Academy of ICT Essentials for Government Leaders

Module 7

ICT Project Management in Theory and Practice

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APCICT ASIAN AND PACIFIC TRAINING CENTRE FOR INFORMATION AND COMMUNICATION TECHNOLOGY FOR DEVELOPMENT

The Academy of ICT Essentials for Government Leaders Module Series

Module 7: ICT Project Management in Theory and Practice

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FOREWORD

The world we live in today is inter-connected and fast-changing, largely due to the rapid development of information and communication technologies (ICTs). As the World Economic Forum fittingly states, ICTs represent our “collective nerve system”, impacting and connecting every fabric of our lives through intelligent, adaptive and innovative solutions. Indeed, ICTs are tools that can help solve some of our economic, social and environmental challenges, and promote more inclusive and sustainable development.

The increased access to information and knowledge through development of ICT has the potential to significantly improve the livelihoods of the poor and marginalized, and promote gender equality. ICTs can serve as a bridge connecting people from different countries and sectors in the region and beyond by providing more efficient, transparent and reliable means and platforms for communication and cooperation. ICTs are essential to the connectivity that facilitates more efficient exchange of goods and services. Success stories from Asia and the Pacific region abound: e-government initiatives are improving access to and quality of public services, mobile phones are generating incomes and professional opportunities for women and the voices of the vulnerable are louder than ever through the power of social media.

Yet, 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 the countries of 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 complete the bridging of the digital divide, policymakers must be committed to further realizing the potential of ICTs for inclusive socio-economic development in the region. Towards this end, the Asian 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 in 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.”

In order to further respond to this call to action, APCICT has developed a comprehensive information and communication technology for development (ICTD) training curriculum, the *Academy of ICT Essentials for Government Leaders*. Launched in 2008 and based on strong demand from member States, the *Academy* presently consists of 10 stand-alone but interlinked modules that aim to impart essential knowledge and expertise to help policymakers plan and implement ICT initiatives more effectively. Widespread adoption of the *Academy* programme throughout Asia-Pacific attests to the timely and relevant material covered by these modules.

ESCAP welcomes APCICT's ongoing effort to update and publish high quality ICTD learning modules reflecting the fast-changing world of technology and bringing the benefits of ICTD knowledge to national and regional stakeholders. Moreover, ESCAP, through APCICT, is promoting the use, customization and translation of these *Academy* modules in different countries. It is our hope that through their regular delivery at national and regional workshops for senior- and mid-level government officials, the acquired knowledge would be translated into enhanced awareness of ICT benefits and concrete actions towards meeting national and regional development goals.

Noeleen Heyzer

Under-Secretary-General of the United Nations
and Executive Secretary of ESCAP

PREFACE

In the effort to bridge the digital divide, the importance of developing the human resource and institutional capacity in the use of ICTs cannot be underestimated. In and of themselves, ICTs are simply tools, but when people know how to effectively utilize them, ICTs become transformative drivers to hasten the pace of socio-economic development and bring about positive changes. With this vision in mind, the *Academy of ICT Essentials for Government Leaders* (*Academy*) was developed.

The *Academy* is the flagship programme of the United Nations Asian and Pacific Training Centre for Information and Communication Technology for Development (APCICT), and is designed to equip government officials with the knowledge and skills to fully leverage ICT for socio-economic development. The *Academy* has reached thousands of individuals and hundreds of institutions throughout the Asia-Pacific and beyond since its official launch in 2008. The *Academy* has been rolled out in over 20 countries in the Asia-Pacific region, adopted in numerous government human resource training frameworks, and incorporated in the curricula of university and college programmes throughout the region.

The impact of the *Academy* is in part a result of the comprehensive content and targeted range of topics covered by its eight initial training modules, but also due to the *Academy's* ability to configure to meet local contexts and address emerging socio-economic development issues. In 2011, as a result of strong demand from countries in the Asia-Pacific, APCICT in partnership with its network of partners developed two new *Academy* training modules designed to enhance capacity in the use of ICT for disaster risk management and climate change abatement.

Adhering to APCICT's "We D.I.D. It In Partnership" approach, the new *Academy* modules 9 and 10, like the initial modules 1 to 8, were Developed, Implemented and Delivered in an inclusive and participatory manner, and systematically drew upon an extensive and exceptional group of development stakeholders. The entire *Academy* has been based on: needs assessment surveys from across the Asia-Pacific region; consultations with government officials, members of the international development community, and academics and educators; research and analysis on the strengths and weaknesses of existing training materials; and a peer review process carried-out through a series of APCICT organized regional and sub-regional workshops. These workshops provided invaluable opportunities for the exchange of experiences and knowledge among users of the *Academy* from different countries. The result is a comprehensive 10-module *Academy* curriculum covering a range of important ICTD topics, and indicative of the many voices and contextual nuances present across the region.

APCICT's inclusive and collaborative approach to development of the *Academy* has also created a network of strong partnerships to facilitate the delivery of ICTD training to government officials, policymakers and development stakeholders throughout the Asia-Pacific region and beyond. The *Academy* continues to be rolled out and adopted into training frameworks at the national and regional levels in different countries and regions as a result of close collaboration between APCICT and training institutions, government agencies, and regional and international organizations. This principle will continue to be a driving force as APCICT works with its partners to continuously update and further localize the *Academy* material, develop new *Academy* modules to address identified needs, and extend the reach of *Academy* content to new target audiences through new and more accessible mediums.

Complementing the face-to-face delivery of the *Academy* programme, APCICT has also developed an online distance learning platform called the APCICT Virtual Academy (http://ava.unapcict.org), which is designed to enable participants to study the material at their own pace. The APCICT Virtual Academy ensures that all the *Academy* modules and accompanying materials are easily accessible online for download, dissemination, customization and localization. The *Academy* is also available on DVD to reach those with limited or no Internet connectivity.

To enhance accessibility and relevance in local contexts, APCICT and its partners have collaborated to make the *Academy* available in English, Bahasa Indonesia, Mongolian, Myanmar language, Russian, Tajik and Vietnamese, with plans to translate the modules into additional languages.

Clearly, the development and delivery of the *Academy* would not have been possible without the commitment, dedication and proactive participation of many individuals and organizations. I would like to take this opportunity to acknowledge the efforts and achievements of our partners from government ministries, training institutions, and regional and national organizations who have participated in *Academy* workshops. They not only provided valuable inputs to the content of the modules, but more importantly, they have become advocates of the *Academy* in their countries and regions, and have helped the *Academy* become an important component of national and regional frameworks to build necessary ICT capacity to meet the socio-economic development goals of the future.

I would like to extend heartfelt acknowledgments to the dedicated efforts of the many outstanding contributors who have made Module 7 possible, with a special note of gratitude to module authors Maria Juanita R. Macapagal and John J. Macasio. I would also like to thank the more than 7,500 participants that have attended over 80 *Academy* workshops in over 20 countries, as well as online trainings. Their invaluable insight and feedback have helped to make sure that the *Academy* has had a lasting impact.

I sincerely hope that the *Academy* will help nations narrow ICT human resource gaps, remove barriers to ICT adoption, and promote the application of ICT in accelerating socio-economic development and achieving the Millennium Development Goals.

Hyeun-Suk Rhee

Director
UN-APCICT/ESCAP

ABOUT THE MODULE SERIES

In today's "Information Age", easy access to information is changing the way we live, work and play. The "digital economy", also known as the "knowledge economy", "networked economy" or "new economy", is characterized by a shift from the production of goods to the creation of ideas. This underscores the growing, if not already central, role played by ICTs in the economy and in society as a whole.

As a consequence, governments worldwide have increasingly focused on ICTD. For these governments, ICTD is not only about developing the ICT industry or sector of the economy but also encompasses the use of ICTs to engender economic as well as social and political growth.

However, among the difficulties that governments face in formulating ICT policy is that policymakers are often unfamiliar with the technologies that they are harnessing for national development. Since one cannot regulate what one does not understand, many policymakers have shied away from ICT policymaking. But leaving ICT policy to technologists is also wrong because often technologists are unaware of the policy implications of the technologies they are developing and using.

The *Academy of ICT Essentials for Government Leaders* module series has been developed by the UN-APCICT/ESCAP for:

1. Policymakers at the national and local government level who are responsible for ICT policymaking;

2. Government officials responsible for the development and implementation of ICT-based applications; and

3. Managers in the public sector seeking to employ ICT tools for project management.

The module series aims to develop familiarity with the substantive issues related to ICTD from both a policy and technology perspective. The intention is not to develop a technical ICT manual but rather to provide a good understanding of what the current digital technology is capable of or where technology is headed, and what this implies for policymaking. The topics covered by the modules have been identified through a training needs analysis and a survey of other training materials worldwide.

The modules are designed in such a way that they can be used for self-study by individual readers or as a resource in a training course or programme. The modules are standalone as well as linked together, and effort has been made in each module to link to themes and discussions in the other modules in the series. The long-term objective is to make the modules a coherent course that can be certified.

Each module begins with a statement of module objectives and target learning outcomes against which readers can assess their own progress. The module content is divided into sections that include case studies and exercises to help deepen understanding of key concepts. The exercises may be done by individual readers or by groups of training participants. Figures and tables are provided to illustrate specific aspects of the discussion. References and online resources are listed for readers to look up in order to gain additional perspectives.

The use of ICTD is so diverse that sometimes case studies and examples within and across modules may appear contradictory. This is to be expected. This is the excitement and the challenge of this newly emerging discipline and its promise as all countries begin to explore the potential of ICTs as tools for development.

Supporting the *Academy* module series in print format is an online distance learning platform—the APCICT Virtual Academy—with virtual classrooms featuring the trainers' presentations in video format and presentation slides of the modules (visit http://e-learning.unapcict.org).

In addition, APCICT has developed an e-Collaborative Hub for ICTD, or e-Co Hub (http://www.unapcict.org/ecohub), a dedicated online site for ICTD practitioners and policymakers to enhance their learning and training experience. The e-Co Hub gives access to knowledge resources on different aspects of ICTD and provides an interactive space for sharing knowledge and experiences, and collaborating on advancing ICTD.

MODULE 7

This module provides an introduction to basic project management concepts that are relevant in ICTD projects. It introduces methods, processes and project management disciplines commonly used by development and ICT service management practitioners. Some case studies, practice tools and templates are provided, and the unique challenges of planning and managing ICT projects are highlighted.

Module Objectives

The module aims to:

1. Provide an overview of concepts, principles and processes in ICT project planning and management;

2. Discuss issues and challenges in ICT project planning and management in developing country contexts; and

3. Describe approaches to and tools for ICT project management.

Learning Outcomes

After working on this module, readers should be able to:

1. Discuss ICT project management concepts, principles and processes;

2. Discuss issues and challenges in ICT project planning and management in developing country contexts, and propose relevant solutions and approaches;

3. Utilize a variety of tools for different phases of ICT project management; and

4. Critically assess the management of existing and proposed ICT projects.

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Acronyms

APCICT	Asian and Pacific Training Centre for Information and Communication Technology for Development
AusAID	Australian Agency for International Development
CIDA	Canadian International Development Agency
CMM	Capability Maturity Model
CMMI	Capability Maturity Model Integration
COBIT	Control Objectives for Information and related Technology
COP	Certified Outsourcing Professional
COPC	Customer Operations Performance Center
CPM	Critical Path Analysis Method
ESCAP	Economic and Social Commission for Asia and the Pacific (UN)
FAO	Food and Agriculture Organization (UN)
ICT	Information and Communication Technology
ICTD	Information and Communication Technology for Development
IDRC	International Development Research Centre (Canada)
IPPP	Indigenous Peoples Partnership Program
IT	Information Technology
ITIL	Information Technology Infrastructure Library
LDC	Least Developed Country
LFA	Logical Framework Approach
LFM	Logical Framework Matrix
MDG	Millennium Development Goal
MSF	Microsoft Solutions Framework
NGO	Non-Governmental Organization
P3M3	Portfolio, Programme and Project Management Maturity Model
PC	Personal Computer
PCM	Project Cycle Management
PERT	Project Evaluation Review Technique
PM	Project Manager
PMBOK	Project Management Book of Knowledge
PMI	Project Management Institute
PMO	Project Management Office
QA	Quality Assurance
RBM	Results-Based Management
RUP	Rational Unified Process
SDC	Swiss Agency for Development and Cooperation
SLA	Service Level Standard
SMART	Specific, Measurable, Achievable, Relevant and Testable
SOCITM	Society of Information Technology Management (UK)
SRS	System Requirements Statement
UK	United Kingdom
UML	Unified Modelling Language
UN	United Nations
UNDP	United Nations Development Programme
USA	United States of America
USAID	United States Agency for International Development
USDA CADI	United States Department of Agriculture Central Accounting Database Inquirer

List of Icons

 Case Study

 Questions To Think About

 Something To Do

 Test Yourself

1. KEY CONCEPTS IN ICT PROJECT MANAGEMENT

This section aims to:

- **Present an overview of project management within the information and communication technology for development (ICTD) framework; and**
- **Define key concepts in information and communication technology (ICT) project management, including the knowledge areas, basic project phases and processes, and important elements and variables of managing ICT projects.**

Governments in developing countries are increasingly becoming aware of the value of ICTs, particularly for improving the efficiency of systems and the delivery of services to citizens. While governments have planned and implemented projects in various agencies, ICT projects are relatively new and require more in-depth understanding to ensure that they effectively meet development goals and the needs of stakeholders.

ICT projects, which may be small or large in scale, are part of a bigger environment. They relate to programmes as well as the goals and objectives of an organization. Once the projects are completed, they could become part of the mainstream operations of the organization. In this sense, projects contribute to the higher goals, mission and vision of the organization.

For this reason, an overarching framework that puts in context the existence and implementation of projects is essential. The *Academy of ICT Essentials for Government Leaders* module series of which this module is a part adopts meaningful development, particularly as expressed in the Millennium Development Goals (MDGs), as the framework for planning, implementing and evaluating ICT-supported projects. Module 1 – *The Linkage between ICT Applications and Meaningful Development* of this series articulates this framework of ICT use in developing country contexts.

The current module focuses on the management of ICT projects. Managing ICT projects is challenging. Project managers need to be concerned about all aspects of project planning and implementation, including goal setting, organization, resource and cost management, change management, and handing over the project outputs and deliverables to the project owners. The tasks of project managers become more complex when ICT projects are implemented within the government context. Governments have overarching development goals and government agencies have their own plans to address their service delivery goals and mandates. ICT projects and programmes need to be aligned with these goals and mandates. In addition, different stakeholders of ICT projects and programmes, including the critical public, tend to have high expectations.

The unique challenges of planning and managing ICT projects are highlighted in this module. The critical knowledge areas in ICT project management, as well as the different project management phases and the processes involved in each phase, are also discussed.

1.1 Project Management and ICT for Development

What are Projects?

The word "project" is so commonplace it probably does not need a definition. Before looking at some definitions in the literature, complete the activity below.

Something To Do

Based on your own experience and understanding, briefly define the following:

a. Projects
b. ICT Projects

The following are some "textbook" definitions of the term "project".

Box 1. Textbook definitions of "project"

"A project is a temporary venture with finite beginning and end whose goal is to create a unique product or service."
(Microsoft Corporation, "Microsoft Solutions Framework White Paper: MSF Project Management Discipline v.1.1", June 2002, p. 8, http://download.microsoft.com/download/b/4/f/b4fd8a8a-5e67-4419-968e-ec7582723169/MSF%20Project%20Management%20Discipline%20v.%201.1.pdf)

"A project is a temporary effort to create a unique product or service. Projects usually include constraints and risks regarding cost, schedule or performance outcome."
(James R. Chapman, 1997, http://www.hyperthot.com/pm_intro.htm)

"A project is a unique set of co-ordinated activities, with definite starting and finishing points, undertaken by an individual or team to meet specific objectives within defined time, cost and performance parameters as specified in the business case."
(Office of Government Commerce, "Project Management", http://webarchive.nationalarchives.gov.uk/20110822131357/http://www.ogc.gov.uk/delivery_lifecycle_project_management.asp)

"A project is a series of activities aimed at bringing about clearly specified objectives within a defined time-period and with a defined budget."
(European Commission, *Aid Delivery Method: Volume 1 - Project Cycle Management Guidelines* (Brussels, 2004), p. 8, http://ec.europa.eu/europeaid/multimedia/publications/documents/tools/europeaid_adm_pcm_guidelines_2004_en.pdf)

In sum, projects are transitory undertakings that use resources, incur costs and produce deliverables over a definite period of time, to achieve a specific goal. They come in all shapes and sizes and can vary in length and complexity.

According to Ciano, "projects are similar to operational and programme-type activities in that they also produce deliverables, consume resources and incur costs." But "operations are ongoing and repetitive in nature while projects are not." Some examples of operational activities are weekly maintenance of databases and help desk operation activities. "Programmes, on the other hand, are much larger than projects; they are more complex; and they include repetitive operation-type activities such as maintenance work and facility administration. Programmes are usually funded on a fiscal year basis. Projects in general are more time-focused than programmes."[1]

1 Bruno Ciano, "Project and Program Management", http://brunociano.blogspot.com.

What are ICTs?

Information technology (IT) and ICT projects have emerged in the last three decades of the twentieth century. At that time, they used to call those pertaining to data storage and retrieval processes as computers, and towards the 1980s the term “IT” was popularly used to include programming activities. The expanded use of applications processing, and the exchange and distribution of information in a network that includes telecommunications and various forms of media is now aptly called “ICT”.[2]

The United Nations Development Programme (UNDP) defines ICTs as:

> A varied set of goods, applications, and services that are used to produce, store, process, distribute and exchange information. They include the “old” ICTs of radio, television and telephone, and the “new” ICTs of computers, satellites and wireless technology and the Internet. These different tools are now able to work together, and combine to form our “networked world”, a massive infrastructure of interconnected telephone services, standardized computer hardware, the Internet, radio and television, which reaches into every corner of the globe.[3]

For our purposes, we define ICT projects as ICT-based solutions that meet defined service and government strategic needs. These projects introduce processes and methodologies that are supported by ICTs. They introduce technological changes in an organization that are intended to be beneficial to the organization and its target clientèle.

The Differences Between Non-ICT and ICT Projects

Numerous development projects in the past had very limited use of ICTs. Projects within poverty alleviation programmes often focused on food security. Projects such as the Homestead Catfish Culture in Bangladesh, Livestock Development in Viet Nam, Community Water Project in Tanzania are examples of conventional types of projects.[4]

Nowadays, the use of ICT devices and applications in undertaking activities is common. The need to communicate is essential. By their very nature, ICTs are cross-cutting and their application may be multi-sectoral and multi-pronged. For instance, while ICT deployment for poverty alleviation may focus on providing livelihood for a community, the same project may be able to run a parallel development goal, such as women empowerment.

Table 1 lists some differences between conventional or non-ICT projects and ICT projects.

2 Rainer Schendel, *ICT Project Guidebook: e-Government Capability Maturity Model* (Manila, Asian Development Bank, forthcoming), p. 17.

3 UNDP Evaluation Office, *Information Communications Technology for Development, UNDP Essentials: Synthesis of Lessons Learned* (New York, 2001), p. 2.

4 Networklearning, “Examples of ways to alleviate poverty”, http://www.networklearning.org/index.php?option=com_content&view=article&id=128:examples-of-ways-to-alleviate-poverty&catid=18:poverty-a-income-generation&Itemid=42.

Table 1. Comparison of conventional non-ICT projects and ICT projects

Conventional/Non-ICT Projects	ICT Projects
• Directed to meet strategic needs • With ownership support • With specific start and end dates • Defined and documented scope • With a finite budget • Specific end results – deliverables • Quality constraints • Assigned resources	• Directed to meet strategic needs • With ownership support • With specific start and end dates • Defined and documented scope • With a finite budget • Specific end results – deliverables • Quality constraints • Assigned resources • *Uses ICT-based solutions that meet defined service and government or non-government strategic needs* • *Introduces processes and methodologies that are supported by ICTs*

Source: John Macasio, ICT Project Management Practitioner Network (2008), http://ictpmpractitioner.ning.com.

Something To Do

Can you think of other differences between conventional projects and ICT projects? Add your ideas to table 1.

What are Projects For?

A project is usually a response to a pressing need, a problem or, in project management parlance, a "business case" for an organization. But while the objectives of a project are a response to an immediate need, the project is or should be anchored on larger goals. Projects are carried out to address organizational problems; testing solutions to increase efficiency or changing systems for more effective delivery of services. Projects could also be designed to address socio-economic problems of a community, and society at large.

In the year 2000, many countries adopted the United Nation's goal to cut world poverty in half. The eight Millennium Development Goals (MDGs) provide a human development framework that addresses: extreme poverty and hunger; universal primary education; gender equality and empowerment of women; child and maternal health; HIV/AIDs, malaria and other diseases; ecological sustainability; and effective governance and peace.

How can ICTs be used as a tool to support the MDGs? ICTs have a role to play in meeting societal challenges. It can boost a country's economic growth as there is evidence that business and industry have benefited the most from the information revolution.

Many developed societies have shown how ICTs can enhance the quality of education or improve administrative and instructional efficiency in schools. ICTs are also increasingly becoming a major tool for social participation and enhancement of economic productivity. ICTs have created new economic opportunities for women, as evidenced by the large number of women, especially in countries like India and the Philippines, who have entered the workforce in IT-enabled services

such as call centres and help lines. Moreover, telework and e-commerce enable women to work from home. These ICT-enabled economic opportunities are much more successful when designed, operated and managed by women, as in the case of "eHomemakers" in Malaysia.[5]

In health-related concerns, ICTs are already used not only for health education and dissemination of information, it can also be used to develop health monitoring systems for hospitals and government—for keeping track of cases of infant mortality, maternal mortality, as well as cases of HIV/AIDs and malaria incidences. It can also be applied to connect patients in rural and remote communities to medical specialists in the city.

ICTs have a major role to play in addressing environmental issues, through monitoring and observation (using satellites and sensing devices), mapping of natural resources (using geographic information systems), and sharing of environmental data, including awareness raising and advocacy. In managing environmental risks, ICTs have a role to play in alerting communities to impending disasters through radio and television, cellular and satellite phones, ham radio sets, SMS systems, e-mail and the Internet.

Governments with many internal transactions between individual officials and government agencies, as well as transactions between the government and the citizenry benefit from the use of ICTs in the improvement of its performance, processes, functions, decision-making and service delivery. Governments can be supported by ICT applications to curb corruption, anomalies, as well as in conflict prevention and management, peace operations, humanitarian relief and disaster assistance, and post-conflict, peace-building and reconstruction.[6]

The many uses of ICT to benefit society, government and its citizens are sources of strategic interventions, programmes and projects.

ICT projects could be direct or indirect interventions in relation to the MDG targets. As direct services they are usually undertaken to provide direct impact interventions to beneficiaries. By indirect interventions, governments could look into addressing systems gaps resulting in inefficient and ineffective government processes. Whatever the size or cost of an ICT project, it is important for project managers to know and understand the rationale for the implementation of the project and how it relates to the larger goals of the organization.

See Module 1 of the *Academy of ICT Essentials for Government Leaders* module series for in-depth discussions on the use of ICTs in meeting the development targets of the MDGs.

e-Government, e-Governance and ICT Projects

More and more governments in the world are integrating ICTs in their front and back-end processes, as well as in providing services to the public. However, a government must have an overarching framework in its ICT governance in relation to its national development goals for it to become relevant to society's "essential steering functions" such as coordination, arbitration, networking and regulation.[7] ICT projects thrive in situations when there is political commitment from government and clear ICT governance blueprint and investment priorities. Otherwise, ICT projects become outputs from fragmented dispositions of government leaders.

5 Rainer Schendel, *ICT Project Guidebook*, p. 22; and http://www.ehomemakers.net/en/index.php.

6 Rainer Schendel, *ICT Project Guidebook*, pp. 23-24.

7 Gianluca C. Misuraca. *e-Governance in Africa: From Theory to Action – A Handbook on ICTs for Local Governance* (Ottawa, IDRC, 2007), http://www.idrc.ca/en/ev-113398-201-1-DO_TOPIC.html.

e-Government or the "use of… ICTs to improve the activities of public sector organizations"[8] are of interest to ICTD policymakers because ICT expenditures by government can influence the overall development of the local ICT industry and also because e-government promises good governance.

e-Governance is the use of ICT in the domain of administration (including public service delivery, regulation, law enforcement, security, improving bureaucratic efficiency and policymaking) and the domain of politics (the range of activities related to how society makes decisions and establishes values that are binding upon its members) at the local, national, regional and global levels.

Using a governance perspective highlights not only the institutional interactions usually associated with public policymaking but also the relationship of society to governing. e-Governance moves the focus away from the narrow view of using ICT to deliver better public service towards the broader view of using ICT to involve citizens in decision-making.

Below are examples of e-government programmes that have evolved from ICT projects and were implemented as part of medium- and long-term national development plans and strategies.

Back Office Automation: Improving efficiency and service delivery

Automating government processes can be challenging for developing countries, many of which suffer opaque, corrupt and inefficient bureaucracies. In these cases, developing electronic systems goes beyond IT issues, encompassing the need for full assessment and re-engineering of government administration, record keeping and knowledge management. This process determines the success or failure of e-government projects. Despite the difficulties, national and local governments in countries such as Brazil, Chile, India and the Philippines have implemented comprehensive automation of procurement, tax administration and other government systems. These kinds of reform foster accountability, transparency and trust in the government's ability to deliver services to citizens.

The Government of Karnataka, India has instituted the widely lauded Bhoomi land registry system. Using biometric identification technology, document scanning and dispersed information kiosks, the system has automated 20 million land records since its inception in 1998. Additionally, the state of Bihar has implemented the Sales Tax Administration Management Information Network Aided, improving sales tax revenue collection and helping prevent tax evasion. Implemented in stages, it has steadily increased tax revenue for the state since 2001.

In the Philippines, a comprehensive electronic procurement system has been implemented that allows for online supplier and government agency registration, price confirmations and supply cataloguing, and contract bidding. Also available on the government Web portal is the Bureau of Customs e-Trade website that provides a 24-hour electronic logistics network for the country's cargo industry. A project by the National Police encourages the use of text messaging to facilitate emergency assistance, complaint registration and monitoring of corruption by the police and other public agencies.

In Chile, the Chile Compra website gives public agencies a single online location to access information on goods and services. The site includes a notice board of current government needs, online registration for private companies wishing to do business with the government, and updates on procurement guidelines and regulations. In addition, an

8 Rainer Schendel, *ICT Project Guidebook*.

online discussion forum allows providers and government agencies to learn more about best practices, available contracts and other procurement-related news and information.

Source: Abridged from John Paul, Robert Katz and Sean Gallagher, "Lessons from the Field. An Overview of the Current Uses of Information and Technologies for Development", A Digital Dividend Report, World Resources Institute, November 2004, p. 33, http://unpan1.un.org/intradoc/groups/public/documents/apcity/unpan021672.pdf.

The projects described above have brought about significant changes in government systems and processes in the countries mentioned, improving service delivery within and across agencies, service delivery to the business sector, and service delivery to the citizenry.

Lessons learned from ICTD studies show that e-government will only be successful if there is strong demand and support for it from the majority of the population. Some of this demand will come from better awareness of the opportunities offered by better and faster government service delivery. Citizens and businesses also need to be motivated to use e-government services through the provision of compelling, relevant and accessible digital content. In particular, the following must be implemented to increase demand and support for e-government services:

- Develop a multi-channel single-window common service delivery infrastructure, including "physical" citizen service centres and other public access points such as telecentres, call centres, Web portals and mobile portals;
- Implement measures that will enhance public trust in ICT-enabled transactions and all other interactions in the digital environment;
- Encourage the development of relevant, compelling, user-friendly online and mobile content, including so-called "killer applications"; and
- Implement programmes aimed at improved accessibility and affordability of online and mobile content and ICT.[9]

What are ICTD Projects?

There is growing optimism that technology, particularly the new ICTs, can help achieve development goals and spur progress in developing countries. Many studies suggest that investment in ICT production facilities and investment in ICT equipment help boost economic growth.[10] However, ICTs remain inaccessible to the rural poor who comprise a very large portion of the population of developing countries. The term "digital divide" was coined to describe the gap between those who have access to ICT facilities and the benefits it provides and those who do not. In developing countries the digital divide is wide.

Social development organizations and international development cooperation agencies have undertaken development initiatives and programmes that aim to give unserved and underserved populations access to the benefits of ICT use. While there are few scientific studies that prove a direct relationship between poverty reduction and ICT growth and use in developing countries, anecdotal evidence and examples of innovative community-based ICT initiatives are proofs of concept for the growing ICTD movement.

Since the mid-1990s many international cooperation agencies have been supporting ICTD projects as a means to improve the quality of life of marginalized groups. The aim of ICTD is "to

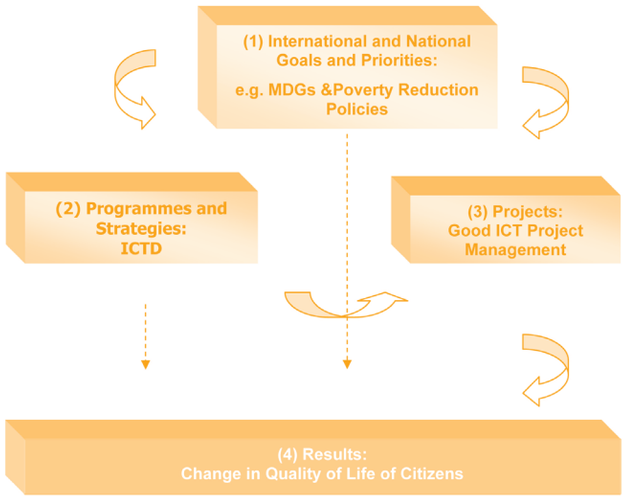
9 Nag Yeon Lee and Kwangsok Oh, Module 3: *e-Government Applications*, *Academy of ICT Essentials for Government Leaders* module series, second edition (Incheon, UN-APCICT/ESCAP, 2011), http://www.unapcict.org/academy.

10 Isabel Neto and others, "Chapter 1 – Look Before You Leap: The Bumpy Road to E-Development," in *E-Development: From Excitement to Effectiveness,* Robert Shware, ed. (Washington, D.C., World Bank, 2005), pp. 1-22, http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2005/11/08/000090341_20051108163202/Rendered/PDF/341470EDevelopment.pdf.

counterbalance the often negative impact that ICTs can have on the poor—such as exclusion—with proactive and innovative measures that strengthen their position on a significantly uneven playing field, both in terms of access to and utilisation of ICTs."[11]

Figure 1 illustrates the relationship between: (1) poverty reduction policies; (2) ICTD programmes and strategies; and 3) good ICT project management, which are all meant to (4) improve the people's quality of life.

Figure 1. The relationship between poverty reduction policies, ICTD programme strategies and ICT project management



Governments of developing countries are now investing more in ICT. However, ICT projects are risky endeavours. Studies suggest that firms, governments and civil society organizations in the least developed countries (LDCs) encounter difficulties in exploiting ICTs to their full potential. A 2005 World Bank study estimates that the majority of public sector ICT applications in LDCs are either partial or total failures. The failures have been ascribed to poor project design, lack of affordable access to infrastructure, law and order problems, and weak government and market institutions.[12]

Let us review the different ICTD approaches presented in Module 1 of the *Academy of ICT Essentials for Government Leaders* module series. When considering an ICTD intervention, the first decision to be made is whether the intervention should be ICT-driven or ICT-supported. Both approaches are important, and in practice there is great variation in the ways in which ICTs have been used in development programmes and projects. The ICT-driven approach is based on the assumption that access to timely and relevant information through ICTs will promote economic growth as it provides opportunities to generate income. For example, initiatives such as telecentres offering access to e-mail and the use of a website as a marketing tool are favoured because they offer the opportunity to promote goods and to improve sales. Moreover, the ICT-driven approach to development is more likely to emphasize communication as a good outcome in itself. The ICT-supported approach first clarifies the development goal that the project seeks to address; works out the information and communication needs; and then looks at cost-effective ways of using ICTs to address the goals and the needs.[13]

11 SDC, *SDC ICT4D Strategy* (Berne, SDC, 2005), p. 5, http://www.deza.admin.ch/ressources/resource_en_161888.pdf.

12 Isabel Neto and others, "Chapter 1 – Look Before You Leap".

13 Usha Rani Vyasulu Reddi, *Module 1: The Linkage between ICT Applications and Meaningful Development*, *Academy of ICT Essentials for Government Leaders* module series, second edition (Incheon, UN-APCICT/ESCAP, 2011), http://www.unapcict.org/academy.

Whichever approach is taken, careful project planning is essential to avoid gaps between design and reality—in contexts, in approaches to planning and implementation, and in perceptions and philosophies between the different stakeholders. Without planning, the consequence is often a mismatch between priorities, investments, deliverables and outcomes.[14]

Given the opportunity cost of investing in ICT and ICTD projects, there is an urgent need for rigorous, well-designed initiatives based on good practice.

Let us also review here the "Good Practice Guide for use of ICTD",[15] which is a framework developed by the Australian Agency for International Development (AusAID). Its checklist provides a set of questions in designing ICTD projects that will bring clarity to the planning process. The questions are as follows:

- Is the use of an ICT-based project aimed clearly at achieving a specific poverty reduction goal?
- Is there a clearly specified target group for poverty alleviation?
- Is the form of ICT to be deployed appropriate in terms of cost, support for maintenance and compatibility with existing information flows?
- Is the form of ICT to be deployed scalable to enable it to be replicated and expanded?
- Are appropriate intermediaries being used?
- What scope is there for public-private partnerships?
- Is the content transmitted by the ICT relevant to the audience and is it in a language easily understood by the target audience?
- Is the project self-sustaining over what period?
- What performance measurement, monitoring and evaluation processes are in place?
- What unexpected events or situations might arise and what should be done to manage these?

As previously mentioned, projects, no matter how small, should be related to the larger environment of the organization. It is best that these projects are supported by ICT policy frameworks to make the results of the programme lasting. Projects may be undertaken to generate knowledge, validate certain assumptions, or pilot test prototypes. These projects have a common underlying aim and that is to introduce or promote "change" within the organization and in the larger environment.

Organizations targeting better quality service levels for their constituency may implement ICTD projects in their jurisdictions. Those promoting e-governance to streamline and harmonize services could also make use of ICT to improve service delivery and interaction with citizens. These initiatives are expensive because they require the procurement and use of technology and other resources. Good management practices are required to ensure value for money. A strategic approach is the phased approach where plans and frameworks are divided into several chunks of work or projects. Implementing these projects would require orchestrated planning and the observance of good practices in project management.

Buehring lists seven good practices in project management:

1. Defining the scope and objectives of the project – knowing what needs to be achieved
2. Defining the deliverables – knowing what products need to be delivered at the end of the project and getting the key stakeholders to agree on these
3. Planning the project – defining how the outcomes of the project will be achieved and deciding the requirements, i.e. people, resources (tools), activities and budget, for effective project completion

14 Ibid.

15 Richard Curtain, Information and Communications Technologies and Development: Help or Hindrance? Report prepared for AusAID, 28 June 2003, p. 28, http://unpan1.un.org/intradoc/groups/public/documents/apcity/unpan014679.pdf.

4. Communication and communication planning – designing a plan to communicate effectively with stakeholders
5. Project tracking – continuously and consistently checking the status of scope, schedule and costs
6. Managing changes – deciding whether to accept, reject or integrate changes right away
7. Managing risks – identifying events that could adversely affect the project as early as possible and incorporating action plans necessary to avoid or mitigate these risks[16]

These best practices will be discussed in later sections of this module.

1.2 What is Project Management?

Project management as a discipline emerged during the last half of the nineteenth century when companies began to apply scientific principles to labour practices and to industry as a whole. In the twentieth century, as technology and industry became increasingly complex, project management began to evolve as an activity distinct from general business management.

Project management is defined in a number of ways (see box 2).

Box 2. Definitions of "project management"

"Project management is a set of principles, practices, and techniques applied to lead project teams and control project schedule, cost, and performance risks to result in delighted customers."
(James R. Chapman, 1997, http://www.hyperthot.com/pm_intro.htm)

"A good project management method will guide the project through a controlled, well-managed, visible set of activities to achieve the desired results."
(Office of Government Commerce, *For Successful Project Management: Think PRINCE2* [Norwich, TSO, 2007] p. 3)

"Project management is an area of knowledge, skills, tools and techniques used to achieve project objectives within agreed upon parameters of quality, cost, schedule and constraints."
(Microsoft Corporation, "Microsoft Solutions Framework White Paper: MSF Project Management Discipline v.1.1", June 2002, p. 8, http://download.microsoft.com/download/b/4/f/b4fd8a8a-5e67-4419-968e-ec7582723169/MSF%20Project%20Management%20Discipline%20v.%201.1.pdf)

Project management is a "set of well-defined methods and techniques for managing a team of people to accomplish a series of work tasks within a well-defined schedule and budget."
(Ez-B-Process Inc.)

Project management is "[t]he application of knowledge, skills, tools, and techniques to project activities in order to meet or exceed stakeholder needs and expectations."
(Project Auditors, http://www.projectauditors.com/Dictionary/P.html)

These definitions of project management all indicate that:

- Project management is a method, a discipline and a process.
- It has a set of tools for planning, implementing, maintaining, monitoring and evaluating progress of activities.

16 Simon Buehring, *Implementing Best Practices in Project Management* (2007), http://www.computerworlduk.com/management/it-business/it-department/instant-expert/index.cfm?articleid=338.

- In line with larger goals and objectives of the organization, it defines what needs to be accomplished.
- The major challenges in project management are managing the project scope and resources, particularly time, cost and people.

Through the years, various schools of thought and approaches to project management have emerged and best practices and reference standards have been offered. Some of these are:

- The Project Management Book of Knowledge (PMBOK) approach that is presented in a 182-page compendium published by the Project Management Institute (PMI) based in the United States of America (USA). The institute encourages certification of project managers who will apply their standards. (http://www.pmi.org)

- The Projects in Controlled Environments (Prince 2) approach developed in 1989 as a standard for IT project management by the United Kingdom (UK) government. Since then the method has been enhanced to become a generic approach suitable for the management of all types of projects, and has a proven record outside both IT and government sectors. Organizations are certified through standard examinations administered by the Association for Project Management group. (http://www.prince-officialsite.com)

- The Microsoft Solutions Framework (MSF) that evolved out of best practices in software development. Microsoft claims that it has been successfully applied to infrastructure deployment projects as it is designed "to provide value in today's Internet era of computing." (http://www.microsoft.com/technet/solutionaccelerators/msf/default.mspx)

- The Rational Unified Process (RUP) that provides an amalgamation of constructs developed after the Rational Corporation. It is an iterative framework for software development that is now available as a product from IBM.[17] It is a cousin of the Unified Modelling Language (UML), which is widely adopted in tools for object-oriented software design and development.

- Project Cycle Management (PCM) that describes the management activities and decision-making procedures used during the life cycle of a project (including key tasks, roles and responsibilities, key documents and decision options). Many organizations, including bilateral and multilateral aid groups, make use of PCM tools and processes.[18]

- The Logical Framework Approach (LFA) is an analytic, presentational and management tool developed by the United States Agency for International Development (USAID) and other donor groups. It establishes a logical hierarchy of means by which goals and objectives are reached, with the indicators, risks and assumptions, and inputs and outputs identified. (http://www.ausaid.gov.au/ausguide/pdf/ausguideline3.3.pdf)[19]

Some of these approaches to project management are discussed in more detail in section 3 of this module.

Management practitioners continuously study ways in making project management easier and more efficient. There are many business schools and consulting organizations that conduct management researches or offer services to make project management methods available to students, practitioners and those aspiring to become project managers in public and private organizations. There may be many variations; nevertheless, the principles are still the same.

17 See Wikipedia, "IBM Rational Unified Process", http://en.wikipedia.org/wiki/Rational_Unified_Process.

18 European Commission, *Aid Delivery Methods Volume 1: Project Cycle Management Guidelines* (Brussels, 2004), p. 17, http://ec.europa.eu/europeaid/multimedia/publications/documents/tools/europeaid_adm_pcm_guidelines_2004_en.pdf.

19 Wilson Mar, "Project Planning Strategies and Tools", http://www.wilsonmar.com/1projs.htm.

With the advent of ICTs, some practitioners in private organizations claim there are now two types of project management that have emerged: the traditional and the modern project management. The traditional refers to the above project management approaches (using orthodox, linear methods and techniques in management processes), which work for most domains and environments; while the modern ones are iterative and applicable mostly to the domains of software development.[20] The modern type of project management is also regarded as a specialized area in project management.

The so-called modern project management approach makes use of an umbrella concept called agile project management. The differences with the traditional project management approaches include:

- Emphasis on the team that must work as a tightly integrated unit (the developers, quality assurance [QA], project manager, and customer)
- Frequency of communication through daily meetings among team members to line up the day's work and determine dependencies
- Short-term delivery of expected outputs or products ranging from one to two weeks
- The use of open communication techniques and tools so all engaged in the project can express their views and have a quick response during the identification of requirements and implementation of the software[21]

Under this umbrella term of agile project management are the sub-methodologies:

- The "Scrum" method that focuses on team productivity
- The Crystal method that focuses more on the team's communication (on skills, people, and interaction) than the processes
- The Dynamic Systems Development where emphasis is made on the active involvement of users; it also places importance on training and document support
- Extreme Programming that does not have detailed requirement specifications and soft architecture but focuses more on feedback, process and programmer's welfare

In this module, ICT project management methods will cover the mainstream or "traditional" project management with some discussions on the "modern methods" when the software development projects for government are examined.

1.3 ICTD Project Management Phases

ICTD projects tend to be expensive and risk-prone. For this reason, the process, product (i.e. the outputs or deliverables) and resources invested should be managed responsibly. More specifically, ICTD projects require rigorous, methodical yet flexible processes, quick decisions, participatory means and collaboration.

ICTD projects are often mistakenly thought of as a set of activities requiring hardware, networking systems, software and applications with the end goal of introducing technological changes. In fact, however, there is a substantial amount of human activity in these projects, and each project is or should be anchored on the larger goals of the organization. In large and complex ICTD programmes, the acquisition of ICT applications is only one of the tasks or sub-projects (see case study below). ICTD projects are not standalone activities but part of an integrated whole (i.e. a programme, a component, a strategy or a strategic plan).

20 Tutorial Point, "Traditional Project Management", http://www.tutorialspoint.com/management_concepts/traditional_project_management.htm.

21 Ibid; and Kiron D. Bondale, "Agile Methodologies Are Not the Answer to All Projects!" PM Hut, 29 July 2011, http://www.pmhut.com/agile-methodologies-are-not-the-answer-to-all-projects.

Municipal Network Project in Brazil: The Piraí Digital Project

The municipal network project started from the principle of "delivering services tailored to local needs and integrating ICT with broader economic and social development activities."

Piraí is a rural municipality of the State of Rio de Janeiro, Brazil. It has approximately 25,000 inhabitants. In the late 1990s the Piraí Digital Project was started with a small grant from the Federal Government to modernize its local tax office.

The target was to upgrade telecommunications facilities, which at the time consisted of two phone lines and two computers, to a hybrid fixed-wireless IP network to connect different government offices. But when it became apparent that broadband connectivity could be extended to a much larger area at little extra cost, a community committee that included municipal authorities and representatives of community-based organizations and the private sector was formed to put together a plan to extend wireless connectivity to much of the Piraí territory as part of a broader plan to diversify the local economy and attract new investments. The latter was needed as the state-owned power utility, then the largest local employer, had been privatized and had laid off many employees.

The project focused on four areas: e-government; education, including distance education in partnership with a consortium of public universities; public access points, including training in partnership with various non-governmental organizations (NGOs); and small and medium enterprises adoption.

The project cost reached USD 33,600 or about USD 2,800 per village. Universities, NGOs and private firms contributed to the project with equipment, application development, and expertise in the deployment and operation of the municipal network. At present, the network has over 50 broadband nodes connecting all local government offices and most of the public schools and libraries. The number of public access points is increasing, and a private company with majority municipal ownership has been formed to commercialize services to households and businesses.

The success of the Piraí project may be ascribed to the following success factors:

- Due to the lack of public subsidies (beyond the small grant to modernize the tax office), community leaders were forced to draw in resources through cooperation with various actors from the private and civil society sectors, and inputs were assembled through a combination of in-kind contributions, partnerships and the city's modest budget.

- The use of low-cost technologies at the transport (i.e. wireless local area network) and terminal (i.e. free and open source software) layers dramatically reduced upfront costs, allowing Piraí to provide broadband services where traditional cable and digital subscriber line operators could not justify investments.

- Local leadership, good governance and strong social capital enabled collective planning and management of the project, helping to better match services with local needs.

Source: Adapted from Hernan Galperin and Bruce Girard, "Microtelcos in Latin America and the Carribean", in *Digital Poverty: Latin American and Caribbean Perspectives*, Hernan Galperin and Judith Mariscal, eds. (Warwickshire, Intermediate Technology Publications and Ottawa, International Development Research Centre, 2007), pp. 105-107, http://www.dirsi.net/espanol/files/05-Galperin-Girard_23nov.pdf and http://www.crdi.ca/en/ev-112564-201-1-DO_TOPIC.html.

The Piraí Digital Project shows that the most important component of a project is not the installation of the IT system but its rollout to end-users and its expansion to link with other systems.

The phases of ICTD project management include: Planning, Implementation, Monitoring and Evaluation. Other terms are sometimes used to refer to these phases, as follows:

- Programming – Project Initiation, Envisioning
- Planning – Design and Planning, Directing a Project
- Implementation – Execution
- Monitoring – (Mid-term) Review, Control
- Evaluation – End-of-Project Review, External Review
- Project Closure (referring to the administrative end of the project) – Cut-over to Operations

While the different project management schools of thought might use different terminologies for the different phases, the same milestones are targeted for each phase (see table 2).

Table 2. Project milestones in the different versions of project phases

#	Milestone at Completion	Martin Tate / PMI	Microsoft	Rational / UML	Burdman	PRINCE2	Other
1	Vision / Scope Approved	Initiation	Envisioning	Inception / Analysis	Planning and Strategy	Starting Up A Project and Initiating A Project	Concept-ualization, Research
2	Project Plan Approved	Planning	Planning	Elaboration / Design	Design and Specification Prototyping	Planning and Directing A Project	
3	Scope Complete / First Use	Execution	Developing	Construction and Testing	Production	Managing Stage Boundaries and Controlling A Stage	
4	Product Release	Close-out	Stabilizing Deployment	Launch and Deployment	Testing	Managing Product Delivery	

Source: Wilson Mar, "Project Planning Strategies and Tools", http://www.wilsonmar.com/1projs.htm#ProjPhases.

Milestones are highlights or landmarks that signal when project deliverables are completed or accepted at every phase of the project. As shown above, the completion of the project's "vision/ scope" signals the completion of the first phase (variously named the initiation, envisioning, inception and project start-up phase); the approval of the project plan marks the end of the planning phase; and so on. Section 3 of this module discusses project milestones or project deliverables in more detail.

In discussing ICTD project management phases, this module uses a mix of "conventional" and ICT-related terms. Table 3 lists these terminologies. The first column shows the general or generic management phases; the second column provides the "conventional" definitions or descriptions of each phase; and the third column shows the description of each phase relative to ICT projects.

Table 3. Definitions of project management phases by type of project

General Management Phases	Conventional Project Management Phases (PCM, LFA)	ICT Project Management Phases (MSF, others)
Planning	Programming is the process by which a programme of actions is identified and put into a coherent plan based on (national or local) policies, agenda, strategies and objectives, and cross-cutting themes for consideration in the development and planning processes of projects. Planning is the most important part of the project process. It is in this phase where the project environment is examined, the rationale and assumptions of the project are defined, and the scope, requirements and resource parameters (time, costs and people), including risks, are identified. All of the knowledge areas of the project are designed at this phase.	Project Planning/Envisioning/ Initiation establishes the project's purpose, scope, stakeholders, cost/benefit analysis, resourcing and project management framework. Its checkpoint is an agreed Terms of Reference and Project Plan. Requirements Analysis establishes "what" the product is to do. It requires that participants adopt an enquiring, analytic frame of mind, rather than the "synthetic", inventive or constructive approach appropriate in later phases. Its checkpoint is an agreed System Requirements Statement (SRS). System Design establishes "how" the product is to perform the functions defined in the SRS. Its checkpoint is an agreed System Design Specification. This Phase may be further broken down into: • Logical Design – This is largely independent of the physical environment in which the product is to run. • Physical Design – This maps the Logical Design on to a physical environment, comprising specific systems software, networks and workstations. Construction involves the evaluation and acquisition of existing software, writing of additional software, detailed specification of manual activities, integration of all elements into a whole, and successive layers of testing of the software. Its checkpoint is an integrated application that has satisfied defined quality standards, including multiple levels of testing, supported by appropriate documentation.
Implement-ation	Implementation is the project phase where all of the project plans are executed. The goal at this phase is to manage the execution processes and ensure that control mechanisms are working.	Implementation/Execution refers to the introduction of the service into usage by the intended clientèle. Its checkpoint is an accepted operational service.

General Management Phases	Conventional Project Management Phases (PCM, LFA)	ICT Project Management Phases (MSF, others)
Monitoring	Monitoring is the process of checking that all plans (inputs and outputs) and quality standards are being met. Progress and monitoring reports are important to detect and manage the risks areas.	Review is undertaken at the completion of all phases and all major tasks, and on a periodic basis. The purposes of a review are to: • Assess progress and delays; • Account for resource usage; • Explain material variances from resource allocations and elapsed time schedules; • Identify any remedial action that may be necessary, to assist in the re-estimation of uncompleted phases and tasks; • Assist in the planning of future phases and tasks; and • In case of serious negative variances, provide management with information to support a "go/no-go" decision about the continuation of the project.
Evaluation	Review and evaluation procedures measure the impact of the project and how it has contributed to larger goals (for instance, programmes at the national or local levels of government). The findings and results will serve as a basis for future planning and programming activities.	
(Project Close/ Operations Main-streaming)	Project closure is when the project activities have wound down, and when deliverables, including reports and financial obligations and disbursements, have been met and accepted by respective stakeholders.	Operation is the ongoing use of the system, and includes a provision for incident reporting and work requests to deal with errors, and with changes in the system's environment and in users' needs.
	Source: European Commission, *Aid Delivery Method: Volume 1 - Project Cycle Management Guidelines* (Brussels, 2004), http://ec.europa.eu/europeaid/multimedia/publications/documents/tools/europeaid_adm_pcm_guidelines_2004_en.pdf.	*Source*: Roger Clarke, *The Conventional System Life-Cycle* (Canberra, Xamax Consultancy Pty. Ltd., 2000), http://www.rogerclarke.com/SOS/SLC.html.

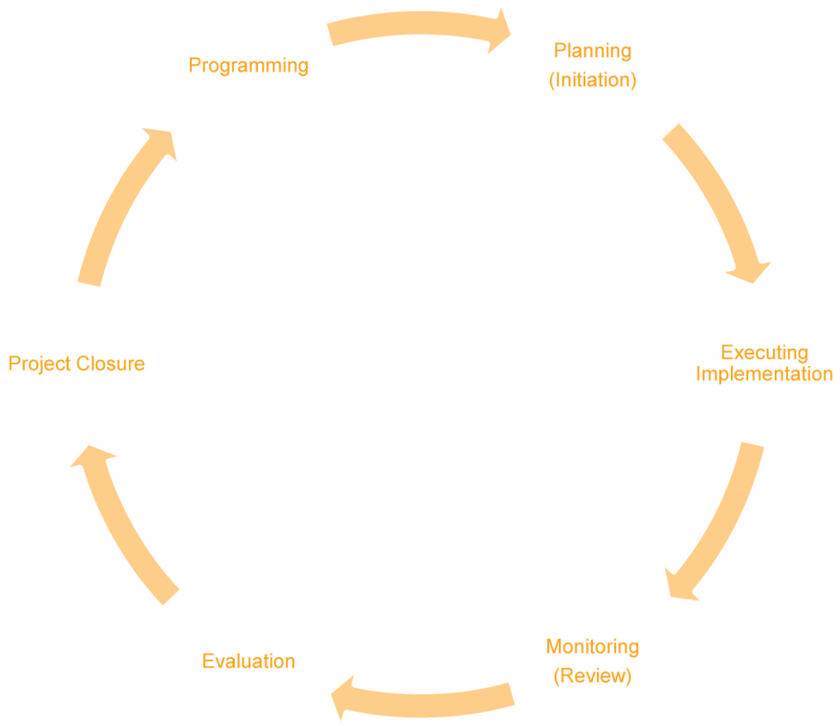
Most project management practitioners, including bilateral and multilateral aid groups, use the PCM. The European Commission uses the term to describe management activities and decision-making procedures during the life cycle of a project (including key tasks, roles and responsibilities, key documents and decision options). PCM helps ensure that:

- Projects are supportive of overarching policy objectives of the country and of development partners
- Projects are relevant to an agreed strategy and to the real problems of target groups/ beneficiaries
- Projects are feasible, meaning that objectives can be realistically achieved within the constraints of the operating environment and capabilities of the implementing agencies
- Benefits generated by projects are likely to be sustainable[22]

22 European Commission, *Aid Delivery Methods Volume 1*.

The conventional project phases are often represented in a cyclical diagram as shown below:

Figure 2. The project cycle



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

In ICT-supported projects, the cyclical approach is also used and planning is shown as a very important process. There are many review activities that check the outputs/products, processes and resource usage against plans. The processes are cyclical in the sense that each version of a product becomes part of the environment within which the next version is developed. In systems applications, this approach is called Systems Development Life Cycle.[23]

A project can be defined both with a project life cycle and a systems development life cycle. According to James Taylor, "the project life cycle encompasses all the activities of the project, while the systems development life cycle focuses on realizing the product requirements."[24]

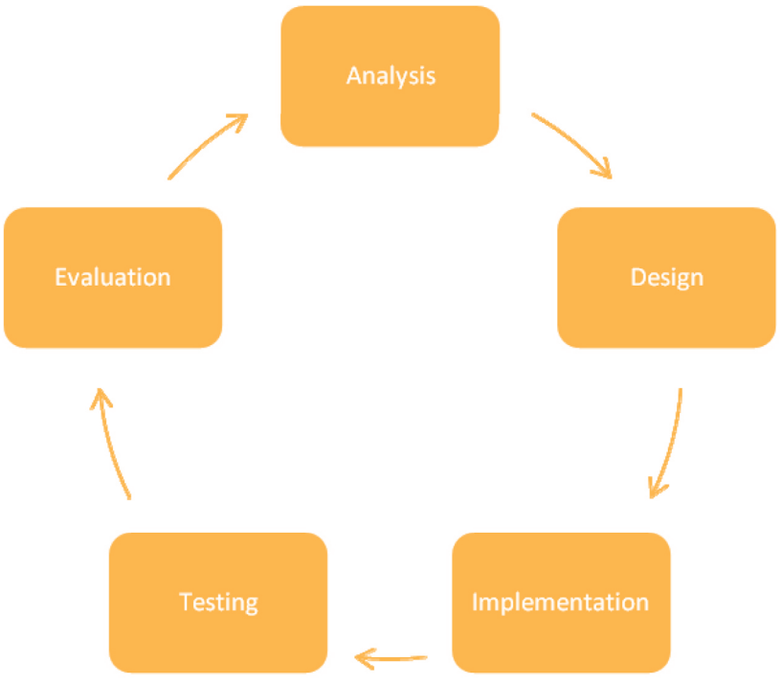
The Systems Development Life Cycle is one of the traditional IT project management methods used in medium or large complex systems project. This method assumes that systems development has "a lifecycle similar to that of any living organism, with a beginning, middle and end."[25] It includes the stages of: (1) analysis; (2) design; (3) implementation; (4) testing; and (5) evaluation (see figure 3).

23 Roger Clarke, *The Conventional System Life-Cycle* (Canberra: Xamax Consultancy Pty. Ltd., 2000), http://www.rogerclarke.com/SOS/SLC.html.

24 James Taylor, *Managing Information Technology Projects* (2004), p. 39.

25 Kenneth C. Laudon and Jane P. Laudon, *Essentials of Management Information Systems*, third edition (1999), p. 341.

Figure 3. Model of a systems development lifecycle



Each phase has specific activities with defined purpose and checkpoints also called milestones. Milestones are defined outcomes, the delivery of which marks the completion of a phase or set of tasks.[26]

Unmarked in the cycle is an important phase that is the "maintenance" phase. This refers to the time when the project is about to fold up and the final product of the project is mainstreamed into the regular operations of the organization. The project management team must have detailed a plan and undertaken certain preparations for the gradual integration and sustainability of the project outcome, which may be a product or process (i.e. a new way of doing things).

The Systems Development Life Cycle could combine with other project management methodologies for best outcome. This method emphasizes and strictly adheres on the use of documentation guidelines.

The choice of a Project Life Cycle model is critical in ICT projects since it largely determines the success or failure of the project. The three most common models are the spiral model, cascade (waterfall) model and task model, as well as their modified and combined versions.

Cascade (Waterfall) Model

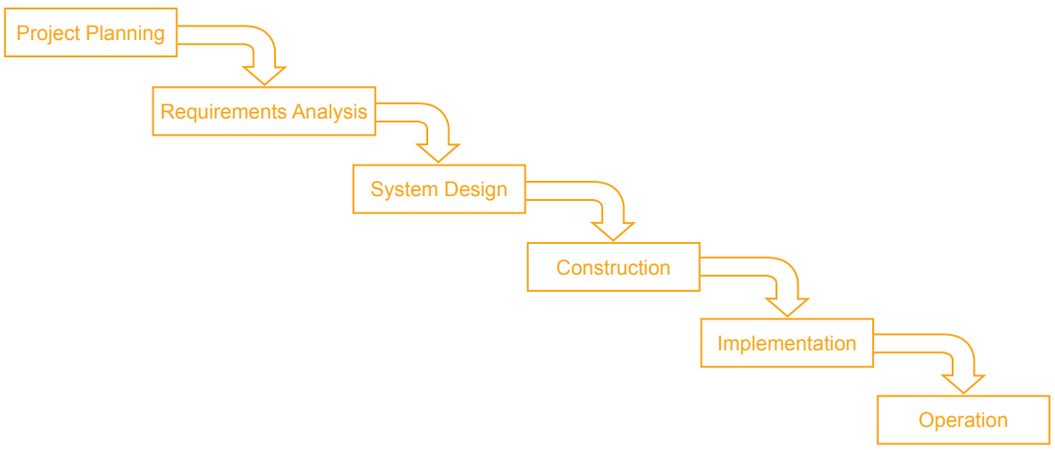
The main feature of this model is in the breakdown of the whole project into a number of main stages, which implies that transition from one stage to the next one can take place only upon a full completion of the work in the current one. Each stage ends with the release of complete documentation, sufficient for the next development team to carry on the work on their relevant stage.

26 Roger Clarke, *The Conventional System Life-Cycle*.

The advantages of the cascade (waterfall) model include the following:

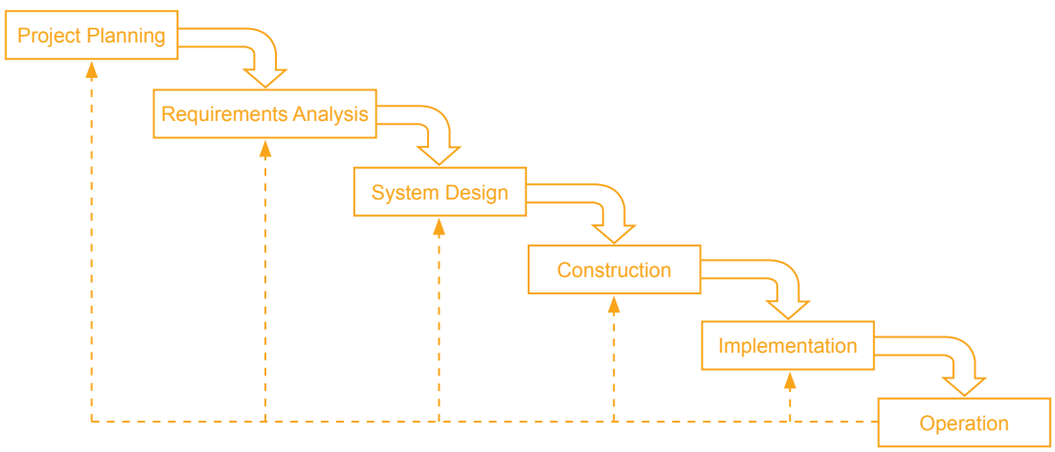
- Each stage produces a complete set of project documentation that meets the criteria of completeness and consistency.
- The tasks in stages completed in a logical sequence make it possible to plan time of completion of all the work and related costs.

Figure 4. Cascade (waterfall) model



The cascade (waterfall) model has proved to be useful in projects of developing information systems for which all the requirements could be accurately and fully articulated in order to give the developers freedom to implement them as best as possible from a technical point of view. However, the use of this approach revealed some of its shortcomings, caused primarily by the fact that the actual process of creating a system never quite fit into a rigid scheme. During the process of development, there has been a constant necessity to return to previous stages for refinement and revision of the previous decisions. As a result the actual process of software development looks more like figure 5.

Figure 5. Actual implementation of the cascade (waterfall) model



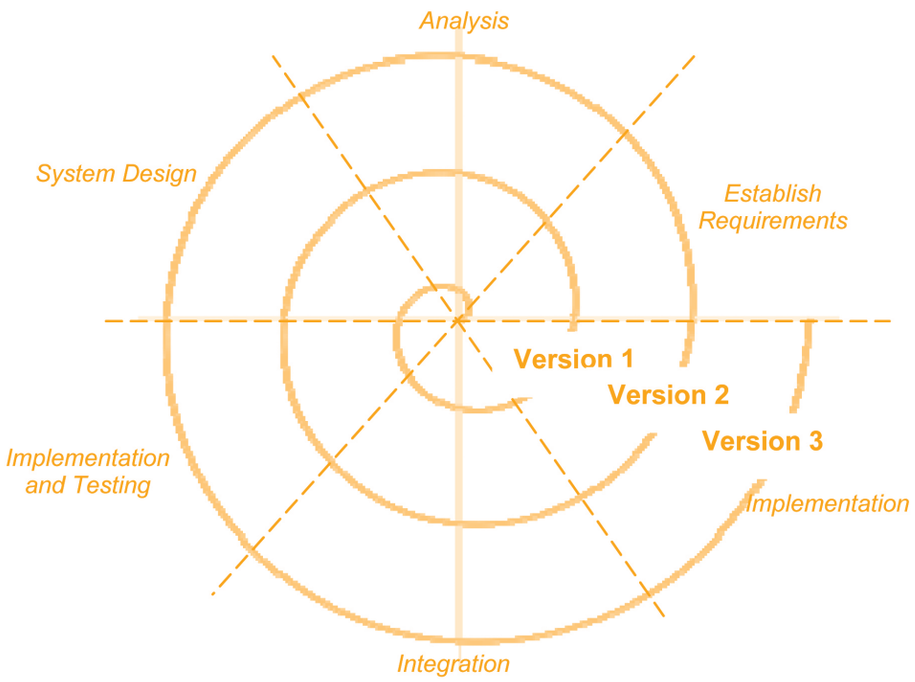
The main disadvantage of the cascade (waterfall) model is a significant delay in obtaining results. Approval of results by users is possible only at the time after completion of each stage of the work, while the requirements of the information system is “frozen” in the form of technical specifications for the whole time of its development. Thus, users are able to make comments only after the work on the system is completed. As a result, in the case of an inaccurate statement of requirements or changes over a long period of system development, users end up getting a system that does not meet their needs.

In summary, the waterfall model presents a systematic approach to systems development, though it can come at high costs and lengthy time.

Spiral Model

This model offers a solution to the shortcomings of the cascade (waterfall) approach and focuses on the initial stages of the life cycle: analysis and design.

Figure 6. Spiral model



Each cycle of the spiral represents a generation of a new version of a product, at which point, the aims and characteristics of the project are clarified, its quality is determined, and objectives of the new cycle of the spiral are set. This model provides the framework to deepen and consistently specify the details of the project, and as a result, the best option is selected to be brought to realization. This gives a chance to show the user an operable product as soon as possible, thereby activating the process where requirements can be clarified and supplemented.

The systems life cycle has its limits, although some of its problems can be solved by alternative system building approaches. These approaches include prototyping, application software packages, end-user development and outsourcing. (For discussions on outsourcing refer to section 4.8).

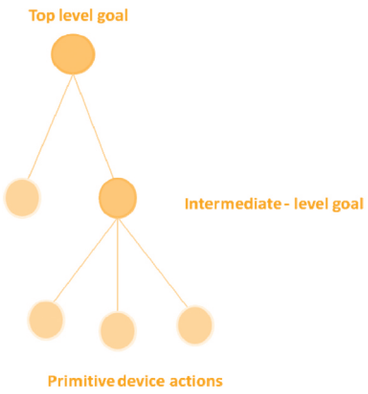
Task Model

A task model is a logical description of activities and analysis that should be performed in systems design to reach users' goals. It could be used to make high level system or architectural diagrams of a software system, or lower level task diagrams. Knowing the tasks necessary to goal attainment is fundamental to the design process. The need for modeling is done when the design aims to support system implementation as well.[27]

A task model can be represented by a graph structure where:

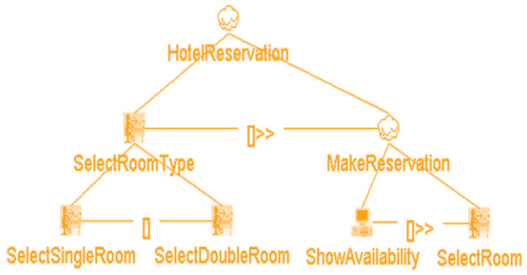
- Nodes are the different tasks and subtasks a user has to carry out
- Edges denote either a decomposition relation (a task is decomposed into several subtasks) or a temporal relation (e.g. a task must be performed before another) between nodes[28]

Figure 7. Task model description



Source: Gottfried Zimmerman, Gregg Vanderheiden and Charles Rich, "Universal Control Hub & Task-Based User Interfaces", URC Consortium, January 2006.

Figure 8. Task model sample



Source: Philippe Palanque slide presentations from a joint tutorial with Fabio Paterno at the World Congress on Formal Methods, Rio de Janeiro, Brazil, 18-19 September 2007.

Task models are useful in the analysis of the user's activities, context and roles in the design of software applications with users' interface.

27 Fabio Paterno, "Task Models in Interactive Software Systems", in *Handbook of Software Engineering & Knowledge Engineering: Vol. 1 – Fundamentals*, Shi Kuo Chang, ed. (Singapore, World Scientific Publishing Co. Pte. Ltd., 2001), pp. 817-836, ftp://cs.pitt.edu/chang/handbook/21.pdf.

28 Nathalie Souchon, Quentin Limbourg, and Jean Vanderdonckt, "Task Modelling in Multiple Contexts of Use", in *Interactive Systems: Design, Specification, and Verification – 9th International Workshop, DSV-IS 2002, Rostock, Germany, June 2002, Revised Papers*, Peter Forbrig and others, eds. (Springer-Verlag Berlin Heidelberg, 2002), pp. 59-73, http://www.uclouvain.be/cps/ucl/doc/iag/documents/WP_43_Limbourgtaskmodel.pdf.

Something To Do

Below are 26 project activities that are listed at random. Identify the phase where each activity or task belongs.

Activities/Tasks	Phase
1. Adapt the project to changing circumstances	
2. Agree and sign a grant fund document	
3. Appraise the technical, economic, commercial, financial, managerial and organizational soundness of the project	
4. Identify the project stakeholders	
5. Awards contracts	
6. Collect the technical, economic, commercial, financial, managerial and organizational data related to the project	
7. Conduct a pilot activity to show proof of concept	
8. Detail the objective of the project	
9. Determine alternative ways to accomplish project objectives	
10. Establish priorities of various projects in relation to sector and national plan	
11. Evaluate project performance	
12. Finalize feasibility studies and reports	
13. Gather information about the National Development Plan	
14. Hold a tripartite meeting	
15. Identify project for detailed preparation	
16. Implement the project	
17. Monitor the project progress	
18. Negotiate the grant/funding conditions	
19. Prioritize projects according to importance and pre-feasibility	
20. Procure project inputs through competitive bidding	
21. Secure project budget/financing	
22. Select consultants and consulting firms	
23. Study key tasks and prepare work breakdown structure	
24. Write a comprehensive project completion report	
25. Confirm Government's position on issues raised related to the project	
26. Present project brief and obtain project approval	

1.4 The Vectors of Management: People, process and technology

The vectors of project management are elements or variables that impact on the quality and speed of a project. These vectors, which are the vital forces of projects, are people, process and technology.[29] They determine project performance and progress towards achieving project goals or objectives.

29 TeleTech, White Paper: Human Capital as a Force Multiplier (n.d.).

People

Projects are developed, managed and implemented by people. Project managers manage project processes and technology to ensure that products are delivered and objectives are met. In some projects, there may be no person specifically designated as the project manager. But whatever his/her title, it is important that there is a person who is held responsible for the satisfactory completion of the project.

Aside from the project manager, a project usually involves competent professionals working together as a team. The project manager needs to understand the roles of team members, as well as those of stakeholders and beneficiaries. The project manager also needs to manage the expectations of the people involved in the project.

Section 2 of this module includes a detailed discussion of project human resources and stakeholders.

Process

The quality of the process depends on good procedural design by management and adherence to the process by the project implementers or staff. A well-designed and precise process can lead to the discovery of potentialities, and enhance the capabilities or competencies of project staff members, resulting in self-propelling staff, which is vital to the success of internal project management.[30]

In most ICT projects, one of the work components is process re-engineering, which means that the activities and documentation are reviewed to remove redundancies or unnecessary processes. If this review is not done, the old process will produce the same inefficient or ineffective results.

Technology

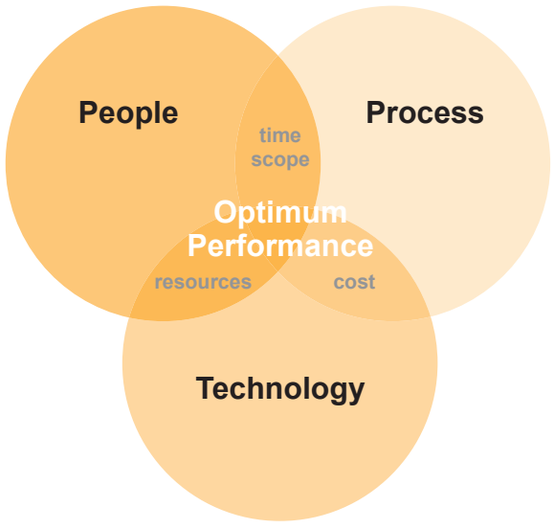
This refers to the machines and/or software in the market that are used to support the needs and processes of an organization. Technology should not dictate or take the lead in addressing organizational or project needs. Instead, it should be used in support of the needs of the people in the organization. In ICT-enabled community projects, technology should take the back seat until the needs of people and processes are defined. Projects that put technology before users' needs and process requirements often fail, resulting in a waste of resources (time and cost).

When it is selected well, used appropriately and built on a stable platform, technology can make project processes efficient and accelerate the project workflow. Corollarily, even the best of procedures and the sharpest of minds cannot make up for inappropriate and unstable technology. In other words, technology can be a bane or boon for a project.

Project managers and the management team must take note of the importance of people, process and technology in approaching a project. Defining, balancing and integrating the relationships among these elements can result in the project's optimum performance (see figure 9).

30 Ibid.

Figure 9. The people, process and technology approach to project management



1.5 Lessons from the Field

ICTD projects are relatively new endeavours. Nevertheless, there are already lessons from the field that can be harvested. The Swiss Agency for Development and Cooperation (SDC) lists several areas of concern that need to be addressed when ICTD projects are undertaken (see box 3).

Box 3. Lessons learned from ICTD projects

Participation: People who are part of the project should be involved at every stage, from the initial needs assessment through to monitoring. A participatory and demand-driven approach increases the impact of ICTD activities.

Local ownership and capacity development: For projects to be sustainable, they must be locally owned and accompanied by human and organizational capacity development. Physical access is just one element of effective ICT access and use. Local ownership and capacity development will ensure that individuals, communities and organizations can use and maintain ICT systems and gain the full benefits from their use.

Mix of technology: The choice of technology will depend largely on the context of use. The relationship between the user or audience and the specific media type also needs further exploration. The potential pro-poor impact of any ICT is determined by appropriate choice of technology.

Multi-stakeholder partnerships: ICT use will have spillover effects beyond individual sectors and programmes and can considerably improve outreach and resource allocation. Multi-stakeholder partnerships are an appropriate response to the complexity of this task in view of the need for increased resources and the fact that development is the responsibility of all sectors of society with multi-level linkages.

Alignment: The potential benefits for the poor are more likely to be realized when ICTD activities are aligned with the larger demand-driven development efforts of partners, particularly those related to poverty reduction.

Institutional ownership and leadership: A sense of ownership by and leadership of partner institutions are important. Although successful ICT pilot programmes are often driven by individuals, there must also be an institutional base to extend the project's reach and increase the number of people involved.

Competitive enabling environment: An enabling ICT policy environment includes respect for freedom of expression, diversity and the free flow of information, completion of ICT infrastructure provisions, including in the last mile, and investment in service development, including the creation of local content and the adoption of open source solutions.

Financial and social sustainability: In order for projects to be financially sustainable, all potential costs and revenue generation should be included in the planning process from the start. The issue of social sustainability[31] is of equal importance and is secured through local ownership and capacity building. It is essential for both social and financial sustainability to be considered.

Risk considerations: Possible and unforeseeable negative impacts need to be taken into account and carefully monitored, including watching out for how the benefits of ICT-supported interventions may be unequally distributed or even have the opposite of their desired effect (i.e. deepening economic, social and cultural divides rather than reducing poverty).

Source: Adapted from SDC, *SDC ICT4D Strategy* (Berne, SDC, 2005), p. 7, http://www.deza.admin.ch/ressources/resource_en_161888.pdf.

Questions To Think About

In what stages or phases of project management do you think will the lessons learned in box 3 apply?

The concerns listed in box 3 are mostly related to social categories, particularly people (stakeholders), who are the ultimate beneficiaries of the project. Concerns related to costs, risks and appropriate technology were also raised. All these must be taken into account when projects are planned and executed.

One of the key considerations when planning and implementing an ICT project is the fit between the project design and the project context. Often, there is a big gap between the ideal project design and reality. It is important to acknowledge this and to plan accordingly. Table 4 shows a comparison between the ideal design and the reality of ICT project management taken from the ESCAP documentation of ICT applications for development.

31 Social sustainability refers to the maintenance of social capital, which includes "investments and services that create the basic framework for society. It lowers the cost of working together and facilitates cooperation: trust lowers transaction costs. Only systematic community participation and a strong civil society, including government, can achieve this. Cohesion of community for mutual benefit, connectedness between groups of people, reciprocity, tolerance, compassion, patience, forbearance, fellowship, love, commonly accepted standards of honesty, discipline and ethics. Commonly shared rules, laws and information promote social sustainability." (Robert Goodland, "Sustainability: Human, Social, Economic and Environmental", in *Encyclopedia of Global Environmental Change* (John Wiley & Sons, Ltd, 2002), http://www.wiley.com/legacy/wileychi/egec/pdf/GA811-W.PDF).

Table 4. The ideal design and the reality of ICT project management

Feature	Ideal Design	Reality
ICT project management	• All participants are treated as equals and have a substantial stake in the project's success. • All participants understand the project management process and the roles and responsibilities of all the players. • Available financial resources are invested where they are most needed. • Information about project status is frequently shared. • The participants engage in joint problem identification and problem-solving. • Collectively, the project team has the skills needed to carry out a successful system project.	• Individuals and organizations resist change. • Project goals are often comprehensive, but budgets to achieve them are usually underestimated. • New projects are started with too little advance information, weak leadership support, inadequate user participation, too little funding, and less-than-comprehensive training and orientation. • Many projects take considerably longer than originally planned. • Especially in government projects, the roles of collaborating parties in project planning and management can conflict with their (simultaneous) oversight and regulatory roles, and become a source of difficulty in working relationships.

Source: Center for Technology in Government, *Tying a Sensible Knot: A Practical Guide to State-Local Information Systems* (Albany, University of Albany, 1999), http://www.ctg.albany.edu/publications/guides/tying/tying.pdf.

Questions To Think About

1. In your own experience of project design and project planning, which of the realities described above has caused you the most problems and why?

2. How do you think these realities can be addressed?

The gap between project design and the context need not be as wide as table 4 suggests. Bridges.org has put together what it calls "The 12 Habits of Highly Effective ICT-Enabled Development Initiatives" that, if followed by project planners, could result in a better fit between design and reality. The 12 Habits can be used for planning or for evaluation.

Box 4. Habits of highly effective ICT-enabled development initiatives

Habit 1. Start by doing some homework. Look at what has worked and what has not worked, study good practices in the area, and build on what you have learned.

Habit 2. Conduct a thorough needs assessment of the community to be served so you can plan to do what is actually required.

Habit 3. Make it local. Ensure local ownership, get local buy-in, work with a local champion and be context-specific.

Habit 4. Engage a local problem-solver with some degree of responsibility, and involve them sufficiently so they can identify and address problems as they arise.

Habit 5. Form sound partnerships and collaborations, and be good partners and collaborators.

Habit 6. Set concrete goals and take small achievable steps. Be realistic about outputs and timelines.

Habit 7. Found your initiative on technology-neutral concepts so it can be adapted as needed to accommodate technology change over time.

Habit 8. Involve groups that are traditionally excluded on the basis of age, gender, race or religion.

Habit 9. Identify and understand the external challenges you face, and take practical steps to address them.

Habit 10. Monitor and critically evaluate your efforts with effective tools, report back to your clients and supporters, and adapt your approach as needed.

Habit 11. Make your initiative sustainable over the long term either by bringing in sufficient income to be self-sustaining, or by delivering on a social mission so effectively that it is worthy of continued donor funding.

Habit 12. Widely disseminate information on what you are doing and what you have learned so others can avoid your mistakes and build on your efforts.

Source: Abridged from Bridges.org, "12 Habits of Highly Effective ICT-Enabled Development Initiatives", http://www.bridges.org/12_habits.

Test Yourself

1. Why should projects be linked to the larger goals of society?
2. What are the common elements in various definitions of project management?
3. Why must good project management practices be employed in ICTD projects?
4. What are some best practices and reference standards in project management?
5. What are the phases of project management? What are the milestones for each phase?
6. Name some ICT project management models used in developing systems applications. How are these models used?
7. What are some of the lessons learned in implementing ICTD projects?

2. ICT PROJECT MANAGEMENT, HUMAN RESOURCE AND STAKEHOLDER PARTICIPATION

This section discusses the importance of people—both the project personnel and stakeholders—in ICT project management.

2.1 Human Resource and Organizational Change Management

Projects are brought into fruition through human activity from the project conception to its completion. The bearers of the project intentions and results are people who work for the project, as well as the project stakeholders.

First, it is essential that project team members are chosen based on clear criteria as well as terms of reference or job descriptions that spell out their roles, functions, expected performance and deliverables.

Second, it must be borne in mind that projects bring about change that elicits corresponding actions, reactions and behavioural adjustments among the people involved. Change refers to alterations, modifications or transformations that result in a new product, which may be tangible or intangible. A concept alone, even at the initiation phase, can elicit strong reactions from people. When ideas are new, unclear or ambiguous, people tend to question and resist these new ideas. This is especially true when the ideas seem to challenge the status quo.

For instance, the idea of installing back office automation of services in a government agency may trigger strong resistance among the concerned personnel. A common reaction is the fear of losing one's job, which puts a person on the defensive. One way of reducing or minimizing resistance is making an Organizational Change Management Plan part of the project management tasks and deliverables. The project manager could also conduct "environmental scanning" or "intelligence gathering" in the selection of change management team members who will serve as the project's "change management agents".

An Organizational Change Management Plan addresses the impact (positive and negative) of change on the organization. Activities to be included in the plan will depend on the magnitude of change and attributes of the organization. If the impact of change is high, a separate and high-level organizational development plan would be more appropriate.[32]

In the planning phase, an impact analysis must be conducted to include the risks and the changes that may be attributed to the implementation of the ICT project activities. Questions to ask will include the following:

- Are there people who will be displaced or lose their jobs when the project ends and become mainstreamed?
- What forms of cultural resistance to change by some members of the organization and among stakeholders affected by the changes attributed to the project can take place?

32 For more information about organizational change management, refer to Carter McNamara, "Organizational Change and Development (Managing Change and Change Management)", Free Management Library, http://managementhelp.org/organizationalchange/index.htm.

- What actions can be done to prepare for and mitigate risks from cultural resistance to change in the organization?

According to a study conducted by Rosen and Weil, late adopters of technology are most resistant to changes attributed to ICT projects. The late adopters of technology were labeled as technophobes or those who fear technology, feel inadequate using it, and generally have negative attitudes toward technology.[33] In 15 organizations in the Philippines, it was found that problems at the start of automation projects created much resistance as manifested by the following reactions: employees felt that the ICT system made their work difficult; they were uncooperative and unwilling to complete the transactions; people thought they do not need the new application to do their job; or they thought they were too old for the new change. It was also found that the lengthy time of the computerization project, the lack of resources, incompatibility with existing structure and technologies, fear of company downsizing, were thoughts and sources of frustrations for the implementers and the employees. The lack of competence in the newly introduced software applications even made senior management officers feel resistant because of the thought that they will do clerical tasks.[34]

The same study suggested the following strategies for managing change:

- Ensure support from senior management
- Research and benchmark on standards
- Have a change management plan
- Sell the idea (stakeholders' buy-in)
- Acknowledge change reactions
- Take a systems approach to change (a change in one part of a system affect the other parts)
- Consult line experts
- Collaborate with different users
- Make the ICT system easy to use
- Communicate the change (e.g. conduct a transformation programme course for all employees before the project is implemented)
- Create excitement, build competencies, get the right people, ensure humane redeployment
- Ensure that support systems are in place
- Test and evaluate progress
- Create a culture of professionalism in computer use, and provide rewards and reinforcement.[35]

In creating a plan for organizational change, the following eight-stage process should be considered:

1. Establish a sense of urgency. Examine market and competition realities. Identify and discuss crises, potential crises or major opportunities. Change will not occur where there is complacency.
2. Create the guiding coalition. Pull together a group with enough power to lead the change, and urge them to work together as a team. No one person has the credibility, expertise or skills to provide the necessary leadership alone.
3. Develop a vision and strategy. Provide a vision that gives the change effort direction and motivates people.
4. Communicate the change vision. Use every vehicle possible to get the message out: big or small meetings, memos and company newsletters, formal and informal interactions. Communicate the vision in terms that will be understood in a five-minute discussion.

33 L.D. Rosen and M.M. Weil, "Measuring Technophobia: A Manual for the Administration and Scoring of the Computer Anxiety Rating Scale and the Computer Thoughts Survey" (unpublished), cited in Regina Hechanova and others, "Managing Computerization", in *Leading Philippine Organizations in a Changing World: Research and Best Practices*, Regina Hechanova and Edna Franco, eds. (Manila, Ateneo de Manila University Press, 2008), p. 140.

34 Ibid., pp. 142-143.

35 Ibid., pp. 144-150.

5. Empower broad-based action. Change those systems or structures that seriously undermine the vision. Emphatically encourage risk taking and non-traditional ideas, activities and actions.
6. Generate short-term wins. Plan for visible performance improvements and early evidence that sacrifices are worth it. Recognize and reward people who make wins possible.
7. Consolidate gains and produce more change. Use increased credibility to change all systems, structures and policies that do not fit together and do not fit the transformation vision. Reinvigorate the process with new projects, themes and change agents.
8. Anchor new approaches in the corporate culture.[36]

Communication plays an important role in change management. The people hired or contracted for the project, from the project manager to the rank-and-file personnel, must be able to accurately state the project intentions, plans and activities to avoid misconceptions.

2.2 Stakeholder Analysis and Participation

Project stakeholders and the project process

Development studies suggest that stakeholder participation has a positive impact on project and programme performance, outcomes and sustainability. Indeed, many development programmes and projects have failed due to the lack of people's participation in their design and implementation.[37]

Participation is widely considered as both a means and an end. As a means, "participation is a process in which the people involved cooperate and collaborate in development projects and programmes." As an end, "participation is seen as the empowerment of individuals and groups in terms of acquiring skills, knowledge and experience, leading to greater self-reliance."[38]

Three aspects to consider in assessing stakeholder participation are:

- Quality and extent of participation
- Costs and benefits of participation for the different stakeholders
- Impact of participation on outcomes, performance and sustainability[39]

Consider the following case example: the Enlaces eEducation Program of Chile, an ICT project for the rural poor; One of the lessons learned in this case is that ownership should take priority over technology to ensure project success.

36 J. Kotter, *Leading Change* (Boston, Harvard Business School Press, 1996) cited in Stephen Marquard, *African Schoolnet Toolkit* (Vancouver, Commonwealth of Learning and Johannesburg, SchoolNet Africa, 2005), http://www.col.org/SiteCollectionDocuments/African%20schoolnet%20toolkit.pdf.

37 Elizabeth Campbell-Page, *Participation in Development Assistance* (Operations Evaluation Department, World Bank, 2001), http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2002/10/09/000094946_02100903402348/Rendered/PDF/multi0page.pdf; and Marilee Karl, "Monitoring and evaluating stakeholder participation in agriculture and rural development projects: a literature review", SD dimensions, FAO, November 2000, http://www.fao.org/sd/PPdirect/PPre0074.htm.

38 IDB, Clayton and others (1998) cited in Marilee Karl, "Monitoring and evaluating stakeholder participation".

39 Ibid.

The Enlaces eEducation Program of Chile

In 1991, Chile embarked on an electronic education (e-education) programme to address educational exclusion in rural and deprived areas by linking primary and secondary schools to the Internet. The programme started as a pilot in six schools in Santiago and was subsequently scaled up to the national level following a successful pilot. By 2004, the programme covered more than 93 per cent of the subsidized school population, almost 80 per cent of all classroom teachers, and 8,500 schools, virtually all urban schools and a growing proportion of rural schools.

Experts from the World Bank, the United Nations Educational, Scientific and Cultural Organization (UNESCO) and USAID attributed the programme's success to, among others, stakeholder participation as evidenced by:

- An integrated strategy focusing not only on infrastructure but also on teacher training; and
- Sufficient political will to push forward the nationwide educational reform, with the Ministry of Education overseeing the programme and coordinating with key stakeholders for policies, guidelines, funding and technical expertise from 35 universities.

For more information, see http://learnlink.aed.org/Publications/Sourcebook/chapter4/chile_casestudy.pdf.

Source: Adapted from Robert Schware, ed., *E-Development: From Excitement to Effectiveness* (Washington D.C., The World Bank, 2005), http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2005/11/08/000090341_20051108163202/Rendered/INDEX/341470EDevelopment.txt.

Stakeholders and Project Partnership

ICTD and e-governance projects aim to improve services that will lead to positive changes in the quality of life of citizens. It is important to remember this end goal when planning and developing project strategies. Concretely, this means prioritizing the human element of the project and promoting participatory processes and collaboration. This in turn implies that ICTD projects must be in the business of building large-scale and long-term relationships. Building relationships is an investment that the project manager and project team must be willing and able to make.

Project partnership is more than just signing agreements like memoranda of cooperation. The Canadian International Development Agency (CIDA) defines partnership "as a relationship between one or more... entities with the following characteristics: shared vision and goals, resources and information; mutual accountability and shared decision-making; clear definition of the roles and responsibilities of each of the partners; mutual respect and good communication; two way exchanges of learning about each other's… knowledge, and experience with development; and relevant and appropriate matching of… expertise and experience with… development…"[40]

There is partnership in an ICTD project when the project vision and processes are defined by all stakeholders at the start of the project. This collaborative process is not an easy task because it requires time (patience), money and other resources. Nevertheless, it is important to build partnerships in project planning and implementation, which means that the processes involved should be taken into account when doing the work breakdown and cost and time planning for the project.

40 CIDA, "Guidelines: Indigenous Peoples Partnership Program", http://www.acdi-cida.gc.ca/inet/images.nsf/vLUImages/IPPP/$file/IPPP%20Guidelines.pdf.

The case example below, Social Outsourcing of IT Services to Women's Social Enterprises of the Kerala Poverty Eradication Mission, shows that when government is supportive and understand the context of the partner beneficiaries, the project tends to have high impact results.

Social Outsourcing of IT Services to Women's Social Enterprises of the Kerala Poverty Eradication Mission

In India, the State Government of Kerala launched the State Poverty Eradication Mission on 17 May 1998. Kudumbashree, which means prosperity of the family, is the name of the women-oriented, community-based mission. It aims to empower women through the formation of social enterprises, and encouraging women's entrepreneurship and the implementation of a wide range of activities to eradicate poverty. These activities include clothing production, food processing and direct marketing. The purpose of the mission is to ensure that the women no longer remain as passive recipients of public assistance, but active leaders in women-involved development initiatives.

The Kerala mission came up with a new business model for IT services, which Heeks has termed "social outsourcing". Social outsourcing is defined as the contracting out of goods and services to social enterprises, and in this case, it is to cooperatives formed by unemployed women from poverty-stricken families.

A group of women registers as a cooperative enterprise by each investing USD 30. The Government of Kerala then supports the enterprise by providing a grant of ten times the group investment and helps secure a matching amount as a bank loan. The women thus typically register their cooperative enterprise with a starting capital of about USD 6,000, of which half must be repaid.

As part of this scheme, over 200 IT social enterprises have been created, and they operate in three main areas of social outsourcing, as follows:

- Data entry and digitization, e.g. digitizing the State's voter records, and entering and helping process the results of a state-wide poverty survey
- IT training of students in the state secondary schools
- Personal computer (PC) assembly and maintenance that include building PCs from parts, selling them (mainly to public sector organizations) and arranging annual maintenance

This scheme has benefitted government since the services of these women addresses the public sector problem of retaining in-house IT staff. Furthermore, the outsourcing of IT services to the women's enterprises has provided low-cost IT service solutions. The tender process for digitization and supply of PCs is open, and these social enterprises most compete with private sector providers in the bidding process. For IT training, discussions are held with individual secondary schools to see if they wish to have a training enterprise attached to their school, and if so, the IT training is awarded to an enterprise without tender.

The University of Manchester conducted a study that examined the impact of social outsourcing on women in the poor communities of Kerala. Findings include the following:

- Almost all the women were able to earn at least USD 1 per day, which made a significant difference in the household income. This income contributed to the cost of education, health care, repairs and construction of the home, and payment of debts. Most women's enterprises were able to pay their initial loans to the bank and some had borrowed further loans to update or expand their ICT infrastructure.

- The women had gained ICT-related skills and entrepreneurial and management capabilities from their social enterprises.

- Cooperative ownership of the women's enterprise's ICT infrastructure has supplied each member with physical assets worth about two times their annual income. This works as collateral for additional loan to upgrade their PCs/infrastructure.

- The social capital of the women had increased since they were able to expand their network not only in their community but also in other parts of the district and with local government officials.

- The women spoke about their increased self-confidence and having better status as they are able to approach and deal with other people and institutions. The women talked about gaining respect, recognition and acceptance in their communities since the ICT jobs are looked highly upon as modern, progressive and with hope.

There are some concerns about the sustainability of this model as the development of these social enterprises has required a significant degree of institutional support from government departments, banks, other financial intermediaries and other local organizations. The social enterprises may find it difficult to sustain themselves without ongoing intervention and support. Nevertheless, they have moved beyond the start-up phase, established networks and gained assets through this scheme (e.g. land, housing, education for children, health care for family members), including assets that women can take forward into future employment, such as their computing and entrepreneurial skills.

Similar initiatives and cases of women ICT enterprises in other parts of the world can be found from: http://www.womenictenterprise.org/cases.htm.

Sources: Richard Heeks, "Building Women's ICT Social Enterprise", i4d, 2009, http://www.i4donline.net/articles/current-article.asp?articleid=800&typ=Features.

Richard Heeks and Shoba Arun, "IT Social Outsourcing as a Development Tool: IT Outsourcing to Social Enterprises for Poverty Reduction and Women's Empowerment in Kerala", Development Informatics Group, Institute for Development Policy and Management, University of Manchester, 2007, http://www.womenictenterprise.org/publications.htm.

Kerala State Poverty Eradication Mission website, http://www.kudumbashree.org/.

Stakeholder Analysis

Stakeholders include those who are affected by the project outcome, whether negatively or positively, and those who can affect the outcomes of a proposed intervention. Development projects usually identify two types of stakeholders: the primary stakeholders and the secondary stakeholders. Primary stakeholders are people and groups who are ultimately affected by the project. Secondary stakeholders are intermediaries in the process of delivering services to the primary stakeholders. In addition, there are external stakeholders who are not formally involved in the project but who may impact or who may be impacted by the project activities.[41]

The World Bank outlines the following guide questions to help identify key project stakeholders:

- Who might be affected (positively or negatively) by the development concern to be addressed?
- Who are the voiceless for whom special efforts may have to be made?
- Who are the representatives of those likely to be affected?

41 Marilee Karl, "Monitoring and evaluating stakeholder participation".

- Who is responsible for what is intended?
- Who is likely to mobilize for or against what is intended?
- Who can make what is intended more effective through their participation or less effective by their non-participation or outright opposition?
- Who can contribute financial and technical resources?
- Whose behaviour has to change for the effort to succeed?[42]

Stakeholder analysis is used to identify all of the groups and individuals who have a stake or interest in the success or failure of a project or activity.

The LFA, which will be discussed in the next section, uses stakeholder analysis in the project initiation phase.

There are many stakeholders in a development project. The most critical ones are: the project owner, the project sponsor, the project "champions", the project manager, the project team and the influencers.

2.3 The Project Owner

It is important to define ownership in project development because it will determine the direction, role and structures that the project will take. Determining the owners of the initiative will ensure that needs, key parameters, and local social and cultural circumstances are considered.

What is "Ownership" in the Context of ICTD?

Siochrú and Girard refer to ownership or taking ownership as "a process of internalisation of responsibility for a development process and its outcomes, and therefore a willingness to invest considerable effort and resources. [It] is generally regarded as a prerequisite for sustainability of a… development action."[43]

In some application areas, "customer", "end-user" and "owner" are synonymous as these are persons or organizations that will utilize the project product. Wikipedia cites the economic and commercial definition of end-user as "the person (groups, organizations) who uses a product." However, the end-user or consumer may differ from the customer "who might buy the product but…not necessarily use it." The same source refers to end-user as a concept in software engineering to refer to "an abstraction of the group of persons (target user or expected user) who will ultimately operate a piece of software."[44]

In e-government projects, the project owners are the performing organization (i.e. the persons in the enterprise who are most directly involved and affected in implementing project tasks). The project owners will determine the final "users" of the initiative. Such users could be a unit in the national government or a local government, a community, or an NGO. The success, usability and sustainability of projects depend on the projects' consideration of who the owners and users are.

42 World Bank, *The World Bank Participation Sourcebook* (Washington, D.C., 1996), p. 127, http://go.worldbank.org/R3WF0ID3N0.

43 Seán Ó Siochrú and Bruce Girard, *Community-based Networks and Innovative Technologies: New models to serve and empower the poor*, Series: Making ICT Work for the Poor (New York, UNDP, 2005), p. 19.

44 Wikipedia, "End-user", http://en.wikipedia.org/wiki/End_user.

In ICTD, emphasis is given to empowering the beneficiaries—the poor people—so they can shape decisions that affect them, grasp economic and social opportunities, and deal with misfortunes and disasters. For this to happen, local stakeholders must be committed to an activity and have a sense of ownership of it, as evidenced by their taking on responsibilities for the activity and its outcomes. To foster a sense of ownership, ICTD programmes and projects, should be designed to be "ownership-friendly", that is, "listening to the demands of all stakeholders from the start. It means carefully managing different stakeholder roles and relationships in and around an activity, adapting cooperation and partnership instruments to give greater value to reciprocity and shared commitments, building 'spaces' where ownership can be negotiated and developed, and fostering local capacities to create and drive such activities."[45]

2.4 The Project Sponsors and Donors

Project sponsors are major supporters and, in most instances, the "political endorsers" of the project concept. The project manager and team must be aware of the interests and vision of the project sponsors and ensure that they support the project and vice-versa.

Development projects in developing countries are mostly funded by bilateral or multilateral donors. Bilateral donors include AusAID, CIDA, the International Development Research Centre (IDRC), SDC, the Swedish International Development Cooperation Agency (SIDA) and USAID. Multilateral donors include the Asian Development Bank, United Nations agencies and the World Bank. Donors usually have a "say" in the projects that will be developed and implemented. Aside from financial assistance, they could also provide technical assistance and other resources, such as equipment (hardware) or software that will be used in project implementation. Typically, donors have their own policy frameworks and management systems that will influence the direction and operations of projects.

Projects may be fully funded by a donor organization, or funded jointly with other donors. Most donors require counterpart funding from the project owners. For instance, bilateral projects (i.e. government-to-government projects) require the government benefiting from the project to allocate counterpart funding for particular project expenditures. This could be in the form of time of government employees who will be involved in the project, capital outlay for equipment, or space for the Project Management Office (PMO).

The more sponsors there are in a project, the more varied the systems and expectations are. When there is variety among stakeholders, the project team will find it more challenging to translate targets dictated by donor organizations for execution in the local context.

2.5 The Influencers

The influencers are individuals or groups 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 their position in the organization or in the community.

45 Peter Ballantyne, "Ownership and Partnership – Keys to Sustaining ICT-enabled Development Activities", International Institute for Communication and Development Research Brief No. 8, December 2003, http://www.iicd.org/files/Brief8.pdf.

2.6 The Project Champions

Project champions are project advocates or people who will support the project all the way. Although not members of the project team, the champions strive to help the project succeed. Champions are identified at the project definition stage.

Champions are influential, proactive and able to manage relationships and bridge gaps for the project. They are leaders in the organization or community.

Government projects are usually championed by an individual with a high position or a group of high government officials from the implementing agency who is convinced that the project is the "way to go". This person or group will provide the informal leadership for the project to flourish in the organization. The absence of this person or group makes it difficult for a project to take off or to survive. The role of the champion is to represent the project's importance and value to the organization.

At the community level, the project champions must be known and respected within the community and have good connections. They must have confidence in the project and the passion to generate support for the project from others in the community. They must have the skill to make a sales pitch for the project when needed.[46]

Any successful ICT project has a local champion responsible for driving the project from within. e-Government projects need ICT champions from within the government to develop institutional support. These are people who have "the right skill sets, knowledge, aptitude and leadership qualities, occupying decision making levels and managerial positions."[47] To be effective, the role of the ICT champions at various stages of the project must be clearly defined. Local champions at the senior level must have an appreciation for ICT and the authority to make decisions or some form of influence to move the project forward. They need to be managers—people who oversee the implementation of strategies and allocate the necessary resources during the transition—and leaders—people who keep the government institution and staff on track during the transition. Local champions should also include people who are directly involved at various stages of project implementation. Champions can promote institutional ownership, something that is built over time "as the actor grows in capacities, understanding and commitment."[48] In some developed countries, local e-champions have already been institutionalized in the government structure, such as in Canada and in the UK.[49]

2.7 The Project Manager

The project manager is responsible for controlling and overseeing the project and ensuring that project objectives are met. The role of the project manager is crucial in the development, initiation and deployment of project activities. Project managers must make sure that the three sources of project constraints (time, scope and costs), as well as the vectors of change (people, process and technology), are well within control during the project life span. Project managers must also manage stakeholders' expectations, which can be laborious because stakeholders often have very different or conflicting views and objectives.

46 See Education with Enterprise Trust, "The Project Champion's Path", http://www.ewet.org.za/pdm/pc.html.

47 National Institute for Smart Government, "e-Government Champions Training Program", http://www.nisg.org/home.php?page=eGov%20Champions%20Training%20Program.php.

48 Peter Ballantyne, "Ownership and Partnership".

49 Socitm, "Managing e-government – a discussion paper", Socitm *Insight*, May 2003, http://unpan1.un.org/intradoc/groups/public/documents/UNTC/UNPAN011528.pdf.

Given their responsibilities, project managers must be carefully selected. Their qualities and areas of competence need to be well considered.

Questions To Think About

For those without prior experience as a project manager:

- What qualities should a project manager have?

For those with a previous experience of managing projects:

- What documentation processes did you use in carrying out your role as project manager?
- What technology did you use to facilitate project management?
- What issues and challenges did you encounter as a project manager?
- How did you address these issues and challenges? What good practices did you develop and apply to address these issues and challenges?

Table 5 summarizes the qualities and skills of an effective project manager.

Table 5. Qualities and skills of an effective project manager (PM)

Qualities/Characteristics of a PM	Skills of a PM
• A committed leader who inspires belief in a shared principle • A good communicator • Has integrity • Has enthusiasm • Has empathy/adaptability • Trusts and exercises fairness in the team • Has a sense of urgency but is cool under pressure • Competent and has common sense • A prudent risk taker	• Ability to define the project objectives and outputs • Ability to plan the work • Ability to manage the work plan • Ability to manage issues and change • Ability to manage scope • Ability to manage risks • Ability to manage communication • Ability to manage documentation • Ability to manage quality • Ability to manage metrics • Ability to delegate tasks • Ability to solve problems

Source: John Macasio and others, PM training materials (ICT Project Management Practitioner Network, 2008), http://ictpmpractitioner.ning.com.

Questions To Think About

Are there characteristics and skills that you think should be added to the list in table 5? What are these?

This list of qualities and skills can serve as a basic guide to the selection of a project manager. Barry expounds on each of the qualities as follows:

- A committed leader who inspires belief in a shared principle – An effective project manager must be a leader. S/he must believe in and be committed to the development vision. Thus, s/he can inspire others to believe in and be committed to a set of shared principles.

- A good communicator – An effective project manager has the ability to communicate with people from all walks of life. S/he can clearly communicate goals, responsibility, performance, expectations and feedback. As a link to the project and the larger organization, s/he must be able to effectively negotiate and use persuasion when needed to ensure the success of the team and the project. S/he also uses tools of effective communication, such as guidelines for accomplishing results.

- Has integrity – The project manager must bear in mind that his/her actions and not just his/her words set the tone for the rest of the team. Leadership demands commitment to and demonstration of ethical practices. The project manager must set ethical standards, live by these standards and reward those who exemplify them. In the process of demonstrating consistency in values and behaviour (i.e. “walking the talk”), as well as honesty with him/herself and the team members, the project manager will earn the trust of colleagues and project stakeholders.

- Has enthusiasm – Project managers showing optimism, eagerness and a “can do” attitude are contagious and invigorating. This quality shows a positive energy towards the projects that persuades people to see the brighter side of the project.

- Has empathy – As a leader, the project manager acknowledges his/her feelings and those of others. S/he can show concern for the reality and special experience of the team and other persons involved in the project.

- Has competence and common sense – A project manager knows what s/he is doing, although not necessarily in the technical sense. S/he has the capacity to lead and is experienced in the field.

- Has a sense of urgency but is cool under pressure – A project manager knows that a project should be delivered on time. But s/he is aware that projects have problems and these could be stressful events. As a leader s/he considers these moments interesting and tries to influence the outcome and see the constraints as opportunities.

- Trust and fairness – Trust is an important element in the relationship between a project manager and the team. This can be demonstrated in how the project manager trusts the team and others through actions, how s/he checks and controls their work, how much work is delegated, and how much people are allowed to participate. The project management can hold the team together.

- Prudent risk taker – The project manager is expected to be practical and have problem-solving skills. When threats and opportunities arise, s/he can see the opportunities they present and yet remain sensible, cautious and discreet in his/her approach.[50]

Westland provides a summary of the work responsibilities of a project manager:

- Documenting the detailed project plan and quality plan
- Ensuring that all required resources are assigned to the project and clearly tasked
- Managing assigned resources according to the defined scope of the project
- Implementing the project processes (time, cost, quality, change, risk, issue, procurement, communication and acceptance management)
- Monitoring and reporting project performance (schedule, cost, quality and risk)
- Ensuring compliance with the processes and standards outlined in the quality plan
- Adjusting the project plan to monitor and control the progress of the project
- Reporting and escalating project risks and issues
- Managing project interdependences[51]

Something To Do

A good manager knows him/herself—his/her skills, strengths and weaknesses. A sample self-assessment tool that you can use to gauge or benchmark your strengths, attributes and general skills in management is provided by Gary Evants, CVR/IT Consulting, at http://www.cvr-it.com**.** Once you have registered at the website, download the self-assessment tool through http://www.cvr-it.com/PM_Templates/.

2.8 The Project Team

Supporting the project manager are the project team members who are directly involved in the management of activities. The team members may be hired specifically for the project or selected from other units or entities of the organization that "own" the project.

The selection and organization of the project team must ensure that the project's internal support systems are in place. Project team members must have the special skills needed to make the project a success.

Depending on the project size and scope, a PMO could be required. If a project has many components with many persons directly involved, and if the project requires day-to-day administrative, operational and technical management, a PMO must be created.

50 Timothy R. Barry, "Top 10 Qualities of a Project Manager", Project Smart, http://www.projectsmart.co.uk/top-10-qualities-project-manager.html.

51 Jason Westland, *The Project Management Life Cycle* (London and Philadelphia: Kogan Page, 2006), p. 36.

Something To Do

1. Read the case below and identify the project's:

    - Potential users
    - Potential sponsors
    - Project champions
    - Influencers

2. Use the template (table 6) to identify the project stakeholders (i.e. the participants, partners and beneficiaries of the project).

Project: Establishing a multi-purpose telecentre

A telecommunications specialist from the Department of ICT, the highest ICT regulating body of an island country in Asia, is appointed to be the project manager of a pilot project to establish a multi-purpose telecentre in a remote village. The project objectives are to:

1. Support the livelihood, health, education and environment programmes in the village through the multi-purpose telecentre
2. Build the capacity of the village community leaders, the local government officials in charge of social welfare and community development programmes of the town, and the intermediaries (NGOs) to run the multi-purpose telecentre after the project pilot
3. Establish sustainability mechanisms to ensure that the telecentre will be viable and sustainable

The project is under the supervision of the Deputy Minister for Special Projects of the Department of ICT, which is tasked with promoting e-government in all local government units. The town mayor, who is running for re-election the next year, has specifically requested the establishment of the telecentre.

The village has rolling mountainous and coastal terrain about 5 km away from the town proper. It has 10,000 inhabitants, with an equal percentage of male and female. Sixty per cent of the population are aged 10 to 25 years old.

The livelihood in the area is farming, forestry and fishing. Most women are engaged in food preservation (dried fish). About two-thirds of the population (65 per cent) are poor. The literacy rate is about 75 per cent while the labour force participation rate is only 50 per cent. The village has electricity and there are some telecommunications facilities (radio, television, telephone, mobile phone) for about 20 per cent of the population.

Local officials are elected through formal elections every six years. The incumbent local officials belong to the Mayor's party. There are religious leaders who attend to the spiritual needs of the community, which consists of Catholic, Buddhist and Muslim groups. The religious leaders are known to be suspicious of what modern technology could bring to the community. Two schools in the community provide primary and secondary education. According to the young school teachers, they welcome the project because the library facilities of their schools are not well equipped and have inadequate resources.

Three NGOs operating in the area are concerned with the livelihood, environmental and health needs of the village. One of the NGOs fully supports the idea of the telecentre while the two other NGOs are quite sceptical about the possible benefits of the project.

The project manager will conduct a stakeholder analysis as part of the project's General Management Plan, which he is supposed to submit in a month's time to the Deputy Minister. The Department of ICT will fund the pilot project. However, some officials of the Department doubt that the fund for the project will be sufficient to support the initial operations of the telecentre after the pilot phase.

Note: This is a hypothetical case created only for this module.

Table 6. Stakeholder analysis sample template

Who are the potential stakeholders in this project?	What are their potential roles (e.g. influencers, sponsors, users, champions)	What are their problems/ needs in relation to the project idea?	What could be the expectations/ interests of respective stakeholders regarding this project?	What are the weakness/ constraints of each stakeholder identified?	What could be the potential contribution (positive or negative) of each stakeholder in the project?	What are the consequences of their contributions in the project?

In addition to the key stakeholders described previously, there are other kinds of project stakeholders, including internal and external stakeholders, owners and investors, sellers and contractors, team members and their families, government agencies and media outlets, individual citizens, temporary or permanent lobbying organizations, and society at large. Naming or grouping stakeholders is primarily an aid to identifying which individuals and organizations view themselves as stakeholders, and to avoid the overlapping of roles and responsibilities.

Test Yourself

1. Why is it important to understand the project in the context of organizational change management?

2. Why is stakeholder analysis important? When do you conduct this analysis?

3. What are the types of stakeholders and what influence will they have on the project?

3. PROJECT INITIATION, PLANNING AND SCOPE DEFINITION: DISCIPLINE, ISSUES AND PRACTICES

This section discusses concepts, issues and practices in the project initiation and planning phase.

3.1 Project Initiation: Establishing the business case for the project

All projects need to be justified. There must be a good rationale for pursuing a project. This rationale is the business case for the project. Technically speaking, a business case is a document that justifies an intervention or initiative as a means of addressing an issue or correcting a problem. The business case identifies the benefits to be achieved, as well as the consequences of inaction or of failure to see the project through, thereby creating an imperative to succeed.[52]

The business case is the outcome of the pre-identification and identification stages of the project initiation phase. The different stages of the initiation phase are shown in figure 10.

Pre-Identification Stage

The external and internal environments of the unit or organization affected by the project are the focus of the pre-identification stage of project development. It is at this stage that research or environmental scanning is conducted. This includes reviewing existing policy documents and national statistics (e.g. socio-economic figures) to identify gaps and generate a database that could be a source of ideas for possible projects in the future. Because of budgetary and time constraints, this stage is often overlooked. But it is an important stage that should be undertaken prior to project planning.

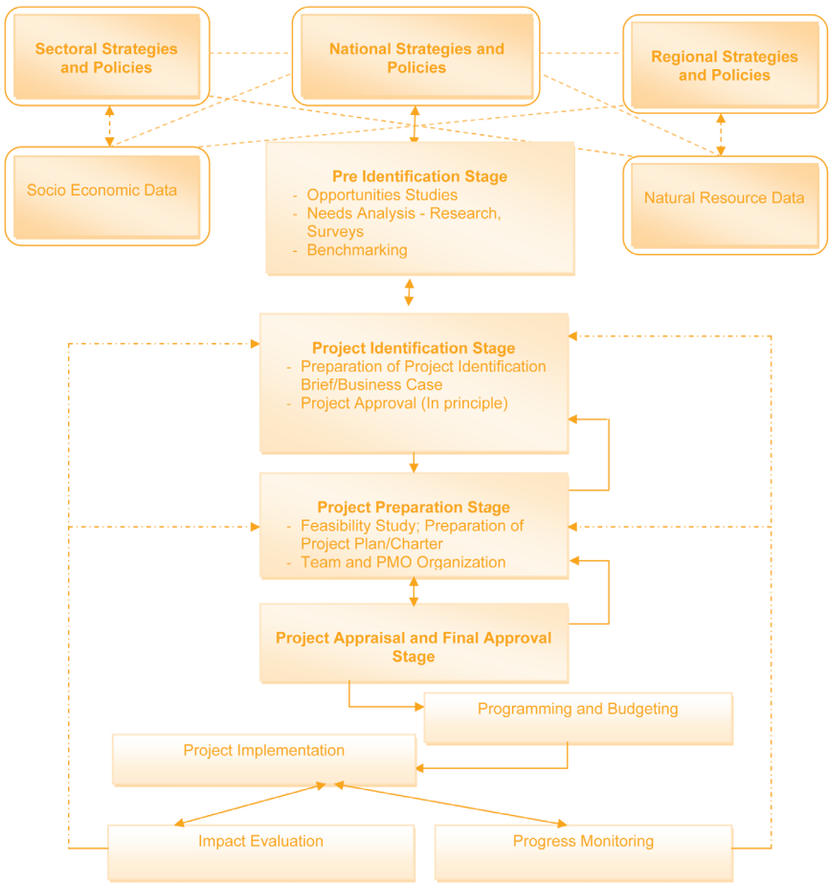
Project ideas may be identified in different ways. Bruce and McMeekin have identified three approaches.[53]

One approach is picking an idea from the government's investment portfolio. This shortens the pre-identification and identification stages in the planning phase and ensures that the selected idea directly relates to national government goals and strategies. However, caution must be exercised because "ready-made" project ideas may also already prescribe the use of a specific brand of technology (or the services of a particular vendor or service provider). This is quite risky as the project may be "held hostage" to a technology that may not be suitable to the organization and to the other government agencies that may need to interface with the ICT project or product in the future.

52 Jason Westland, *The Project Management Life Cycle*; and Wikipedia, "Business case", http://en.wikipedia.org/wiki/Business_case.

53 Colin Bruce and R.W. McMeekin, "The Project Cycle – An Introduction to the Stages of Project Planning and Implementation", Monograph handout, 1981.

Figure 10. Stages of project planning



Source: Colin Bruce and R.W. McMeekin, The Project Cycle – An Introduction to the Stages of Project Planning and Implementation, 1981.

Another approach to identifying projects is using data and information generated through an external and internal analysis. Problems, bottlenecks, shortfalls or inefficiencies that can be resolved through one or more projects could surface from this kind of analysis undertaken by the project team.

A third approach that can be used in the project identification stage is the “grass-roots” or “bottom-up” approach. This requires consultations and discussions with concerned individuals and groups about the sector of interest. People who know the system well would understand its weaknesses and needs in perceptive ways.

Benchmarking

One way to enrich project development approaches is to use a benchmarking tool. Benchmarking facilitates the identification of possible projects for an organization by comparing and measuring the organization’s policies, practices and performance against those of high-performing organizations within a sector. The processes involved are:

- Identifying problem areas using a range of research techniques, such as interviews, observations, focus group discussions, process mapping, quality control variance reports and financial ratio analysis. It is important to establish a baseline or the current status of the organization that will serve as a reference point for any improvement effort;

- Identifying organizations that are leaders in the area of interest, by looking at the best in the industry and in any country;
- Surveying the organizations identified for alternative measures and best practices; and
- Visiting the organizations identified to have leading-edge practices.[54]

For example, a government agency wishing to establish a comprehensive system that will increase its service efficiency to the public could, at the pre-identification stage, identify problems in the existing service system and find out how to improve the systems' process, including how technology can be used to address the problems identified. To benchmark the agency's performance, the officials of the concerned government agency, with the support of donor organizations, can undertake several studies that will give more information about the services and systems existing in other countries. This will enable the agency to understand and make decisions about the reforms that may be undertaken and be guided in planning, programming and executing projects.

Project Identification

Once the project idea has been selected, a Project Identification Brief or a documentation of the business case follows. In this documentation, the objectives of the project are defined, constraints and the means to overcome them are identified, and a rough assessment of the costs and benefits of the project is made. The purpose of coming up with this document is to seek approval in principle from the project sponsors or the higher body to which the project proponents must report.

The documentation of the business case must have:

- A description of the problem or opportunity that exists in government;
- A list of the available options for delivering a solution to address the problem;
- A list of costs and benefits associated with each solution option; and
- A recommended solution option for approval.[55]

To develop the business case (or "project brief") the following processes may be undertaken:

Conducting an environmental analysis – Start by identifying the core aspects of the government environment that is problematic (or that shows opportunities) and needs a change (e.g. changes in vision, strategy or objectives), in particular business processes or technologies that are no longer relevant and not operating efficiently. Also identify new developments and trends in the industry or sector, opportunities brought about by new technology, and changes in the statutory, legal, legislative and policy environment. Use the data collected during the pre-identification process.

Completing the problem analysis – Describe the problem or opportunity to be solved by the project. Write a summary of the business problem or core business opportunity that includes:

- A comprehensive description of the problem or opportunity
- Supporting evidence to prove that the problem or opportunity is real
- Factors that have created or caused the problem (such as human, process and technology factors)
- The impact of addressing the problem or of leveraging the opportunity identified (such as the financial, operational or cultural impact)
- The time frame within which the problem/opportunity must be addressed

54 Wikipedia, "Benchmarking", http://en.wikipedia.org/wiki/Benchmarking.

55 Jason Westland, *The Project Management Life Cycle*.

Assessing the available options – List all of the alternative solution options, their benefits, costs, feasibility, risks and attendant issues. As much as possible, reduce the number of options by conducting a feasibility analysis. Complete the following steps:

1. Name all alternative solutions/options and write a detailed description of each.
2. Identify and quantify the financial and non-financial benefits that can be gained from implementing each alternative solution/option.
3. Collate supporting evidence such as statistical data, historical trends and analysis to support the presentation.
4. Forecast the costs by enumerating the expenses to be incurred from implementing each solution/option. State whether the costs are capital or operational expenses.
5. Show the feasibility of each solution/option. A feasibility study may be undertaken at this point to show the viability of the options presented. Methodologies for the feasibility study must also be identified.
6. Identify the risks of each option. Risks are events that may adversely affect the ability of the solution to generate the desired deliverables or outcome. Rate each in terms of whether it is a low, medium or high risk, and show mitigating actions required to reduce the impact or the likelihood of the risk being realized. It may help to write a Risk Management Plan at this stage.
7. For each option, document issues and actions to resolve issues.
8. List all of the assumptions of each option.

Recommending the solution/option – After presenting the options, rate and rank them according to your chosen criteria and then identify the best option.

Describing the implementation approach for the recommended option – This is the final component of the business case. To convince the approving party that this project is well thought out, include the implementation plan for the best option. The implementation plan should have the following:

1. Project Initiation Plan – Steps involved in defining the project, recruiting and staffing the project team, and establishing the PMO

2. Project Planning and Milestones – A description of the overall process showing the project phases, activities and tasks to be undertaken and coordinated

3. Project Implementation – A list of activities required to produce the deliverables that create the solution for the end-user/customer

4. Project Closure – A list of activities for handing over the final solutions to end-users/ customers and conducting the post-project review, and the administrative procedures in closing the PMO

5. Project Management – A description of how the following aspects of the project will be undertaken and handled:

    - Time management
    - Cost management
    - Quality management
    - Change management
    - Risk and issue management
    - Procurement management
    - Human resource management
    - Communication management
    - Acceptance management

To come up with good business case documents and project plans, the sponsoring organization or unit might need to consider getting resources (technical assistance) outside the organization (e.g. project planners), especially if the agency or organization concerned does not have the necessary competency.[56]

3.2 Feasibility Study

The core of the project preparation process is the conduct of the feasibility study. The project team or project planners must have a "feel" for whether the project is worth it and whether it is feasible. Once the feasibility study has been completed and the implementation arrangements are agreed upon, the business case is transformed and expanded into a Project Planning Document.

A feasibility study is designed to provide an overview of the primary issues related to the proposed project. It gives stakeholders a basis for deciding whether to proceed with the project and for choosing the most desirable options. The feasibility study must provide answers to the following questions:

- Does the project conform to the development and environmental objectives and priorities of a specific country and/or region?
- Is the project technically and scientifically sound, and is the methodology the best among the available alternatives?
- Is the project administratively manageable?
- Is there adequate demand for the project's outputs?
- Is the project financially justifiable and feasible?
- Is the project compatible with the customs and traditions of the beneficiaries?
- Is the project likely to be sustained beyond the intervention period?[57]

It is assumed that a full appreciation of the business problem has been reached in the course of the environmental analysis during the pre-identification stage. The feasibility study then takes the analysis further.

The areas of analysis in a feasibility study depend on the nature of the proposed project. If the project is similar to the establishment of a telecentre or a community Internet café, an analysis of market or customer issues and organizational and financial issues should be included. The following description of these issue categories is adapted from the University of Wisconsin Center for Cooperatives.[58]

Market or customer (user) issues. For projects offering a product or service, a market analysis is essential. The following questions should be asked:

- What is the current demand for the proposed product or service?
- How many will make use of the proposed service?
- What are the target markets for the product or service?
- What demographic characteristics do the potential customers have in common?
- How many of them are there?
- What is the projected supply of the product or service needed for the project?

56 Jason Westland, *The Project Management Life Cycle*; and Colin Bruce and R.W. McMeekin, "The Project Cycle".

57 Colin Bruce and R.W. McMeekin, "The Project Cycle"; and European Commission, *Aid Delivery Methods Volume 1*.

58 University of Wisconsin Center for Cooperatives, "Chapter 5: Conducting a Feasibility Study", in *Cooperatives : A Tool for Community Economic Development*, http://www.uwcc.wisc.edu/manual/chap_5.html.

- What competition exists in the market?
- Can a market niche enabling effective competition with others who are providing the product or service be established?
- Is the location of the proposed business or project likely to affect its success? If so, is the site identified the most appropriate one available?

If the analysis does not indicate adequate demand for the proposed product or service, then the project is not feasible and there is no need to continue with the next step in the feasibility study.

Organizational issues. When analysing organizational issues, the key questions to answer include the following:

- What organizational structure is the most appropriate for this project? Will it be community-based? Will it be government-supported all the way? Will the organization be maintained after the project?
- Who will serve under the governing body? What are their qualifications?
- What qualifications are needed to manage this project?
- Who will manage the project?
- What other staffing needs does this organizational structure have?
- How do you expect the staffing needs to change over the next 2-3 years?

The first question is critical because subsequent decisions depend on the organization's legal "business" structure and whether the organization will be maintained after the project. Answering this question may require some research and there may be a need to call on the services of a qualified lawyer or advisor. The other questions also need to be answered satisfactorily before operations commence. This is a good time to begin the process of identifying appropriate individuals for the board management and other staff positions, and to think carefully about what qualifications are necessary to manage this business.

In order to identify potential organizational issues, the utilization of the e-Government Capability Maturity Model is recommended.[59] The model has been developed to evaluate ("benchmark") a public institution against (best) international practices in the area of e-government, including:

- Formulation of organizational strategies
- ICT management
- Operative management
- Organizational capabilities including human resources

Following the organizational assessment the model also proposes concrete road maps for capability improvement. The main purposes of the model are:

- Identification of fundamental areas in the development of an e-government strategy
- Establishment of the technological capability level relevant to the provision of services
- Determination of the maturity level of the organization's technology management
- Definition of development strategy for the organization's capabilities for a continuous improvement of its maturity level

Its main objectives are to:

- Qualitatively assess the current capabilities of the organization to execute their envisioned e-government initiative
- Quickly identify capability and capacity gaps to be addressed prior or during the implementation of the e-government initiative

59 The detailed description that follows is drawn from the e-Government Capability Maturity Model documentation of Rainer Schendel, *ICT Project Guidebook* (see footnote 2).

- Be an operational tool to support the visions, strategies and road maps of the government agencies
- Allow for the quick identification of capability development needs

In the interest of minimizing the assessment time and costs the focus is on a qualitative high-level assessment but still allowing for future detailed assessment as the development of the e-Government Capability Maturity Model considered standard IT practice frameworks (including the Control Objectives for Information and related Technology [COBIT], the Capability Maturity Model Integration [CMMI], the Information Technology Infrastructure Library [ITIL] and other country-based assessment frameworks). The current state of the model is closely aligned with COBIT but focuses on the "Activity Execution" capabilities rather than the other three high-level metrics—"Assigned Responsibilities", "Existing Documents" and "Monitored Key Performance Indicators".[60]

In order to determine or assess the desired or required Capability Maturity Level based on the planned e-government projects, the utilization of the Project Complexity Model is recommended. The project complexity needs to be analysed in order to understand the inherited risk of the project and incorporate the required actions into project plan. Project complexity can be analysed based on a set of criteria, which can include the size and composition of the team, nature of business processes and data management, level of human resource capacity, and infrastructure. The clarity of problems and achievability of their solutions, as well as the requirements needed to address them are also considered.[61]

Technological issues. The cost and availability of technology are critical to the feasibility of ICTD and e-government projects. There are a number of complex technology-related questions to answer to determine whether the proposed project is feasible:

- What are the technology (including software applications) needs of the proposed project?
- What other equipment does the proposed project need?
- Where can this technology and equipment be obtained?
- When can you get the necessary equipment?
- How does your ability to obtain this technology and equipment affect your start-up timeline?
- How much will the equipment and technology cost?
- Is the equipment still up-to-date and is it still being produced?
- Will this equipment be maintained and repaired directly in your territory?

Naturally, the more complex the technology needed, the more research will be required to make sound decisions about it. Cost estimates should be plugged into financial projections.

Financial issues. Once the analyses of marketing, organizational and technology issues have been completed, the third and final step of a feasibility analysis is to take a look at key financial issues. The following categories of project costs should be considered:

- Start-Up Costs – These are the costs incurred in starting up the project, including costs for "capital goods" such as land, buildings and equipment. The project may have to borrow money from a lending institution to cover these costs.

- Operating Costs – These are the ongoing costs, such as rent, utilities and wages, incurred in the everyday operation of the project. Also included are interest and principal payments on any debt incurred to cover start-up costs.

60 Refer to Marten Simonsson, Pontus Johnson and Hanna Wijkstroem, "Model-Based IT Governance Maturity Assessments with COBIT", Department of Industrial Information and Control Systems, KTH, Royal Institute of Technology, Stockholm, 2007, for an example of a methodologically compatible quantitative assessment of the Capability Maturity Model. This paper is available at https://eeweb01.ee.kth.se/upload/publications/reports/2007/IR-EE-ICS_2007_026.pdf.

61 Rainer Schendel, *ICT Project Guidebook*.

- Revenue Projections – These take into account the pricing of goods or services.

- Sources of Financing – If the proposed project will need to borrow money from a bank or another lending institution, there is a need to research potential lending sources.

- Profitability or Benefit Analysis – This is the "bottom line" for the proposed project. Given the costs and revenue/benefit analyses above, will the project bring in enough revenue/ benefit to cover or justify operating expenses? Will the resources poured into the project be commensurate with the benefits that will be derived from the project? Is there anything that can be done to improve the bottom line?

Other issues that a feasibility study can cover are:

- Legal Feasibility – Is there any legal impediment?
- Operational Feasibility – How will the new system affect people's lives?
- Schedule Feasibility – Can the new system be implemented in the preferred time frame?

Cost-Benefit Analysis

A cost-benefit analysis estimates the monetary value of the project benefits and costs to the community. For a decision on the overall feasibility of a project to be reached, all aspects of the project, whether positive or negative, must be accounted for in monetary terms. How can intangible benefits be measured?

Let us use as an example the project for setting up a community telecentre through which the government can provide services and reach citizens in remote villages. The project sponsor (also the national government) is aiming for all relevant government information and other basic and relevant information services (e.g. information on health, education, livelihood and employment, agriculture services and related information) to be made available over the Internet, through mobile telephony and through compact discs. The cost of setting up the telecentre and the revenues to be generated will include the option items presented in table 7.

Table 7. Schematic telecentre budget for evaluating sustainability

Expenditures	Cost/Amount
Start-up costs • Site and building (purchase cost, conversion) • Installing power supply, telecommunications • Installing securing equipment • Equipment and furniture costs (purchase, down payment) • Software supplies reference, training manuals • Training costs	XXXXXX
Operating costs • Site and building (utilities/maintenance) • Insurance, security operating costs • Equipment, furniture (lease, amortization costs over time, maintenance costs) • Upgrades to equipment and software • Communication costs (fees fixed per use) • Staff costs (salaries and benefits) • Training costs • Outreach promotion	XXXXXX
Total Expenditures	XXXXXX
Revenues	**Amount**

• Grants
• Public subsidies
• Private donations, fund raising events
• In-kind support (e.g. equipment volunteers)
• Community support (e.g. rent free building)
• Membership fees
• Revenues earned from core business
  ○ Connectivity (phone, fax, internet, web pages)
  ○ Direct computer access to users
  ○ Office services (photocopying, scanning, audiovisual aids)
• Revenues earned from ancillary activities
  ○ Business services (word processing, spreadsheets, budget preparation, printing reception services)
  ○ Educational services (distant education training courses)
  ○ Community services (meeting rooms, social events, local information, remittances from migrant workers)
  ○ Telework and consulting
  ○ Specialized activities (telemedicine)
  ○ Sales (stationery, stamps, refreshments, etc.)
	XXXXXX

Total Revenues	XXXXXX

Source: Maria Garrido, "A Comparative Analysis of ICT for Development Evaluation Frameworks", Discussion Paper, Center for Internet Studies, University of Washington, November 2004, http://www.asiafoundation.org/pdf/ICT_analysis.pdf.

How do we quantify the benefits to be gained from the establishment of the telecentre? Table 8 lists some potential benefits.

Table 8. Some possible benefits/outcomes from telecentre projects

Category	Some Indicators of Benefits
General	Use of telecentres will contribute to: • Innovation for equitable access • Enhancement of human capacity • Strengthening communications • Promoting local content • Fostering policy
Employment and Livelihood	• Increase in the number of job placements • Increased farm productivity and other income-generating activities • Increased income • Increased remittances from overseas family members
Education	• Improved school performance • Better quality of teacher and student interaction in the classroom • Higher rates of adult literacy • Decrease in drug abuse among school children and adults
Health	• Increased prevention of common illnesses of children, women and men • Decrease in infant mortality rates
Social Network	• Increased social networking of citizens: families able to communicate online or through telephony with family members and friends overseas
Participation in Governance	• More informed citizens • More individuals participating in local government projects and activities and meeting their obligations to pay taxes • More lives saved from disaster

Sources: Jessica Rothenberg-Aalami and Joyojeet Pal, "Rural Telecenter Impact Assessments and the Political Economy of ICT for Development (ICT4D)", BRIE Working Paper 164, Berkeley Roundtable on the International Economy, University of California, Berkeley, January 2005, http://escholarship.org/uc/item/18q2282h; and Roger Harris, "Telecenter Evaluation in the Malaysian Context", paper presented at the 5th International Conference on IT in Asia, Kuching, Malaysia, 10-12 July 2007, http://www.docstoc.com/docs/72431515/Telecentre-Evaluation-in-the-Malaysian-Context.

Measurements of costs and benefits must be expressed in currency values. The net benefit of the project is the sum of the present value of the benefit minus the present value of the costs. The valuation of benefits and costs should reflect the cost of what people say their time is worth. It should also show the relationship of the market price of the services and the quantity of consumed services (also known as the demand schedule). When the increase in consumption is small compared to the total consumption, the gross benefit is adequately approximated. In some measurements, benefits require the valuation of human life, as in the case of lives saved from disasters, fatal illnesses or severe hunger.[62]

The impact of a project is the difference between the situation in the target area with and without the project. This means that the analysis must include an estimate of the situation with the project as well as of the situation without the project.

The output of the detailed feasibility analysis and project preparation should be a report that puts together the technical, institutional and financial analysis. The report should also outline task descriptions, schedules and modes of implementation. This report will:

- Serve as a guide for those responsible for implementing the projects;
- Provide the basis for review, management appraisal and final approval; and
- Provide the basis for subsequent monitoring of progress and impact evaluation.

62 Thayer Watkins, "An Introduction to Cost Benefit Analysis", San Jose State University Department of Economics, http://www.sjsu.edu/faculty/watkins/cba.htm.

A **project appraisal** is a formal review and management tool for quality control. If the project is properly identified, prepared and presented in a document, final approval may be quick and formal, for example, the head of the concerned agency will sign off on the document, signalling the formal launch of the project.[63]

In planning project quality, the following values should be considered:

- Relevance – The project meets demonstrated and high-priority needs.
- Feasibility – The project is well designed and will provide sustainable benefits to target groups.
- Effective management – The project is well managed and is delivering the anticipated benefits.
- Sustainability – The project ensures that the outputs and products become integrated in the organizational operations and is maintained after the project life.[64]

3.3 Some Project Planning Models[65]

Results-Based Management (RBM) Many donor organizations promote RBM as a way of managing the organization to ensure that all of its processes, products and services contribute to the achievement of desired results.[66] RBM aims to improve management effectiveness and accountability by "defining realistic expected results, monitoring progress toward the achievement of expected results, integrating lessons learned into management decisions and reporting performance."[67]

The **Logical Framework Approach** (LFA) was developed by USAID and utilized by many donor organizations. In Canada, the approach is used not only in development aid but also in domestic public investments. International NGOs and partner governments also use the LFA in their programming and project design efforts.

AusAID defines the LFA as "an analytical, presentational and management tool which can help planners and managers: analyse the existing situation during activity preparation; establish a logical hierarchy of means by which objectives will be reached; identify the potential risks to achieving the objectives, and to sustainable outcomes; establish how outputs and outcomes might best be monitored and evaluated; if desired, present a summary of the activity in a standard format, and monitor and review activities during implementation."[68]

Systems Thinking is another project management tool that emphasizes the analysis of problems in a holistic way, looking at how many elements interrelate in a complex system. Systems thinking helps identify appropriate intervention points that are likely to have the greatest sustainable impact.[69]

63 European Commission, *Aid Delivery Methods Volume 1*.

64 Ibid.

65 See the African Schoolnet Toolkit for a detailed discussion of project planning models.

66 FAO, "Results-based management", http://www.fao.org/about/57743/en/, last updated on 18 February 2010.

67 CIDA, "Results Based Management in Canadian International Development Agency", January 1999, cited in Annette Binnendijk, "Results Based Management in the Development Co-operation Agencies: A Review of Experience – Background Report", prepared for the DAC Working Party on Aid Evaluation (n.d.), http://www.oecd.org/dataoecd/17/1/1886527.pdf. See also UNDP, "Results Based Management: Concepts and Methodology – Technical Note" (2000), http://www.undp.org/evaluation/documents/RBMConceptsMethodgyjuly2002.pdf.

68 AusAID, "The Logical Framework Approach", in *AusGuide - A Guide to Program Management* (Commonwealth of Australia, 2005), p. 1, http://www.ausaid.gov.au/ausguide/pdf/ausguideline3.3.pdf.

69 For more information on systems thinking see Peter Senge and others, *Schools That Learn: A Fifth Discipline Fieldbook for Educators, Parents, and Everyone Who Cares About Education* (New York, Currency Doubleday, 2000).

3.4. The Logical Framework Approach

The LFA is a core analytic and management tool in Project Cycle Management. It helps analyse and organize the planning process. The analytical tools of the LFA include stakeholders analysis, problem analysis, objective analysis and strategy analysis. Table 9 shows how the analysis phase leads to the planning phase in the LFA.

Table 9. The logical framework approach

Analysis Phase →	Planning Phase →
Stakeholders analysis – Identifying and characterizing potential major stakeholders; assessing their capacity	**Developing a Logical Framework Matrix** – Defining project structure; testing its internal logic and risks; formulating measurable indicators of success
Problem analysis – Identifying key problems, constraints and opportunities; determining cause and effect relationships	**Activity scheduling** – Determining the sequence and dependency of activities; estimating their duration and assigning responsibility
Objective analysis – Developing solutions from the identified problems; identifying means to end relationships	**Resource scheduling** – From activity schedule, developing input schedules and a budget
Strategy analysis – Identifying different strategies to achieve solutions; selecting the most appropriate strategy	

Source: European Commission, *Aid Delivery Method: Volume 1 - Project Cycle Management Guidelines* (Brussels, 2004), p. 60, http://ec.europa.eu/europeaid/multimedia/publications/documents/tools/europeaid_adm_pcm_guidelines_2004_en.pdf.

The LFA output is the Logical Framework Matrix (LFM), also known as the Logframe, which consists of four columns and four (or more) rows where the key elements of a project plan are summarized. These key elements are:

- The project's hierarchy of objectives (Project Description)
- The key external factors that are critical to the project's success (Assumptions)
- How the project's achievements will be monitored and evaluated (Indicators and Sources of Verification)

Before a Logframe can be made, project planners must undertake the four main analytic processes: problem analysis, stakeholder analysis, objectives analysis and selection of a preferred implementation strategy. Each of these entails the use of specific analytic tools.

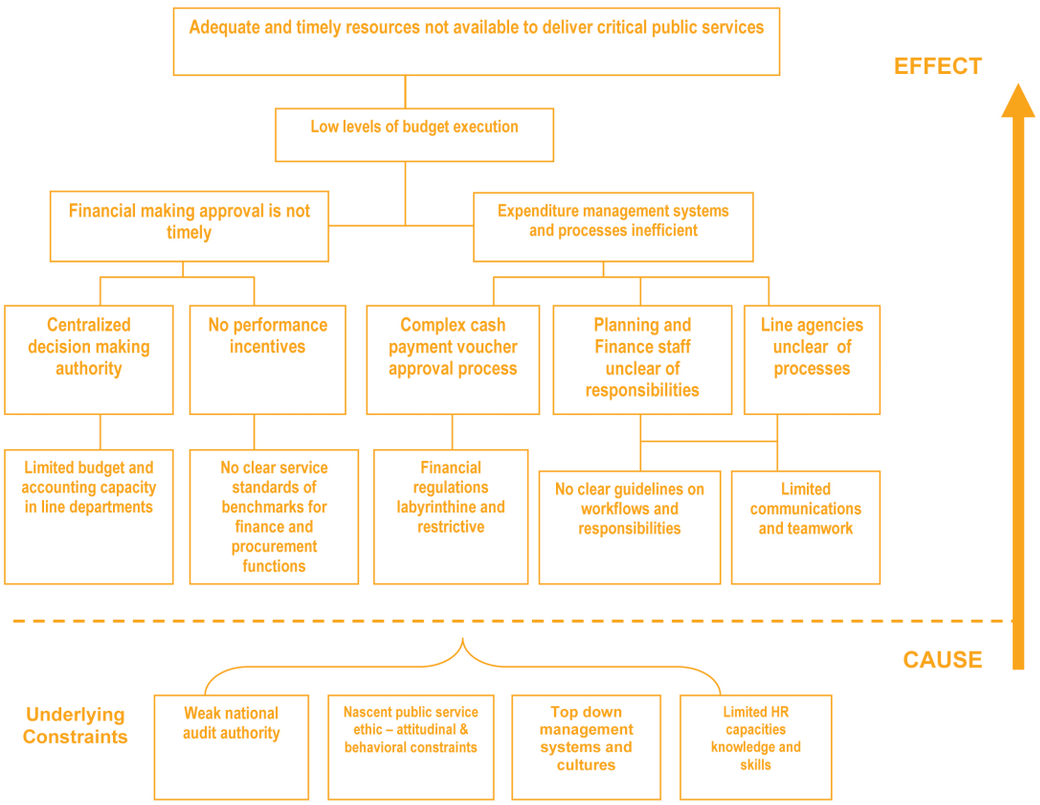
Problem Analysis

The purpose of the problem analysis is to identify the root cause (not the symptoms) of the problem that the activity design will address. A clear and comprehensive problem analysis enables the project planner to provide "a sound foundation on which to develop a set of relevant and focused activity objectives."[70] One of the tools used in problem analysis is the **problem tree**.

Problem analysis is an ideal process for eliciting the participation of stakeholders who can provide meaningful inputs and relevant technical and local knowledge. The planning tool can be used for this purpose. It is important to simplify the problem tree. Making it too complicated will make it less useful for providing direction to subsequent steps in the analysis.[71]

Figure 11 is an example of a problem tree. It shows a causal structure of problems impacting on poor budget execution by the national government of a developing country, which results in poor delivery of key public services.

Figure 11. Sample problem tree



Source: AusAID, "The Logical Framework Approach", in *AusGuide - A Guide to Program Management* (Commonwealth of Australia, 2005), p. 6, http://www.ausaid.gov.au/ausguide/pdf/ausguideline3.3.pdf.

70 AusAID, "The Logical Framework Approach", p. 5.

71 Ibid.

Stakeholder Analysis

"Stakeholders are individuals or institutions that may directly or indirectly, positively or negatively, be affected by or affect an activity."[72]

Stakeholder analysis was described in section 2 of this module. To recap that discussion, a stakeholder analysis will enable project planners to: (1) understand the interests of different stakeholder groups and their capacity to solve identified problems; and (2) design activities appropriate to the institutional capacity and in response to distributional and social issues.

A stakeholder analysis includes:

1. Identifying the principal stakeholders (can be further distributed from national to village levels);
2. Finding out their roles, interests, relative power and capacity to participate; and
3. Interpreting the findings of the analysis and defining how this can be incorporated into the project design.[73]

The first step in stakeholder analysis is to identify and classify all potential stakeholders as primary, secondary and external stakeholders. Primary stakeholders can be further classified by gender, social or income classes, and occupational or service user groups. Secondary stakeholders can be divided into funding, implementing, monitoring and advocacy organizations or into governmental, non-governmental and private sector organizations. These categories may need to be further refined as the organizations involved have sub-groups that should also be considered as stakeholders.[74]

A checklist for classifying stakeholders includes the following questions:

- Have all primary and secondary stakeholders been listed?
- Have all potential supporters and opponents of the project been identified?
- Has gender analysis[75] been used to identify different types of female stakeholders (at both primary and secondary levels)?
- Have primary stakeholders been divided into user/occupational groups or income groups?
- Have the interests of vulnerable groups been identified?
- Are there any new primary or secondary stakeholders that are likely to emerge as a result of the project?

Table 6 (in section 2) can be helpful in identifying project stakeholders.

The stakeholder analysis identifies "whose problem" is the problem, "who has to change their work ways to address the problem" and "who benefits" from the activities designed to solve the problem (i.e. the project). By definition, beneficiaries are those who benefit in whatever way from the implementation of the project. Target groups are those who will be directly and positively affected by the project at the Activity Outcome level. Target groups could include staff from partner organizations. Final beneficiaries are those who will benefit from the project in the long term at the sectoral or societal level. Partners are those who will implement the project. They are stakeholders themselves and may be a target group as well.[76]

72 Ibid., p. 9.

73 Ibid.

74 Marilee Karl, "Monitoring and evaluating stakeholder participation".

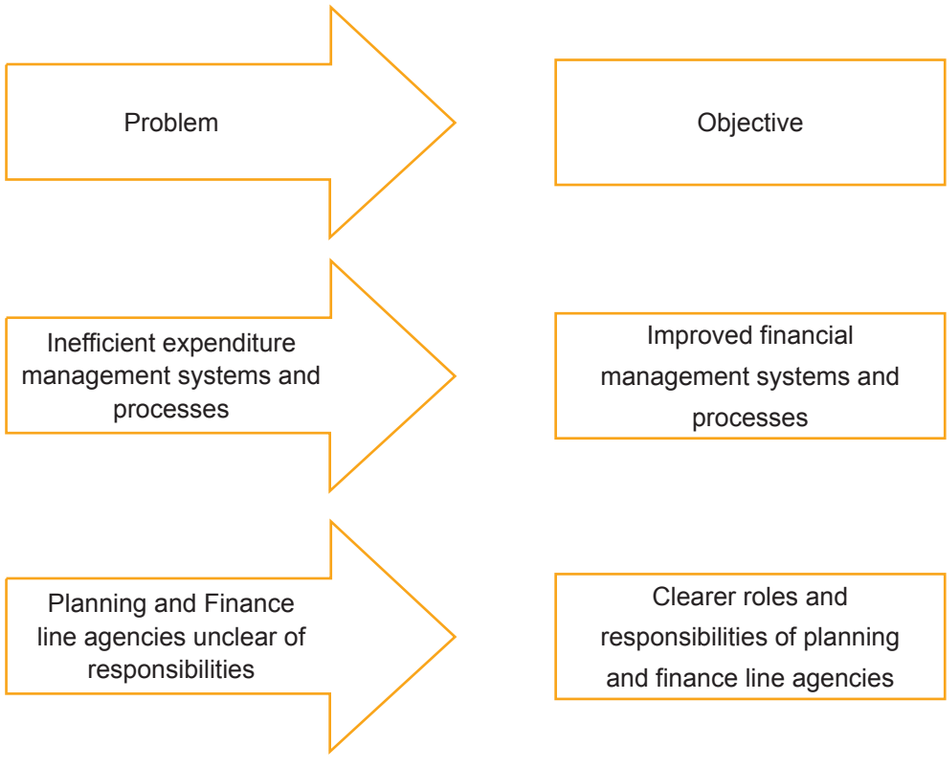
75 Gender analysis is required by international donor groups to be an integral part of the planning, monitoring and evaluation activities of a project. In particular, it is important to understand how gender differences affect the participation of women in development activities.

76 European Commission, *Aid Delivery Methods Volume 1*, p. 62.

Objective Analysis

The objective analysis should be conducted after the problem tree has been completed and an initial stakeholder analysis has been undertaken. The **objective tree** has the same structure as the problem tree, but with the problem statements (negatives) turned into objective statements (positives). At this point, the results of the stakeholder analysis may have helped identify priority problems, which mean that not all of the original problem statements will need to be translated into objective statements.

Figure 12. Problem and objective analysis diagram



Source: AusAID, "The Logical Framework Approach", in *AusGuide - A Guide to Program Management* (Commonwealth of Australia, 2005), http://www.ausaid.gov.au/ausguide/pdf/ausguideline3.3.pdf.

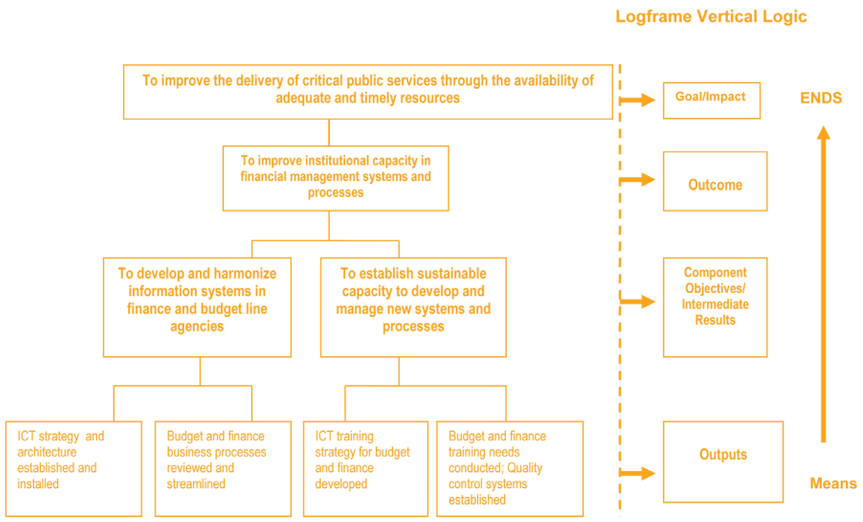
The problem tree shows the cause and effect relationship between problems, while the objective tree shows the means-end relationship between objectives (i.e. the means by which desired ends, or results, will be achieved). This leads directly to developing the project's narrative statements in the LFM. Negative statements from the problem tree are re-worded into positive statements. It is helpful then to check and ask the following questions to refine the LFM:

- Are the statements clear and unambiguous?
- Are the links between each statement logical and reasonable? (Will the achievement of one help support the attainment of another that is above it in the hierarchy?)
- Is there a need to add other positive actions and/or statements? More detail may be required.
- Are the positive actions at one level sufficient to lead to the result above?
- Do the risks involved with achieving the objectives and sustainable outcomes appear to be manageable?
- Is the overall structure simple and clear? Simplify if possible or necessary.[77]

77 AusAID, "The Logical Framework Approach", p. 10.

Verifying the statements of the LFM through consultations with stakeholders is encouraged. Eventually the problem tree is linked with the LFM as shown in figure 13.

Figure 13. Problem tree linked with LFA



Source: Adapted from AusAID, "The Logical Framework Approach", in *AusGuide - A Guide to Program Management* (Commonwealth of Australia, 2005), p. 13, http://www.ausaid.gov.au/ausguide/pdf/ausguideline3.3.pdf.

Strategy Analysis

In the course of stakeholder assessment and objectives analysis, other ideas can surface, such as potential merits as well as difficulties, assumptions and risk events. It will be helpful to take note of these ideas as they may suggest options that can be scrutinized further to help firm up the likely scope of the project before more detailed design takes place. Here are some guide questions to generate solutions for the problems identified:

- Should all of the identified problems and/or objectives be tackled, or only a selected few?
- What is the combination of interventions that is most likely to bring about the desired results and promote sustainability of benefits?
- What are the likely capital and recurrent cost implications of different possible interventions, and what can be realistically afforded?
- Which strategy will best support participation by both women and men?
- Which strategy will most effectively support institutional strengthening objectives?
- How can negative environmental impacts be best mitigated?[78]

To assess alternative interventions, it is useful to identify a number of criteria against which alternative interventions can be ranked or scored. These criteria may be used to help make a broad assessment of different intervention options:

- Benefits to target groups – level of benefits, equity and participation
- Sustainability of the benefits
- Ability to repair and maintain assets after the project
- Total cost and recurrent cost implications
- Financial and economic viability
- Technical feasibility
- Contribution to institutional strengthening and management capacity building

78 Ibid., p. 11.

- Environmental impact
- Compatibility of the project with sector or programme priorities[79]

A project design should demonstrate that the main options have been assessed and considered. There is always more than one way to solve a development problem. The aim is to find the best way.

However, it is important to emphasize again that activity planning is not a linear process. One does not move mechanically from one step to the next, always in a forward direction, and arrive automatically at the best solution. Planning is an iterative and creative process, and selecting a design option often involves significant leaps of thought that cannot be neatly slotted into a "stage" in the planning process.[80]

The Logical Framework Matrix[81]

The LFM (or logframe) is a summary of the project activity design resulting from the logical framework analysis. The matrix, when detailed down to output level, should generally be no more than three or four pages long.

The tasks that are part of the activity work programme may be listed in the logframe itself. The project document includes a narrative that describes the "indicative" sets of tasks (required to produce each output). The narrative also covers the implementation and resource schedules to further detail when key elements of the work programme are expected to be undertaken, as well as the division of work responsibilities among the various partners.

As shown in table 10, the logframe has four columns and usually four or five rows, depending on the number of levels of objectives used to explain the means-ends relationship of the activity.

Table 10. The logical framework matrix

Level	Narrative Summary (Column 1)	Indicators (Column 2)	Means of Verification (MOVs) (Column 3)	Critical Assumptions (Column 4)
1	Goal/Impact (1)	Indicators (8)	MOVs (9)	
2	Purpose/Outcome (2)	Indicators (10)	MOVs (11)	Assumptions (7)
3	Component Objectives/ Intermediate Results (3)	Indicators (12)	MOVs (13)	Assumptions (6)
4	Outputs (4)	Indicators (14)	MOVs (15)	Assumptions (5)
	Work Programme (optional)			

Sources: AusAID, "The Logical Framework Approach"; European Commission, *Aid Delivery Method*; and Levon Gyulkhasyan, *Using Logical Framework Approach for Project Management* (USDA CADI, 2005).

79 Ibid.

80 Ibid., pp. 11-12.

81 This section is drawn from AusAID, "The Logical Framework Approach", p. 14.

The logframe is read thus:

1. The **vertical logic** (reading up and down columns 1 and 4 of the matrix) presents the causal relationships between the different levels of objectives (column 1), and specifies the important assumptions and uncertainties beyond the activity manager's control (column 4).

2. The **horizontal logic** (reading across the rows of the matrix) briefly describes how the activity objectives specified in column 1 of the Logframe (e.g. Goal, Purpose, Outputs) will be measured (column 2) and the means by which the measurement will be verified (column 3). This provides a framework for activity monitoring and evaluation.

3. The activity description or narrative summary is completed first (column 1 – vertical logic 1-4); followed by the assumptions (column 4 – vertical logic 5-7); the indicators (column 2 – horizontal logic 8, 10, 12 and 14); and finally the means of verification (column 3 horizontal logic 9, 11, 13 and 15). However, completing the matrix must be approached as an iterative process. As one part of the matrix is completed, there is a need to look back at what has been said in previous parts to determine whether the logic still holds. This process will often require the modification of previous descriptions.

The general structure of the LFM is by hierarchy levels (table 11).

Table 11. Description of LFA by level

Project Narrative Summary Description	Indicators	Source of Verification	Critical Assumptions (and Risk Factors)
Level 1: Overall Objective – The project's contribution to policy or programmed objectives. The broad development impact to which the project contributes – at a national or sectoral level provides link to the sector programme context.	How is the achievement of the objectives to be measured (Quantity, Quality, Time)? Measures the extent to which contribution to the overall objective has been made. Used during the evaluation. However, it is often not appropriate for the project itself to try and collect the information.	How will the information be collected and when and by whom and how frequently? Sources of information and methods used to collect and report it.	
Level 2: Purpose – Direct benefits to the target group(s). The development outcome at the end of the project – more specifically the expected benefits to the target group(s).	How will we know if the purpose has been achieved? Should include appropriate details of quantity, quality and time, which will serve as indicators of accomplishments.	How will the information be collected and when and by whom? Sources of information and methods used to collect and report it.	Assumptions – If the purpose is achieved, what assumptions must hold true to achieve the overall objectives? Factors outside project management's control that may impact on the purpose-objective linkage.

Project Narrative Summary Description	Indicators	Source of Verification	Critical Assumptions (and Risk Factors)
Level 3: Results – Tangible products of services delivered by the project.	How will we know if the results have been delivered? Should include quantity, quality and time, which will serve as indicators of accomplishments.	How will the information be collected and when and by whom? Sources of information and methods used to collect and report it.	If the results are achieved, what assumptions must hold true to achieve the purpose? Factors outside project management's control that may impact on the purpose-result linkage.
Level 4: Activities – Tasks that have to be undertaken to delineate the desired results.	(A summary of resources/means is provided in this box)	(A summary of cost/ budget is provided in this box)	If activities are completed, what assumptions must hold true to deliver the results? Factors outside project management's control that may impact on the purpose-activity linkage.

Source: Adapted from European Commission, *Aid Delivery Method: Volume 1 - Project Cycle Management Guidelines* (Brussels, 2004), p. 73, http://ec.europa.eu/europeaid/multimedia/publications/documents/tools/europeaid_adm_pcm_guidelines_2004_en.pdf.

Assessment of Assumptions and Control of Project Risk Factors[82]

Assumptions are external factors with the potential to influence the success of a project. But project managers have no direct control of these external factors.

In a logframe assumptions work bottom-up, as follows:

1. Once the activities have been carried out, and if the assumptions at this level hold true, results will be achieved.
2. Once these results and the assumptions at this level are fulfilled, the project purpose will be achieved.
3. Once the purpose has been achieved and the assumptions at this level are fulfilled, a contribution to the achievement of the overall objectives will have been made by the project.

Additional assumptions may be identified through further consultation with stakeholders.

Like assumptions, project risks are external events or uncertain conditions that could have positive or negative effects on the delivery of project objectives. The effects could impact on time (schedules), cost, scope or quality. A risk may have one or more causes and, if it occurs, one or more impacts. For example, the passage of a legislative policy may be required for subsequent work activities to proceed. The risk event is that the passage of the law may take longer than planned. This in turn will impact on the project cost, schedule and/or performance.

Risk conditions could include aspects of the environment of the project or organization, such as poor project management practices, lack of integrated management systems, concurrent multiple projects, or dependency on external participants who cannot be controlled. It is therefore important to monitor the "external" environment to identify whether or not the assumptions made

82 This section is drawn from European Commission, *Aid Delivery Methods Volume 1*.

are likely to hold true and what new risks may be emerging, and to take action to manage or mitigate these risks where possible.

Table 12 is an example of a completed logframe. The levels were identified and written vertically from 1 to 4 and then horizontally.

Table 12. An example of a completed logframe

Levels	Intervention Logic		Objectively Verifiable Indicators	Sources of Verification	Critical Assumptions
1	**Overall Objective**	Community empowered to facilitate transition towards rich and sustainable life in the community	• Improved and increased level of participation in community development and governance • Participation in policy formulation, implementation • Sustainability measures of telecentres undertaken	Local government and community records Newspapers and websites	Local government continue to support the community telecentre efforts
2	**Project Purpose**	Improved immediate conditions in the community: Livelihood Employment Health Education Social	• Significant increase in the income of women and men • Increased productivity • Growth in business transactions • Reduced infant and maternal mortality rates • Decreased affliction of common diseases • Increased educational performance and literacy rates • Increased social capital	Revenue reports Reports from local agriculture and employment agencies Hospital and clinic records School records Sample survey of target groups conducted and analysed	Consistent support to the improvement, maintenance and operations of the telecentre

Levels	Intervention Logic		Objectively Verifiable Indicators	Sources of Verification	Critical Assumptions
3	**Results**	Increased public access to information of villagers on: Livelihood Employment Health Education Social Government Services	• Number of villagers who use the telecentre • Number of farmers or fisherfolks who gained new knowledge and skills in improved farming and fishing methods • Number of villagers who were able to gain employment • Number of villagers who access telemedicine services • Number of businesses that were improved or established as a result of their use of the telecentre • Number of villagers who were informed about common illnesses and learn prevention methods • Number of teachers and students who used the facilities of the telecentre • Increased user satisfaction with quality of services provided	Attendance and participation log books and registry Records from local employment agencies e-Registry of telehealth programmes	There is social acceptability and trust in the use of ICT as a medium of relevant information Villagers are willing to participate in organizing activities Government services and information are relevant and updated Local champions are consistent and supportive throughout the project life

Levels	Intervention Logic		Objectively Verifiable Indicators	Sources of Verification	Critical Assumptions
4	**Activities**	1. Design and implement the establishment of a telecentre 1.1. Community participate and organize to establish the telecentre 1.2. Government services and other institutions are coordinated and integrated in the design of the telecentre 1.3. Design and implement community ICT training programme for: • Community leaders • Local government leaders • Project staff	Technical Assistance Equipment (See activity schedule)	Lump sum costs Reimbursable (See budget)	Government – national and local level maintains level of funding at pre-project levels in real terms Suitably qualified staff willing to work in remote areas

The LFA has been proven to be a useful planning and management tool. However, it is not a comprehensive tool and, like other tools, it does not guarantee project success. The LFA process can be time-consuming and it requires considerable training in the use of the concepts and logic of the approach. Management practitioners have observed that the LFA requires planners to summarize complex ideas and relationships into simple phrases that may be unclear or meaningless to others. The fill-in-the-boxes approach to complete the matrix during project design leads to a poorly prepared project with unclear objectives and a lack of a sense of ownership among stakeholders.[83] Nevertheless, learning the LFA process is helpful in understanding large-scale projects funded by donor organizations.

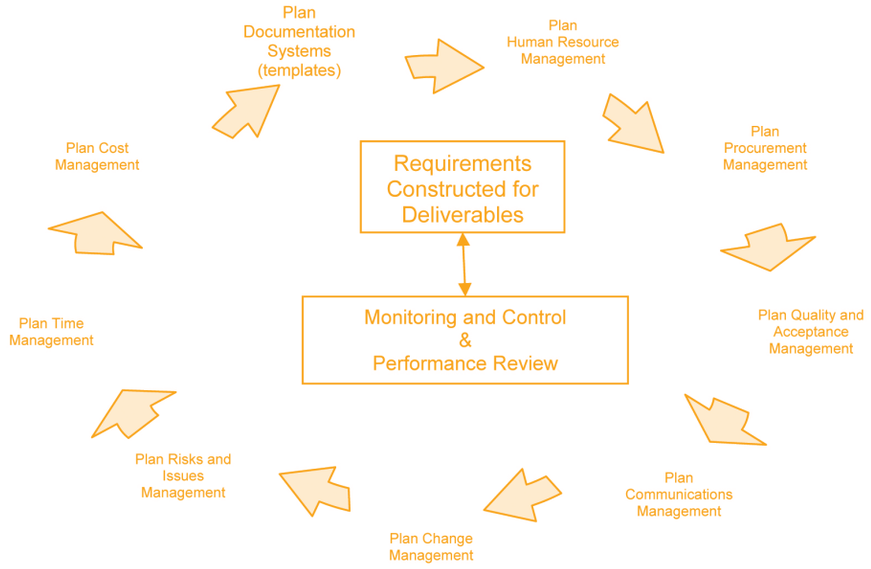
83 Ibid.; Alan Walsch, "Introduction to the LFA", http://www.pops.int/documents/guidance/NIPsFINAL/logframe.pdf; and Des Gasper, "Logical Frameworks: Problems and Potentials", http://pdf2.hegoa.efaber.net/entry/content/904/LF_problems_and_potentials_Des_Gasper.pdf.

3.5 Range of the Project Plan

The project plan details all areas of discipline and processes that will answer the question, how do we achieve the goals, objectives and requirements of the project? The areas of discipline and processes include: time, cost, human resource, procurement, quality, acceptance, communication, change, risks and issues. Figure 14 shows the coverage of the project plan.

Within the project plans are smaller components requiring the following areas of discipline: project time management, project cost management, human resource management, procurement management, quality and acceptance management, communication management, change management, risks management, and issues management.

Figure 14. Range of project management planning



Source: Adapted from Jason Westland, *The Project Management Life Cycle* (London and Philadelphia: Kogan Page, 2006); and Nick Jenkins, *A Project Management Primer or a guide to making projects work (v.02)* (2006), http://www.exinfm.com/training/pdfiles/projectPrimer.pdf.

3.6 Milestones and Project Deliverables

Milestones are major project events that indicate the completion of a set of project activities and deliverables. Milestone dates are important reference points in managing project schedules.[84]

Project deliverables are the outputs of the project tasks. As with project milestones, it is important to set the schedules of the deliverables because these serve as reference points for assessing the performance of project processes and outputs.[85]

Table 13 shows examples of project milestones and deliverables.

84 Ibid.; Jason Westland, *The Project Management Life Cycle*; and Nick Jenkins, *A Project Management Primer or a guide to making projects work (v.02)* (2006), http://www.exinfm.com/training/pdfiles/projectPrimer.pdf.

85 Ibid.

Table 13. Sample list of project milestones and deliverables

Milestone	Deliverables and Description	Milestone Date
Vision/Scope Approved	*Project Scope Description*. This event is one of the important milestones of a project. It signifies that the business case has been prepared and the scope is clarified. Once presented and approved by the project sponsor, it becomes a major milestone of the project.	xx/yy/zzzz
Project Plan Approved	*The Project Plan* is the detailed road map of the project. It provides the tasks and activities that must be undertaken in the following areas of discipline: scope, time, cost, integration, quality, human resource, communication, risks and procurement. Once approved, the project activities as planned are implemented.	xx/yy/zzzz
Scope/Design Completed – Sign off Development sign off First Use of the product tested – Testing sign off	*ICT Requirement Definitions and Specifications* *(List of Products under development or construction)* *Assessment of product prototypes* The delivery of these outputs is a major milestone of a project. For ICT projects, such as software application development, the implementation process of requirement definitions, specification of functionalities, parameters, and business process definition must have happened in close coordination with the users and software developers. Once the software is ready for beta testing or prototyping, the first use of the software program can already undergo a series of tests to look into bugs and problems that users may encounter. Meanwhile, this may also mean that the users and other stakeholders must undergo training activities to prepare them for the actual use of the product.	xx/yy/zzzz
Product Acceptance and Release Product Launch	Integration of product in the system. This represents the completion of the project. This means that the product is accepted and ready to be integrated into the organization's mainstream operations.	xx/yy/zzzz

Sources: Adapted from Wilson Mar, "Project Planning Strategies and Tools", http://www.wilsonmar.com/1projs.htm; and Nick Jenkins, *A Project Management Primer or a guide to making projects work (v.02)* (2006), http://www.exinfm.com/training/pdfiles/projectPrimer.pdf.

Constructing the ICT Delivery Requirements

Producing and completing the project deliverables is the most time-consuming activity in ICT projects. Whether it is building a centre, developing new computer software or implementing an e-governance process, this activity will consume most of the available resources (labour costs).

Requirements specification is an important activity prior to producing the project deliverables. Jenkins defines this as the "process of refining the goals of a project to decide what must be achieved to satisfy the 'customers'." Requirements are either functional or non-functional. Functional requirements refer to the daily requirements of end-users and stakeholders for a product. Non-functional requirements are covert requirements or requirements that are not obvious to the users. These include performance, usability, reliability, security, financial, legal, operations and special requirements.[86]

Functional specifications become defined after a series of **requirements capture**, which refers to the process of determining the needs of the user through data gathering. The data directs the project to answer the question, what must be achieved (in this ICT project)? The output of the requirements capture is a SMART (Specific, Measurable, Achievable, Relevant and Testable) definition of specifications that are documented (documenting requirements) and mostly reported in graphical or diagrammatic presentations to show the relationships of requirements and the process by which the product will function.[87] Once the users or stakeholders sign off on the document as confirmation of their requirements, the actual technical construction work begins.

Deliverables are produced as outputs from the processes performed by individuals (e.g. management staff, consultants, contractors or vendors) to accomplish the project work planned and scheduled in the project management plan. Work performance information about the completion status of the deliverables and what has been accomplished, is collected in the course of project implementation and is fed into the performance reporting process.[88]

Deliverables can be tangible or intangible. Examples of tangible deliverables are products such as buildings, roads, equipment, and hardware and software. Examples of intangible deliverables are services such as research and training.

The project manager and the project team should be aware of the deadline of the delivery of outputs. Delays are costly to the project. Moreover, activities are usually linked such that any delay will have a "domino effect".

3.7 Planning Major Activities of the Project

The Project Plan lists all of the major tasks and activities of the project after the milestones and deliverables are identified (see table 14). In major management approaches, the term used is Work Breakdown Structures.[89]

86 Nick Jenkins, *A Project Management Primer*, pp. 15-16.

87 Ibid.

88 Jason Westland, *The Project Management Life Cycle*.

89 James Taylor, *Managing Information Technology Projects* (2004).

Table 14. Planning of tasks, activities and outputs

Major Planning Tasks	Purpose	Output	Helpful Tools to Use
Make a Project Schedule or Time Frame	To manage schedule of deliverables	Project Management Schedule or Work Breakdown Structure	PERT/CPM Gantt charts MS Project Office
Make a Schedule of Costs	To manage budget and costs or expenditures	Cost or Budget Plan that provides financial expenditures required for the duration of the project	Budget analysis and accounting software tools
Prepare an Office Plan to include administrative and operations systems	To manage day-to-day office activities	Administrative and Operations Plan	Listing of standards, systems and processes
Prepare the Project Quality Standards	To manage quality of deliverables and outputs	Quality Plan or Quality Control Plan	Listing of functional requirements and expectations
Prepare Procurement Plan	To manage procurement process	• Procurement Plan • Terms of Reference for expertise and services needed • Specifications on service level standards (SLAs) in relation to Quality Plan • Specifications of equipment and software to use • Should include acceptance plan for SLAs	Listing of resources to use—technical expertise, equipment, others
Prepare Human Resource Plan	To manage human resource requirements of the project	Human Resource Plan to include: • Roles and responsibilities • Positions and qualifications standards • Salary scales	Benchmarking of personnel with other similar type of PMOs
Prepare Communication Plan	To manage communication with stakeholders	Communication Plan to include a list of stakeholders and kind of communications required and scheduled plans	Use of templates or standards for letters, presentations, communication outlines
Prepare Risks Plan	To manage risks and mitigating measures	Risks Plan	Regular risk assessments using standard templates
Prepare Documentation and Reportorial Plans	To manage reporting requirements	Documentation and Report Plan to include templates to facilitate documentation	
Prepare Change Management Plan	To manage changes on scope and quality	Change Requests templates and Issue Plans	Templates available

3.8 The Project Management Office

A large-scale project usually creates or establishes a PMO. The PMO defines and maintains the standards of processes generally related to project management within an organization or government agency. It strives to standardize and introduce economies of repetition in the execution of projects. It is the source of documentation guidance and metrics on the practice of project management and execution. The functions of a PMO include:

- Administration of shared and coordinated resources across all projects
- Identification and development of project management methodology, best practices and standards
- Clearinghouse for the management of project policies, procedures, templates and other shared documentation
- Centralized configuration management for all projects administered
- Centralized repository and management for both shared and unique risks for all projects
- Central office for operation and management of project tools, such as enterprise-wide project management software
- Central coordination of communication management across projects
- A mentoring platform for project managers
- Central monitoring of all PMO project timelines and budgets usually at the enterprise level
- Coordination of overall project quality standards between the project manager and any internal or external quality personnel or standards organization[90]

It is ideal for a project to have an office space for members of the project team. The PMO space is useful for administrative desk work, meetings and discussion, and the creation of products that may be included as deliverables. Some members of the team may be deployed outside of the office premises and need not report physically to the PMO. They can be connected with the team using modern communication technology.

Project Management Team Roles and Responsibilities

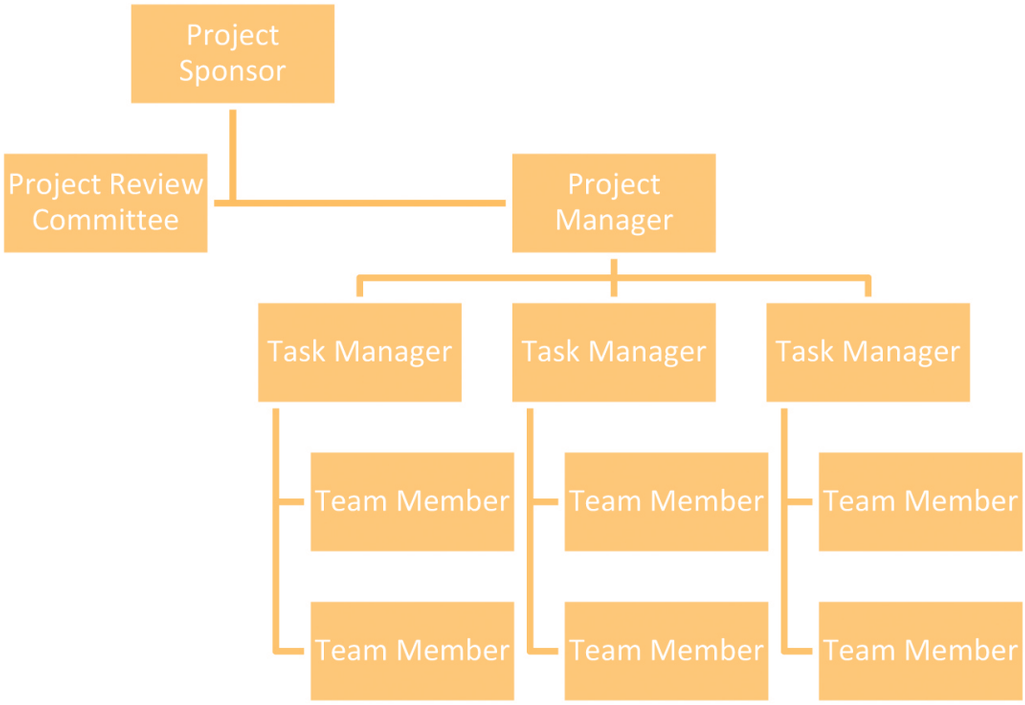
It is important to identify all of the roles, responsibilities or job descriptions of project team members. This is done via a human resource plan that also includes the project organizational structure. A full-blown description of responsibilities or terms of reference should be undertaken before the contracting process.

The Project Organizational Structure

The project organizational structure indicates the reporting lines for each person in relation to the other members of the team. Figure 15 shows a typical project organizational structure.

90 John Macasio, “ICT Project Management Practitioner Network”, http://ictpmpractitioner.ning.com. See also Wikipedia, “Project management office”, http://en.wikipedia.org/wiki/Project_management_office.

Figure 15. Example of a project organizational structure



Source: Adapted from Jason Westland, *The Project Management Life Cycle* (London and Philadelphia, Kogan Page, 2006).

A well defined structure helps the project manager perform his/her management tasks efficiently and effectively. Delegating roles and responsibilities would allow the project manager to focus on project deliverables and essential areas, issues and problem solving processes.

Something To Do

ICT Project Management Case: Tell the Story of Your Project

My value as an ICT project manager is measured in terms of my CAPABILITY to deliver the PROJECT RESULTS successfully according to the QUANTITY and QUALITY of EXPERIENCE expected by my STAKEHOLDERS and solution USERS.

My capability is CONSTRAINED by the defined and agreed SCOPE based on SPECIFIED REQUIREMENTS. REQUIREMENTS are viewed as strategic and tactical conditions in order to FILL IN GAPS or to ACTUALIZE OPPORTUNITIES for improvement or development.

My capability is LIMITED by TIME expectation, which prescribed the START DATE and END DATE to happen in order for the results of the project to have IMMEDIACY and RELEVANCE.

My performance is CONDITIONED by the kind of available RESOURCES to support WORK and MATERIALS, and the BUDGETED COST allocated as INVESTMENT that will bring social and financial RETURNS.

My results are RESTRICTED by required METRICS that speaks of numbers and quality. I 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 people.

My decision is BOUND by rules, policies, procedures, decision-flow, inter-relationship and responsibility matrix.

To get started, I must understand my project by filling up the thinking matrix to initiate, plan, execute, control and close my ICT PROJECT.

Tell the story of your project

1	**PROJECT NAME**	Code Name or Descriptive Title
2	**Problem or Needs to Address**	Gaps to be filled up Opportunities to be exploited
3	**Stakeholders**	Whose interests are affected by the project
4	**Goals**	State or condition to be achieved
5	**Outcomes**	Objective results to be experienced
6	**Critical Success Factors**	What are to be made available
7	**Critical Assumptions**	Considered to be true
8	**Competency**	People, Process, Technology and Culture
9	**Methods**	Management, Analysis, Valuation, Modeling, Data Gathering, Evaluation, Control and Monitoring
10	**Standards**	Procedures, Tools, Results, Metrics, Documentation, Financial Standards, Templates
11	**Risks**	What if – consequences and mitigation
12	**Governance**	Responsibility, Accountability, Expert and Work
13	**Major Tasks**	Scope of Work – work breakdown
14	**Main Output**	Products, Artifacts, Deliverables
15	**Duration**	Timeline, Schedule
16	**Resource Requirement**	Input – time and material
17	**Sourcing Strategy**	Acquisition and Procurement
18	**Control and Metrics**	Checkpoint, Quality and Quantity Standards Checklist

Source: John Macasio, ICT Project Thinking Matrix.

Test Yourself

1. Why do we need to plan projects?
2. What approaches can be used to identify projects? What is benchmarking?
3. What are planning tools that can help clarify the goals and objectives of a project?
4. What is a Logical Framework Analysis?
5. What is the range of planning phase processes?

4. PROJECT IMPLEMENTATION AND CONTROL: DISCIPLINE, ISSUES AND PRACTICES

This section discusses concepts, issues and practices during the project implementation phase, which includes project monitoring and control.

The approval of the Project Management Plan is the signal that project implementation has begun. This is normally the longest phase of the project. It is when the deliverables are physically built. To ensure that requirements are met, the project manager must monitor and control the production of each deliverable by executing the appropriate monitoring and control processes.

To say that a project is successful means that the project is delivered on time, within budget and to the required specifications, and that the tests undertaken are acceptable to the users. Note that the project implementation has to be undertaken in its entirety and that each process has to be communicated clearly to the project team. Many projects have failed because of the lack of formalization of these simple but critical project management processes.

The project manager and the project team are required to perform multiple functions and tasks to implement the Project Management Plan (figure 16).

Figure 16. Project management activities at the implementation phase

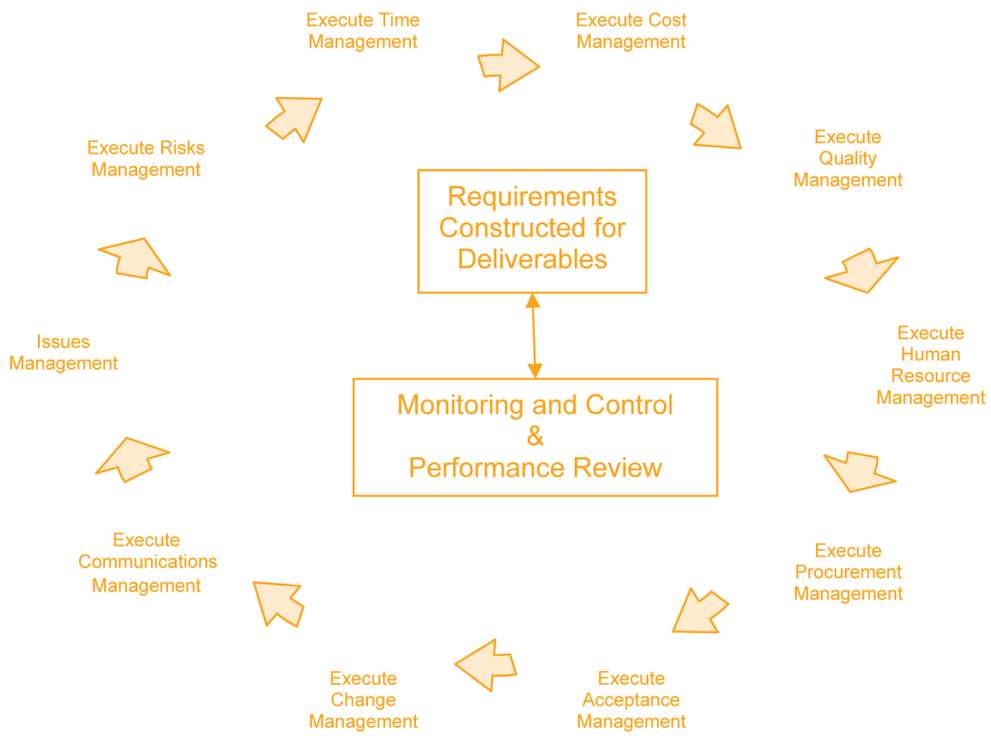
The project manager will have to work closely with the project management team and direct the planned performance of the project activities. The project manager and the project team will manage the various technical and organizational interfaces within the project. Effective management of resources—time, money (or costs) and people (stakeholders)—is critical.

4.1 Implementation of ICT Management Processes

Range of implementation process

ICTD project managers manage a range of project processes during the project implementation stage (figure 17).

Figure 17. Range of management activities in the ICT project implementation phase



Managing the implementation processes is linked directly to control mechanisms and processes.

Documentation and Use of Templates

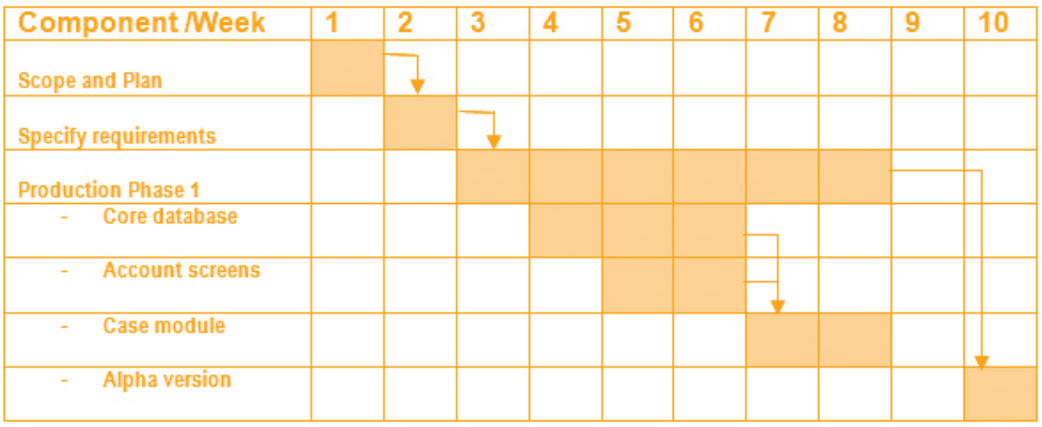
One way of tracking project efficiency and controlling the project is ensuring that project activities are documented and that templates are used for this to make it easy for everyone in the project team. There are many standard templates that can be adopted or adapted (see Further Reading).

4.2 Time Management

The project manager needs to monitor and record the time spent by staff on executing project tasks since time spent performing a task translates to cost. Managing time enables the project manager to control the level of resource allocated to each task and identify the percentage of each task that has been completed, as well as the amount of outstanding work required to complete each task in its entirety.

At the planning stage, the output of time management is a planned schedule. The template for time management at this stage is usually the work breakdown structure or a work plan using a Gantt chart. A Gantt chart is an illustration of how much time is spent for an activity and the interdependencies attendant to this (see table 15).

Table 15. Sample of a Gantt chart for a production phase



Source: Nick Jenkins, *A Project Management Primer or a guide to making projects work (v.02)* (2006), p. 28, http://www.exinfm.com/training/pdfiles/projectPrimer.pdf.

Project scheduling can be written in a non-graphical way (see table 16).

Table 16. Sample of work plan scheduling

Phase	Start	Finish	Duration	Deliverables
Scope and Plan	01 Jan	10 Jan	7 days	Project proposal
Specify requirements	13 Jan	24 Jan	10 days	Requirements spec
Production phase 1	03 Feb	14 Feb	10 days	Alpha
Production phase 2	24 Feb	07 Mar	10 days	Beta
Production phase 3	17 Mar	28 Mar	10 days	Final candidate
Acceptance Testing	07 Apr	11 Apr	5 days	Release system
Implementation	21 Apr	25 Apr	5 days	-
Launch	28 Apr	28 Apr	0 days	-
TOTAL			67days	

Source: Nick Jenkins, *A Project Management Primer or a guide to making projects work (v.02)* (2006), p. 27, http://www.exinfm.com/training/pdfiles/projectPrimer.pdf.

Tools for calculating the time to be spent on certain activities include the Project (or Programme) Evaluation and Review Technique (PERT) and the Critical Path Analysis Method (CPM).

PERT was designed for large-scale research and development projects where events are more uncertain. The method analyses the tasks involved in completing a given project, especially the time needed to complete each task, and identifies the minimum time needed to complete the total project.

The CPM is a tool that helps identify the critical or the minimum set of tasks to deliver the product. The process includes listing all tasks and interdependencies, and then distinguishing critical tasks from non-time dependent tasks or activities. Being able to determine which activities are crucial or key in delivering the desired outputs given the limited time frame will help the manager choose a course of action.

Project schedules are monitored during the execution stage to measure the project performance rate.

To facilitate time management, time sheet templates can be used to document or record time allocation for project activities listed in the project plan. Project team members, including contractors/consultants and suppliers, should regularly accomplish the time sheets. If time sheets are not recorded or accurately documented, the project manager will have difficulty ascertaining time spent versus the projected time frame of deliverables. This in turn will result in problems in managing time constraints, cost and quality.[91]

Time management is the overall responsibility of the project manager. A project administrator may be hired to help the project manager monitor the day-to-day time sheet process.

Among the variety of techniques applied to estimate the duration of the project is an Experts Assessment, whereby the duration of the project is estimated by specialists whose expertise in this area is significant. To improve the reliability of estimations, more than one expert can be engaged, with average of the results by these experts taken as the final one.

4.3 Cost Management

Cost is one of the constraints that a manager should be vigilant about. Jenkins lists three principles to remember in cost management:

- Prudence – Taking into consideration margins of error
- Accruals – Matching budget and expenditures in a given schedule
- Consistency – Using the same basis even at different periods of time; when change has to happen, the basis for changes has to be consistent for all[92]

Planning project costs involves listing all possible expenditures with the currency value or amount for each. At the planning phase, one must already consider both the tangible and intangible cost items of the project. Tangible cost items refer to capital outlay, lease and utilities costs, staff costs (salary, training, benefits and overhead), professional services, supplies and consumables. Intangible costs would include those that do not belong to normal operations but are important to quantify, such as the building of relationships or rapport, contacts and/or good will, intellectual property, and the like.

91 Jason Westland, *The Project Management Life Cycle*.

92 Nick Jenkins, *A Project Management Primer*, p. 29.

Once the costs are established, the project budget can be prepared. However, the project manager must always expect the unexpected; s/he must be prepared for such eventualities as changes in scope and mitigating risks and errors, as well as external influences such as inflation, irregular currency exchange rates and policy changes. These must also be quantified in the budget. Providing an allowance (contingency funds) for "unexpected" occurrences and changes will help the project team cope if and when these arise.

Documentation and regular financial reporting and frequent monitoring and review of the budget and expenditures will help the project manager read the trend and spot potential problem areas.

In the cost management processes, the project manager must be assisted by a project staff member with an accounting and financial background.

4.4 Quality Management

What quality standards should the project achieve? In the planning process, the project management team should already identify the types of quality measurements, assurances and control techniques that must be implemented. Quality management processes are highlighted during the actual construction of physical deliverables. They ensure that time, cost and quality targets are not compromised.

Quality control refers to the "curative steps taken to eliminate any variances in the quality of deliverables produced from the quality target set."[93]

For example, if your IT requirement is to install a new financial management solution with accounts receivables and payable processes, an expected project deliverable would be implementing (or customizing) brand modules of Accounting Ledger, Accounts Payable and Accounts Receivable. To ensure quality targets, your technical team has to set the quality criteria of product performance (see table 17).

Table 17. Sample quality standards

Conditions for Quality	Standard Quality
All system functionality of the General Ledger. Accounts Payable and Accounts Receivables are - tested and installed	All system functionality of the General Ledger. Accounts Payable and Accounts Receivables are - operational with no errors
All system performance must be matched with - system up time - system response time - data migrated from old system	All system performance indicate - no less than 99% uptime - no less than 5 second response time - 100% accuracy of data

Source: Jason Westland, *The Project Management Life Cycle* (London and Philadelphia: Kogan Page, 2006), p. 149.

93 Jason Westland, *The Project Management Life Cycle*, p. 76.

In the assessment of deliverables, the product must be able to demonstrate the targets set in terms of measurable indicators. Anything below the targets must not be accepted until standards are met.

In the construction stages as well as in test schedules, a performance review can be undertaken and documented using the standards as a tool for gauging the status of deliverables.

If the construction and test processes are outsourced, the quality control team must be able to ascertain the performance of these solutions based on the quality targets.

4.5 Change Management

Two types of change management are covered in this module. One refers to organizational change and the other refers to changes or modifications in planned activities and outputs that may affect the scope and quality of the project.

Change Management at the Organizational Level

Organizational development should be given due consideration when planning ICTD initiatives. The project manager and the project team should note that project activities are not as easy to implement as planned on paper. There are varied expectations and perceptions among stakeholders and managing expectations alone is a huge task. There are anxieties, resistance and hostilities that may be experienced from stakeholders along the way. The change management process may be simple or complex depending on the magnitude or impact of change that the project will have on the organization and project beneficiaries.

As discussed in section 2, an organization going through reform processes using ICT to re-engineer systems and processes for improved service delivery must consider in its general organizational plans the development of change management programmes. Such programmes must be aligned with project goals and objectives to make sure that the outputs and outcomes will impact positively on reform processes within the organization.

Change Management at the Project Level

Plans are usually not perfectly implemented. Project activities are modified in the course of implementation. Modifications are permissible provided they do not affect a major part of the project scope. Control mechanisms will have to be put in place to ensure that “scope creeps” do not occur.

Scope creeps are deviations from the project scope. They are additional elements not earlier agreed upon or considered.

Planning takes a lot of project time because functional and non-functional requirements and specifications need to be defined in detail with the users and stakeholders. Adding other elements to the deliverables will delay the project implementation.

The project manager and team must be wary of potential causes of changes in the project. During the implementation stage, change requests must be studied well and the project manager has to decide carefully whether to consider or ignore these requests as they will impact on the processes and constraints (time, cost and scope) already in place.

4.6 Communication Plan: A strategy for managing change[94]

In project management, communication provides the critical links among stakeholders. A project's change management plan should include a communication strategy and sub-plan that addresses how information about the project and the changes to be brought about are disseminated in a timely manner and discussed appropriately. Managing this process is important because fundamentally the project is about people of varied interests and contexts in relation to the project.

Project managers should spend a lot of time communicating with the project team, stakeholders, users and sponsors. Everyone involved in the project team should understand how communication affects the project as a whole. The project team should use communication effectively to ensure timely and proper creation or production, gathering and compilation, distribution, storage, retrieval and ultimate disposition of project information.

In planning the communication process, the team must determine the information and communication needs of stakeholders. At the planning stage, key questions to ask in this regard are: who will need what type of information, when will they require it, how will it reach them and who will provide the communication messages.

The project manager and team should have good communication skills. They should have a basic understanding of effective communication, feedback loops, barriers to communication and the various media that can be used. For each stakeholder, some questions they must ask themselves are: What medium should be used? Should it be oral or written communication? Should a message be transmitted face-to-face or by e-mail? Should it be formal or informal? In written communication, what words should be used? Should the message be formal or informal, straightforward or indirect? The choice of communication medium usually depends on the situation.

The management of communication must start at the earliest phase of the project. A communication management plan can include guidelines for meetings (whether face-to-face or electronic) and other occasions, based on the needs of the project. The plan should be reviewed regularly throughout the project life and revised when needed to ensure its relevance and applicability. Furthermore, the plan will have to be based on the project's organizational structure as this will affect the project's communication requirements.

With respect to the project management plan as a whole, there should be a regular review of activity results as there may be processes that could result in changes in scope, schedule, budget or quality of plans. The project manager and project team should maintain a log of change requests and monitor the adequacy of resources and funding that are available in support of the implementation of the change management plan. Changes in processes, if any, may have to be negotiated and communicated to affected parties.

94 This section is drawn from Jason Westland, *The Project Management Life Cycle*.

Something To Do

Below is a communication plan matrix. Column #1 indicates the project activities while Row #1 indicates the person or group that one has to communicate with in each activity. The role of each person or group in the communication process is specified as follows:

A = accountable for the communication of plan or event; develops and distributes communication materials; and facilitate meetings
R = receives the communication materials and participates in the meetings
M = monitors the communication process and provides feedback

Fill in the rest of table with the appropriate roles (use the initial only) of each person or group in your project. Note that a person or group could have more than one role.

Activity	Project Sponsor	Project Manager	Project Leader	Project Member	Procure-ment Manager	Communi-cations Manager	Others
Quality Planning	R	A	R	R	R	R, M	R
Risks Planning							
Document Planning							
Metrics Reporting							
Mid-Term Review Report							

Source: Adapted from Jason Westland, *The Project Management Life Cycle* (London and Philadelphia: Kogan Page, 2006).

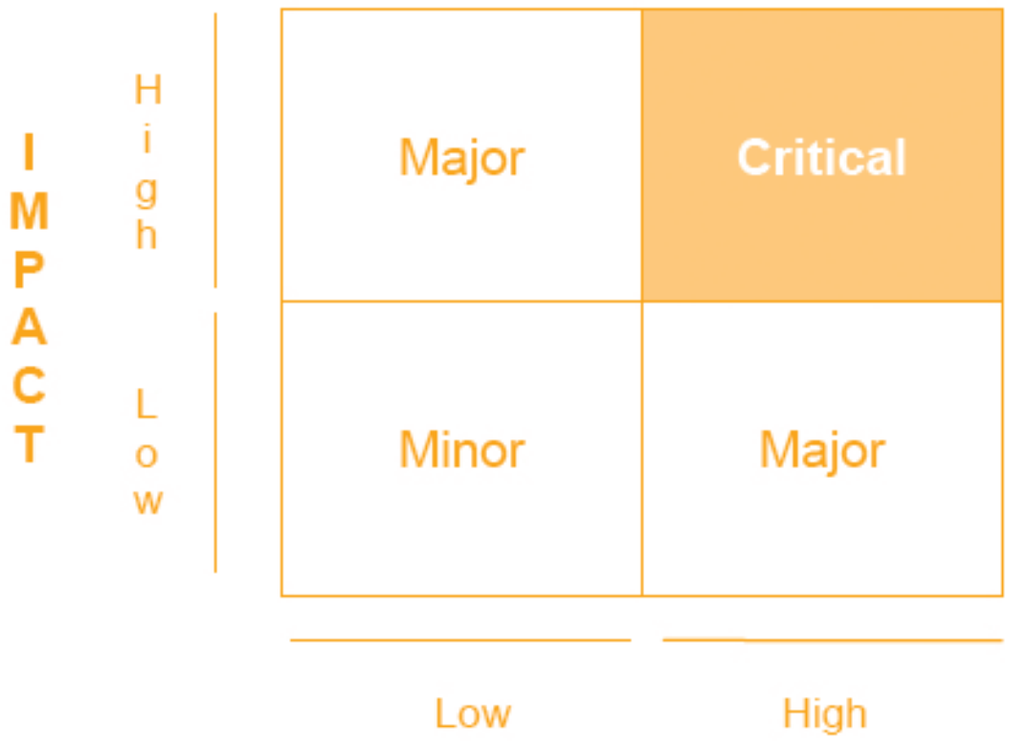
4.7 Risk Management[95]

Project risks are uncertainties, external events or conditions that are outside the control of the project management team. There are risks in all projects. Some risks can be identified and analysed as early as the planning stage, which means that plans can be made to avoid, minimize or mitigate the risks posed to the project. However, there are unknown risks that cannot be determined or managed proactively. A good way to deal with this type of risk is for the project manager and project team to allocate general contingency plans against such risks, as well as against any known risks. This can be discussed as a regular agenda item in project management team meetings. The project team should be committed to the proactive and consistent management of risk throughout the project.

Risk analysis is a tool that will help identify threats to a project. It includes reflecting on questions like what risks could lead to failure and what would be the impact of such risks. Answering these questions could help determine whether the likelihood of failure is high or low, and whether the impact is high or low. Figure 18 is a graphic representation of the answers to these questions.

95 This section is drawn from Nick Jenkins, *A Project Management Primer*.

Figure 18. Risk profile



Source: Nick Jenkins, *A Project Management Primer or a guide to making projects work (v.02)* (2006), p. 31, http://www.exinfm.com/training/pdfiles/projectPrimer.pdf.

High frequency threats may have a significant impact on the project. Major issues can reach a critical level, which means that project failure is likely. Minor level risks are annoying but not necessarily significant, and they may be ignored or dealt with at a slower pace.

Something To Do

Here is a case scenario. Read through the case and answer the questions posed at the end.

One of the major partner organizations in an ICT project has suddenly lost its project champion. The loss of the champion reduces the project's influence over other stakeholders and parties; and it may take some time before a new champion will succeed. The impact on the project is primarily directed towards the project schedule and consequently the cost that is attached to the delay. What is the likelihood that this event will result in project failure? What is the degree of impact leading towards project failure?

What are the options for dealing with the effects on the project?

Option 1: Change the partner organization. This means the possibility of change in project scope and the project proponents will have to go through the entire process of selecting a new partner organization, negotiating, waiting for new approvals and adjusting to the new organization, until the project stakeholders are confident of the new project scope and the new organization.

Option 2: Wait for the new champion to succeed. This means that the project will go through the process of orienting, training and persuading the new champion, and ensuring that s/he is qualified and has the clout to influence other major parties and stakeholders. The longer it takes the costlier it will become.

Option 3: Undertake preliminary steps for both options and see which one will be most viable. This means spending for both options before a decision arises.

Questions to answer:

1. What are the risks in changing the partner organization?
2. What are the risks in waiting for the new champion from the same organization?
3. What poses more opportunities for minimizing project delay and project costs? Which option is worth taking the risk for?
4. What level of risk does this problem pose?

A project manager should regularly raise risk issues with the project team. If the project is large enough and designed for a longer time frame, a risk manager can be hired as one of the members of the project team.

4.8 Procurement Management

All projects need to procure goods and services to support project operations. Managing the procurement process includes managing the purchase or acquisition of products or services from outside the project team. The project team needs to manage contracts and related change and quality control processes required to administer contracts or purchase orders issued by authorized project team members.

Procurement management includes administering any contract issued by an outside organization (such as a request from the user) that is acquiring the project from the performing organization and administering contractual obligations placed on the project team by the contract.

Procurement management processes include the following:

1. **Purchases and acquisitions plan** – To determine what to purchase or acquire when and how.

2. **Contracting plan** – To document products, services and other requirements and identify as early as possible the criteria for selecting potential vendors. The project manager and team members should take into account any procurement policy in the organization or at the national or local level of government that will influence or affect the procurement process.

3. **Request for proposal** – To obtain information, quotations, bids and offers as necessary. Suppliers can be given terms of reference to solicit appropriate proposal offers from them.

4. **Contractor selection process** – Includes the criteria and a method of reviewing offers and choosing among potential vendors, as well as a process for negotiating a written contract with each vendor.

5. **Management of contracts** – Refers to administering contracts and the relationship between buyer and seller. This includes an assessment and documentation of how a vendor is performing or has performed to establish required corrective action and to establish a basis for a future relationship with the vendor.

6. **Contract completion** – Refers to closing and settling each contract, including the resolution of any open item that has an effect on project closure.[96]

96 Jason Westland, *The Project Management Life Cycle*.

Something To Do

Below is a table of procurement requirements for setting up a multi-purpose telecentre. Add other requirements that you think such a project will need.

Product or Service	Description	Product ID	Quantity	Budget	Date Required
Computer	Latest specs Intel PC with - Screen 19 inch monitor - Computer unit with latest Intel processor - Accessories – keyboard and mouse - Latest Microsoft operating system - Windows office software suites		20	$ 6,000	Xx/yy/zzzz
Building materials	Construction materials to build cubicles for each computer service - Wooden framing for walls - Electrical cabling and switches		20 wooden slabs, bolts and nuts, cable switches etc.	$ 6,000	Xx/yy/zzzz
Consultancy Services	General consultancy services for project management support including: - Quality assurance auditing - Project office management - Accounting services			$	Xx/yy/zzzz
...					
...					

Source: Adapted from Jason Westland, *The Project Management Life Cycle* (London and Philadelphia: Kogan Page, 2006).

Outsourcing

What is outsourcing? A simple definition is contracting services, tasks or functions to a third party.[97] Organizations that do not have enough personnel or do not have enough competency or skills to perform a function may opt to procure services that will assist an organization fulfill its requirement.

Since ICT is a relatively new function in most governments in developing countries, there are service needs that their staff cannot meet or provide. As a result, request for service proposals for procurement becomes an alternative for government.

The experiences of government agencies in outsourcing services from ICT vendors are sometimes not encouraging. Here are some examples:

- During the presentation and proposal stage, vendors could promise services and other features that they cannot deliver or that are not very useful to the project.
- Vendors offer large “commissions” to the “broker” (the procurement officer or a high government official acting as the “sponsor” of the vendor). This usually happens when the contract price at stake is big.
- Vendors may not be able to deliver the specified agreement, causing delays and other inconveniences, including a legal suit. A delay means additional costs to the project.

97 Wisegeek, “What is Outsourcing?”, http://www.wisegeek.com/what-is-outsourcing.htm; and Sourcingmag.com, “Outsourcing – What is Outsourcing?” http://www.sourcingmag.com/content/what_is_outsourcing.asp.

Questions To Think About

To avoid some of these negative experiences with vendors and the outsourcing mode, an ICT consultant or staff member might recommend in-house development of services (e.g. developing database systems). What do you think might be the advantages and disadvantages of in-house development of systems? What about the advantages and disadvantages of outsourcing?

Whether to outsource or to produce in-house has to be studied carefully. Whichever mode is chosen, it is important to manage it properly. Large-sized projects must have a procurement team leader who will be responsible for the procurement process.

Many government ICT needs are complex and different from those of the commercial or business sector. Procurement in this context will require an information-intensive process between the project management and the supplier or vendor. The latter has to understand from the start what the project really requires, providing specific details about these requirements to make sure that the vendor knows what his/her organization is getting into.

The project manager and the procurement team leader and staff will have to work closely and in partnership with suppliers. There should be a lot of communication to make sure that both parties understand each other's points. While the project team has the requirements, vendors can supply what is available and feasible. Threshing out solutions rather than being too prescriptive is the way to go.[98]

The integration of the Capability Maturity Model (CMM) in the planning process is critical to the organizational assessment of the capability maturity level of an organization for a defined set of operational ("business") processes. Prior to the procurement of services, the assessment can assist the organization determine the relative current state of practice of an organization on a pre-defined scale. In project implementations, procurement must be consistent with the "business case" or the organizational goals. Outsourcing must be able to offer potential improvements for it to be considered an option and it should enhance the organization's capability in a cost-effective manner.

Should outsourcing becomes an option, it is important to ask how and to what extent an organization can improve its capability level(s) for the selected processes or practices, and how it affects the capability rating of the internally managed processes or parts thereof? Although outsourcing can improve the organization capability in certain areas and increase productivity as well as lower costs, it is important to note that the outsourcing objectives still need to be clearly defined. If the outsourcing decision follows and is aligned with the CMM-based strategy, the organization has to carefully assess and define the touch points or interfaces in the process(es) between the internal and externally managed steps.[99]

The processes commonly outsourced in e-government projects are:

- Data management
- Infrastructure management

98 London Advice Services Alliance, *The Lasa Computa Guide to Project Management* (2003), http://www.lasa.org.uk and http://www.ictknowledgebase.org.uk/managingictprojects.

99 Rainer Schendel, *ICT Project Guidebook*, pp.118-119 (see footnote 2).

- Application development and management
- Customer support[100]

The following outlines observed benefits (advantage) and the negative aspects (disadvantage) of outsourcing:[101]

Advantages	Disadvantages
Financial benefits: The common reason for outsourcing is to reduce the operating costs. The costs to serve as the outsourcer can potentially provide a particular set of services in a more cost effective way (through efficient labour management, low-cost locations, distribution of overhead cost over multiple customers etc.)	Loss of control and knowledge: When an organization decides to outsource part of its business, it is to a high degree losing control over that part of the business to the outsourcing partner. It is also starting to lose the business knowledge in those outsourced business areas.
Budgetary benefits: An organization outsourcing can have opportunities to reallocate Investment Budget (CAPEX) to Operational Budget (OPEX).	Potential decrease in customer service satisfaction (or for public service organizations: decrease in constituency satisfaction) due to the lack of "intimacy" or perceived drop in personalized services.
Focus on core business: Outsourcing non-core operations (such as customer service, administration services and accounting) may assist the organization to re-focus on its core business.	Multiple security aspects need to be carefully considered (e.g. personal information, transaction data).
Productivity increase: The organization can select a professional outsourcing partner with access to better technology and processes and may result to increase in the organization's work outputs.	Quality of the services performed under the contract can be compromised and requires a well structured, managed and implemented outsourcing contract (i.e. depending on the extent of the outsourcing contract the organization requires a high capability level in managing third-party services and related processes).

For e-government organizations, among the four components—strategy, process, technology and people—certain areas in the technology component can be outsourced, for as long as the objectives of outsourcing are thoroughly defined and well managed in the outsourcing contract. This means that although outsourcing can close the gaps of capability in certain areas (e.g. identify automated solutions, acquire and maintain application software, among others); it can also create gaps in other areas (such as third-party service management, project management, change management interventions, and the like) between its current capability and required capability level.

Outsourcing can narrow down capability gaps in certain areas and can create or enlarge capability gaps in other areas. Therefore, a capability assessment needs to be analysed carefully before making an outsourcing decision purely based on the results of the capability maturity assessment.

During the course of the gap analysis and determination of actions, outsourcing can be considered with the inputs as discussed above and the analysis will show different assessment rating results.

100 Ibid.

101 Ibid.

The analysis should be able to identify answers for the following questions:

- Which process(es) should be outsourced?
- What are the justifications for outsourcing the process(es) (benefits vs risks)?
- Which gap(s) in capability can be narrowed down and which will be created or enlarged by outsourcing?
- What are the consequences e.g. will the consequences cancel out some of the determined justifications?

If the process is outsourced end-to-end, the organization will also need to assess the capability maturity of the outsourced partner in order to make sure the partner will have enough capability to deliver the required services. This assessment of IT outsourcing services has now been standardized with certificate(s) such as the Customer Operations Performance Center (COPC) Inc's COPC-2000, Certified Outsourcing Professional (COP), CMM, CMMI and ITIL, to name a few.[102]

Finally, outsourcing may result in cultural resistance within an organization. When an organization wants to change all or part of its existing processes, there is usually a certain degree of resistance to change by some members of the organization affected by those changes. Outsourcing a complete set of processes (sometimes including the transfer of the staff to the outsourcer) may elevate some of those potential Organizational Change Management issues.[103]

4.9 Acceptance Management[104]

Acceptance management refers to the process of arriving at an agreement with end-users regarding what products and services the project should produce. It involves several steps, as discussed below.

Acceptance Tests. Acceptance testing forms an important and separate phase from the technical testing efforts done by the technical team and suppliers. Acceptance testing is focused principally on the "acceptance" of the product. In the planning and definition stage with users, acceptance testing parameters must be included in the "sign off" prior to the development of ICT solutions. The manager and the technical team must establish a set of parameters and tests from the users that will prove that the product meets the goals set in the design. This could be a simple checklist specifying what was agreed between the project team and the users.

Go Live! This is when the product is launched and released publicly. This is an event that shows the successful delivery of the project. It could be a simple activity of announcing to all stakeholders the release of the product or it could be a celebration where the product is the toast of the party. The latter can be a good opportunity to reward the members of the project team and show appreciation for their hard work in completing the project. This also creates a positive perception of the project.

Product Release. When products are released to users, it is important to document what has been released, to whom and when. This sounds trivial but it is important to keep track of these as aspects of the product might need fixing or changing if and when users discover some problems and glitches.

102 Ibid. http://www.chillibreeze.com/articles/top-certifications-outsourcing.asp provides a quick overview of the leading BPO certifications.

103 Ibid.

104 This section is drawn from Nick Jenkins, *A Project Management Primer*, pp. 39-40.

The tracking of releases should include the following:

- The version number or identifier of the release
- The date and time of the release
- The purpose of the release (whether maintenance, bug fix or testing)
- For each component within the release: the name and version number of the component, and the date it was last modified

Once they are mainstreamed in organizational systems, accepted products will require maintenance and possible upgrades. There must therefore be a base documentation of the project (i.e. a documentation of the design, specifications and supporting materials) as an important reference for the users group who will be responsible for maintaining and managing the system after the project ends. For the users group to understand the product, both a technical and non-technical orientation or training on product details must be undertaken. This is to ensure that the users will be able to cope with maintenance and upgrading needs after the project.

Test Yourself

1. What is included in the project implementation phase?
2. Why do project managers have to manage the following project constraints: time, cost and scope?
3. What are scope creeps? Why do managers have to be on guard against scope creeps?
4. Why should project management have quality processes?
5. What are risks? How is the degree of risk assessed? How are risks managed?
6. What is communication management? Why is it necessary to have a communication plan?
7. What is procurement? Why should managers manage procurement?
8. What is change management? How is change in the project to be managed?
9. What is acceptance management? Why should it be implemented?

5. PROJECT CONTROL AND MONITORING: DISCIPLINE, ISSUES AND PRACTICES

This section aims to describe project control and monitoring concepts, issues and practices.

5.1 Monitoring progress[105]

Monitoring is the systematic and continuous collection, analysis and use of management information to support effective decision-making. There are multiple levels of monitoring. At the activity level, the project team must keep track of how the project is progressing in terms of expenditure, resource use, implementation of activities, delivery of results and management of risks.

In the LFA tool (table 11), observable verifiable indicators (described quantitatively, qualitatively and in terms of time) are indicated. These indicators serve as a monitoring and evaluation guide for the project manager, the project team and the project implementing agency (the government agency hosting the project).

While monitoring is an internal management responsibility, it also needs to be complemented and enhanced by "external" monitoring inputs. These external monitoring inputs are useful in providing objective verification of results, additional technical advice and a "big-picture" view for senior or higher management officials.

Figure 19 illustrates the LFA's hierarchy of objectives and its link with monitoring, review, evaluation and audit.

Figure 19. Connection of evaluation, monitoring/review activities with LFA hierarchy of objectives

Focus	Logframe hierarchy of objectives
Evaluation (ex post facto) →	Overall objective
Evaluation and Review →	Purpose
Monitoring Review and Audit →	Results
Monitoring and Audit →	Activities and resources

Source: European Commission, *Aid Delivery Method: Volume 1 - Project Cycle Management Guidelines* (Brussels, 2004), p. 103, http://ec.europa.eu/europeaid/multimedia/publications/documents/tools/europeaid_adm_pcm_guidelines_2004_en.pdf.

105 This section is drawn from European Commission, *Aid Delivery Methods Volume 1*.

Plans and activities must be reviewed on a regular basis and updated or revised if they are to remain relevant and feasible. Whenever appropriate, monitoring processes, guidelines and formats for the project monitoring system should be developed and documented. The monitoring system must cover the following areas:

- Project scope – stakeholders, institutional capacity, project objectives and resources
- The nature of organizational relationships, management arrangements and capacity constraints
- The information needs of project implementers and other key stakeholders
- Existing information collection systems and procedures
- Monitoring system guidelines and formats
- Training and resources to support systems development and implementation
- Project assumptions and risks[106]

Regular reviews of the project implementation process provide an opportunity to reflect on progress. Reviews must be perceived as a continuous learning process whereby the experience gained is reviewed and fed back into ongoing planning. Monitoring and review provide inputs and insights into an ongoing process of planning and re-planning the project.

5.2 Documentation Management

Projects produce document outputs from the conceptualization stage up to the closing phase. These documents must be organized by dates of preparation and issuance. Managing documents can either be done electronically and important ones can be kept also as hardcopy files. Active documents using electronic files are a lot easier to retrieve for the project management team. Software applications that provide project management templates are widely available for procurement or for free to use. Documents when managed well facilitate reporting and monitoring of activities.

As early as the planning phase, the performance measurement and reporting framework for tracking performance must be set. The project manager and the team must agree with partners on a set of results that will be monitored by primarily using a set of indicators.

The project can first set a modest baseline data collection. The baseline provides the ground for monitoring. For example, in tracking ICT literacy training programmes, the initial baseline must be able to assess the level of competency of the potential trainees or participants of the training. It can also find out the demographic characteristics of the potential trainees and clientèle as well as their different levels of literacy background prior to the project interventions. From the baseline, progress can be tracked from the data that will be extracted during activity implementation as against the targets set. The data must be analysed from information so as to identify variances and emerging problems. Reporting on performance against expected results and agreed upon indicators must be established. For large projects, data management is necessary to integrate data from the performance measurement framework.[107]

106 AusAID, “The Logical Framework Approach”; and European Commission, *Aid Delivery Methods Volume 1*.

107 CIDA Strategic Planning and Policy Division, Asia Branch, “Is a Project Being Managed for Development Results? Integration of RBM Principles in Project Monitoring: A Guide for Self Assessment and Monitoring”, January 2000, pp. 9-24.

5.3 Reporting Progress

As part of monitoring processes, the project manager and project team must prepare reports on the physical and financial progress of the project for stakeholders, particularly those providing financial resources to support project implementation. These reports:

- Inform stakeholders of project progress (against what was planned), constraints encountered, and any significant remedial or supportive action required;
- Provide a formal documented record of what has been achieved during the reporting period, and thus facilitate future reviews or evaluations;
- Document any change in plans, including budgetary requirements; and therefore
- Promote transparency and accountability.[108]

As early as the planning phase, a reporting system can be structured to provide a standard for reporting on project implementation and progress. The reporting plan includes the time when reports are expected. Reports can be monthly, quarterly, semi-annual or annual.

Project sponsors, such as donors and funding agencies, require reports. Some of these reporting requirements are:

An inception report – This is highly recommended for all projects. Usually it is produced within three months from the launch of the project. The report may trigger funding releases to support the selection and organization of project key staff. The preparation of an inception report can provide the opportunity for project managers to review the project design in consultation with stakeholders. It can update the first annual work plan to ensure its relevance and feasibility and build both management and other stakeholder commitment to, and "ownership" of, the project. This is particularly important in situations where much of the design work has been undertaken by "others" before the project manager and project team take over project implementation. It is also helpful when the design has been prepared sometime in the past (e.g. in some cases there may be a time lag of more than a year between finishing a feasibility study and financing proposal and the commencement of project implementation).

First annual (or quarterly or semi-annual) plan – The inception report is usually accompanied by the first annual plan, which outlines and highlights the activities, project deliverables/outputs, budget estimates and timeline of key activities.

Progress reports – These must be produced by implementing partners and the project manager on a regular basis (or as specified in the agreement with the funding institution). However, overburdening project managers with reporting requirements should be avoided and report formats and timing should take account of or build on existing systems rather than duplicate them. As a formal requirement, it is advisable to require progress reports no more than quarterly and every six months. A progress report provides a summary of the project's status in a standard format that is accessible to staff. The annual report should not only focus on what the project itself has achieved (or not), but also on any significant change in the "external" environment. It should also provide an overview of prospects for the sustainability of benefits.

Revised project budget – This includes any revision in the budget based on changes in the plans.

108 AusAID, "The Logical Framework Approach"; and European Commission, *Aid Delivery Methods Volume 1*.

Accompanying plan for a certain time frame – This should focus on documenting progress towards delivering planned results and achieving the project purpose. A comparison with the original project design (or as updated by the inception report) and the latest work plan should be provided. This report also makes reference to previous plans, providing opportunities for project implementers to reschedule results, activities and resource requirements in light of experience gained or lessons learned. Often, an executive summary of the report is required, specifically addressing the decisions and actions required from relevant stakeholders.

Completion report – This should be prepared at the end of the project fiscal time frame. If there is no formal ex post facto evaluation, the completion report may be the final opportunity to document and comment on overall achievements relative to the original plan and prospects for sustainability of benefits. It is also an opportunity to document lessons learned and recommendations on any follow-up action required.[109]

In preparing reports, the following requirements should be kept in mind:

- The focus must be on progress towards achieving the target results, or those articulated in the project plan. The report should not just list activities undertaken and inputs provided.
- There should be a comparison and contrast of progress against the project plan so that an assessment of performance can be made.
- There should be a brief explanation of deviations from the plan. Remedial actions taken or recommended should be highlighted.
- The report should be clear and concise so that the information presented is easily accessed and understood.

Test Yourself

1. What is the difference between these processes-monitoring, evaluation and audit? When do you use these processes?

2. Why should a project be monitored? Why should it be evaluated?

3. What reports and documentation are produced in the course of project monitoring and evaluation?

109 Ibid.

6. PROJECT CLOSURE: DISCIPLINE, ISSUES AND PRACTICES

This section aims to describe and discuss project closure concepts, issues and processes.

Project closure involves finalizing all project activities that have been completed. It also includes establishing procedures to coordinate verification and documentation of project deliverables, formalize the acceptance of project deliverables, and document reasons for actions taken if an activity is terminated before completion.

6.1 Project Output Acceptance[110]

There are two types of project closure activities.

Administrative closure involves detailing all of the activities, interactions, roles and responsibilities of the project team and other stakeholders involved in project implementation. It also includes collecting project records, analysing project successes or failures, gathering lessons learned and archiving information for the organization or project team's future use.

Contract closure includes all activities to settle and close any contract agreement. This procedure involves both product verification (i.e. checking that all work has been completed correctly and satisfactorily) and administrative closure (i.e. updating contract records to reflect final results and archiving the information for future use). The contract terms and conditions can also prescribe specifications for contract closure. Early termination of a contract is a special case of contract closure that could arise, for example, from the inability to deliver the product, a budget overrun or lack of required resources. This procedure is an input to the contract closure process.

When contracts are completed (i.e. when the final product is delivered according to the agreed specifications), the project team will have to indicate acceptance of the product. Usually acceptance is signified formally with a document explicitly expressing acceptance through the signatures of all parties concerned.

As mentioned earlier, if the deliverables are not acceptable to the users, an investigation is conducted and reports explaining the reasons for non-acceptance are filed. The project team must seek legal advice for this kind of situation.

6.2 Project Evaluation[111]

At the end of the project (or even before project closure), an evaluation is conducted to provide a systematic and objective assessment of the project design, implementation and results, and to determine the relevance and fulfilment of objectives, developmental efficiency, effectiveness, impact and sustainability.

110 This section is drawn from Jason Westland, *The Project Management Life Cycle*.

111 This section is drawn from European Commission, *Aid Delivery Methods Volume 1*.

What is the difference between this evaluation activity and monitoring and audit? While all of these activities are meant to assess the project, the focus of each will be different, as follows:

Evaluation focuses on the efficiency, effectiveness, impact, relevance and sustainability of the policies and actions of the organization or donor.

Monitoring is an ongoing analysis of project progress towards achieving planned results for the purpose of improving management decision-making.

Audit makes an assessment of:

- The legality and regularity of project expenditures and income (i.e. the project's compliance with laws and regulations and with applicable contractual rules and criteria);
- Whether project funds have been used efficiently and economically (i.e. in accordance with requirements of sound financial management); and
- Whether project funds have been used effectively (i.e. for the purposes intended). An audit has a financial management focus.

An evaluation should have the following characteristics:

- It is impartial and independent of the programming and implementation of the project.
- It is credible – The evaluation is conducted by appropriately skilled and independent experts, and transparency is observed, for example through the wide dissemination of results.
- It encourages the participation of stakeholders in the evaluation process to ensure that different perspectives and views are taken into account.
- It ensures that findings and recommendations are useful through timely presentation of relevant, clear and concise information to decision makers.

The output of an evaluation activity is an **evaluation report**, which should mirror the structure of the main evaluation criteria (i.e. relevance, efficiency, effectiveness, impact and sustainability). The report must take into account the nature of the project, the stage at which the evaluation has been carried out and the users for whom the report has been prepared. Table 18 can be used to demonstrate the benefits realized from the project. It translates benefits into values, such as cash values, percentages or number of hours.

Table 18. Benefit realization

Benefit category	Intended benefit	Forecast value	Actual value	Deviation
Financial	• New revenue generated • Reduction in costs • Increased profit margin	$x $x $x Describe	$x $x $x Describe	$x $x $x Describe
Operational	• Improved operational efficiency • Reduction in produce time to market • Enhanced quality of product/service	x% x hours x% Describe	x% x hours x% Describe	x% x hours x% Describe

Benefit category	Intended benefit	Forecast value	Actual value	Deviation
Market	• Increased market awareness • Greater market share • Additional competitive advantage	x% x% Describe	x% x% Describe	x% x% Describe

Questions To Think About

1. Who do you think should conduct the project evaluation—in-house personnel or an external reviewer? Why?

2. What are the benefits of having an external reviewer? What are the disadvantages?

6.3 Deriving Lessons Learned

During the project life cycle, the project team and key stakeholders identify lessons learned from the technical, managerial and process aspects of the project. All knowledge learned during the project should be documented so it becomes part of the historical database of the organization. These lessons learned should be compiled, formalized and stored throughout the duration of the project.

For example, lessons learned in the area of human resources can include:

- Project organization charts, position descriptions and staffing management plans that can be saved as templates;
- Ground rules, conflict management techniques and recognition events that were particularly useful;
- Procedures for virtual teams, co-location, negotiation, training and team building that proved to be successful;
- Special skills or competencies by team members that were discovered during the project; and
- Issues and solutions documented in the project issue log.

Lessons learned sessions can be conducted to focus on identifying project successes and failures, and to generate recommendations to improve future performance on projects. The focus of lessons learned meetings can vary. In some cases, the focus is on technical or product development processes, while in other cases the focus is on the processes that aided or hindered work performance. Teams can gather information more frequently if they feel that the increased quantity of data merits the additional investment of time and money. Lessons learned sessions provide future project teams with information that can increase the effectiveness and efficiency of project management. In addition, phase-end lessons learned sessions can serve as a good team-building exercise.[112]

112 European Commission, *Aid Delivery Methods Volume 1*; and Jason Westland, *The Project Management Life Cycle*.

Project managers have a professional obligation to conduct lessons learned sessions with key internal and external stakeholders, particularly if the project yielded less than desirable results. Such sessions can yield:

- An update of the lessons learned knowledge base
- Inputs to the knowledge management system
- Updated project or organizational policies, procedures and processes
- Improved skills
- Overall product and service improvements
- Updates to the risk management plan
- A revised budget plan[113]

Something To Do

Systems (product) application projects are usually subjected to User Acceptance Tests. Outsourced companies have to conduct demonstrations and tests with the users until all functionalities and specifications of the systems are well accepted by the users.

There are cases when the product tests are not accepted by the users. In such situations, the project closure phase is delayed. If you were the project manager, what will you and your management team do to address the situation? What lessons can be derived from this kind of situation?

Test Yourself

1. Why should a project have a closing process?

2. What are “lessons learned”? What are the uses of “lessons learned”?

113 Ibid.

7. POST-PROJECT ACTIVITIES: PUTTING ICT SYSTEMS INTO OPERATION AND ISSUES OF SUSTAINABILITY

This section discusses the need to ensure that project products or outcomes are integrated into regular operations and sustained.

Technically, a project ends when the project closure and product handover 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. For projects that give rise to an e-government system, 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 enough thought 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 policies 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 organization 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 organization 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 within the organizational environment.

7.1 Policy Environment

Countries that are embarking on e-governance and ICTD projects need to consider national ICT policy needs and requirements. Without policy support, new initiatives could end up as "white elephants", unable to yield their promised benefits. It is also important to take into account the telecommunications policies that will support or hinder ICT-supported development in the country, as well as the organizational policies that will support or hinder the development of any ICTD or e-governance initiative at the local or organizational level.

7.2 Capacity for Maintenance and Improvement

Aside from policies, there are resources required to ensure the continuity, maintenance and improvement of the product or system. A product sponsor (for example, a Ministry at the country

level, a local government unit at the local government level, or an ICT or Management Information System Unit at the organizational level) that will continue to support the development and maintenance of the product or system should be designated. Specifically, the project sponsor can:

- Assign units or groups that will maintain and continuously improve the product or system;
- Ensure that there are funds allocated for the development, maintenance and improvement of the product or system; and
- Build the capacity of the organization and other institutions to fully appreciate the benefits of using and maintaining the new product or system. When the organization or local government understands the benefits to be gained from the initiative, more support could be generated from these governing bodies.

7.3 Continuous Advocacy

Especially in ICTD projects, it is essential to ensure that the product or system developed works for the intended users. Government should invest in making the new product or system as widely known as possible. The support of the business sector, which has the capacity to invest and embark on ICTD and e-governance initiatives, should be sought.

Management Maturity Model

Organizations should strive to continually improve their systems to ensure optimum performance. One way of doing this is to standardize systems and processes that will cover all levels of the organization—that is, not only the organization's projects but also its programmes and portfolios. There must be an alignment of the systems within the organization.

According to the UK Government, "a mature organization has an organization-wide ability for managing initiatives based on standardized, defined management processes." [114] The latter can be customized to address the specific needs of the organization, which also need to be communicated to team members and stakeholders and implemented based on plans and defined processes.

The UK Government offers the "Portfolio, Programme and Project Management Maturity Model" (P3M3), the key concept of which is building the alignment of the management clusters (project, programme and portfolio) to five levels of maturity.

Level 1: Initiation Process – Projects, programmes and portfolios have no standards and tracking process

Level 2: Repeatable Process – Projects, programmes and portfolios have limited consistency and coordination process

Level 3: Defined Process – Projects, programmes and portfolios have centrally programmed processes

114 Office of Government Commerce, *Portfolio, Programme and Project Management Maturity Model: P3M3 Public Consultation Draft v2.0* (2008), p. 16, http://www.strategies-for-managing-change.com/support-files/p3m3-maturity-model-full-version.pdf.

Level 4: Managed Process – Projects, programmes and portfolios have obtained specific measurements of management performance and operate on quality to better predict future performance

Level 5: Optimum Process – Projects, programmes and portfolios continue to improve their processes with problem and technology management in order to improve the ability to depict performance over time and to optimize processes

This model poses a challenge to organizations aiming for a maximum level of efficiency and effectiveness in delivering quality services to citizens.

Something To Do

Read the following case and answer the questions posed at the end.

> Three years ago, a project was developed and implemented to improve the frontline information services of a government revenue agency. The project output was a pilot citizens' service centre providing one easy number to call and an e-mail address for citizens to contact. During its implementation and closure, the project was considered successful because it increased customer satisfaction, indirectly contributing to increased revenue as well as increased capacity and service productivity of government personnel in providing information and in contributing to citizens' education through the citizen's centre.
>
> During the project implementation, a unit was created—the agency Citizen Centre—with personnel assigned on a temporary basis. After two years, the project was handed over to the main agency operations and the unit continued to operate. The citizen centre unit personnel decided to stay on. However, the unit and the personnel needed to be formally recognized. The positions of the personnel had to be secured, which required policy support from other agencies such as the Civil Service Authority, which is in charge of regulating all government personnel, and the Budget Ministry for fund allocation such as personnel salary, maintenance of equipment and improvement of technology.
>
> Two years has passed and the unit is still not formally recognized, and the positions of the personnel are still not secured, although programme operations still continue to provide financial support to cover the maintenance of the unit. Demoralization among the personnel has increased, which is resulting in decreased service productivity.

Questions:

1. What support does the Citizen Centre unit need for it to remain in operation?

2. What could have been done earlier to ensure the sustainability of the Citizen Centre unit?

Test Yourself

1. Why should ICT projects result in sustainable initiatives?

2. What are the requirements of product sustainability after the project?

SUMMARY

The following key points were discussed in this module:

1. Managing ICTD projects is very much like managing other types of development projects. The same project management processes and project management cycle are involved. The important elements in ICTD projects, as in other types of projects, are people, process and technology.

2. However, ICTD projects must pay particular attention to managing change. In particular, the viewpoints of the stakeholders must be taken into account and their full participation in the process of project development and implementation must be encouraged. Users of the project deliverables should be involved from day one of the project.

3. Any ICTD project requiring the efficient and effective delivery of services to citizens must consider business process re-engineering. A careful review of the unit or the organization's system must be undertaken and the system should be modified to meet the objectives of the project.

4. ICTs are not a quick fix for development. People's needs, not technology, should dictate the project design. Ownership of the project by the target users must be emphasized because in the final analysis the users will be responsible for meaningful integration and sustainability of the products or systems developed by the project.

5. For ICTD projects to be successful, the following principles derived from projects implemented by different country jurisdictions should be observed:

    - Participation by all people who are part of the project at every stage
    - Local ownership and capacity development
    - Mix of technology
    - Multi-stakeholder partnerships
    - Alignment with the larger demand-driven development efforts of partners, particularly those related to poverty reduction
    - Institutional ownership and leadership
    - Competitive enabling environment
    - Financial and social sustainability
    - Risk considerations

6. For the outcomes of ICTD projects to be sustainable:

    - They must be anchored on national development goals and linked with the project's external environment.
    - There should be commitment and support from the national government and alignment (and creation) of policies in support of ICT development.
    - They must consider the public interest, in particular the public's right to information.

ANNEX

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Glossary

Assumptions	External factors beyond the control of project managers that have the potential to influence or determine the success of a project.
Benchmarking	Facilitates identification of possible projects for an organization by comparing and measuring policies, practices and performance against those of high-performing organizations within a sector.
Business case	A document that justifies an intervention or initiative as a means of addressing an issue or correcting a problem.
Construction	Involves the evaluation and acquisition of existing software, writing of additional software, detailed specification of manual activities, integration of all elements into a whole, and successive layers of testing of the software.
End-user	The person, group or organization that uses a product.
Feasibility study	Designed to provide an overview of the primary issues related to a proposed project to give stakeholders a basis for deciding whether to proceed with the project and for choosing the most desirable options.
Influencers	Individuals or groups 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 their position in the organization or community.
Information and communication technologies	Information handling tools—a varied set of goods, applications and services that are used to produce, store, process, distribute and exchange information. They include the "old" ICTs of radio, television and telephone, and the "new" ICTs of computers, satellites and wireless technology and the Internet. These different tools are now able to work together, and combine to form our "networked world", a massive infrastructure of interconnected telephone services, standardized computer hardware, the Internet, radio and television, which reaches into every corner of the globe.
ICT projects	ICT-based solutions that meet defined service and government strategic needs.
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.
Milestones (also called Checkpoints)	Outcomes, the delivery of which marks the completion of a phase or set of tasks.
Monitoring	The process of checking that all plans (inputs and outputs) and quality standards are being met; enables the detection and management of risk areas.
Operation	The ongoing use of the system; includes a provision for incident reporting and work requests to deal with errors and changes in the system's environment and in users' needs.
Organizational Change Management Plan	The plan that will address the project impact (positive and negative) on people's behaviour in the organization.
Outsourcing	The contracting of services, tasks or functions to a third party.
Ownership	Taking ownership; a process of internalization of responsibility for a development process and its outcomes, and therefore a willingness to invest considerable effort and resources; generally regarded as a prerequisite for the sustainability of a development action.
Participation	Process in which the people involved cooperate and collaborate in development projects and programmes; also seen as the empowerment of individuals and groups in terms of acquiring skills, knowledge and experience, leading to greater self-reliance.

Planning	The phase where the project environment is examined; the rationale and assumptions of the project are defined; and the scope, requirements and resource parameters (time, costs and people), including risks, are identified.
Programming	The process by which a programme of action is identified and put into a coherent plan based on (national or local) policies, agenda, strategies and objectives, and cross-cutting themes for consideration in the development and planning processes of projects.
Project	Transitory undertakings that use up resources, incur costs and produce deliverables over a definite period of time, to achieve a specific goal.
Project appraisal	A formal review and a management tool for quality control.
Project champions	Project advocates or people who will support the project all the way.
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; a list of activities for handing over the final solutions to end-users/customers and conducting the post-project review, and administrative procedures in closing the project management office.
Project Cycle Management	The management activities and decision-making procedures during the life cycle of a project, including key tasks, roles and responsibilities, key documents and decision options.
Project implementation	A list of activities required to produce the deliverables that create the solution for the end-user/customer; the project phase where all of the project plans are executed; the goal at this phase is to manage the execution processes and ensure that control mechanisms are working.
Project Initiation Plan	Steps involved in defining the project, recruiting and staffing the project team, and establishing the project management office.
Project management	Set of “principles, practices, and techniques applied to lead project teams and control project schedule, cost, and risks to deliver the results of a successful project to the delight of stakeholders” (Chapman, 1997).
Project Management Office	Defines and maintains the standards of processes generally related to project management within an organization or government agency.
Project Manager	The person responsible for managing the project and ensuring that project objectives are met.
Project partnership	A relationship in which partners have a 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 risks	External events or uncertain conditions that could have positive or negative effects on the delivery of project objectives.
Project sponsors	The funders and “political endorsers” of the project concept.
Project task	A specific activity with a defined purpose.
Requirements analysis	Establishing what needs to be done.
Review and evaluation	Measures the impact of the project and how it has contributed to larger goals of government; findings and results will serve as basis for future planning and programming activities.
Scope creeps	Deviations in the project scope; “additional elements” not agreed upon or considered in the original project scope.
Social sustainability	The maintenance of social capital, which includes “investments and services that create the basic framework for society. It lowers the cost of working together and facilitates cooperation: trust lowers transaction costs” (Goodland, 2002).

Stakeholders	Those who are affected by project outcomes, whether negatively or positively, and those who can affect the outcomes of a proposed intervention.
System Design	Establishes “how” the product is to perform the functions defined in the System Requirements Statement; its checkpoint is an agreed System Design Specification.

Notes For Trainers

As noted in the section entitled “About The Module Series”, this module and others in the series are designed to have value for different sets of audiences and in varied and changing national conditions. The modules are also designed to be presented, in whole or in part, in different modes, on- and off-line. The modules may be studied by individuals and by groups in training institutions as well as within government offices. The background of the participants as well as the duration of the training sessions will determine the extent of detail in the presentation of content.

These “Notes” offer trainers some ideas and suggestions for presenting the module content more effectively. Further guidance on training approaches and strategies is provided in a handbook on instructional design developed as a companion material for the *Academy of ICT Essentials for Government Leaders* module series. The handbook is available at: http://www.unapcict.org/academy.

Content and Methodology

The module is divided into seven 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. Trainers 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 training participants. It is suggested that the following be given prominence in the training:

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 module, along with others in the *Academy of ICT Essentials for Government Leaders* module series, is anchored on the ICT for development perspective and the e-government service delivery environment.

Roles and Functions – People manage projects, and projects have an impact 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 ICT project management should be given prominence.

Reference Standards – Awareness of different international project management reference standards is an edge for project managers.

Project Management Tools and Techniques – Use of appropriate tools and techniques can increase the efficiency and effectiveness of managers. The correct use of these tools and techniques should be demonstrated.

Training participants are likely to have diverse backgrounds or exposure to ICT and management experience. Thus, it would be useful to begin by clarifying expectations and sharing perspectives. It is also important to recognize that their experiences are important sources of information and

learning that would enrich the discussion of the module content. Case examples can be built from the participants' experience.

Training sessions should be as interactive as possible, with a lot of group discussion and hands-on exercises. In local training sessions, it is best to use the local language for the training to be more meaningful and effective.

Structuring the Sessions

The following can be used as guide in the selection of training content for training sessions of varying durations.

For a 90-minute session

The session should provide an overview of ICT project management from a development perspective, including project phases and lessons learned from the field about effective ICTD project management (section 1 of the module).

For a three-hour session

In addition to the overview of ICT project management from a development perspective, the value of organizational change management and stakeholder participation should be discussed (section 2).

For a full day session (6 hours duration)

A full day session should include an exploration of the discipline, issues and practices in project initiation, planning and scope definition (section 3). Case studies should be used to demonstrate the concepts, principles and standards of ICT project planning presented.

For a three-day session

In a three-day workshop, key aspects of project planning, implementation, control and monitoring (up to section 4) should be explored through the analysis of case studies and hands-on activities. In the latter, participants should be invited to apply the project management practices and tools presented to actual ICT projects that they have been or are currently involved in. In addition, opportunities should be provided for the participants to reflect on and discuss issues in the application of these project management practices and tools.

For a five-day session

A five-day workshop will allow not only coverage of all phases of project management, including post-project activities (section 7), but also a project-based learning approach where participants prepare and critique a complete ICT project management plan that they can then "bring home" for implementation.

Resources

The module makes reference to a number of online training resources in project management. Training participants should be encouraged to explore these resources keeping in mind the needs and imperatives of actual projects they are involved in.

To make the sessions more meaningful and participatory, the facilitator can make use of the examples of the experiences of the participants using the activity: “Tell the Story of Your Project” (at the end of section 3). The facilitator may start with this exercise as a take off point to discuss the basic concepts and theories on ICT project management.

Other case examples can be sourced and retrieved from the APCICT *Academy* modules; from resource libraries of the United Nations and the World Bank; from organizations such as the Asian Development Bank, AusAID CIDA, Commonwealth of Learning and IDRC; and from working papers and articles developed by international NGOs and the academe such as Manchester University (Department for International Development [DFID] projects) and the University of Washington (Technology and Social Change).

About the Authors

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.

John J. Macasio has over 20 years of experience in educational administration and 13 years in managing ICT projects. He has been extensively involved in providing technical advisory services, strategic planning and programme formulation for government agencies, private educational institutions and enterprises. During his tenure with the Philippine Commission on Information and Communications Technology, he designed and facilitated the National Computer Institute's training programmes on e-government, ICT project management and enterprise architecture. He has also been involved in the formulation of National ICT Competency Standards for teachers and government executives.

UN-APCICT

The United Nations Asian and Pacific Training Centre for Information and Communication Technology for Development (UN-APCICT/ESCAP) is a subsidiary body 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. UN-APCICT/ESCAP's work is focused on 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 member 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

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. Below are the short descriptions of the ten modules of the *Academy*.

Module 1 - The Linkage between ICT Applications and Meaningful Development

Highlights key issues and decision points, from policy to implementation, in the use of ICTs for achieving the MDGs.

Module 2 - ICT for Development Policy, Process and Governance

Focuses on ICTD policymaking and governance, and provides critical information about aspects of national policies, strategies and frameworks that promote ICTD.

Module 3 - e-Government Applications

Examines e-government concepts, principles and types of applications. It also discusses how an e-government system is built and identifies design considerations.

Module 4 - ICT Trends for Government Leaders

Provides insights into current trends in ICT and its future directions. It also looks at key technical and policy considerations when making decisions for ICTD.

Module 5 - Internet Governance

Discusses the ongoing development of international policies and procedures that govern the use and operation of the Internet.

Module 6 - Information Security and Privacy

Presents information security issues and trends, and the process of formulating an information security strategy.

Module 7 - ICT Project Management in Theory and Practice

Introduces project management concepts that are relevant to ICTD projects, including the methods, processes and project management disciplines commonly used.

Module 8 - Options for Funding ICT for Development

Explores funding options for ICTD and e-government projects. Public-private partnerships are highlighted as a particularly useful funding option in developing countries.

Module 9 - ICT for Disaster Risk Management

Provides an overview of disaster risk management and its information needs while identifying the technology available to reduce disaster risks and respond to disasters.

Module 10 - ICT, Climate Change and Green Growth

Presents the role that ICTs play in observing and monitoring the environment, sharing information, mobilizing action, promoting environmental sustainability and abating climate change.

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 have 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 APCICT 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