The Primer Series
on ICTD for Youth

Primer 2: Project Management and ICTD

UNITED NATIONS
APC*i*CT - ESCAP

Primer Series on ICTD for Youth

Primer 2: Project Management and ICTD

*A learning resource on ICT for development
for institutions of higher education*

**Lead Author:
Maria Juanita R. Macapagal**

Primer Series on ICTD for Youth

Primer 2: Project Management and ICTD

A learning resource on ICT for development for institutions of higher education

FOREWORD

The importance of youth and its role in helping to build our future society cannot be understated. Every generation comes to a point where it must invest in its youth to lead society into the future. The United Nations clearly understands that only through the enthusiasm and energy of youth will the accomplishments of our generation be sustained and furthered in the next.

The global community, through its shared commitment to sustainable development, has accomplished much over the past decades. Though much work is still to be done to fully meet the Millennium Development Goals (MDGs) by 2015, there are many accomplishments to be acknowledged, achieved through common purpose.

Our world today is moved by the rapid development of information and communications technologies (ICTs). Technologies, best understood as a means of better communication, improved processing and exchange of information, now impact every aspect of our lives, constantly revolutionizing the way we communicate with each other, comprehend our environments, and interact with government.

ICTs have played an important role in fostering improved connectivity as well as socio-economic development throughout the world, including the Asia and Pacific region. ICTs have provided the region's population with new opportunities and resources; e-Government extends the reach of public services, social media provides voices to those social groups most often marginalized, e-Health brings medical practitioners to rural communities and online learning provides access to education for those outside traditional hubs of learning.

However, considerable inequalities in terms of ICT infrastructure, connectivity and know-how still exist and inhibit the potential benefits of ICTs from being adequately leveraged. Access to ICTs is not uniform across regions, countries and communities, with many significant discrepancies existing between neighboring regions and the social groups within them. Indeed, the digital divide in Asia and the Pacific is still seen to be one of the widest in the world. This is evidenced by the fact that countries within the region are placed across the whole spectrum of the global ICT Development Index ranking. Despite the impressive technological breakthroughs and commitments of many key players in the region, access to basic communication is still not assured for all.

In order to fully bridge the digital divide and realize the full potential of ICTs, a requisite level of human resources and institutional capacity must first exist. Towards this end, the Asia and Pacific Training Centre for Information and Communication Technology for Development (APCICT) was established as a regional institute of the United Nations Economic and Social Commission for Asia and the Pacific (UN/ESCAP) on 16 June 2006 with the mandate to strengthen the efforts of the 62 ESCAP member and associate member countries to use ICT for their socio-economic development through human and institutional capacity development. APCICT's mandate responds to the Declaration of Principles and Plan of Action of the World Summit on the Information Society (WSIS), which states that: "Each person should have the opportunity to acquire the necessary skills and knowledge in order to understand, participate actively in, and benefit fully from, the Information Society and the knowledge economy."

Since inception, APCICT has strived tirelessly to develop the requisite set of ICT knowledge and skills among government officials and senior development stakeholders through numerous thematic and programmatic initiatives. APCICT has also indentified the need to build ICT capacity in the next generation of government officials and development stakeholders, if the Asia-Pacific region's development achievements are to be sustained.

However, a gap currently exists in terms of a well designed, instructional sound package for the capacity building of today's youth—the leaders of tomorrow. Understanding the need to bridge this gap, APCICT has developed the *"Turning Today's Youth into Tomorrow's Leaders"* programme, which aims to develop requisite ICT capacity among the leaders and workforce of the next generation.

ESCAP welcomes APCICT's efforts to empower the youth of the Asia-Pacific region and build their ICT for development capacity through the various elements of the programme, and in particular "The Primer Series on ICTD for Youth"; a core curriculum for university students that will provide Twenty-First Century skills for the knowledge society, where ICTs are an intrinsic part of everyday life. With over 56 million students enrolled in institutions of higher learning in Asia and the Pacific alone, the Primer Series is indeed a timely resource, and will support the spirit of the WSIS Declaration of Principles which recognizes that "young people are the future workforce and leading creators and earliest adopters of ICTs. They must therefore be empowered as learners, developers, contributors, entrepreneurs and decision-makers."

Noeleen Heyzer, Ph.D.
Under-Secretary-General of the United Nations
and Executive Secretary of ESCAP
December 2013

PREFACE

Launched in February 2012, the Primer Series on ICTD for Youth has strived to provide resourceful materials for educators and students in Asia and the Pacific region on various topics pertaining to ICT for development. Its first issue titled 'An Introduction to ICT for Development' provided a comprehensive understanding on the linkage between ICT and development, and how ICT can be used for socio-economic development. Since its launch, the Primer Series has seen a rapid uptake across Asia and the Pacific region. Available in five languages, it has been adopted and utilized in 13 countries and 2 sub-regions, reaching over 90 universities.

Building on the success of the first issue, APCICT has developed the second issue on project management and ICTD. Based on the development framework discussed in Primer 1, Primer 2 specifically focuses on ICTD project management concepts, tools and techniques. It intends to provide students with practical knowledge, skills and tools to effectively plan, implement and evaluate ICTD projects towards achieving development goals. It also describes the project management profession in the context of development and ethics, and the significance of leadership, teamwork, communication, and stakeholders' participation in managing change. The contents are closely linked to Module 7 on ICT Project Management in Theory and Practice of the Academy of ICT Essentials for Government Leaders, APCICT's flagship capacity-building programme for government officials. As much as Academy Module 7 has successfully contributed to building the capacities of policy makers and government officials in ICTD project management, this second issue of the Primer Series will enhance the understanding of university students on the essential concepts of ICTD project management and the process of planning, implementing, monitoring and evaluating ICTD projects.

The road to developing this new issue has involved an inclusive, participatory and demand-driven approach to better reflect actual needs of youth for ICTD. A series of stakeholder consultations, meetings and workshops, and online surveys were deployed to identify needs and conceptualize ideas. The content was developed, reviewed and commented on by over 100 university professors and stakeholders across Asia and the Pacific. I wish to extend sincere gratitude to all those who participated in meetings and workshops, and provided valuable feedback and insights along the way.

Foremost, I would like to express gratitude to Maria Juanita R. Macapagal, lead author of this second issue of the Primer Series, for her enthusiasm and dedication to creating forward-looking materials for students in the region. Also, I would like to acknowledge contributions from Royal Donald Colle who created a communication framework for ICTD projects, an annex to this issue, thus further enriching the content. My gratitude also goes to Christine Apikul for her editing of the manuscript. Lastly, I would like to thank the Korea International Cooperation Agency (KOICA) for its generous financial support.

I sincerely hope that this second issue of the Primer Series will help meet the growing need for more diversified ICTD content for youth in Asia and the Pacific region, and contribute to creating a cadre of future leaders with the ability to leverage ICTs for inclusive and sustainable development.

Hyeun-Suk Rhee, Ph.D
Director
UN-APCICT/ESCAP

PRIMER 2: PROJECT MANAGEMENT AND ICTD

This Primer on Project Management and ICTD provides fundamental concepts and tools utilized in project planning and management. There are two parts to this Primer. Part 1 discusses general concepts and tools in project management for development, as well as the use of general computer applications. This part is intended for students without any or limited technical background on ICT. Part 2 looks into the use of ICTs in managing projects, and delves into tools and techniques for managing ICTD projects. This second part will be more appropriate for students with some technical information technology background.

While this Primer is specifically focused on ICTD project management concepts, tools and techniques, it is anchored on the development framework comprehensively discussed in Primer 1: An Introduction to ICT for Development. Primer 1 provides a foundation for understanding how ICTs can be used for social and economic development, in particular in meeting a country's development goals and needs.

Case examples of ICTD initiatives that support the Millennium Development Goals and other socio-economic development programmes are given in this Primer. Some of the case examples will be taken from Primer 1 and related sources. This Primer will also include fictitious case studies for the purpose of exemplifying the use of project management concepts, tools and techniques, and for enriching discussions and analyses. These case studies use imaginary characters and places but they are mostly based on real life lessons and experiences. Aside from the case studies, activities and simulation exercises are provided and suggested for knowledge and skills application. Throughout these learning activities, students are expected to be analytical and critical.

LEARNING OBJECTIVES

The Primer aims to:

• Introduce students to essential concepts in project management, in the use of ICTs in management, and in managing ICT projects for development;

• Provide the project management phases and processes, disciplines and knowledge areas, and the basic tools and techniques commonly used in relation to different international reference standards for the management of ICTD projects;

• Enhance understanding of project planning and management concepts and applications through instructive features such as case examples and exercises, summaries, discussion questions and list of useful resource materials in every chapter; and

• Describe the project management profession in the context of development and ethics, and the importance of leadership, teamwork, communication, and stakeholders' participation in managing change.

LEARNING OUTCOMES

After receiving training on this module, students will be able to:

• Identify the general concepts of project management, the phases in the project management cycle, and the different tools and techniques available for each phase of the project management cycle;

• Explain the importance of project management for any type of project and how these are used to promote socio-economic development;

• Understand the role of project managers and the importance of working as a team in promoting change in the organisation and in the community at large;

• Describe the different approaches, tools and techniques used to manage ICTD projects; and how ICTs are used in project management; and

• Develop a simple project management plan in the context of development, and use project management and ICT tools as a method for advancement.

HOW TO USE THIS PRIMER

The Primer is a guidebook and intended as an introduction to project management and ICTD for students. The educators are encouraged to use other resources and methods that will increase and sustain the students' interest to learn more about the use of project management in the context of human development projects.

Primer 2 is divided into two parts and nine sections that present key concepts in various phases of project management, as well as cases and exercises designed to demonstrate project management principles and strategies. Chapters 1-4 provide the essentials of project management and can be applied for any type of human development projects. Chapters 5-8 provide basic ICTD project management that can also be useful for students without technical background.

Educators are invited to enhance and modify the examples provided, and/or supplement these with cases and exercises that they think will be more effective and meaningful to students. It is suggested that the following be given prominence in the course:

- Concept Definitions – Concepts should be clearly defined to serve as a common starting point or baseline upon which to develop a deeper understanding through further explorations of how the concepts work in specific contexts.

- ICTD Framework – There are many reference materials on project management, which is a generic concept with universal applications, as well as on ICT project management. However, most materials are written in the context of commercial and profit-making ventures. This Primer, along with others in the Primer Series, is anchored on the ICTD perspective and the e-government service delivery environment. For more effective results, it is suggested that students first take up Primer 1 before taking Primer 2. Primer 1 provides a foundation on ICTD. Having the Primer 1 background will give the student an enhanced appreciation of project management for ICTD.

- Roles and Functions – People manage projects, and projects have impacts on people. Development projects in particular should focus on the impact of projects on people. Thus, the role of individuals and groups in the various phases of ICTD project management should be given prominence.

- Reference Standards – Awareness of different international project management reference standards is an edge for project managers. Students will realize that ICTD project management requires a lot of skills and exposure to human development projects.

- Project Management Tools and Techniques – Use of appropriate tools and techniques can increase the efficiency and effectiveness of managers. The correct uses of these tools and techniques should be demonstrated. There are many examples and cases that can be added in each country context for the student's further appreciation of the subject matter.

Students are likely to have diverse backgrounds or exposure to ICT uses and experience. While this Primer is intended for students with or without ICT technical background, the level of discussion may be most suitable for students from the third or fourth year undergraduate levels and those in the graduate levels.

Course sessions should be as interactive as possible, with a lot of group discussion and hands-on exercises.

The Primer makes reference to a number of online training resources in project management. Students should be encouraged to explore these resources keeping in mind the needs and imperative of actual projects they are involved in. Finally, educators and students alike are encouraged to enroll in the APCICT Virtual Academy (http://e-learning.unapcict.org), an online distance learning platform for ICTD.

TABLE OF CONTENTS

LIST OF BOXES

LIST OF CASE STUDIES AND CASE EXAMPLES

LIST OF FIGURES

LIST OF TABLES

ACRONYMS

AC	Actual Cost
AusAID	Australian Agency for International Development
BAC	Budget at Completion
BMML	Balsamiq Mockups Markup Language
CASE	Computer Aided Systems Engineering
CD	Compact Disc
CPI	Cost Performance Index
CPM	Critical Path Method
CV	Cost Variance
DANIDA	Danish International Development Agency
DMADV	Define, Measure, Analyse, Design and Verify
DMAIC	Define, Measure, Analyse, Improve and Control
ECO	Environment Conservation Organisation
EMR	Electronic Medical Record
E-MRS	Electronic Medical Record System
ETC	Estimated Time for Completion
EU	European Union
EV	Earned Value
ICT	Information and Communication Technology
ICTD	Information and Communication Technology for Development
IEEE	Institute of Electrical and Electronics Engineers
IT	Information Technology
J2EE	Java2 Platform Enterprise Edition
LFA	Logical Framework Approach
LRE	Latest Revised Budget Estimate
LSE	Latest Schedule Estimate
MDGs	Millennium Development Goals
MOV	Means of Verification
MRS	Medical Record System
MS	Microsoft
MSF	Microsoft Solutions Framework
NASA	National Aeronautics and Space Administration (USA)
NGO	Non-Governmental Organisation
NPV	Net Present Value
NTH	National Tele-Health Centre
PBX	Private Branch Exchange
PCM	Project Cycle Management
PDM	Precedence Diagram Method
PMBoK	Project Management Book of Knowledge
PMI	Project Management Institute
PMO	Project Management Office
PRINCE2	Projects in Controlled Environment 2
PV	Planned Value
RACI	Responsible, Accountable, Consulted and/or Informed
RFI	Request for Information
RFP	Request for Proposal
RUP	Rational Unified Process
SAC	Schedule at Completion
SDC	Swiss Agency for Development and Cooperation
SDLC	Systems Development Life Cycle
SMART	Specific, Measurable, Achievable, Realistic and Time-bound

SMS	Short Message Service
SOAP	Simple Object Access Protocol
SOW	Statement of Work
SPI	Schedule Performance Index
SWOT	Strengths, Weakness, Opportunities and Threats
SV	Schedule Variance
TOR	Terms of Reference
UML	Unified Modeling Language
UN-APCICT	United Nations – Asian and Pacific Training Centre for Information and Communication Technology for Development
USD	Unites States Dollar
URL	Universal Resource Locator
WBS	Work Breakdown Structure
XML	Extensible Markup Language

LIST OF ICONS

Case Study

Questions to Think About

Test Yourself

PART I: CONCEPTS AND TOOLS IN PROJECT MANAGEMENT

Young people are development catalysts and a driving force for socio-economic growth and technological advancement. The international community has long recognized the benefits of engaging youth, not merely as a beneficiary or recipient, but as an active partner and participant in policy, planning, implementation, monitoring and evaluation of development programmes, projects and activities. Countless youth-led projects worldwide manifest the changing paradigm in young people's participation in and contribution to social transformation.

Part One is intended for students without any or limited technical background on information and communication technology (ICT). It presents the general concepts and tools in project management as well as the applications of these concepts and tools using the project cycle management (PCM) approach. This part has four chapters where each builds on the preceding chapter. Cases and exercises are adapted and created for students to have better appreciation of management processes in developing, planning and implementing projects.

The first chapter, Project and Project Management, provides an overview of the general concepts related to projects and project management. Aside from the definitions of concepts, discussions on project management phases, processes and constraints are given emphasis. Also included are brief descriptions of the disciplines or knowledge areas of project management.

The second chapter discusses the phases of project initiation and project formulation. The logical framework approach (LFA) with corresponding analytical tools is introduced. These tools highlight the use of stakeholder analysis, problem analysis, strategy analysis and objectives analysis in preparing and designing projects.

Chapter 3 shows the preparation of a detailed project plan. Each discipline or knowledge area of a project are discussed and elaborated. Also provided are pointers and instructional step-by-step activities in the preparation of project management plans. The preparation for each specific management area such as integration management, scope management, time management, cost management, quality management, communication management, risk management and procurement management are thoroughly covered in this chapter. Hands-on activities on how to prepare the important start-up documents are highlighted as well.

A discussion on the role of communication planning and strategies appears in annex 2.

The fourth chapter presents the monitoring and evaluation processes during the execution or implementation phase. It also provides the link between closing and the monitoring and evaluation processes. The roles of the project manager and the project team are woven into the discussion.

CHAPTER 1: PROJECTS AND PROJECT MANAGEMENT

1.1 Introduction

This chapter introduces the fundamental concepts of projects and project management in the context of development. It presents the rationale of projects and how these can be used to improve the quality of life of people in an organisation, community and society. Aside from distinctions of projects and project management phases and processes, discussions also include the disciplines or knowledge areas of project management.

Objectives

• Know what project and project management are and what they can do for development
• Discuss the life cycle of projects, its phases and processes
• Describe the different approaches and disciplines in project management
• Explain the roles and responsibilities of a project manager and members of the project team
• Understand the importance of communication in project management
• Understand the importance of project documentation
• Apply a tool in the project pre-initiation phase

Case Study 1.
The case of Clara and the University Outreach Programme

Clara Shung is in her fourth year as a university student. She is taking up a business course major in Marketing. The university where she studies has a volunteer programme for students called the University Outreach Programme. The programme is in partnership with the provincial local government that supports socio-economic projects that can benefit the marginalized population. Through the programme, students are encouraged to take part in projects where they can learn and earn academic credits.

From among the list of several potential projects, Clara chose to help young women and mothers learn new skills and immediately use these skills to contribute and augment their family income.

Upon initial consultations with Dr. Farida Ramirez, the University Outreach Programme Director, Clara was informed that one of the expressed needs of the young women in a nearby village is to learn how to use the computer and the Internet to find jobs and/or to market their hand-woven products. She was assigned as the project leader and she will be working with a few other students. The Director asked her to put forward a project concept and a project plan. The Programme has a grant for successful project proposals in the amount of USD 5,000. Clara felt excited and started conceptualizing the project.

What are the first things she would do to make the project successful and worthwhile?

Practical Exercise

Make a to-do list for Clara. Check and discuss this list with your peers as you read through the chapter.

Many people who have managed or have been involved in useful and meaningful projects find their experiences both challenging and rewarding. Primer 1[1] gave numerous examples from different countries of projects using ICT to improve people's lives.

Imagine yourself like Clara taking part in one of these projects. Certainly, there will be a lot of questions in your mind. To list a few: What is the project about? What is the project for? How will I relate with the people participating in the project? How will I perform in the project? And perhaps there would be feelings of excitement, anxiety and fears that may go with these thoughts.

So first, let us understand the fundamental features of projects.

1.2 What are Projects?

Projects are not routine activities. They are a **temporary** planned set of activities with purposes, goals, objectives, and expected outcomes and results. They are given special attention because resources and money are appropriated and ideally these are expected to terminate once the products or services are created, delivered and project objectives are met.[2] There are scope, specifications and requirements to cover, a clear start and end date, and a budget to finance the activities from start to finish.

A project has limits or boundaries that must be taken into critical consideration. These are called constraints. By these, we are restricted or confined by conditions that will control our project decisions and activities. The three main project constraints are: scope, time and cost—also known as the "project triangle", or the "triple constraints". They are the basic limitations in managing projects. In other literature, quality definitions of outputs or the competency required in project implementations are also included as one of the project's major constraints. These limitations must be balanced with the demands of the project activities in relation to its purposes, goals, objectives, and expected outcomes and results.

A project may be small and simple. The scope may cover an uncomplicated requirement, a small target group, a few tasks and activities, a few resources, a small budget, and a short time frame. For example, preparing and conducting a training of trainers for a computer literacy class for out of school youth, women home-makers, farmers, and senior citizens in a village community to increase economic opportunities. The scope requirements, budget, and the time frame to implement the project example are quite straightforward. However, the same project can also be considered small but complex depending on the factors (political and cultural) in the external environment that can result to complications in the preparation and implementation processes.

A project can be large and complex. It can be multi-faceted with many component parts and activities. An example of a large and complex project is developing and implementing a computerized national elections systems project for more efficient electoral results. The project example is huge in scope, in costs, and most often longer in time frame because it covers many components. It will have to deal with many geographic areas of a country, many preparatory and testing activities, and will have many tasks and resources to manage. There will be many considerations of various factors that may affect it. One of these factors is the requirement of quality definitions. The latter can include quality specifications of certain telecommunications infrastructure, equipment or software products that have to be defined as early as the project initiation stage. Aside from the scope, schedule and costs, quality definitions become one of

---

1   Usha Rani Vyasulu Reddi, *Primer 1: An Introduction to ICT for Development*, Primer Series on ICTD for Youth (Incheon,UN-APCICT, 2011). Available from http://www.unapcict.org/pr.
2   Not all projects reach completion due to several factors; internal factors may include inadequate resources and budget, poor design, lack of support from sponsors or higher management, external factors such as physical environment, social acceptance and other similar factors.

the project constraints too. Furthermore, if the quality of the specified requirements such as equipment and software products will still have to be procured and developed outside the country and involving various agencies for technical assistance, the definition of the project scope, time and costs of the project will take into consideration the management of tasks, resources and functions that are dependent upon the defined product quality.

What about Human Development Projects?

Any social sector or institution whether in business, government, education or health, create projects for various good reasons. Social development projects are projects that promote the well-being and strengthening of systems for people in an organisation, an institution, a community and a nation. A broader concept that encompasses these social development projects is "human development". It is defined as "the process of enlarging people's [choices] and opportunities and improving their well-being; [it] is about the real freedom ordinary people have to decide who to be, what to do, and how to live." Basic to the process of widening people's choices, opportunities, and improving people's conditions is building the capabilities of people to have better quality of lives.[3]

Some examples of human development projects may include:

• Providing safe drinking water in an upland community
• Improving nutrition of school children in a remote village
• Adult literacy among indigenous peoples
• Poverty alleviation through conditional cash transfers

Can you name other examples of projects in your community?

The UN-APCICT Primer Series on ICTD for Youth are concerned about ICT projects that promote human development (ICTD). The ICTD projects in mind are those that offer ICT solutions to address vital social and economic problems of defined groups, in specified geographic locations, within a set time frame, and with the aim of bringing about an ongoing improvement in the living conditions of the people.[4]

Primer 1 provides several cases of ICT projects that have been implemented to meet certain problems affecting in particular human development sectors such as agriculture and livelihood, education, health, and the environment. UN-APCICT also gives emphasis on projects that will help meet the Millennium Development Goals (MDGs).[5]

For example, projects that address poverty are the cases of the "Reuters Market Light in India" and the ICT "e-Choupal" initiatives for farmers to check commodity prices in India. These projects use ICTs as tools to help small farmers make informed decisions about the sale of their products. The ICT solutions provide them "timely and reliable information on prices, weather and other news that affect crop or input prices, government schemes and sources of finance." These tools can also provide them opportunities to improve their know-how on agricultural inputs, crops and market developments, which in turn can increase their revenues.[6]

---

3   Paul Streeten, "Human Development: Means and Ends", *Human Development*, 84.2 (May 1994), pp. 232–237. Available from http://people.ds.cam.ac.uk/mb65/documents/streeten-1994.pdf; and Measure of America, "About Human Development". Available from http://www.measureofamerica.org/human-development/.
4   DANIDA, Guidelines for Programme Management, September 2011, p. 12. Available from http://amg.um.dk/en/~/media/amg/Documents/Technical%20Guidelines/Programme%20management/GuidelinesforProgrammeManagementSept2011.jpg.
5   The MDGs are eight international development goals that were established following the Millennium Summit of the United Nations in 2000, and following the adoption of the United Nations Millennium Declaration. All 189 United Nations member states and many international organisations have committed to help achieve these goals by the year 2015.
6   Usha Rani Vyasulu Reddi, *Primer 1: An Introduction to ICT for Development*, Primer Series on ICTD for Youth (Incheon, UN-APCICT, 2011), p. 82. Available from http://www.unapcict.org/pr.

ICT projects on education include projects that promote distance education, teacher training and ICT human capacity building. An example of a project that addresses problems of school drop outs or out-of-school youths and adults is the "e-Skwela" in the Philippines. The project promotes an ICT-enhanced alternative education programme where students spend an hour on computer-aided lessons, an hour with teacher-led instructions, and another hour in collaborative group activities and projects. "Community-based e-learning centres or e-Skwelas are being established across the country where community members can learn new skills and competencies, review for the Accreditation and Equivalency Exam of the Bureau of Alternative Learning System, and prepare to rejoin the formal school system, if so desired."[7]

Many governments invested in projects such as the establishment of telecentres in urban and rural areas to provide citizens venues to learn the use of computers and the Internet, and have better access to relevant information, specifically those that will answer their basic information needs.

In the health sector, one of the ICT projects commonly undertaken in several countries in Asia is the promotion of telemedicine. An example of a telemedicine project featured in Primer 1 is in Afghanistan that linked provincial hospitals of limited capability and facilities to specialist health care diagnosis, treatment and training expertise from abroad. This is done through the use of broadband technology, wireless video conferencing and digital image transfer.[8]

On e-government, many ICT projects are being developed and implemented by different countries in many parts of the world to ensure more efficient and effective services delivery to their respective citizens. Many developing countries are now pursuing online citizen services, and the enhancement of their front and back-end automation of basic processes such as accounting systems, payroll systems, records management and other similar computerized systems.

Governments are likewise investing in projects that will prepare citizens to protect the environment, and support disaster risk reduction and management.

Development projects are similar to projects implemented by the business sector and other sectors in society. What makes them different are in the goals, purposes and objectives of these projects, as well as the perspectives and processes that enjoins people to participate in the promotion of human development. More ICT projects as we speak are being developed and implemented to serve the interest of human development and that is to help better the quality of lives of people.

Key Features of Projects

What are the basic characteristics of projects? They include:[9]

- Clear purpose, goal and SMART objectives
- Defined and documented scope
- Strategic options to answer identified needs
- Specific end results
- Ownership support from persons involved at different levels of the project environment
- Specific start and end dates
- Timely deliverables
- Finite budget

---

7   Ibid., p. 91.
8   Ibid., p. 104.
9   Maria Juanita R. Macapagal and John J. Macasio, *Module 7: ICT Project Management in Theory and Practice*, second edition, The Academy of ICT Essentials for Government Leaders Module Series (Incheon, UN-APCICT/ESCAP, 2011), p. 17. Available from http://www.unapcict.org/academy.

- Quality constraints
- Assigned resources

Clear purpose, goal and SMART objectives. A project must have a clear purpose and goal. It also needs objectives that are SMART—<u>s</u>pecific, <u>m</u>easurable, <u>a</u>chievable, <u>r</u>ealistic, and <u>t</u>ime-bound. In addition the goals and objectives must be logically linked with each other. They must be clear enough to give a good picture of what the project wants to change and achieve. (For the definition of project purpose, goals and objectives, see glossary in the annex.)

Box 1. Example of objective statements

Project Name: Public Libraries for Economic Opportunities and Community Development in [Name of City]

Project Goal: By end of Year 2014, the public library and the satellite libraries covered by [Name of City] are developed as Centres for Economic Opportunities to sustainably provide access to information and services for city residents.

Project Objectives: By end of Year 2014:

- The district libraries and reading centres in 4 communities are equipped with the needed telecommunications infrastructure and ICTs to provide city residents information and services on economic opportunities.
- The knowledge and skills of the staff of public library, district libraries and reading centres are enhanced to become community information intermediaries (or "infomediaries") who can provide residents information and services related to economic opportunities.
- In order to build and sustain demand in the use and access of the city district libraries and reading centres the economic information needs of the residents in the communities are identified and monitored.
- Sustainable and synergistic partnership between and among city government agencies, private companies, civil society groups and other stakeholders are created to use and support the public libraries as facilities for information exchanges about their respective needs and services related to economic opportunities.

Box 1 gives an example of a clear goal of a city local government project in partnership with a non-governmental organisation (NGO) that aims to redefine the purpose of the existing public library facilities.[10] In the example, the goal and objective statements are specific enough to answer the basic questions—who, what, when, where, why and how—about the project.

Defined and documented scope. A project must have a specific and defined coverage or scope that is expressed in writing. This is to identify what it will do and not do, and what it will cover and not cover within a span of time. A scope document is prepared that indicates the basic information about the project, and the specific activities and tasks that will be covered. This document must be reviewed and approved by concerned authorities to make this document binding for all who are concerned in the project.

---

10 See the Beyond Access Programme, http://www.beyondaccess.net.

In the example given in box 1, each objective must be able to identify activities that are included in the scope of the project. For example, in the first objective which is to equip the public libraries with telecommunications infrastructure and ICT equipment, the activities can include: the renovation of the libraries (to accommodate space for equipment and cables), the installation of telecommunications cables and apparatus, as well as the specifications and procurement of four computers in each library facility.

Strategic options to answer identified needs. Projects, as mentioned earlier, propose solutions to a problem or an identified need of an organisation, a community, or even a country. When the idea of a project is offered, part of its preparation is to do a problem analysis (more discussion on this in chapter 2). In the analysis, different ways of solving the problem will surface. Projects are selected from the many options listed and identified as ways of answering problems or needs of a community or organisation. The options that will be selected must be assessed to find the best way to answer the need given the limited time, money and resources. Undertaking this analytical exercise results in the project being regarded as strategic.

In the example, the main problem posed before the solution was offered is: How will the city be able to increase the economic opportunities and productivity of the community residents? For certain there were many solutions offered. However, the project proponent who saw the potential use of the public libraries as an information hub for economic opportunities gave the following reasons for the strategic option to the problem.

- Libraries are already a trusted community service
- The library is a neutral, safe, respected place accessible to all
- Local governments already support libraries and reading centres, and staff—built-in sustainability
- With access to information and the skills to use that information, people are better able to apply for jobs, create businesses and develop new markets
- The proponents recognized the city public library as the most innovative and promising public library initiative in the country; it has won several achievement awards
- The public libraries can easily support the city's Knowledge Management Programme in the communities

As you can see, the project example cited here was well thought of. Time and effort were spent to carefully conceptualize the project.

Specific end results. Projects must be able to articulate the results expected from the project. These results must be specific and measurable. As an answer to a problem, they must be able to show desired changes after solutions are tested and proven, or at the end of the project.

The example articulated its end result as follows: The public libraries will become a hub for information and economic opportunities in that particular city.

Ownership support from persons involved at different levels of the project environment. Projects must be supported by the groups in the organisation or community desiring the change. Since development projects are most often introduced by external parties such as funding or management agencies, the persons who are in need of the change and are beneficiaries of the solutions must be able to own or take hold of the solutions as their own responsibilities.

In the example, the city officials and the public librarians must be able to own the project concept as well as the activities and end results of the project. While it may have been sponsored and supported by an NGO, the main project actors must be at the forefront in the implementation of the project.

Specific start and end dates. Projects are constrained by time. Projects are temporary endeavours and must have start and end dates. The activities must be implemented according to the set dates and the results must be assessed from time to time until the end of project life to gain insights and lessons from the activities.

In the example, the project implementation time frame is 18 months. The project is to be implemented from 1 September 2013 – 31 March 2015 upon the signing of a Memorandum of Agreement with the NGO that sponsors the project on 28 August 2013.

Timely deliverables. Projects have activities and tasks for implementation with tangible outputs to produce. The expected outputs are project markers and must be scheduled at given periods in the project life. The outputs must have estimated dates of delivery so that other activities that are dependent on this output will also happen and produce timely results.

In the example, one of the required outputs of the project is the installation of computers in the four library sites. In the project design, it is expected that the computers are installed by 31 December 2013. Activities and tasks must be implemented to progress towards this output. The delivery of this output must be done in time so that the succeeding activities such as computer training of residents can take place.

Limited budget. Projects are constrained by available and predetermined funds. Money is limited and must be budgeted to make sure funds will be sufficient and used judiciously.

The example has contributions from the city government (USD 17,500) and the NGO that sponsors the project (USD 23,500). Total funds are in the amount of USD 41,000 for 18 months. All project activities and tasks including the procurement of equipment hardware and needed software products and services must be included in the project budget.

Quality constraints. Projects are also limited by the defined quality of inputs and outputs of the project. While budget and time are quantifiable categories needed to run a project, quality provides the valued specifications and description of an input or output of the project.

For example, the needed computer hardware has specifications of fast and robust quality so that it can accommodate video streaming and downloading. The procurement and purchase of the required equipment must take into consideration specifications that will accommodate such requirements. In the same manner the quality specifications of Internet service must also be included in the procurement requirements. The project team must make sure that the specified quality is checked upon the delivery of the needed goods and services.

Assigned resources. Projects need resources such as personnel, expertise, equipment, space and other technical requirements. Resources are allocated to be utilized and organized in the implementation of the project.

The example identified the resources that need to be prepared and mobilized for the project. The members of the project team assigned to the project are mostly personnel of the public libraries. They were assigned with the following roles: Project Manager, Project Coordinator, Training Coordinators, Administration and Finance Manager, Technical Team Leader, Project Monitor, and Satellite Library Coordinators. There were external resources assigned such as technical support to the project team in the project preparation and in the training of the public library personnel. The organisational structure was defined to establish the functional relationships of the personnel involved. As a project management office (PMO), a space in the main public library was assigned with the needed telecommunications equipment, hardware and software materials, and furniture and fixtures.

In addition, projects are based on certain assumptions, are risk-prone and are developed in progression proceeding from one stage to another. It must also be mentioned at the start that projects are subject to uncertainties in an ever-changing environment. Projects will be tested by several problems and issues from start to finish. The more information the project manager and the project team can have to be able to identify these problems and issues in advance, the more they are able to prepare to deal with them in the process.

Clara and the University Outreach Programme

From case study 1, Clara has to first figure out if she has enough information in conceptualizing and preparing for the project. Clara then has to strive to ensure that the features of the proposed project are met and documented as she runs through the course of the project. Table 1 provides a checklist to help Clara conceptualize and prepare the initial project documents.

Table 1. Sample checklist of project features and to-do list for project conceptualization

Project Features	Clara's Initial Status and Checklist on Conceptualization Tasks
Does the proposed project have clear goals and objectives directed to strategically meet the identified needs?	• Clara has limited information. • She needs to know more about the community and the conditions of the women where she is assigned to implement the project. • She will have to assess if the proposed skills training on computer and Internet literacy is appropriate and has a promising future to help the women augment their livelihood.
Does the proposed project show specific end results?	• Once Clara has more information, she can have more inputs in preparing her project document, where she can identify the specific end results of the project.
Does the proposed project have "ownership" support?	• In the beginning, Clara must identify the support and the resources she will need from project conceptualization to finish. • Aside from that she has to validate the information that the young women and the mothers in the community truly desire this project to happen and will commit themselves to it.
Does the project have defined and documented scope?	• Once Clara has more in-depth information about the community and the women, she can be more definite about the coverage of her project activities.
Does the proposed project have specific start and end dates?	• She has to identify the project activities, the number of days that the activities will take, when the project will commence, be implemented and finish.

Does the proposed project identify timely deliverables?	• Clara has to identify what are the outputs (products and or services) of the project and when these outputs should be done and delivered. • Clara must also know what the University Outreach Programme Director expects in the reporting of project progress.
Does the proposed project have identified quality constraints?	• Clara is unaware of the kind of training that is relevant for the young women. She must be more specific when defining the training criteria. She can then track these criteria to see if they are met by the training.
Does the proposed project have assigned resources?	• Clara must be realistic that she needs people to help her in the project. • She must identify how many and the kind of people she will need. • She will also need to know the materials and equipment required for running the project.
Does the proposed project have a finite budget?	• Clara has to know the source of funds for the project, the amount that is available as well as how much the project requires in total.
Does the proposed project define project assumptions?	• Clara has to know what she holds true for the project to succeed and check this constantly.
Does the project identify the uncertainties and risks?	• She also must know what are the challenges and risks that threaten the project to fail and check this constantly throughout the project duration.
Does the project follow stages and follow progressions?	• Clara has to build the project from one phase to another; identifying the activities in each phase before implementation.

Did your "To-Do List" match with the Checklist of Project Features in table 1? As we go through the discussion in this Primer there may be other things that can be added to the checklist above. Doing a checklist is one tool that is useful to project managers because it helps one to remember and later organize the many activities in a more systematic way.

1.3 What is Project Management?

Now that you have gone through reading about the project features, you notice that there are many activities that a Project Leader/Manager and the project team have to do for a project to be successfully planned and implemented. From the above initial checklist for Clara, we now have some ideas about project management.

Using an Internet search engine to search about project management, one can encounter thousands of entries about its definition alone. Below are some textbook definitions:

Project management is:

"A unique set of coordinated activities, with a definite starting and finishing points, undertaken by an individual or organisation to meet specific objectives within defined schedule, cost and performance parameters."[11]

"A set of tools, skills, techniques, and knowledge that can be applied to a project in order to fulfill that project's requirements."[12]

"The discipline of planning, organizing, motivating, and controlling resources to achieve specific goals."[13]

"A set of principles, practices, and techniques applied to lead project teams, control project schedule, costs, performance and risks to result in delighted stakeholders."[14]

Box 2. Brief history of project management

Project management is a branch of the management sciences. Many project management literatures trace the origins of project management practice from 4,500 years ago as attested by the colossal infrastructures of the wonders of the world— the pyramids in Egypt, the Greek Parthenon, the Roman Colosseum, the cathedrals and churches of the Roman Catholic Church, the Great Wall of China, the Taj Mahal and others.

The prominence of the project management concept as a distinct discipline in modern society could be attributed to the lessons from the Industrial Revolution, the infrastructure constructions in the nineteenth and twentieth centuries and military projects. Most of the published project management tools and techniques nowadays were used and enhanced by the United States' military in partnership with private consulting agencies as in the case of the logical framework approach (LFA), the Gantt chart, the project evaluation review technique and the critical path method (CPM).

The project management tools and techniques were further enhanced with the use of computer applications. These tools and techniques are currently used by business industries, government and non-governmental organisations in local and international settings.

Sources: History of Project Management Book Trailers; and Microsoft Office, "A quick history of project management".
Available from http://office.microsoft.com/en-001/project-help/a-quick-history-of-

What is Common to All Definitions and Approaches of Project Management?

• There are sets of beliefs or philosophy behind a system or ways of accomplishing activities towards goals and objectives.
• There are goals, objectives and requirements that have to be met in a disciplined fashion.
• The system of accomplishing work includes tools to plan, implement, maintain, monitor and evaluate progress of activities in a project.
• Emphasis of control is given over resources and constraints of the project such as – project scope, time, cost, quality and people.

---

11 Roger Atkinson, "Project management: cost, time and quality, two best guesses and a phenomenon, it's time to accept other success criteria", *International Journal of Project Management,* Vol. 17, No. 6 (Elsevier Science Ltd and IPMA,1999), pp. 337-342.
12 College of Information Sciences and Technology, "Supplemental Topic A: Project Management", Pennsylvania State University, 2008. Available from http://www2.ds.psu.edu/AcademicAffairs/Classes/IST260W/topic0A/topic_0116_02.html.
13 Wikipedia, "Project management". Available from http://en.wikipedia.org/wiki/Project_management.
14 James Chapman, "What is a Project?", 1997. http://www.hyperthot.com/pm_intro.htm.

In managing projects, it is important to define in specific terms what is to be accomplished and delivered to meet purposes and objectives of the project. There are preliminaries such as preparing for a plan and following methods and processes to ensure that progress is achieved in line with the objectives of the project. For projects that have impact on people and organisations, project management can be an efficient way of introducing change. Why?

Project management methods and processes can provide opportunities to identify gaps, problems and risks factors that are planned or addressed during the life span of a project. Through the identification of the gaps and risk factors, the project team can prepare for planned interventions and activities that will be able to lessen conflicts during implementation as well as communicate the benefits of the project.

To put in effect the planned interventions and activities, a project must have a project manager with a core of management team to ensure that planned goals and objectives are accomplished. The more complex a project becomes, the more need for projects to have a structure of relationships and functions among project teams, project partners and stakeholders. For large and complex projects, the creation of PMOs becomes necessary. The creation of PMOs is discussed in section 1.7.

Project Management Approaches

For project management to be a systematic endeavour, efficient and logical methods must be applied.

In the course of the development and recent practices of project management, several methods or approaches have emerged. These approaches are utilized depending on the size, focus, complexity and context of the project. The choice of the approaches will depend largely on the decision of project leaders and other factors affecting the project. Listed and briefly described below are some of the project management approaches that follow international standards:

- **Project Cycle Management (PCM) and the Logical Framework Approach (LFA)** use logical method of analysis in developing a project's hierarchy of objectives. The PCM includes programming, project identification and appraisals as part of the management cycle and processes. It provides a guide on how to manage projects and decision-making points from the perspective of the organisation's project funding cycle. The approach is widely used by many international social development organisations particularly donor organisations (e.g. AusAID, the Canadian International Development Agency, the European Union [EU], the United Nations systems, and the United States Agency for International Development).
- **Project Management Book of Knowledge (PMBOK)** is created by the Project Management Institute Incorporated (PMI) of the United States of America. One can take the PMI examinations to be certified as a project management practitioner.
- **Projects in Controlled Environment (PRINCE2) method** is developed by the Office of the Government of Commerce of Her Majesty's Treasury Office of the United Kingdom. It also offers certification for persons intending to pursue careers in project management.
- **Microsoft Solutions Framework (MSF)** is an approach by Microsoft using tools to develop "high-quality, business-relevant technology solutions."[15]
- **Rational Unified Process (RUP)** is an iterative software development process that gives premium on best practices in team productivity, and provides industry standards and technical methods in creating and maintaining software systems solutions.[16]

---

15 See Microsoft Development Network Library. Available from http://msdn.microsoft.com/en-us/library/jj161047.aspx.
16 See http://www.ibm.com.

- **Six Sigma Methodologies** are based on six sigma principles; two main methodologies include the Define, Measure, Analyse, Improve and Control (DMAIC) and the Define, Measure, Analyse, Design and Verify (DMADV) to create new products or process designs to achieve predictable defect-free performance.[17]
- **Agile methods** are used by ICT practitioners to deliver software products using iterative workflow and incremental product delivery in short iterations. Under Agile methods identified by project management practitioners are: Projects integrating Sustainable Methods (PRiSM), critical chain project management, event chain methodology, process-based management, lean project management, extreme project management, and ten benefits realization management.[18]

The first three approaches in the list (PCM-LFA, PMBOK, and PRINCE2) can be considered classic project management methods, and are mostly used for any types of project context. The subsequent approaches (MSF, RUP and Agile methods) are recent project management methods and are used in the management of ICT-related projects in information systems settings.

Project Management Cycle, Phases and Processes

Project management approaches view projects in a cyclical process. The classic approach to project management makes use of the following phases: (1) pre-initiation phase, (2) initiation phase, (3) planning phase, (4) implementation phase, and (5) closing phase. The approach as shown in figure 1 is viewed in a cyclical and iterative process in order to achieve the desired results.

Figure 1. Project management cycle

Sources: Adapted from the European Commission, Aid Delivery Method: Volume 1 – Project Cycle Management Guidelines (Brussels, 2004). Available from http://ec.europa.eu/europeaid/multimedia/publications/documents/tools/europeaid_adm_pcm_guidelines_2004_en.pdf; and Method 123, "Project Management Life Cycle". Available from http://www.method123.com/project-lifecycle.php.

These phases in actual project implementation are non-linear. Not all projects happen on a phase by phase series. Some projects can end even before reaching the completion or closing phase. There are those that do not follow a structured planning or monitoring stages. There are those that traverse from phases 2, 3 and 4 and back before the closing phase. The methods

---

17 Kathy Schwalbe, "Management of Information Technology Projects", Cengage Learning, Philippine edition, 2011, p. 82.
18 Project Management Soft.com, "Various Approaches to Project Management". Available from http://www.projectmanagesoft.com/guide/various-approaches-to-project-management; and Business2Com, "Differing Approaches to Project Management". Available from http://www.business2community.com/strategy/differing-approaches-to-project-management-0154472.

however can facilitate the system and cycle flow that each phase can follow after another; and when the project ends; from it another one can be born.

- **Pre-Initiation Phase** – A preliminary stage by which a programme of action is identified and put into a coherent plan on higher level. An example is a five-year plan of an organisation that is based on (national or local) policies, agenda, strategies, objectives and cross cutting themes, and also on the problems, constraints, opportunities and threats. This five-year plan is referred to during the development and planning processes of projects to ensure that they are aligned with this plan. Also known as the pre-identification stage, the programming phase provides the framework from where a new project is anchored upon.

  Some of the tools and techniques employed in the pre-initiation stage include **a review of the lessons from past projects.** The lessons can be taken from documents of previous projects such as evaluation reports, progress reports, and monitoring reports. Lessons usually include insights on how the past project could have been done better.

  Another tool is called **environment scanning.** This tool identifies the internal **s**trengths and **w**eaknesses of the organisation; and the **o**pportunities and threats **t**hat are currently happening in the external environment of the organisation. The SWOT analysis is an activity that you can perform to examine your organisation against the external situation that your organisation is a part of. The result of the analysis can help you identify project options for your organisation.

  Examples of external situations may include new laws and policies that will affect your organisation and the project that you are proposing. There may also be new developments in the industry, or the economic or social sector your organisation belongs to. The change happening in your organisation and your environment will have an effect on your project. In the analysis of your situation, you will need information and solid data such as socio-economic statistics, and reports from opportunities study or surveys.

  Another tool that is useful in this phase is the **benchmarking activity**. An organisation may desire to assess and compare its functions, systems and practices against another organisation with similar characteristics and activities. For example a local public library in a developing country compares its functions and services with another public library in another country that is considered a leader in innovative practices. The public library that is making a benchmark study intends to learn about the good practices that the other library is doing. From the lessons in the benchmarking activity, the local public library can propose a project that will improve its practices.

- **Initiation Phase** – The first phase of a new project. It is an important phase of the project because it is at this stage when the goals and purpose of the project are defined; and the rationale and the assumptions of the project are validated. In this phase, the aim is to define the project scope, the general resource requirements, the project time frame and project costs.

  The project scope refers to the definition of what the project is supposed to achieve and accomplish. The scope must include the duration and the corresponding budget needed to achieve the project objectives. The scope document may also include the major activities and a list of work items that are not part of the project. For example, in the project of redefining the public library as an information hub for economic opportunities, preparing laws and policies to support the project is not included in the project scope.

  Some of the tools and techniques that are covered in this phase are stakeholder analysis, problem analysis, objectives analysis, feasibility study, cost-benefit analysis and business

case development. Stakeholder analysis is a tool to identify the primary (direct) and secondary (indirect) stakeholders of the project. Problem analysis examines the causes and the effects of the problem. From a cluster of cause-effect relationships decision makers choose the cause and effect cluster that the project can address. Building from the problem analysis is the objective analysis, a tool that helps define the intended objectives of the project. The feasibility study as a tool at the initiation phase is used to evaluate the proposed project that has large amounts at stake. The study finds out if the project is workable or doable with a given method, estimated cost, and the desired outcomes and benefits of the project. The feasibility study can be accompanied by a cost-benefit analysis that evaluates the proposed project in relation to its quantifiable benefits; and in comparison to an alternative activity or solution. These tools and techniques help you assess and decide the best project option. They are further elaborated in chapter 2.

A business case document is consequently expected to be prepared for the approval of the project sponsors or approving authorities. In business organisations, the term business case refers to a presentation of different approaches to solve a problem; and a selection and justification of the option that has the best value for the organisation. In crafting the business case: (1) the problem is identified and stated; (2) the causes and effects of the problem are explained; (3) scenarios describing the effects of the problem are presented; (4) the different solutions to the problem are discussed; (5) the best solution option is selected; (6) the description of the proposed project is provided; (7) results of the cost-benefit analysis is given; and (8) recommendations are made.

The phase ends with the approval of the business case and the project scope document.

- **Planning or design phase** – This is also known as the detailed planning stage. The planning phase involves the work processes where all the activities are listed and specified. The work processes are organized into different category of management areas or parts that project managers must know about. These categories or parts are called knowledge areas by the PMI. There are nine management categories or knowledge areas – scope management, time management, cost management, quality management, human resource management, communication management, risk management, procurement management, and project integration management.[19] These are further explained in the following sections of this chapter and in chapters 3 and 4.

  One of the main tools that are found very useful in detailed planning is the work breakdown structure (WBS). The WBS tool provides a list of specific activities and tasks with the corresponding schedules, resources, quality and costs. The phase ends when the project implementation plan and the project management plan are appraised and approved.

- **Implementation** – This is also known as the project execution phase or the production phase where all the plans are performed according to the defined scope, quality, schedules and costs. This is also the phase where the aim is to manage the execution processes and ensure that "control mechanisms" are working. The term control or control mechanisms in management refers to the ways of "getting the project on track" after a regular assessment of the project situation.

  In this phase, activities are done according to plan. Most of the activities and tasks are being done as the work in each component progresses in incremental steps according to the scheduled time and budget. However, there are several factors—internal or external to

---

19 Lee A. Tolbert Community Academy, "Nine Knowledge Area Definitions", Available from http://www.pmi.org/pmief/learningzone/ KCMA_Curricula_Documents/Lesson_1-Nine_Knowledge_Area_Defintions.pdf.

the project—that will or may affect positively or negatively the activity schedules and the costs of the implementation process. These factors or events could have been identified earlier at the initiation phase or the planning phase. These events could also happen during the implementation phase.

Examples of internal factors that could influence change of the plans are availability or unavailability of resources, and unexpected behaviours and attitudes from project team members or project partners. External factors could include the passage of new laws, political or legal impediments, and natural or human-induced disasters. Some of the effects of these factors or events could be changes in the project scope, delays in project schedules, and increase in costs variances.

Control mechanisms that are planned are put in effect during the implementation phase. Examples of control mechanisms are regular project staff meetings, performance reviews, and regular monitoring documents. Project control and monitoring are discussed further in chapters 3 and 4.

The stage ends when all the activities and products are done and delivered. At this stage the monitoring process that checks all plans (inputs and outputs) and quality standards must be met. Progress and monitoring reports are important to observe and watch for risk areas.

- **Closing and Evaluation** – This is when the project activities have wound down, deliverables including reports and financial obligations and disbursements are met and accepted by respective stakeholders. An evaluation measures the impact of the project and how it has contributed to larger goals (for instance the programmes at the national or local levels of government). An evaluation also includes findings and results that will serve as a basis for future planning and programming activities.

  In every phase, key decisions, information requirements and responsibilities must be defined. The phases in the cycle are progressive—each phase needs to be completed for the next to be tackled with project success in mind. New programming is drawn from the evaluation and project reviews. The lessons build organisational experience as part of the institutional learning process.[20]

The classic project management cycle can be used as a base to compare other project management approaches. In other approaches, the project phases are termed or named differently, or are expanded to have additional phases in their project management processes.

Let us use PMBOK as a base for the project management phases to compare the terms used in selected approaches, namely: PCM, PRINCE2, the Microsoft project management approach and the RUP approach. Table 2 shows a comparison of the terms used in the different phases of the project cycle.

---

20   Ibid.

Table 2. Terms used by different project management approaches for the different phases of the project cycle

#	PMBOK	PCM	PRINCE2	Microsoft	RUP	Other
1	Initiation	Programming Identification (Appraisal) Financing	Starting Up a Project and Initiating a Project	Envisioning	Inception/ Analysis	Conceptualization and Research
2	Planning	Formulation Inception	Managing Product Delivery	Planning	Elaboration/ Design	
3	Execution	Implementation	Managing Stage Boundaries and Controlling a Stage	Developing	Construction and Testing	
4	Close-Out	Evaluation	Managing Product Delivery	Stabilizing Deployment	Launch and Deployment	

Source: Adapted from Wilson Mar, "Project Planning Strategies and Tools", 2008.

> **? Clara and the University Outreach Programme**
>
> **Questions To Think About**
>
> Is Clara's preparation of a project concept already considered a project?
>
> At what phase will Clara be able to say that the project has commenced?

1.4 What are Project Milestones?

Each project phase schedules a delivery event that marks a major episode of the project. This major event signals that a phase reaches a concluding stage and the next phase is about to start. These project markers are called milestones or "checkpoints". There are common major milestones set in every phase of the project but this practice should not limit project planners to add more especially for large projects.

In table 3, the major milestone for every project phase is found in the second column with the title heading, "Milestone at Completion".[21] These major milestones are shared by different project management approaches. For example the "Vision/Concept/Scope Approved" is a major milestone for the initiation phase. Approval of a document that provides clear concept or scope of the project signifies that the project can proceed to the next phase. It is important to identify the approving authorities of the project. Their signature and stamp of approval are

---

21   Adapted from Wilson Mar, "Project Planning Strategies and Tools", 2008.

important not only because the project concept and scope is clear, but also because the project already has funding earmarked. Thus, the activities of the next phase—the detailed planning phase—can be assured to happen.

The major milestone of the planning phase is "Project Plan Approved". The event is a high-level support and authorization for the project to proceed to the implementation phase. This is again an important event because this will ensure that the project has resources and money to spend for the project activities in the implementation stage.

The implementation phase milestone is "Scope Complete". This means that all that was required to be done are done and delivered. If the project is building a road, and the requirements agreed upon were delivered and when completed, then your milestone can also be named "First Use".

For the closing phase, the major milestone is "Product Released". This means that the result expected from the project is ready for use. If it were a house, the building contractor is now ready to sign off as s/he has turned over the house to the owner. This also means that the project is finished.

Table 3. Major milestones at different project phases

#	Milestone at Completion	PMI/PMBOK	PCM	PRINCE2	Microsoft	Rational/ UML
1	Vision/ Concept/ Scope Approved	Initiation	Programming Identification Appraisal	Starting Up a Project and Initiating a Project	Envisioning	Inception/ Analysis
2	Project Plan Approved	Planning	Formulation Inception Phase	Managing Product Delivery	Planning	Elaboration/ Design
3	Scope Complete/First Use	Execution / Implement-ation	Main Implement-ation	Managing Stage Boundaries and Controlling a Stage	Developing	Construction and Testing
4	Product Release	Close-Out	Final Evaluation and Completion	Managing Product Delivery	Stabilizing Deployment	Launch and Deployment

Source: Adapted from Wilson Mar, "Project Planning Strategies and Tools", 2008.

Milestones are important project markers that help signal or identify at what stage a project is. In preparing the project plan, one has to identify the big and small milestones of the project to follow the project progress. Smaller milestones are important for showing the completion of an activity or a group of tasks.

In the example of the project, "Libraries for Economic Opportunities and Community Development" milestones are set in activities that meet the project objectives. Thus, for the first objective: "The district libraries and reading centres in 4 communities are equipped with the needed telecommunications infrastructure and ICTs to provide city residents information and services on economic opportunities", the milestones for the objectives include: library space repaired or renovated; computer sets and other equipment delivered and installed; and for the

major one, the milestone is the "first use" of the residents to access information and services on economic opportunities.

Clara and the University Outreach Programme

In the case of Clara, she realises that she will need to prepare the activities at the different phases. She has to indicate the milestones for each phase to help her track the growth and movement of the project, and whether she is meeting her objectives or not. Moreover, Clara also realises that there are people, activities, and things in the project that she has to manage.

1.5 What Must be Managed in a Project?

The three constraints—scope, time, and cost—were mentioned as the critical elements to control in a project. Aside from these, the other important aspects that need to be managed in a project are the quality, human resources and stakeholders, communication, procurement, risks and coordination or integration of the project. These categories are listed and briefly described in table 4. Tools that can be used in each project management category are also listed. Some of these tools are mentioned and used in the succeeding chapters, while all the others are defined in the glossary section of this Primer.

Table 4. Description of project management categories and some corresponding management tools

Project Management Categories	Description	Tools Used for Managing the Categories
Scope	All the work required to complete the project successfully. The scope defines what is and what is not included.	• Project scope statements • Work breakdown structures • Statement of work • Requirements analyses • Scope management plans • Scope verification techniques • Scope change controls
Time	The duration of the project and the estimated time when tasks will be completed. Project schedules are included in the preparation of the activities and tasks in the work plan.	• Gantt chart • Project network diagram • Critical path analysis • Crashing • Fast tracking • Schedule performance measurements
Cost	The money allocated and will be spent for project activities, tasks and services. Project managers need to manage costs well.	• Net present value • Return on investment • Payback analysis • Earned value management • Project portfolio management • Cost estimates • Cost management plans • Cost baselines

Project Management Categories	Description	Tools Used for Managing the Categories
Quality	Standards, forms, user focus and reliability of planned project performance.	• Quality metrics • Checklists • Quality control charts • Pareto diagrams • Fishbone diagrams • Maturity models • Stats methods
Human Resources	The people (individuals, teams, contracted professionals) who will be involved in the project.	• Motivation techniques • Empathic listening • Responsibility assignment matrices • Project organisational charts • Resource histograms • Team building exercises
Stakeholders	The individuals and groups who are involved, affected and will benefit from the project.	• Stakeholder analysis • Communication plan
Communication	The messages that need to be put across to manage change and expectations.	• Communication management plans • Kick off meetings • Conflict management • Communication media selection • Status and progress reports • Virtual communication templates • Project websites
Risk	The collective term for uncertainties that pose threats, limitations and obstacles to the achievement of project goals and objectives.	• Risk management plans • Risk registers • Probability impact matrices • Risk rankings
Procurement	The process of acquiring goods and services, infrastructure and equipment that are needed by the project to meet goals, objectives and deliverables.	• "Make or buy analyses" - "in-house or outsource analyses" • Contracts • Requests for proposal or quotes • Source selections • Supplier evaluation matrices
Coordination and Integration	Amalgamation, coordination and oversight of project plans to create consistent, coherent tasks and documentation.	• Project selection methods • Project management methodologies • Stakeholders analyses • Project charters • Project management plan • Project management software • Change request • Change control boards • Project review meetings • Lessons learned reports

Source: Kathy Schwalbe, "Management of Information Technology Projects", Cengage Learning, Philippine edition, 2011.

1.6 What are Factors that Facilitate Project Success?

Studies and experiences show that there are factors that influence the success or failure of a project. These include the following:[22]

- Support from sponsors or from senior management provides confidence and assurance that the project will be carried out.
- Involvement of the users or beneficiaries makes the project clear and easily understood by the project actors.
- Experienced project managers are able to demonstrate organized and systematic ways in preparing and implementing the project.
- Clear goals and objectives provide specific and measurable indicators to make the project understandable.
- Small and attainable project scope enables the manager to avoid complicated processes.
- Use of reliable infrastructures or systems will help the team and the beneficiaries employ reliable systems and are on the same page for applications.
- Firm basic requirements provide stable and consistent work activities for all the project team members.
- Use of methods enables systematic and structured working processes.
- Reliable estimates provide dependable and consistent approximation of the plan to real applications.
- Other factors involve proper planning, hiring competent staff and stakeholders' ownership.

Project Documents

Aside from the factors listed above, the management of project documents is another crucial factor that facilitates project success. These documents serve as binding documents or milestones once approved and signed for. The documents are filed and used as references to:

- Guide decision-making
- Derive lessons to improve the project processes
- Monitor, assess and evaluate processes
- Serve as legal bases during and after the project life
- Prepare new projects

Since project management is an iterative process, document templates have been developed, although varied in format. These documents are in hard copies, soft copies or are developed through online processes. See examples of useful links in the reference section.

Table 5 provides a list of documents produced during and immediately after the project life.

---

22   Kathy Schwalbe, "Management of Information Technology Projects", Cengage Learning, Philippine edition, 2011, p.27.

Table 5. Documents created and produced in developing and implementing projects

Phases	Basic Documents Required and Used as Milestones for each Phase Completion	Process
Pre-initiation	Strategy Papers Concept Papers Proposals	Initial research documents in preparation of Request for Proposals
Initiation	Project Charter Project Scope	Preparation and execution of: • Pre-Feasibility • Project Identification Sheet • Feasibility Study • Financing Documents • Financing Agreement • Scope of Work
Planning	Project Plan Project Management Plan	Preparation of: • Work Plan • Gantt Chart • Resource and Budget Plans • Business Requirements Specification • Change Register • Change Request Form • Communication Plan • Implementation Checklist • Issues Register • Risk Register • Meeting Agenda • Meeting Minutes • Product Breakdown Structure • Quality Assurance Plan • Work Breakdown Structure • Terms of References • Contracts
Implementation	Progress Reports – Narrative and Financial Reports	Preparation and execution of: • Terms of References • Contracts • Monitoring Reports (per constraints and categories)
Closing	Sign Off or Acceptance Documents Evaluation Report	Preparation and execution of: • Reviews • Exit Meetings and Sign Off • Lessons Learned • Recommendations

1.7 Who are Involved in a Project: The Project Team and the Stakeholders

In preparing and implementing activities of a project, people—individuals from groups and organisations—will be engaged, involved, concerned, influenced and affected. In the same manner, these people will also shape, change and influence the outputs, outcomes and impact

of a project. Thus, it is important to identify the project team and the project stakeholders at the early stage of the project at the initiation and planning phases.

The Project Manager and the Project Team

The project manager and the project team members are key stakeholders of the project. They are expected to plan and manage the implementation of project activities with the goals and objectives of the project in mind. In the implementation of the project, performance and targets are monitored and the necessary adjustments are made if changes are required. Through the use of project management tools, project managers can control and lead teams to reach objectives on time and within budget.[23]

The Role of a Project Manager

The job descriptions of project managers vary depending on the project context. In general, project managers must be committed to planning and controlling project activities. They are mostly the key to project success. Project managers must be able to lead the team. They must prioritize, coordinate and harmonize all the project activities for smooth integration of tasks, activities and project outputs. They are also responsible for keeping their sponsors and stakeholders satisfied and happy.

> **? Question To Think About**
>
> What qualifications—knowledge, skills, and attitudes—should project managers have in order for them to perform well in their job?

A list of competencies that project managers must possess to ensure projects are on their way to success includes knowledge and experience in:

- Planning from a strategic perspective
- Defining project goals and objectives
- Taking responsibility for financial management
- Ensuring timely deliverables within budget
- Identifying and mitigating risk
- Overseeing the procurement process
- Monitoring and project evaluation
- Using project management methods
- Establishing the PMO
- Identifying and selecting the team members of the project
- Coordinating the work and tasks of team members
- Managing people—team and other stakeholders, ensuring a good communication plan and its implementation to help in managing people in the project
- Reporting on the progress of the project
- Negotiating for changes in the project

Table 6 shows the results from a brief informal survey and analysis of project management literature on the web on the top ten desirable characteristics or qualities, and the skills that a project manager must possess.

---

23   Andy Bruce and others, *Managing For Excellence* (Dorling Kindersley Limited, 2009), pp. 290-291.

Table 6. Ten desirable qualities and most important skills of project managers

Top Ten Qualities[24]	Ten Most Important Skills[25]
1. A committed leader and inspire a shared principle or vision 2. Good communicator 3. Has integrity; consistent ethical behaviour 4. Has enthusiasm 5. Has empathy/adaptability 6. Trusts and exercises fairness in the team; team building skills 7. Has a sense of urgency but is cool under pressure; problem solving skills 8. Competent and has common sense 9. Prudent risk taker 10. Has ability to delegate tasks	1. People skills including human resource assessment – selecting the right people; strong at building teams 2. Communication skills: listening and speaking with authority (show leadership) while empowering 3. Prioritizing – understands and maintains balance in project integration 4. Goal setting and scope management 5. Conflict resolution/conflict management 6. Critical thinking, problem solving 7. Risk management: proactive approach to risks 8. Quality management: quality control 9. Time (delegation of tasks) and cost management; performance monitoring (metrics management) 10. Documentation, information management

Notable among the advantageous qualities of project managers mentioned are the people skills and leadership skills. For human development projects, it will be desirable to have project managers with experience in managing human development projects.

It is desirable that project managers have a natural command of authority for stakeholders to recognize, and that they ask good questions and listen to stakeholders. They cultivate reliable informal networks inside and outside the project and the organisation to anticipate, understand potential and emergent issues, and solve problems. They must know how and when to exercise independent and fair consensus-building skills when conflict arises, and yet they do not use information as a weapon or a means of control. They set examples, look forward to going to work, adhere to schedules and are able to communicate these and other important information in a regular predictable fashion. It is helpful that they possess quick sifting abilities, knowing what to prioritize, what to take note of and what to ignore. They set, observe and re-evaluate project priorities frequently. In addition, it is desirable that they possess expertise in project management as applied to a particular field,[26] as in this case an ICTD project management expertise.

---

24 Timothy R. Barry, "Top 10 Leadership Qualities of a Project Manager", Project Times, 16 May 2012. Available from http://www.projecttimes.com/articles/top-10-leadership-qualities-of-a-project-manager.html; David C. Baker, "Top 10 Characteristics of Great Project Managers", 99u. Available from http://99u.com/tips/6946/Top-10-Characteristics-of-GREAT-Project-Managers; and William Daniels, "The Top 10 Skills Every Project Manager Needs", The PMologist, 21 February 2009. Available from http://thepmologist.blogspot.com/2009/02/top-10-skills-every-project-manager.html.

25 Ginny Edwards, "10 Critical PM Skills: How Do You Rate?" Bright Hub PM, 20 May 2011. Available from http://www.brighthubpm.com/certification/105665-ten-critical-pm-skills-how-do-you-rate/; Timothy Sexton, "Top 10 Skills of Successful Project Managers", Yahoo! Voices, 29 April 2011. Available from http://voices.yahoo.com/top-10-skills-successful-project-managers-8363237.html; Tom Mochal, "Master these 10 processes to sharpen your project management skills", Tech Republic, 13 March 2008. Available from http://www.techrepublic.com/blog/10things/master-these-10-processes-to-sharpen-your-project-management-skills/323; and Jennifer Krahn, "Effective Project Leadership", July 2006.

26 David C. Baker, "Top 10 Characteristics of Great Project Managers", 99u. Available from http://99u.com/tips/6946/Top-10-Characteristics-of-GREAT-Project-Managers.

The Composition of the Project Team

Being a project manager is a big challenge. S/he is expected to have qualities and abilities to carry on the responsibilities. Complementarities however can make up the inadequacies of the manager with other team members in the project. It is therefore crucial to have a good selection process in choosing the members of the project team.

In general, it is desirable that team members have skills in project management or general management knowledge and skills, good interpersonal skills, applied knowledge in standards and regulations, as well as an understanding of the project environment. Certainly, it is also essential that your team members have qualities and competencies that are particular to the job.

Depending on project size and complexities, the project team may be composed of project personnel of varied expertise in the management disciplines. For example, if you are running a large and complex project, you may need to hire a procurement manager, a technical manager, a communication manager, a quality assurance manager, a human resources manager, a lawyer or legal adviser, an accountant or a budget and finance manager.

In the hiring and selection of a member of the team, the qualities and attitudes of a would-be team member must be considered, aside from his/her skill set. The project leader must be able to determine if the attributes of an applicant meet the desirable qualities of a team member. Through pre-selection interviews, recommendations from previous employers or reputable sources, and applicable objective testing tools, the project manager and other parties involved in the selection process can help choose the desired members of the team.

Some of the qualities of a team player are listed below:

- Demonstrates reliability. The team member shows consistency in his or her ability while working with others to get the tasks and activities done. S/he takes responsibility for his/her actions.
- Communicates constructively. The member is able to say clearly his/her thoughts, opinions and positions.
- Listens actively. The member is able to listen, understand and consider what others say.
- Functions as an active participant. S/he is fully engaged, comes prepared for team meetings, takes the stance of "what can I contribute to the team for the project to succeed".

- Shares openly and willingly. S/he gladly passes relevant information, knowledge and experience on to other team members, and keeps members updated on the activities that s/he is responsible for.
- Cooperates and pitches in to help. S/he jointly works with others to accomplish tasks, responds and takes initiative to offer assistance to others.
- Exhibits flexibility. The member is able to adapt to changing situations of the project.
- Shows commitment to the team. The member cares about the team to accomplish their tasks and objectives.
- Works as a problem solver. S/he contributes to the solution of problems that the project encounters.
- Treats others in a respectful and supportive way. S/he treats fellow team members with courtesy and consideration.

Organizing and Working with a Project Team

Individuals make up the team. Each has a unique personality, motivation for work, work style, proficiency and skills level, previous work experience, and educational background. Apart from their roles and responsibilities, having in mind the different attributes of team members will help the project leader understand and develop a plan to make the team work as one.

What unifies the team is that they are part of the whole—the project. Members must have common understanding of the goals and objectives of the project. Likewise it is also important to note how the members of the team understand their roles and responsibilities. A description of their jobs and their deliverables must be in place at the beginning of project implementation. The project manager must be able to clearly communicate and clarify with the team the work expectations, goals, accountability and outcomes. An open, honest and respectful environment, where members feel comfortable to participate, communicate their viewpoints/positions and take action on high quality decisions and agreements is a process or practice that the manager and the team can strive for.[27]

Having constant dialogues, following agreed systems and procedures for team processes and activities, as well as procedures for resolving problems and conflicts must be taken into consideration in building the team. Cooperation, commitment and cohesion are important qualities for the team to develop.

Something To Do

Several websites can be accessed for self-assessment on teamwork.

Try the assessment tool at the link below entitled, "How good are you and your team at teamwork and team building?"

http://www.mindtools.com/pages/article/newTMM_84.htm

Do you think these websites can be useful assessment for project teams?

---

27   Twelve Ways to Build an Effective Team, http://people.rice.edu/uploadedFiles/People/TEAMS/Twelve%20Ways%20to%20 Build%20an%20Effective%20Team.pdf.

Creating the Project Management Office

A PMO is a formal mechanism that is responsible for a centralized, administrative and organized system providing coordination, management support or direct project management for a project or multiple projects.[28]

Some of the common functions of a PMO include:[29]

• Project administrative support, such as management of project finances and logistics—vehicles and equipment, providing meeting spaces and "war room", maintenance of project website and software support
• Creation and maintenance of standards and methods
• Centralized archive for review of project status, progress and other documents
• Providing human resource and staffing assistance such as identification of proper person for the project
• Project management consulting and mentoring on methods
• Providing or arranging project management training

Large, long-term and complex projects require the creation of a PMO where project managers and project team members report for work. The PMO can be a stand-alone entity or it can be a part of a bigger organisation. For the latter, it is ideal that a PMO is autonomous but linked with the main organisation.

The Project Stakeholders

Stakeholders are people who are affected directly and indirectly by the project and its end results. These people come from within the organisation and outside the project environment. From within, people who influence the shaping of a project are the sponsors, project team members, project champions, influencers and customers or end users. Although there are those who may not be seen as openly participating in the project activities, these stakeholders can include suppliers, service providers, agents from government and other interest groups. Many projects result in delays and failures because of issues connected with the stakeholders and the interests that they represent.

For example in the initiation stage of the project "Public Libraries for Economic Opportunities and Community Development" there were stakeholders from the private sector who had political interests to influence the project sponsors for their own organisational agenda. These stakeholders have no background whatsoever in running public libraries. They seemed to have a major interest of generating more business from the project (the stakeholders sell computers and related paraphernalia). It was also found that these stakeholders were quite close to the previous mayor of the local government. These stakeholders expected that they will be given leadership or advisory roles in the project. The public librarians became wary of the situation. They waited for the term of the mayor to complete. The project was delayed for almost a year.

It is important to know the project's key stakeholders, their needs, expectations and interests, their potential roles, their weakness and constraints, their positive and or negative contribution, as well as their influence over the project. Getting commitment and buy-in of stakeholders is one of the most important and difficult aspects of project management. Making stakeholders become

28   David Andrés, "PMO Definition", Good PMO. Available from http://www.goodpmo.com/project-management-office/pmo-definition/.
29   Ibid.

familiar with the project as well as getting them to cooperate and participate in the preparation of the project will facilitate the implementation and delivery of project outputs and outcomes.

Project Sponsors

A project sponsor is a person or group that approves and provides the financial resources, in cash or in kind, for the project. These persons have approval functions and capacities. They can be an executive programme director or a steering committee within the organisation. They may also be donors, providing grants or funds for the project. They may have the power to influence the project based on institutional arrangements, or they may have a say in the project process or provide suggestions that can affect project structures and activities. These persons as individuals or as groups are important for approvals and they value the outputs and outcomes of projects that they are also responsible for.

Project Champions

Aside from project sponsors are individuals or groups who may not be officially part of the organisation or the project itself but can be advocates of influential capacities. These individuals or persons may come from the environment where the project will be tested or implemented. They may also come from organisations or institutions of importance to another organisation or community. Their presence can be of value to the promotion of the project as they can provide prestige, reduce resistance from other influencers, or be an additional resource for the project.

Project Influencers

People who are not directly involved in the project but can exert pressures in the way projects are prepared and implemented are influencers. They can come from the organisation where the project is hosted or external to the project setting. Employees from the organisations who are not part of the project may be examples of persons internal to the organisation. Some examples of external influencers are: politicians, who may not agree with the project because of project personalities that run counter to his/her political agenda, authorities like local government officials who will cite or create policies that will stop short the project activities, or groups (e.g. business groups or ideology-based groups), who resist and oppose the project and may serve as your doomsayers.

Project Owners

Project owners are those individuals or groups who usually are the origins of the request for the project and will be the eventual holders of the end-product results of the project. In organisations, project owners are often the operators of the product. The owners are usually represented by the head of the team, the unit or the organisation itself depending on the size and complexity of the project. Examples of project owners are: the accounting/finance department needing the development of back-end systems operations; an organisational unit requesting the services of a construction firm to expand their office buildings; and a government agency requiring a change in their operational systems processes.

Project End Users

Persons or groups who will directly use and benefit from the projects are the project users or the project beneficiaries. They include clients and customers who will use the end products of the project.

1.8 Why Consider Organisational Change Management in Project Management?

Projects can introduce change at: an individual level (e.g. students, employees or staff member of a unit of an organisation, or a beneficiary of a community-based activity); organisational level (e.g. unit, department, the whole office or the whole agency); and in systems level (e.g. change in policy, standards, processes and procedures).

When a project is created to address a compelling need within an organisation, it already signals that a change is required at various levels. Thus, project managers have to understand that change is a component that should be given importance and consideration in every aspect of the project plans and the management cycle. Likewise, resources, time and costs must also be allocated in preparing for actions and reactions to change.

For example, a policy to change the grading systems of a school will correspond to many reactions from those affected, once this is announced or disseminated. Teachers may express the following reactions: unwillingness, resistance, confusion, caution and cooperation, just to name a few. Likewise, students and parents may also have similar reactions. At the organisational level, the effects of the new policy will affect the heads of the academic department, the registrar's office and other systems related to the grading system. If not properly managed by the school authorities, the implementation of the new policy may take longer and be more cumbersome than expected.

Similarly, if organisational change is not considered at the onset and during project implementation, success of the project may be endangered. Those affected will either be incapable of performing or unwilling to perform the tasks required or there will be no accountability for certain new tasks. In either case, the organisation will not function as intended.[30]

It is therefore critical and strategic that change management activities are considered in the project activities that will be planned and implemented to control, counter and measure in a structured manner.

There are many definitions of change management. It can be a set of coordinated and structured activities to transition from the old to the new systems, and as a discipline, "change management is the process, tools and techniques to manage the people-side of business change to achieve the required business outcome, and to realise that business change effectively within the social infrastructure of the workplace".[31]

Some examples of change management activities are development of action plans on change management, and development and implementation of communication plan, preparation and conduct of training modules and hands-on demonstrations.[32]

---

30   Jonathan Gross, "A Structured Approach to Organisational Change Management: An Introduction to Milestone Deliverables: Part 3 of an Intro to Milestone Deliverables", Pemeco Consulting, 19 October 2011. Available from http://www.pemeco.com/a-structured-approach-to-organisational-change-management-part-3-of-an-intro-to-milestone-deliverables.

31   Change Management Learning Center cited in Change-Management-Coach.com, "Definition of Change Management". Available from http://www.change-management-coach.com/definition-of-change-management.html.

32   See Jonathan Gross, "A Structured Approach to Organisational Change Management: An Introduction to Milestone Deliverables: Part 3 of an Intro to Milestone Deliverables", Pemeco Consulting, 19 October 2011. Available from http://www.pemeco.com/a-structured-approach-to-organisational-change-management-part-3-of-an-intro-to-milestone-deliverables.

1.9 What are the Benefits of Effective Project Management?

Projects managed effectively result in benefits. It is not simply making sure the project is completed within specific time and resource limitations. In managing projects, the endeavours become more valuable when we ensure that the initiative delivers the expected results. Thus, effective project management brings results mostly beneficial to all concerned.

As a method and practice, the use of project management provides advantages and benefits to organisations. Some of the advantages and benefits include the following:[33]

- Better control of financial, physical and human resources. As a result it can lead to better efficiency in delivering services. The methods push projects to complete more quickly and cheaply.
- More focus on fact-based decision-making, measuring outputs, and faster implementation by using common processes and templates, and meeting deadlines.
- Higher levels of stakeholders' satisfaction happen when a project is done on time and within or under budget.
- Improved project communication leads to better decision-making and better internal coordination. Communicating and managing expectations with stakeholders more effectively improve teamwork and ultimately improve the work environment.
- Better up-front estimating, planning and project definition result in lower costs and improved productivity, improved financial management and expected results. Likewise, budget management, saving efforts and cost with proactive scope management, leads to budgetary savings.
- Better and frequent risk assessment means resolving future risk before the problems occur. Fewer "surprises" are encountered as problems are pre-empted or discovered early due to active project monitoring.
- Increase in quality means you are able to build a higher quality product the first time because of the use of standard practices in tracking and monitoring. The more you use project management disciplines, opportunities result in higher quality of outputs and outcomes, as well as, increased reliability of methods and processes.

Project management can guide members of the project team and help them to progress in their profession. It can also promote participation of stakeholders as this is an important aspect in development projects. Likewise, it can also promote transparency as it provides checks and balances through progress reporting, monitoring, audit activities and evaluation, the results of which are shared with key stakeholders.

1.10 The Importance of Communication in Human Development Projects

Communication is indispensable to any development project. It is recognized as a medium for social change. Its importance is indicated by the attention given to it by many development organisations and agencies. The purpose of communication is to make sure of two-way and meaningful exchanges between and among parties and stakeholders who are involved in projects that promote human development.

Studies done by development organisations show that the use of a planned communication strategy in development projects motivates people to participate and own the project. There

---

33   Gary Picariello, "Top Ten Benefits of Project Management", Bright Hub PM, 19 April 2013. Available from http://www. brighthubpm.com/project-planning/2350-the-top-ten-benefits-of-project-management; Ten Step, Inc., http://www.luc.edu/media/ lucedu/pmo/pdfs/additionalreading/The_Value_of_Project_Management.pdf; and Data Perceptions, "Project Management". Available from http://www.dataperceptions.com/projectManagement.

are evidences that project results are more lasting or sustainable when the target beneficiaries participate in the development and implementation of the project. In fact, a course on Development Communication is offered in many universities in developed and developing countries.

Projects involve many stakeholders from various backgrounds, with different interests and motivation for participation. Sharing the ideas and thoughts about the projects with beneficiaries and end users require many ways and frequencies of communication. For example, we may want to:

- Be assured that project goals and objectives and other fundamental information about the projects are understood
- Test if the ideas are relevant and effective
- Arrive at agreements, for people to become motivated to participate and become involved in the accomplishment and realization of projects

In annex 2 is a "Communication Framework for ICTD Projects" prepared by Professor Royale Colle of Cornell University. It provides a brief guide to understand and manage elements in communication planning of development projects such as ICTD.

1.11 Using Technology in Project Management

Technology can be useful in managing projects. The use of appropriate technology for your project can make communication and accomplishment of tasks faster. It can be a solution for communication, for generating information required of the project, and for documentation and creation of advocacy work. Project leaders will need to consider harnessing the use of technology in project management.

Computers, Internet and mobile phones are useful tools for communication. These tools can serve as answers to problems of time, distance and geography, especially for projects that have nationwide or worldwide features. Virtual teams and processes are created for those projects that are constrained by time and distance to ensure that communication are well in place for all members of the project team.

"They use electronic collaboration technologies and other software applications to lower travel, facility costs, reduce project schedules and improve decision-making time and communication. People who lead virtual teams need to have special skills including an understanding of human dynamics, knowledge of how to manage across functional areas and national cultures and the ability to use communication technologies as their primary means of communicating and collaborating."[34]

1.12 Preparing a Concept Paper

In the conceptualization of a project, the following steps are helpful to take note of:

- Determine the scope, time and cost constraints for the project
- Identify the project sponsor
- Select the project manager
- Develop a business case for a project
- Meet with the project manager to review process and expectations for managing the project
- Determine if the project should be divided into two or more smaller projects

---

34   Deborah L. Duarte and Nancy Tennant Snyder, *Mastering Virtual Teams*, second edition (John Wiley and Sons, Inc., 2001), p. 4.

A concept paper is a document written to convince sponsors to fund and approve a project. Concept papers vary in format and specifics depending on the sponsoring organisation, but are generally concise documents containing information, statistics and persuasive arguments. Table 7 provides suggested steps to write a concept paper.

Table 7. Project concept paper template guide

Section Name	Guide Questions to be Answered	Suggested Length
1. Title page	• What is the proposed project name? • Who is preparing the document? • For whom is the document? • Is there a document identification number required?	Half page
2. Key development issues and rationale	• What is the justification of the project? (in management literature, justification or project rationale is also called a business case) • Is the proposed project supportive of any overall plan of a local government agency or a funding institution? • What problems are being addressed by the project? • Are there lessons that can be derived from previous projects? • What is the evidence of commitment and ownership of the proposing team? • Are there other partners that the proposing team will work with? What is their suitability to assist? • What can the project accomplish that cannot be accomplished by other means?	Half page
3. Proposed project development objective(s)	If the project is successful, what will be its principal outcome for the primary target group?	Half page
4. Preliminary project description	• Describe the proposed project. • What are the alternative development interventions or approaches being considered? If an approach is favoured, what is the rationale for it? • What activities are proposed and why; or what alternative activities are being considered? • If the proposed project is to support a programme, what would be the key elements of the programme and how would the proposed project fit into it? • What project components are being considered? • Can indicative costs be identified? • What issues are there at this stage, if any, regarding possible partnerships and co-financing with other organisations?	One page

Section Name	Guide Questions to be Answered	Suggested Length
5. Potential risks and mitigation	• What are the risks that might prevent the project development objective(s) from being achieved, including but not limited to political, policy related, social/stakeholder-related, economic or financial? • What is the capacity of the proposing party to handle preparation and implementation of the proposed project? • What relevant risks have been identified through predecessor operations or project assessments? How might they be addressed in the proposed project? Might any new assessments be needed? • Would any stakeholders feel that their interests are threatened by the project? How might the risks be mitigated? • Which safeguard policies might apply to the proposed project and in what ways? • What actions might be needed during project preparation to assess safeguard issues and prepare to mitigate them?	One page
6. Issues on which the team seeks guidance	What specific guidance does the team seek? These may include but are not limited to: • Policy and strategy • Relationships with partners • Policies or procedures • Project design • Funding • Technical/analytical aspects • Institutional/capacity aspects • Mitigation of potential risks • Resources, task team composition and management, and any other issues	Half page
7. Proposed preparation schedule, team composition and budget estimate	• What is the proposed timetable of the project? • To what extent has the timetable been agreed on with the stakeholders? • Who are the members of the project team? What capacity issues, if any, are there? • What is the estimated amount of funds needed for the project preparation and approval?	One page

Clara prepared a concept paper using the template provided in table 7. You will find her concept paper in annex 1.

TEST YOURSELF

Choose the letter that corresponds to the best answer.

1. These are a temporary planned set of activities with purposes, goals, objectives and expected outcomes and results.

   a. Projects
   b. Programmes
   c. Project triangles
   d. Project proposals

2. It is a set of principles, practices, and techniques applied to lead project teams, control project schedule, cost, performance and risk to result in delighted stakeholders.

   a. Development projects
   b. Project management
   c. ICT project
   d. Project coordination

3. This tool in the pre-initiation phase identifies the internal strengths and weaknesses of the organisation, and the opportunities and the threats that are currently happening in the external environment of the organisation.

   a. Pre-initiation phase
   b. Environment scanning
   c. Projects in controlled environment
   d. Stakeholder analysis

4. This is the phase where the goal is to manage the execution processes and ensure that "control mechanisms" are available.

   a. Initiation phase
   b. Pre-initiation phase
   c. Implementation phase
   d. Design phase

5. The people (individuals, teams, contracted professionals) who will be involved in the project.

   a. Human resource
   b. Staffing
   c. Stakeholder
   d. Project team

6. It is a selective and periodic exercise that attempts to objectively assess the overall progress and value of a project.

   a. Reporting
   b. Monitoring
   c. Evaluation
   d. Implementation

7. The tool provides a list of specific activities and tasks with the corresponding schedules, resources, quality and costs.

   a. Work breakdown structure
   b. Project Management Institute
   c. Cost benefit analysis
   d. Business case document

8. This is a major project event that signals a phase has reached a concluding stage and the next phase is about to start.

   a. Project management
   b. Project milestone
   c. Project marker
   d. Project plan

9. Covers all of the work required to complete the project successfully.

   a. Time
   b. Money
   c. Scope
   d. Cost

10. The messages that need to be planned to manage change and expectations.

    a. Communication
    b. Stakeholders
    c. Project cost
    d. Scope

1.13 Summary

Projects are temporary endeavours aimed at fulfilling desired goals but are constrained by the availability of resources. Project management provides a discipline that is able to organize the project in a systematic way to achieve goals and objectives. As a discipline, project management has phases, processes and activities managed by a project manager and a project team in partnership with stakeholders. Substantial time and effort must be allocated to planning since it is concerned about the process elements of scope, time, budget, quality, human resources, communication, procurement, risks and the overall coordination and integration of management activities. The use of technology can be harnessed to serve as an efficient means of managing projects.

? Questions To Think About

- Cite examples to differentiate a programme and a regular work activity from a project.
- What are the benefits of project management?
- Why is it important to consider change as a factor in project management?
- Why is planning given emphasis in project management?
- What is the significance of project documentation?
- In your opinion, is the use of ICT in managing your school projects and activities helpful or not?
- How do we prepare for project initiation?

1.14 Suggested Readings

Reddi, Usha Rani Vyasulu. *Primer 1: An Introduction to ICT for Development,* Primer Series on ICTD for Youth, Incheon: UN-APCICT, 2011. Available from http://www.unapcict.org/pr.

Westland, Jason. Method 123 Empowering Managers to Succeed: Project Management Guidebook, Method123 Ltd., undated. Available from http://www.thoughtware.com.au/documents/method123-ebook.pdf.

Walsch, Alan. Introduction to the LFA, GEF Facility Council, 2000. Available from http://www.pops.int/documents/guidance/nipsfinal/logframe.pdf.

Something To Do

Activity 1: Review of Projects in Websites

View the following websites and video clips of ICT project examples for and by youths. Assess the programmes developed by the respective organisations and the projects done by students. Answer the questions below.

- TakingITGlobal – http://www.tigweb.org/#

    TakingITGlobal (TIG) is an international organisation, led by youth, empowered by technology. TIG brings together young people in more than 190 countries within international networks to collaborate on concrete projects addressing global problems and creating positive change.

- ThinkQuest – http://www.youtube.com/watch?NR=1&v=m0hfi8WyNz4&feature= endscreen

    ThinkQuest is an online learning platform that helps students develop important twenty-first century skills, including communication, critical thinking and technology skills.

- Global Teenager – http://www.globalteenager.org/?q=multimedia-st

    The Global Teenager Project connects students globally by sharing web-based classroom discussions in a safe and structured environment. It gives schools a kick-start in the use of ICT. It also provides students with a strong basis in communication skills and valuable insights into other cultures.

? Questions To Think About

- In your opinion, are the projects of students mentioned in the videos similar to the projects that are being discussed in this module? Explain.
- The programmes and projects shown in the video are advocacies and promote

education and change. Are there other types of projects that you think students can engage in, explore and implement?

- What do you think worked for the students who implemented their projects?

Activity 2: Community Activities

Recall the MDGs, choose one where you can relate a potential project in your community—whether ICT or non-ICT project. Analyse the situation in your neighbourhood or community where you reside. Are there things that need to be changed? What project can you think of for your community that you can lead or get involved with? Prepare a concept paper for this project you have in mind using the things you have learned in chapter 1.

Guiding Questions

- Prepare a situational analysis of your community—include political, economic, social, technological and environmental situations.
- What problem area would you like to help solve or research more through a project?
- What simple project can be done?
- Give a title to the project. What can be the goal of the project?
- What are the objectives of the project?
- What activities can be done to achieve these objectives and goals?

CHAPTER 2: INITIATING AND FORMULATING THE PROJECT

Objectives

- Identify and analyse the different stakeholders of a project, their roles and how they will affect the project
- Discuss the use of Project Cycle Management – Logical Framework Approach (PCM-LFA) in project identification and initiation
- Apply the analytical and design tools of the LFA in project identification and formulation

Case Study 2. Clara and the University Outreach Programme – Developing a community profile

After writing and rewriting the draft concept paper, Clara realised that it is important to work with a team to put together the concept paper and to have more information about the community and the group that she intends to have the project with. With fellow students—Mona, Husef and John, who eventually became members of the project team, Clara had another consultation meeting with the Director, who gave them a few documents about the profile of the municipality.

Based on the document, the Municipality of Pax covers 20 villages with a total population of about 45,000. The female and male population is almost equal, but the young population is nearly two-thirds of the total population and about 40 per cent are between the ages of 15 to 25. The main livelihood in the communities is farming with seasonal fishing ventures to a nearby lake that is actually a tourist destination. While the men are engaged in the main livelihood, the women, aside from taking care of the young children, are mostly engaged in backyard gardening, and poultry or livestock rearing, and at times are engaged in traditional weaving when they get orders from neighbouring tourist shops. From the assessment of the national government, Pax is among the five municipalities in the province that have a low performance rating in the MDG programme of the government.

- The average household income of the 5 municipalities is only about USD 2 per day.
- Although the literacy rate is more than 65 per cent of the population, about 15 per cent of the youth tend to drop out of school at the age of 12 to help in the farm or in the households. Only half of the youth population is able to graduate from high school. A few of those who graduated were employed in the tourist town near the lake.
- About 20 per cent of the population marry young and have more than 2 children by the age of 21. Infant mortality and maternal mortality is relatively higher than the national average.
- Low lying communities of the municipality are prone to flooding during the rainy months (September to November).

Thinking that the information is still limited from the Programme Director's Office, Clara and team decided to visit the municipality and a few villages near it. The students travelled by bus on rugged dirt roads and sloping terrain for almost an hour to reach

the 2 kilometre distance of the municipal office. Upon arrival they paid a courtesy call to available local officials. From their initial visits they were able to get more information about the municipal office and the nearby villages.

The municipality has electricity and source of water from the nearby lake and natural springs in the area. The municipal office has about 8 of 10 units of computer sets that are functioning, but there is no Internet connection. They also learned that only a few of the officials (2 men and a woman official) know how to use the computer, and only the young women staff use them to type documents for preparing letters and reports. The opinions of the officials about computer literacy are divided. Half of them tend to favour its implementation and the other half are not sure about the benefits of having computer literacy. Two of these officials (1 man and 1 woman) who use computers are very happy and see the value of having this educational programme, while another two male officials are strongly opposing it because of the reason that it will distract the young people from their regular education citing the example of a nearby Internet café that has teenage boys frequently visiting the place for gaming. These opposing officials also warned Clara's team that they may anger the men when their wives learn to use the computers and the Internet. They heard about women meeting men on the Internet and ending up in romantic relationships or in marriage.

The team observed that the houses even though small have television antennas on the rooftops. They learned that at least one member of the household has a radio set and a mobile phone.

There are two public schools in the village—one for primary education and the other for secondary education. Each school has about 10 teachers reporting to the School Headmaster or Principal. They noticed that the schools did not have a functioning school library. They also learned that the school has not yet implemented a computer literacy class because the government has not provided the computer infrastructure for these schools.

Since news travel fast in small municipalities, the next time Clara and the other university students visited, the school teachers invited them for a meeting to express their interest about computer literacy. The teachers gave their opinion that having this project will be helpful to the school children and other community members. They said that instead of the young men always having drinking sprees and making trouble in the community, let these men learn something new for a change so they can find good jobs and become role models for the younger children. The teachers also informed the team that women have to be given better use of their time since most of them are into card gaming and small-scale gambling.

From the teachers, the team learned that an NGO based in the city helps the municipality in farming-related programmes and it was this NGO that suggested a computer literacy class for the organisation of young women and mothers engaged in traditional weaving.

Clara's team met with the organisation of women and mothers engaged in traditional weaving. They found out that the women are keen to earn extra income for their family. The women expressed that they want to change the situation of their family and their community and they thought that learning new skills from the computer and Internet training will help them look for additional livelihood and earning sources, including marketing their woven products at a better price.

According to the head of the women's group, Mrs. Patel, the weaving organisation was set up because the tourist shops from the nearby village would only want to deal with organized business in selling their handmade woven products and embroideries. A shop owner from the nearby town expressed interest in selling the women's crafts but Mrs. Patel and the other women were not certain about how much they should price their handmade products. She was advised by her son who works in the city that they can get more information if they know how to use the computer and the Internet. But they do not own computers or have the Internet.

How would Clara and her team use all the information they gathered to formulate a community project?

2.1 The Initiation Phase: Identifying and Formulating the Problem

The initiation phase covers the general analysis and formulation of the whole project. At this project stage, the processes include the identification and analysis of the stakeholders, the problem and situation being addressed, as well as the identification and analysis of the objectives, and the project and management strategy. These steps and processes lead to the design and project planning phase. The milestone of this project stage is the approval of the project charter and the project scope.

In this chapter, the PCM-LFA approach to the initiation or project formulation stage will be highlighted, including the tools and processes of the LFA approach.

In chapter 1, the PCM was introduced as one of the methods of project management. The PCM defines the different phases in the project life with distinct management activities and decision-making procedures. The phases in the PCM method can be viewed another way as shown in table 8.

Table 8. PCM phases and major processes

Project Cycle Management Phases (The phase name of the classic project cycle in parenthesis)	Major Steps/Processes
Programming (Pre-Initiation Phase)	1. **Analyse the situation** – This entails clarification of the needs of primary stakeholders and the generation of project ideas.
Identification Financing (Initiation Phase)	2. **Design the appropriate project** – This involves looking at the various options and choosing the best one considering the objectives and the resources available. An initial document is required for assessing the project's viability and if it will merit financing.
Formulation Inception (Planning Phase)	3. **Plan the project** – This requires documenting the project and consists of describing the objectives, outputs, activities, inputs, assumptions and risk factors. 4. **Prepare for implementation** – This involves communicating and mobilizing the target group and resources and ensuring everything is in place to start.

Implementation *(Implementation Phase)*	5. **Execution** – This is the actual "doing" of the project and requires supervision and control to ensure performance of the project. 6. **Monitoring** – This involves checking, collecting and analysing information about the project's performance. Monitoring alerts project team/staff to any changes that should be made.
Evaluation Completion *(Closing Phase)*	7. **Evaluation** – This entails the assessment and final review of the project and its impact, which is usually done at the end of the project, although mid-term reviews are common for large projects. Evaluations can be an important means of generating and summarizing lessons during the implementation of a project and can feed back into the project or produce new project ideas. 8. **Completion** – This is the end of the project's life cycle. All projects should be designed to end or be phased out in an appropriate manner that will either ensure the continuance of the project activities or encourage the continuance of benefits obtained from the project.

Source: Department of Water Affairs and Forestry, South Africa, "Logical Framework Approach – Project Planning: Preparing and Documenting a Project" (DANIDA, 2005), pp. 5-6.

Preparing, planning and writing up a project requires a certain discipline that will help the person developing the project think clearly in a systematic manner. Many creators of development projects make use of the LFA as a method for planning, managing and evaluating programmes and projects. It makes use of tools to enhance participation and transparency, and to improve orientation towards objectives.[35]

In conducting analytical and design processes to identify and formulate projects, it is imperative that project designing processes are supported by accurate, reliable and sufficient information.[36] Since development projects are created for the purpose of seeking solutions to a problem of a group, organisation or a community, baseline data must be sought or made available to have a correct diagnosis of the problem. Good information enables us to understand, justify and make good decisions for the project.

In accessing information that we need, we can talk with people who know about the situation and the problem that we want to tackle, or we can get relevant documents that can help draw a good picture of the project context.

Let us imagine that we would like to develop a Community Health Project. From our initial observations we noticed a high incidence of mortality among children in the community. To probe further about this health situation, we will need more information and evidence to establish the problem and later recommend possible solutions. Some of the information that may be required for us to develop a good situational analysis (depending on the project length and depth) includes:

35 Umlabha Development Services, "Basic Introduction to Project Cycle Management using the Logical Framework Approach", European Commission Civil Society Fund in Ethiopia, pp. 7-8. Available from http://eeas.europa.eu/delegations/ethiopia/documents/eu_ethiopia/ressources/pcm_manual_en.pdf.
36 Rachel Blackman, Project Cycle Management, ROOTS resources 5 (Teddington, Tearfund, 2003), pp. 29-30. Available from http://ebookbrowse.com/tearfund-manual-project-cycle-management-2003-pdf-d120705157 or http://tilz.tearfund.org/webdocs/Tilz/Roots/English/PCM/ROOTS_5_E_Full.pdf.

- The history of the group, organisation or the area where the project will take place
- The area characteristics in terms of geography, climate or environment
- The people's population and profile – by age, sex, educational background
- The social systems and structures – including social status, social institutions or even religious divisions
- Politics and government – including hierarchies, relationships with central government agencies, policies in relation to the problems, power and influence in the areas
- Culture – including norms, beliefs and practices, gender roles, cultural groups, languages, religion and world view if applicable
- Living conditions such as type of housing, water and sanitation
- Economics – including sources of income, crops, landholding and average daily income
- Education – including schools and literacy rates
- Health information – including statistical data such as mortality rates, cause of deaths and illnesses, and local health services
- Services and development programmes – including those of the government and NGOs, and previous experiences of community health programmes

Asking relevant questions[37] helps the person developing the project to prepare a more solid foundation for the project. Such foundation with possible corresponding questions which can include the following:

- A baseline of the current situation. For example, if the community has identified water as their priority need, we may want to ask them questions such as: How many people live in the area; how much water does each person have now; where does the water come from; how is the water collected; who collects the water; how long does it take to collect the water; and how clean is the water now.
- Factors that will help anticipate the future: How will the demand for clean water grow; what are the future implications if the need is not met; for instance, how many people will be in the area in five years time.
- Build the ideal scenario: How should things be? Government departments or books can provide some information. For example, how much water does each person need for a healthy life?
- Options for solutions to problems: What possible improvements can be made? This may involve approaching government departments and technical experts. The community should also be given an opportunity to put forward options. For example, what other sources of clean water are available in the area; who owns or controls the other sources; and what technical options are there.
- Identify the groups and organisations working on the issue that you chose to develop as a project: What other local organisations are working on the issue; who are they; and can we work together.

Research is an important activity in any project development. It helps provide good information for us to appreciate: the context of the project; understanding of the cause and effects of problems or issues that we want to solve; and the factors that that can contribute to an appropriate or effective solution. A thorough analysis from the research also gives us: more confidence about the rationale for taking on the project; make us learn from failures and successes; and know what others are doing or not doing in relation to the problem to avoid duplications, or to be more certain about the selected solution to the problem.

---

33   Ibid., p. 31.

2.2 The Logical Framework Approach

The LFA, also known as the log frame approach, follows a hierarchical results-oriented planning structure and methodology. Its processes focus on all the elements of project planning towards the achievement of one project purpose and overall objective. It establishes logical connections of the hierarchy of goals, results and objectives with the outputs and activities in relation to assumptions and inputs. The LFA can be visualized graphically as shown in figure 2.

Figure 2. Hierarchy of objectives of the LFA

Source: Umlabha Development Services, "Basic Introduction to Project Cycle Management using the Logical Framework Approach", European Commission Civil Society Fund in Ethiopia. Available from http://eeas.europa.eu/delegations/ethiopia/documents/eu_ethiopia/ressources/pcm_manual_en.pdf.

The log frame is a tool used to help strengthen project design, implementation and evaluation processes. Although it is constructed during the planning stage of a project, the log frame is a living document, which should be consulted and altered throughout the project's life cycle.

The LFA initiation approach brings about a series of two sets of processes: the first is the analytical set and the second is the design set. The stakeholder analysis, problem analysis, objectives analysis, and the strategy analysis are the analytical set of activities in the planning process. The second set or the design phase is the development of the log frame itself, which consists of the: definition of the project elements; the assessment of the assumptions and risks; and the development of indicators. From these process activities will arise a project plan document that includes an encapsulation of the project summary in a log frame matrix. An example is provided in table 9. The example is a Community Health Project.[38]

To help us appreciate the log frame matrix, let us first read the first column from the left that shows the hierarchy of objectives (top to bottom): first the "overall objective" then followed by "purpose", "output" and "activity". As you can see, the health project aims to reduce the incidence and impact of diarrhoeal disease. From the many health problems that this target community has, the project focused on one disease: the diarrhoeal disease. Actually, it is a common

---

38   Ibid.

health problem in many poor countries. And yet, this disease can easily be remedied in many developed countries. Apparently from the analysis done earlier, the cause of the problem had been traced to the access of safe drinking water. Based on the identification of the cause of diarrhoeal disease in that particular area, solutions are identified.

The overall objective, purpose, outputs and activities of the project are written as solutions statements. The project purpose is "to improve access to and use of safe water in the community". The project outputs or the expected immediate results of the project are: (1) Participatory management systems established for needs identification, planning and monitoring; (2) Improved sources of safe drinking water; and (3) Raised community awareness on good hygiene practices.

For each of these results or project outputs are corresponding activities. Thus, for the first result you have: (1.1) Establish Water User Committee in the community; (1.2) Provide training for Water User Committee members in surveying, planning, monitoring and proposal writing; (1.3) Communities carry out baseline and monitoring surveys of water use and needs, and submit proposals; and (1.4) Hold planning meetings with local governments, Water Department and Water User Committees. For the two other results the activities are listed correspondingly in table 9.

You will notice that as you read vertically through the first column of the matrix the solutions offered by the project become more specific. Observe the other columns, such as the verifiable indicators, means of verification (MOV), and the assumptions. Again when you read vertically, you will see that the statements become more specific and each column corresponds to the next column from left to right (horizontally).

Table 9. Sample log frame matrix of the Community Health Project

Intervention Logic/ Summary of Objectives	Verifiable Indicators	Means of Verification	Assumptions
Goal or Overall Objective: Decreased incidence and impact of diarrhoeal disease	Mortality rate due to diarrhoeal disease reduced by 5% by end of year 3 Incidence of diarrhoeal disease in the community reduced by 50% by end of year 3	Government statistics Local health centre statistics	
Purpose: Improved access to, and use of, safe water in the community	All households accessing at least 15 litres of water per person per day by end of year 3 Average distance of households to nearest safe water is less than 500m by end of year 3	Household survey report Household survey report	Healthcare does not decline Diarrhoeal disease is due to unsafe water and hygiene practices

Intervention Logic/ Summary of Objectives	Verifiable Indicators	Means of Verification	Assumptions
Outputs: (1) Participatory management systems established for needs identification, planning and monitoring (2) Improved sources of safe drinking water (3) Raised community awareness on good hygiene practices	Development agency and community joint plans and budgets in place by end of month 9 At least 90% of Water User Committees raise local contributions by end of year 1 At least 90 improved or new sources of safe water established and in operation by end of year 2 Number of people washing hands after defecating increased to 75% of target population by end of month 30	Plans and budgets Water User Committee logbooks Water User Committee logbooks Water quality test reports Survey of knowledge, attitudes and practices	Adequate quantity of water available People are not excluded from accessing improved sources Access not for potentially polluting uses
Activities: (1.1) Establish Water User Committee in the community (1.2) Provide training for Water User Committee members in surveying, planning, monitoring and proposal writing (1.3) Communities carry out baseline and monitoring surveys of water use and needs, and submit proposals (1.4) Hold planning meetings with local governments, Water Department and Water User Committee (2.1) Water User Committee selects community water/health workers and agrees on incentives	30 Water User Committees established in 5 regions by end of month 3 Once established, Water User Committees meetings held once a month All Water User Committee members trained by end of month 5 All Water User Committees complete baseline surveys and submit proposals by month 7 Agreement reached with Water Department and all Water User Committees by end of month 9 2 community water/health workers selected by each community by end of month 9 All community water/health workers attend training by end of year 1	Constitutions of Water User Committees Minutes of meetings Membership list Training records Survey reports and proposals Minutes of meetings Letters of agreement Minutes of meetings Training reports and participants' evaluation	Groundwater is free of arsenic Communities have confidence that water sources can be improved Committee members will take responsibility to work for community Water User Committees continue to function in everyone's interests Community prepared to work with Water User Committees Incentive arrangements for community water/ health workers are sufficient and sustained Effective supply chain for spare parts

Intervention Logic/ Summary of Objectives	Verifiable Indicators	Means of Verification	Assumptions
(2.1) Water User Committee selects community water/health workers and agrees on incentives	2 community water/health workers selected by each community by end of month 9	Field survey Water User Committee logbooks	District Water Department continues to be allocated enough resources to carry out water testing; alternative testing if not possible
(2.2) Train community water/health workers to dig and cover wells, and to maintain and repair hand pumps	All community water/health workers attend training by end of year 1 60 current wells deepened, covered and functioning at end of month 21	Field survey Water User Committee logbooks	Community members apply the training they have received
(2.3) Upgrade current wells and create/build new ones	30 new wells established and in operation by end of month 21 All sources tested before use 97% of hand pumps in community function at end of year 2	Field survey Water User Committee logbooks Attendance records Test results	
(2.4) Arrange for Water Department to test water quality		Attendance records	
(2.5) Community water/ health workers to repair hand pumps			
(3.1) Train existing community water/health workers to increase their knowledge of diarrhoeal disease and the need for good hygiene practice	3 Community water/health workers per community attend training and score at least 90% in a post-training test by end of year 1		
(3.2) Community water/ health workers train men, women and children in good hygiene practice	80% of community members trained by end of year 2		

This log frame matrix is the summary result of the analytical processes in project identification and formulation (described below). Then project formulation will follow that includes: the preparation of the project plan, activity planning and resource scheduling.

2.3 The Analytical Processes

The analytical processes in project identification cover the following: stakeholder analysis, problem analysis, objectives analysis, strategy and options analysis.

2.3.1 Stakeholder Analysis

Stakeholder analysis is a tool that takes into account any individuals, groups of people, institutions or firms that may have a relationship with and stake, roles and interests in the project.[39]

It is an essential exercise to carry out in order to maximize the social and institutional benefits of the project and minimize its negative impacts. It is best to have the analysis conducted at the early stage of the project.

Development projects usually identify two types of stakeholders: the primary stakeholders and the secondary stakeholders. Primary stakeholders are those people and groups directly benefiting or ultimately affected by the project. Secondary stakeholders are intermediaries in the process of delivering aid to primary stakeholders. In addition, there are external stakeholders who are not formally involved in the project but who may impact or may be impacted by the project activities.

There are several ways of doing stakeholder analysis, and the length of time required to carry out the analysis depends on the project objective and purpose. Ideally it should be conducted at the identification stage of the project or when a priority need of a group or community is identified. This is to ensure that important stakeholders are not missed out or excluded at the early stage of project planning. As a tool it is also ideal to use it during the implementation, monitoring and evaluation phases of the project cycle.

Below is a seven-step stakeholder analysis that should be carried out with representatives of as many stakeholder groups as possible. It may not always be practical to do so if the stakeholders are widely spread. However, if there is a danger that important stakeholders may be excluded, more time and resources should be invested in doing the stakeholder analysis to make sure they are included. The seven steps are as follows:

1. Identify and list all potential stakeholders. From the initial observations and discussions with the local people, there should be a good idea of potential stakeholders. Write and compile a list comprising all organisations, groups and people who are likely to be affected by a project in the area (positively, negatively, directly or indirectly).
2. Prioritize the list and select those stakeholders who are most important. These groups must be analysed in more detail.
3. Using a table, list the stakeholders under the headings of primary, secondary (also direct and indirect) and external stakeholders. Primary stakeholders can be categorized according to social analysis and divided by gender, social or income classes, occupational or service user groups. Secondary stakeholders can be divided into funding, implementing, monitoring and

39 Umlabha Development Services, "Basic Introduction to Project Cycle Management using the Logical Framework Approach", European Commission Civil Society Fund in Ethiopia, pp. 3-6. Available from http://eeas.europa.eu/delegations/ethiopia/documents/eu_ethiopia/ressources/pcm_manual_en.pdf; Department of Water Affairs and Forestry, South Africa, "Logical Framework Approach – Project Planning: Preparing and Documenting a Project" (DANIDA, 2005), pp. 18-20; and Rachel Blackman, *Project Cycle Management*, ROOTS resources 5 (Teddington, Tearfund, 2003), pp. 20-26. Available from http://ebookbrowse.com/tearfund-manual-project-cycle-management-2003-pdf-d120705157 or http://tilz.tearfund.org/webdocs/Tilz/Roots/English/PCM/ROOTS_5_E_Full.pdf.

advocacy organisations, or into NGOs and private sector organisations. These categories may need to be further subdivided, for example, organisations may have subgroups that should also be considered as stakeholders. Characterize them by asking questions from a social and organisational point of view, and by taking a gender perspective. Questions include: What are their social and economic characteristics? How are they structured and organized? How are decisions made? What is their socio-economic status?

4. Analyse them with regard to expectations and relationships. Identify their interests and expectations in the project and analyse the links and relationships between the various stakeholder groups.

5. Characterise their sensitivity to important issues that your project is concerned about (for example, gender equality, environmental protection, human development issues. Are they sensitive to these issues? Do they consider the impact of their tasks and activities on these issues?)

6. Assess the potential, resources and capacities of the stakeholders. Ask questions such as: What are the strengths and contributions on which the project could build on? What are existing deficiencies to be considered by the project?

7. Draw conclusions and make recommendations for the project. Answer these questions: How will you take each stakeholder group into account? What actions will you undertake? How will you deal with the group?

The criteria of **importance** and **influence** of stakeholders are significant points to assess in the analysis. By importance, we mean the weight or the priority given by the project in meeting or satisfying the needs of each stakeholder. While the primary stakeholders—the beneficiaries or ultimate users of an intervention have the highest priority, the assessment will help identify stakeholders who are allies of the project and those who may cause problems for the project.

By influence, we refer to the power that stakeholders have or can have over the project. Some stakeholders have or will have more influence on the project than others. While some are in a position to influence the project to become successful, there may be others who feel threatened by it. Through this assessment we will be able to consider how to approach those whose interests will be negatively affected in order to avoid conflict and possible failure of the project.

It is important that we do not neglect the primary stakeholders, even if we think they have low influence.

An integral part of the stakeholder analysis is another tool that is called Gender Analysis. This tool is used for examining the differences between the roles that women and men play, the different levels of power they hold, their differing needs, constraints, opportunities and the impact of these differences on their lives.[40] Since projects are participated in by women and men in a cultural context, gender and cultural sensitivity is a concern; thus ethical considerations in the project practices must also be observed.

It is also noteworthy for the project to consult with the different stakeholders who are most affected. The consultations will help identify the target groups and other beneficiaries. In the consultations, their interests and expectations are expressed, as are the role they are willing to play, and the resources and capacities they may provide in a gender-differentiated way. It is also important to take note of what other stakeholders have expressed their general support for the project. In the analysis, conclusions are drawn on how the project can deal with these groups. Furthermore, ownership of the project must be established among primary stakeholders as the project develops and is implemented.

---

40   Vibrant Community, "Gender and Poverty Project: Gender Analysis Tools". Available from http://tamarackcommunity.ca/downloads/gender/Tools.pdf.

A planning workshop or meeting with primary stakeholders at the end of the planning phase is strongly recommended. This is to obtain final agreement on the project's overall objectives, results, activities and indicators, the outline of the activity and resource schedules, and implementation arrangements. This will help improve ownership by the target groups and by the beneficiaries of the project.

Something To Do

Identify the stakeholders of Clara's project using the stakeholder analysis matrix shown in table 10. The entries in the matrix are briefly explained as follows:

- **Stakeholders** refer to the individuals, groups and organisations who are directly or indirectly affected by the project. They have influence on or interests in the project or project activities.
- **Primary or secondary stakeholders** refer to the stakeholders' categorization based on their involvement and participation in the project. Primary stakeholders are such key project participants as beneficiaries and/or decision makers. Secondary stakeholders, while they may be on the sidelines, can serve as influencers, either positively or negatively or both depending on the impact of the interventions in their interests.
- **Potential roles in the project** refer to the identification of their function, position, tasks or disposition in the project. They can be users, influencers, champions, channels, decision makers, partners or facilitators.
- **Problem or needs** refer to the stakeholder's requirements that have to be answered or met by the project.
- **Expectations or interests** in the project refer to the concerns or the conditions of the stakeholders to participate in the project.
- **Weakness, constraint or influence** refers to the limitations or the power of the stakeholders to convince people to participate in the project.
- **Potential contribution (positive or negative)** refers to the possible or probable inputs or influence of the stakeholder to the project. Positive means a likelihood of a favourable contribution to the project. Negative means a possibility of an unfavourable contribution to the project.
- **Consequences of their contributions in the project.** The positive contribution of an individual, the group or organisation means that there is ability or capacity to facilitate or help in the development and implementation of the project. The negative contribution to the project may result in risk factors or problems for the project. It will be important to identify these possible consequences, including the probability of the consequences happening and the magnitude of the effect on the project.

Table 10. Stakeholder analysis matrix

Stakeholders	Primary or Secondary	Potential Roles	Problems or Needs	Expectations or Interests in the Project	Weakness, Constraint or Influence of Stakeholder	Potential Contribution (Positive or Negative)	Consequences of their Contributions in the Project
Local Government Officials	Primary	Accept the project and make the project official. They have computers that can be used for training	Not fully certain of the benefits of the project. Low or no computer and Internet literacy	Half of them are open to the project and see the value of computers and Internet as tools for learning; the other half are resisting and fear the effects of computer literacy for boys and families	Highly influential to the community but will have to be convinced about the benefits of the project; they may pose some problems in the project if not convinced. They will have to issue official Memorandum of Agreement with the university to make the project official	Negative/ positive	If convinced, the project will immediately gain ground; if not convinced the project can stall.

The project must be able to convince all the local officials.

The project team must be wary of the internal politics and dynamics among officials; and will need to understand internal dynamics among the political figures |
| Women Weavers Group | Primary | Attend the basic training and immediately apply the knowledge and skills. Can be tapped as local trainers. Can be village champions | Need extra income for the family. No computer or Internet literacy but open to learning new skills in using computer and Internet | Open to participate; open to learning new skills in using computer and Internet | The head of the women's group, Mrs. Patel, seems to be influential in the community; she commands the respect of her members. She can also identify members who could be potential local trainers and project role models | Positive | Mrs. Patel, as head of the women's group, can help convince the local officials. She can help the project team in coordination and communication |

See annex 1 for the complete stakeholder analysis of Clara's project.

After completing the table above, assess the influence and importance of stakeholders so that we can see their position in relation to each other. Let us use a similar table as figure 3 below to find out the influence and importance of the stakeholders.[41]

---

41 Rachel Blackman, *Project Cycle Management*, ROOTS resources 5 (Teddington, Tearfund, 2003). Available from http://ebookbrowse.com/tearfund-manual-project-cycle-management-2003-pdf-d120705157 or http://tilz.tearfund.org/webdocs/Tilz/Roots/English/PCM/ROOTS_5_E_Full.pdf.

Figure 3. Influence and importance of stakeholders

High

	A	B
	1	5
	2	
	3	11
	4	8
	C	D
		6
		7
	9	

Low   INFLUENCE   High

Importance

Think about the amount of influence the stakeholders have and the extent to which they are important to the project. Give each stakeholder a number and put the numbers in the appropriate places on the table like in figure 3. If they have high influence, place them towards the right of the table. If they are of high importance to the project, move the number upwards towards the top of the table.

The table can be analysed as follows:

- Boxes A, B and C are the key stakeholders of the project. They can significantly influence the project or are most important if project objectives are to be met.
- Box A stakeholders are of high importance to the project, but with low influence. They need special initiatives to ensure their interests are protected.
- Box B stakeholders are of high importance to the project, and they can also influence its success. Good working relationships with these stakeholders must be established to ensure adequate support for the project.
- Box C stakeholders have high influence and can affect the project impact, but whose interests are not the target of the project. These stakeholders may be a source of risk. Relationships with these stakeholders are important and will need careful monitoring. These stakeholders may be able to cause problems for the project and it may be too risky to go ahead with the project at all.
- Box D stakeholders are of low priority but who may need limited monitoring and evaluation to check that they have not become high priority.

Once completed, the stakeholder analysis can give a clear idea about:

- Who should be involved in the project
- What they need from the project
- How they can contribute to it

Stakeholder analysis and problem analysis are closely connected as part of the initial "situation analysis". To effectively conduct the analysis, consultation with stakeholders will be necessary. Without the views of a situation the problems and potentials will not become clear, and without the analysis of their potentials, subsequent action by the project may not be feasible.

The analysis report resulting from a process of consultations will be made a point of continuous reference. Whenever the logical framework has to be revised the stakeholder analysis should be reconsidered, as the landscape of stakeholders involved in a project evolves over time. Thus, stakeholder analysis is not an isolated step, but a process.

2.3.2 Problem Analysis

A problem analysis tool is useful at the initiation or identification phase. It helps define the problematic situation that needs to be addressed by the project. By defining the problem, good solutions as well as good decisions are also identified. There are many benefits that can be derived in the use of this tool. It helps to:

- Determine real as opposed to perceived development needs
- Bond project stakeholders together – identify issues, roles of different stakeholders in resolving the issues, and timescale and resources needed to achieve a given solution
- Build stakeholder consensus
- Identify barriers and opportunities
- Identify causes and effects of a problem
- Establish meaningful relationships among the different stakeholders
- Establish actual size of the problem and the likely resources needed
- Establish comparative advantage of the project

In doing a problem analysis one can use the problem tree analysis with key stakeholders in a workshop. The problem tree process identifies and analyses how problems relate to each other. This is important in deciding which problems are the ones that a project should focus on and try to address. Creating a problem tree analysis diagram like figure 4 gives a visualization and appreciation of the problem network and how these can be helpful in identifying solutions and later the project objectives.

The problem tree in figure 4 uses the example of the Community Health Project previously discussed in the sample log frame matrix (table 9).

As you can see in the diagram, you start developing a problem tree by identifying a **central problem**. The central problem identified in the example is, "shortage of safe drinking water". As discussed earlier, the identification of the central problem requires comprehensive research of the situation in the project site.

From the central problem, there are other problems and issues that are raised; thus, there are branches that are generated down and there are those that go up. The arrows pointing down (going to the root of the problem) are the causes. The arrows up from the central problem are the effects of the central problem.

There is a step-by-step technique for developing the problem tree (see "Something To Do" below).

Figure 4. Problem tree analysis of the Community Health Project

Source: Rachel Blackman, *Project Cycle Management*, ROOTS resources 5 (Teddington, Tearfund, 2003). Available from http://ebookbrowse.com/tearfund-manual-project-cycle-management-2003-pdf-d120705157 or http://tilz.tearfund.org/webdocs/Tilz/Roots/English/PCM/ROOTS_5_E_Full.pdf.

If we were to read the above example, we can start with the problem statement going down by asking the question: "Why is there a shortage of safe drinking water in this community?" The answers to the question branched out into four: There is a shortage of safe drinking water in the community: (1) Because there is increased demand in farm use; (2) Because there is increased demand in household use; (3) Because there are not enough wells in the community; and (4) Because the open wells dried up. To go to the root of the problem you use each answer and ask the question why again. For instance: Why is there an increased demand in farm use? Another layer of answer comes out: Because the farming methods used require intensive water use. Why is there increased demand in household use? Answer: Because population increased and more water is used up. And so on.

To know the effects of the central problem, the following question is asked: "What is the effect of the lack of safe drinking water?" The example shows two answers: (1) The lack of water has resulted in higher cost of water collection; and (2) the lack of water has pushed people to use "dirty" sources that are unsafe. Probing deeper into the problem the effects of these two answers are asked: "What is the effect of higher cost in water collection?" and "What is the effect of dirty sources of drinking water?" Relating to the first question on higher collection charges for water this has resulted in: people having less time for farming and people having to buy water from other sources. Related to the other question on dirty sources of drinking water, this has resulted in: increased disease in the community and an increased mortality rate. The technique is to ask the right questions starting from the central problem statement.

Something To Do

Let us do a problem analysis on Clara's project. With a small group made up of your project team and primary stakeholders, follow the steps below to construct a problem tree. You may use "post-it" stickers as you create the tree.

Step 1	Brainstorm with your team: Identify major problems existing within the given case situation. Write a problem at a time using a meta card or "post-it" stickers.
Step 2	From among the many problems, select a starter problem.
Step 3	Look for related problems to the starter problem and cluster them together.
Step 4	Establish a hierarchy of causes and effects: • Problems that are directly causing the starter problem are put below; ask the question "why" to identify and validate what is causing the problem until you reach the "root" cause. • Problems that are direct effects of the starter problem are put above; ask the question "what does the problem results in?" to identify and validate the effects.
Step 5	Repeat step 4 with all the other problems accordingly.
Step 6	Connect the problems with cause-effect arrows.
Step 7	Review the diagram and verify its validity and completeness.

Remember:
• Problems have to be worded as negative situations as they exist.
• Problems should be as specific as possible – what is the problem, who does it affect?
• Problems have to be existing problems, not future ones or imagined ones.
• The position of the problem in the hierarchy does not indicate its importance.
• A problem is not the absence of a solution, but an existing negative situation, that is a "lack of" something.

Source: Umlabha Development Services, "Basic Introduction to Project Cycle Management using the Logical Framework Approach", European Commission Civil Society Fund in Ethiopia. Available from http://eeas.europa.eu/delegations/ethiopia/documents/eu_ethiopia/ressources/pcm_manual_en.pdf.

Is your Problem Tree of Clara's project similar to the one in figure 5 next page?

In Clara's problem tree analysis, the central problem that she identified as her starting point of analysis is the "constrained ability of women to improve livelihood". The causes that emerged from the analysis are: lack of skills among the women, lack of information and credit facilities available to women, inadequate market network, and so on. The effects identified in the problem are: poor sales or low income, poor product quality, and proliferation of vices and idle time. As you can see in the lower and upper parts of the problem tree, the causes of the problem become deeper; likewise the effects of the main problem also become more basic.

Figure 5. A problem tree analysis of Clara's project

2.3.3 Objectives Analysis

The LFA offers another tool to develop the objectives of the project. The objectives analysis provides a method to define the objectives of the project.

From the problems identified in the problem analysis, solutions can be derived from the process of identification and analysis. The objectives should relate directly to the problem analysis, which identified key problems and their causal relationships among other problems. Using a similar pattern, the objectives analysis uses the objectives tree to identify the necessary solutions and the links between these solutions. Each level of the objectives tree represents a means to achievement at the next level. It can be represented graphically as shown in figure 6.

Side by side with the results of the problem analysis, the problems can be converted into positive statements for the objectives analysis. The causes identified in the problem tree can be converted to become the hierarchical **means** or ways to solve the presented problem. In the same manner, the effects identified in the problem tree are converted as logical **ends** or the results and outcomes that are desired.

Figure 6. Objectives tree

Source: Umlabha Development Services, "Basic Introduction to Project Cycle Management using the Logical Framework Approach", European Commission Civil Society Fund in Ethiopia. Available from http://eeas.europa.eu/delegations/ethiopia/documents/eu_ethiopia/ressources/pcm_manual_en.pdf.

Let us use the problems identified in the Community Health Project in figure 4. Table 11 provides examples of converting the negative words of the problem to positive words to state the objectives.

Table 11. Example of problems converted into objectives

Problem Example	Objective Example
High infant mortality rate	Reduced infant mortality rate
Shortage of safe drinking water	Improved access to safe drinking water
Not enough wells	More wells dug
Open wells dried up	Wells protected and yielding
Hand pumps broken	Hand pumps repaired

Objectives are worded and written in a way that describes the condition which an improvement to the situation will bring about. Unlike a problem tree, the order in which problems are transformed into objectives has no particular relevance and thus, one can start at any point. However, it is important that the objectives are realistic, achievable and desirable. Figure 7 shows the objectives tree for the Community Health Project.

Figure 7. Objectives tree analysis of the Community Health Project

Something To Do

Prepare an objectives tree for Clara's project. Using the problem tree, compile a tree of objectives by following these steps.

Step 1	Reformulate/rewrite all negative situations of the problems analysis into positive situations that are: • Desirable • Realistically achievable
Step 2	Convert the causes identified in the problem tree into means or ways to solve the presented problem. In the same manner, convert the effects identified in the problem tree into logical ends, or the results and outcomes that are desired. Check the means-ends relationships to ensure validity and completeness of the hierarchy.
Step 3	If necessary: • Revise statements • Add new objectives if these seem to be relevant and necessary to achieve the objective at the next higher level • Delete objectives that do not seem suitable, convenient or necessary. The objectives tree is a picture of the future desired situation, and the elements necessary to achieve it.

Remember that LFA is an iterative process. This means that as you define your objectives based on the problem tree, you should check whether the problems were clearly identified, and whether the logic still holds between them. You can (and should) be altering your problem tree as you go along.

Source: Umlabha Development Services, "Basic Introduction to Project Cycle Management using the Logical Framework Approach", European Commission Civil Society Fund in Ethiopia. Available from http://eeas.europa.eu/delegations/ethiopia/documents/eu_ethiopia/ressources/pcm_manual_en.pdf.

Does your objectives tree look like figure 8 below?

Figure 8. An objectives tree analysis of Clara's project

The main objective that was once a problem is converted into a positive statement: "Increased capacity of women to improve livelihood". In the lower portion of the objectives tree or the means section, three branches of means emerged: (1) Improve skills related to livelihood; (2) Improve access to information and credit facilities; and (3) Improve market network. With each branch, other related means are clustered that follow the logic of the leading branch.

2.3.4 Strategy Analysis

The strategy analysis helps identify which problem and solution will be most suited for your project. Prioritizing and choosing the most feasible, achievable, desirable and relevant solutions must follow.

Having a clear idea of what options are available can help prioritize which project objectives to choose. There are seldom enough resources to do everything, and resources that do exist should thus be invested in areas where they will have the most benefit.

From the objectives tree, a number of solutions or options can be identified. These options can be clustered or grouped together to help prioritize and choose the solutions to address.

From the objectives tree of the Community Health Project (figure 7), there are three clusters of options:

1. Decreasing the demand for farm use
2. Reducing the wastage of household water
3. Digging more wells, protecting the wells and repairing the pumps

Figure 9. Objectives tree analysis of the Community Health Project with selected project strategy option

The project went through an options assessment and the strategy selected is the cluster of activities that include digging of more wells, protecting the wells and repairing the pumps.

Criteria for Selecting Project Options

The succeeding discussions offer guiding questions that can help the project team select the best solutions or options for the main problem of the project. The guide questions pertain to factors in the internal and external environment of the project. These factors include: feasibility, costs, benefits, probability of achieving the objectives, risks factors and social acceptability.

Feasibility

To address the feasibility of the project option, questions to ask include the following:

* Does the project have the capacity and resources to address the problem identified?
* Is the project practical and realistic?

Some needs, although pressing, cannot be addressed by the project implementer. The project conceived may be too large. It may help to approach the project option in smaller chunks. In other words, you can make the project smaller in scope but designed to lead to new projects in the future. Thus, you build one project after another in progression until you reach the desired project goal.

Costs

* Can the money needed to implement the project be found within the local area or organisation, or from external support agencies?
* Will the money be spent on promoting self-help and building capacity, or encouraging dependency?

Benefits

* Who will benefit from the project?
* Do these people or institutions fall within the priority groups among the stakeholders (e.g. poor rural people)?
* Are benefits mutual for both the organisation and the local people involved?
* Will the project help to build sustainable relationships among stakeholders so that they continue to reap the benefits of the project even after it ends?

Probability of achieving objectives

• Is the project likely to work or is it based on wishful thinking? It makes sense to invest time, effort and other resources in a project that is likely to succeed.

Social risks and acceptability

• Is the project appropriate to the local people and to the area in which it will be situated? Issues of appropriateness include cultural sensitivity, environmental effects, selection of technology, financial and economic matters, gender issues, and effects on local institutions and social structures.
• Will it contribute to the reduction of inequalities?

Furthermore, local people may have their own criteria for supporting a project. Knowing and having this information discussed and documented will help make the local project actors or primary beneficiaries own the project. Project ownership is a sustainability measure that can make the benefits of the project more lasting for the beneficiaries.

Options Assessment Tools

Depending on the scope, the amount of work entailed, the resources and the budget, selecting a strategy may either result in forming a large project intervention or a programme that consists of a number of smaller projects.

When an option or idea for a project has been identified, a document should be prepared that contains the problem situation, the objectives analysis, possible options, the chosen option and the criteria used to select the option. This should be done before detailed planning of the chosen project takes place. In the next phase (project design), the detailed objectives, outputs, activities and tasks will be developed.

Table 12 shows an options assessment tool that you can use to decide and select the best choice from the list of possible projects. The assessment tool helps you rate the project (as low, medium and high options, or by assigning a numerical value) using the following criteria:

• Feasibility – Is the project relevant, practical and realistic?
• Costs – Is the project within the budget parameter?
• Benefits – Are there gains that can be reaped from the project?
• Achievable objectives – Can the objectives be accomplished within a certain time period?
• Potential capacity of stakeholders – Are there stakeholders from within and outside the project that can support the project through the use of their financial or human resources?
• Social Risks – Are there events that can threaten the project's life?
• Acceptability – Is the project up to standard? Does the project have cultural, ethical or political sensitivities to consider?
• Urgency – Is the project so significant that it can meet the immediate needs of primary stakeholders?

Table 12. Community Health Project options assessment

The options identified are:
Option 1 – Decreasing the demand for farm use
Option 2 – Reducing the wastage of household water
Option 3 – Digging more wells, protecting the wells and repairing the pumps

Criteria	Option 1			Option 2			Option 3		
	H	M	L	H	M	L	H	M	L
Feasibility			✓			✓	✓		
Costs	✓			✓				✓	
Benefits	✓			✓			✓		
Achievable objectives			✓			✓	✓		
Potential capacity of stakeholders			✓			✓	✓		
Social Risks	✓			✓					✓
Acceptability			✓			✓	✓		
Urgency		✓			✓		✓		

Something To Do

After going through the objectives analysis and identifying the possible project options from these objectives, help Clara make a strategy analysis by using table 12. Rate the project options high (H), medium (M) or low (L) against the criteria listed in the first column of the table.

Following the rating, assess which option(s) are optimal according to the criteria.

Another tool that is useful in scanning the project environment and in selecting the project strategy is the **SWOT analysis** that looks at the strengths (S), weaknesses (W), opportunities (O) and threats (T) of the project environment. The strengths and weaknesses refer to the internal environment of the project, while the opportunities and threats are external to the project environment.

Table 13 is a SWOT matrix that you can use to assess project options. The first row represents the strengths and weaknesses of the project's internal situation. This includes looking at the capabilities of the project team members, the leadership and the partner organisations—the skills, type of services, quality of services and reputation; the internal systems, organisational structure and processes; and the financial status of the organisation and partners.

The second row represents the opportunities and threats in the external environment that can affect the project during its implementation. This includes looking at the:

- Policies and laws – local and international
- Economic situation – economic growth rates, market and industry trends, employment statistics and trends
- Social situation – literacy rates, gender relations, community cohesiveness, use of technology, media freedom
- Political situation – interest groups, politics in power, and decision-making at local and national levels
- Cultural situation – norms, values, beliefs, language and ethnicity

Steps that need to be taken to assess and select the best project options using a SWOT analysis are demonstrated using Clara's project as an example.

1. In the top left quadrant, list all the strengths of a project option. For example, strong support from the Weavers' Association.
2. In the top right quadrant, list all the weaknesses of the same project option. For example, the Weavers' Association has low organisational and marketing skills.
3. In the bottom left quadrant, list all the opportunities that you find outside the project environment. For example, favourable policy environment.
4. In the bottom right quadrant, list all the threats. For example, environmental degradation.

Table 13. A SWOT analysis of Clara's project

OPTIONS	External Environment		OPTIONS
	1. List Strengths (S)	2. List Weaknesses (W)	
S-O Strategy	• Support from stakeholders • Low cost • Low maintenance of equipment	• Low capability • Unorganized groups • Weak leadership	W-O Strategy
	External Environment		
	3. List Opportunities (O)	4. List Threats (T)	
S-T Strategy	• Interest from support organisations • Favourable policy environment	• Environmental degradation • Unfavourable interest of private sector	W-T Strategy

In conducting the SWOT analysis, it is important to collect as much relevant data as you can for both the internal and external environments of the project. The more recent data you are able to find the better for decision-making on the most relevant, feasible and effective strategy to take.

There are four combinations of strategic options[42] that can result from the SWOT analysis.

- The S-Option: This option involves using your strengths to take advantage of the opportunities. When the team or organisation is dominantly strong and opportunities in the external environment are high and favourable, the S-O strategy is definitely a priority. This option is likely to give a quick return on investment and is relatively easy to implement. It can also be easily justified for immediate action.
- The S-Toption: This option involves using your strengths to avoid real and potential threats. When the team or organisation is dominantly strong and the threats are high this may be the option to choose. Ways to use your strengths to turn threats into opportunities should be considered in this option.

---

42 MindTools, "Strategy Tools" Mapping Out Your Best Possible Direction". Available from http://www.mindtools.com/pages/main/newMN_STR.htm; Jim Riley, "SWOT Analysis", tutor2u, last updated 23 September 2012. Available from http://www.tutor2u.net/business/strategy/SWOT_analysis.htm; andbusinessballs.com, "Ethnical work and life learning", Alan Chapman. Available from http://www.businessballs.com.

- The W-Option: This option involves using opportunities to overcome the weaknesses that you are experiencing. When the team or organisation is dominantly weak and the opportunities are potentially attractive as options, it may likely produce good returns if internal capabilities are improved. This option is potentially more stimulating and rewarding than the S-O option because of the change, challenge, surprise tactics and benefits from addressing and achieving improvements. In the table 13 example, the W-O option was selected.
- The W-Toption: This option looks at how can you minimize your weaknesses and avoid threats. When the team or organisation is dominantly weak, this is potentially a high-risk option. Assessments of the risks are crucial and critical. Where the risk is low then we must ignore these issues and not be distracted by them. But when risks are high, we must assess capability gaps and plan to defend the project in a very specific and controlled way.

Once you have identified your strategy option(s), you should determine the overall purpose and objectives of the project.

2.4 The Project Plan Matrix

The result of the above analysis leads to the preparation of a detailed project planning matrix or the log frame (see table 14). The matrix gives you an overall summary of your project plan. It gives the answers to the following questions:

- Where do you want to be? (Overall objective, goal/purpose)
- How do we get there? (Outputs, activities)
- How do we know that we are getting there? (Indicators)
- What proofs do we have that we are getting there? (Evidence)
- What potential problems will we encounter? (Assumptions)

Table 14. Log frame matrix

	(6) Indicators	(7) Means of Verification	(8) Assumptions
(1) Overall Objective			
(2) Project Purpose		Horizontal Logic	
(3) Results			
(4) Activities			
(5) Inputs: Means and Cost	(5.1) Means	(5.2.) Cost	(5.3) Pre-conditions

Vertical Logic (shown along the left side)

The LFA project plan matrix consists of the vertical intervention logic and the horizontal intervention logic with corresponding elements.

2.4.1 The Vertical Intervention Logic

(1) Overall (Development) Objective
This is the main development objective that the project intends to contribute to in the long run. This objective will usually describe what the beneficiaries will obtain from the project, and is

related to the problem or need the project is seeking to address. Write the overall objective as if it has already been achieved.

(2) Project Purpose (Immediate Objectives or Goals)
The project purpose normally describes a change in the target group's behaviour due to the project intervention. This is the immediate reason for a project, describing the effects that the project is expected to achieve, if it is completed successfully. The objective should be SMART and written as if they have already been achieved.

(3) Results or Outputs
Results are the goods, services and products that the project makes available to the target group. Project management must be able to achieve the outputs listed for the project, provided the requested inputs are available. The results should be SMART and written as if they have already been achieved.

(4) Activities
Activities are all the steps that the project takes to provide the various goods, services and products listed as results. Care should be taken to ensure that the activities listed will realistically lead to the specified result. Activities should be SMART and written as if they have already been achieved.

(5) Inputs
Inputs are the raw materials of a project and include funds, equipment, supplies, personnel, premises, etc. Inputs should be specified for each activity, and should be sufficient to allow the activities to be carried out. The inputs can include the means, cost and pre-conditions of the project.

(5.1) Means include the ways to source the needed inputs. Will funds come from a donor, group investments or both? Will the project get resources such as personnel by outsourcing or will the resources come from within the organisation?

(5.2) Cost – The amount needed to complete the project .

(5.3) Pre-conditions – What must be present for the project to proceed?

When we write the objectives for each level, we must make sure the statements are logically connected to each other. We can use the "if-then" test to check. Let us use the Community Health Project in table 9 to explain:[53]

- Let us examine the activities, and ask the question: If all of the activities are carried out, will they result in the outputs?
  - o If we train members of the community to maintain and repair hand pumps (activities), then sources of safe water will be improved (output).
  - o If we train community health workers on diarrhoeal diseases and the need for good hygiene practice, and if these community health workers train men, women and children in good hygiene practice (activities) then, awareness on hygiene and sanitation practices are raised.
- Examine the outputs and ask the question: If the outputs are met, will they achieve the purpose?

43   Rachel Blackman, *Project Cycle Management*, ROOTS resources 5 (Teddington, Tearfund, 2003), p. 43. Available from http://ebookbrowse.com/tearfund-manual-project-cycle-management-2003-pdf-d120705157 or http://tilz.tearfund.org/webdocs/Tilz/Roots/English/PCM/ROOTS_5_E_Full.pdf.

o   If the sources of safe drinking water will be improved (output), then access to safe water will be improved (purpose).

o   If the awareness on hygiene and sanitation practices is raised (output), then access to safe water will be improved (purpose).

- Examine the purpose and ask the question: If the purpose is achieved, will it contribute to the overall objective?

o   If access to safe water is improved (purpose), then the incidence and impact of diarrhoeal disease will decrease (overall objective).

In writing the objectives, we may find the need to adjust the words in the objectives or add new objectives. We may also decide to remove some of the objectives if these do not seem relevant to the set of objectives.

2.4.2 The Horizontal Intervention Logic

(6) Verifiable Indicators

Indicators are verifiable measures of the progress and success of a project. Indicators of output are usually simple (for example, the number of units of a product produced or the number of persons trained) but indicators may be more difficult to determine for the overall objectives and the project purpose.

Indicators are based upon things that are essential to the accomplishment of an objective, output or activity and the question that should be asked is: What indicator and verifiable evidence will prove that the objective/output has been achieved?

Each level of the vertical logic has a different level of indicator. Take a look at the sample indicators of the Community Health Project in table 9. Indicators should include the following:

- Quantity – the number of people, services, products, etc.
- Quality – to what standard will this be done
- Time – by when will this occur, how frequent will it happen, and will it end at some point?
- Location – where will this be taking place?

An example of an activity indicator from the Community Health Project is: 30 Water User Committees established in 5 regions by end of month 3.

(7) Means of Verification

The MOVs are the evidences, reports and methods used to collect the information/data that will serve to verify the indicators. MOVs should be accessible, easy to gather and reliable. Some important questions to consider when specifying MOVs for the indicators include the following:

- Are the MOVs available from normal sources (statistics, observations and reports)?
- How reliable are the sources?
- Is special data gathering required (e.g. survey research)?
- If so, what will it cost in terms of time and money?

From the Community Health Project log frame, examples of MOVs include:

- Recorded information and activity such as attendance list and minutes of meetings
- Documents such as reports, test results, letters of agreement and government statistics
- Research and observation study, field survey results and interview transcripts

(8) Critical Assumptions or Risk Factors[44]

The critical assumptions or risk factors are situations, events, conditions or decisions that must exist and are necessary for the project to successfully happen, but are largely beyond the control of the project. In the Community Health Project log frame in table 9, some examples of the assumptions, specifically external factors that may affect the project listed at the activities level are:

• Groundwater is free of arsenic
• Communities have confidence that water sources can be improved
• Committee members will take responsibility to work for the community
• Water User Committees continue to function in everyone's interests
• Community prepared to work with Water User Committees

In the previous section, the "if-then" test was used to check the logic link of each level. However, we can never be 100 per cent certain that the objectives of each level will lead to the next because there will always be external factors that can affect the link between and among the objectives at each level. These external factors that are either outside the control of the project or are too difficult or costly to control, are most often the reasons of project failure, especially when insufficient attention is given to them from the start.

Let us first understand what a risk is before considering the risk factors linked to a project. Every activity we plan involves risks. A risk is a potential exposure to danger. There are some risks that will likely affect an activity more than others. When we identify the risks and consider the likelihood of them happening, through risk assessment, we are able to determine the likely impact of the risks to the project. Doing this at the project identification and formulation stage allows you to make more preparation to manage these risks by including them in the plans, and if necessary changing the project plans to ensure that the risks are minimized.

Risks can include certain economic, political, social, environmental and technological conditions. For example:

• Economic – unstable prices, instability of inflation rates, interest rates, non-investments
• Political – presence of conflict, unfavourable government policies
• Social – labour strikes, beneficiaries unwilling to try new techniques, project staff leaving the organisation, projects related to your project are not able to start or have erratic schedule
• Environmental – project location prone to natural hazards like flood and landslides, worsening soil, water and air conditions
• Technological – power fluctuations, absence of electricity, unavailable spare parts

The assumptions and the different types of risks in the Community Health Project are explained below:

• *Groundwater* is free of arsenic is a technical health risk because it requires water testing.
• *Communities have confidence that water sources can be improved* is a social risk factor because the project has to ensure that the community members believe that the project can improve the sources of water.
• *Committee members will take responsibility to work for community* is a political risk factor because it will take political will for the members to take the leadership in this project.
• *Water User Committees continue to function in everyone's interests* is also a political risk factor because the committee will have to take into consideration the good of everyone and not their individual interests.

---

44 Ibid.

- *Community prepared to work with Water User Committees* is a socio-political risk factor because it will require a belief that they can work together with the members of the Committee.

To identify and assess the risks and their likely impact on the project, here are some steps to take:

First, review all the results of the analytical process—the stakeholder analysis, problem analysis, and researches from various economic, political and environmental analyses. List the risk factors that you come across in your review. You may categorize these risks according to the list presented above (economic, political, social, etc.).

Looking at each level of objectives and the list that you have made, ask the following questions:

- If we do the activities, what can stop us from delivering the outputs?
- If we are able to successfully deliver the outputs, what can stop us from achieving the purpose?
- If the purpose is achieved, what would stop it in contributing to the goal?

The risk assessment considers the probability of the risks happening and the likely impact to the project. If any of the risks are found critical upon assessment, you may use the risk decision tree to help you decide ways to mitigate them, or you may decide to totally reject the project if the risks are too high. Figure 10 gives an example of a decision tree flowchart.

Figure 10. Example of a decision tree flowchart

Once you have the list of risks you need to turn them into assumptions. Risks are negative statements about what may go wrong, and the assumptions turn risks into positive statements. They are the conditions that need to be met if the project is to continue.

Project risks and the assessment of risks are discussed in the next chapter under "Risk Management Plan".

Something To Do

Prepare a logical framework matrix for Clara's project.

A sample logical framework matrix of Clara's project is presented in annex 1.

2.5 Activity Scheduling

Project planning requires a detailed scheduling of activities that looks at what and when will be implemented in the life of the project. In LFA, the project activity schedule is organized according to the results, and is shown in a graphic format called a Gantt chart. The Gantt chart for each project may vary according to the nature of the project, but should convey the following information:

- The specific activity to be conducted, organized sequentially according to results
- A specific time when this activity is to be undertaken and for how long
- Who is to take responsibility for this activity

Table 15. Example of an activity scheduling matrix

Seq.	Activity	Number of days	Start date	End Date	1	2	3	4	5	6	Person Responsible
1	Prepare modules for training	20	1 Aug	30 Sep							Clara
2	Pre-testing of modules	10	1 Oct	20 Oct							Prof. Ramirez
3	Revision of modules	20	21 Oct	15 Nov							Clara
4	Approval of modules	5		25 Nov							Prof. Ramirez
5	Conduct of training	10	1 Dec	20 Jan							Clara

2.6 Resource Scheduling and Budgeting

Project budgeting in LFA follows a detailed activity-based costing framework. In essence the budget needs to directly correspond to the project log frame or plan. Each project result, activity and sub-activity needs to be clearly identified and budgeted for. Table 16 gives an example of an activity resources and cost template that can help calculate the cost of each activity.

Table 16. Example of activity resources and cost template

Activity Resources	Unit	M1	M2	M3	M4	Cost per Unit ($)	Funding Source	M1	M2	M3	M4	Total Cost ($)
Equipment: - Laptop computer - Printer - Projector	1 1 1	1 1	1			1,000 300 1,000	University	1,000 300	1,000			2,300
Resource persons for module preparation and revision			2			1,000 1,000	SIDA		2,000	2,000		4,000
Training venue for pre-testing Training venue for actual conduct				1	2	500 500	Local government		500		1,000	1,500

2.7 Writing the Project Design Document

The result of the above activities is the preparation of a project plan or a project design. In other approaches such as PMBOK, the initiation phase results in the approval of the business case and the project charter. Table 17 shows the typical project plan outline of two project management approaches—PCM-LFA and PMBOK.

Table 17. Outline of project plan document for two project management approaches

PCM-LFA	PMBOK
1. Project Title and Key Parameters	**Business Case**
2. Context	1. Project Title and Key Parameters
3. Description	2. Introduction/Background
4. Beneficiaries	3. Business Objectives
5. Stakeholders	4. Current Situation and Problem Opportunity Statement
	5. Critical Assumptions and Constraints
6. Development Objective	6. Analysis of Options and Recommendations
7. Immediate Objective	7. Preliminary Project Requirements
8. Major Outputs	8. Budget Estimate and Financial Analysis
9. Major Activities	9. Schedule Estimate
10. Inputs	10. Potential Risks
11. Critical Assumptions	11. Exhibits or Annexes
12. Sustainability	**Project Charter**
13. Implementation Plan	1. Project Title
14. Project Reporting	2. Project Start Date
	3. Budget Information
	4. Project Objectives
15. Exhibits	5. Main Project Success Criteria
• Project Planning Matrix	6. Approach
• Budget	7. Roles and Responsibilities
• Project Approval Documents	8. Sign off
	9. Comments

Sources: EU PCM LFA project outline; and CVR/IT Consulting, "The Project Management Template Library". Available from http://www.cvr-it.com/PM_Templates/.

TEST YOURSELF

Choose the letter that corresponds to the best answer.

1. Also known as the log frame approach, its processes focus on all the elements of project planning towards the achievement of one project purpose.

    a. Logical framework approach
    b. Stakeholder analysis
    c. Problem analysis
    d. Cost benefit analysis

2. _____is a tool that takes into account any individuals, groups of people, institutions or firms that may have a relationship with and stake, role and interest in the project.

    a. Problem analysis
    b. Stakeholder analysis
    c. Strategy analysis
    d. Option analysis

3. _____refers to the stakeholder's requirement that has to be answered or met by the project.

    a.   Problem or needs
    b.   Potential roles in the project
    c.   Expectation or interest
    d.   Project cost

4. It is useful at the initiation or identification stage. It helps define the problematic situation that needs to be addressed by the project.

    a.   Problem analysis
    b.   Stakeholder analysis
    c.   Logical framework approach
    d.   Problem tree analysis

5. A method to define the objectives of the project.

    a.   Option analysis
    b.   Problem tree analysis
    c.   Objectives analysis
    d.   Strategy analysis

6. It involves defining the project's objectives and targets and strategies. This process is also known as project scoping.

    a.   Project framework
    b.   Project design
    c.   Pre-initiation
    d.   SWOT analysis

7. It helps identify which problem and solution will be most suited for your project.

    a.   Option analysis
    b.   Strategy analysis
    c.   Benefits
    d.   Total cost

8. This tool identifies internal and external situation of the project environment.

    a.   Project design
    b.   Analytical process
    c.   SWOT analysis
    d.   Problem tree analysis

9. It is the actual "doing" of the project and requires supervision and control to ensure performance of the project.

    a.   Execution
    b.   Monitoring
    c.   Completion
    d.   Evaluation

10. _____are the evidences, reports and the methods to collect the information/data that will serve to verify the indicator(s).

    a.   Means of verification
    b.   Verifiable indicators
    c.   Risk factor
    d.   Project documents

2.8 Summary

The initiation phase of project management provides processes to identify, clarify, analyse and define the project rationale, goals and objectives. For instance, the LFA offers tools to analyse stakeholders, objectives and strategy options. The initiation phase builds the process of formulating the project scope by developing a hierarchy of objectives and establishing ways to measure the project achievement. This phase answers the following questions:

- What needs will the project address?
- How will the project be undertaken?
- What outcomes are expected?
- What outputs and targets must the project deliver?

With all the analyses and design issues considered, the activity and resource scheduling, and budgeting follow in preparation for the detailed planning of the project.

2.9 Chapter Review Questions

1. What is the importance of having accurate, reliable and sufficient information in the preparation and formulation of project plans?
2. What is the benefit of using the LFA in project identification and in designing projects?
3. What are the analytical tools in the PCM-LFA? How do you use these analytical tools?
4. What are the design tools in the PCM-LFA? How do you use these design tools?
5. In your opinion, what is the value of using the analytical and design tools that were discussed in this chapter?

2.10 Suggested Readings

On PCM-LFA:

AusAID. A Guide to Program Management. Available from http://portals.wi.wur.nl/files/docs/ppme/ausguidelines-logical%20framework%20approach.pdf.

Blackman, Rachel. *Project Cycle Management*, ROOTS resources 5. Teddington: Tearfund, 2003. Available from http://ebookbrowse.com/tearfund-manual-project-cycle-management-2003-pdf-d120705157 or http://tilz.tearfund.org/webdocs/Tilz/Roots/English/PCM/ROOTS_5_E_Full.pdf.

Department of Water Affairs and Forestry, South Africa. Logical Framework Approach – Project Planning: Preparing and Documenting a Project. DANIDA, 2005.

European Commission. *Aid Delivery Methods*, *Volume 1 Project Cycle Management*. Brussels, 2004. http://ec.europa.eu/europeaid/infopoint/publications/europeaid/49a_en.htm

Gyulkhasyan, Levon. Using Logical Framework Approach for Project Management. USDA CADI, 2005.

Umlabha Development Services. Basic Introduction to Project Cycle Management using the Logical Framework Approach. European Commission Civil Society Fund in Ethiopia. Available from http://eeas.europa.eu/delegations/ethiopia/documents/eu_ethiopia/ressources/pcm_manual_en.pdf.

2.11 Suggested Activities

1. Use the LFA templates in the following simple projects:

    • Preparing a university or school event
    • Preparing community basketball (or any sports) tournament

2. In chapter 1, it was suggested that you think of a project in your neighbourhood. If you have not identified one yet, use the methods discussed in chapter 2 to firm up your project identification and formulation stage.

CHAPTER 3: THE DETAILED PROJECT PLAN

Objectives

- Explain the process of preparing a detailed project plan
- Identify the different disciplines and knowledge areas of a project plan
- Describe each of the disciplines and knowledge areas in a project plan
- Use some of the templates in preparing a project plan

Clara and the University Outreach Programme

The project proposed by Clara and team, the *Computer and Internet Literacy Training Project*, was approved in principle. She was awarded the grant but for this to be released, Clara and team were tasked to prepare a detailed plan for approval by the Grants Committee and the Director of the University Outreach Programme.

How will she proceed to write the detailed plan?

Clara realised that she will need to work with her team as well as consult with other people with expertise in computer and Internet training. She also realised that she will have to consult with other stakeholders to make sure that the detailed plan that she will need to write is relevant, appropriate, effective, and will be efficiently delivered.

Clara will now have to focus on providing details on the various categories of the projects with her team to express and show their understanding of what they will do before implementing the project.

From the identification and formulation of the project scope, planning the specific details of the project follow. The plan must be aligned with the goals and objectives of the project. Clear and detailed planning can save time, money and temper during project implementation. Planning is a consultative process—without the joint inputs from all stakeholders, important issues may be missed or overlooked. The detailed plan, which is called the project plan or the project management plan must be written as a project document for approval by authorities sponsoring the project. The plan includes a detailed presentation of the categories covered in the project. These are the scope, time, cost, quality, human resources and stakeholders, communication, procurement, risks, and coordination.

The project manager must be able to articulate in the document the activities and tasks under these categories. S/he must also be able to show the relationship of these categories with the project baselines, specifically the scope, time and cost of the project. The project manager must also be able to provide guidelines on how s/he will coordinate the different categories to support the goals and objectives of the project, and how s/he will balance the management of the activities under each category—quality, human resources and stakeholders, communication, procurement, risks and coordination—with the baseline categories of the project.

Figure 11. Balancing the baselines with other project categories

3.1 The Overall Work Plan: The Project Scope

The project scope document is the overall work plan that covers all the processes in project implementation. The intention of the work plan is to:[45]

- Guide and enable the project team to create a joint understanding on what should be done, when and by whom in order to ensure that the project is on the right track
- Ensure efficient and effective project implementation
- Provide details on how the project will be monitored to ensure that the project progresses towards the desired objectives
- Provide details on how the project will report on progress

The overall work plan indicates:

- What achievements are expected by the end of the project (results, purpose and related indicators)
- What the project team intends to do in order to achieve the results – the activities (including management activities) and the time schedule for activities
- What resources are needed to carry out the work (time, human and material resources, equipment, etc.) and who is in charge of the tasks (responsibilities)

Table 18 gives a sample outline of an overall work plan.

---

45   European Commission, Project Cycle Management Handbook, Version 2.0, March 2002, pp. 73-77. Available from http://www.
      sle-berlin.de/files/sletraining/PCM_Train_Handbook_EN-March2002.pdf.

Table 18. Sample outline of an overall work plan

Outline	Description and Notes
Title Page	Project title and key parameters
Executive Summary	A brief narrative summary of the project using the project design matrix or the project charter as a basis for this text. Include rationale and the justification of the project. Create a hyperlink that points to the project design document.
Implementation Environment and Arrangements: 1. Context 2. Summary of project objectives 3. Organisational set-up and arrangements 4. Staff and qualifications 5. Monitoring and coordination arrangements	**Describes:** • The need and the problem (business case) • What will occur in the project to solve the business problem • Benefits of completing the project • Why the project is necessary • Institutions and groups involved in the project and flow of relationships • Training needs and learning processes • Meetings, visits, workshops, and data requirements and storage
Project Description: 1. Overall objectives, purpose/outcomes, results including indicators 2. Activities and means planned 3. Assumptions and risks at different levels 4. Special activities to ensure sustainability 5. Contribution to policy issues 6. Coordination with other key institutions for complementariness of results	**Describes:** • The project and the vertical and horizontal intervention logic as reflected in the log frame matrix • Quality and sustainability issues and how to address these • If the project will contribute to policy issues • If there are other groups and institutions doing similar activities that complement the project initiatives
Sustainability Prospects: 1. Background of situations affecting sustainability and project quality 2. Participation and ownership of primary stakeholders or the beneficiaries 3. Policy support 4. Appropriate technology 5. Socio-cultural aspects 6. Gender equality 7. Environment protection 8. Institutional management capacity 9. Economic and financial viability	Describes how the project will address the factors listed
Project Performance Measurements (Optional): 1. Deliverables that will be included and excluded from the project 2. Key milestones, the approach and other components as dictated by the size and nature of the project 3. Project efficiency and effectiveness measures	Describes how reports on issues will be prepared while project is in operation. These issues include changes in the scope or the work plan that are related to: • Schedules • Quality • Costs • Procurement • Human resources • Communication • Project team • Stakeholders
Conclusions and Recommendations: 1. On implementation 2. On critical issues and risks	Describes the conclusions and recommendations for ways to tackle issues and risks in the implementation period. When the project is implemented at a given periodic reporting schedules, the conclusions and recommendations will discuss how to address issues and risks in the succeeding implementation period.
Periodic Plan: 1. Results to be achieved at the given period 2. Activity schedules, milestones, responsibilities 3. Special activities addressing sustainability issues 4. Risks and assumptions 5. Resource schedule	Describes the implementation plan at a given period
Annexes: 1. Updated LFA matrix 2. Implementation schedules 3. Resource plan 4. Budget 5. Others	In tabular and graphical formats, it may include other information as required

Source: European Commission, *Project Cycle Management Handbook*, Version 2.0, March 2002, pp. 75-77. Available from http://www.sle-berlin.de/files/sletraining/PCM_Train_Handbook_EN-March2002.pdf.

While the project is ongoing the overall work plan should be regarded as a living document. It is modified as the project progresses, and as reports are prepared and compiled.

> ### Something To Do
>
> Develop a project plan for Clara's project using the outline of the overall work plan provided in the previous pages.

The overall work plan is sometimes called the scope statement or management plan in other project management methods. The approval of the overall work plan signals that the implementation phase is about to begin.

3.2 Planning of Management Activities

In the PCM-LFA method, the management activities are not articulated in the project plan or log frame matrix. These activities, however, must be planned and included as systematically as possible in the project as part of the project activities and presented as part of the work plan. At times, a project management plan is required, especially for large-sized and long-term projects. Major management activities include:

* Financial planning (budget control)
* Quality control
* Staff management (human resources)
* Information, communication and reporting (communication)

To complement and enhance the PCM-LFA methodology, other categories as described in the PMBOK method such as time, risk and procurement management need to be considered and are discussed below.

3.3 The Project Schedules: Time Management

To help manage time, the Gantt chart and the CPM are used.

The Gantt chart, discussed in the previous chapter, gives a quick overview of the project activities' schedule. Project managers usually prepare a timeline or project chart with milestones and deadlines to:

* Identify tasks and specific procedures that are to be done during the implementation stage
* Assign resources for the tasks and procedures including who will be responsible, who will do what and by when
* Allocate and control time, money and other resource requirements
* Find ways to be more efficient in delivering products and services
* Estimate project start and end dates

The critical path analysis is an effective method for planning and analysing complex projects. It helps to focus on the essential activities and provides a basis for the scheduling and monitoring of progress.

Let us illustrate the Gantt chart and the critical path analysis. For example, your objective is to prepare and have breakfast before going to school. What are the step-by-step activities from start to finish? Without the charts yet, see table 19 for a way to develop your list of activities or tasks.

Table 19. Table of activities/tasks

Activity Tasks	Time Duration	Predecessor	Same Time	Successor
A. Prepare ingredients, kitchen tools and utensils	10 minutes	-	-	B
B. Heat oil in frying pan	5 minutes	A	E	C, D
C. Fry bacon and sausages	5 minutes	B	-	G
D. Scramble eggs	5 minutes	A, B	-	G
E. Toast bread	5 minutes	A	B	A
F. Wash pan, plates, kitchen tools and utensils	5 minutes	A, B, C, D, E	-	-
G. Put on tray and serve		-	-	-

If we were to put the activity and time in a Gantt chart, it will look like table 20. Using a table in a word processing software programme such as Microsoft Word or OpenOffice Writer, or creating a spreadsheet in Microsoft Excel or OpenOffice Calc, you will need to prepare several columns and rows to fill in. The required inputs include: activity number or identifier, list of activities and tasks, the starting point, duration, and the unit to measure the time in minutes, hours, days, weeks, months or years.

Table 20. Example of a Gantt chart

Activities	No. of Min	Start	Minutes						
			6:00	6:05	6:10	6:15	6:20	6:25	6:30
A. Prepare ingredients, kitchen tools and utensils	10	6:00	■	■					
B. Heat oil in frying pan	5	6:10			■				
C. Fry bacon and sausages	5	6:15				■			
D. Scramble eggs	5	6:20					■		
E. Toast bread	5	6:10			■				
F. Wash pan, plates, kitchen tools and utensils	5	6:25						■	
G. Put on tray and serve	5	6:30							■

As you can see in table 19, there are some tasks that must be started before you can proceed to another task. There are also tasks that will follow after you are done with the current task. This analysis is called the precedence diagram method (PDM).

Let us say we want to shorten the time from start to finish. What we can do is to review the tasks and find out which of those in the list can be put aside to shorten the breakfast preparation time. To do that is to find the critical path of breakfast preparation.

The diagram below is a CPM where you try to analyse the activities that are necessary and the activities that need not be done or that can wait.[46]

---

46 Nick Jenkins, A Project Management Primer or a Guide to Making Projects Work (v.02), 2006. Available from http://www.exinfm.com/training/pdfiles/projectPrimer.pdf.

Figure 12. Example of a critical path method

Source: Nick Jenkins, A Project Management Primer or a guide to making projects work (v.02), 2006. Available from http://www.exinfm.com/training/pdfiles/projectPrimer.pdf.

The tasks "toast bread" and "wash pans", while important, are not time-dependent or as critical as the other tasks. We can move the two tasks—"toast bread" and "wash pans"—but if we try to move the other tasks that are on the critical path, the project may be delayed. Having a toasted bread for breakfast is ideal but: (a) it is not essential and (b) it does not matter where in the process it happens. If we toast the bread before or after scrambling the egg, it makes little difference to the overall result.

The Gantt chart, the PDM and the CPM are analytical tools that can support you in planning the sequencing and managing your project time. To apply and support these tools to the project, box 3 provides a checklist of steps that can be used for scheduling and estimating activities.

Box 3. A checklist for preparing an activity schedule

Step 1 – List main activities

Step 2 – Break activities down into manageable tasks
The breakdown should stop as soon as the planner has sufficient detail to estimate the time and resources required, and the person responsible for actually doing the work has sufficient instructions on what has to be done. This is where planning of tasks for individual team members starts.

Step 3 – Clarify sequence and dependencies
Once the activities have been broken down into sufficient detail, they must be related to each other to determine their:

- Sequence – in what order should related activities be undertaken?
- Dependencies – is the activity dependent on the start-up or completion of any other activity?

The sequence dictates that an activity comes before or after another; while dependencies include the fact that you cannot start an activity until a prior activity has reached a certain point of completion or installation. Dependencies may also occur between otherwise unrelated activities that will be undertaken by the same person.

Step 4 – Estimate start-up, duration and completion of activities
The activity schedule must specify the start and end dates. This means you have to make

a realistic estimate of the duration of each task, and then build it into the activity schedule to establish the likely start-up and completion dates. Often though, it is difficult to estimate the time with complete confidence.

To ensure that the estimates are at least realistic, those who have the necessary technical knowledge or experience should be consulted. Inaccuracy is a common mistake that usually results in an underestimation of the time required. Reasons for this may include the:

- Omission of essential activities and tasks
- Failure to allow for interdependence of activities
- Failure to allow for resource competition (i.e. scheduling the same person or piece of equipment to do two or more things at once)
- A desire to impress with the promise of rapid results

Step 5 – Summarize the scheduling of main activities
Having specified the timing of the individual tasks that make up the main activities, it is useful to provide an overall summary of the start-up, duration and completion of the main activity itself.

Step 6 – Define milestones
Milestones provide the basis by which project implementation is monitored and managed. They are key events that provide a measure of progress and a target for the project team to aim for. The simplest milestones are the estimated completion dates for each activity, e.g. training needs assessment completed by January 2013.

Step 7 – Define expertise
When the tasks are known, it is possible to specify the type of expertise required. Often the available expertise is known in advance. This provides a good opportunity to check whether the action plan is feasible given the human resources available.

Step 8 – Estimate time required for team members
This step requires a realistic estimate of the time that will be required for each of the allocated tasks, and a check whether the overlap of tasks is manageable for the team members. Having done this exercise for all project activities, a review should be made to check the timing and sequencing of tasks, and the workload for each individual team member.

Source: European Commission, *Aid Delivery Method: Volume 1 - Project Cycle Management Guidelines* (Brussels, 2004). Available from http://ec.europa.eu/europeaid/multimedia/publications/documents/tools/ europeaid_adm_pcm_guidelines_2004_en.pdf.

The method shown for activity scheduling includes elements of the critical path analysis, which is a common tool for operational planning. The "critical path" is the longest sequence of dependent activities that lead to the completion of the plan. Any delay of a stage in the critical path will delay the completion of the whole plan unless future sequential activities are sped up. The method can be applied to calculate the minimum length of time in which a project can be completed, and which activities should be prioritized to complete by that date.

There are available software applications to develop activity schedules and Gantt charts. Microsoft has the MS Project, a project management application that can be procured from Microsoft product sources. There are also open source applications that can be downloaded for free, such as the:

- Serena Open Project – http://sourceforge.net/projects/openproj/.
- Gantt Project – http://www.ganttproject.biz.

Other project management applications can be found in Free Lance Folder http://freelancefolder.com/10-free-project-management-applications/.

These applications can help you: (1) list activities and tasks in sequential order and automatically compute the time estimation of activities and tasks; and (2) identify critical tasks that the project cannot do without. These software applications can also help calculate early and late starts, and early and late finish of tasks, and identify the interdependency and relation of each task from another.[47]

The open source application, Serena Open Project, can create a PDM, a network tool that helps identify the gaps, overlaps and slack time in the schedule, and keeps the critical path to stay on schedule. PDM identifies all the activities that are interdependent and linked together, as one activity must happen first before proceeding to the next activity. The former is called the "predecessor" activity or task, and the latter is the "successor" activity or task.

Something To Do

Prepare a Gantt chart and the PDM using Microsoft Excel or the Serena Open Project (http://sourceforge.net/projects/openproj/).

3.4 The Budget: Cost Management

Building the budget for a project is a big challenge. An experienced manager may know whether a budget is sufficient or not. But if s/he is managing a project for the first time or perhaps organizing and running a particular type of project for the first time, how do you know what the budget should be? You will only know when you add up the cost of everything you may need. What if you are provided with the budget sum and you are to operate from that amount only, what would you do as a project manager?

The project budget and cost categories are based on the list and levels of activities (WBS), the Gantt chart, the network analysis, and the resource plan. The latter provides data on the resources for project implementation. For example, the conduct of an ICT literacy training activity will require computer equipment, systems or software application, and use of classroom facilities. These are costs that must be categorized in the activity and included in the budget. Based on the activity duration, it will be important to identify and quantify the units, the quantity per period, and the estimated unit costs. The calculation of project costs will be easy if the unit costs and required quantity are determined based on project activities.

The cost elements of the project are reported in a budget or the funds allocated. In preparing budget proposals, fund receipts (as income or revenue) and expenditures are the general cost headings reported. Revenue funds represent the amount of financial assets and in-kind contribution used as support sources of the project, while expenditures/expenses are all of the costs anticipated to occur during project implementation.

Often, the main categories for project costs are direct costs and operational costs. The former refers to costs related to specific activities (e.g. organizing and conducting the computer literacy training), while the latter refers to internal administration activities (e.g. personnel salaries,

---

47   James Taylor, *Managing Information Technology Projects: Applying Project Management Strategies to Software, Hardware, and Integration Initiatives,* American Management Association, 2004, pp. 20-26.

utilities, rent and other administrative expenses). Units, quantity per period and estimated unit costs are the three elements that are needed to calculate costs associated with any of these categories.[48]

In the detailed plan, it is imperative to examine and estimate the use of resources, which include the personnel, services, infrastructure, equipment and other use of facilities including the modes of commitments and the selection of costing methods.

The project resources—personnel and contracted professional and service requirements—must be estimated in terms of their level of effort. How many days will a resource need to achieve a task or an activity? In table 15, the number of days or level of effort for the resource persons who will prepare the training modules were estimated at 20 person days each.

In table 16, an example of the activity resources and cost template showed a list of activity resources that correspond with the number of units of the resources, the quantity required per period, the cost per unit, the source of funding, the cost per unit and the total costs.

A **cost-benefit analysis** must be prepared to show the proposed project's "bottom line". The main interests of project sponsors are: Will the project bring in enough benefit to cover or justify operating expenses? Will the resources provided for the project be commensurate with the benefits that will be derived from the project?

As a safety measure in preparing the project budget, contingency planning must be included to cover for losses, e.g. potential delays in the critical path, losses in exchange rates, and other potential project threats. Thus the contingency plan must also review the project's cost-benefit analysis.

Preparing the budget and recording of expenses with weekly, monthly or yearly time frames using templates in software applications such as Microsoft Excel come in handy to track how the funds are being spent during the implementation stage.

Some of the cost entries in estimating the budget for the entire project must be given a valuation based on certain assumptions. Table 21 provides an example of project budget entries.

Table 21. Example of project budget entries

Type of Budget Costs/ Expenses	Description	Example of Entries	
(1) Capital Costs/ Expenses	Also called capex. Items under this category are one-time expenses associated with procurement and/ or implementation of the product or service.[49]	• Hardware Servers Clients Network • Software Server Client Application Database • Infrastructure Cabling Construction Network • Installation Servers Clients Network Application Database • Professional Services	• Projection Screen • Projector • Video Player • Back Up Player • Interface Unit Switcher • Lectern Monitor • Scan Converter • Laser Pointer • Cabling Adaptor • Autocue • Laser • Video Module Creation Fee • Copies for Distribution

---

48   Besim Nebiu, Ildiko Simon and Cerasela Stancu, "Preparing Project Proposals", Regional Environmental Center for Central and Eastern Europe, 2002.
49   CVR/IT Consulting. http://www.cvr-it.com.

(2) Operations Expenses	Also called opex. Items under this category are expenses associated with day-to-day running of activities wherein effects are measured within short time frame.[50]	• Full-Time Salaries • Benefits for Full-Time Staff • Part-Time/Temp Staff • Benefits for Part-Time/ Temp Staff • Office Supplies • Operational Supplies • Computer Operations • Hardware Maintenance • Network Maintenance • Client Software • Server Software • Application Software • Database Software	• Computer Lease • WAN Equip Lease • Contracted Services • Installation, Maintenance, Help Desk • Administration • Professional Services • Consultants • Training • Travel • Communication • Taxes
(3) Contingency Budget	Costs for covering uncertain or unforeseen events	Some projects provide a 10% contingency fund	

The total sum of *capex* and *opex* is the "real money" that has to pay for goods and services, which have to be monitored and accounted for at the implementation stage and later subject to audit during the project evaluation or closing stage.

Project funds can be sourced from national governments, international development organisations (through bilateral country-to-country agreements and multilateral agencies), local or international financial institutions (e.g. banks, World Bank, Asian Development Bank), and contributions from individuals, groups or other social institutions (e.g. church organisations). Funding arrangements include internal sourcing, grants, loans, private-public partnerships (e.g. Build Operate Transfer[51]), and other forms of contributions, or a mixture of all these. Well-established development organisations have standardized methods and templates for requesting for project proposals, reporting and financial management. Project proponents and partners must familiarize themselves to the set standards of the funder. Having different fund sources can create some complexities if the set ways of various partners are not harmonized.

3.5 The Project Quality: Sustainability Measures and Standards

The PCM-LFA looks at quality with respect to processes and outputs. This includes the quality of data that are defined, analysed and reported for decision-making. The definition of the required data is the standard created in measuring the relevance, effectiveness, efficiency, results and outcomes, and sustainability of the project implementation.

Sustainability is one of the key areas where project quality is taken into consideration in development projects. Situations affecting sustainability and project quality include: (1) Participation and ownership of primary stakeholders or the beneficiaries; (2) Policy support; (3) Appropriate technology; (4) Socio-cultural aspects; (5) Gender equality; (6) Environment protection; (7) Institutional management capacity; and (8) Economic and financial viability.

For methods that are used in ICT projects, quality also refers to how the stakeholders, the customer in particular, define quality of deliverables. Certain acceptable and international standards are adhered to for certain products and services, for example. Aspects that affect quality, aside from information or data, include quality of: (1) Performance, (2) Functionalities, (3) System outputs, (4) Reliability, and (5) Maintenance, to name a few.

---

50   Michael Gentle, "IT Project Financials: Budgeting, Cost Management and Chargebacks", 26 August 2010. Available from http://itprojectfinancials.com/glossary/costs/.
51   Build Operate Transfer (BOT) is a financing arrangement between government and private sector, where the private developer designs and builds a facility (e.g. airports, sea ports, transit toll roads) at no cost to the government or through joint ventures with government. The facility is turned over to government at such time the private developer is able to recoup its investments with some profits depending on the agreement with the government. Definition source: http://www.businessdictionary.com/definition/build-own-operate-transfer-BOOT.html.

Table 22 gives an example of a quality management plan template.

Table 22. Quality management plan template

Table of Contents	Description		
Title Page	Quality Management Plan Project Manager Date: Version:		
Outline			
1. Organisation's Quality Policy	If the organisation has a quality policy, include it in the plan		
2. Project's Quality Definition	Describe how your customer or enduser/beneficiary defines quality in this project. Which is more important: schedule, cost, scope or quality of deliverables? How will the customer or enduser/beneficiary know "quality" when they see it?		
3. Deliverables and Acceptance Criteria	List significant project deliverables, including contract deliverables and milestone checklist. For each deliverable, describe the acceptance criteria that will be used in product acceptance testing. List relevant quality standards where applicable. (Add rows as needed.)		
	Deliverables	Acceptance Criteria / Applicable Standards	
	1.		
	2.		
	3.		
4. Quality Assurance	Define quality assurance activities for the project. Include at least the items listed below:		
	What steps will you take to ensure that quality is built into the product?		
	How will you ensure that adequate testing is done? How do you define "adequate"?		
	Will the test team work from a test plan? Do they understand their responsibilities?		
	How will you ensure that Requirements are correct, complete and accurately reflect the needs of the Customer?		
	How will you verify that Specifications are an accurate representation of the Requirements?		
	Describe how Requirement – Specification – Test Plan traceability is managed		
	What steps will you take to ensure that the project plan (e.g. Risk Management Plan, Change Management Plan, and Procurement Plan) is followed?		
	What steps will you take to ensure that the Vendor is supplying deliverables of adequate quality?		
5. Project Monitoring and Control	Define the following:		
	What audits and reviews are required and when they will be held?		
	How will you report and resolve variances from acceptance criteria?		
	What will you measure to determine if the project is out of Scope?		
	What will you measure to determine if the project is within budget?		
	What will you measure to determine if the project is within schedule?		
6. Project Quality Plan Signatures	Project Name:		
	Project Manager:		
	The information contained in this Project Quality Plan was reviewed and agreed upon by the following: (The signatures indicate an understanding of the purpose and content of this document by those signing it. By signing this document, they agree to this as the formal Project Quality Plan)		
Name	Role	Signature	Date
1.			
2.			
3.			

Source: CVR/IT Consulting, "The Project Management Template Library". Available from http://www.cvr-it.com/PM_Templates/.

3.6 Staffing and Human Resource Management

Human resource management refers to the project team and the project stakeholders. It answers the question: Who will do the work? In the project internal environment, it is important to identify and define roles, functions, responsibilities and reporting relationships. An organisation chart helps illustrate the latter.

In chapter 1 in the stakeholders section, the roles of the project manager, the project team and the stakeholder analysis were thoroughly discussed. Aside from defining tasks and responsibilities, managing the internal and external stakeholders requires the identification of training needs, conduct of training to address needs, and motivation of staff, e.g. through team building.

Having a clear resource plan must be in place before hiring any staff or team member. The plan must include:

- Definitions of roles and responsibilities
- Number of staff required based on expertise and project requirement
- The reporting schedule of the staff; when is this role required.
- Type and duration of services; whether full time or part-time and for how long the staff is needed
- Job description for every staff and team member or Terms of reference (TOR) for contracted staff or team members, where lists of activities and responsibilities are stated including:
  - o The expected outputs
  - o Deliverables and the expected time required
  - o Remuneration offered or agreed upon

Certain human resource policies must also be taken into consideration as part of an orientation plan for any staff member or team member.

Any member of the team or staff member must also be clear about their relationships with each other and with the manager. The project manager can prepare a responsibility assignment matrix or a table identifying who among the staff or team members is responsible, accountable, consulted and/or informed (RACI) for every activity or group of activities.[52]

- Responsible – persons who are responsible to do the job
- Accountable – persons who are answerable for the results of the job
- Supportive – persons who provide support for the job to be done
- Consulted – persons are who are asked about required information that will help the persons responsible to do the job
- Informed – persons who must know what is happening in the job even if s/he is not directly involved in the job

An example of the RACI table may look like table 23. The example shows the activity on the first column and the roles of persons in the said activity. It also shows the relationship among the groups in order to help the manager monitor the roles of persons in the implementation and completion of the activity.

---

52   Bright Hub PM, "Project Management Templates & Forms". Available from http://www.brighthubpm.com/templates-forms.

Table 23. Example of a RACI Table

Activity	Responsible	Accountable	Supportive	Consulted	Informed
Project Planning	Web Developer	Website Manager		Content Administrator, Web Administrator, Advocacy Manager	NGO Client
Website Construction	Web Developer	Website Manager		Content Administrator, Web Administrator	NGO Client, Advocacy Manager
Content Review	Content Administrator	Website Manager	Content Proofer	Web Developer	NGO Client, Web Administrator, Advocacy Manager
Usability Testing	Web Administrator	Web Developer		Content Administrator	NGO Client, Website Manager, Advocacy Manager
Installation of Tracking Software	Web Administrator	Web Developer			NGO Client, Website Manager
Ongoing Review of Visitors	Web Administrator	Web Developer			Advocacy Manager, Advocacy Worker
Advocacy and Follow up with Frequent Visitors	Advocacy Worker	Advocacy Manager			Website Manager

Source: Bright Hub PM, "Project Management Templates & Forms". Available from http://www.brighthubpm.com/templates-forms.

3.7 Communication Plan

Any project must be communicated to get the desired results from stakeholders. To be effective throughout the life of the project, a project manager must have a communication plan. The manager spends more than 50 to 80 per cent of his/her project time communicating for the project. Thus, to be effective, the project manager must have good communication skills. Likewise, an effective communication plan helps the project manager and the project teams think through the important communication requirements to successfully deliver key messages to various stakeholders.

The tasks for this plan includes defining what important information and messages are required, in which form the information should be made available, how it will be delivered, by whom and to whom. Information must be communicated in an effective and timely manner. An important consideration is the choice of the communication medium. Since the project management team needs to communicate for coordination of activities, it is also important to understand the group and individual communication needs. Some of the skill sets that will be called for include communication skills, running effective meetings and use of software tools for communication.

Every step of the project must be communicated. The project manager must communicate the intentions, the activities, and the tasks as well as the partnerships with the team, sponsors and stakeholders.

Each project area and discipline entails communication. It is recommended that in each project category, a section must include the process about how plans and progress are communicated to particular stakeholders.

Table 24 gives an example of a communication plan template.

Table 24. Communication plan template

Table of Contents	Description
Title Page	Communication Plan Project Manager Date Version:
Outline	
1. Context and Project Background	In this section, fill in a summary of the project with which this communication plan is associated. List the relevant schedules and milestones here. Also, include information such as the budget as it affects the communication plan, and key partners in planning the project. Include information such as competitors, media coverage and political climate if any of these factors apply to your project. This section should be concise. Just enough information will be covered here to get the point across.
2. Stakeholder Analysis	Here, you will insert your stakeholder analysis. Include the stakeholder analysis matrix. This section should be detailed.
3. Communication Plan	
3.1 Communication Objectives	In this section, you will want to list the objectives of your communication plan. Do you want to increase collaboration? Do you need to keep investors informed? List and detail all goals in this section.
3.2 Communication Plan	Present a summary.
3.2.2.1 Routine Communication	Here, you will include information about how day-to-day communication will happen. Information in this section should include how to update status of tasks, communicate issues and conduct meeting agenda items. Anything that would be within the ideal functioning of your project will be included here.
3.2.2.2 Budget Communication	This section will discuss how to keep relevant stakeholders informed about the budget of the project vs. the actual cost of the project.
3.2.2.3 Risk and Issues Communication	In this section, you will include the plan on how to communicate when things go unexpectedly. Who needs to be informed? When? Where? How?
3.2.2.4 Summary of Objectives and Keys to Communication	Here you will list a summary of how your plan meets the objectives. You will also list key points of the communication plan.
4. Budget	In this section you will discuss factors including the percentage of the project budget that will be directed toward facilitating communication and what to do in cases of budget overage.
5. Approval	Suggested text: The information contained in this Communication Plan was reviewed and agreed upon by the following: (The signatures indicate an understanding of the purpose and content of this document by those signing it. By signing this document, they agree to this as the formal communication plan) Document approved and signed by: _____ on_____

Source: Bright Hub PM, "Project Management Templates & Forms". Available from http://www.brighthubpm.com/templates-forms.

A more thorough discussion on "A Communication Framework for ICTD Projects" is provided in annex 2.

3.8 Procurement Plan

Resources, including services, equipment, hardware and software technology, that are required and important to the project are procured. Issues that revolve around procurement management include: what, when, where, how much, how often and why one service or a thing for the project should be procured.

One of the issues to consider is the mode of procurement. Should the required services be done in-house or should they be outsourced? The organisation implementing the project must understand the project requirements and their existing capacity to undertake the project activities, and weigh the benefits and costs of the two options.

When services are outsourced, procurement documents include statement of work (SOW), request for proposals (RFPs), request for quotes or bids, contracts, and similar documents such as acceptance and sign-off documents. The member of the project management team in charge of procurement has to plan, conduct, administer and close the procurement package or activities that are included. The person in charge of the procurement team must be aware and guided by the policy directions and legal implications of the procurement activities. See further discussions in section 8.4.

The procurement management plan refers to the resource plan for a list of all goods and services that must be procured from sources outside the organisation. The procurement management plan includes:

- How much, when and by what means each of the goods and services will be obtained
- The types of contracts required (if any)
- How independent estimates (as evaluation criteria) will be obtained
- Who will actually work to procure any item or service
- Which procurement documents will be used
- How procurement will be coordinated with project schedule and budget
- What an SOW includes (e.g., how to describe a product or service so that a prospective seller can decide if they can supply it)
- A description of request for information (RFI), RFP, and other processes (if required for the project)
- Potential sources of goods and services

Table 25 is an example of a procurement management plan template.

Table 25. Procurement management plan template

Table of Contents	Description
Title Page	Procurement Plan Project Manager Date: Version:
Part I refers to the procurement statements, procurement estimation and selection of vendors' policy that are presented during the project initiation stage. This portion of the procurement plan document is used to provide the project team with general information about the possible purchase of goods and services. Knowledge about the procurement policies of the organisation or the funding organisation becomes a guiding principle for the project team in the process of procurement, as well as in estimating time and cost in procuring the goods and services required in the project.	
1. Procurement Statement	Describe, in specific terms, what items will be procured and under what conditions.
2. Estimated Cost	Provide an estimated total cost of all procurements in this project. Include confidence limits for your estimate (e.g. plus/minus dollars or percent of estimate). Example: USD 1,000,000 +/- 20%.
3. Vendor Selection	Describe what approach the project team will take to select a product or vendor (e.g. RFI, RFP).
Part II refers to the detailed procurement plan document that is laid out in the project planning stage. It is very important to identify all the goods and services that need to be procured during the implementation stage of the project. This document provides detailed information about how vendors, products and services will be selected, what kinds of contracts will be used, how vendors will be managed, and who will be involved at each stage of the process. This document should be approved by appropriate individuals before the actual procurement process begins.	

1. Organisation's Procurement Policy	If the organisation has a procurement policy, include it in the plan.
2. Project's Procurement Definition	Describe, in specific terms, what items will be procured and under what conditions.
3. Selection Criteria	Describe the selection process. List selection criteria. Describe any analytical selection tool that you will use.
4. Procurement Team	List all stakeholders who will be involved in the procurement process, along with contact information and a description of their procurement role. Enter an "X" next to each project team member who is authorized to enter into contract agreements or purchase for the team.

X = authorized to approve procurement	Name	Phone / e-mail	Procurement Role

5. Contract Type	Document the types of contracts that will be used and the actions required to initiate the contract.
6. Contract Standards	Provide the standards for documentation that will be used for each contract.
7. Vendor Management	Describe what steps the project team will take to ensure that the vendor provides all of the products and/or services (and only the products and/or services) that were agreed upon, and that appropriate levels of quality are maintained.
8. Related Documents	Provide links or notes to related documents, such as the change request management plan, vendor payment plan, etc., or attach as an annex.
9. Project Procurement Plan Signatures	Suggested text: The signatures indicate an understanding of the purpose and content of this document by those signing it. By signing this document, they agree to this as the formal project procurement plan.
	Project Name:
	Project Manager:
	The information contained in this project procurement plan was reviewed and agreed upon by the following: (The signatures indicate an understanding of the purpose and content of this document by those signing it. By signing this document, they agree to this as the formal project procurement plan)

Name	Role	Signature	Date
1.			
2.			
3.			

Source: CVR/IT Consulting, "The Project Management Template Library". Available from http://www.cvr-it.com/PM_Templates/.

3.9 Risk Assessments and the Risk Management Plan

Risks as defined in the LFA in chapter 2 are external factors to the project, which pose as opportunity or threat factors. In the analysis stage, once a strategy has been selected, objectives that are not included in the intervention logic and other external factors remain. These are crucial for the achievement of results, project purpose and overall objectives, but lie outside the project's control. If the project is to succeed, the identified external factors must be covered in the assumption column of the log frame.

For example in the Community Health Project, the assumptions covered include:

- Healthcare services do not decline – This implies that the health care services status stays as is throughout the project; if it declines, the project result will be jeopardized.
- Diarrhoeal disease is due to unsafe water and hygiene practices – The diarrhoeal disease does not cover other sources of disease as diagnosis shows that unsafe water is the only cause of the disease in the area; if there will be other causes of diarrhoea, it will have to be known in the analysis.
- Adequate quantity of water available – The source of water still produces sufficient quantity for the community.
- People are not excluded from accessing improved sources – The farming company or the government will not bar people accessing water from identified sources.
- Access not for potentially polluting uses – The usage of water is intended for safe drinking purposes and there are no cases that will contribute to pollution of the water sources.

In planning the project, schedules must be realistic, taking into consideration external and internal conditions and factors of the project environment. Political, social, economic and cultural aspects of the environment will definitely have an impact on the project. Likewise, the internal organisation where the project originates will also affect and influence the project's development and implementation. To help one anticipate these factors that will influence the project positively and negatively, a risk assessment as early as the initiation phase can already be undertaken and continuously validated and observed during the planning and implementation process.

An example of a risk assessment is shown on table 26. The table describes:

- The risk factor
- The result of this factor to time delays
- The impact of the risk factor on the project, whether it is high, medium or low
- The specific events that relate to the general description of the risk factor
- The possible mitigation strategies that the project team can do to remedy the situation

Table 26. Example of a key risk factor and mitigation strategies

Outcome	Description	Impact	Specific Risks	Mitigation Strategies
2	If resource numbers are inadequate, it can potentially result in missed milestones, project delays and increased costs	High	Other work commitments prevail (e.g. involvement of staff in other projects) Other technology projects create staff shortages	• Provide flexibility in the project schedule to accommodate other pressures • Establish communication links with other projects to identify and respond quickly to activities that can affect the project • Obtain senior executive commitment to the project and ensure that this is continuously conveyed to the staff • Identify expectations of staff in the project plan – hours of effort and scheduled dates; also build in known absences.

Other types of risks that can impact the project are found in box 4.

Box 4. Types of project risk factors

Type of Risk	Describe the Impact or Characteristics
- Project schedule	- Increased project time
- Budgets/funding	- Increased cost
- Personnel issues	- Loss of key team member, not enough team members assigned to project
- Quality	- Doesn't meet standards
- Key Stakeholder consensus	- Conflicts and project delays
- Scope changes	- Increased project time and costs
- Project plans	- Increased project time and costs, impact on quality, poor direction and communication
- Project management methodology	- Increased project time and costs
- Business risk	- Poor public image
- Environmental risk	- Increased costs, delays to schedule, poor public image
- Weather or natural disasters	- Schedule delays, delivery delays, increased costs
- Technology risks	- Not available when needed
- Project complexity	- Inexperience of project team
- Project manager skills	- Inexperience of project manager
- Team skill and abilities	- Inexperience of team members, lack of training

Risk assessment helps the project team analyse the intensity of the risk factors. One of the assessment tools that helps identify the risks probability and impact is the use of the probability and impact matrix to calculate the risk factors.

Table 27 shows the gradation of the assessment with a three-level ratings—low, moderate and high for the **probability** of the consequence of a risk factor. Likewise, the same level of ratings for impact will show the **magnitude** of the consequence, whether high, moderate or low impact. The list of risk factors can be distributed in the boxes to show how many of the risks fall in what consequence category. Risks in the high probability and high impact box are the most alarming and would likely affect the project even if mitigation measures are in place. If in the planning phase the information is already able to show that the project is a high-risk endeavor, you should either proceed cautiously and focus on reducing risks, or do not proceed with the project.

Table 27. Probabilityand impact matrix to assess risk factor

		IMPACT		
		Low	Medium	High
PROBABILITY	High	High Probability Low Impact	High Probability Medium Impact	High Probability High Impact
	Medium	Medium Probability Low Impact	Medium Probability Medium Impact	Medium Probability High Impact
	Low	Low Probability Low Impact	Low Probability Medium Impact	Low Probability High Impact

Source: Bright Hub PM, "Project Management Templates & Forms". Available from http://www.brighthubpm.com/templates-forms.

Risk factors must be mitigated. Mitigation measures must be in place for all the risk factors.

- A list of risk factors and the response measures must be regularly tracked and updated. A template for risk response tracking will help document the dates, actions taken when risks are mitigated, or when risks event occurred.
- A risk monitoring system provides a systematic review of the project risks. It schedules the risks in the project to:
  - o Ensure that all the necessary elements in the risk management plan are being implemented
  - o Ensure that the risks are identified in the list of risk factors
  - o Assess the effectiveness of the mitigating actions
  - o Identify status of actions taken
  - o Identify status of actions to be taken
  - o Validate previous risk assessment
  - o Validate previous assumptions
  - o State new assumptions
  - o Identify new risks
  - o Track risk response
  - o Establish the system of communicating the status and results of the mitigation measures
- A risk control plan is also helpful to:
  - o Validate mitigation strategies and alternatives
  - o Take corrective action when actual events occur
  - o Assess impact on the project in terms of cost, time and resources
  - o Identify new risks resulting from risk mitigation action
  - o Ensure the project plan and risk management plan are maintained
  - o Ensure that change control addresses risks associated with the proposed change
  - o Revise risk assessment and other documents to capture results of the mitigation actions
  - o Revise the list of risk factors
  - o Establish communication and updates about the risk factors

Assessing the project risks also has implications on the project constraints and project knowledge areas. If the project already displays medium- to high-risk probability and impact, the manager must already think of the time and cost of mitigation measures, in addition to the time and cost of achieving results. In other words, risks must also be quantified according to costs and time.

The risk management plan must contain a strategy that includes the method and process of risk identification, categorization, assessment, mitigation planning, and tracking of response.

Table 28 is an example of a risk management plan template.

Table 28. Example of a risk management plan template

Table of Contents	Description
Title Page	RISK MANAGEMENT PLAN Project Manager Date: Version:
1. Risk Management Strategy Definition	Define the risk management methods to be used.
	1.1 Risk Identification – Identify risks through discussion with all major stakeholders. You may also design and use a risk assessment questionnaire and a project planning risk assessment checklist. The risk questionnaire and assessment checklist can help recognize and discover all problem areas in detail. These tools can augment the list to include other project specific risks.

	1.2 Risk Categorization – Group the risks into categories by using a risk assessment questionnaire. Categories may include: scope, budget, schedule, linkages and deliverables, human resource, management, leadership, business, vendor, organisational and environmental impacts, technology, and project management quality. The project manager can create additional categories, as required.
	1.3 Risk Response Tracking – • Document the dates and the actions taken to mitigate the risk • Document the actions taken when the risk event occurred (contingency plan) • Document any subsequent actions taken • Incorporate this information into the risk register
	1.4 Risk Monitoring – • Establish systematic reviews and include them in the project schedule • Ensure that all requirements of the risk management plan are being implemented • Assess currently defined risks in the risk register • Evaluate effectiveness of actions taken • Identify status of actions to be taken • Validate previous risk assessment (likelihood and impact) • Validate previous assumptions • State new assumptions • Identify new risks • Track risk response • Establish communication
	1.5 Risk Control – • Validate mitigation strategies and alternatives • Take corrective action when actual events occur • Assess impact on the project of actions taken (cost, time, resources) • Identify new risks resulting from risk mitigation actions • Ensure the project plan (including the risk management plan) is maintained • Ensure change control addresses risks associated with the proposed change • Revise risk management documents to capture results of mitigation actions • Revise risk register/list of risk factors • Establish communication
2. Review of Assumptions	Define assumptions that have a significant impact on project risk.
3. Project Team	Identify members of the risk management team. Define the roles and responsibilities unique to the risk management function.
4. Risk Management Milestones	Define risk management milestones.
5. Risk Assessment	Define risk rating/scoring techniques. The project can rate each identified risk (e.g. Impact Score = High, Medium, Low) based on the likelihood that the risk event will occur and the effect on the project's objectives if the risk event occurs. This will be a subjective evaluation based on the experience of those assigned to the project's risk management team. Default rating/scoring system is as follows: Impact Score can be rated as 1, 3, 5, 7 or 9 (1 = Very Low, 9 = Very High). Probability can be rated as 0.1, 0.3, 0.5, 0.7 or 0.9 (0.1 = Very Low, 0.9 = Very High).
6. Risk Thresholds	Establish risk thresholds. Modify the text below to show how the project team will plan for risk events, e.g. "The project will establish risk responses for risk events that have been determined to have a rating of 'High'."
	Risk priority is determined by calculating a Risk Score (= Impact * Probability) and then comparing that Risk Score to priority thresholds. Based on the scoring system in section 5., the lowest possible risk Score is 1 * 0.1 = 0.1 and the highest possible risk score is 9 * 0.9 = 8.1 The following priority thresholds can be used to establish risk priority: Green (Low Risk) <= 2.5 Yellow (Medium Risk) between 2.5 and 6.5 Red (High Risk) >= 6.5 • The project team develops a full response plan for each item rated as high risk. These risks are watched closely. • The project team should create a response plan for any medium risk item where they deem it necessary. However, in general no response plan is required for medium risk items. Medium risks are monitored on a regular basis. • No action is required for low risk items except to keep a watch on them as the project progresses. • All risk items with a response plan are to be entered into the risk register document.

7. Communication	Define risk communication.		
8. Risk Tracking Process	Define risk-tracking process.		
9. Risk Management Plan Signatures	Suggested text: The information contained in this project risk management plan was reviewed and agreed upon by the following: The signatures indicate an understanding of the purpose and content of this document by those signing it. By signing this document, they agree to this as the formal project risk management plan.		
Name	Role	Signature	Date
1.			
2.			
3.			

Source: CVR/IT Consulting, "The Project Management Template Library". Available from http://www.cvr-it.com/PM_Templates/.

3.10 Coordination and Management of Overall Plans and Monitoring of Sub-Plans

The project manager coordinates all the plans of the project. S/he must be involved in the planning activities and must have all the major documentations of the project. The planned activities at the implementation stage are compared with the actual implementation results based on monitoring tools and reports. The implementation plan also provides for the monitoring and evaluation and audit plan, and the project closing plan.

The coordination and overall management process using the PMBOK methodology, is called project integration management.[53] The main processes include:

- The development of the project charter that involves working with stakeholders to create the document. It provides approval of the project in principle.
- The development of the project management plan entails consistent and clear documentation that coordinates all the planned activities of the project.
- The direction and management of project implementation use the project management plan as the guide to the performance outputs of the project, such as the deliverables, work performance information, change requests and project plan document updates.
- The control and monitoring of project activities involves tracking of the project according to performance objectives and goals. Follow through of project outputs such as the deliverables, work performance information, change requests, and project plan document updates are expected to happen throughout the implementation of the project.
- Since there are expected changes in the project, continuous assessment of the project situation covering both the internal and external environment of the project is a good practice to help identify, assess and manage changes confronted by the project. Based on these assessments, the project team can prepare status updates, possible recommendations for change in the project activities and updating of the project plan document.
- Before the formal closing of the project, activities must include a transition plan that will show how products and resources will be integrated into the organisation or into a community. For example a new system that was a result of the project must be introduced to the organisation through a training programme; the personnel who were assigned to the project will have a

---

53   Kathy Schwalbe, "Management of Information Technology Projects", Cengage Learning, Philippine edition, 2011, pp. 139-142.

transition plan when they go back to the departments or units where they used to be part of before the project; and the equipment and space used in the project must be returned back to the proper units or departments that loaned these resources.

The project management plan serves as the guide to coordinate all the tasks, activities and the corresponding documents that are produced in the project. The tasks and activities per categories—human resources, procurement, risks, and quality factors—must be integrated with the project constraint categories—time, cost and scope.

An outline of a project management plan includes the following:

- Project name and project description, which includes a clear articulation of the goals of the project and the rationale for implementing the project, the time frame and the total cost of the project.
- The names of the key people involved in the project—manager, sponsor and the team—their corresponding roles and responsibilities, an organisational chart and other reporting related information.
- Management objectives, priorities, a list of key deliverables and products, and processes for monitoring progress, ensuring quality and handling changes.
- Risk management process that includes a summary of how the project team will manage the risks.
- Technical processes that include methodologies, procedures for documenting information, and the ICTs that will be used in the project.
- Major activity work packages that include the scope summary and WBS.
- Summary schedule that includes the Gantt chart and related time management information showing key deliverables.
- Summary of costs that include the budget of key entries and the time frame for expenditures. A guide for cost reporting and other measures to monitor budget and expenditures.

TEST YOURSELF

Choose the letter that corresponds to the best answer.

1. _____ is the overall work plan that covers the whole work processes of the project implementation.

   a. Work plan
   b. Project implementation plan
   c. Project approval documents
   d. Project scope document

2. It gives a quick review of the project activities' schedule.

   a. Gantt chart
   b. Cost benefit analysis
   c. Critical path analysis
   d. Procurement plan

3. The _____is an effective method of planning and analysing complex projects, helping to focus on the essential activities to which attention and resources should be devoted.

    a.   Procurement plan
    b.   Critical path analysis
    c.   Project scope document
    d.   Communication plan

4. Also called opex, items under this category are expenses associated with the day-to-day running of activities wherein effects are measured within a short time frame.

    a.   Operations expenses
    b.   Daily expenses
    c.   Project cost
    d.   Contingency budget

5. Costs that need to cover uncertain or unforeseen events.

    a.   Capex
    b.   Contingency budget
    c.   Capital cost
    d.   Operations cost

6. It defines the important information and messages that need to be communicated, and in which form the information should be made available.

    a.   Work plan
    b.   Procurement plan
    c.   Communication plan
    d.   Risk management plan

7. _____helps the project team analyse the intensity of the risk factors.

    a.   Risk assessment
    b.   Mitigation plan
    c.   Project implementation plan
    d.   Probability matrix

8. A _____provides a systematic review of the project risks. It schedules the risks in the project.

    a.   Procurement plan
    b.   Risk monitoring system
    c.   Risk management plan
    d.   Risk monitoring system

9. The coordination and overall management process using the PMBOK methodology, is called _____.

    a.   Project integration management
    b.   Project implementation plan
    c.   Contingency plan
    d.   Project schedule plan

10. A_____ is also helpful to validate mitigation strategies and alternatives.

    a. Operation cost
    b. Risk control plan
    c. Project integration plan
    d. Contingency plan

3.11 Summary

Upon the approval of the project concept from project sponsors in the initiation phase, detailed planning follows. The project plan has to provide details on the following categories: scope, time, cost, quality, human resource, communication, risks, procurement and the overall coordination and management. The plans must be communicated and delegated to the responsible project team members for implementation so that the project manager is able to focus on the overall management and monitoring of the project implementation phase.

3.12 Chapter Review Questions

1. Why is it important to make a detailed project plan?

2. Explain the use of the following plans in the overall management of a project:

- Scope management
- Time management
- Cost management
- Quality management
- Human resource management
- Procurement management
- Communication management
- Risk management
- Coordination and integration management

3.13 Suggested Readings

Ali, Moi and others. *Managing for Excellence, the Essential Practical Guide to High Performance.* DK Publishing Inc., 2009, pp. 288-350.
Jenkins, Nick. A Project Management Primer or a guide to making projects work, v.02.2006.

Available from http://www.exinfm.com/training/pdfiles/projectPrimer.pdf.

Taylor, James. *Managing Information Technology Projects: Applying Project Management Strategies to Software, Hardware, and Integration Initiatives.* American Management Association, 2004.

3.14 Suggested Activities

A. Watch any of the following video clips to enhance your knowledge and skill.

A. 1 Gantt Chart
    http://www.youtube.com/watch?v=sA67g6zaKOE
    http://www.youtube.com/watch?v=V8yjYGiwJ5w
A. 2 CPM
    http://www.youtube.com/watch?v=DdDzybQ_9vM
    http://www.youtube.com/watch?v=LdRZN5o08eM
    http://www.youtube.com/watch?v=d6-bb9oDsSA
    http://www.youtube.com/watch?v=WyRuw81ruwc
A. 3 What is Project Management?
    http://www.youtube.com/watch?v=9LSnINglkQA

Provide feedback to your class on how you rate the video clips.

B. Practice using Microsoft Excel or any of the project applications, such as Open project or Gantt project. Create a WBS for your school or community project.
C. Interview a project manager and inquire about the methods and templates s/he uses in managing projects.

CHAPTER 4: IMPLEMENTING, MONITORING AND COMPLETING THE PROJECT

Objectives

- Explain the importance of preparing a monitoring and evaluation plan, and the processes for the project
- Identify values used to monitor and evaluate a project
- Discuss the activities that cover the closing phase of the project
- Describe the project manager's role in the implementation and closing phase of the project

---

Clara and the University Outreach Programme

After preparing and having the detailed project plans approved, Clara and team are now ready to implement the project. Clara must now be on top of the project to make sure that activities happen as planned, be aware of new things that come up while activities and tasks are being implemented, and monitor and track changes that affect the project activities and project constraints. She will also be responsible for keeping documents updated and progress reported. She must use the project management plan as her guide for the implementation, monitoring and closing phases of the project.

In the implementation phase, project managers must be able to monitor all the tasks and the processes in relation to the scope, time schedules and costs, and in relation to the other project management resources and categories—human resource and stakeholders, communication, procurement and risks as well as the project deliverables. See further discussions on project control in chapters 7 and 8.

Throughout the duration of project implementation, three major principles apply: planning and re-planning; monitoring; and reporting.[54]

4.1 Planning and Re-planning

The initially prepared implementation schedule, log frame, and activity plans and budgets need to be regularly reviewed, refined and updated accordingly. As mentioned earlier, the planning documents are living documents when implemented. When activities, results and assumptions are monitored, changes in the plan may take place for adjustments.

When a project is implemented, expect changes to happen. What you have planned may not exactly happen. This is because there are internal and external factors that will always influence the project.

For example, in the Community Health Project that was used earlier for problem analysis and objectives analysis in chapter 2, there are external factors that may affect the planned scope,

---

54   European Commission, *Project Cycle Management Handbook,* Version 2.0, March 2002. Available from http://www.sle-berlin.de/files/sletraining/PCM_Train_Handbook_EN-March2002.pdf.

schedule, and cost during project implementation. What you will have to watch out for is the assumptions and risk factors identified in the logical framework. In the activity of establishing Water User Committee in the community, the assumption is that "the communities have confidence that water sources can be improved." So, what if not everyone believes that the water sources can be improved? What if during the implementation, some people in the Water User Committee will not cooperate because they think that the project is a waste of time? This is going to be a big problem for the project. By identifying these risks early in the planning phase, countermeasures can be prepared.

The stakeholder analysis helps to identify from the start those who are the people who would likely oppose the project activities. The project team can then prepare to meet the challenge, by having a good communication plan, for example. Perhaps in the communication plan you will highlight the benefits of the project showing what safe drinking water can do for the community, for the children, for their livelihood, and for the general well-being of the people.

Another activity of the Community Health Project is to upgrade current wells, create and build new ones, and repair hand pumps. What if the spare parts for the hand pumps are not available at the time you scheduled for it? What could you have done so that you are aware about the delay of the spare parts? Such a delay will of course affect your schedule and the cost of the project in terms of time. The same may be expected when you have external resources for the project. For example the resource persons who will carry out water testing initially says that results will only take five days. But in the implementation, they changed the schedule. Again, what adjustments can you make as a team?

With these examples of implementation challenges, the project team will have to do re-planning, revisiting your strategy and tactics and perhaps making some changes in the scope, that will in effect change the schedule and cost of the project. In your project plans, these "what-ifs" can be factored in and incorporated in the schedule and costs of the project by estimating possible delays and the costs that may be incurred should this happen.

4.2 Monitoring

Monitoring is an ongoing built-in performance assessment process of projects at the implementation stage.[55] It is meant to improve the project and ensure that it stays on course towards the achievement of its objectives. It is the systematic and continuous collection, analysis and use of information for management control and decision-making. In this instance implementation is viewed as a continuous learning process where experience gathered is analysed and fed back into planning.

The monitoring schemes include the following steps:

Step 1. Data collection – Facts, observations and measurements are documented. The data collected are matched alongside the following:

- Indicators for objectives at all levels of the logical framework
- Quality and appropriateness of activities, and use of resources (performance)
- Project environment (indicators for assumptions)
- Project impact
- Cooperation with target groups and partners

---

55   Ibid.

Step 2. Analysis:

- Comparison of planned and actual achievements (planned and unforeseen), and identification of deviations
- Changes in project environment and consequences for project
- Comparison of planned and actual mechanisms and procedures of project organisation and cooperation with target groups

Step 3. Recommendation – Taking corrective actions and adjustments of:

- Schedule of activities and resources
- Objectives
- Procedures and cooperation mechanisms

Monitoring generates information that provides opportunities for decision-making and direction at different project levels: project activities and schedule, inputs (means and resources), the project results, assumptions (and risks), and project impact. The project indicators developed from the planning process (verifiable indicators) are made useful at this point to measure the achievements of the project as against the actual situation of the project.

4.2.1. Monitoring of Activities and Inputs

Activity monitoring looks at what happens during the implementation of the project and whether those activities that were planned were carried out. This information can be obtained from the project progress reports.

Input monitoring refers to the resources that are put into the project. These include finance, staff, skills, materials and other resources. Information on this type of monitoring comes mainly from project progress reports and accounting. For example, ways of measuring this can be the number of days a consultant is employed, or the amount of funds spent on training and equipment.

Project activities are given timelines or schedules for completion. It also has checkpoints or milestones to mark events of the project's progress. The completion of activity deliverables or "deadlines" and the milestone events are the bases for checking the project progress. If the schedules of activities and the milestones are not met, changes and adjustments have to be made to the resources and the project budget.

An example for tracking schedules and milestones to control time is by regularly reviewing the Gantt charts with your team. This can be done on a weekly basis by posting the chart of activities and schedule online. These activities listed along the left column, dates along the top and bars representing the timelines are presented to the team. The bars can be colour coded to indicate responsibilities of the team members.[56] It must be agreed upon prior to implementation that this type of communication and feedback mechanisms will be in place to solicit discussion and comments from the team.

Aside from online reminders, another way to track progress is through regular (weekly) submission of progress reports. An example of a progress report is shown in table 29.

---

56   William Rothwell and H. C. Kazanas, "Mastering the Instructional Design Process: A systematic approach", 2004, pp. 327-328.

Table 29. Progress report template

Progress Report	
Name of Team Member	Date Submitted
Responsibility	Name of Project
1. Duties and activities (Brief description of activities assigned and pertinent deadlines)	
2. Progress (Brief description on how much progress has been made over the past week. List and briefly discuss specific results achieved if any)	
3. Problems encountered (Briefly describe issues and problems encountered or met while executing tasks)	

William Rothwell and H. C. Kazanas, "Mastering the Instructional Design Process: A systematic approach", 2004, p. 328.

It can also be agreed that the project team have regular (weekly) meetings, either face-to-face or through online video conferencing applications like Skype. These meetings are useful for making sure that all the team members are informed about the latest updates on the project. Project team meetings are also used to share information, and discuss problems and ways to resolve them.

Running team meetings takes special skills. It must not take long yet encourage everyone to participate. It must be emphasized that having information about the progress of the project activities will help avoid problems or mitigate problems from the onset. A meeting must have rules and an agenda that everyone will respect and follow. At the end of each meeting, all the team members must be clear about next steps, when they will be undertaken and by whom.

Project means and resources must be made available in adequate quantity and quality at the time these are required in the implementation period. Most often though during actual implementation, the resources are often underestimated. Monitoring activities help ensure availability of resources—financial and other means, and to correct inefficient practices during project implementation.

The operational deployment of the required resources is monitored using the activity and resource schedules. Monitoring the use of resources mainly concerns analysing the resources used against the results they achieve. Doing this will allow estimations for project efficiency. The correct use and the proper management of resources include identifying deviations from the schedules and taking remedial action if required. The control of funds requires regular budget reviews and possibly subsequent updates of the budget. Major modifications in the budget will require amendments to contracts or funding/financing agreements.

A manager must regularly check budget schedules and reports. Establishing procedures—justification of budget variances, regular reporting of planned and actual expenditures, making adjustments and redistribution of funds for planned and actual budget discrepancies—prior to implementation must be agreed upon.

Let us take again the example of the Community Health Project logical framework matrix (table 9). At every level of the log frame are sets of verifiable indicators. For the first activity, "establish Water User Committee in the community", the planned verifiable indicator is "30 Water User Committees established in 5 regions by end of month 3." Monitoring helps you assess whether that number that was targeted was realistic enough for the third month. If the 30 was not reached at the scheduled time, which is the third month, the project team must be able to find out the reasons that will explain the inability to meet the set target. Should the number be adjusted? Or is the time frame too tight that you need to prolong the schedule of such activity?

The MOV column of the logical framework shows where to obtain the data to monitor progress, such as the "constitutions of the Water User Committee or the minutes of the meetings." Also

very helpful in monitoring is the assumptions column of the log frame where it states what risks could have been anticipated. It was earlier assumed that the "communities have confidence that water sources can be improved." Is this assumption true for all districts? What if there are districts that still require convincing?

In the case that certain adjustments have to be made either to lower the targets or to make the time frame for this activity longer, the budget should be taken into consideration to see if such adjustments can be afforded.

4.2.2 Monitoring of Project Results/Outcomes

Monitoring of results is based on the indicators for the results or outcomes. The indicators represent the desired situation at a specific time or at the end of the planning period. However, this may not be sufficient for managing the project, since very often decisions have to be taken at shorter intervals to control implementation. Therefore, results may have to be broken down into interim results and described with additional indicators that cover the relevant planning period (e.g. indicators should be set for periodic work plans, e.g. quarterly or annual work plan).

Progress is assessed by comparing an initial situation with the current situation. When establishing the initial situation (which should have been done during project preparation, and updated during the planning/inception period), it should be kept in mind that a wide range of data collection methods exists.

Again, using the example of the Community Health Project in table 9, refer to the outputs and outcomes levels of the log frame matrix. The target results are explicit in the verifiable indicators and can be explained by the MOV and the assumptions columns.

4.2.3 Monitoring of Assumptions (and Risks)

Assumption/risk monitoring entails monitoring of external factors (those factors outside the control of the project), defined by the assumptions and risks.

4.2.4 Monitoring of Project Impact

Impact monitoring relates to the objectives of the project. The aim of impact monitoring is to determine whether the development objective of a project has been met. Such monitoring should highlight changes that are fundamental and sustainable without continued project support.

4.3 Reporting

As mentioned earlier, the project management team must provide reports on progress. The aim of these reports is to provide ample detailed information to check the state of project and its progress in relation to its objectives. These reports also cover details of budget disbursements, and include the details of future budgetary provisions and adjustments for the following reporting period. For this purpose, progress reports are submitted on a regular basis.

4.4 Evaluation

Evaluation is a selective and periodic exercise that attempts to objectively assess the overall progress and value of a project. It uses the information gathered through monitoring and surveys and is carried out at particular points in the project cycle. In the mid-period of project implementation, a review or an evaluation can be done by an external evaluator. Likewise, at the end of the project, an evaluation is also conducted. Related to the evaluation process is the financial audit. The latter is a good practice to put in order the finances of the project.

Monitoring and evaluation should make it possible to assess:

- Project Relevance – Does the project/activity attend to its broader development objective?
- Project Effectiveness – Have the impacts, objectives, outputs and activities of the project been achieved?
- Project Efficiency – Did the process that was followed make optimum use of the resources and time available to achieve the desired outputs?
- Project Impact – To what extent has the project contributed towards longer-term goals such as job creation, poverty alleviation, or a reduction of dependency on forest resources?
- Sustainability – What is the likelihood that efforts will be continued by other agencies at the end of the project?

Usually large and long-term projects will have both a mid-term and end-of-project evaluation. The evaluation process not only involves a review of the project outputs, results and impacts but also emphasizes the learning of lessons, and harvesting of insights and recommendations. When the evaluation is conducted, sharing the processes and the results with stakeholders will also be valuable. Stakeholders may be able to validate, recommend, gain and contribute lessons and reflections from the evaluation findings and recommendations. These will eventually enrich not only the evaluation report but future planning processes of programmes and projects.

4.5 Management of Project Closing Processes

When all the deliverables are completed, the project proceeds to the closing phase. Since the project is temporary, with a beginning and an end, the closure phase must also be planned in the project design. The purpose is to have an organized and orderly manner of ending the project.

Project closing must also be done to obtain the approval and acceptance from the stakeholders. The stakeholders will need to know and recognize that the project has been done. It is also important to document lessons from the project to improve future projects.

A project creates a lot of information and knowledge resources that are collected from the initiation stage (sometimes as early as the pre-initiation stage) to project closing. The files of information should be systematically compiled and organized.

In organisations, if the deliverables are products, a smooth transition from the project to the organisation's operations must be planned. Development of a transition plan during project design that includes policies and procedures for project closing would be useful.

Project closing includes the following activities:

- Notice of conclusion of contracts and sign off
- Payment of fees, and settlement of bills (utilities, rent and other related matters)
- Handing over and sign off of equipment, furniture and fixtures, hardware and software products that were acquired during the project life (whether borrowed or procured) to the proper groups, authorities or stakeholders who are also beneficiaries of the resource materials
- Handing over of files and project final report. A final report from the project manager and the project team is also expected

The project manager may opt to have a closing ceremony to announce project closure and celebrate the success of project completion.

Something To Do

Prepare a Closing Project Plan for Clara's Project.

TEST YOURSELF

Choose the letter that corresponds to the best answer.

1. It is an ongoing built-in performance assessment process of projects at the implementation stage.

   a. Monitoring
   b. Project implementation
   c. Planning and re-planning
   d. Activity monitoring

2. _____monitors what happens during the implementation of the project and whether those activities that were planned were carried out.

   a. Input monitoring
   b. Progress report
   c. Assessing
   d. Activity monitoring

3. It refers to the resources that are put into the project.

   a. Input monitoring
   b. Progress report
   c. Project evaluation
   d. Monitoring

4. This is assessed by comparing an initial situation with the current situation.

a. Evaluation
b. Progress report
c. Progress
d. Project documents

5. _____entails monitoring of external factors (those factors outside the control of the project), defined by the assumptions and risks.

a. Monitoring of assumption (and risk)
b. Input monitoring
c. Activity monitoring
d. Progress reporting

6. The aim of _____is to determine whether the development objective of a project has been met.

a. Project closing
b. Impact monitoring
c. Project effectiveness
d. Project

7. _____is a selective and periodic exercise that attempts to objectively assess the overall progress and value of a project.

a. Evaluation
b. Project closing
c. Project implementation
d. Initial phase

8. The _____keeps track of the progress of a project not only at the inputs level but also in relation to the outputs or results level as well as the outcomes level of the project.

a. Project team
b. Project manager
c. Stakeholders
d. Management

9. The aim is to provide ample detailed information to check the state of project and its progress in relation to its objectives.

a. Reporting
b. Evaluation
c. Monitoring
d. Work plan

10. This is in the implementation phase, when all the deliverables are completed, and the final approval and acceptance must be obtained from the stakeholders.

a. Scope verification
b. Contract administration
c. Project closing
d. Input monitoring

4.6 Summary

Monitoring is crucial in the implementation phase of a project. The project manager keeps track of the progress of a project not only at the inputs level but also in relation to the outputs, results and outcomes level of the project. Monitoring is able to provide corrective measures when the project encounters difficulties and uncertainties that affect the project inputs. It takes stock of the lessons learned from the changes that occur during project implementation. The information that is culled from the monitoring phase is uploaded in the evaluation phase of the project that will reflect the efficiency, effectiveness, impact and sustainability of the project. Project closing follows once all the deliverables are completed.

4.7 Chapter Review Questions

1. What is the role of the project manager in the implementation phase?
2. What is the role of the project team in the implementation phase?
3. Why is monitoring and evaluation important?
4. What is the purpose of the closing phase?
5. What activities compose the closing phase?

4.8 Suggested Readings

Jenkins, Nick. A Project Management Primer or a guide to making projects work, v.02.2006. Available from http://www.exinfm.com/training/pdfiles/projectPrimer.pdf.

FAO, Economic and Social Development Department. Computerizing Cooperatives: A practical guide. Available from http://www.fao.org/docrep/007/y5471e/y5471e00.htm#Contents

Lasa. The Lasa Computanews Guide to Project Management. June 2003. Available from http://www.lasa.org.uk/uploads/publications/ictpublications/computanews_guides/lcgpm.pdf.

4.9 Suggested Activities

Prepare a monitoring plan and a closing plan for your community project.

PART II MANAGING ICTD PROJECTS

Nowadays students and youths are great users of ICTs, particularly computers and mobile phones. The development of these technologies whether hardware products or software applications, will continue to grow. As ICTs are developed for daily communication, transactions, business operations and knowledge purposes, the effective usage of these technologies is able to increase productivity, create networks and provide services to physically remote communities.

ICTs have also become tools for people's development and improvement of life. As presented in Issue 1 of the Primer Series, entitled *An Introduction to ICT for Development*, many ICT projects have been tried and tested to become useful devices or services that benefit marginalized communities.

The first part of this primer discussed project management for all types of development projects. We have learned so far that there are common tools and techniques for managing projects. However, there are knowledge and skills requirements for specific types of projects depending on the nature, theme, purpose and technological focus. This second part discusses the management of ICTD projects. You will be oriented about some of the terminologies used in ICTD projects, specifically those that pertain to information systems development.

Five chapters are covered under Part 2.

Chapter 5 presents ICTD project management concepts, approaches and methods used. The cycle framework used in different ICT methods is introduced here. It emphasizes the need to anchor information systems projects from the enterprise architecture of organisations, whether they are government or non-governmental organisations.

Chapter 6 focuses on understanding systems development methods, and the functional and non-functional requirements of ICT projects. The practices and challenges revolving around the requirements from clients and users are discussed.

Chapter 7 presents the project planning and control methods, and corresponding tools. The use of the WBS is explained in relation to scope, schedule and cost management. Project information and management, and planning for the project's organisational impact and change management are covered.

Chapter 8 provides guidelines on project implementation and completion. The focus is on organizing and managing the project team, stakeholders and procurement.

Chapter 9 wraps up the ICTD project management portion raising issues and concerns on sustainability, ethical issues and rapid changes in ICT technology.

CHAPTER 5: PROJECT MANAGEMENT AND ICT

Objectives

- Describe ICT and ICTD projects and their difference to other projects
- Understand the relationship of organisations and ICT
- Compare ICTD project management with traditional project management
- Describe the tasks of the ICTD project manager in relation to the concept elements of ICTD projects
- Explain the project life cycle phases, processes and approaches in ICTD project management

Case Study 3. Enhancing the Website of the Environment Conservation Organisation

Noy, an information technology (IT) student, is accepted to perform an on-the-job-training at the Environment Conservation Organisation (ECO), a local NGO. ECO is partnering with the local government to advocate for the protection and conservation of the rich biodiversity of coastal towns in Pax Province. Coming from a nearby university and driven by his passion for the protection of the environment, Noy is eager to help this NGO in their environment protection projects.

The NGO's President, Mr. Kumar, welcomed him to the organisation and assigned him to propose an ICT project. Mr. Kumar would like this ICT project to help them deal with their stakeholders more effectively by: sharing their knowledge and expertise in the field, raising awareness about environmental protection, obtaining financial contributions from stakeholders who believe in their cause.

He explained that the NGO has a website but it is static and is limited to basic information about the organisation. It needs an upgrade. He said that the staff members of the NGO see the importance of linking with other similar organisations online to share their mangrove conservation knowledge, build alliances and seek donations. By posting online relevant articles, tools and templates, and links to websites, they will also be useful resources for NGOs and local government agencies with limited capabilities on mangrove conservation.

Mr. Kumar asked him to prepare a proposal on how they can make the website more useful for the NGO. He informed Noy that he has some funds set aside from the big advocacy project. He wanted to use the funds to have wider reach on the promotion of environmental protection.

After researching online on the issues and challenges of mangrove conservation, Noy met and interviewed some of the technical staff and experts of the NGO and he found them very committed as well as very knowledgeable in conservation and environmental protection. Along with his university friends, he also visited two coastal communities assisted by the NGO on mangrove conservation. He had a chance to meet with community local leaders who shared information about the situation in the coastal communities. Noy felt overwhelmed by the major challenges of pollution from the tourism industry, the informal settlers, and the threats of rapid urbanization

contributing to the mangrove's degradation. He was at a loss on how to begin the project. His friend assured him that no matter how small his act will be, he can make a difference.

Inspired by the words he remembered from the quotations of Mahatma Gandhi, "Be the change that you want to see in the world", Noy livened up and proceeded to preparing a project proposal.

He proposed to enhance the website for the NGO to promote cooperation with stakeholders on the conservation of the mangroves, solicit petitions, and possibly raise funds to start projects for advocacy and capacity building of people who will directly benefit from mangrove conservation.

Young IT students like Noy can make a difference by getting involved in simple but high impact projects.

5.1 ICTD Projects

In chapter 1 we discussed the definition and features of projects. They are activities of temporary nature but with specific purposes. Are ICT projects different from any other projects?

ICT projects are projects that make use of ICT devices or products, such as hardware, software, networks and services to create ICT information solutions to groups and organisational needs. These projects vary in size according to tasks, number of persons involved, scope, funding, risks, processes and methods. Some examples of ICT projects are:

- ICTD Projects for Education
  - o ICT training for teachers and students
  - o Procuring hardware products such as computers and printers for a public school or a state university

- ICTD for Community Development and Human Resource Projects
  - o Public libraries such as e-centres for livelihood and ICT training
  - o Agricultural information on market prices and crop management for farmers

- e-Government and Human Capacity Building
  - o Computer literacy to increase skills competencies of government health workers
  - o Development of systems for business registration to promote e-commerce, e.g. creating a website for promoting trade registry and completing transactions of a government agency responsible for national trade and industry
  - o Development of a database system for a labour agency to match skills and competencies of a job applicant to existing job vacancies, and to monitor labour demand
  - o Automation of back-end operations (e.g. enterprise resource planning) for government agencies
  - o Systems upgrade of a financial system of a national and a local government agency to integrate and increase efficiency outputs
  - o Migration of private branch exchange (PBX) telephony systems to voice over Internet protocol system for a government agency or an NGO for instituting feedback from users and citizens
  - o Upgrading of real estate tax system of a local government
  - o Database upgrade with interface for SMS to report disasters and management of relief operations

- ICTD Material Resource Development
  - o Green IT project – recycling computer equipment for use in public schools and state universities and colleges
  - o ICT policy study and development

? Questions To Ask

What makes the ICT examples above different from ICT projects developed and promoted by many business endeavours in the global market such as:

- Programming computer software, a mobile app or video game
- Designing hardware architecture for a computer platform
- Web development for an online shopping site
- Data security on a social network or bank server

The emphasis of the ICTD examples is in the purpose and outcomes of the projects. These ICT projects are created for the purpose of development such as having better access to information; delivering more efficient and effective services in education, health and employment; and improving citizens' access to government services.

As mentioned in chapter 1, the UN-APCICT Primer Series is concerned about development projects, interventions that address social problems by offering particular forms of support to a defined target groups; in specified geographic locations; within a set time frame; with the aim of bringing about an ongoing improvement in the living conditions of the people.[57] While we refer to ICTD projects as those development projects that are mostly government-initiated for improved services and for citizens' improved access to better goods and services, general discussions of ICT project practices in business environments that are helpful to ICTD will also be mentioned.

What are unique features of ICTD projects?

ICT projects, like other projects, are part of a larger setting. These are not stand-alone sets of activities but these should be anchored in programmes and larger plans of a unit or an organisation. Thus, the setting of ICT and ICTD projects come from policies and programmes of organisations, be they government or non-government. These organisations often make use of ICTs to increase the efficiency and effectiveness of their activities and processes.

ICT projects, like other projects, must make use of project management principles and methods to increase the chances of success in the achievement of objectives/goals.

ICTD projects are not only about computers, connectivity and the development of technology. ICTD projects give emphasis to the development capacity and participation of stakeholders. The human resource and the stakeholders who will be involved in the projects are given ample focus on ICTD projects. The products and results of ICTD projects must benefit people.

In ICTD, there is growing optimism that access to the benefits and use of ICT will enable the marginalized to improve their quality of life. This means having access to ICT can help teachers teach well, and help children and youth improve their education; health workers can provide

---

57   DANIDA, Guidelines for Programme Management, September 2011, p. 12. Available from http://amg.um.dk/en/~/media/amg/Documents/Technical%20Guidelines/Programme%20management/GuidelinesforProgrammeManagementSept2011.jpg.

better health information, or connect people in remote villages to doctors and other health practitioners; more young professionals can have better ways of looking for jobs; farmers in far villages can have access to relevant and timely agricultural information; people with disabilities can have opportunities to improve their skills and have jobs similar to those in the mainstream; and many other benefits in the community and society.

🔍 Case Study 4. Agronegocios in El Salvador

Agronegocios in El Salvador helps farmers become traders by establishing direct contact with buyers, instead of selling to middlemen (called "coyotes"). This is done through bi-weekly markets in the capital city, but also through a virtual market on the website where offers and demands are published. In Agronegocios centres spread around the country, the farmers and their children are taught how to enter their offers and how to find possible buyers. Although the farmers in general prefer personal contacts with their customers, the virtual market has the advantage of offering "business-to-business" opportunities and larger quantities of produce can be sold. Furthermore, trade is not restricted to the province or country the farmers live in; deals with foreign traders are an option as well.

Source: Op de Coul, 2003 cited in "Connecting the First Mile: AFramework in ICT Best Practice for Knowledge Sharing in Development" a research by the Intermediate Technology Development Group (ITDG) in collaboration with Cranfield School of Management.

A real access real impact development framework for ICTD projects was offered by Bridges. org.[58] The framework has 12 access criteria with corresponding guide questions for ICTD project assessment as shown on table 30.

Table 30. Real access real impact framework by Bridges.org

12 Real Access Criteria	Guide Questions for Assessment
1. Physical access to technology	• Is technology available and physically accessible to people and organisations? • What factors affect the physical access to technology in the context of this project/policy? • What can the ICT project/policy do to help ensure that technology is available and physically accessible to people and organisations?
2. Appropriateness of technology	• Is the technology appropriate to the local needs and conditions of the community? • What can the ICT project/policy do to help ensure that technology is appropriate to local needs and conditions of the community?
3. Affordability of technology and technology use	• Are the technologies and ICT services affordable for local people to obtain, access and/or use? • What does "affordable" mean in the context of the community or target group? • What can the ICT project/policy do to help ensure that technologies and technology use are affordable for local people and organisations?

---

58   Bridges.org, "The *Real Access = Real Impact* Framework for ICT in Development", Multimedia Training Kit for ICT Policy Training, 2004. Available from http://www.apc.org/english/capacity/policy/mmtk_realaccess.ppt.

4. Human capacity and training	• Do people have the skills necessary to use ICT effectively? • Can they envision other uses for the technology in their lives or work? • What training is available? • What can the ICT project/policy do to help ensure that people and organisations get the training they need to use technology effectively?
5. Locally relevant content, applications and services	• Are there locally relevant content, applications and services that people and organisations can access and use through ICT? • Are they available in local languages? • What is "locally relevant" in the context of the communities or target groups affected by the ICT project/policy?
6. Integration into daily routines	• Is technology use an additional burden to the lives and work of people and organisations already burdened by daily tasks, or is it integrated into their daily routines? • What can the ICT project/policy do to help ensure that technology use is integrated into daily routines and does not become an additional burden to people's lives and work?
7. Socio-cultural factors	• Are people limited in their use of technology because of their gender, race, disability, age or other socio-cultural factors? • What can the ICT project/policy do to help ensure that people and organisations are not limited in their technology use due to gender, race, disability, age or other socio-cultural factors?
8. Trust in technology	• Do people and organisations have confidence in technology use? • Do they understand issues like privacy, security or cyber crime in the context of technology use? • What can the ICT project/policy do to help ensure that people and organisations have confidence in technology use?
9. Local economic environment	• What impact will ICT use have on the local economy? • Can the local economic environment sustain the technology use envisioned in the ICT project/policy? • What can the ICT project/policy do to help ensure that the local economic environment can sustain long-term technology use?
10. Macro-economic environment	• How do policy issues like deregulation, taxation, trade, investment or labour affect the use of technology envisioned in the ICT project/policy? • What can the ICT project/policy do to help ensure that the macro-economic environment is favourable to technology use?
11. Legal and regulatory framework	• Do the country's laws and regulations affect the use of technology? • How do legal and regulatory issues affect the use of technology envisioned in the ICT project/policy? • What can the ICT project/policy do to help ensure that laws and regulations promote, and do not inhibit, technology use?
12. Political will and public support	• Do people understand the links between local technology use and the government's overall political strategies to promote ICTD? • What can the project/policy do to help ensure that the general public supports technology use? • What can the project/policy do to help ensure that the government has the political will to drive needed change?

For Bridges.org, it is "critical to involve the private sector, adapt internationally-accepted policies to the local context, and connect on-the-ground initiatives with policy-making."[59] These

---

59   Bridges.org, "Spanning the Digital Divide: Understanding and Tackling the Issues", 21 June, 2001. Available from http://www.itu.int/wsis/docs/background/general/reports/26092001_bridges.htm.

lessons are also shared by the Swiss Agency for Development and Cooperation (SDC). The SDC identified the following lessons that must be given considerations in the development and implementation of ICTD projects:

• Participation of stakeholders in the project—people are involved at every stage of the project
• Local ownership of the initiatives, accompanied by capacity development to gain benefits
• Institutional ownership and leadership of partner organisations to extend project reach and increase the number of people participating and gaining benefits from the project
• Multi-stakeholders partnership must be encouraged since development is a responsibility of everyone
• Alignment with poverty reduction strategies because ICTD projects are meant to benefit the marginalized sector of society
• Provision of a competitive enabling environment that respects and promotes freedom of expression, diversity and the free flow of information, completion of ICT infrastructure, and promotion of local content and open source solutions
• Mix of technology that considers appropriateness of choice of technology
• Financial and social sustainability as a goal for ICTD initiatives. Even if projects are completed, organisations or communities will be able to sustain the project results of common good
• Risk considerations are monitored carefully, especially the possible and unforeseeable negative impacts such as unequal distribution of benefits, and deepening of social and cultural divides.

Bridges.org offered the eight habits of highly effective ICT-enabled development initiatives that included the following efforts for ICTD:[61]

1. Do some homework, conduct a needs assessment – Read and study the context of your project. If it is about the environment, there is a lot information that you can get from online sources. Ask professionals who are engaged in this kind of work and find out what are their needs and challenges. Also, speak with communities that are affected by problems in the environment area that you are studying.
2. Implement and disseminate best practice – There are ways that are already tried and tested; learn from them.
3. Ensure ownership, get local buy-in, find a champion – Participation of stakeholders in the project from the conceptualization to the evaluation stage are found to be beneficial in most projects. By ownership, it means that the project are theirs to plan, implement, monitor and evaluate with partners like you to make the product or the outcomes of the project more lasting. Make partnership arrangements with people, groups and organisations that genuinely believe in the goals of the project. Have a person or persons who are well respected in the organisation or the community to help campaign about the goals and benefits of the project.
4. Set concrete goals and take small achievable steps – Make the goals of the project something tangible and easily understood. Plan simple tasks and activities that people can do with you so they can appreciate and understand more about the project and have outputs as milestones set at every end of activity.
5. Critically evaluate efforts, report back, and adapt as needed – Stakeholders must know how the project is doing. Share the project status with them. Assess the project's strengths, weaknesses, opportunities and threats. Solicit stakeholders' feedback and plan with them the changes and adjustments that are needed to make the project more efficient and effective.
6. Address key external challenges – Identify risk factors that are critical to the project. Make sure you do something about it to lessen or eradicate its effects to the project.

60 Gerolf Weigel and Daniele Waldburger (eds.), *ICT4D – Connecting People for a Better World: Lessons, Innovations and Perspectives of Information and Communication Technologies in Development*, SDC and Global Knowledge Partnership, 2004.
61 Bridges.org, "Spanning the Digital Divide: Understanding and Tackling the Issues", 21 June, 2001. Available from http://www.itu.int/wsis/docs/background/general/reports/26092001_bridges.htm.

7. Make it sustainable – Ensure that the outputs and outcomes will be lasting. If they are products, such as software solutions or systems of doing things, plan for ways to maintain it at lesser costs or for people to set ways to keep them growing. If the project is a telecentre in the community, partnerships with government institutions or private sector can be thought of to keep the benefits of the telecentre going.
8. Involve groups that are traditionally excluded. If the project is in a community, ensure that other groups will benefit from it. If this is within the organisation, share the benefits of the solution or the systems with other units and departments in the organisation.

5.2 Organisations and ICT

For more than three decades now the global economy and the rise of technology has influenced changes in business operations, and in the political and social landscapes. Many industrial businesses operate globally non-stop 24 hours a day with the support of ICT systems. To become competitive or for them to survive, many organisations find it necessary to use ICTs in their business systems, and in trade and commerce. Knowledge and information are becoming the foundation for many new services and products.

All organisations have common features. By definition, an organisation is "a social unit of people that is structured and managed to meet a need or to pursue collective goals."[62] The key elements of any formal organisation are its people, structure, operating procedures, politics and culture. Governments for instance have a hierarchy of human resources (people). Like a pyramid, an organisational structure has different reporting levels and division of work activities and procedures. Each level has certain functions and responsibilities; the structure arranges different levels of authority and expertise or professional skills requirements—managerial or technical, and there are those involved at operational levels. In the higher levels are management decision makers, there are mid-managers as well that supervise those in the lower levels such as employees or agency staff at the operational level. Figure 13 below is the information structure of organisations like government agencies.

Figure 13. Key system application levels in an organisation

Source: Adapted from Kenneth C. Laudon and Jane P. Laudon, *Essentials of Management Information Systems*, 3rd ed. (New Jersey, Prentice Hall, 1999).

62 BusinessDictionary.com, "organisation". Available from http://www.businessdictionary.com/definition/organisation. html#ixzz2SUuDq3f2.

Depending on their mandate, agencies have knowledge workers such as engineers, architects or scientists who provide or design products and services or create new knowledge. If you were to make an inventory of government agencies, you will notice that they specialize in certain information and technologies. For example, your tax or customs and revenue service agency focuses on tariff and tax collections; your health ministry on health; education ministry on pedagogy; and the ministry of public works focuses on building roads, bridges and infrastructures. Each agency has their expertise and their information requirements will be different. Within organisations, there are front liners—those who deliver the knowledge services to the public and must be able to disseminate the information that is needed. At the support and operations level, there are employees that provide administrative functions, such as bookkeeping, payroll, and records or document processing.

Organisations have formal rules and set ways for accomplishing tasks that could have developed over time. These rules and procedures serve as a guide to personnel and management. Most of the procedures are written down although there are others that involve informal work practices. Organisations have distinctive business processes in which work is organized into work flows of activities, information, knowledge and materials.

People in organisations are from different backgrounds and expertise, and they belong to different levels or positions in the organisations, divisions and groups. They will have different sets of interests and concerns; and different viewpoints, positions and reactions to issues and significant changes introduced in the organisations. Competition, conflicts, oppositions and divergent struggles are part of the politics in an organisation.

Depending on their mandate, organisations also have their own unique culture brought about by the set of assumptions, values and ways of doing things, formal or informal, shared by the staff members of the organisation. For example, the Ministry/Department of Health that is dominated by public health professionals and health workers will have a different culture from the Ministry/Department of Defense.

With the introduction of ICTs in the organisation, the way people work can change because the processes can be streamlined and engineered. When information systems are automated and digitized, decision-making as well as work processes can be made more efficient. There is a "growing interdependence between business strategy, rules and procedures on one hand, and information systems software, hardware, databases and telecommunications on the other."[63] Changes done in one component will affect other components, and may require changes in those other components as well.

For example, if the payroll system that processes cheques at the Treasurer's Office is integrated with the human resource system, other departments in the organisation can also make use of the data that is generated from the payroll system. When accessing and obtaining information, and group communication and discussions for decision-making used to take several days, installation of enterprise systems using software and web applications through the Internet, data for decision-making can be accessed and obtained online and in real time.

Having these changes brought about by ICTs can be both a boon and a bane in organisations. The efficiency of systems can bring economic and personal benefits for organisations. Nevertheless, ICTs can also challenge the traditional or prevailing systems, as well as the politics and culture in these organisations. The growing complexity and scope of ICT projects and applications can bring about many changes at the personal, managerial and institutional levels.[64] For example,

---

63   Kenneth C. Laudon and Jane P. Laudon, *Essentials of Management Information Systems*, 3rd ed. (New Jersey, Prentice Hall, 1999), p. 11.
64   Ibid., pp. 11-16.

while ICTs can increase the efficiency of business processes by reducing the number of person-hours required to complete tasks, it can also lead to resistance and lack of cooperation from staff members due to fear that they may lose their jobs.

Case study 5 about an e-government initiative in Malaysia describes an extensive systems development plan for the different departments of government. Aside from aiming for efficient government services, they also aimed at providing solutions to meet the challenges of the MDGs.

Case Study 5. e-Government and Service Delivery Innovations in Malaysia

In 1996 Malaysia unveiled its e-government strategy that would broadly support national economic objectives and the MDGs. Its aim: "By the year 2020, Malaysia can be a united nation, with a confident Malaysian society, infused by strong moral and ethical values, living in a society that is democratic, liberal and tolerant, caring, economically just and equitable, progressive and prosperous, and in full possession of an economy that is competitive, dynamic, robust and resilient."

Seven flagship programmes were outlined under Multimedia Super Corridor of Malaysia. They include: (1) e-Government, (2) Multipurpose Card, (3) Smart School, (4) Tele-Health, (5) R&D Clusters, (6) e-Business, and (7) Technopreneur Development.

Under the e-government programme, seven main projects were identified as core e-government applications. These are: (1) Electronic Procurement, (2) Project Monitoring System, (3) Electronic Services Delivery, (4) Human Resource Management Information System, (5) Generic Office Environment, (6) e-Syariah, and (7) Electronic Labour Exchange. Aside from these main projects, several government agencies introduced their own projects that aim to improve the delivery of services to the Malaysian people. Among these are the Public Services Portal (myGovernment), e-Tanah (for land administration), e-Consent, e-Filing, e-Local Government, Custom Information System, Pensions Online Workflow Environment, and Training Information System.

As of 2010 a variety of e-government projects initiated and implemented under the Multimedia Super Corridor of Malaysia have radically redefined the nature of public governance by introducing a range of innovations in government to citizens, government to businesses, and government to government interactions.

- Jobs Malaysia, formerly known as Electronic Labour Exchange (ELX), was launched in 1999 with the objective of optimizing the utilization of human resources through an effective and integrated job matching process.
- The e-KL project seeks to integrate service delivery across agencies and has already introduced the online gateway for citizen's payment to government, downloadable forms and online submission of required forms to government, and MySMS15888—the short messaging system that enables people on the move to stay connected to government services.
- The e-Bario project aims to connect a remote community to the Internet with the ultimate objective of promoting their socio-economic development in a sustainable manner.

- The e-Tanah system offers significant benefits to government as well as the citizens through cost effective and quality services in all matters of land administration.
- The e-Perolehan is designed to streamline the public procurement system to allow the suppliers to sell their products and services to the government through the Internet.
- The e-Syariah project intends to upgrade the quality of services offered by syariah courts and enhance their efficiency and internal management. It consists of various modules such as Syariah Court Case Management System, Syariah Lawyers Registration System, e-Syariah Portal, Library Management System and Office Automation System.
- The e-Sevices project aims to provide services and information anywhere anytime electronically through one-stop service windows where a range of services can be obtained at various delivery channels, including the Internet and multimedia kiosks. Services include issuance and renewal of driving licenses, summons check and payment, utility bills check and payment, and access to various legal documents.

These government systems are significant for they provide improved and more convenient services to a large number of users through ICTs.

Sources: Noore Alam Siddiquee, "e-Governance and Service Delivery Innovations in Malaysia", presentation, undated. Available from http://www.adbi.org/conf-seminar-papers/2011/02/23/4404.e.gov.service.malaysia/; and Ganesh Ch Deka, Jasni Mohamad Zain, and Prabhat Mahanti, "ICT's role in e-Governance in India and Malaysia: A Review", Journal of Next Generation Information Technology, Vol. 3, No. 1, pp. 7-16, 2012. Available from http://arxiv.org/abs/1206.0681.

5.3 ICTD Project Management

ICTD projects are scheduled solutions to problems identified and initiated to promote efficiency and effectiveness in public service delivery. These projects are planned and implemented as strategies in support of human development goals. They can be part and parcel of progressive development goals and strategies that may cover any one or more of diverse aspects but must be based on coherent and logical frameworks. The projects may involve one or more of the following: building infrastructures, hardware installations, software development applications, web-based solutions, policy development and implementation, capacity and capability building, and other innovative measures.

Like other projects, ICT and ICTD projects are constrained by scope, time and cost. They must be governed by management principles and methods for organized and systematic analysis, planning, implementation and completion of projects, and ensure judicious use of resources.

ICTD projects do not only entail the use of computer hardware devices, or the development or enhancement of a software product just for the sake of upgrading and creating a new product or service. These projects must be anchored on development visions, goals and plans.

Aside from the ICT components, the people and organisational aspects as well as the "business" process that requires change and streamlining must be more or equally regarded. Figure 14 shows an ideal graphical framework presentation of the three areas to consider in managing ICT and ICTD projects. The balance among the three elements—the people (organisation), the process (business) and the technology (ICT), and the purpose intended to address the specific human development requirement must be the major concerns in managing ICTD projects.

Figure 14. Balanced model for ICTD project management

Source: Adapted from Kathy Schwalbe, "Management of Information Technology Projects", CENAGE Learning, 2011.

People. The intention and the final product of an ICTD project are for the people. It is therefore important to understand the beneficiaries' needs and requirements, and involve them in the planning and design of products and services in the project. Refer to the sections on project stakeholders in chapter 1 and stakeholder analysis in chapter 2 for techniques in identifying the stakeholders and their requirements.

Process. For a well-organized agency, there must be a well-defined function of process chain activities or systems. The functions of organisations are established through business activities that are made up of a sequence of related tasks to accomplish the organisational goals and objectives.

However the business process of organisations can be made up of old rules and outdated assumptions that make work more cumbersome. When ICT projects address these problems, agencies often break the old rules and create new ways of doing the job. ICT projects must be able to review the original business process and examine ways that these can be made more efficient for the users. The process is called business process design or business process re-engineering.

An example where business process re-engineering may be required is the process of loan application by a farmer or an entrepreneur at a government bank. The application and approval process includes obtaining and submitting the request form, background checking of the applicant, modifying the terms of the agreement, determining the appropriate interest rate, and issuing a quote letter. Many of these loan applicants get frustrated and complain over the slow response time in processing applications for financing, and thus affect business of both the borrower and the bank.

Technology. In ICT and ICTD projects, decisions will need to be made on the types of technology to use. It will require selection from a wide array of hardware products, such as personal computers, network servers or equipment, and mobile devices. For network systems, choices include wireless, phone-based, cable-based or satellite-based systems. A choice of network providers will also have to be considered. For office software applications there are again a wide range of choices that may be proprietary or open source. The equipment life span, the cost and expiration of licenses, and the fast-paced development of technologies are a few issues to consider once the organisation decides to use ICTs to improve its business operations.

The choice of technology and their appropriateness for users matter. Choosing the hardware and software applications in ICT projects are key business management decisions. It is preferable

that organisations are able to include the specifications for hardware and software depending on the expected performance, functions required and current capabilities of existing hardware.

Managers must be familiar with the capabilities of a diverse range of hardware and software technologies for computer processing, input, output and storage options, and in relation to price and performance. They must be involved in hardware capacity planning and decision-making, and distribute these items and facilities in relation to usage. Since there is a wide array of ICT hardware and software products available in the market, managers and planners must be able to select from the best options for their internal or organisational and project use. They must be able to ensure that the selected products will be user friendly, appropriate for the organisation or the project and are easy to manage if technical problems arise.

Planning of hardware technology and its configuration in the information systems must be studied thoroughly prior to upgrading and procuring new ones desired by the organisation or as dictated by the systems information project.[65]

Organisations must have an ICT master plan, and an enterprise-wide strategic and annual planning process to be able to determine the kind of information systems and hardware requirements the organisation must have within a time frame of five to ten years. This must be assessed on a regular basis and may form part of a project output and results to ensure long-term viability.

5.3.1 Trends Affecting ICTD (e-Government) and Project Management

Since ICTs are a new global phenomena of diverse characteristic, being updated on ICT trends, best practices, as well as the acceptable standards in managing ICT systems are some of the actions or resolutions that organisations need to proactively consider in e-government. Some of the issues that affect ICT and ICTD projects, particularly e-government projects are: (1) business trends and globalization; (2) outsourcing trends; and (3) the rise of virtual management.[66]

- Business and global trends. Globalization is a trend in the political and market economy that brings societies closer to one another and makes them more interdependent. It engenders free trade, free flow of capital, and the tapping of cheaper foreign labour markets. Distance for example is considered less of a barrier in business because of ICTs. ICT is one of the drivers of globalization. Rapid changes in ICTs result to pressures in organisations, including governments, to continuously upgrade and upscale their information systems as well as hardware and software applications. How does this affect ICTD or e-government projects and project management? For one, it increases expectations in work performance. The use of technology is expected to make communication with and among project actors easier. Pressure to improve and streamline business processes are also some of the consequences of these trends. New knowledge and skills become in demand. Collaboration with the private sector that has the capacity to provide these new knowledge and skills also becomes essential. Some implications of the trends in e-government projects include new policies in management and ways in managing human resources.
- Outsourcing trends. Outsourcing is the practice used by organisations to contract third parties to do a job in part or whole. Rather than doing a task in-house, organisations use outsourcing practices as this can reduce costs or may provide knowledge and skills that are not available within the organisation. Some vendors of e-government projects for example outsource parts of the business applications in other countries. Again, implications in project management will include impact of outsourcing in project controls, business practices and

---

65 Search Data Center, "Hardware upgrade and server refresh guide", TechTarget, undated. Available from http://searchdatacenter. techtarget.com/guides/Hardware-upgrade-and-server-refresh-guide.
66 Kathy Schwalbe, "Management of Information Technology Projects", Cengage Learning, Philippine edition, 2011, pp. 67-68; and Rothwell and Kazanas, 2004.

management of stakeholders, such as the consideration of cross cultural management.
*   Virtual management trends. Virtual systems management refers to the management of staff members who are remote or not in a face-to-face setting. When outsourcing becomes an option, management of stakeholders is important to consider. The outsourced company and their employees become part of your stakeholders and your risk factors. Achieving a common goal must be understood to ensure that the project goals and baselines are not compromised.

Something To Do

Watch the video "NASA Project Management Challenges" (http://www.youtube.com/watch?v=3yERUM9k7aE) and answer the questions below.

1. Why do you think NASA finds project management important?
2. How does NASA regard individuals and project teams?
3. What do they say about the lessons learned programme? How does it relate to better project management at NASA?
4. Why is individual accountability so important for managing risks in NASA projects?
5. What are the key competencies of a good project manager according to the NASA managers?
6. Is "leadership" the same as being a good project manager?
7. What does leadership integrity have to do with the success of a project?

5.4 The ICTD Project Manager

The good news is that there are many organisations in search of ICTD project managers. The bad news is that 78 per cent of ICT projects fail.[67] One of the causes of failure is poor project management.

"Poor project management" means many things. It may have something to do with:

*   Project design
*   High risk environment factors
*   Unclear objectives
*   Identification and management of stakeholders
*   Selection and hiring of project team
*   Procurement of services

What about leadership? What must a manager do to manage an ICTD project successfully?

The ICTD project manager must first have the conviction of the development goals of the project. S/he must have the capability to successfully deliver project results according to the agreed quantity and quality of specifications expected by stakeholders and solution users.

At the same time, the ICTD project manager must work within the constraints of the defined and agreed **scope**. The scope is based on specified requirements that are strategic, relevant and tactical conditions for filling in the gaps or needs, and for actualizing opportunities for development or planned improvement.

---

67   Lakshman Pillai, "Who is good in Project Management - IT or non-IT industry?" NASSCOM, 1 January 2009. Available from http://nasscom-emerge.groupsite.com/beta/discussion/topics/129243/messages; and Great Work! Transformation, "Wise Project Knowledge System". Available from http://www.lpcube.com/wise/project.

The project manager and the project team are also constrained by the project **schedule**, which has a prescribed start date and end date. The project, if found relevant and worthy, must be approved by the concerned authorities in the organisation. It must be systematically planned and judiciously implemented by the project team.

The project work plan and performance is conditioned by the kind of available resources—**inputs, materials and budget cost**—allocated as investment to support the tasks of the project in order to bring social and financial returns.

The project results are restricted by the required metrics or indicators that speak of numbers and quality. Managers have to comply with competency, process and technology standards that are used to benchmark the value of project methods, analytics, models, documentation, hardware, software, products and the required human resources.

The manager's decision is bound by rules, policies, procedures, decision-flow, inter-relationship and the project's responsibility matrix.

To get an ICTD project started, the project manager and the management team must understand the project goals and objectives, and the ICT project concepts for the phases of initiating, planning, executing, controlling and closing of the project.[68]

Table 31. Concept elements of ICTD projects

No.	ICT Project Concept	Description
1	Project name	Descriptive title and code name
2	Problem or the pressing needs to be addressed	Gaps to be filled up Opportunities to be exploited Business case
3	Stakeholders	Whose interests are affected by the project?
4	Goals	State or condition to be achieved
5	Outcomes	Objective results to be achieved
6	Critical success factors	What are to be made available for the project to happen
7	Critical assumptions	Conditions considered to be true
8	Competency and conditions	People, process, technology and culture
9	Methods	Management, analysis, valuation, modelling, data gathering, evaluation, control and monitoring
10	Standards	Procedures, tools, results, metrics, documentation, finances and templates
11	Risks	What if threats – what are consequences and how to address for mitigation
12	Governance	Responsibility, accountability, expertise and work process
13	Major activities and tasks	Scope of work – work breakdown
14	Main output	Products, artefacts and deliverables
15	Duration	Timeline, schedule
16	Resource requirement	Input – time, material (equipment) and human resources
17	Sourcing strategy	Acquisition and procurement
18	Control and metrics	Checkpoint, quality and quantity standards checklist

---

68   J. Macasio, "ICT Project Thinking Matrix" start-up activity and case study for ICTD Project Management Theory and Practice, UN-APCICT presentation materials, 2010.

The project manager and the management team must be able to define the concepts in table 31 according to the specific requirements of the project. An analysis of these requirements is an important process of any ICTD project planning.

Something To Do

Help Noy prepare the ICT project proposal using the concept elements of ICTD projects in table 31 as a guide.

5.5 The Life Cycle of ICTD Projects

ICTD projects like other projects follow a project life cycle; they have a beginning and an end. The stages of the traditional project life cycle are the initiation phase, planning phase, implementation or execution phase, and closing phase. However, certain approaches have additional phases in the project life cycle to emphasize that certain stages require focus and concern.

ICTD projects need to follow the same stages and processes to keep track of the triple constraints—scope, schedule and costs—and the other project categories, including quality, human resource, stakeholders' communication, procurement, risks, and coordination and integration.

For large and complex e-government ICT projects that have several components, and one or more systems development and applications, parallel phase management such as the systems development life cycle (SDLC) can be used to sub-manage the systems development component in addition to the full project management phases and processes.

Table 32 provides a comparison between traditional project management stages and processes, and the SDLC.

Table 32. Comparison of stages and processes of three project management approaches

Project Stages/ Processes	PMBOK 5 process groups	PRINCE2 8 process groups	SDLC
Initiating	(1) Defining scope and authorizing the closure of initiation phase	(1) Starting up a project	(1) Concept (2) Requirements
Planning	(2) Designing workable scheme to include plans – scope, schedule, cost, quality, risk, procurement, human resource, communication	(2) Planning (3) Initiating a Project	(3) Design
Implementing	(3) Acquiring human resources and project team, performing quality assurance, distributing information, managing stakeholder expectations, conducting procurement	(4) Directing a Project	(4) Implementation
	(4) Monitoring and control processes	(5) Controlling a project (6) Managing product delivery (7) Managing stage boundaries	(5) Integration and tests

			(6) Systems installation
Closing	(5) Closing processes	(8) Closing a project	(7) Support and maintenance plan

5.6 Approaches and Methods in Managing ICTD Projects

In chapter 1, different approaches used in project management were discussed including: PCM, PMBOK, PRINCE2, RUP, MSF, Six Sigma, and Agile methods. ICTD projects can benefit from the use of the PCM, PMBOK, and PRINCE2 approaches. The use of the more recent methods—RUP, MSF and Agile methods are applicable to the development of the SDLC. The recent methods were developed in response to the uniqueness and complexity of ICT projects. In essence, though, the use of project management tools and techniques discussed in part 1, such as the use of Gantt chart and WBS, apply in most cases.

Which method is most relevant for ICTD projects? The answer to the question lies within the project goal, scope and project leadership. ICT projects have more uncertainties and distinct risks, aside from the rapid changes that characterize ICT technologies, as well as the requirements that are set by the primary stakeholders, particularly the users who will use the ICT products created in the project.

In software development projects, certain methods would be preferred by the project team engaged in the project. The disciplines and processes desired by IT software developers are mostly short, incremental, iterative and adaptive approaches.

For a project manager, the method s/he is comfortable with would be personally desirable. However, a project manager is a leader who must make decisions and weigh consequences; s/he must not solely rely on personal preferences. Certain conditions may require him or her to use additional approaches that will help deliver a useful and effective project quality at the most efficient time and cost-effective manner. The project processes and stages apply to all of the projects, with emphasis on the best method that will result in the desired quality of outcomes and goals.

TEST YOURSELF

I. Choose the letter that corresponds to the best answer.

1. It is a social unit of people that is structured and managed to meet a need or to pursue collective goals.

a. Organisation
b. ICT
c. Government
d. Structure

2. The following levels are included in an organisational structure:

a. Strategic, informational, management, operational
b. Strategic, management, executive, knowledge
c. Strategic, management, knowledge, operational
d. Strategic, managerial, operational, informational

3. _____are those development projects that are mostly government-initiated for improved services and for citizens' improved access to better goods and services.

a. ICTD projects
b. Projects
c. ICT projects
d. Programme

4. The _____are created for the purpose of development, such as having better access to information; delivery of more efficient and effective services in education, health and employment; and improving citizens' access to government services.

a. ICTD projects
b. Programme
c. Projects
d. ICT projects

5. Competition, conflicts, oppositions and divergent struggles are part of the _____in an organisation.

a. Politics
b. Government
c. Rules
d. Work plan

II. True or False. Write true if the statement is correct. If false, underline the words that make it wrong, and write the correct words in the space provided.

_____6. The project management and the management team must be able to define the concept elements of ICTD project according to the specific requirements of the project.

_____ 7. The project work plan and performance is conditioned by the kind of available resources—inputs, materials and budget cost—allocated as investment to support the tasks of the project in order to bring social and financial returns.

_____ 8. ICTD projects are scheduled solutions to initiated problems.

_____ 9. The ICTD project team must have the capability to successfully deliver project results according to the agreed quantity and quality of specifications expected by stakeholders and solution users.

_____ 10. ICTD projects like other projects follow a project life cycle; they have a beginning and an end.

5.7 Chapter Summary

What makes ICT projects different is because they make use of ICT devices—hardware and software—to create solutions that address information needs of groups and organisations.

ICTD projects like e-government projects impact on people, structure, operating procedures, politics and culture of organisations. ICTD project management makes use of principles and methodologies for organized and systematic analysis, planning, implementation and completion of projects, and to ensure judicious use of resources. The ICTD project managers expand or focus management tasks in relation to the concept elements of ICTD projects. The approach suitable to ICTD projects is a concern of ICTD project management.

5.8 Chapter Review Questions

1. What are the differences between non-ICT projects and ICT projects?
2. What is an organisation? How can organisations benefit from ICT?
3. Are there any differences between non-ICT project management and ICT project management?
4. What are roles of the ICTD project manager in relation to the concept elements of ICTD projects?
5. Give an example of an ICTD project, suggest a project management approach and explain the reason for the selection.

5.9 Suggested Readings

Jenkins, Nick. A Project Management Primer or a guide to making projects work, v.02.2006. Available from http://www.exinfm.com/training/pdfiles/projectPrimer.pdf.

Laudon, Kenneth C., and Jane P. Laudon. *Essentials of Management Information Systems*, 3rd ed. New Jersey: Prentice Hall, 1999, chapter 3.

Maria Juanita R. Macapagal and John J. Macasio, *Module 7: ICT Project Management in Theory and Practice*, Second edition, The Academy of ICT Essentials for Government Leaders Module Series (Incheon, UN-APCICT/ESCAP, 2011), Available from http://www.unapcict.org/academy.

Reddi, Usha Rani Vyasulu. *Module 1: The Linkage between ICT Applications and Meaningful Development*, Second edition, The Academy of ICT Essentials for Government Leaders Module Series, Incheon: UN-APCICT/ESCAP, 2011. Available from http://www.unapcict.org/academy.

Reddi, Usha Rani Vyasulu. *Primer 1: An Introduction to ICT for Development, Primer Series on ICTD for Youth*, Incheon: UN-APCICT, 2011. Available from http://www.unapcict.org/pr.

Taylor, James. *Managing Information Technology Projects: Applying Project Management Strategies to Software, Hardware, and Integration Initiatives*. American Management Association, 2004.

5.10 Suggested Activities

1. Conduct research on any two project management approaches mentioned in chapter 1. Make a summary and assess how they can be useful in managing any two ICTD project examples mentioned in the chapter. Explain your reason for suggesting a project management approach.

2. Choose a government or non-governmental organisation in your country. Research about the organisation's mandate and service it is supposed to render to citizens. How do you think the organisation can benefit from the use of ICT? What ICT project do you think can be proposed to that organisation?

3. Identify a government organisation in your country that uses information systems. How do the following concepts apply to their information systems architecture or programs?

    - Usable   - User-friendly, easy to use, matching results to user needs and requirements
    - Learnable   - Simple and easy to learn and perform tasks, and tolerant of errors and recovery
    - Flexible   - Able to withstand and accommodate changes in the project
    - Robust and Secure   - Strong, able to hold a great deal and cannot be attacked by outside forces
    - Reliable   - Consistent and dependable
    - Transparent   - Has integrity for data use and can easily be traced for further improvements
    - Appropriate   - Suitable for use and follows certain policies and standards
    - Scalable   - Can accommodate upgrades and changes

CHAPTER 6: UNDERSTANDING SYSTEMS DEVELOPMENT PROJECTS AND REQUIREMENTS ANALYSIS

Objectives

- Describe the purpose of systems development and the processes in building systems
- Explain the systems development life cycle in building ICT solutions in organisations
- Understand the importance of requirement analysis in systems development

Something To Do

Watch the 4-minute video on Customer Relationship Management for San Francisco's City Government at http://www.youtube.com/watch?feature=player_detailpage&v=2eoEoaev9BI and answer the following questions:

1. What is the problem and the ICT solution presented in this case?
2. What is the impact on the users of the ICT solution?
3. Write out the steps taken to achieve the ICT solution?
4. What role does technology play in this case?

6.1 What is Information Systems Development?[69]

Organisations create and produce information and knowledge. Using the computer and software applications, an information system can be established to support decision-making, control, analysis, and coordination and creation of new products (or services) in an organisation.

Information systems are sets of interrelated components that collect (or retrieve), process, store, and distribute information to carry out the functions of organisations. These systems are developed to provide solutions to organisational problems or opportunities.[70]

Systems development requires a structured set of activities in order to produce business solutions for an organisation. To make information systems relevant and functional, users must drive the systems development projects. The users' participation in the analysis and design of the project solutions reduce risks of failed projects. The involvement of users is all the more necessary in less structured systems and in vaguer or undefined requirements analysis.

Developing and establishing information systems in the organisation is a complex and expensive undertaking. Most organisations plan and implement information systems architecture in an incremental or piece by piece approach over a period of time. Apportioning the information systems requirements of the organisation are sources of ICT projects of the organisation.

---

69   Kenneth C. Laudon and Jane P. Laudon, Essentials of Management Information Systems, 3rd ed. (New Jersey, Prentice Hall, 1999), chapters 6, 10 and 11.
70   Ibid., p. 7.

The advantage of developing and establishing information and communication systems in an organisation is the opportunity to redesign the organisational structure, scope, power relationships, work flows, and products and services. Business process re-engineering is an activity that can redesign the business process of the organisation and consequently prompt organisational change. A radical form for this process is the so-called paradigm shift. The latter changes the orientation, the mindsets and the way business is conducted in the organisation.

In chapter 5, we discussed that organisations have different levels of information and knowledge requirements. Usually the entities include the strategic or executive level, the managerial level, the knowledge level and the operational level. Thus, like other organisations, the government information systems are divided into three level categories: the strategic or executive information systems, the management level information systems, and the operational level information systems.

In establishing the government information systems, the operational level is usually the first to be systematized and computerized. The operational systems support the government employees at the operational level. According to the United Nations Department for Development Support and Management Services:[71]

- The operational systems are characterized as being transaction based, cyclically processed, usually batch oriented, and usually operating in a current time frame. These transactions are accumulated and processed on a periodic basis designed for expediency of processing rather than for the production of information. Operational systems are built on a function by function basis or functional collection-by-functional collection basis, and each systems-supported function is traditionally called an application. Typical operational systems in a government are statistical data processing systems in public sectors, accounting system, payment processing system, revenue system, customs system and other similar systems.
- The management information systems are broader and horizontally based. It is mainly focused on reporting rather than processing in nature. Existing data are arranged and ordered to provide the control, coordination and planning functions with views of the business function of the agency. Examples of management information systems in a government are financial management information systems, personnel management information systems, external finance management information systems, programmes/projects management information systems, civil registration systems, enterprises registration systems, motor vehicle registration systems, passport management systems, patents management information systems, land management information systems, police information systems, judicial information systems, information systems for national defense and security, and information systems for various public sectors.
- In the decision-making support systems, the emphasis is on providing support to decision makers in terms of increasing the effectiveness of the decision-making efforts. Generally, decision support systems are used for strategic and sometimes tactical situations. The primary components of a decision support system are a database management system, a model-base management system, and a dialogue generation and management system. Decision support systems are usually based on operational systems and management information systems existing within the organisations. These systems project future trends from past events. The data in decision support systems tends to be less precise and more statistically oriented. That is, they tend to look at the whole situation rather than individual

---

71 United Nations Department for Development Support and Management Services, "Government Information Systems: A Guide to Effective Use of Information Technology in the Public Sector of Developing Countries", 1995, pp. 8-9. Available from http://unpan.org/publications/PDFs/E-Library%20Archives/1995%20Government%20Information%20Systems.pdf.

events. Examples of decision support systems in a government are national, sectoral and urban/regional planning information systems, natural resources information systems, laws and regulations information systems, scientific and technological information systems, social and economic information systems, demography information systems, human resources information systems, and executive information systems. Artificial intelligence and expert systems have been developed rapidly as tools to support decision-making.

6.2 Systems Development Process

The activities of information systems development include problem or systems analysis, systems design, programming, testing, conversion, and production and maintenance.[72]

System Analysis

Establishing or enhancing information systems in an organisation requires systems analysis to design the information and communication architecture or blueprint of the organisation. Systems or project analysis is the analysis of the problem that the organisation will try to solve with an information system. The study includes problem definition, identification of causes, specification of solutions, and identification of the information requirements that must be addressed by the system solution. Aside from suggesting the solutions, the analysis must also include a feasibility study for every solution proposed to ascertain their viability in the context of the resources and limitations of the organisation. The study must cover the following:[73]

- Technical feasibility – Is the proposed solution achievable given the availability of ICT resources?
- Economic feasibility – Does the proposed solution outweigh costs?
- Operational feasibility – Is the proposed solution desirable within the existing organisational framework?

Upon the selection of the most desired solution, **requirements analysis** follows. It is considered as one of the most difficult tasks in systems analysis. It entails the definition of objectives of the new or enhanced system and developing a detailed description of the functions that the new or enhanced system must perform. In requirements analysis, cost, time and technical specifications and constraints must be considered in relation to the goals, procedures and decision processes of the organisation. A flawed requirements analysis can lead to a faulty system of high development cost. Thus, it is important to give considerable time for research and revision of the requirement statements. In defining this endeavour, the systems analyst or the person responsible for this activity must ensure the participation of the user of the systems from the start.

Systems Design

Determined by the systems analysis, the systems design provides the details or specifications of the information requirements—what and how these should look like and function. The systems design serves like a blueprint of a building, specifying all the form and structure of the information systems. It includes specifications of how the solution will address the managerial, organisational and technological components of the information system. The design includes the logical and physical design specifications of the information system.

---

72   Ibid., pp. 313-314.
73   Ibid., p. 314.

The logical design pertains to the abstract/business layout of the system components and their relationship to each other as how these would appear to the users. The design specifies what the system solution will do as opposed to how it is implemented physically. It describes the inputs and outputs, processing functions to be formed, business procedures, data models, and controls. The controls specify the standards for acceptable performance and methods for measuring actual performance in relation to these standards.

The physical design is the process of translating the abstract logical model into the specific technical design for the new system. It produces the specifications for the hardware, software, physical databases, input/output media, manual procedures, and specific controls. Physical design provides the remaining specifications that transform abstract design plan into functioning system of people and machines.

Programming

The details specified in the systems design are inputs necessary for programming. The latter is the implementation of the design. Programming process involves the translation of the design to software program codes. While it can require a shorter time to accomplish compared to the analysis and design phase, programming is considered as the heart of the systems development.

Testing

The process involves a thorough, comprehensive and extensive examination of the programmed system under known conditions. Preparation of the test data, actual conduct of the tests, and assessment of the test results, subsequently making corrections or revisions in the system involves the testing stage. Testing activities are of three types:

*   Unit testing – The separate testing of each program in the system for the purpose of locating and correcting errors in the program.
*   System testing – The testing of the full program suite assessing whether the system as a whole is functioning as planned or if there are inadequacies or inconsistencies as planned – according to performance time, capacity for file storage, handling peak loads, recovery and restart capabilities, and manual procedures.
*   Acceptance testing – The systems testing results are evaluated by users and management based on standards set. If the system is found acceptable, it is certified for production or installation.

Conversion

The process involves the change from the old to new systems. There are four types of conversion strategies:

*   Parallel strategy – The old system runs parallel or at the same time with the new system
*   Direct cut-over strategy – A specific date is assigned to turn over to the new strategy
*   Pilot study – The conversion is done only to limited and select areas under study, until the system runs well for the organisation to start full installation or in stages
*   Phased approach strategy – The new system is introduced at one location or one batch at a time

Preparations to implement conversion plans are expected, as well as the documentation and observations from the technical and users' point of view is beneficial. Training of all personnel to the new systems is a must to make the system work for the organisation.

Production

The system is in production once the conversions and systems installation are complete. A review from the users and the technical team must take place to assess the project process and compare between planned and actual results. It is also at this stage that future modifications and enhancements of the system are conceptualized and planned.

Maintenance

Maintenance takes place once the system is in place. Any modifications or changes in the hardware, software, documentation or procedures to correct errors, meet new requirements or improve processing efficiency is referred to as maintenance.

6.3 What is Systems Development Life Cycle?

The SDLC is a method that refers to the entire process of building systems or software solutions. While it is considered the oldest method in systems development, the SDLC has evolved from a simple programming and encoding automation process to a more complex process of integration and interfacing with other systems. The purpose of this method is to ascertain the quality of the delivered systems through strong management controls that maximize the productivity of systems staff.[74] Similar to the project life cycle, the SDLC is composed of activity sets in phases.

Figure 15. Systems development life cycle phases

In each phase are sets of activities that define each phase.[75] Table 33 briefly describes each phase of the SDLC.

---

74   Russel Kay, "Quick Study: System Development Life Cycle", Computerworld, 14 May 2002. Available from http://www. computerworld.com/s/article/71151/System_Development_Life_Cycle?taxonomyId=11&pageNumber=2; and Bender RBT, *Systems Development Life Cycle:Objectives and Requirements* (Queensbury, 2003). Available from http://www.benderrbt.com/ Bender-SDLC.pdf.
75   John W. Satzinger, Robert B. Jackson and Stephen D. Burd, *Systems Analysis and Design in a Changing World*, sixth edition (Boston, Course Technology, Cengage Learning, 2012). See Chapter 8: Approaches to System Development. Available from http://web.cerritos.edu/sfuschetto/SitePages/CIS201/LectureNotesOnTalonNet/Chapter08Lecture.pdf.

Table 33. Brief description of systems development life cycle phases

SDLC	Activities
1) Initiation	Get the project identified, approved, and budgeted
(2) Planning Phase	Establish the scope of the project, plan and schedule work, and identify the required resources
(3) Analysis	Understand the user requirements
(4) Design Phase	Define and structure the ICT solution or system
(5) Implementation Phase	Programming activities and other activities to build the solution and database
(6) Deployment Phase	Data conversion, final testing, and putting the system into production

Other names given to every SDLC phases are noted in table 34 below:

Table 34. Comparison of terms used in the systems development life cycle phases

Systems Development Life Cycle	The Traditional Systems Life Cycle	Systems Development Life Cycle
1) Initiation	Project Definition	Concept
(2) Planning Phase		Requirements
(3) Analysis	Systems Study	Design
(4) Design Phase	Design	Implementation
(5) Implementation Phase	Programming	Integration and Test
(6) Deployment Phase	Installation	Installation
Support and Maintenance	Post Implementation	Maintenance and Support

There are two approaches to SDLC—the predictive and adaptive approaches. The SDLC predictive approach assumes that the development is planned in advance and the new information system can be done as planned. The SDLC adaptive approach is used when the requirements of the project users are not clear and well understood. In this situation, a more flexible approach is called for to allow modifications in the project as it progresses.

Related to SDLC models (the type of design and process), the SDLC has evolved from the waterfall model to other models. The spiral model is preferred by many software developers.

The **waterfall model** (figure 16) uses the SDLC predictive approach and follows a sequential pattern from one phase to another. It assumes that when one phase is done, it will fall to the next and there is no retroactive process. Systems developers see the model as disadvantageous in reality. They find this model time consuming, has little room for iteration and has difficulty in responding to changes. Problems are often identified only at the testing phase, which often leads to delays and overspending.[76] Modifications of this model were done to allow flexibility and overlaps. However, the use of the model is limited to medium to large projects. The expectation is that each phase will develop in a continuous sequential manner.

A newer and more adaptive SDLC model is the **spiral model** (figure 16). It assumes that a cycle of iterations and adjustments must happen in every phase to complete the project. Users participate in the cyclical process, and the process adapts and is repeated until requirements

---

76   Nabil Mohammed Ali Munassar and A. Govardhan, "A Comparison between Models of Software Engineering", *International Journal of Computer Science Issues*, Vol. 7, No.5, September 2010. Available from http://www.ijcsi.org/papers/7-5-94-101.pdf.

are stable and users approve the design. It is supposed to be risk management focused. The weakness of the model is its lessening of control if not tightly managed. For example, each iteration loop leads to requests for change from users. It may be difficult to accommodate all requests for change at each level of iteration. Thus, the scope becomes difficult to manage, and the process results in projects running late and over budget.[77]

Figure 16. Waterfall and spiral models[78]

6.4 Other Alternative System Building Approaches[79]

Prototyping – This involves the experimental building of systems where prototypes are created for end users to evaluate. The preliminary model will be further refined to conform precisely to the users' requirements. Like the spiral model, the approach makes use of an iterative process of systems development. The steps include: identification of users' basic requirements; development of initial prototype; evaluation of prototype by users; and revision and enhancement of the prototype until no more iterations are required. The approved prototype provides the final specifications for the application.

Customisation of application software packages – This involves the modification of procured software packages to meet specific or unique user requirements. If the use of the customized software package no longer meets a specific user requirement, the use of additional software is sometimes used as an option. Having two different software applications sometimes are not able to connect. The use of a middleware is also considered. A middleware is software that can connect two separate applications.

77 John W. Satzinger, Robert B. Jackson and Stephen D. Burd, *Systems Analysis and Design in a Changing World*, sixth edition (Boston, Course Technology, Cengage Learning, 2012). See Chapter 8: Approaches to System Development. Available from http://web.cerritos.edu/sfuschetto/SitePages/CIS201/LectureNotesOnTalonNet/Chapter08Lecture.pdf; andNabil Mohammed Ali Munassar and A. Govardhan, "A Comparison between Models of Software Engineering", International Journal of Computer Science Issues, Vol. 7, No. 5, September 2010. Available from http://www.ijcsi.org/papers/7-5-94-101.pdf.
78 Nabil Mohammed Ali Munassar and A. Govardhan, "A Comparison between Models of Software Engineering", *International Journal of Computer Science Issues*, Vol. 7, No. 5, September 2010. Available from http://www.ijcsi.org/papers/7-5-94-101.pdf; andMatt Heusser and Tabrez Sait, "General Idea of Iterative Models - Spiral Model", presentation made on 13 September 2001. Available from http://www.xndev.com/CS/CS641/FinalSpiralModel97.ppt.
79 Kenneth C. Laudon and Jane P. Laudon, *Essentials of Management Information Systems*, 3rd ed. (New Jersey, Prentice Hall, 1999), chapters 6, 10 and 11; and adapted from Kathy Schwalbe, "Management of Information Technology Projects", Cengage Learning, Philippine edition, 2011.

End user development – In-house system development is an option considered if there is enough expertise in the organisation.

Agile software development approach – This is a recent adaptive software development approach that emphasize collaboration between programming teams and business experts. Methodologies include an iterative workflow and incremental delivery of software in short iterations. Some of the popular Agile methodologies include Agile unified process, crystal, dynamic systems development method, extreme programming, feature driven development, lean software development, and scrum.

Outsourcing – This involves the contracting of external organisations to develop all or part of the system when the organisation does not have enough expertise or when the organisation wishes to use their in-house expertise for other work.

6.5 System Building Methods and Tools

Traditional methods – They are structured methodologies developed since the 1970s that document, analyse and design information systems in a step-by-step methodological approach. The methodologies included: structured analysis using data flow diagram; structured programming using component modules and using simple sequence selection and iteration; and system flowcharts that presents graphic design tool illustrating physical media and sequence of processing steps used in the entire information system.

Object oriented methodology – The use of object oriented programming and object oriented software development by combining data and procedures into unified objects. The system is viewed as a collection of classes, objects and relationships. The objects are reusable and are defined, programmed, documented and saved as building blocks for future applications.

Computer aided software engineering (CASE) – Automated step-by-step methodologies for software systems development to reduce the amount of repetitive work the developer needs to do. CASE tools are used for front-end and back-end systems development processes.

Rapid application development – The use of processes to create workable systems in a short period. The process need not be sequential but they make use of CASE tools, reusable software, object-oriented software tools, prototyping, fourth generation tools, visual programming, and other tools. These tools are used for building graphical user interfaces, prototyping of key elements, the automation of program code generation, and close teamwork among end users and information systems specialist. Under this methodology is the joint application design that brings users and information systems specialists to work on the interactive design of the system.

Software re-engineering – A methodology to salvage aging software. It uses re-engineering to avoid long and expensive processes of having new systems projects since the old system still works. It makes use of reverse engineering, revision of design and program specifications, and forward engineering.

6.6 Understanding Requirements Analysis

Identifying the requirements of the information systems solution is crucial and one of the most difficult tasks in systems development. Requirements analysis is a process of discovering what is desired versus what is actually needed by users. It clarifies the products that will attempt to satisfy the complex desire or sets of desires that constitute the major part of the requirement process. It is important to have opportunities to interview users at the category level of the

systems in focus, their business and business processes, and the terminologies they use to describe their processes. The process must result in a documentation of the existing user functions, processes, activities and data.

6.6.1 Functional Requirements

The term refers to a software engineering concept that shows and specifies what a system should be able to do to perform its function. It is used to identify user requirements specifications in the phases of the software life cycle.[80] It is a capability requirement that a product must have to make it function for the user. For example, the functional requirement for a bank product is to: "Produce a daily summary of inventory at the end of every work shift." Another example is a sample statement for a health device: "Display the heart rate, blood pressure and temperature of the patient when device is connected to the patient." The sample statements are the output of the requirements analysis that provides the detailed function of a system or a component—what it should do or perform. Some of the typical functional requirements are related to:[81]

- Business rules
- Transaction corrections, adjustments and cancellations
- Administrative functions
- Authentication
- Authorization – functions user is delegated to perform
- Audit tracking
- External interfaces
- Certification requirements
- Reporting requirements
- Historical data
- Legal or regulatory requirements

6.6.2 What are Non-Functional Requirements?

Non-functional requirements refer to specifications on how the system should behave, constrained upon the systems behaviour. Non-functional requirements specify all the remaining requirements not covered by the functional requirements. They specify criteria that judge the operation of a system, rather than specific behaviour. For example: "Display the patient's vital signs" must respond to a change in the patient's status within two seconds. Another example of a non-functional requirement is an initialization sequence incorporated into the software that is given to a specific user. Typical non-functional requirements involve:

- Performance
- Capacity
- Reliability
- Maintainability
- Security
- Manageability
- Data integrity
- Interoperability
- Scalability
- Availability
- Recoverability
- Serviceability
- Regulatory
- Environmental
- Usability

Non-functional requirements specify the system's "quality characteristics" or "quality attributes". Potentially many different stakeholders have an interest in getting the non-functional requirements

---

80   The Free Dictionary, "(specification) functional requirements", Farlex, Inc. Available from http://encyclopedia2.thefreedictionary.com/functional+requirements.
81   Lessons from History, "Functional versus Non-Functional Requirements and Testing", Mark Kozak-Holland, 5 February 2009. Available from http://www.lessons-from-history.com/node/83.

right. This is because for many large systems the people buying the system are completely different from those who are going to use it (customers and users).[81]

Requirements are well entwined with project constraints—scope, time and cost. Having the requirements and these project constraints considered helps identify and interpret all of the stakeholders' requirements and the project parameters.

In the matrix below in table 35 is a checklist of ICT project requirements. Where specific requirements exist, you can describe them under the "comments" column.

Table 35. A sample checklist of ICT requirements

Requirement Type	Examples	Comments
Accessibility	Localization? Handicap access?	
Architecture software	J2EE or .NET; Object oriented design; XML, SOAP; operating system, middleware	
Architecture hardware	Server platform, storage area network, firewall	
Availability	When is it needed? 24/7?	
Business process	Which business processes must be changed to fit with the new system?	
Business recovery	Does this system introduce new business recovery requirements?	
Data	For each datum: definition, format, type, length, business rules (boundaries, default value, access rules)	
Data migration	Is data migration required? Must migration take place within a specified period of time? How much data cleansing is needed? Can some of the data be moved into archive files rather than live?	
Disaster recovery	Does this system introduce new disaster recovery requirements?	
Document	Are specific documents required? Format? Delivery: web vs. paper?	
Fail over and recovery	To what extent must product recover without data loss? Is a mirror system required?	
Functional	Use cases; use case priorities; business rules	
Hardware configuration	Which hardware configurations must be supported? Server, desktop, laptop, router, firewall models; microcode, basic input/output system, scripts.	
Installation	Are special skills required for installation? Special preparation at user site? Install scripts? Does the install have to take place on a specific date or time? Must the user be present?	
Interface	Is there a need to import/export data in a specified format?	
Legal	Are there legislated or mandated standards or processes that must be followed?	
Load	Concurrent number of users, concurrent transactions, data per transaction, magnitude of peak load, estimated growth in load over time	
Localization	Language and cultural requirements, date and address format, time zone	

---

82   Ibid.

Organisation	Will this project result in a change in organisational structure? Will it change how people do their jobs? What preparation do they need? Will there be resistance to change?	
Performance	Response time for queries, reports, screen updates, web page load time, time per transaction	
Product delivery vehicle	Install via web vs. CD? Access code required for download or install?	
Quality	What types/level of defects are stop-ship vs. acceptable? When are work arounds okay?	
Reliability	To what extent must all parts of the product work in a consistent manner (e.g. consistent navigation)?	
Robustness	How resistant to failure must the product be? Must it fail gracefully, and what does that mean?	
Scalability	Will it be necessary to expand the number of users? Over what period of time? In how many locations?	
Security	Password rules; physical security; security from Internet attack; data security where various user groups cannot see one another's data	
Software configuration	Versions of operating system, browser, middleware, database	
Standards	Coding standards such as JavaDoc, user interface standards, IEEE standards, Section 508 for web access	
Stress	Will the system be used at the edge of its range, i.e. near or at its boundary conditions?	
System interface	How many systems will interface with the new one? Will there be data import/export in specific formats?	
Training	Will training be required? Of whom? Who does it? Where? When? Is there need to measure training effectiveness?	
User interface	Do specific user interface rules apply?	
Others		

A glossary of concepts and terms is available in the annex.

? Questions To Ask

- Aside from the requirement elements listed above, what else can be added to the list?
- Using the case study of Noy on enhancing the ECO website (case study 3), what are the ICT requirements? Apart from the requirements listed in table 34, what else can be added?

The key to success in ICTD projects is to actively manage project requirements and ensure that they are appropriately designed. By design appropriateness this means that the users are consulted and have participated in the requirement analysis. Sometimes users do not know what they want; at times the users are not able to articulate in the language that IT people know. Project managers have to be on guard at this phase to be able to observe if there are unclear understanding of requirements between analysts and the users, and between developers and users. The analysis and systems design phase tends to be easy if the requirements are clear. The only likely problems to emerge are practical limitations and the consequent need to change the requirements to reflect what is actually possible. As long as these changes are controlled and managed then this phase should not result in any surprises.[83]

---

83 Roger Lever, "Manage Project Requirements Analysis and Design", Suite 101, last updated 24 October 2013. Available from http://suite101.com/article/manage-project-requirements-analysis-and-design-a87601.

6.7 Preparing a Requirement Document

A requirements document should include the following sections:[84]

Introduction – State the problems that need to be fixed, the history, examples of the problem situation, motivation to fix it, etc.

Project goals – A simple statement of why the system development is being proposed. Major constraints of personnel, time and money can be mentioned

Major functions – Simple statements about how the system will function based on the project goals

General outputs – A simple description of information required from the system. Details on every item of information (not necessarily screens or reports) is required. The system analyst should suggest what reports will best provide the required information

General information inputs required – Go through the list of output items and see what input data are necessary to produce the outputs. This is an important time to ensure that all of the required data are available at the proper time

Performance – How many transactions are to be processed, how much data must be stored, how frequently must reports be produced? State in terms of averages and maxima (in a peak day or hour)

Growth – Estimate the increase in business and stipulate the number of years that the system is expected to function. Express the growth as a percentage or as actual numbers. The additional functions in the subsequent phases can also be described

Operation and environment – For example, where the computer will reside, how the LAN will be wired, where the interactive terminals are, if any. Who will use it? Identify any unusual circumstances such as a hostile environment (intentional or accidental), or endurance requirements? There may be a need for portability, or for special safety or physical security measures

Compatibility and interface – State if inter-computer communication is required, any existing equipment that has to be incorporated or if distributed access is required. If the system must go on an existing computer, or must be programmed in a specific language, document this fact here

Reliability and availability – Quote mean time between failures figures, mean time to repair and percentage up-time required. All manufacturers publish these figures for their hardware

Human interface – Outline the computer experience required of the user. State how the system is to handle the brand new user

Organisational impact – Which departments will be affected and how their work must be changed. How the new system is to interface with some existing or new manual systems

---

84   United Nations Department for Development Support and Management Services, "Government Information Systems: A Guide to Effective Use of Information Technology in the Public Sector of Developing Countries", 1995, pp. 8-9. Available from http://unpan.org/publications/PDFs/E-Library%20Archives/1995%20Government%20Information%20Systems.pdf.

Maintenance and support – Warranties required: how long, to what extent, how it will be delivered

Documentation and training – List the general documents and/or courses that will be required. For example, documents for users, operators and maintainers

TEST YOURSELF

Choose the letter that corresponds to the best answer.

1. These are sets of interrelated components that collect (or retrieve), process, store and distribute information to carry out the functions of organisations.

a. Information systems
b. System development
c. Requirements analysis
d. Systems design

2. It requires a structured set of activities in order to produce business solutions for an organisation.

a. Information systems
b. System development
c. Programming
d. Conversion

3. The _____ provides the details or specifications of the information requirements—what and how these should look like and function.

a. Testing
b. SDLC
c. Systems design
d. Maintenance

4. It is a method that refers to the entire process of building systems or software solutions.

a. SDLC
b. Conversion
c. Testing
d. Programming

5. The _____ assumes that the development is planned in advance and that the new information system can be done as planned.

a. SDLC predictive approach
b. SDLC adaptive approach
c. Waterfall model
d. Spiral model

6. It is used when the requirements of the project users are not clear and well understood.

a. SDLC predictive approach
b. SDLC adaptive approach
c. Waterfall model
d. Spiral model

7. It assumes that when one phase is done, it will fall to the next and there is no retroactive process.

a. Spiral model
b. SDLC predictive approach
c. Waterfall model
d. SDLC adaptive approach

8. Pertains to the use of processes to create workable systems in a short period.

a. Rapid application development
b. Object oriented methodology
c. Computer aided software engineering
d. Traditional methods

9. Pertains to structured methodologies that document, analyse and design information systems since the 1970s in a step-by-step methodological approach.

a. Rapid application development
b. Traditional methods
c. Computer aided software engineering
d. Waterfall model

10. Pertains to the use of object-oriented programming and object-oriented software development by combining data and procedures into unified objects.

a. Object-oriented methodology
b. Traditional methods
c. Computer aided software engineering
d. Waterfall model

6.8 Chapter Summary

Systems development requires a structured set of activities in order to produce business solutions for an organisation. The activities of information systems development include problem or systems analysis, systems design, programming, testing, conversion, production and maintenance. The SDLC is a method that refers to the entire process of building systems or software solutions. The purpose of this method is to ascertain the quality of the delivered systems through strong management controls that maximize the productivity of systems staff.[85] Similar to the project life cycle, the SDLC is composed of activity sets in phases – initiation, planning, analysis, design, implementation, deployment, and support and maintenance.

---

85 Russel Kay, "Quick Study: System Development Life Cycle", Computerworld, 14 May 2002. Available from http://www. computerworld.com/s/article/71151/System_Development_Life_Cycle?taxonomyId=11&pageNumber=2; and Bender RBT, *Systems Development Life Cycle: Objectives and Requirements* (Queensbury, 2003). Available from http://www.benderrbt.com/ Bender-SDLC.pdf.

Aside from SDLC, there are other systems development approaches and methodologies used in building systems or software solutions. Requirement analysis is one of the difficult phases in systems development and in SDLC. It entails the definition of objectives of the new or enhanced system, and developing a detailed description of the functions that the new or enhanced system must perform. In requirements analysis, cost, time and technical specifications and constraints must be considered in relation to the goals, procedures and decision processes of the organisation.

Two types of requirements are analysed, the functional and the non-functional requirements. Functional requirements are the features that specify what the system should be able to do to perform its function, and the non-functional requirements are the specifications for how the system should behave. In defining and analysing the system requirements, the users must be engaged to participate throughout the systems building process.

6.9 Chapter Review Questions

1. What is systems development and what are the processes to build systems?
2. How can organisations benefit from it?
3. What is SDLC? What are the models in SDLC? How are the models used?
4. What are functional and non-functional requirements? What is the significance of these requirements to systems development?

6.10 Suggested Readings

Bender RBT. *Systems Development Life Cycle: Objectives and Requirements*. Queensbury, 2003. Available from http://www.benderrbt.com/Bender-SDLC.pdf.

Kay, Russel. Quick Study: System Development Life Cycle. Computerworld. 14 May 2002. Available from http://www.computerworld.com/s/article/71151/System_Development_Life_Cycle?taxonomyId=11&pageNumber=2.

Laudon, Kenneth C., and Jane P. Laudon. *Essentials of Management Information Systems*, 3rd ed. New Jersey: Prentice Hall, 1999, chapters 3, 10 and 11.

Munassar, Nabil Mohammed Ali and A. Govardhan. *International Journal of Computer Science Issues*, Vol. 7, No.5 (September 2010). Available from http://www.ijcsi.org/papers/7-5-94-101.pdf.

Schwalbe, Kathy. Management of Information Technology Projects. CENAGE Learning, 2011.

Systems Analysis and Design in a Changing World, sixth edition – Chapter 8 cited in http://web.cerritos.edu/sfuschetto/SitePages/CIS201/LectureNotesOnTalonNet/Chapter08Lecture.pdf.

United Nations Department for Development Support and Management Services. Government Information Systems: A Guide to Effective Use of Information Technology in the Public Sector of Developing Countries. 1995. Available from http://unpan.org/publications/PDFs/E-Library%20Archives/1995%20Government%20Information%20Systems.pdf.

6.11 Suggested Activities

1. Using case study 3, what systems development concepts can be applied in building the enhanced ECO website?
2. Find the meaning of the following terms below and give examples of functional requirement statements for these terms:

- Business rules
- Transaction corrections, adjustments and cancellations
- Administrative functions
- Authentication
- Authorization – functions user is delegated to perform
- Audit tracking
- External interfaces
- Certification requirements
- Reporting requirements
- Historical data
- Legal or regulatory requirements

3. Find the meaning of the following terms below and give examples of non-functional requirement statements for these terms

- Performance
- Scalability
- Capacity
- Availability
- Reliability
- Recoverability
- Maintainability
- Serviceability
- Security
- Regulatory
- Manageability
- Environmental
- Data integrity
- Usability

CHAPTER 7: ICTD PROJECT PLANNING

Objectives

- Describe project planning in relation to the implementation and control phases of a project
- Explain scope, schedule and cost constraints, and corresponding tools for planning and control
- Demonstrate how the tools are used for planning and control
- Discuss the management of information in project life
- Describe the importance of planning for project organisational impact and change management

---

Something To Do

The E-MRS Health Application for the National Telehealth Project

Read the case in annex 3 and answer the following questions to initiate the case analysis:

- What are the objectives of the project?
- What is the need?
- What solution is proposed?
- What is the situation based on the review they made of the previous system?
- What is their new proposal?
- What do you think are the concepts applicable in analysing this case?
- How was the planning process approached?

7.1 Project Planning and Control

Planning can be a powerful tool to serve the organisation's ends. Traditional planning requires an analytical-based approach to determine expected outcomes, and develop appropriate strategies towards achieving the outcomes. Situational analysis that includes external and internal conditions and historic data trends are used to identify and assess the strategic options for solutions to problems in the organisations. Anchoring project plans from organisational goals, clear targets, and continuous assessment strengthens the implementation and control processes towards project success.

Knott and Dawson identified three reasons for poor ICT project planning in organisations: (1) Risk management had not been addressed; (2) Business systems had not been fully justified; and (3) Lack of involvement from management.[86] In addition, participation of stakeholders in the project planning process is overlooked. Laudon and Laudon observed that insufficient involvement of the user in the planning and design stage is a major cause of system failure.[87] Participation was also listed as one of the lessons learned in SDLC specifically advocating for the involvement of people concerned at every stage of the project initiatives.[88]

---

86 D. Gichoya, "Factors Affecting the Successful Implementation of ICT Projects in Government", *The Electronic Journal of e-Government*, Vol. 3, No. 4, 2005, pp. 175-184. Available from http://www.ejeg.com.
87 Kenneth C. Laudon and Jane P. Laudon, *Essentials of Management Information Systems*, 3rd ed. (New Jersey, Prentice Hall, 1999).
88 *SDC, SDC ICT4D Strategy* (Berne, SDC, 2005). Available from http://www.deza.admin.ch/ressources/resource_en_161888.pdf.

As discussed previously in earlier chapters of the Primer, planning must be able to produce a written output that defines the project scope. This includes SMART-ly defined targets articulated in objectives and goal statements. The plan document spells out the project basics relating targets and objectives to the scope, schedule, cost, and quality constraints. It serves as the charter that binds the project team and the organisation to observe as the starting point of project implementation and control.

7.2 Scope Definition

The concept refers to all the work activities, including the processes entailed to create the product or service end of the project. A project scope statement must be written and approved. The statement must also be related to a fundamental project management tool, the WBS.

Work Breakdown Structure

The WBS refers to the breaking or division of work into smaller details. It is a structured process that will produce the detailed list of work activities in each major project categories that includes enumeration of detailed tasks, sub-tasks, work packages and components of the project. It is detailed enough that you are able to assign roles and responsibilities to various components including hardware, network and software components, services, documentation, labour, testing, implementation, installation and maintenance.

With the WBS completed, the scheduling and resource identification and analysis follows. Together, they form the basis for estimating costs and developing budget plans.

Something To Do

Prepare a WBS for the case study of Noy on the enhancement of the ECO website.

7.3 Schedule Management

The concept refers to management of all the scheduled activities and processes of the project. It also includes the approved planned duration of the project. The schedule planning tools include the Gantt chart, PDM and CPM that can support you in planning the sequencing and managing your project time. The tools are also used to show the interdependencies of activities and tasks, and areas that may cause delays in the schedule. Delays will often have an impact on the cost of the project activities. See section 3.3 for details about these tools.

7.4 Project Budget and Financial Management

Cost estimation can be done after breaking down the tasks and work packages, as well as the components—resources, equipment and facilities required. It is useful to break down costs into five categories: people, supplies, facilities, equipment and information. Ideally, the project manager is already on board when the project budget is being planned. It is important to verify the adequacy of the budget before implementation, even if the total budget cost of the project cannot be changed. This will help determine if there are areas that need cost cutting and realignment.

Members from the project team and other people in the organisation can be sought for help to complete the process. Organisational policies in relation to financial management must be observed. For example, a project will need to have cash available. The team will need to produce a cash flow report showing the timing of payment and receipts. A regular financial reporting must be scheduled to consistently check on the financial state of the project vis-à-vis the work and milestone schedules.

Some tools that are helpful to continuously check and control the financial conditions of the project in relation to project schedules are: the earned value analysis, cost and schedule variance analysis, schedule performance index and cost performance index.

Earned Value Analysis

Earned value (EV) analysis is a technique to assess progress between actual cost and planned budget. The Gantt chart is used as a reference to assess percentage completion, a necessary input to earned value. EV has a formula to give a picture of project progress. Schedule is actually measured in money currency. The terms used in earned value analysis are: planned value (PV), actual cost (AC), and work performed or earned value (EV). The latter is necessary to know the cost variance (CV) and schedule variance (SV) of the project.

- PV refers to the task (or whole task) but it is represented by the project budget depending on when the time analysis is accomplished
- AC refers to the money actually paid out in the accomplishment of the task
- EV refers to the actual work completed, measured against the planned PV

If the actual cost is higher than the planned budget, there is the probability that the project may exceed its budget. However, if the actual cost is lower than the planned budget, it can mean that the project is behind schedule. Measuring can be done on a periodic basis according to progress points of tasks and to the whole project.

Cost and Schedule Variance Analysis

Analysis by task can provide a more detailed picture about the performance of the project by cost and schedule. EV determines whether there is a cost and schedule variance from the project baseline.

- Cost variance (CV) is the difference between earned value (EV) and actual cost (AC). The formula is: CV = EV – AC
  - o Positive CV means the project is under budget
  - o Negative CV means the project is over budget
  - o Zero CV means the project is on budget

- Schedule variance (SV) is the difference between the earned value and the planned value. The formula is: SV = EV – PV
  - o Positive SV means the project is ahead of schedule
  - o Negative SV means the project is behind schedule
  - o Zero SV means the project is on schedule

Schedule Performance Index and Cost Performance Index

Similar to the CV and the SV, the schedule performance index (SPI) and cost performance index (CPI) measure the project status according to efficiency and financial status. The CPI in particular though provides a more critical assessment of how the project is doing.

By formula, SPI makes use of the earned value divided by the planned value or SPI = EV/PV. The interpretations are:

- If SPI is above 1.0, the project is ahead of schedule
- If SPI is below 1.0, the project is behind schedule
- If SPI is equal to 1.0, the project is on schedule

The CPI makes use of the EV divided by the AC or CPI=EV/AC. The interpretations are:

- If CPI is above 1.0, it is a good indication that the project is over budget, earning more than it is spending
- If CPI is below 1.0, it is a bad indication that the project is under budget, spending more than what is has accomplished
- If CPI is equal to 1.0, the project is on budget

The use of the SPI and the CPI is for the project manager's re-planning measures. It is also used for reporting project status, communicating the good news and bad news of the project financial status. The bottom line is spelled out in money terms—CPI measures the amount earned versus the money spent. It provides the information that will trigger analysis (e.g. why is the project under budget or over budget?) and decision-making for the project manager (what steps to take to correct the situation) and key stakeholders for interventions (what they should do to support a decision).

Budget at Completion and Estimates for Completion

The calculation of SPI and CPI helps to revise and finalize schedule and budget estimates. Upon revision, you will have the latest schedule estimate (LSE) vis-à-vis the original schedule at completion (SAC). The LSE is represented by the formula: LSE = SAC/SPI.

For the budget, the latest revised budget estimate (LRE) is calculated by dividing the original budget at completion (BAC) by the CPI or the equation: LRE = BAC/CPI.

The SPI and the CPI also helps to obtain the worst and best case estimates for completion. While the CPI can show the best case estimate, for the worst case you will be able to yield the product by multiplying SPI and CPI. From the figures, you will be able to calculate the LRE or the latest budget estimate for the worst case budget estimate.

The estimated time for completion (ETC) is computed by calculating the difference between the actual amounts spent on the project from the latest budget estimate at completion. Thus, the formula is: ETC = LRE – AC.

The ETC provides an estimate of the money needed to complete the project from a certain point in time to the estimated completion time. The ETC concept is important because it can help the project manager assess the amount of money needed to complete the project. The calculated results can also provide indications for actions to improve the budget situation such as the cash flow required for project completion.

7.5 Project Control Cycle

Planning is intertwined with project implementation and control. The project manager, upon completion of the project blueprint also prepares for the coordination and monitoring of the project. The manager makes sure that all the work components, tasks, sub-tasks and activities

are coordinated in the implementation phase. S/he must also set up a monitoring system to regularly review the project and ensure that it is running according to schedule, cost and scope.

Setting project milestones at activity and task levels provide checkpoints that will indicate the performance of the project. It is important to use the control and monitoring tools at every checkpoint of the project to assess the status and make corrective actions if necessary. A scheduled plan for reporting on project progress and scheduled meetings are ways to help track progress.

Measurement of progress must be in place to track the project's progress. Metrics or measurement of quality such as the number of defects, defect removal rates, or errors in coding, must also be planned. Lessons gained from monitoring will help improve future ICT/systems development projects.

Figure 17 shows the elements of the project control system.[89]

Figure 17. Elements of a project control system

7.6 Project Information and Management

From conceptualization to completion, a project produces a lot of information, and this information must be managed to become useful for the project.

Project information is derived from ideas that are spoken and written from project conceptualization to project closing. The information harvested into data is processed for knowledge generation, such as analysis used for decision-making. The project manager must be aware of who the creators and users of the information are, plan a way of distributing the information when it is needed, and decide when information should be filed and archived.

89 Max's Project Management Wisdom,"Total Project Management of Complex Projects:Improving Performance with Modern Techniques – Understanding and Running a Successful Project". Available from http://www.maxwideman.com/papers/performance/understanding.htm.

Managing information works to the advantage of project managers. When processed and analysed, information is able to help managers make strategic decisions for the project. Identifying stakeholders who will require timely information at certain progress points of the project reduces risk factors associated with the information and communication needs of the project team and stakeholders.

Managing information must be a central function of the project management team. Information and communication strategies must be planned at the onset in relation to the other planning and control measures of the project. While information processing and production is quite cumbersome, one of the tools that can facilitate and address this challenge is through the use of templates. Using templates means we need not reinvent the wheel. In part 1 several templates are introduced. Templates give us ideas and can be modified to suit our needs.

7.7 Planning for the Project's Organisational Impact and Change Management

As soon as the project is conceptualized and approved, the project is potentially creating an impact in an organisation—intentionally and unintentionally.

By intention, the project charter spells out the vision or the change desired by the new or enhanced product that will be created. The project defines the transition between the current and future state of the organisation. Having this communicated to the stakeholders—from sponsors to users and beneficiaries will create a stir in the organisation. The results from the stir can be the sources of unintentional impact of the project. Being aware of how the project will be received in the organisation is an area to watch out for. Risks factors can be identified from among the anticipated events that will create impact on people in the organisation. Thus, risk factors and change management are something to plan for in relation to stakeholder analysis.

As mentioned in chapter 1, organisations are made up of interest groups and a prevailing culture—set ways of doing things. Aside from the stakeholders directly affecting the project, other people can be of influence to the project. The project manager with the team must be able to prepare a stakeholder analysis, risk analysis and impact analysis. These analyses contribute to the development of a risk management plan and a communication plan to enhance project management and design countermeasures to mitigate potential problems that will emanate from the people from the organisation and from external stakeholders.

The impact of projects in an organisation must also be worked out with other stakeholders in the organisation, such as the human resources department, which must develop a change management plan for the organisation that is transitioning to new information systems. By definition, change management is, "the process, tools and techniques to manage the people side of change to achieve the required business outcome. Change management incorporates the organisational tools that can be utilized to help individuals make successful personal transitions resulting in the adoption and realization of change."[90] In the duration of the project, the project team like "change agents" must share and give feedback to the human resources department of the observations and the project activities that input and feedback to the change management plan of the organisation. Likewise, the human resources department must be able to help the project team by providing their expertise about human resource concerns and change management strategies.

---

90   Tim Creasy, "Defining change management: Helping others understand change management in relation to project management and organisational change", Prosci Inc., 2009.

Questions To Ask

In the case study of Noy on the enhancement of the ECO website:

- Who among the stakeholders of the project will likely be affected directly or indirectly in an organisation? What about external stakeholders?
- What change management strategies can project managers use to minimize conflict situations?

TEST YOURSELF

I. Choose the letter that corresponds to the best answer.

1. It is a structured process that will produce the work breakdown list for each major project category, enumerating the details into tasks, subtasks and work packages and components of the project.

   a.   Work breakdown structure
   b.   Project scope statement
   c.   Schedule management
   d.   Gantt chart

2. The concept refers to management of all the scheduled activities and processes of the project. It also includes the approved planned duration of the project.

   a.   Project scope statement
   b.   Work breakdown structure
   c.   Schedule management
   d.   Gantt chart

3. The _____is a standard template to show information about the project activities and corresponding schedules in a calendar format or bar chart.

   a.   Gantt chart
   b.   Open project
   c.   Work breakdown structure
   d.   Project scope statement

4. It is a technique to assess progress between actual cost and planned budget.

   a.   Open project
   b.   Earned value analysis
   c.   Schedule management
   d.   Project scope

5. Derived from ideas that are spoken and written from project conceptualization to project closing.

   a.   Schedule management
   b.   Project information
   c.   Open project
   d.   Project control system

II. **True or False.** Write true if the statement is correct. If false, underline the words that make it wrong, and write the correct words in the space provided.

_____6. The project defines the transition between the current and future state of the organisation.

_____7. Project management is the process, tools and techniques to manage the people side of change to achieve the required business outcome.

_____8. Setting the schedule management at activity and task levels provide check points that will indicate the performance of the project.

_____9. The calculation of SPI and CPI provide estimates for the final schedule and budget.

_____10. If actual cost is higher than planned budget, there is a high probability that the project is experiencing difficulty.

7.8 Chapter Summary

Anchoring project plans on organisational goals, clear targets and continuous assessment strengthens the implementation and control processes towards project success. Using a project management approach helps organize the planning and control processes. Scope, schedule and cost constraints are project categories that require planning and control measures to minimize the risks that contribute to project and systems failure.

Aiding the planning and control process are various project management tools. To define the project scope is the WBS, from which schedule and costs can be detailed. Schedule planning tools include the Gantt chart, PDM and CPM. The tools used to continuously check and control the financial conditions of the project in relation to project schedules are: the earned value analysis, cost and schedule variance analysis, schedule performance index and cost performance index.

From project conceptualization to the closing phase, voluminous information is created and produced requiring project managers to plan for managing information. Managing information works to the advantage of project managers. Identifying stakeholders who will require timely information at certain progress points of the project reduces the risk factors associated with the information and communication needs of the project team and stakeholders.

The project must anticipate the impact of the project on people in the organisation. The project team must understand the need to manage change from project impact that manifests through people's behaviour. The stakeholder analysis, risk analysis and impact analysis are tools that can help the project team prepare a risk management plan and communication plan to design countermeasures to mitigate potential problems from people in the organisation and from external stakeholders.

7.9 Chapter Review Questions

1. Why must we plan and control ICTD projects?
2. What covers the scope of an ICTD project? How do you determine the scope of the project?
3. How do you derive schedules and costs?

4. How can the following tools – WBS, CPM and EV analysis help plan and control project constraints?
5. Why must the project team manage project information?
6. Why must the project team be prepared for project impact and change management?

7.10 Suggested Readings

Jenkins, Nick. A Project Management Primer or a guide to making projects work, v.02.2006. Available from http://www.exinfm.com/training/pdfiles/projectPrimer.pdf.

Maria Juanita R. Macapagal and John J. Macasio. *Module 7: ICT Project Management in Theory and Practice*, second edition, The Academy of ICT Essentials for Government Leaders Module Series (Incheon, UN-APCICT/ESCAP, 2011), pp. 51-90. Available from http://www.unapcict.org/academy.

Schwalbe, Kathy. Management of Information Technology Projects. CENAGE Learning, 2011, chapters 1-7.

Taylor, James. *Managing Information Technology Projects: Applying Project Management Strategies to Software, Hardware, and Integration Initiatives*. American Management Association, 2004.

7.11 Suggested Activities

1. Practice using the project management applications discussed in this chapter. In the table below is a sample WBS. Use the sample in your practice.

Project: Management Information Software System

1.1. Gap Analysis
    1.1.1. Needs Assessment
        1.1.1.1. Measure state of current system
        1.1.1.2. Determine additional capability requirements
    1.1.2. Develop alternative approaches

1.2. Requirements Specifications
    1.2.1. Develop preliminary software specifications
    1.2.2. Develop detailed software specifications
    1.2.3. Develop preliminary software specifications

1.3. System Engineering
    1.3.1. Develop alternative software approaches
    1.3.2. Develop alternative hardware approaches
    1.3.3. Develop cost estimates for each alternative approach
    1.3.4. Determine best technical and most cost effective approach
    1.3.5. Develop preferred system architecture

1.4. System Design
    1.4.1. Develop preliminary system design
        1.4.1.1. Design software modules
        1.4.1.2. Design hardware subsystem
        1.4.1.3. Integrate systems
        1.4.1.4. Develop detailed system design

1.5. System Development
    1.5.1. Write code for system modules
    1.5.2. Construct hardware subsystems
    1.5.3. Develop prototype

1.6. Testing
    1.6.1. Write test plans
    1.6.2. Test units
        1.6.2.1. Test code
        1.6.2.2. Modify code
        1.6.2.3. Test hardware
        1.6.2.4. Modify hardware
    1.6.3. System Testing
        1.6.3.1. Integrate system
        1.6.3.2. Test code
        1.6.3.3. Modify code
        1.6.3.4. Test hardware
        1.6.3.5. Modify hardware
    1.6.4. Prototype tests
        1.6.4.1. Conduct prototype tests
        1.6.4.2. Document test results
        1.6.4.3. Modify module code/hardware

1.7. Develop Production Model
    1.7.1. Develop production tests
        1.7.1.1. Conduct tests
        1.7.1.2. Document test results
    1.7.2. Conduct deployment
        1.7.2.1. Deliver system
        1.7.2.2. Install system
    1.7.3. Maintain system
        1.7.3.1. Detect/correct faults
        1.7.3.2. Modify/enhance system

1.8. Project Management
    1.8.1. Assign project manager
    1.8.2. Assign project engineer
    1.8.3. Assign administrative assistant
    1.8.4. Assign cost analyst

2. With a group of your classmates, obtain product information for two off-the-shelf software applications for a payroll or accounting system in a small NGO. Find demonstration versions of the applications in websites. Evaluate the strength and limitations of the applications selected, and present the findings to the class.

3. Interview one or two project managers who have managed an e-government project. Find out what preparations they made to plan and control project schedules and costs. Also ask him or her about experiences on change management.

4. Determine the earned value of the following case:

A project's planned cost is USD 20,000. At 60 per cent progress point, the actual percentage of completion is only 50 per cent.

- What is the earned value of the project at this point?
- What is the cost variance?
- What is the schedule variance?
- What is the schedule performance index?
- What is the cost performance index?
- What do the values mean?

Planned Value (PV)	Progress Point	Actual Cost (AC)	Earned value (EV)=Actual % of Task completion	CV=EV-AC	SV=EV-PV
20,000	100%				
16,000	80%				
15,000	75%				
12,000	60%	10,000	50%		
10,000	50%				
5,000	25%				

CHAPTER 8: PROJECT IMPLEMENTATION AND COMPLETION

Objectives

- Describe the processes of organizing a project team
- Explain the theories of motivation that applies to project team members and stakeholders
- Describe effectives ways of managing a project team and stakeholders
- Clarify the three components of risks in relation to the implementation of a risk management plan
- Demonstrate how to manage the procurement of goods and services required in project management

8.1 Organizing and Managing the Project Team

Among all the resources required by the project, the human resource is the most important to look into. For the reason that projects are powered by the team's efforts, it is imperative to consider the organisational processes of recruitment, selection and training of the team. It is also important to understand the team's motivation to work collectively, the leadership and leadership styles, the process of decision-making, and the reporting structure.

8.1.1 Staffing: Recruitment and Selection

Prior to recruitment of the project team, it is important that the resource requirements (including human resource requirements) are based on a comprehensive assessment of the situation and the needs. A project organisational chart is developed, roles and responsibilities defined, and work and assignments identified. The process and criteria for selection should also be prepared. Then, the actual recruitment and selection process can take place.

The project manager must be sought first. As mentioned in chapter 1, the qualities and skill set of the project leaders must be defined to facilitate selection. To reiterate, the desirable qualities, competency and skill set of a project manager includes: leadership, communication skills, negotiating skills, problem solving, and the ability to influence the organisation and inspire people. As a leader, it is desirable to have the characteristics of honesty, credibility, ethical behaviour and be forward-looking.

Where and how do we find the people who will work for the project? Recruitment of job applicants and candidates can be sourced from within the organisation or outside it. As we want to have a good project team but we have limited time to make decisions, filtering the list of applicants must be done with care. The advantages of selecting staff members from within the organisation include the easy access to information about the staff member's skills and performance, and the staff member's familiarity with the organisation's structure and processes. For external candidates, reputable industry partners can be a source of referrals. If the project is large and sufficient funds are available, the position can be advertised in newspapers and on Internet job sites to attract applicants.

Ideally, in the selection of the project team members, the project manager is actively involved since s/he will be managing the team and ensuring that the team members' skills and characteristics complement each other.

8.1.2 Training

Training of the team members must be considered as part of the team organisational plan. At the minimum, a project orientation is organized for new team members. The orientation should explain the vision of the project, common guiding principles, procedures, processes, and roles and responsibilities. The project team must be the first ones to be convinced about the purpose of the project.

Training on project processes, the use of equipment, software applications, and the basics on information systems plans must be a priority. Adequate time for such training should be planned, either through formal training courses or as part of on-the-job training.

The project manager must be mindful of team building efforts to promote harmonious working relationships among members and to strengthen the team atmosphere at the project office. The team must also be encouraged to employ critical thinking to avoid conflicts, and be respectful of decisions made by the team.

8.1.3 Working in Groups

Project activities and tasks require project teams to work in groups. Most often members of the team are expected to multi-task and work in different project tasks. The project manager must be able to assess members' job functions vis-à-vis competence, workloads and working styles to avoid conflicts in work relationships in the future. The RACI matrix tool can be used to define responsibilities and put in place mechanisms for accountability (see table 23).

8.1.4 Understanding People's Behaviour through Motivation

In chapter 1 discussion about the project manager and the project team was initiated. The underlying assumption here is that in managing people, their behaviour must also be understood. A project manager must have basic preparation and the skill set to deal with people in the organisation and the project setting. Several psychological, sociological and industrial-organisational management theories and studies are available to learn about human resource management. Some of these will be briefly discussed here.

As a manager, one of the questions to ask is "what motivates people to do what they do?" S/he must have a basic understanding of the theories of motivation that describe internal and external sources of motivation. One of these theories is the popular theory of Abraham Maslow on the hierarchy of needs. Maslow's theory looks at the unique qualities of people's behaviour that influence decisions and choices—love, self-esteem, belonging, self-expression and creativity. These qualities are guided by a series of needs at sequential levels in a pyramidal form:

- The base of the pyramid is a cluster of physiological needs—food, water, etc.—that must be satisfied to elevate to the next level
- The second level is security or safety needs (physical safety and economic security) that must be satisfied to succeed to the next level
- The third level is social needs—acceptance, love, affection, belongingness or association with a team/group
- The fourth level refers to the esteem needs—recognition, prestige, status
- The fifth level refers to self-actualization needs—challenging projects, opportunities for innovation and creativity

Other motivational theories may help understand the situation of the project team members or members of the organisation where the ICT project is undertaken.

- Herzberg's Motivation-Hygiene Theory – Frederic Herzberg made a distinction about motivational factors and hygiene factors. The motivational factors refer to factors of satisfaction (achievement, recognition, the work itself, responsibility, advancement, growth). The hygiene factors of dissatisfaction (larger salaries, more supervision, more attractive work environment, computer or other required equipment, health benefits and training).
- McClelland's Acquired Needs Theory – David McClelland theorized that a person's needs are learned and formed based on life experiences. The acquired needs categories include: need for achievement, need for affiliation and need for power.
- McGregor's X and Y Theory – Douglas McGregor proposed a human relations approach to management. Theory X assumes that management has sets of assumptions about workers' motivations: workers generally dislike and avoid work so managers tend to coerce, threat and control to make workers meet work objectives. The assumption also includes workers' preference to be directed and avoid responsibility, has little ambition, and wants security above all else. On the other hand, Theory Y pre-supposes that there are managers who assume that workers consider work as natural as rest and play and that the most significant awards are recognition, esteem and self-actualization.
- Theory Z – This theory was added by William Ouchi after a study about workers' perception of management. The workers assume that that they can be trusted to do their jobs for as long as management can be trusted to support them and look out for their well-being. Thus, the emphasis was on-job rotation, broadening of skills, generalization versus specialization, and the need for continuous training of workers.
- Thamhain and Wilemon's Influence and Power – The study of H.J. Thamhain and D.L. Wilemon led to the following findings: When project managers rely heavily on the use of authority, money and penalty to influence people, the projects are likely fail. But when project managers use work challenge and expertise on people, the projects are likely to succeed.
- French and Raven's Bases of Social Power – The use of power is stronger than influence to exact change on people. There are five power bases: Coercive power, legitimate power, expert power, reward power and referent (charismatic) power.
- Covey's 7 Habits of Highly Effective People – Stephen Covey outlines powerful lessons in personal change. The seven habits are:

  o Be proactive – The first habit encourages individuals to be upbeat, have the eagerness to anticipate problems and plan to meet the future
  o Begin with the end in mind – The second habit encourages you to ask and answer the questions: What is it that you want to be remembered for? What is your purpose and mission?
  o Put first things first – The third habit encourages individuals to prioritize what matters in life—what is urgent needing more attention and what can be put aside?
  o Think win/win – The fourth habit encourages you to make decisions that will benefit both parties
  o Seek first to understand – The fifth habit encourages the individual to actively listen having the intention to understand so you can also be understood
  o Synergize – The sixth habit refers to creating synergies through collaboration and by increasing your social network
  o Sharpen the saw – The seventh habit encourages the practice of self-renewal that will increase your physical, mental, social and spiritual dimensions

8.1.5 Managing the Team

Project managers must be observant and maintain an open communication line with his/her project team. S/he must encourage the team members to express what they have in mind in meetings or even in informal conversations. The latter sometimes provide good indications of the project team members' interpersonal relationships.

Project managers must institute and communicate a performance appraisal system for the project team members. The system will vary depending on the size and length of time of the project. The appraisal system must include a schedule and a feedback mechanism. The appraisal must be consistent with the policies and guidelines of the organisation, and the contract of assignment of the project staff. Reward and recognition systems may be considered to acknowledge the performing members or groups of the project team. If this will be instituted, the members of the team must be informed about the systems.

Having conflicts among project team members may be expected as a natural course of the varied personalities, interests and background of the team members. Project managers must be able to understand conflict management and prepare for strategies to manage conflicts in the team. Interpersonal skills of the project manager come in handy to maintain good working relationships among team members.

Projects create and stumble upon issues in the work activities and tasks. Instituting issue logs to document issues in relation to the work can facilitate immediate resolution of problems encountered in the project. Issue logs may be used to elevate opinions, need for clarification or other concerns that need to be resolved immediately. The team can be encouraged to observe the issue log practice. The project manager must assign someone in the team to take charge of monitoring the issues and assigning members to resolve issues.

Communication processes must be established. Virtual communication through the use of e-mails, group intranets, and other electronic means must be discussed and form part of the group agreements. Likewise, agreeing on regular meetings to review and update information regarding the project is a must. Project information and management plans must also be considered as one of the concerns of the project team.

Making team decision must include the use of logical processes, definition of the ideals, and evaluating and presenting options. The project team must define and agree on the process of decision-making.

8.2 Managing Stakeholders

The management of stakeholders actually refers to expectations management. As mentioned in chapter 1, the project will have many stakeholders who are affected directly or indirectly by the project. The manager must be prepared to deal with them or negotiate with them through various communication strategies. It is important to identify the stakeholder and their interests, and find out who among them can do the most damage to the project, and who can promote and champion the project. The stakeholder analysis (section 2.3) must primarily be the basis for crafting the project documents, particularly the communication plan (section 3.7) and the risk management plan (section 3.9). The stakeholder analysis must be conducted at all the phases of the project as there may be new stakeholders or types of stakeholders that need to be considered in the project. Likewise, the communication plan and risk management plan must be updated and revised accordingly.

In all systems development project plans, particularly in e-government projects, increasing the capacity of the organisation, including the capability building and training of primary stakeholders on the products of ICT projects, must be made a policy consideration prior to product installation and closing.

8.3 Managing Risks

The project manager's role is mostly managing risks and conflicts. Risks have three components: (1) The event that affects or threatens the project life; (2) The likelihood or possibility of the event occurring; and (3) The impact on the project.

In chapter 3, discussions about risks include the development of the risk management plan, identifying the type of risks that can affect a project, and the measurement of the risks. Reviewing the risk management plan and preparing to mitigate for the eventual occurrence must be part of the project managers' regular to-do list.

8.4 Managing Procurement

The acquisition of goods and services from outside sources is the business of procurement. A systems development project, like any project, will acquire a lot of goods and services. Procurement of the goods and services must be scheduled. Based on the WBS and Gantt chart, the procurement schedules can be identified and form part of the costs of the project.

Since acquisition is from external sources, management of the procurement process involves the preparation of the SOW/TOR as bid documents, bid selection, contract preparation, contract negotiation, and contract monitoring for deliverables. This is one of the difficult parts of project management. Procurement must be planned, implemented and monitored. This is also connected with quality assurance, risks and communication planning because the external sources are part of the project stakeholders.

In e-government projects the preparation of the RFI and RFP, the preparation of bid documents and the bidding process are management nightmares, especially in developing countries. Project managers must be on guard to manage the procurement process. S/he must be supported by a procurement manager, especially in the implementation of large e-government projects.

In planning procurements, some of tools and techniques for decision-making include the make or buy analysis, expert judgement, and the understanding of contract types:

1. Make or buy analysis – The technique is used to determine if the organisation should perform the service in-house or outsource it. Computing the costs and schedule of doing in-house versus the cost and schedule of procuring from vendors will be presented and evaluated to decide the best option.
2. Expert judgement – Refers to seeking advice from experts—internally within the organisation or externally from industry partners and from potential suppliers or vendors.
3. Types of contracts –

   • Fixed price or lump sum contracts involve the fixed total price for a well-defined product or service
   • Cost-reimbursable contract involve payment to vendors or suppliers for direct and indirect actual costs
   • Cost plus incentive fee contract involve payment to vendors or suppliers for allowable costs along with a predetermined fee and incentive bonus
   • A hybrid of the fixed price and cost reimbursable contracts called time and material contract

The project manager must develop a good information base to analyse and identify the most beneficial or cost effective procurement options for the organisation.

8.4.1 Procurement Plan

Based on the project need, the procurement plan must be able to cover and describe the project's procurement process from preparation of documents for external sourcing to contract closure. It must have the guidelines on the types of contract that the project will use based on the items and services that will be procured. It must also have the standard procurement documents or templates to be used, the guideline for creating contract WBS, SOW, and other documents needed in relation to procurement. It must be able to describe the roles and responsibilities of the project team and the related organisational departments, such as the procuring/purchasing department and the legal department.

The plan must also have: guidelines for using the services of experts involved in preparing estimates and evaluation of vendors; processes for coordinating decisions, and for understanding constraints and assumptions related to procurement and acquisition; lead time for purchase acquisition; risk mitigation strategies such as acquiring insurance and bonds; guidelines for identifying pre-qualified sellers and organisational list of preferred sellers; and procurement metrics to assist in evaluating sellers and managing contracts.

See section 3.8 for more details on procurement planning.

8.4.2 Preparation of Procurement Documents

• The RFI, RFP, request for quotes or bids are documents that solicit information, proposals or requests from vendors or suppliers. Templates are available to use and modify to facilitate preparation of the document.
• The selection criteria document will serve as a basis for assessing the best proposal from among the bidders.
• The SOW or TOR is a document that describes the work required for the procurement. The SOW or TOR forms part of the contract that will be prepared once the bidder or vendor is selected. The SOW must be written in clear, exact and precise terms to guide the vendors on what work and deliverables are expected. Many organisations use templates to generate the SOW or TOR.

8.4.3 The Procurement Process

The procurement process is summarized in figure 18.

Figure 18. The procurement process

Planning	• Prepare procurement plan • Approve procurement plan
Prepare bid documents	• Prepare bid documents • Prepare selection of bids criteria
Solicit	• Advertise request for proposals • Solicit proposals (bids) • Conduct pre-bid conference
Submission and selection	• Receive bid documents or proposals on scheduled deadline • Evaluate bids and select winning bidder • Negotiate contract

8.4.4 Contracts Management

Upon the negotiation with winning bidders, a contract is drawn between the organisational head or the representative of the organisation in the project—the project manager and the representative from the winning bidder. The contract is a legal document and both parties are bound by the contract. It is imperative that a legal or contracting professional from the organisation is involved in the writing and the administering of contracts. The project team must seek advice from legal experts.

It is possible that some of the provisions in the procurement document, specifically the SOW, will require change during project implementation. This is one of the aspects of change that must be controlled and included in the legal document. Suggested guidelines to ensure appropriate change control and effective contract management are as follows:

- Any changes to any part of the project must be assessed, approved and documented by the same planners for efficient review and approval.
- Any change when assessed must include an impact analysis to show how the change will affect the project scope, time, cost and quality of the goods and services that are being changed. A baseline must be a point of reference for any change analysis.
- Changes must be documented including all important documentation such as minutes of the meetings, e-mail exchanges and telephone conversations.
- In the procurement of information systems services, the project team must be closely involved to monitor the work and to ensure that the business requirements are met.
- Prepare a back-up plan in case the new system does not work as planned.
- Systems tools can be used to facilitate reviews, audits, performance reporting, payment, claims administration and records management.

Contract closure must follow once deliverables are tested, reviewed and accepted. The activity involves completion and settlement of obligations agreed upon. The project team must be able to monitor and determine that all work expected to be delivered are satisfactorily met. Exchange of letters and correspondence from the vendor and the buying organisation regarding the closure and settlement of obligations must take place to effect closure. All records and documentation pertaining to the contract must be updated and filed (archived) for future reference.

In case conflicts arise, brought about by unacceptable delivery or non-delivery of agreed goods and services, the procurement plan and contract must have stipulations regarding settlement and mediations before considering litigation to settle contract closure.

Software application to file and archive records, and information filing system must be considered to organize voluminous documents created and produced in the procurement process.

See chapter 4 for adetailed discussion on the closing-out or the project completion process.

TEST YOURSELF

Choose the letter that corresponds to the best answer.

1. The _____ of the project must consider the project team's organisational structure and communication needs.

   a. RACI matrix tool
   b. Communication plan
   c. Training
   d. Project activities

2. Theory that speaks about the unique qualities of people's behaviour and its influence on decisions and choices.

   a. Theory Z
   b. Thamhain and Wilemon's influence and power
   c. Maslow's theory
   d. McGregor's X and Y theory

3. The _____ must also be aware of and guided by the organisational policies, culture and context of the organisation to manage the team effectively.

   a. Training
   b. Project team
   c. Group work
   d. Project manager

4. The fourth habit in "Covey's 7 Habits of Highly Effective People" encouraging you to make decisions that will benefit both parties.

   a. Synergize
   b. Sharpen the saw
   c. Put first things first
   d. Think win/win

5. This may come in handy for the project manager to maintain good working relationships among team members.

   a. Interpersonal skills
   b. Communication process
   c. Spiritual dimensions
   d. Being observant

6. The primary basis for crafting project documents, particularly the communication plan and the risk management plan.

   a. e-Goverment projects
   b. Stakeholder analysis
   c. ICT project
   d. Communication strategy

7. This is connected with quality assurance, risk management planning and communication planning because the external sources are part of the project stakeholders.

   a. Systems development project
   b. Gantt chart
   c. Procurement
   d. Contract negotiation

8. This type of contract is a hybrid of the fixed price and cost reimbursable contracts.

   a. Time and material contract
   b. Cost-reimbursable contract
   c. Expert judgement
   d. Fixed price or lump sum contract

9. This describes the roles and responsibilities of the project team and the related organisational departments, such as the procuring/purchasing department and the legal department.

   a. Statement of work
   b. Procurement plan
   c. Terms of reference
   d. Cost plus incentive fee contract

10. This is a document that will serve as the basis for assessing the best proposal from among the bidders.

   a. Request for proposal
   b. Request for quotes
   c. Selection criteria
   d. Solicit

8.5 Chapter Summary

The organisation and management of the project team is one of the most important components of project implementation. Prior to the recruitment of project staff, the human resource requirements need to be defined. The project organisational structure, roles and responsibilities, criteria for selection and recruitment process must also be outlined prior to staffing. Candidates from the organisation and referrals from reputable external sources are preferred.

In the selection of project team members, the project manager should ideally be involved. Training or orientation on the project context should be provided to all members of the project

team. The project manager must be aware of and guided by the policies, culture and context of the organisation to manage the team effectively.

In group works, the project manager must be able to assess staff members' job functions vis-à-vis competence, workloads and working styles to avoid conflicts in work relationships. The communication plan of the project must consider the project team's organisational structure and communication needs.

In managing the project team, the project manager must have a basic understanding of the theories of motivation that describe internal and external sources of motivation. A project manager must also be observant and maintain an open communication line with his/her project team. S/he must institute and communicate a performance appraisal system for the project team members. S/he must also be able to understand conflict management and prepare for strategies to manage conflicts in the team. Interpersonal skills of the project manager come in handy to maintain good working relationships among team members. Instituting issue logs to document issues in relation to the work can facilitate immediate resolution of problems encountered in the project. Communication processes must be established. The project team must agree on the process of decision-making.

The management of stakeholders' expectations is one of the salient tasks of managers. The manager must be prepared to deal with them or negotiate with them through various communication strategies. It is important to identify the stakeholder and their interests, and find out who among them can do the most damage to the project, and who can promote and champion the project.

The project manager's role is mostly managing risks and conflicts. Risks have three components: (1) The event that affects or threatens the project life; (2) The likelihood or possibility of the event occurring; and (3) The impact on the project.

Procurement of the goods and services required by the project must be scheduled. Based on the WBS and the Gantt chart, the schedules can be identified and form part of the costs of the project. Since acquisition is from external sources, management of the procurement process involves the preparation of the SOW/TOR as bid documents, bid selection, contract preparation, contract negotiation and contract monitoring for deliverables.

Procurement processes must be planned, implemented, monitored and closed in connection with the management of contracts and deliverables. This is also connected with quality assurance, risk management and communication planning because the external sources are part of the project stakeholders. In planning procurements, some of tools and techniques for decision-making include the make or buy analysis, expert judgement, and understanding the contract types. Upon the selection of vendors, contracts must be managed and monitored until closure.

8.6 Chapter Review Questions

1. What are processes involved in organizing the team?
2. What must managers prepare for in managing the project team?
3. Why is the communication plan important in managing stakeholders, including the project team?
4. Why is the management of the risk factors important?
5. What are the processes of project procurement? Why is it important to manage procurement?

8.7 Suggested Readings

Jenkins, Nick. A Project Management Primer or a guide to making projects work, v.02.2006. Available from http://www.exinfm.com/training/pdfiles/projectPrimer.pdf.

Maria Juanita R. Macapagal and John J. Macasio. *Module 7: ICT Project Management in Theory and Practice*, second edition, The Academy of ICT Essentials for Government Leaders Module Series (Incheon, UN-APCICT/ESCAP, 2011), chapters 4-5. Available from http://www.unapcict.org/academy.

Schwalbe, Kathy. Management of Information Technology Projects. CENAGE Learning, 2011, chapters 9-12.

Taylor, James. *Managing Information Technology Projects: Applying Project Management Strategies to Software, Hardware, and Integration Initiatives*. American Management Association, 2004.

8.8 Suggested Activities

With your classmates, conduct research on an ICTD project. Find out about the following:

1. The key members of the project team and the job descriptions of project managers and project team members. What is the organisational chart? What are organisation's policies on hiring and performance appraisal? Are they actually followed? What are common problems and challenges experienced in managing project teams?
2. The procurement policy of the organisation. What are procurement processes of the project? Are they consistent with the organisation's procurement policy? What are the different types of procurement? What issues and challenges did the project team experience in procurement?
3. What lessons and insights did you gain from the research?
4. Compare and contrast your research with other groups in your class.

CHAPTER 9: WRAPPING UP – PROJECT MANAGEMENT ISSUES AND ETHICAL CONSIDERATIONS

Objectives

- Discuss project management methodologies in the context of developing countries
- Explain the issues related to the sustainability of ICTD projects in developing countries
- Describe technological trends and its impact on ICTD projects
- Identify ethical issues and considerations in ICT and project management

9.1 Projects, Project Management Methodologies and Developing Country Context

Project management methodologies evolved and are generally used in developed countries. ICT projects are mostly donor and vendor driven in developing countries and governments find themselves as beneficiaries and consumers of technologies—both in expertise and ICT products. The developing countries could benefit more in improving the use of the project management discipline and their ICT systems development technology in their country context. Project management methodologies can be translated into the local language for more appreciation of its use and application. ICTD projects and project management are influenced by external factors. Cultural and political factors of the organisation and the environment must be considered in developing, planning and implementing projects. Having the country context in mind increases the chances of making more relevant options of implementing appropriate human development and ICTD interventions.

9.2 Sustainability Issues of ICTD Projects

Technically, a project ends when the project closure and product hand over are undertaken. However, the results of the project, specifically the product that the project has borne, will take on a new life in the user (client or customer) environment. The processes undertaken to ensure the usability and effectiveness of the product in that context will determine the product's future life. Sustainability is a key issue that users will have to grapple with after the life of the project.

Just like a newborn baby, the new product or system will have to be nurtured. Plans for its sustainability and improvement should be given a significant amount of attention by the project sponsors, project operators and users. The following are some questions that should be considered in the sustainability plan for the new product or system:

- Are there programmes that will support the continuity, maintenance or improvement of the product?
- Is there infrastructure ready to support the product?
- Are there units or groups in the organisation that will maintain the product?
- Are there funds allocated on a regular basis to maintain and improve the product?
- Are there enough capacities within the organisation for the maintenance and improvement of the product?
- Is there a need to connect the product with other systems?

These questions imply that those who receive or inherit the new product or system will have to plan for its integration and future enhancement within the organisational environment.

The above discussion on sustainability should not be confused with the sustainable development issues referring to the ecology/environment, which is also a critical issue. According to Google, the ICT industry is contributing 2 per cent to the damaging gas emissions in the world. Organisations, projects and project management should consider policies that will promote green ICT (see UN-APCICT Primer 4 on ICT, Climate Change and Green Growth).

Something To Do

Watch the case video on Google Data Center Efficiency Best Practices at: http://www.youtube.com/watch?v=voOK-1DLr00.

In a group, discuss your thoughts on Google's corporate social responsibility project.

9.3 ICT Trends

ICT technology has taken quantum leaps since the last decade, and it will continue to do so. Business and the passion to create have driven changes and enhancements in hardware, software and network technologies. What is the impact of these developments on e-government systems architecture particularly in developing countries? Is this widening the gap between developed and developing countries?[91]

Developing countries must invest in research and development to support relevant ICT project development and address sustainability issues.

In a study of recent literatures of ICT projects in developing countries, in Kenya, it was found that most ICT projects are "initially donor-funded; some donations are made without prior consultation or carrying out a needs analysis by the recipient organisation; operational/running costs are met by the government; funding (capital and human resource requirements) ends with the project phase; the budgets for ICT are inadequate but rising; a lack of ICT policies and master plans to guide investment to the extent that there have been multiple investments for the same product due to lack of coordination; a focus on ICT applications that support traditional administrative and functional transactions rather than on effective information processing and distribution within and without government departments; [and] unstable ICT resources."[92]

The study further notes that: "to fulfill the development needs of ICT projects, those involved in the design, implementation and management of IT-related projects and systems in the developing countries must improve their capacity to address the specific contextual characteristics of the organisation, sector, country or region within which their work is located. [Literatures] reviewed suggests, developing countries are still far behind in implementing e-government and it is hoped that successful implementation of ICT projects will act as a strong foundation for e-government initiatives."[93]

---

91 Rutger Rozendal, Cultural and Political Factors in the Design of ICT Projects in Developing Countries, International Institute for Communication and Development, 2003.
92 Ibid.
93 Ibid.

9.4 Ethical Issues in ICT Systems Development

Intellectual property rights: Piracy issues. Many popular software applications with intellectual property rights are used by governments in developing countries. How can projects and project management be able to uphold the integrity of its software systems?

Security issues of ICT systems in ICTD projects. Stories about hacking e-government sites are commonplace. Global business and developed countries have become the prey of hackers. e-Government projects and newly installed information systems of developing countries are vulnerable to security threats. How can government and private citizens protect themselves from ICT security threats in terms of stealing identity, spamming, compromising systems integrity and similar issues?

Unethical use of systems applications and the Internet. Already mentioned above is hacking, stealing identity and wealth of people, and creating malwares. Below is a video clip showing the use of data mining, a software application for counter-terrorism.

Something To Do

Watch the case video on Data Mining for Terrorists and Innocents at: http://www.youtube.com/watch?v=4lKpD7MC22I.

In a group discuss the following questions:

1. Does the data mining project presented in the video infringe upon the privacy of Internet users, or is it an acceptable tradeoff to combat terrorism more intelligently?
2. What other issues dealing with data and privacy have you encountered on the web?
3. How can project management practices promote ethical use of ICTs?

9.5 Ethical Considerations in Project Management

In managing projects, the leader and team will experience different kinds of situations that will compel them to make decisions based on objective assessments and conditions, or based on moral principles.

Ethics as defined by several online dictionaries are moral principles that govern a person's or group's behaviour, and are basic and fundamental concepts of right human conduct. It covers the "study of universal values such as the essential equality of all men and women, human or natural rights, obedience to the law of the land, concern for human health and safety, and increasingly also for the natural environment."[94]

In the different phases of project management, project manager's paramount concern is ensuring the realization of project objectives, and the motivation of staff. Although in the business sector,

---

94   BusinessDictionary.com, "Ethics". Available from http://www.businessdictionary.com/definition/ethics.html.

the goal is profit making, like other organisations the good of society is what it also upheld. However, human frailty is commonplace. Ego-tripping, greed for prestige, power and money, disrespect or ignorance of the law, or other forms of weaknesses happen in the office or any parts of the world causing the opposite of what we want to uphold in the interest of the good of society.

Some of the common issues in the areas of project management where ethics will be tested are related to:

- Hiring contracts – where certain stipulations may be prejudicial to age, race, religion or gender
- Unequal treatment, unconscious racial prejudice or insensitivity towards cultural norms and practices
- Illegal procurement practices – where fraud or corruption takes place
- Lack of transparency in transactions
- Exaggerations or under reporting of truths or observations to get funding contracts

The PMI, the project management organisation that promotes the PMBOK based in the United States, has come up with a notable policy agreement among peers: "The Code of Ethics and Professional Conduct" effective in January 2007. The guide for ethical conduct in doing business among project management practitioners covers all the project management professionals.[95] The guide was developed in the aftermath of high profile cases involving chief executive officers and project management consultants that some claim may have triggered the economic crisis of powerful societies.

Project managers must remember that they have moral obligations to his/herself, to the project team, the stakeholders and the organisation s/he is part of. Being true to oneself, being trustworthy and being ethical are leadership qualities that anyone will look up to.

TEST YOURSELF

I. Choose the letter that corresponds to the best answer.

1. _____ are mostly donor and vendor driven in developing countries, and governments found themselves as beneficiaries and consumers of technologies.

   a. Project management
   b. ICT projects
   c. Project management methodologies
   d. ICT systems development technology

2. This is a key issue that users will have to grapple with after the life of the project.

   a. Sustainability
   b. External factors
   c. Implementing projects
   d. Political factors

---

95   Bruce McGraw, "Project Management Ethics and Rules of Conduct", Fear No Project – A Technology and Project Management Blog, 27 January 2011. Available from http://fearnoproject.com/2011/01/27/project-management-ethics-and-rules-of-conduct/.

3. ICT projects and project management are influenced by _____.

    a. Cultural factors
    b. Environment
    c. External factors
    d. Human resource

4. This, defined by several online dictionaries, are moral principles that govern a person's or group's behaviour, and are basic and fundamental concepts of right human conduct.

    a. Human health
    b. Natural environment
    c. Obedience
    d. Ethics

5. This is an area in project management where ethics will be tested, and where fraud or corruption can take place.

    a. Unequal treatment
    b. Hiring contract
    c. Procurement illegal practices
    d. Lack of transparency in transaction

II. True or False. Write true if the statement is correct. If false, underline the words that make it wrong, and write the correct words in the space provided.

_____6. Technically, a project ends when the project closure and product hand over are undertaken.

_____7. Project manager's paramount concern is ensuring the realization of project objectives, as well as the staff skills.

_____8. "The Code of Ethics and Professional Conduct" is the guide for ethical conduct in doing business among project management professionals.

_____9. Some of the common issues in the areas of project management where ethics will be tested are related to illegal procurement practices where certain stipulations may be prejudicial to age, race, religion or gender.

_____10. Being true to one self, being trustworthy and being ethical are leadership qualities that anyone will look up to.

9.6 Chapter Summary

ICT projects and project management are influenced by external factors. Cultural and political factors of the organisation and the environment must be considered in developing, planning and implementing projects.

Sustainability of information systems in organisations is a key issue that users will have to grapple with after the life of the project. Plans for information systems' sustainability, maintenance and improvement should be given enough thought by the project sponsors, project operators and users.

With the rapid advancement of ICT technology, the impact on e-government systems particularly in developing countries must be considered. Developing countries must invest in research and development to support relevant ICT project development and address sustainability issues.

Intellectual property rights, piracy issues and security issues are affecting and compromising the integrity of ICT information systems and the industry. Ethical issues pertaining to human resources in relation to labour and human rights issues, and those pertaining to procurement are just a few of the issues that face organisations with ICT concerns. Having a code of ethics among project management practitioners, practicing integrity principles, and aspiring to become a values-oriented leader will contribute to making projects and project management better tools for human development.

9.7 Chapter Review Questions

1. Why must we discuss ethical issues in project management?
2. How can project management contribute to addressing political, cultural, technological and ethical issues of projects?

9.8 Suggested Readings

Gichoya, D. Factors Affecting the Successful Implementation of ICT Projects in Government. *The Electronic Journal of e-Government,* Vol. 3, No. 4 (2005), pp. 175-184. Available from http://www.ejeg.com.

Rozendal, Rutger. Cultural and Political Factors in the Design of ICT Projects in Developing Countries. International Institute for Communication and Development, 2003.

ANNEX

ANNEX 1
CLARA AND THE UNIVERSITY OUTREACH PROGRAMME CASE STUDY: DOCUMENT SOLUTIONS

1-A: Clara's Concept Paper Submitted to the University Outreach Programme Director

Clara is in the pre-initiation phase of her project. Using the guide and template below, prepare a project concept paper using the information from the opening case study.

Section Name	Guide Questions and Answers
1. Title page	• Proposed project name: **"Improving the capacity of the women of Pax Municipality for increased livelihood and economic activities"** • Document prepared by: *Clara Shung and other students* • The document is submitted to the *Director of the University Outreach Programme for Project Funding* • Identification number *UOP 00775*
2. Key development issues and rationale	• What is the project justification? The Pax Municipality is in need of computer and Internet education to develop the capability of community residents, particularly the women's group and the teachers to enhance economic and education opportunities in the municipality. The selected groups will serve as role models and local trainers in the community to give the residents good examples of how computer and Internet education can be used as a tool for increasing livelihood, employment and educational opportunities. The Pax Municipality is a community that needs to uplift the economic and educational conditions of the school. The majority of the residents earn an average of USD 2 per day. Also, there are very few students who are able to complete their secondary education, not only because of the lack of family income, but also the lack of interest and motivation of youths to pursue their education. • Is the proposed project supportive of any overall plan of a local government agency or a funding institution? The MDG targets of the national and local government that will address the economic and education needs of the municipality. • What problems are being addressed by the project? The problems being addressed by the project are: Inadequate capability to basic computer and Internet knowledge and skills. Low access to information such as market pricing of products, and inadequate information sources for education because of the absence of school library and other sources of information. • Are there lessons that can be derived from previous projects? No previous project was done by the university in this particular area. • What is the evidence of commitment and ownership of the proposing team? The proposing team members are university students enrolled in the Marketing Department. They will be able to use the project experience to enhance their education exposure through community engaged learning. The project experience will also be credited to the practical course requirement of the Department.

	• Are there other partners that the proposing team will work with? What is their suitability to assist? The proposing team will be working in partnership with the local government of Pax Municipality. The project needs the support of the local government to make the activity official and for the outcomes of the project to become sustainable. The project will also partner with the women's group and the teachers of the elementary and high school of Pax Municipality. The women's group and the teachers will both be partners and beneficiaries of the project. • What can the project accomplish that cannot be accomplished by other means? The project intends to build the capability of local trainers to train local villagers in the use of computers and Internet in the community for enhancing economic and educational opportunities. The villagers need not go to the city to get information. They will be able to save time and money by using the computer and the Internet. The local trainers can train other villagers in the community who see the need to use computers and the Internet in their livelihood and education.
3. Proposed project development objective(s)	• If the project is successful, what will be its principal outcome for the primary target group? The basic training in the use of computer and Internet will tap initial trainees with the specific need of enhancing education and economic opportunities. For the weavers' women's group the knowledge and skills they will learn from the training will enable them to gain access to information for better pricing of their products and for searching other market opportunities. For teachers, the training will provide a better way to get updated information that will improve their teaching content for their students. They will be able to demonstrate the direct use of the knowledge and skills to their group's business and professional needs. They will also eventually serve as the local trainers in the municipality because they can train other villagers in the community who also desire and see the use of computers and the Internet in improving their livelihood and education.
4. Preliminary project description	Describe the proposed project. The purpose of the project is to build the capability of the local trainers to train other local villagers in the use of the computer and the Internet for enhancing economic and educational opportunities. The project will engage the teachers and the women's weavers group to learn basic use of computers and the Internet to enhance economic and educational opportunities. The community will benefit from the knowledge and skills in the use of computer and the Internet to gain access to information that will increase livelihood, employment and educational opportunities. The villagers need not go to the city to get information. They will be able to save time and money by using the computer and the Internet. The villagers who will be trained can train other villagers in the community who see the need for the use of computers and the Internet in their livelihood and education. The project will be developed and implemented in six months in partnership with the Pax local government. The municipality will provide the computer equipment and the space for training in the secondary public schools. • What are the alternative development interventions or approaches being considered? If an approach is favoured, what is the rationale for it? The alternatives include increasing the capacity of the local government to develop policies that will lay out municipal plans to develop the human resource of the villages for economic development and opportunities. This may include the training of the villagers and the local government employees in the university itself; and also in the long run for the municipality to establish a training centre and offer certificate courses to attract youths in Pax Municipality and in other villages and municipalities as well. Nevertheless, the basic training in computer and Internet use project is favoured at this time to show a proof of concept that the use of computers and the Internet can immediately answer the needs expressed by certain sectors in the community. It needs to be demonstrated that the training, knowledge and skills acquired by the weavers and the teachers can bring about economic and educational opportunities to the residents of the municipality. The other alternatives can follow suit once the project is able to achieve its purpose.

	• What activities are proposed and why; or what alternative activities are being considered? The activities of the training include: training needs assessment, basic training module development and modifications; preparation of the facilities needed for the training; selection of participants for the training; the actual conduct of the training; and the evaluation of the training and project activities. • If the proposed project is to support a programme, what would be the key elements of the programme and how would the proposed project fit into it? The project is envisioned to support the national and local government's socio-economic development programme for the municipality. The training project will be two-pronged. First, it will meet the economic agenda of increasing income opportunities for villagers, specifically the weavers, by gaining timely access to information on the market pricing of products, developing new products, and opening new market opportunities. And the second is helping teachers gain access to new teaching content that will enhance learning of students in the primary and secondary levels of education. • What project components are being considered? The training project will have three components. The first is the preparatory component that will include the assessment of training needs, and the preparation of the community and the facilities for the training. The second is the development of the training module and the actual conduct of the training; and the third is the mentoring of the trainees on the actual use of the modules to train villagers, and customisation of the modules to meet the villagers' specific needs. • Can indicative costs be identified? The project costs will include transportation, meals for the students and trainers, and the fees of resource persons who will develop the instruments for the training needs assessment and the training modules. As a partner, the local government will help prepare the facilities and equipment that will be used for the training. • What issues are there at this stage, if any, regarding possible partnerships and co-financing with other organisations? The local government has not yet formally committed their support to the project. It will require passing an ordinance or a policy statement to recognize their support to the project. Likewise, the university may need to enter into a Memorandum of Understanding with the local government to indicate their support to the project.
5. Potential risks and mitigation	• What are the risks that may prevent the project development objective(s) from being achieved, including but not limited to political, policy related, social/stakeholder-related, economic or financial risks? The risks identified at this stage are as follows: 1. The local government will not be able to pass the policy on time to recognize the project as an official endeavour; 2. The local government officials and the trainees will not be fully committed to own the project and for them to see the project through. 3. The funds will not be released on time. • What is the capacity of the proposing party to handle preparation and implementation of the proposed programme and/or project? The proposing parties are students of the university. They will be represented by the University Outreach Programme Director who will provide advice and directions to the proposing parties. • What relevant risks have been identified through predecessor operations or project assessments? How might they be addressed in the proposed project? Might any new assessments be needed? In the project preparation of the implementation plan, a stakeholder analysis will be done. Likewise, a communication plan will be prepared highlighting strategies that will mitigate project risks pertaining to stakeholders in the community.

	• Would any stakeholders feel that their interests are threatened by the project? How might the related risks be mitigated? There are stakeholders in the project who are still not fully convinced about the project. The communication plan that may include community meetings to all concerned parties will be conducted to explain the benefits of the project. • Which safeguard policies might apply to the proposed project and in what ways? The project will follow the university policies on outreach projects that will safeguard the interests and safety of the students. The latter will likewise observe ethical considerations during the project life. They will consult with and seek the consent of the project advisers, partners and beneficiaries prior to the conduct of the project activities. • What actions might be needed during project preparation to assess safeguard issues and prepare to mitigate them? The students or the proposing party will prepare assessments of the community situation that will include stakeholder analysis, assessments of problems, issues, and risks analyses. Results from these assessments will be used to prepare mitigation strategies for the project.
6. Issues on which the team seeks guidance	• What specific guidance does the team seek? The proposing party, are students; they will like to seek guidance from experts to formulate the following in the project and planning preparation. • Policy and strategy • Relationships with partners • Policies or procedures • Project design • Funding • Technical/analytical aspects • Institutional/capacity aspects • Mitigation of potential risks • Resources, task team composition and management, and any other issues
7. Proposed preparation schedule, team composition and budget estimate	• What is the proposed timetable of the project? The project is expected to be implemented in a span of six months, specifically from January to June 2014. • To what extent has the timetable been agreed on with the stakeholders? The project timetable is still in the proposal stage. • Who are the members of the project team (list)? What capacity issues, if any, are there? The members of the project team include the following students of the marketing department: (1) Clara Shung, Project Leader (2) Husef Hasam, Technical coordinator (3) John Jacob, Community coordinator (4) Mona Lisa Chan, Funds coordinator and bookkeeper • What is the estimated amount of funds needed for the project implementation? The project is estimated to cost USD 5,000.

1-B: Stakeholder Analysis Matrix

Clara and her project team learned the following concepts in the stakeholder analysis:

(1) **Stakeholders** refer to the individuals, groups and organisations, who are directly or indirectly

affected by the project. They have influence or interests on the project or project activities.

(2) **Primary or secondary/direct or indirect stakeholders** refer to the stakeholders' categorization based on their involvement and participation in the project. As primary stakeholders, they are key project participants as beneficiaries and/or as decision makers. Secondary stakeholders, while they may be on the sidelines, can be influential to the project and serve as influencers, either positive or negative or both depending on the impact of interventions to their interests.

(3) **Potential roles in the project** refer to the identification of their function, position, task or disposition in the project. They can be users, influencers, champions, channels, decision makers, partners or facilitators.

(4) **Problem or needs** refer to the stakeholder's requirement that has to be answered or met by the project.

(5) **Expectations or interests** in the project refer to the concerns or the conditions of the stakeholders to participate in the project.

(6) **Weakness, constraint or influence** refers to the limitations or the power of the stakeholders to convince people to participate in the project.

(7) **Potential contribution (positive or negative)** refers to the possible or probable inputs or influence of the stakeholder on the project. Positive means a likelihood of a favourable contribution to the project. Negative means a possibility of an unfavourable contribution to the project.

(8) **Consequences of their contributions in the project**. The positive contribution of an individual, the group or organisation means that there is ability or capacity to facilitate or help in the development and implementation of the project. The negative contribution to the project may result in risk factors or problems for the project. It will be important to identify these possible consequences, including the probability of the consequences happening and the magnitude of the effect to the project.

To create a running analysis, Clara and team filled in the following table to get a good picture of the people they will be dealing with in the project.

(1) Stakeholders	(2) Primary or Secondary/ Direct or Indirect	(3) Potential Roles	(4) Problems or Needs	(5) Expectations or Interests in the Project?	(6) Weakness, Constraint, or Influence of Stakeholder	(7) Potential Contribution (Positive or Negative)	(8) Consequences of their Contributions in the Project
1.1. Local Leaders	2.1. Primary						
	2.1.1. Partners						
1.1.1a. Local Government Officials	Primary	Accept the project and make the project official; they have computers that can be used for training	Not fully certain of the benefits of the project; low or no computer and Internet literacy	Half of them are open to the project and see the value of computers and Internet as tools for learning; the other half are resisting and fear the effects of the learning on boys and families	Highly influential to the community but will have to be convinced about the benefits of the project; they may pose some problems to the project if not convinced; they will have to issue official Memorandum of Agreement with the university to make the project official	Negative/ positive	If convinced, the project will immediately gain ground; if not convinced the project can stall The project must be able to convince all the local officials The project team must be wary of the internal politics and dynamics among officials; will need to understand internal dynamics among the political figures

(1) Stakeholders	(2) Primary or Secondary/ Direct or Indirect	(3) Potential Roles	(4) Problems or Needs	(5) Expectations or Interests in the Project?	(6) Weakness, Constraint, or Influence of Stakeholder	(7) Potential Contribution (Positive or Negative)	(8) Consequences of their Contributions in the Project
1.1.1b. Women Weavers Group	Primary	Attend basic training and immediately apply the knowledge and skills; can be tapped as local trainers; they can be village champions	Need extra income for the family; no computer or Internet literacy but open to learning new skills in using computers and Internet	Open to participate; open to learning new skills in using computer and the Internet	The head of the women's group, Mrs. Patel, seems to be influential in the community; she can also command respect from her members; she can also identify members who can be potential local trainers and project role models	Positive	Mrs. Patel, as head of the women's group can help convince the local officials; she can help the project team in coordination and communication
1.1.1c. Teachers	Primary	Attend the basic training and immediately apply the knowledge and skills; can be tapped as local trainers; they can be village champions	No functional school library; no computer facilities; low computer literacy	Expressed their interest about computer literacy; gave their opinion that having this project will be helpful to the school children and other community members	The headmaster and the teachers seem to be influential in the community; they are positive about the project; they can help convince the village officials	Positive	The headmaster and teachers can help convince the local officials; they can also help identify local residents who may benefit from the project
1.1.2. Local Community	2.1.2. Beneficiaries						
1.1.2a. Members and Employees of the Local Government	Beneficiaries	They may be participants of the training; they can also show proof of the benefits of the project	Low computer literacy; need to show benefits of the use of computers and Internet	Not clear about their expectations	Not yet influential at this point; but can be tapped to show proof of benefits	Negative/ positive	May have to be convinced about the benefits of the project for the community; project may need their help in the coordination of project activities and in showing proof of benefits; project team will identify potential participants
1.1.2b. Members of the Women Weavers Group	Beneficiaries	Attend the basic training and immediately apply the knowledge and skills; can support local trainers and village champions	Need extra income for the family; no computer or Internet literacy but open to learning new skills in using computer and Internet	Open to participate; open to learning new skills in using computer and Internet	They can provide support and assistance to the leaders of the weavers' organisation for project coordination of activities	Positive	They can help the support the project team in coordination and communication
1.1.2c. Other Teachers in the Local School	Beneficiaries	Attend the basic training and immediately apply the knowledge and skills; can be tapped as local trainers; they can be village champions	No functional school library; no computer facilities; low computer literacy	Expressed their interest about computer literacy; gave their opinion that having this project will be helpful to the school children and other community members	They can support the headmaster and the teacher/ leaders coordinate project activities for youth and school children	Positive	They can help identify young women and men and school children who may benefit from the project

(1) Stakeholders	(2) Primary or Secondary/ Direct or Indirect	(3) Potential Roles	(4) Problems or Needs	(5) Expectations or Interests in the Project?	(6) Weakness, Constraint, or Influence of Stakeholder	(7) Potential Contribution (Positive or Negative)	(8) Consequences of their Contributions in the Project
1.1.2d. Young Women	Beneficiaries	Future trainees if local trainers will cascade training to community members	Those that need to have additional income since average income is only USD 2/ day; those that need to have information about possible employment; those that need specific information about required studies in school	To help find ways to have additional income; employment; enhance knowledge for school projects; specialized information in the industry that they may have interest to participate	Can be influential if they will see the use of computers and Internet to meet their needs	Positive/ negative	Future trainees if local trainers will cascade training to community members; can be influential if they will see the use of computers and Internet to meet their needs
1.1.2e. Young Men	Beneficiaries	Future trainees if local trainers will cascade training to community members	Those that need to have additional income since average income is only USD 2/ day; those that need to have information about possible employment; those that need specific information about required studies in school	To help find ways to have additional income; employment; enhance knowledge for school projects; specialized information in the industry that they are part of e.g. agriculture	Can be influential if they will see the use of computers and Internet to meet their needs	Positive/ negative	Can be influential if they will see the use of computers and Internet to meet their needs
1.1.2f. School Children	Beneficiaries	Future trainees if local trainers will cascade training to community members	Need specific information about required studies in school	Enhance knowledge and skills for school activities and projects	Can be influential if they will see the use of computers and Internet to meet their needs	Positive	Can be influential if they will see the use of computers and Internet to meet their needs
1.1.2g. Spouses of Partners	Beneficiaries	Support to their spouses; future trainees if local trainers will cascade training to community members	Need additional income for the family; may need specific information about their work	Opportunities for additional income; information to enhance their work and know how	Can be a threat and can pose some problems if they do not see the benefits of the use of computers and Internet to the work of their spouses and theirs as well; can be supportive and influential if they will be persuaded about the project	Negative; but can be made positive; team needs to do a lot of influencing	May stop their spouses from attending training; Can be influential if they will see the use of computers and Internet to meet their needs

(1) Stakeholders	(2) Primary or Secondary/ Direct or Indirect	(3) Potential Roles	(4) Problems or Needs	(5) Expectations or Interests in the Project?	(6) Weakness, Constraint, or Influence of Stakeholder	(7) Potential Contribution (Positive or Negative)	(8) Consequences of their Contributions in the Project
1.1.3. University Outreach Programme *1.1.3a. The Director and other University Officials*	*2.1.3. University Team*	*Project sponsor; approval of proposal and budget; provide guidance to the team*	*Need proposals for outreach project; need committed students who will present good proposals*	*Winnable project proposal and reasonable project budget; progress of team and community partners and beneficiaries*	*Part of the approving party; influential in approval and fund releases*	*Positive*	*If project and budgets are approved, Director will provide guidance and recommendations for the project team's course credits*
1.1.3b. Project Team	*Project Team*	*Project team - implementer*	*Need to win the bid; have credits; need commitment and guidance from Director and other resource*	*Implement and finish the project*	*Have to be organized and strengthened as a team and have confidence to implement and finish the project*	*Positive*	*Will seek guidance and support from the Director and other departments to support the team*
1.2. Other Members in the Community	*2.2. Secondary - Indirect*						
1.2.1. NGO	*Secondary - Indirect*	*Supportive of the team; provide information and advise*	*Strengthen the farming community and those in need of inputs and micro finance*	*The NGO can reap benefits of more informed farming community and have opportunities to provide more inputs and micro finance to the farming community*	*Not always present in the community; office is still in the city; can provide the team with information about the community; may be influential with spouses engaged in farming*	*Positive*	*Assistance and information can be sought from the NGO*
1.2.2. Internet Café Owner	*Secondary - Indirect*	*Computers and Internet can be used for training purposes*	*Need to sustain his/ her business*	*S/he can have more people to use his/ her shop for computing and Internet needs*	*Have bad image in the community as encouraging children to play more games, distracting their studies. The owner's interest is making profit; may charge high rates to the team and the project*	*Positive if they can influence the community; negative if they will continue to have a bad image in the community and not do something about it*	*The owner can be made an ally to the project but may need to change the shop's image as bad influence to the youth; may have to be oriented about the aims of the project*
1.2.3. Shop Owner Selling Woven Products	*Secondary - Indirect*	*Influential on weavers group; give reasonable price and payment for the weavers' products*	*Need more quality woven products to sell for profit*	*Have more quality woven products to sell for profit*	*Can be threatened by the new knowledge and skills of weavers*	*Negative if s/he will be threatened if weavers group become empowered; positive if s/ he will see benefits of empowering the weavers group*	*Shop owner may not sell woven products of weavers group; will have to allay his/her fears that project can result in the production of quality products to his/her advantage*

(1) Stakeholders	(2) Primary or Secondary/ Direct or Indirect	(3) Potential Roles	(4) Problems or Needs	(5) Expectations or Interests in the Project?	(6) Weakness, Constraint, or Influence of Stakeholder	(7) Potential Contribution (Positive or Negative)	(8) Consequences of their Contributions in the Project
1.2.4. Tourist and Market Community for Weavers	*Secondary - Indirect*	*Appreciate quality of products to buy at reasonable prices*	*Need quality products to buy at reasonable prices*	*Quality products to buy as souvenirs at reasonable prices*	*Can be influential on weavers*	*Positive*	*No direct interaction*
1.3. Other Communities	*Secondary - Indirect*	*Learn about the benefits of the use of computers and Internet in business and in education*	*May have similar needs as that of Pax*	*May like to have similar projects in their community*	*Can be influential to Pax commu-nity to either continue the project or not*	*Positive if the community will learn from the project posi-tive results; negative if they will be-come envious and put down the project benefits*	*Communities may watch out for the success and fail-ure of the project – a pressure for the partners and the team*

As the project progresses, the team will have to review the stakeholders list and analysis and add more to the list or modify the analysis as needed.

A stakeholder analysis can help the team watch out for the groups that will give them problems and threaten the project. Having understood the interests of the stakeholders, this is also a good opportunity to prepare for the communication plan of the project.

1-C: Problem Tree Analysis

1-D: Objectives Tree Analysis

1-E: Strategy Analysis

Option 1: Improve market network
Option 2: Improve access to information and credit facilities
Option 3: Improve skills related to livelihood

Project Options Assessment Based on List of Criteria

Criteria	Option 1			Option 2			Option 3		
	H	M	L	H	M	L	H	M	L
Feasibility			✓			✓	✓		
Costs	✓			✓				✓	
Benefits	✓			✓			✓		
Achievable objectives			✓		✓		✓		
Potential capacity of stakeholders			✓		✓		✓		
Social Risks	✓			✓					✓
Acceptability			✓		✓		✓		
Urgency		✓			✓		✓		

Explanation on Option 3: Improve skills related to livelihood

1. **Feasibility.** As students, Clara and team have limited time, experience and capacity to handle a big project. As students they can have time and skills to provide and organize

training activities for the women of Pax Municipality who have earlier expressed the need for ICT training. Investments may be lower because equipment and resources are available for the students and the women's group to obtain.

2. **Cost.** Aside from the equipment and available resources, the University Outreach Programme has available a grant if their project proposal is accepted.

3. **Benefits.** The project will not only benefit the women but other stakeholders in the community. If training is successful and applied immediately, the weavers group will be able to use the computer and Internet education to obtain information that will help them price, market and communicate with other potential buyers of their products.

4. **Achievable objectives.** The project of Clara and team is simple and of short duration. It only entails a few activities and will be accomplished after the training is conducted.

5. **Potential capacity of stakeholders.** Upon the conduct of stakeholder analysis, the team was able to assess that the weavers group have the capacity to become partners of the project aside from the local government and the interested teachers in the municipality.

6. **Social risks.** One of the project risks is dealing with the fears or technophobia of the spouses of the weavers. When the latter learn more than their spouses, it may increase insecurity and lead to the spouse's critical or hostile regard of the project. There must be a strategy to convince or neutralize the spouses and the men of Pax Municipality in general. Also, find a champion among the men who believes in the goal of the project.

7. **Acceptability.** Most of the stakeholders are enthusiastic about the project and are willing to participate and be involved in the project. There are some who will still need to be convinced about the project.

8. **Urgency.** The project if successful will meet the immediate needs of the weavers group. They have articulated that they need the project to provide them useful information to price and market their products. Having the computer and ICT skills will help them increase potential market. Teachers will be able to have more information that can enrich their teaching skills and content. Other stakeholders will be able to use the computer and the Internet to look for employment and for information in general.

1-F: SWOT Analysis

OPTIONS	Internal Environment		OPTIONS
S-O Strategy	**(1) Strengths (S)** • Support from primary stakeholders • Low cost • Low maintenance of equipment	**(2) Weaknesses (W)** • Low capability • Unorganized groups in the community except for the weavers group • Weak leadership in the local government	W-O Strategy
	External Environment		
S-T Strategy	**(3) Opportunities (O)** • Interest from support organisations • Interest from the education sector • Favourable policy environment • Tourism sector may provide opportunity to the target groups	**(4) Threats (T)** • Hostile attitude of spouses and some men in the local government • Unfavourable image of the Internet café owner	W-T Strategy

The most likely option is the W-O Strategy:

There is high interest from the primary stakeholders and the education sector. The low capability of the weavers' group may be compensated for by the education sector, and the youth sector. Although this group is not organized yet, through the computer and Internet training programme,

a possibility to organize this group can lead to a structured sustainable effort of replicating the training. A training of trainers programme can be developed to cascade the knowledge and skills that may result from the training. Although there is weak leadership in the local government, there may be a possibility of getting a champion from the education sector. With a trusted and respectable champion for the project, the hostile attitudes of the spouses and the bad image of the Internet café owner may be diffused.

1-G: The Logical Framework

The overall objectives of the project is to contribute to the socio-economic empowerment of the women of Pax Municipality.

The purpose is to improve the capacity of the women of Pax Municipality to increase livelihood and employment opportunities.

The objective is to develop the capability of the women of Pax to use the computer and the Internet in their livelihood and employment opportunities.

The main activities will include:

*   Organisation of the group and the participants of the training
*   Conduct of the computer and Internettraining

The Logical Framework Matrix of the Project

Summary	Indicator	Means of Verification	Assumptions
Goal To contribute to the socio-economic empowerment of the women of Pax Municipality	More than half of the population of the adult and young women are able to increase their income and are able to get employment	Impact assessment survey research Statistical records of socio-economic condition in the community	Goal
Purpose To improve the capacity of the women of Pax Municipality to increase livelihood and employment opportunities	25% of the women and youth in the community are able to use the computer and Internet in relation to their livelihood and employment opportunities	Evaluation and progress reports Reports from the local government	Local government fully support the training programme in the community
Output To develop the capability of the women of Pax to use the computer and the Internet in their livelihood and employment opportunities	• All members of the weavers group are trained and are able to apply training in their business • Teachers are able to serve as trainers for the community • 20% of the trained youth are able apply knowledge and skills	Monitoring - Progress reports and evaluation report	Community members, women and men have confidence in the training programme Community members are able to apply knowledge and skills

Activity 1 – Organisation of the Women (1.1) Organize partners in the community (1.2) Participatory planning for the training programme (1.3) Establish groups of women and men as participants to the trainers training programme	• Partners are organized • Plan of activities for training consulted with other stakeholders and approved by local government officials • Participants for the trainers training selected for both women and men	• Criteria for selection • Progress report • List of participants • Minutes of meetings • Organisation plan and activities approved by local officials	Community members, women and men have confidence in the training programme Budget and resources from the community are committed and made available
Activity 2 – Conduct of Training Needs Assessment and Computer and Internet Training (2.1) Select resource persons to train trainers (2.2) Conduct training needs assessment in the community (2.3) Develop modules for the trainers training (2.4) Conduct the trainers training in the community (2.5) Demonstrate skills of trained trainers in the community (2.6) Plan for future conduct of training in the community	• Two resource persons for the ICT training are selected and available for training • Resource persons conduct training needs assessment • Appropriate and practical modules are developed based on needs assessment • Training conducted • Demonstration of community trainers • Plans outlined, developed and approved for implementation	• Letters of exchanges and confirmation • Memorandum of agreement • Training needs assessment report • Module manual and presentation materials • Registration of trained participants • Evaluation and assessment of training activities • Plan written and approved	Resource persons with training expertise in ICT and community are available Resources and equipment are available Funds are committed, available and released on time Commitment of trainers from the community Pre-condition: Budget available upon implementation

1-H: Activity Schedule

Seq	Activity	Number of Days	Start Days	End Days	1	2	3	4	5	6	Person Responsible
1	Resource mobilization	5	1 Jul	6 Jul	■						Clara
2	Project team orientation and preparation for project requirements	5	8 Jul	15 Jul	■						Clara
3	Finalize project work plan and budget	5	16 Jul	24 Jul	■						Mona
4	Approval of project plans	5	25 Jul	31 Jul	■						Prof Ramirez
Component I: Community preparation											
5	Organisation of partners in the community	20	1 Aug	20 Aug		■					John
6	Participatory planning for the training programme	5	21 Aug	25 Aug		■					John/Husef
7	Establish groups of women and men as participants to the trainers training programme	10	26 Aug	4 Sept		■					John/Clara
Component 2: Conduct of Training Needs Assessment and Trainers' Training											
8	Conduct of training needs assessment	10	21 Aug	30 Aug		■					John/Clara
9	Prepare modules for training	20	1 Aug	30 Sep		■	■				Clara
10	Pre-testing of modules	10	1 Oct	20 Oct				■			Prof Ramirez
11	Revision of modules	20	21 Oct	15 Nov				■	■		Clara
12	Approval of modules	5	20 Nov	25 Nov					■		Prof Ramirez

Seq	Activity	Number of Days	Start Days	End Days	Month (M) 1	2	3	4	5	6	Person Responsible
13	Conduct of Training	10	1 Dec	20 Dec							Clara
14	Monitoring and Evaluation	1x a month for 6 months	Jul	Dec							Prof Ramirez
15	Project Management	Six months	Jul	Dec							Clara

1-I: Activity Resources and Cost

Activity Resources	Unit	Quantity per Period M2	M3	M4	M5	M6	Cost per Unit (USD)	Funding Source	Cost Per Period (USD) M2	M3	M4	M5	M6	Total Cost (USD)
Transportation cost and meal allowance for coordination and mobilization	4	4	4	4	4	4	$50	University	$200	$200	$200	$200	$200	$1,000
Equipment: • Laptop computer • Printer • Projector	1 1 1	1 1		1			$1,000 300 1,000	University	$1,000 300	$1,000				$2,300
Resource persons for module preparation and revision	2		20	20			$100/day	SIDA grant		$2,000	$2,000			$4,000
Training venue for pre-testing Training venue for actual conduct	1 2				1	2	$500 $500	Local Government				$500	$1,000	$1,500
Supplies and Communication	4	4	4	4	4	4	$20	University	$80	$80	$80	$80	$80	$400
TOTAL (USD)									$1,580	$3,280	$2,280	$780	$1,280	$9,200

1-J: Project Proposal

Title of Project:	*Basic Computer and Internet Training Programme for Economic and Education Enhancement for the Villagers of Pax Municipality*
Document prepared by:	*Clara Shung, Fourth Year Marketing Student*
Project Sponsor:	*The document is submitted to Ms. Farida Ramirez, Director of the University Outreach Programme for Approval and Funding*
Identification number:	*UOP 00775*

The Pax University and its marketing students propose a six-month project, "Basic Computer and Internet Training Programme for Economic and Education Enhancement for the Villagers of Pax Municipality". The project upon approval will be closely monitored by the University Outreach Programme Office.

The purpose of the project is to build the capability of the local trainers to educate local villagers in the use of the computer and the Internet for enhancing economic and educational opportunities. The project will engage the teachers and the women's weavers group to learn basic use of computers and Internet to enhance economic and educational opportunities. The community will benefit from the knowledge and skills in the use of computer and Internet to gain access to information that will increase livelihood, employment and educational opportunities.

The project will be implemented in six months in partnership with the Pax local government and the public high schools. The municipality will provide the computer equipment, and the public high schools will provide the space for training.

The activities of the training include: training needs assessment; basic training module development and modifications; preparation of the facilities needed for training; selection of participants for training; conduct of training; and evaluation of the training and project activities.

The goal of the project is to contribute to the socio-economic empowerment of the women of Pax Municipality. The purpose is to improve the capacity of the women of Pax Municipality to increase livelihood and employment opportunities. At the end of six months, the project will improve the capability of the villagers, particularly the women of Pax to use computers and Internet in their education, livelihood and employment opportunities.

The Pax Municipality is a community that needs to uplift the socio-economic and educational conditions of the villagers. The majority of the residents earn an average of USD 2 per day. There are very few students who are able to finish secondary education, not only because of lack of income but also the lack of interest and motivation of the youth to pursue higher education.

The women weavers of Pax Municipality and the teachers of the public school expressed the need of computer and Internet education to develop the capability of community residents in order to enhance economic and education opportunities in the municipality.

The goal of the project is to contribute to the socio-economic empowerment of the women of Pax Municipality. The purpose is to improve the capacity of the women of Pax Municipality to increase livelihood and employment opportunities. At the end of six months the project will improve the capability of the villagers, particularly the women of Pax to use computers and Internet in their education, livelihood and employment opportunities.

The selected groups will serve as role models and local trainers in the community to give the residents good examples of how computer and Internet education can be used as a tool for increasing livelihood, employment and educational opportunities.

The Project Objectives

The overall goal of the project is: To contribute to the socio-economic empowerment of the women of Pax Municipality. The purpose is to improve the capacity of the women of Pax Municipality to increase livelihood and employment opportunities. The output result expected is the improvement of the capability of the residents particularly the women of Pax to use the computer and the Internet in their livelihood and employment opportunities.

The Project Goals and Means

The project will have two major components: (1) Community preparation and organisation of women and (2) Conduct of computer and Internet training activities to community trainers. The project will be open to both women and men and the youth groups.

The first component will include the following activities: Participatory planning with community partners—weavers group, teachers and local government; the establishment of selection criteria for the first batch of training participants open to women and men and the youth groups; and the establishment of groups of women as participants to the trainers training programme.

The second component includes the following activities: Selection of resource persons who will conduct the training needs assessment and the trainers training; preparation of modules for the trainers training; conduct of the trainers training; demonstration training of trained trainers; and planning for future conduct of training in the community.

Result Indicators

Results expected include the following:
* *Members of the weavers group are trained and are able to apply training in their business*
* *Teachers are able to serve as trainers for the community*
* *20% of the trained youth are able to apply knowledge and skills*

At the end of the project it is expected that 25% of the women and youth in the community are able to use the computer and Internet in relation to their livelihood and employment opportunities.

Means of Verification

The results will be verified through reports and documents that are laid out for every activity and results level. The project will be monitored by the University's Office of Director for Students' Outreach Programme.

Assumptions and Risk Factors

The assumptions and risk factors are identified at different levels of the project objectives hierarchy.

(1) At the outcomes level, the following must be observed and monitored: Local government have full support of the training programme in the community; community members, women and men have confidence in the training programme; and community members are able to apply knowledge and skills.

(2) At the outputs level, the assumptions and risk factors include: Community members, women and men have confidence in the training programme; and budget and resources from the community are committed and made available.

(3) At the activities level, it is assumed that: Resource persons with training expertise in ICT and community are available; resources and equipment are available; funds are committed, available and released on time; and there is commitment of trainers from the community.

A pre-condition set is the availability of budget upon the start of the project implementation phase.

Sustainability

The project will work closely with project partners in the community. The project will advocate the benefits of the training activities. It will convince the local government to make the activities of the project sustainable by exploring the integration of the programme in the school curriculum, and by providing policy support such as a municipal law upon endorsement of the local school board.

The project will coordinate with other key institutions for complementariness of results. It will enjoin other groups and institutions that are doing similar activities that complement the initiatives.

Sustainability Prospects

The project is developed upon the expressed needs of the women's weavers group and the public high school teachers of the Pax Municipality. While they are the champions of the project, the involvement of the local government will be able to provide more stability for the implementation phase, and contribute to the sustainability of the results after the project. The project must be owned by both the local residents through their champions and the local government.

To ensure more support and to continue project gains, the local government must provide policy support for the initiatives championed by the weavers group and the high school teachers. Official directives and laws in the municipality will provide indications of the support of the local government.

The use of computers and Internet will be introduced in the community as tools that will promote efficiency, increased productivity and improved institutional management capacity. It is aimed that through the use of these technologies, socio-economic gains will not only be felt at the individual level but also at the group, institution and the municipality levels.

The project will ensure that it will respect cultural aspects in the community and promote equal opportunities for women and men to gain access to the knowledge and skills through the use of the technologies.

The proposed project provides detailed activities and milestones during project implementation. It will provide project efficiency and effectiveness measures in the monitoring and evaluation framework and through progress reports on issues while project is in operation. These issues include changes in the scope or the work plan from minor to serious issues affecting the assumptions of the projects.

Schedules.
An activity plan is laid out and summarized in a Gantt chart, where scheduled milestones and delivery of outputs are indicated from start to finish in a period of six months.

Quality
The project promotes a participatory planning approach with partners and beneficiaries. It will also outline and conduct a practical and experienced-based training derived from consultations and results of the training needs assessment.

Project Costs
The project will be financed by the University Outreach Programme, with support from the Swiss International Development Agency (SIDA), and counterpart from the local government. Disbursements will follow the rules and policy of the University Outreach Programme and the project will submit financial reports on a monthly basis.

Procurement
Services and equipment will be acquired through a procurement process following the guidelines from the University Outreach Programme.

Human Resources
The project leader and the project team are university students guided and mentored by the University Outreach Programme. The members of the team are as follows:

(1) Clara Shung, Project Leader. She will be responsible for the overall deployment of resources and results of the project implementation. She will coordinate the project between and among project sponsors, project team, and partners in the community. She will lead the preparation of reports required by the project sponsors. She will support the Project Monitor from the University Outreach Programme.

(2) Husef Hasam, Technical Coordinator. He will be responsible for the acquisition, set up and the technical conditions of the required equipment and software applications. He will coordinate with the training experts and facilitators in the set up and installation of the hardware and software requirements for the training.

(3) John Jacob, Community Coordinator. He will be assisting the project leader in coordinating the requirements for the community activities such as the training needs assessment, and the conduct of the trainers training. He will also be assisting the project leader in preparing the reports, soliciting report inputs and project documentation.
(4) Mona Lisa Chan, Funds Coordinator and Bookkeeper. She will be responsible for tracking the project funds and cash flow, bookkeeping, and financial reporting. She will assist the project leader in coordinating with the University Outreach Programme Financial Disbursing Officers.

The team will be supervised and monitored by Director Farida Ramirez of the University Outreach Programme. She will be responsible for the fund releases and coordinating with the Marketing Department for the students' curriculum credits and performance rating.

Other members of the team will include university professors who will provide services for the conduct of the training needs assessment, the module preparation and the trainers training in the community.

Communication
The project team will prepare the communication plan to ensure that the project sends core messages that are clear and consistent, receives feedback, and provides appropriate medium for communication. The communication plan will include the preparation of guidelines on official press releases, official letters, reporting procedures and planning of presentations to different stakeholders.

Stakeholders
The stakeholder analysis identifies and assesses the interests of the primary and secondary stakeholders of the project. The primary stakeholders of the project are the local government officials, the women weavers group, the high school teachers, and women and men, both young and old, who would like to participate in the training project. The stakeholder analysis matrix and report are provided in the annex.

Conclusions
The Basic Computer and Internet Training Programme for Economic and Education Enhancement for the Villagers of Pax Municipality will provide benefits in the community. The project is envisioned to support the national and local government's socio-economic development programme for the municipality. The training project will be two-pronged. First, it will meet the economic agenda of increasing income opportunities for villagers, specifically the weavers, by gaining timely access to information on market pricing of products, developing new products, and opening new market opportunities. And the second is helping teachers gain access to new teaching content that will enhance learning of students in the primary and secondary levels of education.

The risks identified at this stage are as follows:

(1) The local government will not be able to pass the policy on time to recognize the project as an official endeavour
(2) The local government officials and the trainees will not be fully committed to own the project and for them to see the project through
(3) The funds will not be released on time

LIST OF ANNEXES
• GANTT Chart – Activity Schedules
• Budget Proposal
• Stakeholder Analysis
• Logical Framework Matrix

1-K: Quality Plan

TABLE OF CONTENTS	NARRATIVE
Title Page	*QUALITY PLAN* *Prepared by Clara Shung* *Date: 11 May 2013* *Version: 1.0*
Outline	
1. Organisation's Quality Policy	*The Pax University adheres to high levels of quality assurance in the preparation and implementation of its programmes and project activities in line with its education philosophy and pedagogical methods.*
2. Project's Quality Definition	*The Basic Computer and Internet Training Programme for Economic and Education Enhancement for the Villagers of Pax Municipality is a community learning activity for students of the Pax University. The project's quality definition is based on the university's policy on quality. The project requires quality outputs on the computer literacy and training modules customized for the villagers of Pax Municipality. Specifically the outputs are expected to provide knowledge and application on computer and Internet training suitable to persons requiring information on livelihood, education and employment.*

3. Deliverables and Acceptance Criteria	The following is a list of significant project deliverables, including contract deliverables and milestone checklist. For each deliverable, the acceptance criteria that will be used in product acceptance testing is included.	
	Deliverables	**Acceptance Criteria/Applicable Standards**
	1. Training Needs Assessment Report	• Outline and proposed method presented and approved • Final report presented and submitted to the Project Steering Committee and approved in month 2
	2. Trainers Training Modules	• Outline and proposed method presented and approved • Modules pre-tested prior to actual use • Final report presented and submitted to the Project Steering Committee and approved in month 4
4. Quality Assurance	Quality assurance activities for the project defined as follows:	
	Resource persons are met, briefed and provided with the goals and expected results of the projects	
	The drafts are reviewed by the Project Steering Committee aside from the project team	
	Pre-testing of modules will be done in two rounds for peer review and finalization	
	Pre-testing of modules will include actual conduct with champions from the community to ensure that their needs and requirements are met, and the exercises are applicable	
	Assessment and evaluation of the training activities will be conducted after every module presentation during the pre-testing and actual conduct	
	Criteria will be set for the selection of resource persons and writers	
	Regular update meetings will be scheduled with resource persons to monitor progress of outputs	
	Resource persons will be provided with the opportunity to meet with partners to ensure contextualisation of training modules and exercises	
5. Project Monitoring and Control	Project monitoring and control are defined by the following:	
	Weekly meetings with project staff and monthly progress reports	
	Resolutions on variances will be reported to Project Steering Committee	
	Criteria in the selection and the number of participants will be observed	
	Bi-monthly audits of project budget and expenditures	
	Monitoring of risk factors of the project	
6. Project Quality Plan Signatures	Project Name: Basic Computer and Internet Training Programme for Economic and Education Enhancement for the Villagers of Pax Municipality	
	Project Manager: Clara Shung, Year 4 Marketing Department	
	The information contained in this Project Quality Plan was reviewed and agreed upon by the following: (The signatures indicate an understanding of the purpose and content of this document by those signing it. By signing this document, they agree to this as the formal Project QualityPlan)	

Name	Role	Signature	Date
1. Clara Shung	Project Manager	Signed	11 May 2013
2. Husef Hasam	Technical Coordinator	Signed	11 May 2013
3. Farida Rodriguez	Programme Director	Signed	11 May 2013

1-L: Communication Plan

TABLE OF CONTENTS	NARRATIVE
Title Page	Communication Plan Prepared by Clara Shung Date: 11 May 2013 Version: 1.0
Outline	

1. Context and Project Background	The Pax Municipality is a community that needs to uplift the socio-economic and educational conditions of the villagers. Majority of the residents earn an average of USD 2 per day. There are very few village students who are able to finish secondary education not only because of lack of income but also the lack of interest and motivation of the youth to pursue higher education.
	The women weavers of Pax Municipality and the teachers of the public school expressed the need for computer and Internet education to develop the capability of community residents in order to enhance economic and education opportunities in the municipality.
	The goal of the project is to contribute to the socio-economic empowerment of the women of Pax Municipality. The purpose is to improve the capacity of the women of Pax Municipality to increase livelihood and employment opportunities. At the end of six months the project will improve the capability of the villagers, particularly the women of Pax to use computers and Internet in their education, livelihood and employment opportunities.
	The selected groups will serve as role models and local trainers in the community to give the residents good examples of how computer and Internet education can be used as a tool for increasing livelihood, employment and educational opportunities.
	A communication plan will guide the project team to impart the key messages of development as well as the benefits of the project in order to sustain it in the community.
2. Stakeholder Analysis	1. Local Leaders. The project must be able to convince all the local officials. The project team must be wary of the internal politics and dynamics among officials; and will need to understand internal dynamics among the political figures.
	2. Women Weavers Group. Need extra income for the family; no computer or Internet literacy but open to learning new skills in using computer and Internet. The Head of the women's group, Mrs. Patel, seems to be influential in the community; she can command respect to her members; and she can also identify members who can be potential local trainers and project role models.
	3. Public School Teachers (at the primary and secondary levels). Expressed their interest about computer literacy; and gave their opinion that having this project will be helpful to the school children and other community members.
	4. Local Government Employees. Do not show interest on use of computers and may have to be convinced about the benefits of the project for the community. The project may need their help in coordinating project activities and in showing proof of benefits. The project team will identify potential participants.
	5. Young Women and Men. Future trainees if local trainers will cascade training to community members; and can be influential if they will see the benefit of using computers and Internet to meet their needs.
	6. Secondary Stakeholders.
	6.1. Spouses of Weavers. They can pose some problems if they do not see the benefit of their spouses being trained on the use of computers and Internet; but can be supportive and influential if they will be persuaded about the project.
	6.2. NGO. Can be supportive to the team; and provide information and advice.
	6.3. Internet Café Owners. Have bad image in the community as encouraging children to play more games, and thus, distracting their studies. The owner's interest is making profit; they may charge a high rate for the use of its facilities for training; but can be convinced to provide support to the project.
	6.4. Shop Owner Selling Woven Products. May be threatened by the empowerment of weavers group; and shop owner may not sell woven products of weavers group. Will have to allay his/her fears that project can result in the production of quality products to his/her advantage.
	6.5. Other Communities (including university groups and departments). Communities may watch out for the success and failure of the project—a pressure for the partners and the project team.
3. Communication Plan	

3.1. Communication Objectives	*Overall, this plan seeks to guide the project team in raising awareness about the benefits of the project, and ensuring that all the stakeholders receive relevant information about the project.* *Specific objectives include:* *1. To ensure that project team and partners are properly informed of all accomplished, current and upcoming activities, their support enhanced, and their contributions heard (internal)* *2. To organize and coordinate communication activities, consistent with the guidelines on communication and visibility (external) of the university* *3. To raise awareness about the project and its goals* *4. To provide staff, partners and beneficiaries a platform to engage concerned local government officials* *5. To raise the profile of the university in order to motivate other individuals and organisations to promote the use of computer and Internet for livelihood, education and employment opportunities* *6. To ensure dissemination of achievements, lessons learned and developed approaches in the course of implementing the project*

3.2. Communication Plan	*The team will prepare the following:*
	1. General information sheet about the project
	2. Practical and positive contributions of the project (best practices, etc.)
	3. Briefs on the country's ICT policy measures
	4. Studies on the effects of ICT in human development, such as improvement of livelihood, education and employment
	5. Audio-visual presentations showing experiences with and responses to the use of ICT for human development
	6. The incorporation of human development values in the training modules on computer and Internet literacy
	7. The role of the university in the outreach programme that promotes human development and ICT literacy to support livelihood, education and employment
	
	Specific messages will be targeted to the following stakeholders:
	1. Local Leaders. Benefits of promoting computer and Internet literacy for the improvement of livelihood, education and employment in society as a whole
	2. Women Weavers Group. Benefits of promoting computer and Internet literacy for the improvement of livelihood, education and employment in society as a whole; and the economic empowerment of women
	3. Public School Teachers (at the primary and secondary levels). Benefits of promoting computer and Internet literacy for the improvement of livelihood, education and employment in society as a whole; and the economic empowerment of women
	4. Local Government Employees. Benefits of promoting computer and Internet literacy for the improvement of livelihood, education and employment in society as a whole
	5. Young Women and Men. Benefits of promoting computer and Internet literacy for the improvement of livelihood, education and employment in society as a whole; and the partnership of women and men in economic empowerment
	
	6. Secondary Stakeholders.
	  6.1. Spouses of Weavers. Benefits of promoting computer and Internet literacy for the improvement of livelihood, education and employment in society as a whole; and the partnership of women and men in economic empowerment
	  6.2. NGO. Benefits of promoting computer and Internet literacy for the improvement of livelihood, education and employment in society as a whole; and the role of civil society groups in promoting empowerment and education
	  6.3. Internet Café Owners. Benefits of promoting computer and Internet literacy for the improvement of livelihood, education and employment in society as a whole; and the role of the private sector in promoting empowerment and education
	  6.4. Shop Owner Selling Woven Products. Benefits of improving the skills of women weavers and their business
	  6.5. Other Communities (including university groups and departments). Benefits of promoting computer and Internet literacy for the improvement of livelihood, education and employment in society as a whole

3.2.2.1. Routine Communication	*Communication Tools*
	
	The following communication tools will be utilized and developed to meet communication objectives and reach target groups. The language for communication will be the use of local languages/dialects in project areas; and English for reporting to project sponsors in the university.
	
	1. Internal Correspondence
	  1.1. Electronic mail and mailing groups will be maximized to circulate formal letters of information and regular project updates among staff, officers and partners
	  2. Documentation and updates on the training needs assessment and training seminars

	2.1. The signing of the Memorandum of Agreement between the university and partner organisations in the community in month 1
	2.2. Local orientation meetings thatwill be held in months 1-3 will be documented and included in the first project update
	2.3. The results of the training needs assessment and training seminars will be included in project updates and newsletters that will be disseminated online. Guides for taking good photographs will be distributed to project officers. (Guides are attached as Appendices 1 and 2)
	2.4. A final report will be released to highlight project outcomes, lessons learnt and successful case stories. The report will also consolidate all previous project updates
	3. Feedback from community members and other stakeholders will be gathered primarily through local meetings, workshops, training seminars and orientations/consultations. Additionally, a project website attached to the university will be designed to enable public feedback on the project.
3.2.2.2. Budget Communication	Relevant stakeholders in the university will be informed about the budget of the project vs. the actual cost of the project.
3.2.2.3. Risk and Issues Communication	In case unexpected matters will transpire in the course of the project implementation, the University Director will be informed immediately.
4. Budget	The project budget will earmark about 10% of the budget to facilitate communication.
5. Approval	The information contained in this Communication Plan was reviewed and agreed upon by the following: (The signatures indicate an understanding of the purpose and content of this document by those signing it. By signing this document, they agree to this as the formal Communication Plan) Document Approvedand Signed By: Farida Rodriguez, University Director on 11 May 2013

1-M: Procurement Plan

TABLE OF CONTENTS	NARRATIVE
Title Page	Procurement Plan Clara Shung Date: 11 May 2013 Version: 1.0
1. Procurement Statement	The project, Basic Computer and Internet Training Programme for Economic and Education Enhancement for the Villagers of Pax Municipality is a community learning activity for students of the Pax University. The project requires computer literacy and training modules customized for the villagers of Pax Municipality. Specifically the outputs are expected to provide knowledge and application on computer and Internet training suitable to persons and stakeholders in the community requiring information on livelihood, education and employment. The following is a list of procurement needed to accomplish the project activities and outputs: 1. Services of a Training Needs Assessment Specialist (1) 2. Services of a Module Writer to develop the training module on the Basic Literacy in Computer and Internet for Livelihood, Education and Employment (1) 3. Training venue for trainers training (2) 4. Equipment for training – laptop computer (1), printer (1) and projector (1)
2. Estimated Cost	Total Cost for all Procurement: USD 8,920.00: 1. Services at USD 5,120.00 2. Equipment at USD 2,300 3. Training venue at USD 1,500
3. Vendor Selection	1. Services will be procured from among the resource pool of the university. Criteria for selection will be provided. 2. Equipment will be procured from among the pool of vendors that the university has transacted in the recent past. 3. Training venue will be selected from among the venue used by the university in its previous projects.
Detailed Procurement Plan	
1. Organisation's Procurement Policy	The university policy on procurement is ensuring quality and the promotion of value for money.

2. Project's Procurement Definition	The following is a list of procurement needed to accomplish the project activities and outputs: 1. Services of a Training Needs Assessment Specialist (1) 2. Services of a Module Writer to develop the training module on the Basic Literacy in Computer and Internet for Livelihood, Education and Employment (1) 3. Training venue for trainers training (2) 4. Equipment for training – laptop computer (1), printer (1) and projector (1)		
3. Selection Criteria	1. Services will be procured from among the resource pool of the university. Criteria for selection will be provided. 2. Equipment will be procured from among the pool of vendors that the university has transacted in the recent past. 3. Training venue will be selected from among the venue used by the university in its previous projects.		
4. Procurement Team	The team members for the procurement team will include:		
✓ here	Name:	Phone / e-mail:	Procurement Role:
	Clara Shung	888.8887/cshung@gmail.com	Procurement monitor
	Mona Lisa Chan	631.4748/mlchan@yahoo.com	Procurement coordinator
	Farida Ramirez	753.7171/framirez@university.org	Approving party
	Julia Smith	753.2727/jsmith@university.org	Approving party
5. Contract Type	University contract templates apply		
6. Contract Standards	Contract standards of the university apply		
7. Vendor Management	The project team will ensure that the vendor provides all of the products and/or services (and only the products and/or services) that were agreed upon, and that appropriate levels of quality are maintained. The project team will brief, discuss and negotiate with the vendors based on previous contracts with the university.		
8. Related Documents	Related documents based on previous contracts with the university.		
Project Procurement Plan Signatures	The signatures indicate an understanding of the purpose and content of this document by those signing it. By signing this document, they agree to this as the formal Project Procurement Plan.		
	Project Name: Basic Computer and Internet Training Programme for Economic and Education Enhancement for the Villagers of Pax Municipality		
	Project Manager: Clara Shung		
	The information contained in this Project Procurement Plan was reviewed and agreed upon by the following: (The signatures indicate an understanding of the purpose and content of this document by those signing it. By signing this document, they agree to this as the formal Project Procurement Plan)		
✓ here	Role	Signature	Date
1. Mona Lisa Chan	Procurement Coordinator	Signed	11 May 2013
2. Farida Ramirez	Programme Director	Signed	11 May 2013
3. Julia Smith	Auditor	Signed	11 May 2013

1-N: Risk Management Plan

TABLE OF CONTENTS	NARRATIVE
Title Page	RISK MANAGEMENT PLAN Clara Shung Date: 11 May 2013 Version: 1.0
Section 1 of this table defines the risk management process. The risk management process is scalable to ensure that the level, type and visibility of risk management are commensurate with both the risk and the importance of the project.	

1. Risk Management Strategy Definition	*The following are the risk management methods to be used:*
	1.1. Risk Identification – Risks will be identified through discussion with all major stakeholders. A Risk Assessment Questionnaire and a Project Planning Risk Assessment Checklist will be used to help recognize and discover all problem areas in details. These tools can augment the list to include other project specific risks.
	1.2. Risk Categorization – The risks are grouped into categories by using a Risk Assessment Questionnaire. Categories include: • *Scope – The project scope is limited to trainers training and other training may be required in the community. If the local government requests for additional training and seeks assistance from the university, then the project scope, budget and schedule will change.* • *Budget – If funds are not committed and will not be available and released on time, the project will be delayed.* • *Deliverables –If the deliverables are not met, additional days in the schedule will affect the budget.* • *Schedule – If the deliverables are not met, delay in the project schedule will happen.* • *Linkages – If the linkages among local partners are not established in the first month of the project, the schedule of the project and the budget will be affected.* • *Human Resource – If resource persons with training expertise in ICT and community are not available, it will delay schedule and will increase budget. If the commitment of trainers from the community is not made, it will delay the project.* • *Other resources – If equipment is not available and not procured on time, it will delay the schedule of the project.*
	1.3. Risk Response Tracking – The project team will: • *Document the dates and the actions taken to mitigate the risk* • *Document the actions taken when the risk event occurred (contingency plan)* • *Document any subsequent actions taken* • *Incorporate this information into the risk register*
	1.4. Risk Monitoring – The project team will: • *Establish systematic reviews and schedule them in the project schedule* • *Ensure that all requirements of the risk management plan are being implemented* • *Assess currently defined risks in the risk register* • *Evaluate effectiveness of actions taken* • *Identify status of actions to be taken* • *Validate previous risk assessment (likelihood and impact)* • *Validate previous assumptions* • *State new assumptions* • *Identify new risks* • *Track risk response* • *Establish communication*
	1.5. Risk Control – The project team will: • *Validate mitigation strategies and alternatives* • *Take corrective action when actual events occur* • *Assess impact of actions taken on the project (cost, time, resources)* • *Identify new risks resulting from risk mitigation actions* • *Ensure the project plan (including the risk management plan) is maintained* • *Ensure change control addresses risks associated with the proposed change* • *Revise risk management documents to capture results of mitigation actions* • *Revise the risk register or the list of risk factors* • *Establish communication*
2. Review of Assumptions	*The assumptions that have a significant impact on project risk:* • *Resource persons with training expertise in ICT and community are available* • *Resources and equipment are available* • *Funds are committed, available and released on time* • *Commitment of trainers from the community* • *Pre-condition: Budget available upon implementation* • *Budget and resources from the community are committed and made available*

3. Project Team	*The members of the risk management team with their corresponding roles and responsibilities unique to the risk management function are:* *(1) Clara Shung, Project Leader. She will be responsible for the overall deployment of resources and results of the project implementation. She will coordinate the project between and among project sponsors, project team, and partners in the community. She will lead the preparation of reports required by the project sponsors. She will support the Project Monitor from the University Outreach Programme.* *(2) Husef Hasam, Technical Coordinator. He will be responsible for the acquisition, set up and the technical conditions of the required equipment and software applications. He will coordinate with the training experts and facilitators in the set up and installation of the hardware and software requirements for the training.* *(3) John Jacob, Community Coordinator. He will be assisting the project leader in coordinating the requirements for the community activities such as the training needs assessment and the conduct of the trainers training. He will also be assisting the project leader in preparing the reports, soliciting report inputs and project documentation.* *(4) Mona Lisa Chan, Funds Coordinator and Bookkeeper. She will be responsible for tracking the project funds and cash flow, bookkeeping and financial reporting. She will assist the project leader in coordinating with the University Outreach Programme Financial Disbursing Officers.* *The team will be supervised and monitored by Director Farida Ramirez of the University Outreach Programme. She will be responsible for the fund releases and also coordinating with the Marketing Department for the students' curriculum credits and performance rating.*
4. Risk Management Milestones	*The risk management milestones are as follows:* • *Partners are organized in months 2 and 3* • *Plan of activities for training consulted with other stakeholders and approved by local government officials in months 2 and 3* • *Participants for the trainers training selected for both women and men in month 4* • *2 resource persons as experts of the ICT training for communities are selected and available for training in months 1 to 3* • *Resource persons conduct training needs assessment in month 2* • *Appropriate and practical modules are developed based on needs assessment in month 3* • *Training conducted in month 4* • *Demonstration of community trainers in months 4 and 5* • *Plans outlined, developed and approved for implementation in month 6*
5. Risk Assessment	• *Scope – The project scope is limited to trainers training and other training may be required in the community. If the local government requests for additional training and seeks assistance from the university, then the project scope, budget and schedule will change.* M • *Budget – If funds are not committed and will not be available and released on time, the project will be delayed.* H • *Deliverables – If the deliverables are not met, additional days in the schedule will affect the budget.* H • *Schedule – If the deliverables are not met, delay in the project schedule will happen.* H • *Linkages – If the linkages among local partners are not established in the first month of the project, the schedule of the project and the budget will be affected.* M • *Human Resource – If resource persons with training expertise in ICT and community are not available, it will delay schedule and will increase budget. If the commitment of trainers from the community is not made, it will delay the project.* L • *Other resources – If equipment is not available and not procured on time, it will delay the schedule of the project.* L
6. Risk Thresholds	• *The project team will plan for risk events that have been determined to have a rating of "High (H)".* • *The project team will develop a full response plan for each item rated as H or high risk. These risks are watched closely.* • *The project team will create a response plan for any M or medium risk item where they deem it necessary. Medium risks are monitored on a regular basis.* • *No action is required for low risk items except to keep a watch on them as the project progresses.*
7. Communication	*Risk communication will be focused on high-risk areas. The Project Director will be alerted on any unexpected changes that will take place in the project. The high-risk areas will be given priority in the communication plan.*

8. Risk Tracking Process	The risk-tracking process will involve the following: • Regular weekly meeting with project team • Regular scheduled meeting with project partners • Progress reports will cover risk assessments updates			
9. Risk Management Plan Signatures	The information contained in this Project Risk Management Plan was reviewed and agreed upon by the following:			
Name	Role	Signature	Date	
1. Clara Shung	Project Manager	Signed	11 May 2013	
2. Husef Hasam	Technical Coordinator	Signed	11 May 2013	
3. John Jacob	Community Coordinator	Signed	11 May 2013	
4. Mona Lisa Chan	Funds Coordinator	Signed	11 May 2013	
5. Farida Ramirez	Programme Director	Signed	11 May 2013	

1-O: Monitoring Tool

Monitoring Report
Monitored by:
Date:

Activity	Indicators	Month (M)						TOTAL	REMARKS
		1	2	3	4	5	6		
Output To develop the capability of the women of Pax to use the computer and the Internet in their livelihood and employment opportunities	Total number of trained members of the weavers group (sex disaggregated)								
	Total number of members in the weavers group who are able to apply training in their business (sex disaggregated)								
	Total number of trained teachers who are trained as trainers (sex disaggregated)								
	Total number of trained teachers who are able to serve as trainers for the community (sex disaggregated)								
	Total number of trained teachers who are able to apply knowledge and skills in their subjects/profession (sex disaggregated)								
	Total number of trained youth who are able to apply knowledge and skills in education (sex disaggregated)								
	Total number of trained youth who are able to apply knowledge and skills in employment and livelihood (sex disaggregated)								

Activity 1 – Organisation of the Women *(1.4) Organisation of partners in the community* *(1.5) Participatory planning for the training programme* *(1.6) Establish groups of women and men as participants to the trainers training programme*	*Number of organisations formed as project partners*							
	Total number of consultation activities with stakeholders							
	a. Total number of local government officials who attended meetings (sex disaggregated) *b. Total number of weavers who attended meetings (sex disaggregated)* *c. Total number of teachers who attended meetings (sex disaggregated)*							
Activity 2 – Conduct of Training Needs Assessment and Computer and Internet Training (2.1) Select resource persons to train trainers (2.2) Training needs assessment conducted in the community (2.3) Develop modules for the trainers training (2.4) Conduct of the trainers training (2.5) Demonstration training of trained trainers (2.6) Planning for future conduct of training in the community	*Number of resource persons as experts of the ICT training for communities selected and available for training*							
	Number of resource persons conduct training needs assessment							
	Number of appropriate and practical modules developed based on needs assessment							
	Number of training courses conducted							
	Number of demonstrations conducted by community trainers							
	Number of plans outlined, developed and approved for implementation							
Risk Register	*Status Description: Low, Medium, High*							**Actions/ Mitigations**
(1) The local government will not be able to pass the policy on time to recognize the project as an official endeavour *(2) The local government officials and the trainees will not be fully committed to own the project and see the project through* *(3) The funds will not be released on time*	*Project delay* *Project delay* *Project delay*	H	H	M	M	L	L	*Communic-ation plan prepared; undertake consultat-ions*
OTHERS								

1-P: Closing Plan

Name	Role	Signature	Date
(1) Exit meeting and assessment with local partners	*Schedule of meetings with partners and selection of venue; notice of meetings*	**John**	**M5**
(2) Assessment with module writers and trainers	*Schedule of meetings with resource persons and selection of venue; notice of meetings*	**Clara**	**M5**
(3) Conduct of external evaluation	*RFP; selection of evaluator; preparation of TOR and contracts*	**Director F. Ramirez and Clara**	**M4**
(4) Final payment of contracts and conduct of financial audit	*Request preparation to accounting department; preparation of auditor*	**Director F. Ramirez and Mona**	**M5**
(5) Return of equipment	*Preparation of receipt and hand over*	**Husef**	**M6**
(6) Exit interview of project team members	*Preparation of interview questions and schedule*	**Director F. Ramirez and Clara**	**M6**

ANNEX 2
A COMMUNICATION FRAMEWORK FOR ICTD PROJECTS

Professor Royal Colle, Cornell University

ICTD projects are inevitably part of a larger communication intervention that influences and determines the characteristics and direction of ICTD projects. In discussing the use of ICTs in agriculture, a World Bank publication puts it this way:[96]

> It is important to begin any ICT-in-agriculture intervention by focusing on the need that the intervention is [proposed] to address—not the need for ICT—but the need for better and more timely market information, better access to financial services, timely and appropriate crop and disease management advice.

This Annex provides a brief guide to communicating with stakeholders to search out, understand and manage the priorities that drive the ICTD project. The emphasis here is on communication initiatives that promote changes in people's knowledge, motivation and behaviour.

The Roles of Communication Planning and Communication Strategies

We start by raising questions about what comes *before* an organisation begins its communication activities—before media production such as designing web pages, producing posters, broadcasting radio or television programmes, or printing and distributing booklets. We suggest an alternative approach to the common practice of beginning with setting up a blog or website, or launching a campaign driven by the creation and sending of messages. This approach is similar to the discussion of the "pre-initiation phase" of this Primer. In addition to ICTD, the principles and issues we discuss here can be applied to public opinion, public relations, advocacy, technology transfer, social mobilization, agricultural extension and social change in general—that is, in situations where ultimately the aim is to influence knowledge, motivation or behaviour.

Many—perhaps too many—communication programmes designed to influence public opinion or promote social or behavioural change are driven by intuition, inspiration, artistry and reaction. For example, confronted by high levels of disease or malnutrition in a country, a senior health official declares the need to persuade the population to change their diets or other behaviours. The official gives an order to prepare some radio spot announcements and create some messages-for-mobiles that promote a nutritious combination of foods. The official wants to start the campaign by sending messages. In the bureaucracy, his/her success may be measured by how many SMS messages were sent and how many announcements were broadcast on radio.

Another approach is to be concerned with how many persons learned about the benefits of particular nutrients and were persuaded to change their behaviour as a result. This emphasis is more on what happens among the target populations. Thus, is it more important to concentrate on sending information about nutrition, or is it more important to focus on the successful reception

---

96 World Bank, *ICT in Agriculture, Connecting Smallholders to Knowledge, Networks and Institutions: An e-Sourcebook* (Washington, D.C., 2012). Available from http://www.ictinagriculture.org.

of the information by relevant people? This is an issue that relates, in part, to how you do an evaluation of the intervention, but it also relates to how you begin the intervention.

To avoid making poor decisions on sending information to target populations, a well-designed communication strategy is essential. In fact, sending information is only part of the total communication effort associated with campaigns and with social and behavioural change programmes. Other parts of communication programmes include analysing data, making decisions about communication objectives, identifying priority stakeholders, selecting appropriate information channels (media), and determining appropriate content. All of these elements require planning. The communication activities dictated by these elements need to be put in a time frame (that is, they need to be scheduled). It is after these kinds of decisions are made and plans laid out that information begins flowing. At various stages of this overall process, research and evaluation must be undertaken and the results fed back into the process. Thus, the process is iterative: there is a continual flow of information into and out from the organisation conducting the intervention programme, and new information influences the process as the intervention continues.

Where Strategy Begins

A communication strategy usually has its roots in a policy or goal. A policy is a political statement that says, often in many words, that there is a problem or an opportunity and the organisation (a government, NGO or other enterprise) wants to do something about it. Another way of expressing this is to say "there is an *undesirable state* and we will undertake a programme to achieve a *desirable state*." Thus we often talk about carrying out "interventions." Legislatures, presidents, government ministers, and boards of directors are the typical policy makers.

The Millennium Declaration that resulted in the Millennium Development Goals (MDGs) is an example of a policy advanced by an international group. Thus, the first goal "to eradicate extreme poverty and hunger" with a 2015 target of cutting in half the proportion of people living on less than a dollar a day and those who suffer from hunger sets the stage for commitments to action. Specifically *what* is going to be done may be left to technical specialists, managers or administrators in various countries or locales. These specialists may include director generals, secretariats, planning councils and chief operating officers. For example, technical specialists—perhaps a national planning council—may decide whether the method or programme for reducing hunger will be accomplished through increasing rice production, or decreasing per capita consumption of rice by substituting other foods in the diet, or by reducing the size of the population (and thus reducing total consumption of rice).The approach chosen dictates some sub-goals (such as "produce new technology for higher yielding seed varieties"; "create a system for convenient and low-cost loans to farmers"; or "persuade farmers to adopt new farming practices"). These may then become separate but inter-related programmes each with its own sub-goals.

In each of the eight MDGs, you will see many references to the need for a communication component. A 2012 publication by the World Bank takes each of the MDGs and suggests a role for communication in reaching its target.[97] For example, MDG5 is to improve maternal health. In a Uganda case, the World Bank reports that: "Traditional birth attendants were provided with walkie-talkies, allowing them to stay in contact with health centers and obtain advice…." An assessment found that this action resulted in approximately a 50 per cent reduction in maternal mortality rate.[98]

---

97   World Bank, 2012 *Information and Communication for Development: Maximizing Mobile* (Washington D.C., 2012). Available
      from http://go.worldbank.org/0J2CTQTYP0.
98   Ibid., p. 23.

Something To Do

Using the web, people around you, and your own analytical abilities as resources, list the ways in which communication is important in achieving one of the MDGs.

A background paper written by Clement Dzidonu could be helpful. Available from http://unpan1.un.org/intradoc/groups/public/documents/UN-DPADM/UNPAN039075.pdf.

Image Source: World Bank, "IC4D 2012: Maximizing Mobile". Available from http://go.worldbank.org/0J2CTQTYP0.

The Communication Plan

Whether it is a MDG or a local effort to strengthen some aspect of the local economy, communication is inevitably involved. It is therefore important to recognize what communication can do. We will discuss that later. First, you should note that a communication intervention requires a communication plan. The plan should include at least the following components: (1) mobilizing communication resources—which may include facilities such as recording facilities, or personnel such as outreach workers or webmasters, or access to broadband; (2) a management system indicating who is responsible for what parts of the communication intervention and for liaison with other programmes in the overall project—a topic well-covered in this Primer; (3) a research plan that includes situation analysis, evaluation and specific studies—such as finding out whether a telecentre can be a viable and effective micro enterprise in a community; and (4) the communication strategy or blueprint-for-action itself. Important information on these components appears in this Primer. It is the communication strategy that will be discussed in the remainder of this Annex. It provides the framework within which an ICTD project will emerge.

Three main strategy components that guide the action part of a communication plan are: (1) the populations (or stakeholders) to be reached; (2) the channels to be used; and (3) the content that will shape the messages. If there are no options available to a planner for making choices concerning these issues, there is no need for a guide for making decisions about that element of a strategy. For example, if an official or a donor agency dictates that a project must test the feasibility of using mobile technology in a community health initiative, there may be no need for decisions about media or communication channels. *A strategy is necessary when there are options, and when decisions have to be made from among the options*.

Steps in Developing a Communication Strategy

Research, planning and evaluation provide a framework for laying out a communication strategy. These trigger other steps in the process, including developing communication materials, pre-testing messages, and implementing the initiative. However, the communication strategy includes specific attention to: (1) specifying objectives; (2) selecting channels to be used; (3) identifying stakeholders; (4) deciding on communication content to be developed into messages; and (5) determining evaluation methods to be used.

You should remember that while development programmes tend to be characterized by *an-organisation-doing-something-to-people* (such as changing or reinforcing their knowledge,

beliefs, attitude, skills and behaviours), the most effective strategies will be those that build into them opportunities for participation by various stakeholders. In many of the communication intervention process, citizens can be effectively involved in research, in defining issues, in decision-making related to setting objectives, in choosing media and content, in production of messages, and in evaluation. And, inevitably, governments and other organisations want people to be participants in the benefits of the interventions.

Now, here are some steps to develop a communication strategy for ICTD projects.

Step 1 – Undertake situation analysis. This information-gathering activity is important for shaping the communication plans and strategy, and it is often necessary also for coordinating with the parallel strategies planned for other sectors, such as education and health. The communication strategy requires a variety of information including many of the following:

- Demographic information, including population size, geographic distribution and age distribution
- Psychographic information, including values, lifestyles and dominant beliefs
- Historical legacies, including important relevant forces that have shaped communities and the people's current practices related to the behavioural changes proposed
- Economic realities, including the class structure, how people earn money and patterns of poverty
- Political realities, including formal and informal leaders, and the structure of the political system
- The social structure, including patterns of settlement, ethnic structure, community organisations, cultural diversity, family patterns and social networks
- Communication patterns, including the prevalence and uses of old ICTs (radio and television), new ICTs (mobile phones and social media) and indigenous channels of communication; the credibility of these information sources and channels; and the accessibility of the intervention agency and stakeholders to communication media facilities and organisations
- Beliefs and perceptions related to the product, intervention and organisations associated with them. This includes how people presently deal with the situation an intervention intends to improve, people's views of the intervention, and people's perceptions of the change agent (such as a community health worker), the public representative of the government or the company
- The knowledge, attitudes and practices that are related to the proposed intervention.
- The goals and methods of the intervention, including its real and perceived benefits, possible undesired consequences, costs, limitations and constraints to adopting different behaviours (such as using a telecentre), and any activities or agencies in the community that compete with this intervention.

> ### Something To Do
>
> Consider what the limitations may be for some people to use a telecentre.[99]

This kind of community analysis can be a major research activity requiring many months, perhaps even years. Some anthropologists have spent large parts of their lifetimes learning about communities. However, techniques have been developed for doing "rapid rural appraisals"

---

99   A telecentre is a public place where people can access computers, the Internet, and other digital technologies that enable them to gather information, create, learn and communicate with others while they develop essential digital skills. While each telecentre is different, their common focus is on the use of digital technologies to support community, economic, educational, and social development—reducing isolation, bridging the digital divide, promoting health issues, creating economic opportunities and reaching out to youth for example. Source: Wikipedia, "Telecentre". Available from http://en.wikipedia.org/wiki/Telecentre.

that yield the kind of information needed in a much shorter time.

Perhaps the most important reason for doing a situation analysis is to: (1) understand the population and the root causes of the problem; (2) assess the possible impact of adopting new practices or technologies; and (3) learn how to exchange information with the stakeholders. A research agenda is clearly important for the information and communication component, but it is also relevant to other components. Managers may invest money and effort developing technologies that have little chance of being adopted or sustained, and managers may not realise that people in the community may have significant knowledge that should be factored into communication planning, and into agencies making important decisions about those people's welfare. Research may be perceived as being too expensive or too time consuming, but you should ask the question: what are the potential costs of not doing research?

Step 2 – Set communication objectives. Results from the situation analysis will suggest what the principal communication objectives should be. These objectives should deal with the cognitive, affective or skills aspects of human beings. Communication itself cannot improve yields of rice, improve the nutritional status of individuals or build schools. Communication can affect knowledge, beliefs, perspectives, motivation, attitudes, skills, understanding, and, to some extent, behaviour—some of which can contribute to better rice yields or improved health status of a population. Usually this decision about communication objectives must be made in partnership with other sectors and other resources such as medical clinics, schools, researchers with new seed cultivation techniques, suppliers of firewood or fertilizers, masons and builders, etc. An initiative to increase food production or to protect the environment is not really a communication intervention, but communication is likely to be an essential component.

Communication objectives are likely to start with phrases like:

• To increase knowledge...	• To learn...
• To motivate...	• To teach…
• To reinforce...	• To change perceptions…
• To train...	• To change beliefs…
• To persuade...	• To change attitudes…

Something To Do

Examine the woman in the picture. What communication objective do you think may be involved in her mobile interaction?

Image Source: World Bank, "IC4D 2012: Maximizing Mobile". Available from http://go.worldbank.org/0J2CTQTYP0.

When we consider what we can do with communication, we need to keep in mind that we are largely limited by what can take place in people's heads. Our communication objectives should not be "to increase crop yields" but rather (among other things) "to persuade farmers to adopt a new seed variety."

Note that the examples of the objectives above (to increase knowledge…, to motivate… etc.) reflect an organisation's point of view. They imply output activity by the change agency. But you can also develop objectives from the beneficiaries' point of view. For example, instead of "to train…", the objective can state that "the target population will know how to…" In this case, the emphasis is on the outcome for a particular group of people rather on the action of the organisation doing the intervention).

Is it more important to measure what is sent out (e.g. 200 radio announcements made in a month), or the outcome of the communications (e.g. 60 per cent of the population have heard the announcements and are able to repeat the message)? Output and outcome are both important in a communication intervention, and a planner must be conscious of this distinction. Evaluation of outcomes relates more closely to impact, which, for many in development is the principal issue. Note that the MDGs deal primarily with outcomes.

Some communication-related objectives that are neither cognitive nor affective may deal with mobilizing resources, but in a strict sense they are more resource-building or capacity-building objectives than communication objectives. These may include: building a local radio station, creating an information unit in a ministry, establishing telecentres in villages, or training volunteers. These are part of the communication planning process just as the situation analysis is, and they are often essential to executing the communication strategy.

An important question about objectives is: should objectives be quantified? If a programme or project is to be evaluated, it is often important to have good baseline pre-intervention data (that probably come from the research in step 1) and clear quantifiable objectives. It is possible to have general objectives (e.g. change public opinion about women's roles and rights in Fiji) as a means of focusing attention on what needs to be accomplished. However, if it is important to be able to evaluate a communication intervention, quantifiable objectives are usually needed. An example of a quantifiable objective is the following: "At the end of three months, 75 per cent of the mothers in the community will know three local foods for significantly reducing protein deficiency in their children's diets." This objective can be used to empirically evaluate the communication intervention. Sometimes it is useful to start out with rather general communication goals that show the direction the communication intervention is taking. An example is: "To help villagers understand how to become dairy entrepreneurs." This goal can be sharpened into more specific and precise objectives that deal with knowledge, motivation, skills and reinforcement. If you end up with vague objectives, the quality of the intervention is likely to suffer, and clearly the evaluation will suffer.

The word SMART was introduced in Chapter 1 of the Primer. This has been has been used to guide the development of objectives. It reminds us that objectives should be:

S — Specific: Detailing what is to be accomplished. For example, "to increase the percentage of persons in the community who know how to access the local telecentre."

M — Measurable: Indicating how much change is targeted. The change can be in the number or percentage of people adopting an idea or behaviour.

A — Achievable: Defining intended changes that are achievable.

R — Realistic: Avoiding objectives that are beyond the scope of available resources, contrary to relevant experience, or unrelated to communication efforts.

T — Time-bound: Identifying the time frame in which changes should be achieved.

Step 3 – Identify stakeholders. One of the important decisions to be made relates to target groups or "stakeholders". You had a chance to learn about stakeholders in the main part of this Primer, in the section on "Stakeholder Analysis". Here, we will tie the concept more specifically to developing the communication strategy.

Stakeholders refer to groups or categories of persons who have a significant relation to the intervention being planned. The term "target groups" is often avoided despite its widespread use because it connotes a one-way directional flow of messages, which is contrary to the sense of exchange in the word "communication". To refer to the population that the initiative is primarily directed, the term "beneficiaries" is commonly used. Thus, stakeholders may be those whose behaviour you are trying to change, or other persons who can facilitate or obstruct the changes. The important stakeholders in a communication intervention programme can range from national political leaders and agricultural extension officers in a province to community members, relatives, and local leaders. These are the people whom the government agency or change agent want to reach with information and persuasive messages about adoption of new ideas, practices or technologies, and skills training. The primary "targets" are usually identified or implied in the policy that "drives" the intervention, or in the various objectives that have been laid out.

It is important to include bureaucracies among the stakeholders. An intervention may need to deal with bureaucratic structures as variables to be modified and managed in support of particular kinds of policy outcomes such as poverty alleviation. Too often overlooked is the reality that the response of poor people to government programmes may be influenced by the way services are administered, e.g. how accommodating or inflexible the services are; how satisfying or how humiliating people's treatment is; how readily the poor get access to services or how much more readily the rich can use them; whether government staff adopt a problem-solving stance or a conventionally bureaucratic one; how attuned staff members are to the actual conditions and needs of the poor; and whether these staff members deal with the poor as responsible adults or as ignorant and irresponsible persons. Including people in bureaucracies as stakeholders may be a challenge to the communication planner as well as to the policy maker wanting to achieve successful impact with an intervention programme.

A strategy may also need to consider reaching other groups. There are those who control and influence the behaviour of the beneficiaries, e.g. religious leaders, mothers-in-law, local opinion leaders, and information "gate-keepers". These may be important in supporting or endorsing a proposed change or providing access to vital resources, or they may need to be neutralized if they are perceived to be opposed to an intervention or its possible outcomes. For example, at the policy level, a ministry of agriculture may decide that an extension system needs to modernize by using more information technology and by involving farmers in decision-making concerning priorities in agricultural research. While communication may focus most heavily on communication to and from farmers, the extension staff of the ministry itself may need to be oriented, persuaded or trained to deal with new forms of communication such as ICTs and new interpersonal communication methods such as listening to people and considering their perceptions.[100]

---

100 This issue has been well documented in case studies across the world presented in R. Saravanan, *ICTs for Agricultural Extension, Global Experiments, Innovations and Experiences* (New India Publishing Agency, New Delhi, 2010).

To summarize, planners need to decide about communicating with the following kinds of stakeholders:

- Beneficiaries – The principal population or stakeholders that the overall communication programme or campaign is directed (e.g. families, minority groups, youth, communities, women)
- Controllers – Those who control resources essential to a behaviour change or behaviours themselves (e.g. parents of children, teachers, pharmacists, input suppliers, "middle-men", clinic staff)
- Influentials – Those who have significant influence over the beneficiaries (e.g. community leaders, family members, cooperatives, reference groups)
- Political leaders – Those who set policy and legislate (e.g. government officials, community councils)
- The general public – Population groups that are perceived to support or oppose particular social norms or behaviours
- Competitors – Those who promote a competing behaviour or have a stake in the staus quo
- Gatekeepers – People or organisations that influence the flow of information to and from any of the stakeholders involved in the intervention (e.g. mass media organisations, tribal leaders, bureaucracies)

Each of these stakeholder groups may need to be "segmented"—a concept central to marketing. The criteria for segmenting are many and can include: age, the stage of readiness for changing opinions or adopting innovations, personality, socio-economic class, or lifestyle. The implication of this approach is that in laying out the communication intervention, each stakeholder group may need to be treated distinctively although there may be some overlap among them.

Something To Do

Consider an intervention related to MDG5 to improve maternal health (i.e. reduce the number of women dying in childbirth). Your community health officials wish to increase the number of women attending prenatal clinics. Identify possible roles for communication and the key stakeholders relevant to communication.

Step 4 – Select media and ICTs. In a 2012 publication, the World Bank emphasized the global impact of mobile technology. Mobiles are arguably the most ubiquitous modern technology: in some developing countries, more people have access to a mobile phone than to a bank account, electricity or even clean water. Mobile communications now offer major opportunities to advance human development—from providing basic access to education or health information to making cash payments to stimulating citizen involvement in democratic processes.[101]

The impact of mobiles and other ICTs is further highlighted by the introduction of new words in our language such as m-health, m-agriculture, m-education, e-commerce and e-government. Yet, some will claim that radio broadcasting is the most widely used medium in the world, and others will claim that loudspeakers are the way to reach rural communities in Viet Nam. Furthermore, there is often a tendency to use communication channels that are already in place or have been used traditionally. Thus, government services may put principal or exclusive emphasis on radio for reaching teenagers; the health ministry may depend heavily on community health

---

100 World Bank, 2012 *Information and Communication for Development: Maximizing Mobile* (Washington D.C., 2012), p. 3.
      Available from http://go.worldbank.org/0J2CTQTYP0.

workers to do whatever educating or motivating is required related to vaccination campaigns. Sometimes, the favourite media of administrators may dictate what is used to reach villagers (e.g. telecentres), or funding may be built around the use of particular media (e.g. mobile phones). In some situations these decisions may be rational although at first they may not seem logical. For example, a person holding on to a job or getting a promotion may depend on following the media preferences of more senior officials; or a decision to use an innovative system may disrupt a status quo employment arrangement by substituting computers in place of agricultural agents.[102] Acknowledging that a variety of possibly irrational influences (from the intervention strategy perspective) may dictate choices, it is important to consider more analytical approaches to decision-making about channels—ones that use research-based data for making decisions. Following are some of the kinds of questions that will yield information for a systematic analysis and lead to more strategic decision-making on the selection of ICT channels. We look at this issue from two perspectives: the stakeholders' and the communication planners'.

From the stakeholders' perspective:

• What media/channels are physically accessible?
• What is the cost of accessing the channel? This may be cost in time ("opportunity costs") and energy as well as cost in money.
• What channels are convenient to the stakeholder?
• What channels are currently used by the stakeholder and for what?
• What channels are preferred by the stakeholder?
• What channels are trusted by the stakeholder?

From the communication planner's perspective:

• What channels are available in the community?
• Which channels can the organisation/project afford?
• Which channels are accessible? Some channels may be available and affordable, but not accessible. For example, some television broadcast services may not allow discussion or advertisements related to family planning.
• What channels are most appropriate to particular stakeholder groups or individuals?
• What channels are most appropriate to particular communication objectives?
• What channels have the most cost-effective and cost-benefit advantages?
• What has been the experience with the use of various channels for other interventions?
• What new channels may be introduced into communities?
• What are the particular benefits of the different channels? For example, which channels provide speed, broad geographic coverage, simultaneous coverage, localization, opportunity for local participation, freedom from distortion, direct feedback?
• What are the infrastructure needs associated with various channels?

It is important to be analytical and explicit about the process being undertaken. For example, in helping farmers adopt new agricultural technology, it may be important to: (1) make them aware of the technology; (2) increase their knowledge about the technology; (3) learn about the farmers' technologies; (4) motivate them to use the new technology; (5) train them to use it; and then (6) provide support and more advance training after they have decided to adopt the technology. Some of these steps may be more effectively done with communication media, and others may be better done through interpersonal channels. This suggests that an integrated mixture of channels may sometimes be appropriate.

---

102 Note how the e-Choupal has transformed the lives of many Indian farmers, putting them directly in touch with market information, training and other information. In an e-Choupal, a computer is placed in a farmer's home and other farmers can have access to it and to a world of information. e-Choupal services today reach out to more than four million farmers growing a range of crops—soyabean, coffee, wheat, rice and pulses—in over 40,000 villages through 6,500 farmer's home kiosks across ten states. Source: http://www.youtube.com/watch?v=Fx4gukMYTGA.

Making intelligent decisions also depends on knowing the attributes (beneficial characteristics) of the various media that are available or can be introduced. Some of the attributes are inherent in particular media and some attributes are conferred on the media by political, social or cultural conditions. For example, an inherent attribute of television is its capacity to show moving images. A conferred attribute may be that television is a credible source of information for a particular country, culture or population. The distinction between inherent and conferred attributes is important because recognizing which attributes are inherent and which are conferred will help in the analysis to determine how much you can depend on examples and experience from other situations (and cultures) as guides in your own decision-making.

Something To Do

In small groups, go out into the community around you to interview 20-30 people about their communication behaviour. Ask them about what ICTs they use, for what purposes and how often. Meet with other groups to share your findings and discuss the relevance of your knowledge for interventions related to an MDG.

In selecting channels and media for development initiatives, it is important to make a list of the information delivery needs of the communication situation. Do you need to reach a very large population simultaneously, localize messages, have speed, repetition or feedback? Visualization? Low cost to the stakeholder? You can rank each channel (medium) according to how well its attributes match those needs. Try creating a worksheet on which you list particular media/ICTs and how well they meet particular communication needs such as "providing instant warning about hazards."

The ranking can be done using a of scale 0 to 10, or by assigning some kind of symbol for each medium that represents how well it delivers on the needed characteristics. Numbers generally work better because you can add up the numbers for each medium and get a score. This will help identify the channels that are best suited to the needs of the project. This process of ranking is important because it is unlikely that any project will be able to afford all the media that are available. The analysis helps establish priorities in channel selection. The scores that one obtains from this kind of analysis present a useful guide to decision-making concerning channels and media. However the scores do not automatically dictate a choice. For example, a low scoring medium may have a characteristic that is essential to a project (such as its potential for gaining women's participation in communicating) but may not have enough other desirable characteristics to build up the score. Again, such scores should guide, not dictate decisions about channels.

Step 5 – Identify the content. In the communication component of a development programme where an important element is creating the messages, someone needs to make decisions on what the content for the messages will be. The decisions should be based on the objectives of the development intervention and the situation analysis in step 1. Stakeholders, however, should be involved in the decision-making process and contribute ideas to the content component of the strategy. People to involve may include: the script writer in the production house; the advertising specialist in the agency with whom you contracted to produce radio or television announcements; the extension worker who travels to the field to meet face-to-face with farmers; the webmaster; the medical doctor who is deputy head of the ministry; and/or the community themselves.

Important decisions must be made explicitly about what information should be "packaged" into messages. It is helpful to begin by thinking about what information stakeholders need in relation to the communication objectives that have been laid out, and compare this with what

they already know. From this should come a set of principal content themes, and for each theme a list of information points. (See the discussion on themes and points below.) The final list of communication themes and points may include information the stakeholders already know as well as new information. Including some familiar information (what they already know) in the content may provide a foundation for the new information. And it may contribute to the credibility of the intervention.

To make decisions on content, a planner should try to answer the following kinds of questions (and these can be included in the research questions for the situation analysis in step 1):

- What are the stakeholders' beliefs and perceptions about the situation being addressed by a campaign or intervention?
- How do they perceive the costs and benefits of adopting an idea or behaviour?
- How motivated are they to change their behaviour?
- Do they believe they are able to adopt the behaviours proposed?
- What skills do they need to adopt a new behaviour?
- What are their current practices regarding the intervention situation?
- What communication techniques are appropriate to the situation and culture: for example, use of humour, fear, one-sided versus two-sided persuasion messages, inductive versus deductive reasoning, authoritarian style, dramatic formats, sequencing of knowledge, motivation, etc.
- How much effort needs to be expended on gaining the attention of stakeholders?

Categories of decisions. The major kinds of decisions for communication content can be categorized into four "S"es: Substance, Style, Sequence and pSychology. The names of the categories are not important, nor is it really important whether one issue goes under one category or another. The point is that you recognize the importance of explicitly making decisions about these kinds of content issues.

• The first S: Substance. The first step in planning the communication content is to go back over the communication objectives and understand specifically what they demand. If the objectives call for a person or group *to understand* or *know* something or *know how to do something*, you need to identify the content points (or bits or items) of information that the persons need for that objective to be reached. These points may range from "seed Y gives higher yields" to "you can obtain seed Y at the agricultural experiment station in community Z." One of the most important benefits of the "points" system is that it enables you to assign particular points to particular media at a particular time in the intervention. This will help insure two important conditions:

1. That there is a *logical scheduling* for delivering particular information—that is, the correct information will be used at the proper time and in the proper sequence, and
2. That there is *systematic orchestration* or coordination of messages being carried in various channels. This also suggests that you can more easily coordinate *and control* the different persons or agencies working on message development.

On the second condition, you must consider that communication efforts (whether they apply to development communication, commercial marketing, social marketing, or public relations) will frequently use a variety of channels and message designers to reach consumers. The approaches used may include: putting advertising on television broadcasts, "infomercials" on television cable systems, social dramas on radio, planting articles and letters-to-the-editor in the print media, staging street theatre productions, sending SMS texts via mobiles, and sending health and agricultural extension workers to rural communities to do face-to-face training and promotion. The messages in different media must reinforce or complement each other. Placing messages (and thus content points) in the various channels should not be a random process.

To be effective, the assignment of the content points to particular media at particular times requires careful and meticulous planning.

It has been suggested that it is most convenient to organize the content for the communication programme according to *themes*. A source for good examples of themes related to health is the UNICEF-WHO-UNESCO publication *Facts for Life*.[103] *Facts for Life* lists in very simple form ten "facts" (or themes) that are considered by experts to be most important to family and child health. Some examples of *Facts for Life* themes include: the importance of safe motherhood, dealing with coughs and colds, and what you should know about AIDS. Each theme is accompanied by *prime messages*, or what we have called points. For example, the points accompanying the what-you-should-know-about-AIDS theme in *Facts for Life* are:

• AIDS is an incurable disease that can be passed on by sexual intercourse, by infected blood, and by infected mothers to their unborn and newborn children.
• Safe sex means being sure that neither partner is infected, remaining mutually faithful, and using a condom if in doubt.
• Any injection with an unsterilised needle or syringe is dangerous.
• Women with the AIDS virus should avoid becoming pregnant.
• All parents should tell their children how to avoid getting AIDS.

(Note that there is only one idea in each point.)

For a health communication programme, this is a good start. However, to be able to orchestrate and synchronize messages related to this issue, you can improve the message planning by adding additional single-idea points. *Facts for Life*, for example, includes hygiene as another of its ten major topics which are supported by six major themes. One of major themes concerning hygiene is that: "Illness can be prevented by using clean water." Here are the themes and supporting points:

• Families who have a plentiful supply of safe piped water, and know how to use it, have fewer illnesses.
• Families without a safe piped water supply can reduce illnesses if they protect their water supply from germs by:
  o Keeping wells covered
  o Keeping faeces and water waste (especially from latrines) well away from any water used for cooking, drinking, bathing or washing
  o Keeping buckets, ropes and jars used to collect and store water as clean as possible (for example by hanging up buckets rather than putting them on the ground)
  o Keeping animals away from drinking water
• 8.3.3 Families can keep water clean in the home by:
  o Storing drinking water in a clean, covered container
  o Taking water out of the container with a clean ladle or cup
  o Not allowing anyone to put their hands into the container or to drink directly from it.
  o Keeping animals out of the house

Depending on other aspects of the content planning and the communication objectives, you may build in some points that are more motivational or affective in nature (perhaps ones that touch the heart—or emotions—rather than the head). Points that deal with benefits that persons will gain if they adopt the behaviour can be added. Specifying benefits addresses the motivational points. In summary, this first "S" should give you a list of themes, each accompanied by detailed points of information.

---

103 See http://www.factsforlifeglobal.org.

• **The second S: Style.** The first S identifies the pieces of information (the content points) that help a person move through the stages of knowledge gain or behaviour change. This second S relates to options for packaging the points. Whatever the channels being used, you generally will have to decide what forms the messages will take. This is what we mean by style. In radio and television we usually refer to formats. Radio formats can include: one person talking (lecture), dialogues, discussions, quizzes, musical/singing messages, dramas (and the popular sub-category: "soap operas"), and audience participation. In video/television there will be similar categories. What may they be in texting, newspapers, magazines, or interpersonal contacts? What combinations of the formats may be used (for example, in radio, combining short open-ended dramas with focus group discussions)? The topic or the amount of time you have to get started, the number of messages that need to be produced, or the amount of time or space available or affordable will influence decisions about style.

Style may also include whether you use humour. Your decision will probably be based on your knowledge of the population's characteristics and the appropriateness of the topic. (We have not yet seen very much humour associated with AIDS messages or smoking cessation initiatives.) In a major project in India where satellite television was used to bring rural development information to the most deprived areas of the country, farmers objected to the use of humour in agricultural programming because they felt that farming was too serious a matter to be dealt with in a humorous way. However, entertainment (not necessarily humour) has been used effectively in various development programmes. In fact, the "enter-educate" approach used by the Center for Communication Programs at Johns Hopkins University in the USA is based on the evidence that entertainment can be used effectively to produce change. The strength of enter-educate is summarized by the Center's "Rule of the Eight Ps." The eight Ps that support the use of entertainment in development messages are:

Popular: People like it; they choose to look at or listen to it; they enjoy it. Young people especially prefer entertainment to lectures.

Pervasive: It reaches people everywhere. Mass media are becoming more pervasive: radio and television are more accessible than telephones in many countries. [And the spread of new "personal" media such as mobile phones, tablets and laptops increases the pervasiveness.]

Personal: Songs, soap operas, dramas and dances are not cold and impersonal. In fact, entertainment is more personal, more intimate, more heart-to-heart than most of our daily interpersonal communication. Interpersonal communication is more likely to deal with trivia and "the logistics of life" and actually avoid sensitive personal issues. Through mass media people can personally identify with the characters and situations that entertain them.

Passionate: Entertainment rouses the emotions, and these emotions such as fear, hope, love and hatred are often more powerful than rational arguments in moving people to act.

Persuasive: Entertainment can depict role models. It can illustrate healthy behaviour rewarded and unhealthy behaviour punished. It can illustrate and show people personally how to recognize and adopt healthier and more sexually responsible behaviour.

Practical: Professional entertainers are ready and willing to incorporate into their productions issues such as wanted and unwanted births, the dangers of AIDS, and the changing aspirations of women. Cooperation with public health professionals to include appropriate messages is usually welcome.

Profitable: At the very least, entertainment is cost effective. People pay to watch or listen to it. Writers, producers and performers are often willing to donate some help in return for more promotion by private agencies. Radio and TV stations can co-produce, offer free air-time, or reduce charges.

Proven Effective: Finally, enter-educate approaches are proven effective with evidence from projects in Asian and Latin American countries showing that the intended audience heard the messages, understood the content, approved of the meaning, talked with others about it, and acted to try to get more information and help.

We will add another P to the collection:

Participatory. Ordinary people have become part of the enter-educate process. They serve as producers, editors, critics, performers and evaluators of the approaches being presented in the entertainment package.

Many other examples of using entertainment for social and development causes can be found in *Making Waves*,[104] such as Popular Theater in Nigeria, Aarohan Street Theatre in Nepal, and Teatro La Frugua in Honduras.

What dictates the style of content that a planner should use for developing messages? The research done about the populations' preferences will help provide an answer: Is it popular or traditional to present information through stories? Will the entertainment or production techniques compete or interfere with the communication objective? Is it culturally appropriate to use entertainment for the kind of change proposed?

Pilot testing of information products is an important way of determining what works; another is consulting with and observing the approaches used by experienced media people in the project area, including commercial marketing organisations. An informal focus group in a remote village in Jagawa state of Nigeria revealed that joining health information with local music on cassette tapes was the best way of reaching people in that community.

• **The third S: Sequence.** There are several kinds of sequences used in designing communication programmes and campaigns. Unfortunately, the sequencing are often chosen without making a conscious decision to use them. For many years, K-A-P (Knowledge-Attitudes-Practice) was a major formula in laying out family planning communication initiatives. Some people assumed that in order to reach practice, we must first (in sequence) change stakeholders' knowledge, then attitudes. Some experts have questioned the role of attitudes in the sequence, and, in some circumstances, it makes sense to change behaviour (or practice) first and then change the knowledge, understanding, belief or attitudinal aspect later. This sequencing may be useful for sustaining a behaviour change or for dealing with cognitive dissonance—the psychological discomfort that may come with adopting a behaviour that is contrary to one's beliefs. Taking the three elements (knowledge, attitude, practice) there are six possible sequences that these elements can take in a message. Using K = knowledge, A = attitude and P = practice, these include:

104 Alfonso Gumucio Dagron, *Making Waves: Stories of Participatory Communication for Social Change* (New York, Rockefeller Foundation, 2001). Available from http://www.communicationforsocialchange.org/pdf/making_waves.pdf.

K →A → P
A → K → P
K → P →A
P → K → A
P → A →K
A → P → K

It is important that you deliberately chose what sequence is appropriate for your communication strategy.

• **The fourth S: pSychology.** When you create content, whether it be for social media or mass media: does the communication programme present one-side or multiple sides of an issue? For example, do you tell consumers about the potential side effects of iron-supplement tablets or contraceptives (even if not required by law)? If you are running a controversial campaign, do you reveal some of the negatives on your side, thereby inoculating potential adopters against future opposition messages? To what extent do you design messages based on a target population's beliefs, values and lifestyles? (You should!)

Psychographic, demographic and other kinds of consumer research will give you the data, but the decision is yours. Do you use emotional appeals, logical arguments or "objective" information? Decisions made regarding the communication objectives should suggest an answer, and the characteristics of the population that you are working with will influence these decisions.

Is an inductive or deductive approach more appropriate? In an inductive approach, information or evidence is provided and it is left to the stakeholder to reach the generalization or draw the conclusion. In deduction, the conclusion is given explicitly in the presentation of the information. In some situations one or the other may be more appropriate. Again, the clue may be found in the communication objectives and in the characteristics of the population. If the objective is related to gaining knowledge and understanding, would your approach be different from a situation that was heavily directed toward adoption of a new technology (or other behaviour change)? Would the "sophistication" or educational level of the persons receiving the messages be a factor in deciding on an inductive or deductive method?

There is not necessarily a right or a wrong answer to these questions: the issue is that instead of simply using techniques automatically, you need to complicate yours (or somebody else's) life by forcing more conscious decision-making in situations where significant choices exist. Whether the decision is correct or not can be checked initially in pre-testing and ultimately in later-stage formative evaluation.

A technique for gaining information about the kinds of content that are likely to be effective with particular populations is to encourage a sample of those populations to help develop prototypes. For example, to develop the content for a communication programme aimed at high school students in India on the topics of population, family planning, STDs and AIDS, the programme provided some high school students with communication equipment and asked them to design and deliver the messages for the programme. Looking at what they did helped the programme planners make better-informed decisions.

Some reminders about decision-making related to content and communicating with people who live in poverty come from Javed S. Ahmad, a health communication consultant.[105] In most instances, he says, communicators are attempting to change poor people's knowledge,

---

105 Contributed to *Drumbeat*, The Communication Initiative, 27 October 2006.

attitudes and behaviour concerning ideas and practices that are not part of their felt needs. Project managers may just assume that the ideas being promoted are inherently good so poor people must buy into them—for example, promoting the idea of using vaccinations against childhood diseases.

Ahmad notes that communicating new ideas to bring changes introduces new concepts, new vocabulary and new metaphors that the target population often cannot relate to. Also because of their literacy levels, access to media and ability to comprehend new knowledge, these aspects will affect the level of response from the target population. To get poor people's attention, messages must contain items (words, images, sounds) that pertain to poor people's immediate needs and wants. Hence, it is necessary to learn about their needs and wants before designing messages aimed at them, and to change needs into felt needs. A very important issue is trustworthiness of the message sources. Poor people are most likely to find recognizable local sources more credible and trustworthy than distant sources that are not familiar to them.

Step 6 – Decide about evaluation. You may find it useful to review the material on evaluation in this Primer. We will relate it more specifically as a step in our focus on communication strategy. While programmes often have evaluation components built into them, decisions need to be made about what kinds of evaluation to undertake and by whom? Three principal kinds of evaluation are possibilities. These include:

* **Formative research**, in which data are collected for forming a plan (as in the situation analysis in step 1) and for establishing, where appropriate, baselines from which changes can be measured. Decisions need to be made as to the methods for doing formative research and these may range from qualitative studies (for example, focus groups, interviews and observations) to quantitative methods (for example, field surveys).

* **Monitoring**, in which data are collected that answer the following questions:
  o How well is the communication intervention progressing?
  o Are the logistics of information delivery working according to plans?
  o Are stakeholders receiving and understanding the messages?
  o Do they believe and act on them in the way intended?
  Monitoring is vital for making adjustments in the strategy, which may become necessary because of unanticipated events.

* **Summative evaluation**, in which data are collected that answer the following questions:
  o To what extent did the programme achieve its intended objective?
  o What were the outcomes? (Some of which may not be the same as the results related to the objectives)
  o What are the other—perhaps unintended—consequences that resulted from the communication intervention?
  A vital part of this kind of evaluation is having baseline data from which to measure changes, and quantified objectives to provide some guidelines as to what "success" will look like.

Decisions related to these evaluation questions influence other issues such as who will do the evaluation (the stakeholders themselves, the change organisation, independent agencies, or sponsors of the development communication programme). How will the evaluation be fed back into the ongoing communication programme? And who will receive the evaluations? The answers to these questions evolve from another consideration: Why is the summative evaluation being done? Is it to impress funders or sponsors? To improve the programme? To build or sustain morale? To terminate a programme?

Something To Do

Working in a small group, design a matrix that puts content, stakeholders, media and time together in a format that helps document the communication strategy so that all team members can easily see the strategy, and so that the matrix can be used as a tool in carrying out a communication intervention.

Conclusion

Since the early 1990s, there has been widespread recognition of the increasing importance of ICT in the everyday lives of people across the world. A major thrust toward recognizing the great potential of these ICT initiatives came from the eight major industrial nations (the G8) who in the year 2000 asserted that ICT is one of the most potent forces in shaping the 21st century. Then later a major impetus was the two-phase World Summit on the Information Society (WSIS) in Geneva (December 2003) and Tunis (November 2005) that prompted many international organisations to come forward with ideas, plans, and programmes for using ICTs to meet the MDGs. WSIS Stocktaking was launched in October 2004 and continues today.[106] Its aim is to provide a register of ICTD activities carried out by governments and international organisations. Furthermore, it has been recognized by UN-APCICT and others that having a successful ICTD intervention requires skillful communication planners and strategists. In this Annex, the importance of communication planning and strategy in deliberate applications of ICTD has been emphasized.

Something To Do

Students in Fiji produced an MDG-related initiative as part of their academic programme.

In March 2012, the Pacific Media Assistance Program (PACMAS) held a workshop in Suva, Fiji, on communication for development (C4D) with 20 students from technical and vocational education (TVET) institutions around the Pacific. The students produced radio and TV stories linked to the MDGs.

Participants in the in-person workshop (8 from the region and 12 from Fiji) discussed the meaning of C4D and explored the importance research plays in developing content that is relevant to the audience. They also explored the MDGs and the role the media play in supporting the realization of those goals. Specifically, on the first day, four guest speakers presented on different areas of C4D, including the MDGs, and production in community radio, television, and print. On the second day, students visited the office of the Bureau of Statistics. One of the senior statisticians there gave

---

106 See International Telecommunication Union, *Report on the World Summit on the Information Society: Stocktaking 2012* (Geneva, 2012). Available from http://www.itu.int/wsis/stocktaking/docs/reports/S-POL-WSIS.REP-2012-PDF-E.pdf; and International Telecommunication Union, WSIS Stocktaking: Success Stories 2012 (Geneva, 2012). Available from http://www.itu.int/wsis/stocktaking/docs/reports/S-POL-WSIS.SUCC_STORIES-2012-PDF-E.pdf. See also David J. Grimshaw and Kala Shalini (eds.), *Strengthening Rural Livelihoods: The Impact of Information and Communication Technologies in Asia* (Ottawa, International Development Research Centre, 2011). Available from http://hdl.handle.net/10625/45947.

a presentation on the process and importance of conducting research, with a focus on use of quantitative and statistical information for reporting.

Participants were then grouped into teams and together compiled a short radio or television production. The participant on the team who produced the video explained: "Our group did a television story on a female taxi driver to promote MDG 3: Women's Empowerment and Gender Equality. We believe this story can empower young females in their career path choices and contribute to achievement of MDG 2 - quality education for all children (including females!). The obvious is, the number of female cab drivers in Fiji is disproportionately low. We wanted to find out why this is so and actually hear from a female cab driver share her experience and challenges working in a male-dominant sector." Groups like that one went to different parts of Suva to interview ordinary people and seek out relevant information for their stories.

Using this as an example, work with others in a group and develop an intervention related to one of the MDGs.

Source: The Communication Initiative, "Communication for Development (C4D) Workshop: Pacific Media Assistance Program (PACMAS)", 21 June 2012. Available from http://www.comminit.com/media-development/content/communication-development-c4d-workshop-pacific-media-assistance-program-pacmas.

ANNEX 3
CASE STUDY

Read the following case study documented by an ICTD project manager.

Project Title: E-MRS Health Application for the National Tele-Health Center

The overall project objective was to develop a scalable, interoperable and modular e-health application that was tailored to the processes and procedures of public health centres in a particular city in a country in South-East Asia.

Initially, the project mandate was to continue the development of a community health centre application using OpenMRS, an existing open source electronic medical record application with the GNU General Public License.[107] The completed application had to be delivered within a three-month period.

The Problem Statement

When the project team came on board, a former development team already delivered the modules for the whole project. According to the TOR, the modules should be interoperable, scalable, modular, and developed on top of OpenMRS.

Since contracts between the client and the proponents and stakeholders were already signed, and deadline of the deliverable was nearly approaching, the project team did the following:

* Study OpenMRS – its design, installation, configuration, technologies used, how it was built/ developed and all those intricacies to understand how OpenMRS could be modified to meet clients' needs
* Engage and learn from developers who knew Java, Spring, Maven, Apache, MySQL, Tomcat and similar programmes
* Learn health and medical concepts/terms
* Learn and be familiar with concept/medical data dictionaries and their link with data input

In this process, the project team was able to get hold of the source code of the existing project, about 89 pages of documentation, with diagrams and a set of other reading materials; and a major problem was identified. The former development team did not conform to the project's TOR i.e. develop on top of OpenMRS. Instead, they only used some of the database structure and the installation pattern for the application to work scalable and modular; most of the codes were hard-coded, implying that data input and output were not database driven, which meant that integration and inter-operation was possible but time and effort would be compromised. Moreover, the former team did not follow accepted standard practices when developing enterprise software application and deploying to multiple locations/installations.

---

107 See GNU General Public License. Available from http://www.gnu.org/copyleft/gpl.html.

With these givens, it was impossible to continue and deliver work in a period of three months. It was necessary for the project team to echo the findings to the National Tele-Health Centre (NTH) and for them to decide on the way forward.

Challenges

The project team's recommendation to NTH was to scrap what was already developed by the former team and do the following: Take advantage of the platform, installation, configuration and technology use of the OpenMRS, be modular and be database driven.

However, NTH decided to use the codes of the former development team because NTH reckoned that starting again from scratch would take more time and result in more expenditures for them.

Normally, a software company or developers have the option to turn down the project having understood the givens, the challenges, the budget and the problems that would incur. But the project team was bound to an ethical dedication (like doctors and lawyers), to provide assistance where and when in dire need.

With the decision to build on what was done, the project team had to provide and convey to NTH the facts of what they should expect:

- They might not save time
- They might not save money
- More programmers/developers were needed to code different modules at the same time and they would have to concur and discuss among themselves how to integrate with one another
- The codes would mostly be hard coded and would not be pleasing. New developers would have a hard time following through
- There would be many more problems that would be encountered, seen and unforeseen
- Support and maintenance would be expensive and troublesome

List of To-Do's / Activities

- Study OpenMRS – its design, installation, configuration, technologies used, how it was built/developed and all those intricacies to understand how Open MRS could be modified to meet clients' requirements
- Study the codes and database of the former development team – its design, installation and configuration process, etc.
- Study and learn how OpenMRS and their code can be complementary and still be integrated in a modular way
- Devise a plan/strategy onthe approach and methods to developing the e-health application, with details related to time, cost, persons involved and other details
- Engage and learn from developers who knowJava, Spring, Maven, Apache, MySQL and Tomcat
- Learn health and medical concepts/terms
- Learn and be familiar with concept/medical data dictionaries and their link with data input

Project Progress

As a project manager, my tasks were as follows:

I had to grasp everything that was needed to make the project happen. This project was not to be managed by a first-time project manager or someone who had not handled an enterprise project before, because assumptions were not options, and what was written in project management books or resources might not be of help if one could not concretely picture what the concepts or steps implied. In essence, the project manager had to be ahead of everybody else.

I had to be able to concurrently and intermittently list all givens, what was available and what had been already done. I had to communicate project progress to NTH, specifically the Corporate Technical Officer and the Task Project Manager, assess if tasks were feasible or not, and what was to be expected and delivered.

Project Size

The project was an enterprise scale software application that was to be deployed to about 70 health centres in the city. The application was more or less 15 modules, with multiple reports; it needed a back-up and a sync platform to sync data from remote laptops to the central server. The central server had to be able to back up data from all the health centres.

Project Status

In the initial analysis, almost 30 per cent of the work had been done. The completed work included:

- The codes that had been developed by the former team.
- The Balsamiq Mockups Markup Language (BMML) or the user interface mock ups for some of the modules designed by the Corporate Technical Officer
- 40 per cent of the concept data dictionary
- Data gathering such as forms and questionnaire from the end users

Staffing and Skills

Staffing depends on the budget available. Ideally, if the project budget was open the staffing recommendation would be as follows:

- One developer per module. This included reporting and the documentation of the codes for each module. Skills required included: Java, Spring, Tomcat, Apache and MySQL, and the installation and configuration of modules and other skills.
- One database engineer to sync and back up module, and develop the documentation. Skills required included: MySQL, Networking and Linux, and back up and sync technologies.
- One system administrator to consolidate, test, install and configure servers, and develop the documentation. Skills required included: systems administration, Linux, Network, etc.
- Two or three quality testers to test functionalities, assess if the program/ application was sound, make sure that errors/ bugs were addressed by their respective programmers/developers, and document findings.
- On-site trainers to end users who should also document and develop the user manual.

Strategy and Tools

The way the NTH communicated was with the use of e-mails. General communication using e-mail was relatively good but it was not effective and efficient for software development. The searching and review of the discussion threads took a lot of time, and developers did not have the patience to look for information or details in a full e-mail thread. It caused frustration.

The NTH had a repository for codes in an SVN (Apache Subversion – software version control). The project team decided to use this tool for developers to submit their source codes, binaries and other code-related items. The project team devised a procedure and naming convention for the submission of codes so that they could be easily retrieved for future use.

Since the project team was not familiar with the use of project management tools such as Redmine and Asana, the team decided to use simple yet effective ways to communicate and consolidate files. The project team used Dropbox (https://www.dropbox.com) to upload and easily share files within the project team. Folders with categories were created for easy upload and download offiles. The project team also used Google Docs (http://docs.google.com) to create, collaboratively edit and share documentation for each module, for testing and updates. Notes and key components of the documentation were colour-coded for easy monitoring. The key components were:

- Modules
- Functionalities
- Status
- Remarks
- Issues
- Updates
- Date
- Assignee

Project Team

The experience the project team had in enterprise software development was a very valuable asset for analysis, tackling concerns, looking for solutions and making things possible. We had to be as flexible and as agile as possible due to deadlines, deliverables and understanding of the dilemma we were faced with. The team had to deliver and do more than what was in the scope of work and had to exact dependencies in the manner that clients would easily grasp, and produce.

Due to budget constraints and lack of time to train and teach, the team needed to make the best use of the junior developers at NTH. The junior developers did easier tasks with their skill set while the senior developers did the more difficult tasks. Tasks included concept mapping of data to necessary database configurations, programming reports in PHP and Ruby on Rails, testing the files, and creating binaries.

The project manager had to plan and manage resources such as time and people resources. A project manager for IT or software development should have knowledge on programming, codes, database, business analytics and change management. S/he had to understand and communicate with both the client and the developers. The project manager had to listen to both the client and the developers, ask the right questions, and logically analyse the project needs/client's wants vis-à-vis the approach

or solution of the development team. The project manager should not take the word of both parties as is, and should conduct tests and gather evidence to ensure high-quality and effective solutions. Other tasks of the project manager included getting dependencies from the client and assigning tasks to different developers.

The project manager should know his/her development team, their strength, their weaknesses and how each one works, their behaviour, motivation and what instigates their effectiveness and efficiency to work and deliver.

Lessons Learned

If a project has already been initiated and approved by the sponsors, the first thing to do is to get an experienced project manager, and not a software development that has no project management skills. That way the project manager will be able to thoroughly read and understand the project brief/TOR, and implement according to what is written or revise the project plan. When the necessary details are available, then execution of the software development will be easier for all members, tension is less and resources are maximized.

Skills are important for developer members to execute a project. However, attitudes are as important in relation to the TOR, or how they envision the whole project scenario vis-à-vis objectives.

Interview each prospective member of the team, whether they are a software development team member, an external contractor or an in-house developer. Interview them on how they understand the project, what they consider as options and their strategy. Require them to present their strategy or ask them about their previous work. Do not just take their word for it. Be able to elicit a substantial response to prove concepts and deliverables. Test their understanding of what is modular, interoperable, scalable, and other similar concepts.

Never assume that a bad code base will be better along the way if everything else is based from it.

Guide Questions:

1. What is the ICTD project about?
2. Describe the problem and challenges of the ICTD project manager?
3. What are the options for the project manager?
4. What are the lessons learned of the project?

ANNEX 4
OVERVIEW OF OPEN PROJECT APPLICATION

This annex provides an overview of the Open Project application. Open Project is a free and open source project management software application. It is similar to Microsoft's MS Project. In fact, a file from the latter can be opened in the Open Project application. To become familiar with the software, you can easily download the application from the following URL: http://sourceforge.net/projects/openproj/.

A brief overview of Open Project is presented here to help you navigate and explore some of the features, major screen elements, views and filters.

Starting Open Project

To start Open Project:

1. Download the application from http://sourceforge.net/projects/openproj/ and run the application on your computer.
2. Click the start button on the taskbar, point to **All Programs** in Window XP or **Programs** in Vista, point to the Open Project logo [OpenProj] and then click. Alternatively, a shortcut or icon may be available on the desktop; in this case, double-click the icon to start the software.
3. Maximize Open Project if the window does not fill the entire screen. Click the Maximize button on the upper-right corner of the window. You will see that the application is running when the Open Project icon appears at the bottom right of the screen (see figure A-1).
4. The first screen shot offers "Tip of the Day", as shown in figure A-1. You may either proceed to read the next tip or simply close the pop up.

Figure A-1

5. Close the "Tip of the Day" pop up and a new one emerges that looks like the screen shot in figure A-2. Open Project is now running and ready to use.

Figure A-2

6. Click the "Create Project" button. The next pop up gives you fields such as project name, manager, start date and so on (see figure A-3). Try filling it up by typing "Telehealth Project" under the project name and add some details to each field. Once you have filled up the open fields, click "OK".

Figure A-3

7. Look at some of the elements of the Open Project screen (figure A-4). The default view is the Gantt chart view, which shows tasks and other information in the entry table as well as a calendar display. You can access other views by clicking each button in the view bar on the left side of the screen.

Figure A-4

8. Slide the uppermost left bar (with arrow icons) and move it to your right to show you the fields of "name", "duration", etc., and as you slide you will find the other headings on that row (figure A-5).

Figure A-5

9. On the left of the screen you will see icon views, and along the top are command icons. Point your mouse at each icon and explore what they are. There are the basic commands such as file, edit, view, insert, tools, project and help; and the short cut task icons such as open new project, open project, save project, print project and so on.

Figure A-6

Main Screen Elements

The Open Project default main screen is called the Gantt chart view. At the top of the main screen, the menu bar and standard toolbar are similar to those in Microsoft Windows 2003 programs. The order and appearance of buttons on the standard toolbar may vary, depending on the edition you are using.

In the Open Project, if you want to select another view, click the icons on the left. If you want to return to the Gantt chart view, click the Gantt chart button on the view baron the left of the screen, or select view from the menu bar, and click Gantt chart.

Merging of Open Project and Project Libre Software

Open Project as merged with Project Libre, and Open Project is now being developed through Project Libre. If you saved a file in Open Project, and you have a Project Libre software application, your saved file will now open like Project Libre, which is an updated version of Open Project. Figure A-7 shows the new face of Open Project. The icons on the left are now part of the top screen. The command icons are actually found on the task bars such as file, task, resource and view. The Project Libre application can be downloaded from http://sourceforge.net/projects/projectlibre/. Try using the application to create activity schedules and WBS.

Figure A-7

ANSWER KEY FOR TEST YOURSELF QUESTIONS

Chapter 1
Answers: (1) a (2) b (3) b (4) c (5) a (6) c (7) a (8) b (9) c (10) a

Chapter 2
Answers: (1) a (2) b (3) a (4) a (5) c (6) a (7) b (8) c (9) a (10) a

Chapter 3
Answers: (1) d (2) a (3) b (4) a (5) b (6) c (7) (8) d (9) a (10) b

Chapter 4
Answers: (1) a (2) d (3) a (4) c (5) a (6) b (7) a (8) b (9) a (10) c

Chapter 5
Answers: (1) a (2) c (3) a (4) d (5) a (6) true (7) True (8) True (9) False; Project team – Project manager (10) True

Chapter 6
Answers: (1) a (2) b (3) c (4) a (5) a (6) b (7) c (8) a (9) b (10) a

Chapter 7
Answers: (1) a (2) c (3) a (4) b (5) b (6) True (7) False; Project management – Change management (8) False; Schedule management – Project milestone (9) True (10) True

Chapter 8
Answers: (1) b (2) c (3) d (4) d (5) a (6) b (7) c (8) a (9) b (10) c

Chapter 9
Answers: (1) b (2) a (3) c (4) d (5) c (6) True (7) False: Staff skills – Staff motivation (8) True (9) False: Procurement illegal practices – Hiring contracts (10) True

LIST OF REFERENCES

Andrés, David. Good PMO, Project Management and PMOs. Available from http://www.goodpmo.com/project-management-office/pmo-definition/.

Asian Development Bank Institute. E-Governance and Service Delivery Innovations in Malaysia. Presentation made by Dr. Noore Alam Siddiquee, University, Adelaide Australia and Dr. Mohamad Zin Mohamed University Malaysia at the conference on Reaching out to People, Achieving Millennium Development Goals through Innovative Public Service Delivery, in Trivandrum, India on 11-13 December 2010. Available from http://www.adbi.org/conf-seminar-papers/2011/02/23/4404.e.gov.service.malaysia/.

Atkinson, Roger. Project Management: Cost, Time and Quality, Two Best Guesses and a Phenomenon, It's Time to Accept Other Success Criteria. *International Journal of Project Management*, Vol. 17, No. 6 (1999), pp. 337-342. Available from https://notendur.hi.is/vio1/Project_management_Cost_time_and_quality.pdf.

AusAID. A Guide to Program Management. Available from http://www.ausaid.gov.au/ausguide/Pages/home.aspx. http://portals.wi.wur.nl/files/docs/ppme/ausguidelines-logical%20framework%20approach.pdf.

Baker, David C. Top 10 Characteristics of Great Project Managers. 21 February 2009. Available from http://99u.com/tips/6946/Top-10-Characteristics-of-GREAT-Project-Managers.

Bakken, Elizabeth. Twelve Ways to Build an Effective Team. Ceridan Corporation, 2007. Available from http://people.rice.edu/uploadedFiles/People/TEAMS/Twelve%20Ways%20to%20Build%20an%20Effective%20Team.pdf.

Barry, Timothy R. Top Ten Leadership Qualities of a Project Manager. Project Times, 16 May 2012. Available from http://www.projecttimes.com/articles/top-10-leadership-qualities-of-a-project-manager.html.

Bender RBT. *Systems Development Life Cycle: Objectives and Requirements.* Queensbury, 2003. Available from http://www.benderrbt.com/Bender-SDLC.pdf.

Blackman, Rachel. *Project Cycle Management*, ROOTS resources 5. Teddington: Tearfund, 2003. Available from http://ebookbrowse.com/tearfund-manual-project-cycle-management-2003-pdf-d120705157 or http://tilz.tearfund.org/webdocs/Tilz/Roots/English/PCM/ROOTS_5_E_Full.pdf.

Bolles, Dennis L., and Darrel G. Hubbard.The Power of Enterprise-wide project Management. American Management Association, 2007.

Bridges.org. The Real Access = Real Impact Framework for ICT in Development. 2004. Available from http://www.apc.org/english/capacity/policy/mmtk_realaccess.ppt.

Brighthub.com. Project Management Templates. Available from http://www.brighthubpm.com/templates-forms.

Bruce, Andy, and others. Managing For Excellence. Dorling Kindersley Limited. 2009.

Bryson and Alston. Strategy Tools. 1996. Available from http://www.mindtools.com.

Business Dictionary. Available from http://www.businessdictionary.com/definition.

Business to Community.com. Differing Approaches to Project Management. Available from http://www.business2community.com/strategy/differing-approaches-to-project-management-0154472.

C.A. Schifman and Company. Leadership Competency Self-Assessment.

Change Management Learning Center. Available from http://www.change-management-coach.com/definition-of-change-management.html.

Chapman, James. Principle Based Project Management: What is Project Management. 1997. Available from http://www.hyperthot.com/pm_intro.htm.

Colle, Royal. Advocacy and Interventions. 2007. Available from http://www.ecommons.cornell.edu.

College of Information Sciences and Technology. Supplemental Topic: Project Management. Pennsylvania State University, 2008. Available from http://www2.ds.psu.edu/AcademicAffairs/Classes/IST260W/topic0A/topic_0116_02.html.

Creasy, Tim. Defining change management: Helping others understand change management in relation to project management and organisational change. Prosci Inc., 2009.

Cyfernet Search. Leadership Self Assessments. University of Arizona. Available from http://cyfernetsearch.org/ilm_8_7.

DANIDA. Guidelines for Programme Management. September 2011. Available from http://amg.um.dk/en/~/media/amg/Documents/Technical%20Guidelines/Programme%20management/GuidelinesforProgrammeManagementSept2011.jpg.

Daniels, Will. Ten Skills of every Project Manager. Available from http://thepmologist.blogspot.com/2009/02/top-10-skills-every-project-manager.html.

Data Perceptions IT Consulting Services. Project Management. Available from http://www.dataperceptions.com/projectManagement.

Department of Water Affairs and Forestry, South Africa. Logical Framework Approach – Project Planning: Preparing and Documenting a Project. DANIDA, 2005.

Deka, Ganesh Ch, Jasni Mohamad Zain, and Prabhat Mahanti. ICT's role in e-Governance in India and Malaysia: A Review. Cornel University, 2012. Available from http://arxiv.org/abs/1206.0681.

Duarte, Deborah L., and Nancy Tennant Snyder. *Mastering Virtual Teams*, second edition. John Wiley and Sons, Inc., 2001.

Edwards, Ginny. Ten Critical PM Skills. Bright Hub PM, 20 May 2011. Available from http://www.brighthubpm.com/certification/105665-ten-critical-pm-skills-how-do-you-rate/.

European Commission, *Aid Delivery Method: Volume 1 – Project Cycle Management Guidelines*. Brussels, 2004. Available from http://ec.europa.eu/europeaid/multimedia/publications/documents/tools/europeaid_adm_pcm_guidelines_2004_en.pdf.

European Commission. Project Cycle Management Handbook. Brussels, March 2002. Available from http://www.sle-berlin.de/files/sletraining/PCM_Train_Handbook_EN-March2002.pdf.

Gentle, Michael. Costs. IT Project Financials, 26 August 2010. Available from http://itprojectfinancials.com/glossary/costs/.

Gichoya, D. Factors Affecting the Successful Implementation of ICT Projects in Government. *The Electronic Journal of e-Government*, Vol. 3, No. 4 (2005), pp. 175-184. Available from http://www.ejeg.com.

Gross, Jonathan. A Structured Approach to Organisational Change Management: Part 3 of an Intro to Milestone Deliverables. Pemeco Consulting, 19 October 2011. Available from http://www.pemeco.com/a-structured-approach-to-organisational-change-management-part-3-of-an-intro-to-milestone-deliverables.

Gyulkhasyan, Levon. Using Logical Framework Approach for Project Management. USDA CADI, 2005.

Intermediate Technology Development Group. Connecting the First Mile: A Framework in ICT Best Practice for Knowledge Sharing in Development. In collaboration with Cranfield School of Management.

IYouth Project. Checklist: Designing an Evaluation. Available from http://www.iyouth-project.eu/en/training-materials/empowering-migrant-youth/evaluation/checklist-to-use-in-designing-an-evaluation.

Jenkins, Nick. A Project Management Primer or a guide to making projects work, v.02.2006. Available from http://www.exinfm.com/training/pdfiles/projectPrimer.pdf.

Kay, Russel. Quick Study: System Development Life Cycle. Computerworld, 14 May 2002. Available from http://www.computerworld.com/s/article/71151/System_Development_Life_Cycle?taxonomyId=11&pageNumber=2.

Kehoe, Daniel. Free Leadership and Self Assessment Tool. Leadership and Management Shop. Available from http://www.dkmanagementtools.com/free-leadership-self-assessment-tool.

Krahn, Jennifer. Effective Project Leadership. July 2006. Available from http://www.intropm.com/downloads/ipm3ch1.pdf.

Lasa.org. Project Management. Available from http://www.lasa.org.uk/uploads/publications/ictpublications/computanews_guides/lcgpm.pdf.

Laudon, Kenneth C., and Jane P. Laudon. *Essentials of Management Information Systems*, third edition. New Jersey: Prentice Hall, 1999.

Lessons from History.com. Functional versus Non-functional Requirements: Avoiding Project Disaster. Mark Kozak-Holland, 5 February 2009. Available from http://www.lessons-from-history.com/node/83.

Lever, Roger. Manage Project Requirements Analysis and Design. Suite 101, last updated 24 October 2013. Available from http://suite101.com/article/manage-project-requirements-analysis-and-design-a87601.

Macasio, John. "ICT Project Thinking Matrix" start-up activity and case study for ICTD Project Management Theory and Practice. UN-APCICT presentation materials, 2010.

Mar, Wilson. Project Planning Strategies and Tools. Available from http://www.wilsonmar,com/1projs. htm#ProjPhases.

Max's Project Management Wisdom. Total Project Management of Complex Projects: Improving Performance with Modern Techniques. 1999. Available from http://www.maxwideman.com/ papers/performance/understanding.htm.

McGraw, Bruce. Project Management Ethics and Rules of Conduct. Fear No Project – A Technology and Project Management Blog, 27 January 2011. Available from http:// fearnoproject.com/2011/01/27/project-management-ethics-and-rules-of-conduct/.

Microsoft Developer Network Library. MSDN Library. Available from http://msdn.microsoft.com/ en-us/library/ms123401.aspx.

Microsoft Office. A quick history of project management. Available from http://office.microsoft. com/en-001/project-help/a-quick-history-of-project-management-HA010351563.aspx.

Mochal, Tom. Master these 10 processes to sharpen your project management skills. TechRepublic, 13 March 2008. Available from http://www.techrepublic.com/blog/10things/ master-these-10-processes-to-sharpen-your-project-management-skills/323.

Munassar, Nabil Mohammed Ali, and A. Govardhan. *International Journal of Computer Science Issues*, Vol. 7, No. 5 (September 2010). Available from http://www.ijcsi.org/ papers/7-5-94-101.pdf.

Nebiu, Besim, Ildiko Simon, and Cerasela Stancu. Preparing Project Proposals. Regional Environmental Center for Central and Eastern Europe, 2002.

Office of the Government of Commerce of Her Majesty's Treasury Office. Projects in Controlled Environment (PRINCE2) Manual, third edition. United Kingdom, 2002.

Pennsylvania State University. Supplemental Topic A: Project Management. Available from http://www2.ds.psu.edu/AcademicAffairs/Classes/IST260W/topic0A/topic_0116_01.html.

Picariello, Gary. The Top Ten Benefits of Project Management. Bright Hub PM, updated 19 April 2013. Available from http://www.brighthubpm.com/project-planning/2350-the-top-ten-benefits-of-project-management.

Pillai, Lakshman. Who is good in Project Management - IT or non-IT industry? NASSCOM, 1 January 2009. Available from http://nasscom-emerge.groupsite.com/beta/discussion/ topics/129243/messages.

Project Manage Soft. Various Approaches to Project Management. Available from http://www. projectmanagesoft.com/guide/various-approaches-to-project-management.

Reddi, Usha Rani Vyasulu. *Primer 1: An Introduction to ICT for Development, Primer Series on ICTD for Youth*, Incheon: UN-APCICT, 2011. Available from http://www.unapcict.org/pr.

Riley Jim. SWOT Analysis. Tutor2u, last updated 23 September 2011. Available from http:// www.tutor2u.net/business/strategy/SWOT_analysis.htm.

Rothwell, William, and H. C. Kazanas. Mastering the Instructional Design Process: A Systematic Approach. 2004.

Rozendal, Rutger. Cultural and Political Factors in the Design of ICT Projects in Developing Countries. International Institute for Communication and Development, 2003.

Satzinger, John W., Robert B. Jackson, and Stephen D. Burd. *Systems Analysis and Design in a Changing World*, sixth edition. Boston: Course Technology, Cengage Learning, 2012. Available from http://www.cengagebrain.com.mx/content/9781133830313.pdf;

Schwalbe, Kathy. Management of Information Technology Projects. Cengage Learning, Philippine edition, 2011.

SDC. *SDC ICT4D Strategy*. Berne: SDC, 2005. Available from http://www.deza.admin.ch/ressources/resource_en_161888.pdf.

Search Data Center. Hardware Upgrade and Server Refresh Guide. Tech Target, undated. Available from http://searchdatacenter.techtarget.com/guides/Hardware-upgrade-and-server-refresh-guide.

Sexton, Timothy. Top Ten Skills of Successful Project Managers. Yahoo! Voices, 29 April 2011. Available from http://voices.yahoo.com/top-10-skills-successful-project-managers-8363237.html.

Streeten, Paul. Human Development: Means and Ends. Human Development, Vol. 84, No. 2 (May 1994), pp. 232-237. Available from http://people.ds.cam.ac.uk/mb65/documents/streeten-1994.pdf.

Taylor, James. *Managing Information Technology Projects: Applying Project Management Strategies to Software, Hardware, and Integration Initiatives*. American Management Association, 2004.

TenStep.com. Value of Project Management. Available from. http://www.luc.edu/media/lucedu/pmo/pdfs/additionalreading/The_Value_of_Project_Management.pdf;

The Free Dictionary.com. Available from http://encyclopedia2.thefreedictionary.com

Umlabha Development Services. Basic Introduction to Project Cycle Management using the Logical Framework Approach. European Commission Civil Society Fund in Ethiopia. Available from http://eeas.europa.eu/delegations/ethiopia/documents/eu_ethiopia/ressources/pcm_manual_en.pdf.

UN-APCICT. Academy of ICT Essentials for Government Leaders Module Series, Modules 1-10. Available from http://www.unapcict.org/academy.

United Nations Department for Development Support and Management Services. Government Information Systems: A Guide to Effective Use of Information Technology in the Public Sector of Developing Countries. 1995. Available from http://unpan.org/publications/PDFs/E-Library%20Archives/1995%20Government%20Information%20Systems.pdf.

Vibrant Community. Gender and Poverty Project: Gender Analysis Tools. Available from http://tamarackcommunity.ca/downloads/gender/Tools.pdf.

Walsch, Alan. Introduction to the LFA. GEF Facility Council, 2000. Available from http://www.pops.int/documents/guidance/nipsfinal/logframe.pdf.

Westland, Jason. Method 123 Empowering Managers to Succeed: Project Management Guidebook, Method 123 Ltd., undated. Available from http://www.thoughtware.com.au/documents/method123-ebook.pdf.

Westland, Jason. *The Project Management Life Cycle: A Complete Step by Step Methodology for Initiating, Planning, Executing and Closing a Project Successfully*, UK, USA: Kogan Page Limited, 2006.

Video Cases and Project/Programme Websites

Customer Relationship Management for San Francisco's City Government. http://www.youtube.com/watch?feature=player_detailpage&v=2eoEoaev9BI.

Data Mining for Terrorists and Innocents. http://www.youtube.com/watch?v=4lKpD7MC22I.

Global Teenager. http://www.globalteenager.org/?q=multimedia-st.

Google Data Center Efficiency Best Practices. http://www.youtube.com/watch?v=voOK-1DLr00.

NASA Project Management Challenges. http://www.youtube.com/watch?v=3yERUM9k7aE.

Oracle. Think Quest. http://www.youtube.com/watch?NR=1&v=m0hfi8WyNz4&feature=endscreen.

Taking IT Global. http://www.tigweb.org/#.

Instructional Websites and Videos

On Project Management and Project Management Tools

Open Project and Gantt Project. http://sourceforge.net/projects.
Asana. http://asana.com.
Redmine. http://www.redmine.org.
What is Project Management? Training Video. http://www.youtube.com/watch?v=9LSnINglkQA

On Gantt Chart

http://www.youtube.com/watch?v=sA67g6zaKOE
http://www.youtube.com/watch?v=V8yjYGiwJ5w

On CPM

http://www.youtube.com/watch?v=DdDzybQ_9vM
http://www.youtube.com/watch?v=LdRZN5o08eM
http://www.youtube.com/watch?v=d6-bb9oDsSA
http://www.youtube.com/watch?v=WyRuw81ruwc

Useful Websites for Project Management and Templates

http://www.brighthub.com

http://www.builderau.com.au

http://www.cvr-it.com/Confirm_NonProfit.php.

http://www.dropbox.com

http://www.google.docs

http://www.mindtools.com

http://www.projectinabox.org.uk/community.asp

http://www.projity.com

http://www.collectionscanada.gc.ca/webarchives/20071225005839/

http://www.tbs-sct.gc.ca/btep-pto/documents/2004/templates-gabarits/readiness-etatprep/
    readiness-etatpreptb_e.asp

GLOSSARY

Assumption – External factor beyond the control of project managers that have the potential to influence or determine the success of a project.

Benchmarking – It facilitates identification of possible projects for an organisation by comparing and measuring policies, practices and performance against those of high-performing organisation within a sector.

Business case – A document that justifies an intervention or initiative as a means of addressing an issue or correcting a problem.

Change Control Board – A committee that makes decisions regarding whether or not proposed changes to a project should be implemented.

Change request – A document that contains a call for an adjustment of a system; it states what needs to be changed and accomplished. It is an important process in the change management process in software development.

Checklist – A list or a template with useful to-do list tips and task management.

Communication media selection – A process of choosing the appropriate medium to communicate a message. The medium is critical to convey the message. Choice depends on the richness of the medium and the message. Richness is determined by the desired feedback speed, cues, personalization and emotional content.

Communication plan – A document that provides guidelines on the project's handling of communication processes.

Conflict management – A set of ways to handle conflicts arising from the project team or from among stakeholders.

Construction (of software) – The evaluation and acquisition of existing software, modification of software, detailed specification of manual activities, integration of all elements into a whole, and successive layer of testing of the software.

Contract – A legally binding document where a mutual agreement is arrived at between vendor and the buyer, where the former agrees to provide products and services and the latter agrees to pay for these products and services upon agreed specifications.

Cost baseline – A time-phased budget that project managers use to measure and monitor cost performance.

Cost estimate – It is based on a cost estimating process to approximate the cost of a programme, operation, project, activity and tasks. It is one of the three activities in cost project management.

Cost management plan – A document that describes how variances cost will be managed in the project.

Crashing – A technique for making cost and schedule trade-offs to obtain the greatest amount of schedule compression for the least incremental costs.

Critical path analysis or method – A project network analysis technique used to predict total project duration.

Earned value management – A project performance measurement technique that integrates scope, time and cost data.

Empathic listening – Also known as active listening or reflective listening. It is a way of listening and responding to another person to improve mutual understanding and trust. An essential skill to settle conflict, disputes and negotiation; to receive and accurately receive the speaker's message and then provide the appropriate response.

Enduser – The person, group or organisation that uses a product.

Fast tracking – An effective way to shorten the duration of the project. When you fast track a project, you re-schedule some tasks that were originally scheduled to run one after the other, to run at the same time. You must choose from the critical path method the tasks that can be fast tracked.

Feasibility study – It is designed to provide an overview of the primary issues related to the proposed project to give the stakeholder a basis for deciding whether to proceed with the project and for choosing the most desirable options.

Fishbone diagram – A problem solving technique. Also known as the Ishikawa diagram or the cause and effect diagram, it is a technique used to analyse the cause and effect of problems that are being solved by a project.

Gantt chart – A standard format for showing project schedule information where project activities are listed with their corresponding start and enddates in a calendar format; also referred to as the bar chart.

Influencer – An individual or group who, although not directly related to the acquisition or use of the project's output, can positively or negatively influence the course of the project because of his/her position in the organisation or community.

Information and communication technology – Service, application and technology using various types of equipment and software, often running over telecommunication networks.

ICT project – ICT-based solution that meets the defined service and government strategic needs.

Kick off meeting – A meeting held at the beginning of the project launch in order for stakeholders to meet each other, review goals of the project and discuss future plans.

Lessons learned report – Written reflection by project managers and project team members to document significant things they have learned from working on the project.

Logical framework approach – A management tool that helps analyse and organize the thinking process in building the project development phase towards the planning phase.

Logical framework matrix – A summary of the project activity design resulting from the logical framework analysis.

Make or buy analysis – A process of decision-making on whether to create a product or service in-house or have it done outside the organisation through outsourcing.

Maturity model – It refers to a developmental model that aims to improve existing software development processes. Maturity relates to the degree of formality and optimization of processes from ad hoc or informal processes to formally defined steps to manage results metrics and optimize processes.

Milestone (also called checkpoint) – A delivery event that marks the completion of a phase or a set of tasks.

Monitoring – The process of checking that all plans (inputs and outputs) and quality standards are being met; and it enables the detection and management of risks areas.

Motivation techniques – Behavioural techniques to increase motivation and willingness of people (staff and stakeholders) to do something or meet their goals.

Net present value (NPV) – It is the value of the cost (in currency) today to the value of the same cost (currency) in the future taking inflation and returns into account. If the NPV of a prospective project is positive, it should be accepted but if the NPV is negative, the project should probably be rejected because cash flows will also be negative.

Operation – The ongoing use of the system; and it includes a provision for incident reporting and work requests to deal with error and changes in the system's environment and in users' needs.

Organisational change management plan – The plan that will address the project impact (positive and negative) on the people's behaviour in the organisation.

Ownership – A process of internalization of responsibility for a development process and its outcomes, and therefore the willingness to invest considerable effort and resources; generally regarded as a prerequisite for the sustainability of a development action.

Pareto diagram – A graph based on a problem solving analysis. The purpose of the diagram is to separate the significant aspects of a problem from the trivial ones. Graphically separating the aspects will allow the project team to make decisions on where to focus improvements. Reducing the largest bars identified in the diagram will do more for overall improvement than reducing the smaller ones. Analysis may involve the counting of problem occurrences and costs.

Participation – The process in which the people involved cooperate and collaborate in the development projects and programmes. A truly participative process is likely to empower individuals and groups through their acquisition of skills, knowledge and experience in the process, leading to greater self-reliance.

Payback analysis – It refers to the payback period in capital budgeting; or the period of time required for the return on an investment to repay the sum of the original investment. Short-term payback is preferred to long-term payback.

Planning – The phase where the project environment is examined; the rationale and the assumptions of the project are defined; and the scopes, requirements and the resource parameters (time, cost and people), including risk are identified.

Programming – The process by which a programme of action is identified based on (national or local) policies, agenda, strategies and objectives, and cross-cutting themes for consideration in the development and planning processes of projects.

Probability impact matrices – It is a quantification method of measuring the probability of a risk occurring and its impact to the project. When an event is identified to probably occur in a phase of a project activity, the risk is measured based on its likelihood to occur and its likely impact to the project. The higher the matrix score, the higher the risk level associated with the event that is being analysed.

Project – Transitory undertakings that use up resources, incur cost and produce deliverables over a definite period of time, to achieve specific goals.

Project appraisal – A formal review and a management tool for quality control.

Project champion – A project advocate who will support the project all the way.

Project charter – A formal document that recognizes the existence of a project; it provides a directive on the project's objectives and management.

Project closure – The phase when project activities have wound down, and when deliverables, including reports and financial obligations and disbursements, have been met and accepted by respective stakeholders. It includes developing a list of activities for handing over the final solutions to end users/customers, conducting the post-project review, and administrative procedures in closing the PMO.

Project cycle management – The management activities and decision-making procedure for the life cycle of a project, including key task, roles and responsibilities, key documents and decision options.

Project implementation – A list of activities required to produce the deliverables that create the solutions for the enduser/customer; the project phase where all of the project plans are executed; and the goal of this phase is to manage the execution processes and ensure that control mechanisms are working.

Project initiation plan – This plan includes steps involved in defining the project, recruiting and staffing the project team, and establishing the PMO.

Project management – A set of "principles, practices and techniques applied to lead the project teams and control project schedule, cost, and risk to deliver the results of a successful project to the delight of stakeholders" (Chapman, 1997).

Project management methodology – Specific ways in which a project is being managed. Each method has a set of tools and templates designed to help the project manager and provide consistency in the process.

Project management office – It defines and maintains the standards of processes generally related to product management within an organisation or government agency.

Project management plan – A document used to coordinate all project planning documents and serves as a guide for project implementation and control.

Project management software – It must have the capacity to help plan, organize and manage resource pools and develop resource estimates.

Project manager – The person responsible for managing the project and ensuring that project objectives are met.

Project network diagram – It explains the sequencing needed for project activities and tasks that underpins the planning process. It is essentially a flow chart that includes all of the project elements and how they relate to one another.

Project organisational chart – It is a chart used as a tool to show the relationship of people and structure that govern and influence the project.

Project partnership – A relationship in which partners have shared vision and goals, resources and information; mutual accountability and shared decision-making; clearly defined roles and responsibilities; mutual respect for one other; two-way communication; and complementary expertise and experience with development that is relevant to the project.

Project phase – A broad set of related tasks.

Project portfolio management – It is the centralized management of processes, methods and technologies used by project managers and project management offices to analyse and collectively manage a group of current or proposed projects based on numerous characteristics.

Project review meeting – A meeting that provides an opportunity to analyse and document project successes and difficulties, thereby providing better foundation for future project work. Each meeting must have a set agenda and clear objectives for decision-making.

Project risk – An external event or uncertain condition that can have positive or negative effects on the delivery of project objectives.

Project selection method – A methodical process to assess each project idea and select the project with the highest priority. Selection is based on benefits and feasibility.

Project scope statement – A document that includes at a minimum a description of the project including its overall objectives and justification, detailed description of all project deliverables, and the characteristics and requirements of products and services produced as part of the project.

Project sponsor – The funder and political endorser of the project concept.

Project task – A specific activity with defined purpose.

Project website – It is developed as part of the dissemination, networking and information sharing aspects of the project. It can be part of the communication plan and selected medium to update project's progress.

Quality control chart – It is a graphic that illustrates whether products or processes are meeting their intended specifications and if not, the degree by which they vary from the standards set.

Quality metrics – Software quality metrics can be classified into three categories: product metrics, process metrics and project metrics. Product metrics describe the characteristics of the product such as size, complexity, design features, performance and quality level. Process metrics can be used to improve software development and maintenance. Project metrics describe the project characteristics and execution. For software products intrinsic product quality and customer satisfaction are the levels for quality measurement.

Resource histogram – A visual representation tool used by the project management team that displays the specific amount of time a particular resource is scheduled to be worked on over a predetermined and specific time period. It may also contain the comparative feature of resource availability and used for comparison and contrast.

Request for proposal or quotation – An invitation to bid for required goods and services; an aspect of the procurement process.

Requirements analysis – In systems and software development or engineering, it determines the needs and conditions for meeting a new or enhanced product. It takes into account possible conflicting requirements of various stakeholders, and involves analysing, documenting, validating and managing software and systems requirements.

Responsibility assignment matrix – A matrix that maps the work of the project as described in the work breakdown structure to the people responsible for performing the work as described in the organisational structure.

Return on investment – A concept referring to the resource yielding benefit to an investor. As a performance measure, it is used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments.

Review and evaluation – It measures the impact of the project and how it has contributed to larger goals of government. The findings and results will serve as basis for future planning and programming activities.

Risk management plan – A document that contains the procedures for managing risks throughout the project life.

Risk ranking – It is a tool that considers the factors affecting the risks faced by the project and rates risks according to high-medium-low probability of occurrences and impact to the project.

Risk register – A document that contains results of various risk management processes often displayed in a table or spreadsheet format.

Schedule performance measurement – Performance is in accordance with the cost and schedule performance management standards. It makes use of techniques such as the earned value analysis to measure cost and schedule variances from the plan.

Scope creep – Deviations in the project scope; additional elements not agreed upon or considered in the original project scope.

Scope management plan – A deliverable-oriented grouping of the work involved in a project that defines the total scope of the project.

Scope verification technique – A document that results from the processes of defining what is included and not included in the project.

Scope change control – A documented process that describes when and how official project documents may be changed.

Social sustainability – The maintenance of social capital, which includes "investment and services that create the basic framework for society; lowers the cost of working together and facilitates cooperation; trust lower transaction costs" (Goodland).

Source selection – It is a process that deals with the selection of a contractor through competitive negotiation period. It comprises an invitation to bid, propose and quote; evaluation of the responses received; selection of the most suitable sources; and award of contract or order.

Stakeholders – Those who are affected by the project outcomes, whether negatively or positively, and those who can affect the outcomes of a proposed intervention.

Stakeholder analysis – It is the process of identifying the individuals or groups that are likely involved or affected by the project.

Statement of work – A formal document required for procurement that captures and defines the work activities, deliverables and timeline a vendor must execute in performance of specified work for a client.

Stats methods – The use of quantitative and statistical methods and analysis in project concerns such as risks, quality management, and monitoring and forecasting.

System design – It establishes how the product is to perform the functions defined in the system requirements statement. Its checkpoint is an agreed system design specification.

Work breakdown structure – A tool that is deliverable-oriented in the grouping of work entailed in a project; it helps define the total scope of the project.

About the Author

Maria Juanita R. Macapagal has over 18 years of work experience in development management encompassing project planning, implementation, monitoring and evaluation, and capacity building in various development fields. She has helped implement institutional strengthening strategies in the private sector and in government and non-governmental organizations in the Philippines and in other parts of South-East Asia. She has also worked as a consultant for CIDA-funded projects, such as the Electronic Governance for Efficiency and Effectiveness project, Policy Training and Technical Assistance Facility, and the Philippines-Canada Cooperation Office.

UN-APCICT/ESCAP

The United Nations Asian and Pacific Training Centre for Information and Communication Technology for Development (UN-APCICT/ESCAP) is a regional institute of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). UN-APCICT/ESCAP aims to strengthen the efforts of the member countries of ESCAP to use ICT in their socio-economic development through human and institutional capacity-building with the focus on the following three pillars:

1. Training. To enhance the ICT knowledge and skills of policymakers and ICT professionals, and strengthen the capacity of ICT trainers and ICT training institutions;
2. Research. To undertake analytical studies related to human resource development in ICT; and
3. Advisory. To provide advisory services on human resource development programmes to ESCAP members and associate members.

UN-APCICT/ESCAP is located at Incheon, Republic of Korea.

http://www.unapcict.org

ESCAP

ESCAP is the regional development arm of the United Nations and serves as the main economic and social development centre for the United Nations in Asia and the Pacific. Its mandate is to foster cooperation between its 53 members and nine associate members. ESCAP provides the strategic link between global and country-level programmes and issues. It supports governments of countries in the region in consolidating regional positions and advocates regional approaches to meeting the region's unique socio-economic challenges in a globalizing world. The ESCAP office is located at Bangkok, Thailand.

http://www.unescap.org

Additional UN-APCICT/ESCAP Programmes and Resources

The Academy of ICT Essentials for Government Leaders
http://www.unapcict.org/academy

The Academy is a comprehensive ICT for development training curriculum with currently ten modules that aims to equip policymakers with the essential knowledge and skills to fully leverage opportunities presented by ICTs to achieve national development goals and bridge the digital divide.

These modules are being customized with local case studies by national Academy partners to ensure that the modules are relevant and meet the needs of policymakers in different countries. The modules are also been translated into different languages. To ensure that the programme stays relevant and addresses emerging trends in the ICTD, APCICT regularly revises the modules and develops new modules.

APCICT Virtual Academy (http://e-learning.unapcict.org)

The APCICT Virtual Academy is part of the multi-channel delivery mechanism that APCICT employs in the implementation of its flagship ICTD capacity building programme, the *Academy of ICT Essentials for Government Leaders*.

The Virtual Academy allows learners to access online courses designed to enhance their knowledge in a number of key areas of ICTD including utilizing the potential of ICTs for reaching out to remote communities, increasing access to information, improving delivery of services, promoting lifelong learning, and ultimately, bridging the digital divide and achieving the MDGs.

All APCICT Virtual Academy courses are characterized by easy-to-follow virtual lectures and quizzes, and users are rewarded with APCICT's certificate of participation upon successful completion of the courses. All Academy modules in English and localized versions in Bahasa and Russian are available via the Internet. In addition, plans for more content development and further localization are underway.

e-Collaborative Hub (http://www.unapcict.org/ecohub)

The e-Collaborative Hub (e-Co Hub) is APCICT's dedicated online platform for knowledge sharing on ICTD. It aims to enhance the learning and training experience by providing easy access to relevant resources, and by making available an interactive space for sharing best practices and lessons on ICTD. e-Co Hub provides:

- A resources portal and knowledge sharing network for ICTD
- Easy access to resources by module
- Opportunities to engage in online discussions and become part of the e-Co Hub's online community of practice that serves to share and expand the knowledge base of ICTD

UNITED NATIONS
ESCAP / **APC*i*CT**
Economic and Social Commission for Asia and the Pacific