Academy of ICT Essentials for Government Leaders

Module 2

ICT for Development Policy, Process and Governance

Emmanuel C. Lallana

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

The Academy of ICT Essentials for Government Leaders Module Series

Module 2: ICT for Development Policy, Process and Governance

This work is released under the Creative Commons Attribution 3.0 License.
To view a copy of this license, visit http://creativecommons.org/licenses/by/3.0/

The opinions, figures and estimates set forth in this publication are the responsibility of the authors, and should not necessarily be considered as reflecting the views or carrying the endorsement of the United Nations.

The designations used and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Mention of firm names and commercial products does not imply the endorsement of the United Nations.

United Nations Asian and Pacific Training Centre for Information
and Communication Technology for Development (UN-APCICT)
Bonbudong, 3rd Floor Songdo Techno Park
7-50 Songdo-dong, Yeonsu-gu, Incheon City
Republic of Korea

Telephone: +82 32 245 1700-02
Fax: +82 32 245 7712
E-mail: info@unapcict.org
http://www.unapcict.org

Copyright © UN-APCICT 2009

ISBN: 978-89-955886-1-1 [94560]

Design and Layout: Scandinavian Publishing Co., Ltd. and studio triangle
Printed in: Republic of Korea

FOREWORD

The 21st century is marked by the growing interdependence of people in a globalizing world. It is a world where opportunities are opening up for millions of people through new technologies, expanding access to essential information and knowledge which could significantly improve people's lives and help reduce poverty. But this is possible only if the growing interdependence is accompanied by shared values, commitment and solidarity for inclusive and sustainable development, where progress is for all people.

In recent years, Asia and the Pacific has been 'a region of superlatives' when it comes to information and communication technologies (ICTs). According to the International Telecommunication Union, the region is home to over two billion telephones and 1.4 billion mobile phone subscribers. China and India alone accounted for a quarter of all mobile phones in the world by mid-2008. The Asia Pacific region also represents 40 per cent of the world's Internet users and the largest broadband market in the world with a share of 39 per cent of the global total.

Against this background of rapid technological advancement, many have wondered if the digital divide will disappear. Unfortunately, the response to this question is 'not yet'. Even five years after the World Summit on the Information Society (WSIS) was held in Geneva in 2003, and despite all the impressive technological breakthroughs and commitments of key players in the region, access to basic communication is still beyond the vast majority of people, especially the poor.

More than 25 countries in the region, mainly small island developing countries and land-locked developing countries, have less than 10 Internet users per 100 persons, and these users are mostly concentrated in big cities, while on the other hand, some developed countries in the region have a ratio of more than 80 Internet users per 100. Broadband disparities between the advanced and developing countries are even more striking.

In order to bridge the digital divide and realize ICT potentials for inclusive socio-economic development in the region, policymakers in developing countries will need to set priorities, enact policies, formulate legal and regulatory frameworks, allocate funds, and facilitate partnerships that promote the ICT industry sector and develop ICT skills among their citizens.

As the Plan of Action of the WSIS states, "… each person should have the opportunity to acquire the necessary skills and knowledge in order to understand, participate in, and benefit from the Information Society and Knowledge Economy." To this end, the Plan of Action calls for international and regional cooperation in the field of capacity building with an emphasis on creating a critical mass of skilled ICT professionals and experts.

It is in response to this call that APCICT has developed this comprehensive ICT for development training curriculum – the *Academy of ICT Essentials for Government Leaders* – consisting presently of eight stand-alone but interlinked modules that aim to impart the essential knowledge and expertise that will help policymakers plan and implement ICT initiatives more effectively.

APCICT is one of five regional institutes of the United Nations Economic and Social Commission of Asia and the Pacific (ESCAP). ESCAP promotes sustainable and inclusive socio-economic development in Asia and the Pacific through analysis, normative work, capacity building, regional cooperation and knowledge sharing. In partnership with other UN agencies, international organizations, national partners and stakeholders, ESCAP, through APCICT, is committed to support the use, customization and translation of these *Academy* modules in different countries, and their regular delivery at a series of national and regional workshops for senior- and mid-level government officials, with the objective that the built capacity and acquired knowledge would be translated into increased awareness of ICT benefits and concrete action towards meeting development goals.

Noeleen Heyzer

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

PREFACE

The journey in developing the *Academy of ICT Essentials for Government Leaders Module Series* has truly been an inspirational eye-opening experience. The *Academy* has not only served to fill a gap in ICT capacity building, but has also paved a new way for curriculum development – through people's participation and ownership of the process.

The *Academy* is the flagship programme of APCICT, which has been developed based on: results of a comprehensive needs assessment survey involving over 20 countries in the region and consultations with government officials, members of the international development community, and academics and educators; in-depth research and analysis of the strengths and weaknesses of existing training materials; feedback from participants in a series of APCICT-organized regional and sub-regional workshops on the usefulness and relevance of the module content and the appropriate training methodology; and a rigorous peer review process by leading experts in various ICT for development (ICTD) fields. The *Academy* workshops held across the region provided an invaluable opportunity for the exchange of experiences and knowledge among participants from different countries, a process that has made the *Academy Alumni* key players in shaping the modules.

The national roll-out of eight initial *Academy* modules marks the beginning of a vital process of strengthening existing partnerships and building new ones to develop capacity in ICTD policymaking across the region. APCICT is committed to providing technical support in rolling out the *National Academies* as its key approach towards ensuring that the *Academy* reaches all policymakers. APCICT has also been working closely with a number of regional and national training institutions that are already networked with central-, state- and local-level governments, to enhance their capacity in customizing, translating and delivering the *Academy* modules to take national needs and priorities into account. There are plans to further expand the depth and coverage of existing modules and develop new ones.

Furthermore, APCICT is employing a multi-channel approach to ensure that the *Academy* content reaches wider audiences in the region. Aside from the face-to-face delivery of the *Academy* via regional and national *Academies*, there is also the APCICT Virtual Academy (AVA), the *Academy's* online distance learning platform, which is designed to enable participants to study the materials at their own pace. AVA ensures that all the *Academy* modules and accompanying materials, such as presentation slides and case studies, are easily accessible online for download, re-use, customization and localization, and it encompasses various functions including virtual lectures, learning management tools, content development tools and certification.

The initial set of eight modules and their delivery through regional, sub-regional and national *Academy* workshops 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 the *Academy Alumni* and our partners from government ministries, training institutions, and regional and national organizations who participated in the *Academy* workshops. They not only provided valuable input to the content of the modules, but more importantly, they have become advocates of the *Academy* in their country, resulting in formal agreements between APCICT and a number of national and regional partner institutions to customize and deliver regular *Academy* courses in-country.

I would also like to add a special acknowledgment to the dedicated efforts of many outstanding individuals who have made this extraordinary journey possible. They include Shahid Akhtar, Project Advisor of the *Academy*; Patricia Arinto, Editor; Christine Apikul, Publications Manager; all the *Academy* authors; and the APCICT team.

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

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 information and communication technologies (ICTs) in the economy and in society as a whole.

As a consequence, governments worldwide have increasingly focused on ICTs for development (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 United Nations Asian and Pacific Training Centre for Information and Communication Technology for Development (UN-APCICT) 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 (AVA – http://www.unapcict.org/academy) — with virtual classrooms featuring the trainers' presentations in video format and PowerPoint presentations of the modules.

In addition, APCICT has developed an e-Collaborative Hub for ICTD (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 2

Governments worldwide are increasingly focusing on information and communication technologies for development (ICTD), which is not only about developing the ICT industry or sector of the economy but also about using ICT to engender economic as well as social and political growth. Specifically, governments are expected to develop ICTD policy that addresses a range of areas, including an enabling policy and regulatory environment, access to basic infrastructure, accelerated development of basic ICT skills, development of appropriate content and ICT applications for development, and advanced ICT research and development to provide innovative solutions. This module focuses on ICTD policymaking and governance, providing critical information about aspects of national policies, strategies and frameworks that promote ICTD. It discusses key ICTD policy and governance issues, and shows how governments can measure their progress and benchmark that progress against those of other countries.

Module Objectives

The module aims to:

1. Provide critical information about different aspects of national policies, strategies and legal instruments that promote the use of ICTD;

2. Discuss issues around developing and implementing ICTD policy; and

3. Demonstrate how governments can measure their progress in ICTD policymaking and benchmark that progress against that of other countries.

Learning Outcomes

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

1. Describe the ICTD policy process;

2. Analyse key ICTD policies; and

3. Discuss key issues in ICT governance.

TABLE OF CONTENTS

Foreword 3

Preface 5

About The Module Series 7

Module 2 9
- Module Objectives 9
- Learning Outcomes 9
- List of Case Studies 11
- List of Boxes 11
- List of Figures 11
- List of Tables 11
- Acronyms 12
- List of Icons 12

1. Developing ICTD Policy 13
- 1.1 An ICT Development Model 15
- 1.2 Technology and Legal and Regulatory Reform 21
- 1.3 Multi-stakeholder ICT Policy Development 27

2. Elements of a National ICTD Policy 33
- 2.1 ICT Capacity Development 34
- 2.2 Building the ICT Industry 40
- 2.3 e-Governance 51

3. ICT Governance 61
- 3.1 ICT Governance Framework 62
- 3.2 Governing ICT Investments 68

Annex 73
- Glossary 73
- Notes for Trainers 76
- About the Author 78

List of Case Studies

1. Reforming the Telecommunications Sector of the Philippines 14
2. Digital Technology and Copyright: The Case of New Zealand 22
3. Singapore's Infocomm Human Resource Development Programme 38
4. National ICT Industry Strategy Case Study 1: China – The World's ICT Manufacturing Hub 41
5. National ICT Industry Strategy Case Study 2: India – A Global Software Powerhouse 44
6. National ICT Industry Strategy Case Study 3: The Republic of Korea – From Semiconductors to Multimedia 47
7. National ICT Industry Strategy Case Study 4: A Strategy for the Digital Content Industry in Ireland 49
8. Malaysian Open Source Software Master Plan 53
9. Public Security through Interoperability in Brazil 55

List of Boxes

Box 1. State, Market and Civil Society — Unity or Disjuncture? 19
Box 2. Steps in Formulating ICTD Policy and Strategy 20
Box 3. Telecommunications Licensing 25
Box 4. Principles of Multi-stakeholder Partnership 29
Box 5. Why e-Government Projects Fail 57
Box 6. Australia's 'Whole-of-Government ICT Investment Principles' 68

List of Figures

Figure 1. UK's e-Strategy — Harnessing Technology: Transforming Learning and Children's Services 36

List of Tables

Table 1. Comparative Matrix on ICT Bodies in Asia 64

Acronyms

ADB	Asian Development Bank
APCICT	Asian and Pacific Training Centre for Information and Communication Technology for Development
ASEAN	Association of Southeast Asian Nations
BPO	Business Process Outsourcing
CD	Compact Disc
CMA	Communications and Multimedia Act
DRAM	Dynamic Random Access Memory
ESCAP	Economic and Social Commission for Asia and the Pacific
EU	European Union
FOSS	Free and Open Source Software
GCIO	Government Chief Information Officer
GIF	Government Interoperability Framework
GNP	Gross National Product
GSD	Global Software Development
ICT	Information and Communication Technology
ICTD	Information and Communication Technology for Development
IDA	Infocomm Development Authority of Singapore
IMF	International Monetary Fund
IP	Internet Protocol
IT	Information Technology
ITU	International Telecommunication Union
NEA	National Enterprise Architecture
NGO	Non-Governmental Organization
NIDA	National Information Communications Technology Development Authority, Cambodia
NII	National Information Infrastructure
OECD	Organisation for Economic Co-operation and Development
OSS	Open Source Software
PC	Personal Computer
PLDT	Philippines Long Distance Telephone Company
PWC	PricewaterhouseCoopers
R&D	Research and Development
RAAKS	Rapid Appraisal of Agricultural Knowledge Systems
TA	Technical Assistance
UK	United Kingdom
UN	United Nations
US	United States
VAT	Value Added Tax
VCR	Video Cassette Recorder
WSIS	World Summit on the Information Society

List of Icons

Case Study

Questions To Think About

Something To Do

Test Yourself

1. DEVELOPING ICTD POLICY

This section aims to:
- **Describe the role of states, markets and civil society in ICT policymaking;**
- **Discuss the need for legal and regulatory reform in light of new ICT developments; and**
- **Describe multi-stakeholder ICT policy development.**

The use of information and communication technology for development (ICTD) requires a proactive public policy push. It requires not only vision but also a strategy and a plan of action. A *laissez faire* approach will not do because ICT is expensive and to not use it properly is to waste valuable resources. The promise of ICT is bright but the risk of failure is also high.

Before we proceed to discuss ICTD policy, let us first discuss 'policy'. A policy is a plan of action. It is formally defined as "a set of interrelated decisions taken by a political actor or group of actors concerning the selection of goals and the means of achieving them within a specified situation where those decisions should, in principle, be within the power of those actors to achieve."[1] 'Public policy' is a government's response to issues related to the common welfare or good. It is embedded in a country's laws (legislation), regulations, decisions and actions of government.[2]

It is also important to point out that practice is also policy. A formal statement (in the form of an order or regulation) is not needed in order to be able to say that a policy exists. For instance, widespread use of proprietary software in government and the absence of a formal policy on the use of open source software imply a *de facto* policy in favour of proprietary software.

In sum, public policy is both what is articulated in pronouncements and documents, as well as what is practised by governments.

While public policy aims for the public good, public policy does not always embody the best possible solution to a given issue or problem. Public policymaking is not only about the best technical or scientific response to an issue; it is also about the best solution that meets the legitimate needs of stakeholders. And because the stakeholders often have differing views of what constitutes the best solution, good public policy represents the best *acceptable* solution to all interested parties.

Another reason why policy does not necessarily embody the best possible technical solution is that new policy is invariably written in the margins of existing ones. Old policy acts as a constraint to new ones. For instance, old policies may have created vested interests that would insist on the status quo (no new policy) or at least a new policy that does not make them worse off.

The case of telecommunications reform in the Philippines illustrates the 'politics' of ICT policy development.

1 William Jenkins. "Policy Analysis: A Political and Organizational Perspective," in Wikipedia, "Policy," Wikimedia Foundation, Inc., http://en.wikipedia.org/wiki/Policy.

2 Legislation or 'statutory law' is law that has been promulgated (or 'enacted') by a legislature or other governing body. The term may refer to a single law, or the collective body of enacted law, while 'statute' is also used to refer to a single law. (Wikipedia, "Legislation," Wikimedia Foundation, Inc., http://en.wikipedia.org/wiki/Legislation). Regulation is "a legal restriction promulgated by government administrative agencies through rulemaking supported by a threat of sanction or a fine." (Wikipedia, "Regulation," Wikimedia Foundation, Inc., http://en.wikipedia.org/wiki/Regulation).

Reforming the Telecommunications Sector of the Philippines

The liberalization of the telecommunications industry in the Philippines was initiated by a coalition for reform, which strategized the stages that led to market opening. The Philippine Long Distance Telephone Company (PLDT), the incumbent private monopoly, did not welcome the attack on its cosy position and counteracted with its own publicity campaign. However, when it became clear that (then) President Ramos was committed to breaking its monopolistic control, the owners of PLDT accepted a negotiated settlement. Once this compromise was reached, the specifics of liberalization were left to the National Telecommunications Commission — the regulator, and the Department of Transportation and Communications — the policymaker.

Liberalization in the Philippines was made possible by the President's commitment and the work of an ad-hoc group of reformers. These reformers were not the direct beneficiaries of market entry, in contrast to the Malaysian case. In the Philippines, the beneficiaries of market entry were mostly big businessmen. Once policy credibility was established and the state demonstrated its determination to open the sector, these businessmen enthusiastically entered the telecommunications market.

Unlike in Malaysia, many actors were involved in the reform efforts in the Philippines. In the Malaysian case, where power was concentrated in the hands of the Prime Minister, the facilitation of policy change and the introduction of policy reforms were relatively easier. In the Philippines, where power is diffused in three different branches of government and where a powerful economic elite influences segments of the state bureaucracy, policy reform is more complicated, needing more pressure from outside government as well as the backing of key officials.

Source: Abridged from Lorraine Carlos Salazar, *Getting a Dial Tone: Telecommunications Liberalization in Malaysia and the Philippines* (Singapore: Institute of Southeast Asian Studies, 2007).

Questions To Think About

1. How different are your country's efforts in telecommunication liberalization from those of the Philippines and Malaysia?
2. Based on the case cited, what do you think are the factors that would facilitate liberalization?
3. What barriers or hindrances to telecommunications liberalization can you think of?

It is also critical for policymakers to take into account the fact that policies have unintended consequences. This is clearly illustrated in the case of the computerization of land records (CLR) in the Bhoomi project[3] in Karnataka, India. Amit Prakash and Rahul De' in their study of

3 See Revenue Department, "Bhoomi," Karnataka State Government, http://www.revdept-01.kar.nic.in/Bhoomi/Home.htm.

the use of Bhoomi in the districts of Mandya and Koppal concluded that the variation in social context due to historical land administration systems, led to unforeseen results. According to Prakash and De':

> While we see a favourable structural impact through the use of [the] Bhoomi project in Mandya (in the sense that farmers are facilitated in accessing more credit through formal channels and with an assumption that formal credit has a positive development impact on the farmers) that the projects designers would have hoped for, in Koppal, however, the project use tends to reinforce the existing (exploitative) land relations, which is contrary to what various land reforms initiatives (CLR and Bhoomi are the latest addition in this list) have called for — land to the tiller.[4]

There may be no avoiding unintended consequences, but it is important that in the policy development phase policymakers properly asses the context as well as the potential impact of the intervention so as to minimize unintended consequences.

1.1 An ICT Development Model

It has been suggested that the dominant development paradigm switched from state-led to market-led development in 1978.[5] The new development strategy — eventually dubbed the 'Washington consensus' after the city that hosts the World Bank and International Monetary Fund (IMF) and is the seat of power of the United States (US) government — "emphasized government downscaling, deregulation, and rapid liberalization and privatization."[6]

This pro-market approach is also embraced by many in the field of ICT development.[7] Pro-market ICT development is inscribed in the Geneva Declaration of the World Summit on the Information Society (WSIS) thus:

> Policies that create a favourable climate for stability, predictability and fair competition at all levels should be developed and implemented in a manner that not only attracts more private investment for ICT infrastructure development but also enables universal service obligations to be met in areas where traditional market conditions fail to work.[8]

The shift away from states to markets in ICT development is best seen in the mainstream prescription for the development of the information infrastructure, particularly the telecommunication sector. Up until the mid-1970s, telecommunications was seen as a service to be provided by government (in some instances, a private monopoly). Today, this is no longer the case. Note, for instance, that the first principle in the Global Internet Policy Initiative's general principles for "Best Practices for Telecommunications Reform" is:

4 Amit Prakash and Rahul De', "Enactment of Technology Structures in ICT4D Projects: A Study of Computerization of Land Records in India" (paper presented at the 11th Pacific-Asia Conference on Information Systems, Aukland, New Zealand, 3-6 July 2007), 11.
5 David Howell, *The Edge of Now: New Questions for Democracy in the Networked Age* (London: Pan Books, 2001), 59.
6 Joseph Stiglitz, *Making Globalization Work* (London: Penguin Books, 2006), 17.
7 The term 'ICT development' should be distinguished from 'ICT for development'. ICT development refers to development of ICT infrastructure and ICT-related industries.
8 See WSIS, "Declaration of Principles – Building the Information Society: A global challenge in the new Millennium," http://www.itu.int/wsis/docs/geneva/official/dop.html.

> 1) Governments should not be providers of telecom services, which are run more efficiently by private companies. Its role is to be responsible for planning, structuring and regulation. It is the private sector that should be responsible for management, investment, construction and financing. The transfer of responsibility to the private sector and the introduction of competition should be accomplished through transparent arrangements (management contracts, capital leases, concessions, sale of assets and rights to operate).[9]

Even the goal of ensuring universal access is no longer accepted as a justification for government-provided service:

> The success of universal access efforts will depend in large measure on the success of privatization and competition. The most significant profitability factors for rural investments relate more to policy variables (especially interconnection and tariffs) than to risk and financial variables.[10]

The pro-market shift in ICT development is also reflected in practice. According to the International Telecommunication Union (ITU), "2004 marks a major milestone in the opening up of basic telecommunication services to competition" as "basic services are...being provided under competitive conditions in 54 per cent of countries worldwide."[11]

According to Scott H. Jacobs, former Head of Program on Regulatory Reform of the Organisation for Economic Co-operation and Development (OECD) Public Management Service, the major benefits of the pro-market reforms have been:

- **Boosting consumer benefits** by reducing prices for services and products such as electricity, transport and health care, and by increasing choice and service quality;
- **Reducing the cost structure of exporting and upstream sectors to improve competitiveness** in regional and global markets;
- **Addressing a lack of flexibility and innovation in the supply-side of the economy**, which will be an increasing constraint to growth; and
- **Helping to increase employment rates by creating new job opportunities**, and by doing so reducing fiscal demands on social security, (which is) particularly important in ageing populations.[12]

The Philippines and Singapore are examples of how a pro-market telecommunications policy is beneficial. In the Philippines, there were more telephone lines installed in the first six years of a competitive telecoms market than in the 30 years under a monopoly. Today, the Philippines has one of the most competitive mobile phone markets in Asia.

9 Global Internet Policy Initiative, *Best Practices for Telecommunications Reform* (May 2002), 1, http://www.apdip.net/documents/policy/regulations/gipi01052002a.pdf.
10 Ibid., 2.
11 ITU, *Trends in Telecommunication Reform 2004/05: Licensing in an era of convergence - Summary* (Geneva: ITU, 2004), 3, http://www.itu.int/dms_pub/itu-d/opb/reg/D-REG-TTR.7-2004-SUM-PDF-E.pdf.
12 Scott H. Jacobs, "The Second Generation of Regulatory Reforms" (paper prepared for delivery at the IMF Conference on Second Generation Reform, Washington, D.C., USA, 8-9 November 1999), http://www.imf.org/External/Pubs/FT/seminar/1999/reforms/jacobs.htm.

In the case of Singapore, its 'big bang' telecoms liberalization led to greater investments, infrastructure development and positive spin-offs to other sectors. Singapore's Infocomm Development Authority (IDA) estimates that "total investments arising from the new activities (excluding 3G mobile and fixed wireless investments) following full market liberalization is close to SGD 3 billion (USD1.8 billion) over the next three years...with...2,500 new jobs... to be created."[13]

But critics of the market-led approach note that "it [has] paid too little attention to issues of equity, employment and competition, to pacing and sequencing of reforms, or how privatizations were conducted."[14] A new consensus — the 'Post Washington Consensus' — has emerged to address these issues. The new consensus, according to Kanishka Jayasuriya,

> envisages a strong state — albeit restructured — in a more regulatory direction as a precondition for liberal markets. There has been a clear recognition that in the absence of frameworks like a strong competition policy, deregulation may result in a transfer of power from the state to powerful private sector oligarchies.[15]

Thus, it is now generally recognized that the creation of an independent regulator must accompany telecoms market liberalization.[16] An independent regulator is considered necessary to guard against anti-competitive practices by the dominant (erstwhile monopoly) operator and to establish pro-competitive measures without which new entrants may never enter the market. Among the lessons learned from the privatization of Argentina's telecommunications sector is the importance of a strong independent regulator:

> A stable, credible regulatory environment reduces the risk of investment in this sector and reduces the expected rate of return that private investors would require to participate. Establishing a stable, credible regulatory regime before privatization increases the value of a privatized telecommunications firm to potential purchasers by reducing the risk associated with the purchase. This in turn affects the price generated by the selling government. By failing to establish such a regime in advance, the Argentine government received a lower sale price and increased the probability that buyers would capture windfall profits.[17]

There is evidence that the role of the state in ICT development is not simply to allow the market full play. As noted by the Nobel Prize-winning economist Joseph Stiglitz:

> Markets are essential; markets help allocate resources, ensuring that they are well deployed, which is especially important when resources are scarce.... [But] equally important... [is] strengthening government and figuring out, for each country as it reaches each stage of development, what the right mix of government and market might be.[18]

13 See IDA, *Singapore's Telecom Liberalization Draws ATT, MCI WorldCom and Other Global Players* (Press Release, 3 April 2000), http://www.ida.gov.sg/News%20and%20Events/20060926144739.aspx?getPagetype=20.
14 Joseph Stiglitz, *Making Globalization Work,* 17.
15 Kanishka Jayasuriya, *Governance, Post Washington Consensus and the New Anti Politics* (Southeast Asia Research Center Working Papers Series No. 2, 2001), 3, http://www.cityu.edu.hk/searc/WP2_01_Jayasuriya.pdf.
16 See, for instance, Global Internet Policy Initiative, *Best Practices for Telecommunications Reform*.
17 Alice Hill and Manuel Angel Abdala, *Regulation, Institutions, and Commitment : Privatization and Regulation in the Argentine Telecommunications Sector,* Policy Research Working Paper Series 1216 (Washington, D.C.: The World Bank, 1993), http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1993/11/01/000009265_3961005141505/Rendered/PDF/multi_page.pdf.
18 Joseph Stiglitz, *Making Globalization Work,* 48.

Stiglitz underscores the need to balance state and markets. But it is also important to acknowledge the role of civil society organizations, more popularly known as non-governmental organizations (NGOs), in development. Civil society organizations have unique strengths that make their role in development significant. According to the Asian Development Bank (ADB):

> Among the particular strengths of NGOs are that they serve as bridges to affected communities and respond to local needs. NGOs use innovative approaches to development, help ensure projects are implemented as envisaged, nurture continuity in project work, advocate for increased transparency and good governance, and give voice to vulnerable and/or marginalized groups.[19]

Since 1987, ADB has been working with NGOs as "an effective means of supplementing efforts in selected operational areas." ADB has recognized that it can "enhance the effectiveness of its operations by drawing upon the special capabilities and expertise of NGOs."[20] In 1998, ADB identified "three broad areas of cooperation with NGOs, including cooperation in loan and technical assistance (TA) activities, programming and country-level work, and policy development."[21]

NGOs, according to Yvonne Asamoah, "are particularly critical in circumstances where State funds are limited, political situations are fluid, natural disasters resulting from both predictable and unpredictable environmental circumstances occur, ethnic strife is rampant, and the level of per capita income severely restricts the ability to purchase needed goods and services — social, educational and economic."[22]

The role of NGOs in development has been recognized in the Post Washington Consensus:

> The lexicon of the new policy paradigm... includes civil society, institution building, safety nets and especially governance, to be added to the conventional Washington terminology of 'open markets', 'deregulation', 'liberalization' and 'structural adjustment'.[23]

Taking all these into consideration, the development challenge for policymakers who seek to harness the power of ICT for development is to find the right balance among state, market and civil society in their country's development strategy (see Box 1).

19 ADB, *ADB-Government-NGO Cooperation: A Framework for Action, 2003-2005* (May 2003), 2, http://www.adb.org/NGOs/Framework/final_framework.pdf.
20 Ibid.
21 Ibid., 3.
22 Yvonne Asamoah, *NGOs, Social Development and Sustainability* (12 September 2003), http://www.foreignaid.com/thinktank/articles/NGOsAndSocialDevelopment.html.
23 Kanishka Jayasuriya, *Governance, Post Washington Consensus and the New Anti Politics,* 3.

Box 1. State, Market and Civil Society — Unity or Disjuncture?

For donors, civil society is a force for and ingredient of democratization, as well as a natural component of a market economy.... [D]onors make frequent reference to the potential of civil society, to hold in check the state, to serve as the moral pulse of society and to further democratic value. By reducing the power of the state and increasing the role of the market, it is assumed that civil society too will flourish and will in turn encourage further economic liberalization. Moreover, civil society, state, and market are assumed to constitute an organic, symbiotic whole, characterized by unity rather than disjuncture and by cooperation rather than conflict. There is thus an expectation that civil society will function to mediate and balance the power of the state and market, to provide a moral check on the market, and likewise to maintain the democratic integrity of the state.

...The triadic unity of state, market, and civil society also assumes neat boundaries between the three elements, discrete functions and actors, and an organic harmony and balance. Yet, many organizations within civil society receive funding to varying degrees from both state and private sponsorship. In some countries, government officials have set up their own NGOs as a way to work more creatively, access different resources, and gain new opportunities. Similarly, some development NGOs amount to no more than 'briefcase companies' founded for the purpose of tax evasion and private gain. Furthermore, the triadic representation implicitly assumes an equal — or at least unproblematic — division of power between the three elements, indeed three separate domains of power. Yet organizations within civil society do not enjoy the same degree of power. Business associations, for example, are more likely to have better resources and wield greater political leverage than trade unions or community groups. The power of the market thus permeates and shapes the composition of civil society. As Wood (1990) so cogently argues, the juxtaposition of an array of fragmented and diverse institutions within the conceptual space of civil society masks the totalizing logic of capitalism that fundamentally binds these diverse institutions together and gives them meaning...

Although the state may welcome charities and welfare bodies providing for the homeless, elderly and sick, not least because this reduces state expenditure, it may take less kindly to advocacy groups that promote causes contrary to government policy or organizations that challenge the legitimacy of the state.... Similarly, businesses may sponsor community development, but they may be less receptive to challenges from labour organizations or environmental groups for minimum labour and environmental standards. Thus the interactions of state, market, and civil society are overlaid by contradictory purposes and value, the resolution of which may not necessarily favor the sustenance of civil society nor guarantee stability. The alliances and coalitions are not always self-evident or conducive to redistribution of power and wealth.

Source: Jude Howell and Jenny Pearce, in *New Roles and Relevance: Development NGOs and The Challenge of Change,* ed. David Lewis and Tina Wallace (Kumarian Press, 2000), 76-78. Quoted in Anup Shah, "Nongovernmental Organizations in Development Issues," http://www.globalissues.org/TradeRelated/Poverty/NGOs.asp.

Questions To Think About

1. In your country, what is the role of civil society in governance?
2. Describe the relationship between the state and civil society in your country.

Something To Do

What's your mix? Quantify the current as well as the ideal/future mix of government, market and non-government sectors in your country's ICTD strategy. Use percentages to quantify the 'share' of each sector in the current and ideal mix.

Training participants who come from the same country can do this exercise as a group.

Successful ICT policy and strategy formulation involves several steps (see Box 2).

Box 2. Steps in Formulating ICTD Policy and Strategy

1. Outline a vision statement and state a short/long term scenario for ICT development. This should include measurable outcomes or benchmarks over a given time frame. It may, therefore, be important to conduct visioning exercises for the purpose.

2. Assess current situation based on consultations, research, facts and figures, perception and observations. (This activity will give you a clearer perspective of where you are and will guide you on the efforts that may be required from your end given the goals you want to achieve.)

   2.1 Review existing policies and plans, legislation as well as proposed policies and policy directions. There are also other ICT-related issues that may have to be considered. These include information access, telecommunication policies and regulations, frequency and radio regulations, e-commerce and e-government policies.
   2.2 Consider regional context, including agreements on free trade, etc. that could impact on policy formulation.

3. Undertake consultations that are representative and ensure that marginalized sectors are included, i.e. women, the poor, rural dwellers, youth, and the handicapped. It may also be necessary to prepare a stakeholders' plan that shall include a schedule and methodology of consultations. These include focus group discussions (FGDs), roundtable meetings, online consultations and exchanges. Consultations must be ongoing.

4. Draft an action plan (for actual implementation). This plan should include a proposed list of projects, projected outcomes and indicators of success, intended results and their justifications, risk assessment and mitigation, cost and other detailed resource requirements. The plan should also provide a schedule of implementation. It may also be critical to give an explanation/rationale for the priorities set.

5. Designate institutional arrangements for implementation. The institution should be responsible for the strategy and action plan. In many cases, this agency or organization is associated with or attached to a high-level government decision-making body, which has the authority and full support of government.

»

»

6. Put in place monitoring and evaluation mechanisms. It is important that indicators of success are established, shared, commented on and agreed upon through an open and consultative fashion.

Source: Adapted from Richard Labelle, *ICT Policy Formulation and e-Strategy Development: A Comprehensive Guidebook* (Bangkok: UNDP-APDIP, 2005), http://www.apdip.net/publications/ict4d/ict4dlabelle.pdf.

Questions To Think About

Which step in formulating ICTD policy do you think will policymakers find the most challenging? Why?

1.2 Technology and Legal and Regulatory Reform

Laws and regulation are affected by changes in technology. With the ever growing use of ICT in the economy, polity and society, there is a need to review national laws and, if necessary, repeal those that only serve as a barrier to technological change and ICT-enabled development.

The intimate relationship between law and technology is apparent in contract law. In most countries, a signature is a legal requirement for perfecting a contract. At present, almost all laws require a written signature using paper and ink. In fact, we do not normally problematize what a signature is — that is, until the emergence of a new form of signature based on another technology. A 'digital signature' is functionally equivalent to a 'written' signature: both signify an individual's agreement to a contract. However, a digital signature, which is a type of asymmetric cryptography, is not normally accepted as a means to perfect contracts under the laws of many countries. The problem with this is that contracts can also now be electronic. It is believed that legal recognition of digital signatures is necessary to facilitate electronic commerce (e-commerce). Thus, a number of countries have passed e-commerce laws that give equal (legal) recognition to digital and written signatures.

Business models are also based on (or assume the existence of) a dominant technology. Trade in books is an example. Books are printed on paper and distributed and sold in that format. A significant cost of a book is its printing cost. The distribution cost of a book is also dependent on the fact that it is printed on paper. (Those of us who buy our books from eBay sometimes have to pay more for the cost of mailing the book than the cost of the book itself!) But what happens to a book when it is not printed on paper and it is distributed in electronic format? Should one pay the same price for a downloaded book as for a printed book? Should the publisher eliminate the cost of printing and distribution from the price of the downloaded book? If books can be downloaded, what happens to bookstores? And so on.

These are not just idle musings. Policymakers should think about these things because technological changes normally outpace legal and regulatory reforms. Hence, old rules are being used to govern new things. This becomes odious when old laws prevent new (better) things from happening.

Take music. In the recent past (a past that most contemporary policymakers would remember), music was stored and sold through (vinyl) records. Records were either Long Playing/Albums (played at 33 rpm) or singles (played at 45 rpm) largely because vinyl plastic was used. Vinyl was the preferred medium because it is flexible and (under normal use) unbreakable. What happens to the music industry when we can store and play music in other media? Should we still buy music in Long Playing/Album format? When we substituted CDs for vinyl, the answer was yes. But now that we can download music and use MP3 to play them? Downloading music raises new questions as well as possibilities. Why download albums of specific musicians/groups? Why not download specific songs? And when you have downloaded all of your favourite songs from your favourite musicians, why not compile them into an album? What prevents you from doing this? Is it reasonable (or fair) for record companies to insist on the old way of buying and selling music? Should government prescribe other forms of buying and selling music beyond what is currently allowed?

Admittedly, the answers to these questions are not easy to arrive at. But it is important for policymakers to understand that a critical issue underlying the piracy and intellectual property protection debate is the relationship of technology to laws. New Zealand is among several countries that have taken steps to respond to this debate through a review of its copyright law.

Digital Technology and Copyright: The Case of New Zealand

I

Technological change and the development and adoption of new technologies frequently raise issues concerning the applicability, adequacy and operation of existing laws and regulation. This is particularly true of copyright law, itself a product of technology. From the English Copyright Act of 1709 (the Statute of Anne), the history of copyright shows the legislative framework developing and evolving in response to technological change. The printing press, the gramophone, the player-piano, broadcasting, the photocopier, the video recorder and the computer — copyright has evolved to meet the demands of new technologies and ensure that copyright protects the interests of copyright creators and owners, users of copyright materials and the wider public interest.

The increasing use of digital technology in commerce, information technology, communications and the entertainment industries has particular implications for copyright laws. Digital technology allows copyright works to be copied, manipulated and disseminated with a minimum of effort and cost that cannot be matched using analogue technologies. Key questions are whether the current Copyright Act, which does not include any reference to the word ‘digital’, is capable of dealing with the use of works in the digital and online environment, and whether the Act needs to be reformed to meet the demands of copyright creators, owners and users. Copyright creators and owners have concerns about their ability to control digital copying and communication of their works over the Internet. Copyright users have concerns about the effects of digital technology in restricting reasonable access to copyright material.

»

» II

Copyright is a bundle of rights granted by statute in relation to the expression of ideas and information in original works. Copyright law endeavours to strike a balance between competing interests: i.e. between the interests of creators and owners of copyright material on the one hand, and the interests of users of such material on the other.

Copyright creators and owners seek protection for their works so that they can control and obtain reasonable commercial returns from the use of that material. Copyright assists copyright creators and owners by providing a framework of rules that help to govern the marketplace for creative works.... Copyright therefore functions as an incentive in two important ways, by encouraging:

- Creators to create works of copyright and investors to invest in the creation of those works; and
- Copyright owners to further develop those works and to disseminate them to society.

Copyright law must, however, also recognize the needs of the users of copyright works. It does so by ensuring that copyright protection does not unreasonably restrict the needs of specific users and the general public to have access to copyright works.

Although New Zealand has a small population, it produces persons with a wide range of creative skills and talent. An effective copyright regime is one factor that recognizes the value of a creative work force to the economy and cultural development. It can provide incentives that encourage the:

- Utilization of and investment in New Zealand's creative skills and talent by both local and foreign investors;
- Further development of export markets involving the copyright-based industries; and
- Production of works that contribute to and reflect New Zealand's culture and national identity.

While New Zealand produces a wide range of persons with creative skills and talent, it is a net importer of many products that are subject to copyright protection held in other countries. An effective copyright regime also serves to ensure that New Zealanders have access to foreign copyright works and, more importantly, information contained in copyright works. It is therefore important that New Zealand's copyright regime continues to provide a level of protection commensurate with that provided by trading partners and international obligations.

Any reform of New Zealand's copyright legislation should therefore be directed towards: continuing to encourage domestic innovation and the dissemination of copyright works to New Zealanders; facilitating the growth of export markets for copyright-based industries; and taking account of international obligations, existing and potential, in determining the shape of domestic legislation.

Source: Abridged from New Zealand Ministry of Economic Development, *Digital Technology and the Copyright Act 1994: A Discussion Paper* (2001), http://www.med.govt.nz/templates/MultipageDocumentTOC____991.aspx.

Questions To Think About

1. Is it necessary to have copyright laws? Why or why not?
2. How different is your country's copyright policy from that of New Zealand?

It is not only laws that must be changed. Regulations should also change to adjust to digital technology.[24]

In traditional voice telephony, supply, services and facilities were integrated by technical design. Hence it made sense for only one company to provide both the service (for instance, voice) and the network that made the (voice) service possible. For instance, PLDT in the Philippines in the pre-competition years was the one company with a license to run a (circuit switch) network and provide voice and data services to consumers. This is also the case in television broadcasting: the television company operates a network that carries the programmes created or bought by that company.

Internet technologies, in particular Internet protocol (IP), have permitted a clear separation between network facilities and services. The network facility (the packet switch network that carried the traffic) is no longer tied to the services that can be supplied over these facilities (like Internet access, voice over IP, data). This change in technology provides government the opportunity to formulate regulations that recognize and build on this separation of network facility and services. For instance, network providers can be issued licenses that are separate and distinct from licenses for services providers. A company can be in the network business only and earn simply by transporting data (under this scenario, data also includes voice, music and multimedia) from one point of the network to another. There will be other companies that can provide services like voice telephony, music downloads, on-demand video and games. These service providers need not own a network but they can use the network of the company established primarily to provide network facilities.

Another technical change that is affecting regulation is convergence. Broadly, convergence refers to "the blurring of industry or sector boundaries in the communication field."[25] Convergence, according to the OECD, has three dimensions — technical, functional and corporate. Technical convergence, which concerns us here, "means that, increasingly, a single mode of transmission (a coaxial or fiber optic cable) simultaneously transmits diverse information: voice, text, data, sound, image."[26] Where before you needed separate cables to bring Internet, TV and telephony to homes, with convergence a household needs only one cable to get all of these services (and other services, such as video on demand and pay-per-view TV). However, while this is technically possible, in many instances regulation does not allow this to happen.

Licensing can allow convergence to happen. This is why the ITU is encouraging governments to look at licensing beyond simply 'gatekeeping' towards facilitating convergence (see Box 3).

24 Regulation is defined as "rule or order issued by an agency of the executive branch of government which has the force of law. Regulations must be authorized by the statute and generally provide more details on a particular subject than does the authorizing statute." (Law Library, "A Glossary of Terms for First Year Law Students," George Mason University School of Law, http://www.law.gmu.edu/libtech/glossary).
25 Robert E. Babe, *Convergence and the New Technologies*, http://www.ucalgary.ca/~rseiler/babe.htm.
26 Ibid.

Box 3. Telecommunications Licensing

During telecommunication sector reform in the 1980s and 1990s, many countries initially used licensing as a vehicle to control market entry and to impose regulatory obligations. And even after the initial stage of market liberalization, the licensing process in some countries still provides a means of gatekeeping to control market entry. However, in this new era of convergence, more and more policymakers are questioning the utility of licensing and demanding that licenses be adapted to achieve policy goals without hindering market development and technological advancement. These concerns have been translated into two significant trends: an expansion in the number of services subject to minimal or even no licensing, and the development of converged licensing frameworks that break down traditional service and technology-based licensing distinctions.

From individual licensing to general authorizations

In a number of countries today, licensing requirements for many services are being eased in order to remove barriers to market entry and boost competition. Instead of requiring individual licensing and lengthy application procedures, general authorizations are increasingly used for a growing number of services. A prime example of this trend can be found in the Member States of the European Union (EU), which has taken a major step to create a single licensing classification for all electronic communications.

From service-specific to generic licenses

Malaysia's Communications and Multimedia Act (CMA), enacted in 1999, has established a regulatory framework designed explicitly to reflect and accommodate convergence. In particular, the CMA introduced a technology- and service-neutral licensing regime for telecommunications and broadcasting that reduced that country's 31 service-specific licenses to four generic categories of licenses.

Unified licensing framework

Going a step further, some countries have begun to introduce measures to create a unified licensing model. India's move towards a unified licensing regime provides some insights into this trend. In a consultation paper issued in March 2004, the Telecom Regulatory Authority of India proposed several unified licensing models.

Technology and service neutrality

One of the key goals in moving to a converged licensing framework is to achieve technology neutrality. This term is intended to convey that a licensee retains the ability to choose the technology and equipment he or she will use to provide the licensed service. For example, a rural universal access project that subsidizes a pay phone service can be considered technology neutral if the operator is allowed to choose which technology or architecture is economically optimal to deliver the service.

In addition to experimenting with technology neutrality, governments are increasingly moving to service-neutral licensing. This allows license holders to take cues from the market as to which services are most in demand or most cost-effective. A generic license then empowers operators to offer a variety of different services and applications tailored to fluctuations in market demand. Converged licensing frameworks that incorporate technology and service neutrality increase the scope of applications and services that any operator can provide, using its choice of technologies. Many countries such as Australia, the EU Member States and Malaysia have adopted converged licensing regimes.

Source: Abridged from ITU, *Trends in Telecommunication Reform 2004/05: Licensing in an era of convergence - Summary* (Geneva: ITU, 2004), http://www.itu.int/dms_pub/itu-d/opb/reg/D-REG-TTR.7-2004-SUM-PDF-E.pdf.

Questions To Think About

Which of the trends in telecommunications licensing described above do you observe in your own country? Why do you say so?

The argument is straightforward. Law and regulation must keep up with technological changes. With the advent of digital technologies, particularly the Internet, there is need to change the way the network or infrastructure is regulated. It is now possible to treat service providers as a distinct group from network facility providers.

Policymakers cannot temporize in the face of technical change because problems arise when old regulation governs new technology and its effects. Policymakers (and regulators) should assess the extent to which current laws and established regulations hinder or hamper the spread of new technology and the development of new businesses. Specifically, they should ascertain whether laws or regulations:

1. Create artificial barriers to the achievement of full converged service benefits;
2. Create unjustified biases that favour or retard one segment of the industry in relation to others;
3. Adequately address new public service and public interest opportunities and requirements; and
4. Adequately facilitate the application of the new technological and service possibilities toward extending network and service development to unserved and underserved regions and persons.[27]

Something To Do

Identify laws and regulations in your country that may be:

- Creating artificial barriers to the achievement of full converged service benefits;
- Creating unjustified biases that favour or retard one segment of the industry in relation to others;
- Adequately addressing new public service and public interest opportunities and requirements; and
- Adequately facilitating the application of the new technological and service possibilities toward extending network and service development to unserved and underserved regions and persons.

Training participants who come from the same country can do this exercise as a group.

27 ICT Regulation Toolkit, "Module 7: New Technologies and Their Impacts on Regulation," infoDev and ITU, http://www.ictregulationtoolkit.org/en/Section.1318.html.

1.3 Multi-stakeholder ICT Policy Development

So far we have examined two issues related to making public policy on ICT — market-led ICT policy development and the relationship between technological change and legal/regulatory reform. In this section, we will examine the need to engage stakeholders in ICTD policymaking.

Stakeholders are individuals, groups or organizations who have an interest in the policy being formulated. Another definition of a stakeholder is "anyone significantly affecting or affected by someone else's decision-making activity."[28] For instance, stakeholders in projects related to ICT in Education include students, parents, employers, government agencies, the community, graduates, computer companies and multimedia companies. Different ICTD issues have different stakeholders. The stakeholders for ICT in Education are different from those in ICT in Health.

Stakeholders represent different interests and bring different agenda to the table. Nonetheless, as was noted by world leaders at WSIS:

> Governments, as well as private sector, civil society and the United Nations and other international organizations have an important role and responsibility in the development of the Information Society and, as appropriate, in decision-making processes. Building a people-centred Information Society is a joint effort which requires cooperation and partnership among all stakeholders.[29]

The faith in multi-stakeholder policymaking comes from the belief that different groups can come together for a common purpose, such as using ICT for development. Multi-stakeholder partnerships:

1. Promote inclusivity and equity in ICT policy and implementation;
2. Expand the analytical capability to address ICT policy issues;
3. Promote grass-roots mobilization and participation;
4. Promote the development of focused and holistic action plans;
5. Foster the sharing of skills and innovation;
6. Provide an important platform for training a new crop of experts;
7. Create a balance between market orientation and development orientation;
8. Encourage good governance since partnerships provide an opportunity for different groups to identify conflicts, gaps or overlaps between their respective policies and programmes, and to better coordinate their work going forward;
9. Enable participants to leverage their financial resources;
10. Motivate both leaders and laggards — that is, partnerships create platforms for encouraging those with limited commitment and for bringing progressive actors together;
11. Promote ownership and commitment for action; and
12. Help to develop trust among groups that are usually suspicious of and hostile towards each other.[30]

---

28 Jacques Chevalier, *Stakeholder Analysis and Natural Resource Management* (June 2001), http://http-server.carleton.ca/~jchevali/STAKEH2.html.

29 WSIS, "Declaration of Principles – Building the Information Society: A global challenge in the new Millennium," http://www.itu.int/wsis/docs/geneva/official/dop.html.

30 Lishan Adam, Tina James and Alice Munyua Wanjirar, *Frequently Asked Questions about Multi-Stakeholder Partnerships in ICTs for Development: A guide for national ICT policy animators* (Melville: Association for Progressive Communications, 2007), 8-9, http://rights.apc.org/documents/catia_ms_guide_EN.pdf.

An important component of multi-stakeholder policymaking is stakeholder analysis, which "refers to a range of tools for the identification and description of stakeholders on the basis of their attributes, interrelationships, and interests related to a given issue or resource."[31] In conducting a stakeholder analysis, the following steps should be considered:

1. Identify the main purpose of the analysis.
2. Develop an understanding of the system and decision makers in the system.
3. Identify principal stakeholders.
4. Investigate stakeholder interests, characteristics and circumstances.
5. Identify patterns and contexts of interaction between stakeholders.
6. Define options for management.[32]

A more detailed approach to stakeholder analysis is provided by the Rapid Appraisal of Agricultural Knowledge Systems (RAAKS), an actor-oriented method that has been developed for appraising stakeholders and their networks in a systematic and participatory manner. It covers three phases and 16 steps.

Phase A: Defining the problem

1. Appraise objective(s)
2. Identify relevant actors
3. Trace (diverse) mission statements
4. Define the environment
5. Clarify–redefine the problem

Phase B: Analysis of constraints and opportunities

1. Impact
2. Actors
3. Knowledge networks
4. Integration
5. Tasks
6. Coordination
7. Communication
8. Understanding the social organization for innovation

Phase C: Strategy–action planning

1. Knowledge management
2. Actor potential — who can do what?
3. Strategic commitments to an action plan[33]

To be successful in multi-stakeholder partnerships in ICTD, policymakers would do well to remember the Principles of Multi-stakeholder Partnership drafted by the Global Knowledge Partnership (see Box 4).

31 Ricardo Ramirez, "Chapter 5: Stakeholder analysis and conflict management," in *Cultivating Peace: Conflict and Collaboration in Natural Resource Management*, ed. Daniel Buckles (Ottawa: International Development Research Centre, 1999), http://www.idrc.ca/en/ev-27971-201-1-DO_TOPIC.html.

32 Ibid.

33 For more details see "Introduction: problem, purpose and design," http://www.kit.nl/net/KIT_Publicaties_output/ShowFile2.aspx?e=604.

Box 4. Principles of Multi-stakeholder Partnership

PRINCIPLE 1
Knowing when to apply a multi-sector ICT partnership approach is about recognizing the confluence of the following three features: those aspects of the sustainable development agenda to which ICT can act as an enabler; the persistent challenges to the deployment of ICT as an enabler of sustainable development, in particular cases where the design of solutions by single parties in society or by contractual relationships have failed; and those persistent ICTD challenges that, because of their complexity, require the strategic alignment of resources and competencies from across business, government and civil society.

PRINCIPLE 2
Before agreeing to enter into a partnership, its projected value in satisfying the main drivers for participation should be objectively weighed against the available alternatives and risks.

PRINCIPLE 3
A multi-stakeholder ICT partnership will work best when it is in the self-interest of each party to pro-actively seek solutions that satisfy the interests of the other parties, i.e. when the partnership is mutually reinforcing.

PRINCIPLE 4
Successful partnerships are built on complementary competencies and resources that, in combination, meet the parameters of some strategic design.

PRINCIPLE 5
The resources and competencies contributed to the partnership need to be drawn from as close as possible to the core 'business' of the partner organizations, in order to both retain the relevance of the partnership to the objectives and day-to-day activities of the organization, and to exploit the efficiencies of partners contributing from their existing, i.e. variable, costs base, rather than introducing new, fixed, costs.

PRINCIPLE 6
Regardless of the type of multi-stakeholder ICT partnerships, prior consensus should be sought for some form of written document identifying, at a minimum: the shared vision of the partnership; the objectives of each partner for the partnership, and the division of roles and responsibilities. The moral and legal status of the document will be dependent on circumstances.

PRINCIPLE 7
When evaluating the outcomes of multi-stakeholder ICT partnerships, care should be taken to identify the incremental contribution of the partnership activities over and above external factors and the next most likely alternative, i.e. Added Value of Partnership = Value of Partnership Outcomes – (External Factors + Most Likely Alternatives).

Source: Abridged from Global Knowledge Partnership, *Multi-stakeholder Partnerships: Issue Paper* (Kuala Lumpur: Global Knowledge Partnership Secretariat), http://www.globalknowledge.org/gkps_portal/index.cfm?menuid=178&parentid=179.

Questions To Think About

In your experience, which principles of multi-stakeholder partnerships are often ignored or not observed? Why do you think is this the case?

Something To Do

Who are your ICT stakeholders? Identify the stakeholders, their main interests, and their respective strengths and weaknesses for the following ICTD projects:

- ICT for Health
- ICT for Education
- ICT for Agriculture
- ICT for Disaster Management

Training participants who come from the same country can do this exercise as a group.

Test Yourself

1. What is the role of government in ICTD?
2. What is meant by a market-led ICT strategy? How is this manifested in the development of the Information Infrastructure?
3. What is the role of NGOs in development?
4. What are the implications of the digital revolution on laws, particularly copyright laws?
5. Who are the ICT stakeholders? Why is it important to engage them?

Further Reading

Considine, Mark. 2005. *Making Public Policy: Institutions, Actors, Strategies.* Cambridge, UK: Polity.

Hanna, Nagy K. 2003. *Why National Strategies are needed for ICT-enabled Development.* ISG Staff Working Papers. http://wsispapers.choike.org/national_strategies.pdf.

Labelle, Richard. 2005. *ICT Policy Formulation and e-Strategy Development: A Comprehensive Guidebook.* Bangkok: UNDP-APDIP. http://www.apdip.net/publications/ict4d/ict4dlabelle.pdf.

Lallana, Emmanuel C. 2004. *An Overview of ICT Policies and e-Strategies of Select Asian Economies.* Bangkok: UNDP-APDIP.
http://www.apdip.net/publications/ict4d/OverviewICTPolicies.pdf.

Missika-Wierzba, Bathylle and Mark Nelson. 2006. *A Revolution in Capacity Development? Africans Ask Tough Questions.* Washington, D.C.: World Bank Institute. http://siteresources.worldbank.org/INTCDRC/Resources/CapDev_No16_5.3.06.pdf.

Stiglitz, Joseph. 2007. *Making Globalization Work.* London: Penguin Books.

Tipson, Frederick S. and Claudia Frittelli. 2003. *Global Digital Opportunities National Strategies of "ICT for Development."* Markle Foundation. http://www.markle.org/downloadable_assets/gdoi_1223.pdf.

UNDP Evaluation Office. 2001. *Information Communications Technology for Development. UNDP Essentials: Synthesis of Lessons Learned. New York: UNDP.* http://www.internetpolicy.net/practices/essentials5-web.pdf.

2. ELEMENTS OF A NATIONAL ICTD POLICY

This section highlights and discusses issues related to three of the elements in a comprehensive national ICT policy, namely, capacity building, building the ICT sector of the economy, and e-governance.

As noted by other commentators, "the main objective of national ICT policy is to balance the benefits and the risks of expanded ICT use in a way that is consistent with national development goals."[34] Thus, a comprehensive national ICT policy would include several key elements. This section discusses three such elements — developing human capital, building an ICT industry and e-governance.

Two important reminders before we get into the meat of the discussion.

First, crafting a national ICT policy is not a one-time activity. One should not plan to achieve all conceivable national ICT goals in one document. The more successful countries have done a series of national ICT policies with new plans building on the foundation laid by previous plans. The Republic of Korea, for instance, started with the Basic Informatization Promotion Plan (1996–2000) with the vision of attaining world-class informatization levels by 2010. This was followed by Cyber Korea 21 (1999-2002) with the vision of building a leading knowledge-based society. The third plan was e-Korea Vision 2007 (2002–2007) with 'Build e-Korea as the global leader' as its vision. The most recent national plan is Broadband IT Korea Vision 2007, which sets the blueprint for the future Korea with the following goals:

- e-Government to enhance efficiency and transparency of public service;
- e-Transformation to increase global competitiveness;
- Building the broadband communications network and finding a new engine of growth;
- Realizing a digital welfare state; and
- Increasing global IT cooperation.[35]

Second, this section does not discuss the development of a national information infrastructure (NII) — that is, a broadband network capable of carrying voice, data, text, image and video (multimedia) information in an interactive mode serving the information needs of a country. The need to develop an NII is well-recognized. Many countries have prioritized the development of the NII in their ICTD policy. Unfortunately, the concern with the NII has overshadowed the other elements of a national ICTD policy. Partly as an effort to correct the undue importance given to infrastructure development, partly because of space and time limitations, and partly because telecommunications development has already been discussed in the previous section, the focus of subsequent discussions will be on the other equally important elements of the national ICT policy, namely: capacity building, development of the ICT sector of the economy, and e-governance.

34 Association for Progressive Communications, "Part 3: Policy and regulation," *ICT Policy Handbook,* http://rights.apc.org/handbook/ICT_11.shtml.
35 Dong-pyo Hong, presentation for Workshop on Technology Innovation and Economic Growth, Hangzhou, China, 25-26 May 2005, http://info.worldbank.org/etools/docs/library/144050/Development_of_ICT.pdf.

2.1 ICT Capacity Development

Many governments that prioritized information infrastructure development quickly realized that access does not only mean providing Internet connectivity. Even if Internet connections are made available to a community for free, if nobody in the community knows how to use the Internet, then that community's Internet access point is useless. As noted by Bridges.org:

> Any technology will be insufficient if people do not understand how to put it to effective use as part of their lives or their work, either because they are not trained to use it, or they cannot imagine the possibilities for how they could use it. People will be encouraged to use ICT only when it is apparent to them that it will have a positive impact on their daily lives. Further, it is essential that people understand the broader potential for technology, so that users are empowered to innovate for themselves and use technology in creative ways that may not have been envisioned by the project or policy.[36]

Thus, developing ICT capacity is an important policy objective for any country seeking to harness the power of ICT for development.

The OECD defines 'capacity' "as the ability of people, organizations and society as a whole to manage their affairs successfully"[37] and 'capacity development' "as the process whereby people, organizations and society as a whole unleash, strengthen, create, adapt and maintain capacity over time."[38] The focus of subsequent discussions is ICT capacity development of citizens.

Policymakers face two general issues regarding ICT capacity development. The first is ensuring that all citizens have the basic competencies to succeed in the Information Age. The other is to develop specialist ICT skills so that the country's ICT sector and economy in general can expand in a sustained manner. We will cover the former in the discussion on ICT in Education while the latter will be touched on in the discussion of ICT skills development.

ICT in education

Success in an information society requires skills that are different from skills that are useful in an industrial society. Recognizing this, a number of countries have moved towards defining basic ICT skills for their citizens. For instance, in February 2008 the US National ICT Literacy Policy Council recommended a set of national ICT literacy standards to determine fundamental ICT skills for all students.[39] This standard is seen as a first step towards a national standard for ICT literacy. The United Kingdom (UK) has also defined 'Skills for Life Standards for ICT' alongside the existing standards for adult literacy and adult numeracy.[40]

36 See "Real Access/Real Impact criteria," bridges.org, http://www.bridges.org/Real_Access.
37 OECD, *The Challenge of Capacity Development: Working Towards Good Practice* (Paris: OECD, 2006), 12. http://www.oecd.org/dataoecd/4/36/36326495.pdf.
38 Ibid.
39 Reuters, "National ICT Literacy Standards Set" (21 February 2008), http://www.reuters.com/article/pressRelease/idUS133743+21-Feb-2008+MW20080221.
40 Department for Education and Skills, *National Standard for Adult Literacy, Numeracy and ICT* (London: Qualifications and Curriculum Authority, 2005), http://www.qca.org.uk/libraryAssets/media/14130_national_standards_for_adult_literacy_numeracy_ict.pdf.

But basic ICT skills are not the only skills required in the information society. Experts also call for the development of the so-called '21st century skills' — creativity, problem-solving abilities, information literacy, communication skills and other higher-order thinking skills.[41]

While a country's education system is naturally seen as playing an important role in developing both ICT and 21st century skills, a World Bank global survey of ICT in Education initiatives reveals the following:

- Users believe that ICTs make a positive difference.
- ICTs are used differently in different school subjects.
- The positive impact of ICT use in education has not been proven.
- The positive impact of ICT in education is more likely when linked to pedagogy.
- 'Computer Aided Instruction' has been seen to slightly improve student performance on multiple choice, standardized testing in some areas.
- ICT is less effective (or may even be ineffective) when the goals for its use are not clear.
- There is an important tension between traditional and 'new' pedagogies, and between the latter and standardized testing.[42]

From the World Bank findings, it is clear that ICT in Education programmes that focus only on the technology and are not underpinned by appropriate pedagogy are likely to fail. ICT in education is not simply putting computers with Internet access in schools. Another simplistic approach that must be avoided is limiting the use of computers in schools to teaching ICT literacy. The following are some of the questions that should be considered in policy to use ICT in education:

- What is the appropriate age to start ICT in education?
- How can we change the way we teach to take advantage of digital technologies and multimedia content?
- How can ICT be used to teach math or science?

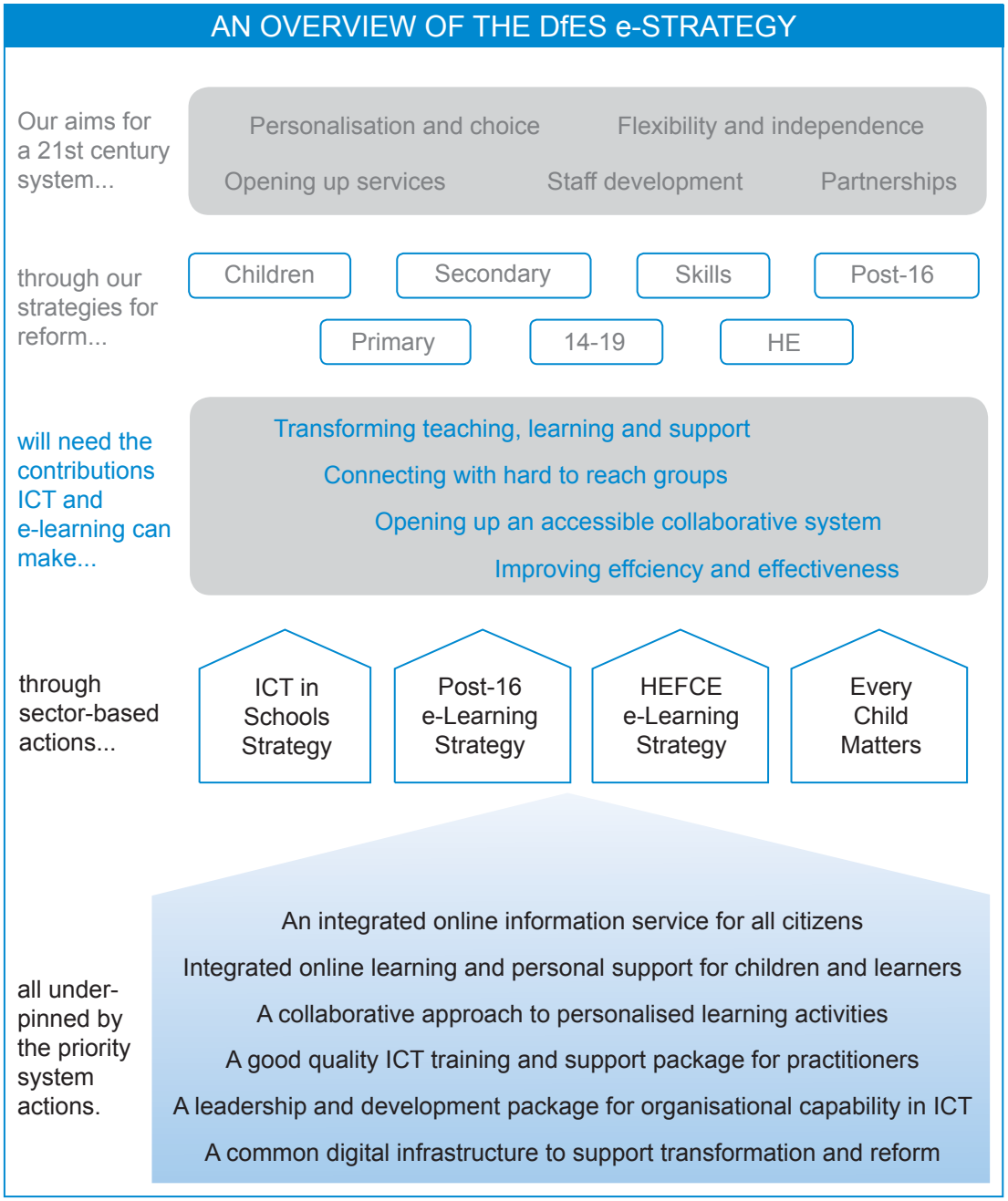
It is also important to remember that an ICT in Education strategy should go beyond ICT in schools. ICT in non-formal and adult education should be part of a national ICT in Education strategy. The UK provides an interesting approach to ICT in Education (see Figure 1).

41 For further discussion of 21st century skills, see "Framework for 21st Century Learning," Partnership for 21st Century Skills, http://www.21stcenturyskills.org/index.php?option=com_content&task=view&id=254&Itemid=120.

42 Michael Trucano, *Knowledge Map: ICT in Education* (Washington, D.C.: infoDev / World Bank, 2005), 5-6, http://www.infodev.org/en/Publication.8.html.

Figure 1. UK's e-Strategy – Harnessing Technology: Transforming Learning and Children's Services

(Source: Department for Education and Skills, *Harnessing Technology: Transforming Learning and Children's Services* (Crown Copyright, 2005), 15, http://www.dfes.gov.uk/publications/e-strategy)



ICT skills development

Governments should also design programmes that will help create a workforce with specialist ICT skills. This is not only to ensure that there is a vibrant local ICT sector in the economy but also to be able to capture some of the ICT projects that are being outsourced. The longer term goal is gaining a national competitive advantage through the rapid adoption of new technology.

There is growing demand for ICT skills in the Asia Pacific.[43] The total demand for professionals in the ICT supply industry is expected to rise sharply and reach a level of about 17 million in 2010. The demand for professionals in the ICT user sectors will rise faster to reach a level of 73 million in 2010.

In terms of specific ICT skills, *Computer World* has identified the following as 'HOT SKILLS' by 2010: enterprise architecture, project leadership, business process re-engineering, project planning, budgeting and scheduling, third-party provider managers, systems analysis, systems design, network design, systems auditing, IT security planning and management, and storage administrator.[44] The same magazine identifies the following as 'COLD SKILLS': programming, routine coding, systems testing, support and help desk, and legacy skills.

Unfortunately, existing national institutions for ICT training are viewed as unable to meet the demand for ICT professionals both in terms of the quantity (the numbers needed) and the quality of ICT skills possessed by graduates.

Among the actions recommended to bridge the skills supply and demand gap are:

- Strict control on the quality of education through continuous monitoring of the ICT education curriculum and pedagogy, by a national authority;
- Establishment of national and regional skill certification centres patterned on the chartered accountant examinations (which must be passed in order to receive certification to practice); and
- Constant interaction between the ICT industry, government and educational institutions in order to develop and design courses that impart appropriate ICT knowledge and skills, including cognitive skills.[45]

It is also acknowledged that to meet the demand, innovative training methodologies are needed. ICT skills development programmes through distance education/remote training, self-learning based on Web delivery of content, electronic Learning Management Systems (LMS), and learning and knowledge-sharing communities are strategic options to explore.[46]

It is also important to broaden the pool of potential skilled ICT workers by developing a programme that would provide ICT training for those who are currently working in different sectors of the economy but who want to move into the ICT sector.

Singapore's ICT specialist skills development plan provides policymakers with a model that they can consider when doing their own plan.

43 Ravi Raina, *APDIP e-Note 13 - ICT Skill Development in the Asia-Pacific Region - Part one: the gap between demand and supply* (Bangkok: UNDP-APDIP, 2007), 2, http://www.apdip.net/news/apdipenote13. The data cited in subsequent paragraphs, unless indicated otherwise, is from this publication.

44 Stacy Collett, "Hot Skills, Cold Skills: The IT worker of 2010 won't be a technology guru but rather a 'versatilist'," *Computerworld,* 17 July 2006, http://www.computerworld.com/action/article.do?command=viewArticleBasic&articleId=112360&pageNumber=3.

45 Ravi Raina, *APDIP e-Note 17 - ICT Skill Development in the Asia-Pacific Region - Part two: Bridging the gap between demand and supply* (Bangkok: UNDP-APDIP, 2007), 2, http://www.apdip.net/news/apdipenote17.

46 Ibid.

Singapore's Infocomm[47] Human Resource Development Programme

Infocomm has significantly transformed the global landscape over the last few decades, breaking down geographical and cultural barriers to information and markets, and forcing fundamental paradigm shifts in the way people think and operate. This digital revolution has seen an explosion of innovative business models made possible by infocomm, producing a new generation of economic forerunners, such as Google, eBay and Skype.

Looking ahead, the acceleration of infocomm technology advances will create even stronger competitive pressures on economies and companies, while generating immense growth opportunities for those who are able to differentiate themselves from the competition. Whether a country or company succeeds in this will be determined by its ability to develop, attract and retain talented manpower which is able to innovatively exploit infocomm.

Set against this global landscape, the vision for Singapore is to have an infocomm-'savvy' workforce and globally competitive infocomm manpower to drive national economic competitiveness.

Targets
In order to achieve this vision, IDA has set a target to:

- Boost the number of infocomm jobs by 55,000 to about 170,000 by 2015.

This is expected to generate another 25,000 non-infocomm jobs in the infocomm industry, to bring the number for such jobs to about 70,000.

In total, the number of new jobs created would be about 80,000.

Strategic Thrusts
To realize this vision and target, these strategic thrusts are recommended:

- **Develop Infocomm Competencies in Key Economic Sectors**
  There is a need to strengthen the belief of business leaders in the strategic value of infocomm to their organizations and to raise the level of infocomm skills among the general workforce so they too can innovatively harness infocomm to improve business productivity and competitiveness.

Programmes under this strategic thrust are targeted at business leaders and the general workforce in order to:

a. Develop a technology receptive mindset among decision makers; and
b. Equip the general workforce with more sophisticated infocomm skills. »

47 'Infocomm' is the term Singapore uses for 'information and communication technology'.

» • **Develop Globally Competitive Infocomm Professionals**
There is a need to build a pool of infocomm professionals who have a breadth of technology know-how; good understanding of business and the capability to create intellectual property.

Programmes under this strategic thrust target are targeted at infocomm professionals in order to:

a. Develop techno-strategists; and
b. Develop technologists.

• **Develop, Attract and Retain Infocomm Talent**
There is a need to ensure that infocomm attracts a fair share of talent to drive the growth of the industry and that young people, who will become the leaders and workforce of the future, are motivated to make technology innovation a part of their everyday life.

Programmes under this strategic thrust are targeted at students and aim to:

a. Attract bright local and foreign students to an infocomm career; and
b. Bring out the initiative in the young to use infocomm innovations whenever they can.

In addition to the three strategic thrusts above, we seek to bridge the digital divide and build an all-inclusive society where infocomm is used as a powerful leveller to empower and benefit the elderly, needy and people with disabilities.

This is done through a range of programmes that promote infocomm awareness to make the less tech-'savvy' feel comfortable with technology and provide infocomm access and tools to help the less privileged enhance their employability, integrate with the mainstream, and lead more independent, fulfilling lives.

Source: Abridged from IDA Singapore, "Manpower," http://www.ida.gov.sg/Manpower/20060414201723.aspx.

Questions To Think About

1. Why is it important to have policies on ICT human resource development?
2. What do you think should be your own country's targets with respect to the development of an infocomm-'savvy' workforce?

Something To Do

Capacity Building Priorities – A Debate
Which do you think should be the priority of your government — ICT integration in Education or specialist ICT skills? List arguments for both sides before taking a position.

Training participants may be divided into two groups: one group will argue the case that ICT in Education should be the priority of government and the other group will champion the development of specialist ICT skills.

2.2 Building the ICT Industry

A nation's ICT industry is critical both as a major economic sector in its own right and as a driver of productivity and improved quality of service for the overall economy. In today's global economy, governments need to act swiftly and decisively to ensure that they provide the right environment for this sector to flourish and to play its full role in driving national economic and social development.

This discussion of developing the ICT industry is divided into three: 1) ICT Manufacturing; 2) Offshoring and Global Software Development; and 3) Content Industry.

ICT manufacturing

The ICT hardware manufacturing sector is the largest and fastest growing manufacturing industry in the world.[48] Even more significant is that much of the growth has taken place in newly industrializing countries in Asia. The first countries to become significant players in ICT manufacturing were Singapore, Taiwan, Malaysia and Thailand, followed by China (massively), the Philippines, Indonesia and, more recently, India. Asia has clearly emerged as the central region for ICT manufacturing.

China's emergence as a global ICT manufacturing leader is worth looking into. Note what is described as the 'Strong Government Policy Support' that was critical in China's success.

48 Irene Schipper and Esther de Haan, *CSR issues in ICT Hardware Manufacturing Sector: SOMO ICT Sector Report* (Amsterdam: SOMO, 2005), 11, http://www.somo.nl/html/paginas/pdf/ICT_Sector_Report_2005_NL.pdf.

National ICT Industry Strategy Case Study 1

China — The World's ICT Manufacturing Hub

China has emerged as the ICT manufacturing hub of the world. The mobile equipment segment constitutes over half of the telecommunications industry and the hardware segment accounts for over 70 per cent of the Chinese IT industry. Chinese companies are emerging as a serious threat to the top IT manufacturing companies in the US. especially after China's Lenovo Group Limited acquired IBM's personal computer (PC) business. Lenovo is now the third largest player after Dell and Hewlett Packard in the worldwide PC market.

This hectic manufacturing activity in China is geared primarily towards exports; the domestic market for the Chinese telecommunications industry is actually declining on the back of strong exports. ICT exports are vital to China's international trade, constituting over 28.5 per cent of the total exports. Computers and telecommunication hardware made up about 79 per cent of the ICT exports. Mobile phone sets are the single largest component in China's telecommunication exports.

The Chinese IT software market is still in the development stage, although it is affected by the over 90 per cent piracy rate in the market.

The total domestic investment in the Chinese ICT industry is substantial. The Chinese Government accounts for over 30 per cent of the domestic investment. The manufacturing industry accounts for over 21 per cent of the total domestic investment. Close to 60 per cent of ICT investment is in the IT industry: about 30 per cent of this investment goes towards upgrading of software. The telecommunications industry is a big investor in IT equipment and systems. The mobile communications segment has received the largest percentage of investments in 2005.

Strong Government Policy Support

The Chinese Government has implemented several policies to make the country the world's largest producer of ICT products and services.

Tax concessions and permission to foreign participation in research and development (R&D) activities have attracted substantial foreign direct investment in the Chinese ICT industry. The 10th five-year plan (2001-2005) emphasized R&D and new product development in the IT industry, with a focus on development of e-commerce solutions and security software packages based on LINUX. The 11th five-year plan focuses on developing basic software, integrated systems, large key applied software, building next-generation Internet projects, as well as making technological breakthroughs in areas such as advanced computing, which consists of petaflop computer systems, grid-based computing platforms, and commercially producing teraflop computers.

The Chinese IT industry is already liberalized to a great extent and has become competitive after the country's accession to the World Trade Organization in 2001. China has also opened up the telecommunications industry to foreign investment.

»

» Telecommunication regulations aim to standardize the telecommunications market to ensure the security of telecommunication users. The government permits foreign companies to enter into joint ventures with Chinese telecommunications companies with up to 49 per cent stake in mobile and fixed line services; in value-added mobile services, these companies can hold a 50 per cent stake. De-regulation is expected to increase competition as foreign participants would find it easier to enter the market.

To promote ICT trade, the Chinese Government exempts the industry from all trade tariffs and has established more than 50 high-technology free trade zones. The ASEAN-China Free Trade Area is expected to become operational by the year 2010 and is likely to facilitate free flow of information and technology among the member countries, due to the e-ASEAN agreement.

The Chinese Government also mandates all government organizations to procure commercially available IT products that are produced domestically. It plans to continue to invest heavily in ICT infrastructure. The government is also implementing stricter intellectual property rights policies. It has been promoting e-governance by handling applications for various government organizations online. The Chinese Government is also investing in technical education and establishing centres of higher education to develop a highly skilled labour force.

Source: Abridged from Frost and Sullivan, "Country Industry Forecast-VI," *Businessworld*, http://www.businessworld.in/index.php/Country-Industry-Forecast-VI.html.

Questions To Think About

1. What is the nature of government intervention in making China an ICT manufacturing hub?
2. How feasible would the policy initiatives adopted by the Chinese government to strengthen China's ICT manufacturing sector be in your own country?

Offshoring and global software development

Offshoring is the trend where job functions are moved overseas to lower cost centres. This trend has been hastened by the information revolution, in particular the rapidly decreasing cost of high-speed data transmission. Forrester Research estimates that by 2015 as many as 3.3 million US jobs and USD 136 billion in wages could be moved to such countries as China, India and Russia.[49]

The three broad areas of growth in outsourcing, which is defined as the hiring of an outside company to perform a task that would otherwise be performed internally by an organization, are: 1) logistics, sourcing and distribution services; 2) information technology services, including the creation of software and the management of computer centres; and 3) business process outsourcing (BPO) areas, such as call centres, financial transaction processing and human resources management.[50]

49 E-Business Strategies, Inc., "Offshoring Statistics - Dollar Size, Job Loss, and Market Potential," http://www.ebstrategy.com/Outsourcing/trends/statistics.htm.
50 Plunkett Research, Ltd., "Outsourcing and Offshoring Overview," http://www.plunkettresearch.com/Industries/OutsourcingOffshoring/OutsourcingOffshoringTrends/tabid/183/Default.aspx.

Financial services were among the earliest to go offshore. The following trends are said to characterize offshoring in this sector:

- **Companies are offshoring finance and accounting functions that are further up the value chain** – Moving beyond the offshoring of transaction processing into outsourcing such value-added areas as financial planning and analysis, some companies are actually delegating the investigation of accounting errors to outsourced providers.

- **Geographies are changing as the space matures** – Offshoring of finance and accounting work in the US is moving beyond India and other well-known spots.

- **Use of collaborative tools is burgeoning** – Aiding the new collaboration in automation and technology: the use of Lotus Notes, Web chatting, and virtual white board interaction between client organizations and suppliers. With these remote networking techniques now coming into play, there is a movement away from manual and travel-intensive processes.

- **The number of outsourcing players and the portfolio of outsourcing services is growing** – Many vendors are positioning themselves as one-stop shops, although distinctions still exist.

- **Finance executives are learning a painful lesson: You can't eliminate a function or process completely** – Striking a balance between the outsourcer and the company has become a challenge. While companies do not want to build up their infrastructures again, how much do they need to hang on to internally to ensure quality, service and cost?[51]

Global Software Development (GSD) is a type of offshoring. It is defined as "software work undertaken at geographically separated locations across national boundaries in a coordinated fashion involving real time (synchronous) and asynchronous interaction."[52] Studies reveal that 40 per cent of the Fortune 500 companies use GSD, and more than 50 nations are participating in GSD. Eighty per cent of the Irish software industry's output is exported.

Let us consider India's emergence as a global software powerhouse.

51 Kate O'Sullivan, "Top Five Trends in Offshoring," *CFO.com,* 30 January 2008, http://www.cfo.com/article.cfm/10607206.

52 See Parastoo Mohagheghi, "Global Software Development: Issues, Solutions, Challenges" (trial lecture at the University of Science and Technology, Trondheim, Norway, 21 September 2004), 2, http://www.idi.ntnu.no/grupper/su/publ/parastoo/gsd-presentation-slides.pdf.

National ICT Industry Strategy Case Study 2

India — A Global Software Powerhouse

The growth of software exports from India at a compound annual rate of over 51 per cent over the past decade has led Indian policymakers to view it as an engine of growth, a source of employment and foreign exchange, among other favourable effects. Indian software enterprises have been able to grow rapidly and expand exports at phenomenal rates and now account for a significant share of the world market in outsourced software services.

Although the rise of Multinational Enterprises in the mid-1980s helped to demonstrate the potential India had as a base of software outsourcing, the Indian development is largely driven by indigenous entrepreneurship, talent and resources. A large number of firms that have entered the industry have grown in their capability, demonstrated their commitment to international best practices in process quality, expanded their geographical reach, and progressively widened the range of products and services offered and domains served. Initially starting off as suppliers of human resources to undertake jobs at client sites, software development is increasingly taking place at exporters' home bases in India. There is also a conscious move away from low value adding coding and programming to high-end consulting and packaged software.

From a national perspective, software accounts for a marginal (nearly two per cent) share of India's GNP but it has contributed nearly 12 per cent of her GNP growth. Software accounts for nearly eight per cent of India's exports of goods and services. The industry creates jobs for 60–70,000,000 highly talented engineering graduates per annum. IT-enabled services such as back-office operations, call centres and medical transcriptions, could create over one million jobs by 2008 according to projections. However, these jobs are of a footloose nature given the low skill content and routinized nature. They will move away from India as wages rise and other cheaper locations emerge.

The software industry has helped in expanding the domestic base for entrepreneurship and in creating a brand equity for the country in knowledge-based industries. Its development helped in reversing the trend of brain drain in the 1990s by creating rewarding career opportunities for professionals in India.

The main resource that has attracted the industry to the country is the pool of trained personnel generated through investments in human resource development over decades.

Subsequently, the government facilitated the development of industry by providing dedicated high-speed data communication links and built up infrastructure in the software technology parks. Several initiatives are being taken by the government and the industry in response to the challenge the country is facing for further strengthening its place in the international division of labour. These include steps to increase the supply of trained personnel and other promotional facilities. The enterprises themselves have responded to the emerging challenges by adopting strategies for acquiring, upgrading and retaining the talent. There is clear evidence that human resource management is becoming a key aspect of the enterprise strategy in the Indian software industry. The companies are also attempting to »

» move up the value chain by moving towards offshore development and by focusing on domain expertise, high-end consulting and proprietary packages, and value pricing strategies.

Despite the strong performance of the Indian software industry over the past decade, there is no room for complacency in view of competition from emerging countries, especially China and the Philippines, among others. While the Indian software enterprises have a head start in the form of reaching the international benchmarks of process maturity, the competition will start biting in the short and medium-term especially in low value adding services such as coding, custom software and IT-enabled services. The Indian industry, therefore, needs to consolidate its strengths and take advantage of the head start over the potential competitors to quickly move up the value chain and establish itself as a leading source of software products. However, there are high entry barriers in the product market that make it difficult for new entrants. In this respect the following measures may be fruitful:

- Paying attention to R&D and product development;
- Strategic acquisition of global marketing channels and brands;
- Industrial restructuring and consolidation; and
- Reorienting governmental promotional measures.

The Government of India has played an important role in the evolution of the industry by creating a pool of trained human resources, and by taking several important initiatives in setting up institutional infrastructure in computing and networking research since the late 1960s. The government has also assisted the industry by providing infrastructural facilities in Software Technology Parks, among other facilities. In addition, software exporters receive an income tax holiday for profits from software exports. But there is a need to rethink the relevance of these tax incentives. In an industry where India enjoys a natural comparative advantage (on account of low-cost human resources), where exports have been growing at more than 50 per cent annually, and where profit margins are around 22 per cent of revenue (much higher than any industry in the country), these tax breaks do not seem to be relevant on a sustained basis.

Source: Adapted from Nagesh Kumar, *Indian Software Industry Development in International and National Development Perspective* (RIS-Discussion Paper # 19/2001), http://www.ris.org.in/dp19_pap.pdf.

Questions To Think About

How relevant is the Indian model for developing the software industry in your own country context? Which success factors in the Indian case are present in your own setting? Which are not? What challenges need to be addressed for these success factors to work?

Digital content industry

The digital content industry is a new area of economic activity that has been brought about by the convergence of traditional content, media and entertainment, software and multimedia, and electronic hardware and telecommunications. The digital content industry comprises the creation, design, management and distribution of digital products and services and the technologies that underpin them. Specific sectors include visual effects and animation (including virtual reality and 3D products), interactive multimedia (e.g. websites, CD-ROMs), computer and online games, educational multimedia (e-learning), and digital film and TV production, and film and TV post-production.

The digital content industry is booming. Computer games revenues in 2001 surpassed film box office ticket sales, and computer games are close to the recorded music industry in global revenues.[53] PricewaterhouseCoopers (PwC), an ICT consulting firm, predicts that the worldwide game market will grow to USD 46.5 billion in 2010.[54] Notably, PwC projects that the Asia Pacific region will hold its leadership position in terms of overall spending on games, growing a USD 9.8 billion market in 2005 to USD 17.4 billion by 2010. This is attributed to increased broadband access, growing computer literacy, and government spending to promote local game development and consumption.

An area of content development that Asian companies can focus on is digital mobile content. This includes mobile news, mobile transport information, mobile financial information services, mobile games, mobile music, ring tones and icon downloads, mobile adult entertainment, and mobile directories.

The Republic of Korea and Ireland are among the countries that have geared up to develop the digital content industry.

53 Donald J. Johnston, "The importance and role of digital content: Encouraging production and enhancing access" (presented at the Conference on The Future Digital Economy: Digital Content – Creation, Distribution and Access, Rome, Italy, 30-31 January 2006), 5, http://www.oecd.org/dataoecd/16/47/36138740.pdf.

54 Lora Kolodny, "Global Video Game Market Set to Explode," *BusinessWeek,* 23 June 2006, http://www.businessweek.com/innovate/content/jun2006/id20060623_163211.htm.

National ICT Industry Strategy Case Study 3

The Republic of Korea — From Semiconductors to Multimedia

Historically, the Korean semiconductor industry's greatest strength has been its ability to produce Dynamic Random Access Memory (DRAM) chips for export. From a standing start in 1983, the major Korean conglomerates — the *chaebol* — Samsung, Hyundai and LG ranked first, fourth and seventh, respectively in their share of the world DRAM market in 1995. The market leader, Samsung, was making 90 per cent of its profits from DRAMs — a perilous state of dependency which became acute in 1996 when the DRAM market slumped and Samsung's profits fell by 93.4 per cent. Hyundai and LG also saw their profits collapse by around 90 per cent in 1995.

The success of the *chaebol* in memory chips has to be seen as more than successful state targeting or deciding to enter the industry at the right time (just as the US-Japan semiconductor agreement of 1986 was beginning to bite). The explanation must embrace the unique relationship between the *chaebol* and the Korean state, and the particular nature of the innovation path in semiconductors. The companies were able to finance their entry into DRAMs in part from profits earned through other activities (for example Samsung's returns from telecommunications equipment), but also through subsidized capital from the state. This can be seen as a 'politics of reciprocal subsidy' where, in exchange for cheap capital, the *chaebol* pledged to become high export performers. DRAMs were an appropriate technology which played to Korean strengths in process innovation applied to a clearly-defined trajectory involving successive steps of miniaturization. The catch-up path was clearly identifiable, as were the major competitors in the US and Japan. Both elements were ideally suited to a model we can call '*chaebol* governance' which prioritized the major conglomerates at the expense of the development of a vibrant small and medium enterprise sector.

All of the top four *chaebol* (Samsung, Hyundai, LG plus Daewoo) have prioritized multimedia as central to their future electronics strategies. But it is clear that the innovation path in multimedia is very different from that in which the *chaebol* have so far excelled. Far from being a linear path based on precision manufacturing, multimedia is characterized by uncertainties unleashed by the process of digital convergence, which draws into the value chain inputs from a variety of individual sectors such as telecoms, computing, entertainment and publishing. Networked multimedia can be broken down into the following key elements:

- Content creation and packaging, including the digitization of existing formats;
- Transport, that is, the networking and switching infrastructure;
- Access, that is, decoding, encryption, subscriber management, billing;
- User interface and applications (browsing and navigating software tools); and
- Delivery platforms, including the set-top box, the digital TV, the personal computer and the Network Computer.

»

» Networked multimedia requires the effective integration of hardware and a variety of software products, including programme material and operating and switching software, as well as interface and database products. Whilst the demand for memory chips in a new generation of products is unlikely to diminish, more of the value is shifting into application-specific integrated circuits such as multimedia signal processing chips, where innovation lies in design rather than in manufacturing prowess. But expertise in DRAM manufacture can be turned to display technologies, and we can expect the Korean firms to be prominent in meeting the expected burgeoning demand for Thin Film Transistor displays. In addition, the strength of the Korean industry in standardized consumer electronics products — such as television, VCR and CD — will translate readily into the manufacturing of set-top boxes, Network Computers and other terminal equipment. Weaknesses in software and networking technologies, however, are likely to hinder any ambitions the Korean firms have of operating right across the value chain, and remaining within the delivery platform segment will make them vulnerable to competition from lower cost industries in the region, especially China.

In conclusion, we can see that the successful push for leadership in mass storage semiconductors played to the strengths of the Korean firms, and was accomplished within a supportive government environment on a predictable technology trajectory. The considerable profits enjoyed in the boom years from the mid-1980s helped to establish the *chaebol* as global players with deep pockets. The firms anticipated the need to adapt their strategies to compete in new product areas even before the recent collapse in the DRAM market, and have recognized the shift in the nature of the industry caught up in the process of digital convergence. The current strengths of the firms are principally in hardware and components for digital delivery platforms, and whilst this will prove an important source of revenue in the future, the firms recognize the need to begin to compete in software and design.

But here the highly concentrated structure of the Korean industry, with its dearth of small innovative firms, is proving a handicap, and all the majors are increasing the scale of their activities in the US. What remains to be seen, however, is how successful these firms can be in managing a complex network of innovative activities very different from their experience in the catch-up phase.

Source: Abridged from Alan Cawson and S. Ran Kim, "The Korean Electronics Industry — From Semiconductors to Multimedia," *InfoWin Bulletin,* 1997, http://cordis.europa.eu/infowin/acts/ienm/bulletin/06-1997/korea.htm.

Questions To Think About

As highlighted in the case of the Republic of Korea, how different are the conditions for success in the semiconductor industry and the multimedia industry? What accounts for the difference/s?

National ICT Industry Strategy Case Study 4

A Strategy for the Digital Content Industry in Ireland

A number of high-growth sectors in the digital content industry have been identified for Ireland. Success in leveraging these opportunities, however, will be dependent on a number of critical factors. These include:

- Proactive targeted development by the development agencies and government;
- Government sponsorship of specific projects/initiatives to act as a catalyst for skills and market development;
- Establishment of education and training facilities in areas where there is an identified shortfall of skills going forward;
- Continued development of Ireland's telecoms infrastructure and R&D;
- Access to finance/funding for digital content enterprise; and
- The continued support for a 'pro-digital content' business environment.

Specific recommendations

Finance and Funding

- Investigate further if a significant international venture capital company with specialist knowledge and experience in supporting digital content enterprises can be attracted to Ireland (Enterprise Ireland, IDA Ireland).
- Establish a specialist venture capital fund for the digital content industry similar to the fund established for the biotechnology sector in 2002 (Enterprise Ireland, IDA Ireland, DETE).

Research and Development

- Introduce a programme to support art and creative colleges to develop R&D specialists in digital content creation and design (Enterprise Ireland, DETE, Irish Council for Science, Technology and Innovation).
- Review the criteria for access to Research, Technology and Innovation funding to support content development projects (Enterprise Ireland, IDA Ireland).

Legal and Regulatory Environment

- A marketing/education programme should be developed to encourage registration of IP by digital content SMEs (Enterprise Ireland).
- Increase the statutory protection provided to the Digital Content IP, through the introduction of a law on theft of confidential information (Department of Justice).

Fiscal Environment

- Progressively reduce Ireland's VAT rate in line with that of other European countries (Department of Finance, the Revenue Commissioners).

Infrastructure

- There is an urgent need for key participants to cooperate in establishing an effective international exchange (Telecom Operators, Independent Service Providers, IDA Ireland).

»

» ***Education and Skills***

- Complete a detailed audit of the supply and demand for skills in the key areas being targeted for development (Expert Group on Future Skills Needs).
- Promote the introduction of bursaries for students to study in leading international digital content colleges and international competitive placement programmes (Third Level Sector, IDA Ireland, Enterprise Ireland).

Enterprise Development

- The Department of Enterprise, Trade and Employment, supported by Forfás, will establish a digital content steering group, comprising the industrial development agencies and relevant Government Departments to guide and co-ordinate the development of the sectoral strategies for specific niches and to progress implementation of the actions in this report.
- Strategies to establish effective linkages with centres of excellence in digital content internationally should also be developed and pursued.
- The Digital Hub should be developed as a 'showcase' for digital content in order to market the capabilities and benefits of digital media/content to the corporate sector in Ireland and internationally (Digital Media Development, Enterprise Ireland, IDA Ireland).

Public Sector Projects

- The public sector should take a leadership role in creating a market for digital content technologies and services in Ireland through the commissioning of 'digital library' projects to serve as demonstration projects and to raise awareness of the benefits of digital content (Department of Arts, Sports and Tourism).
- Encourage existing content companies in the broadcasting, media and publishing industries, particularly State-owned companies, to move towards the digital creation, management and distribution of their content (Department of Communications).

Source: Abridged from Forfas, *A Strategy for the Digital Content Industry of Ireland* (2005), http://www.forfas.ie/publications/digicontent02/021105_digital_content_report_s.pdf.

Questions To Think About

Are the critical factors for success of the Irish digital content industry also the same factors for success that would apply to the digital content industry in your country? Why or why not? Which of these factors are especially critical in your context?

Something To Do

Prioritize the ICT Industry Sectors
Prioritize the three ICT sub-sectors (i.e., manufacturing, offshoring/GSD, and content industry) that your government should develop. Justify your list.

Training participants who come from the same country can do this exercise as a group.

2.3 e-Governance

e-Governance has been defined as the use of ICT in society's 'essential steering function', which includes coordination, arbitration, networking and regulation.[55] A more detailed definition is: 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.

However, it is still important to look at e-government, or the "use of...ICTs to improve the activities of public sector organizations."[56] ICTD policymakers are interested in e-government because ICT expenditures by government can influence the overall development of the local ICT industry and also because e-government promises good governance.

In most countries, the government is the single biggest consumer of ICT goods and services. In developed countries, governments typically spend 1 to 1.5 per cent of GDP on public sector IT systems.[57] According to Government Insights, a global research and advisory firm, "total IT spending for Western European Government will grow from $43 billion in 2006 to $56 billion in 2011. IT services spending will represent the biggest share of IT spending in government, while packaged software will be the fastest growing with average growth rate above 7 per cent."[58] In the Asia Pacific region, governments will continue to spend steadily on IT services and products with a compound annual growth rate of 7.9 per cent from 2007 to 2011.[59] While the bulk of the expenditure will be on hardware, there will be a slight decline of hardware's share in total expenditure from 57.5 per cent in 2007 to 54 per cent in 2011. On the other hand, expenditure on services, including software, is expected to increase steadily during this period.[60]

55 Gianluca C. Misuraca, *e-Governance in Africa: From Theory to Action: A Handbook for ICTs for Local Governance* (Ottawa: IDRC, 2007), http://www.idrc.ca/en/ev-113398-201-1-DO_TOPIC.html.
56 Richard Heeks, "eGovernment for Development: Success and Failure in eGovernment Projects - What is eGovernment?" Institute for Development Policy and Management, University of Manchester, http://www.egov4dev.org/egovdefn.htm.
57 Patrick Dunleavy, Helen Margetts, Simon Bastow and Jane Tinkler, *Digital Era Governance: IT Corporations, the State, and e-Government* (Oxford: Oxford University Press, 2006), 1.
58 Government Insights, "Press Release: Government Insights Predicts IT Spending in the Western European Government Sector Will Grow from $43 B in 2006 to $56 B in 2011," http://www.government-insights.com/GI/getdoc.jsp?containerId=prIT20785507.
59 Government Insights, "Press Release: Government Insights Predicts APEJ Public Sector Market IT Expenditure Will Increase 7.9% CAGR," http://www.government-insights.com/GI/getdoc.jsp?containerId=prSG20779307. Japan is not included in this estimate.
60 Ibid.

Free and open source software

Many governments are initially attracted to free and open source software (FOSS) because its use can reduce the cost of acquiring software. But FOSS is not just free (or unpaid or royalty-free) software. It is also software where the source code is open, extensible and freely distributable. Its proponents argue that its open character makes for faster and more efficient review and testing, which leads to more stable and reliable software. *Refer to Module 4 of the APCICT Academy of ICT Essentials for Government Leaders for more information about FOSS.*

For developing countries there are strategic, economic and social benefits to adopting FOSS.

Strategic Benefits

- Developing local capacity/industry
- Reducing imports/conserving foreign exchange
- Enhancing national security
- Reducing copyright infringements
- Enabling localization

Economic Benefits

- Increasing competition
- Reducing Total Cost of Ownership
- Enhancing security
- Achieving vendor independence

Social Benefits

- Increasing access to information[61]

In South-East Asia, Cambodia, Indonesia, Malaysia and Viet Nam have government policies on FOSS.[62] Singapore does not have a government open source policy for all sectors. Thailand has endorsed the use of Linux in government agencies. At the other end of the spectrum is the Philippines which does not have an open source policy. But all of these ASEAN countries have numerous training programmes and software projects that are very important in establishing an environment conducive to greater FOSS adoption.

Malaysia provides an interesting open source policy model.

61 Kenneth Wong, *Free/Open Source Software: Government Policy* (Bangkok: UNDP-APDIP e-Primers on Free/Open Source Software, 2004), http://www.iosn.net/publications/foss-primers/government/foss-government-primer.

62 Joshua L Mindel, Lik Mui and Sameer Verma, "Open Source Software Adoption in ASEAN Member Countries," in *Proceedings of the 40th Hawaii International Conference on System Sciences* (Washington, D.C.: IEEE Computer Society, 2007), http://csdl2.computer.org/comp/proceedings/hicss/2007/2755/00/27550226b.pdf. Subsequent information on free and open source software in ASEAN is taken from this article.

Malaysian Open Source Software Master Plan

The Government of Malaysia has decided to encourage the development and implementation of Open Source Software (OSS) and the Malaysian Administrative Modernization and Management Planning Unit has been given the responsibility of leading this initiative for the Public Sector.

Objectives

- Reduce total cost of ownership.
- Increase freedom of choice of software usage.
- Increase interoperability among systems.
- Increase growth of ICT industry.
- Increase growth of OSS industry.
- Increase growth of OSS user and developer community.
- Reduce the digital divide.

Guiding Principles

- Fit for purpose.
- Least disruptive to operations.
- Co-existence with other legacy propriety system.
- Leveraging on existing facilities, hardware, software and expertise.
- Not driven or controlled by hardware and software vendors.

The Public Sector OSS Master Plan

- Establish strategic direction and frameworks.
- Develop and implementation plan and roadmap.
- Establish an Open Source Competency Centre to support OSS implementation in the Public Sector.
- Formulate policies, standards and guidelines.

The Malaysian Public Sector OSS Framework

The OSS Framework serves as a blueprint to achieve the Public Sector OSS vision and objectives.

Public Sector ICT Vision

To deliver efficient and quality service through the use of ICT.

OSS Vision

Creating and enhancing value using OSS within the Public Sector ICT framework in providing efficient, secure and quality services.

OSS Objectives

- Increase choice of software usage.
- Increase interoperability.
- Increase capability to maintain and support software.
- Reduce total cost of ownership.
- Reduce vendor lock in.
- Increase security and enforce sovereignty.

»

» ***Solution Areas***
The proven OSS solutions across the IT value chain that can be implemented in the Public Sector.

Implementation Phases
Provide OSS Implementation Roadmap for the Public Sector over the short, medium and long term.

Knowledge Bank
Supports the sharing of OSS knowledge and experience among agencies.

Enabling Environment
Components that will impact OSS related initiatives to ensure the success of OSS implementation in the Public Sector.

Source: Abridged from Malaysian Administrative Modernization and Management Planning Unit, "Malaysian Public Sector Open Source Software Portal," http://www.oscc.org.my/content/view/33/38/ and http://www.oscc.org.my/content/view/34/40/.

Questions To Think About

1. Should a country have a policy on free and open source software? Why or why not?
2. What is your own country's policy on free and open source software? What is your assessment of the appropriateness and effectiveness of this policy?

Interoperability

The *UN e-Government Survey 2008* speaks of 'connected governance' as the distinguishing characteristic of second-generation e-government initiatives. It defines connected governance as "governmental collective action to advance the public good by engaging the creative efforts of all segments of society."[63] The report emphasizes that connected governance refers not only to enhanced cooperation among government agencies but also "active and effective consultation and engagement with citizens, and a greater involvement with multi-stakeholders regionally and internationally."[64]

Interoperability or "the ability of two or more systems or components to exchange information and to use the information that has been exchanged" is what makes connected governance possible. Without interoperability, the exchange of information among government agencies will be more difficult and a single sign-on, no wrong window, integrated e-government portal will remain a remote possibility.

Brazil provides an interesting case in how interoperability achieves the goals of connected governance.

63 Department of Economic and Social Affairs, Division for Public Administration and Development Management, *UN e-Government Survey 2008: From e-Government to Connected Governance* (New York: United Nations, 2008), xv, http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN028607.pdf.
64 Ibid.

Public Security through Interoperability in Brazil

The public security sector was the first to put in practice the principles and determinations recommended by e-PING (Brazil's Government Interoperability Framework). The project is called the National System for the Integration of Judicial and Public Security Information (Nosegay) of the Ministry of Justice. Nosegay integrated the public security systems of Brazilian states. This system enables agents of the civil and military police forces and inspectors to have access, in real time, to registers of motor vehicles and persons with outstanding arrest warrants, among other information.

By integrating the public security systems of the different states, it is now possible, for example, to identify a criminal on the run from Paraná who is being questioned about a traffic incident in a police station in Recife. Nosegay enables the cross-referencing of public security systems data with data from the National Register of Automobiles (Renavam), the National Register of Driving Licenses (Renach), the Arms Registry System (Sinarm) and lists of persons identified as criminals. The National Network of Public Security and Criminal Justice Statistics is also included in Nosegay. The integration is accomplished in a speedy, secure and reliable manner. XML, Web Services, Internet protocols and adoption of browsers are the main means to access Nosegay.

The cost of Nosegay (i.e. interconnecting the existing public security systems of various Brazilian states) is BRL 8.5 million. This is less than one per cent of the estimated cost of the alternative approach of building a single unified system for BLR 4 billion. Prior to Nosegay, at the end of 2003 only four states were providing partial updates of their information to the Public Security System. Today, Nosegay has about 30,000 registered users in more than 200 federal and state entities.

Source: Abridged from UNDP, *e-Government Interoperability: Guide* (Bangkok: UNDP Regional Center, 2007), 2, http://www.apdip.net/projects/gif/GIF-Guide.pdf.

Questions To Think About

1. How does interoperability improve public security?
2. What other benefits are derived from interoperability?
3. What do you think is the greatest challenge to interoperability, particularly in your own country?

Interoperability can be achieved through standards or architecture.

A standards approach to interoperability requires the formulation and adoption of a Government Interoperability Framework (GIF), which is a set of standards and guidelines that a government uses to specify the preferred way that its agencies, citizens and partners will interact with each other. A GIF normally includes: 1) high-level policy statements; 2) technical content; 3) process documentation; 4) implementation; and 5) compliance regimes.

Interoperability through architecture requires a government or national enterprise architecture. A government enterprise architecture is "a common framework that ensures general coherence between public sector IT systems." Marijn Janssen and Kristian Hjort-Madsen define a National Enterprise Architecture (NEA) as a framework or umbrella for explaining the relationships among government's ICT projects and for managing change.[65] An NEA helps not only to secure interoperability but also to reduce red tape. Thus, it has positive long-term effects on economic growth, employment and income.

The choice of achieving interoperability through standards or architecture rests on the goals of e-government as well as the capabilities of government technical personnel.

Caveat emptor

In designing e-government programmes, policymakers must be very conscious of the high failure rate of e-government projects in developing countries. By one estimate, only 15 per cent of e-government initiatives in developing or transitional countries succeed. The vast majority are either partial failures (50 per cent) or total failures (35 per cent).[66] Policymakers should avoid the mistakes of failed e-government projects to increase the success of their own (see Box 5).

65 Marijn Janssen and Kristian Hjort-Madsen, "Analyzing Enterprise Architecture in National Governments: The cases of Denmark and the Netherlands," in *Proceedings of the 40th Hawaii International Conference on System Sciences* (Washington, D.C.: IEEE Computer Society, 2007), http://csdl2.computer.org/comp/proceedings/hicss/2007/2755/00/27550218a.pdf.

66 Richard Heeks, "eGovernment for Development: Success and Failure in eGovernment Projects - Success and Failure Rates of eGovernment in Developing/Transitional Countries: Overview," Institute for Development Policy and Management, University of Manchester, http://www.egov4dev.org/success/sfrates.shtml.

Box 5. Why e-Government Projects Fail

1. Lack of internal drivers - Pressures come only from IT vendors, with no internal ownership (or understanding of e-government).

2. Lack of vision and strategy - Lack of any long-term view, lack of guidance, and lack of a connection between ends and means; may be caused by ever-shifting senior staff and/or an ever-changing policy and political environment.

3. Poor project management - Dispersed responsibilities due to multiple ownership of the project; absence or weakness of controls; ineffective procurement.

4. Poor change management - Lack of support from senior officials (causing lack of resource allocation and a negative message to other groups); lack of stakeholder involvement (causing lack of ownership).

5. Dominance of politics and self-interest - Focus of key players on personal needs and goals, often related to 'playing politics', with symptoms like infighting, resistance where loss of power is feared, 'me too' copying of e-government solutions for image purposes, obsession with electoral impacts and short-term kudos, and corruption.

6. Poor/unrealistic design - Caused particularly by lack of inputs from key local stakeholders, leading to designs that are over-technical, over-ambitious, or mismatched to the local environment (culture, values) and needs; occurs particularly where foreign donors, firms and consultants are involved. Other design problems: lack of piloting, lack of fit to organizational structure.

7. Lack of requisite competencies - Lack of IT knowledge and skills among developers, officials and users/operators; lack of local knowledge among developers.

8. Inadequate technological infrastructure - Lack of sufficient computers or networks.

9. Technological incompatibilities - Inability of computerized systems to interchange data.

Source: Adapted from Richard Heeks, "eGovernment for Development: Success and Failure in eGovernment Projects - Evaluation," Institute for Development Policy and Management, University of Manchester, http://www.egov4dev.org/success/evaluation/factormodel.shtml.

Questions To Think About

1. Which of the factors that account for failure of e-government projects are internal and which are external?
2. Rank the causes of e-government failure enumerated by Heeks (Box 5) from the most relevant to the least relevant in your country context.

Something To Do

Accounting for e-Government Project Failure
Choose an e-government project in your country that has failed and discuss the reasons for its failure.

Training participants may do this exercise in country groups.

Test Yourself

1. What are the two general issues in human capital development related to ICTD?
2. What key issues were raised by the World Bank in their survey of ICT in Education?
3. What should governments do to narrow the supply and demand gap in specialist ICT skills?
4. What policies were implemented by China for it to become the global ICT manufacturing hub?
5. What made India a giant in global software development?
6. What are the main components of Ireland's strategy for digital content development?
7. What is the difference between e-governance and e-government? How would this difference be reflected in policy and strategy?
8. Why should governments consider use of free and open source software?
9. Why is e-government interoperability important?
10. Why do e-government projects fail?

Further Reading

Conklin, Wm. Arthur. 2007. Barriers to Adoption of e-Government. In *Proceedings of the 40th Hawaii International Conference on System Sciences.* Washington, D.C.: IEEE Computer Society. http://csdl2.computer.org/comp/proceedings/hicss/2007/2755/00/27550098a.pdf.

Department of Economic and Social Affairs, Division for Public Administration and Development Management. 2008. *UN e-Government Survey 2008: From e-Government to Connected Governance.* New York: United Nations. http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN028607.pdf.

European Commission. Showcasing eGovernment Success. Europe's Information Society Thematic Portal. http://ec.europa.eu/information_society/activities/egovernment/implementation/index_en.htm.

Heeks, Richard. 2006. *Benchmarking eGovernment: Improving the National and International Measurement, Evaluation and Comparison of eGovernment.* iGovernment Working Paper Series no 18. http://www.sed.manchester.ac.uk/idpm/research/publications/wp/igovernment/igov_wp18.htm.

InfoDev and Center for Democracy and Technology. 2002. *The eGovernment Handbook for Developing Countries.* http://www.infodev.org/en/Publication.16.html.

Lafond, Renald and Chaitali Sinha, eds. 2005. *e-Commerce in the Asian Context: Selected Case Studies.* Singapore: Institute for Southeast Asian Studies and Ottawa: International Development Research Centre. http://www.idrc.org/en/ev-72689-201-1-DO_TOPIC.html.

Narayana, M.R. "ICT sector and regional economic development: Evidence from Karnataka State" (Revised version). Development Gateway Foundation. http://ict.developmentgateway.org/Content-item-view.10976+M57819bce2bb.0.html?&L=0.

OECD. 2006. *The Challenge of Capacity Development: Working towards good practice.* Paris: OECD. http://www.oecd.org/dataoecd/4/36/36326495.pdf.

Trucano, Michael. 2005. *Knowledge Maps: Impact of ICTs on Learning and Achievement.* Washington, D.C.: infoDev / World Bank. http://www.infodev.org/en/Publication.154.html.

UNCTAD. 2006. *The Least Developed Countries Report 2006: Developing Productive Capacities.* New York and Geneva: United Nations. http://www.unctad.org/Templates/webflyer.asp?docid=7011&intItemID=3881&lang=1&mode=downloads.

UNESCO. ICT-in-Education Toolkit for Policy Makers, Planners and Practitioners. http://www.ictinedtoolkit.org/usere/login.php.

World Bank. 2005. *e-Strategies: Monitoring and Evaluation Toolkit.* http://siteresources.worldbank.org/INTEDEVELOPMENT/Resources/estrategiesToolkit_Jan2005.pdf.

3. ICT GOVERNANCE

This section aims to:
- **Define ICT governance;**
- **Describe a framework for ICT governance; and**
- **Discuss principles for governing ICT investments.**

ICT governance is "specifying the decision rights and accountability framework to encourage desirable behaviour in the use of ICT."[67] It is a subset of corporate governance, which is ensuring "that an organization or organization unit is efficient and effective in carrying out its proper functions."[68] ICT governance determines who makes the final decisions on ICT in the organization, in this case, the government. It is distinct from ICT 'management', which is the process of making and implementing final decisions on ICT.

The three main tasks of ICT governance are: 1) the evaluation of ICT in the context of the organization and its needs and pressures; 2) the direction of proposed plans and policies for ICT; and 3) the monitoring of performance of plans and conformance with policies.[69] In the private sector, the overall objective of ICT governance, according to the IT Governance Institute, is:

> ...to understand the issues and the strategic importance of IT, so that the enterprise can sustain its operations and implement the strategies required to extend its activities into the future. IT governance aims at ensuring that expectations for IT are met and IT risks are mitigated.[70]

The Society of Information Technology Management, a UK association of public sector ICT managers, suggests that ICT governance in the public sector comprises the following:

- Stakeholder engagement and representation
- Strategic planning for information and technology investment, procurement and deployment
- Policy development and agreement
- High level monitoring of programme delivery
- 'Business as usual' performance monitoring
- Standards selection and implementation
- Risk management
- Policing policy, standards, conformance with legislation, and proper use[71]

67 Peter Weill and Jeanne W. Ross, *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results* (Boston: Harvard Business School Press, 2005), 8.
68 Richard Ziolkowski and Eugene Clark, "Standards of ICT Governance:The Need for Stronger Epistemological Foundations in Shifting Sands," *The Asia Pacific Journal of Public Administration* Vol. 26, No. 1 (June 2005), 77, http://sunzi1.lib.hku.hk/hkjo/view/51/5000806.pdf.
69 Ibid., 79.
70 IT Governance Institute, *Board Briefing on IT Governance,* 2nd Edition (Illinois: IT Governance Institute, 2003), 7, http://www.isaca.org/Content/ContentGroups/ITGI3/Resources1/Board_Briefing_on_IT_Governance/26904_Board_Briefing_final.pdf.
71 Society of Information Technology Management, "ICT governance," http://www.socitm.gov.uk/socitm/Events/ICT++governance.htm.

3.1 ICT Governance Framework

Governments seeking to maximize the use of ICT in the pursuit of development goals need to develop an ICT governance framework. This framework is usually comprised of: 1) a set of principles; 2) a decision-making hierarchy; and 3) a tailor-made suite of reporting and monitoring processes.[72]

Principles

ICT principles are a related set of high-level statements about the use of ICT. An example of a set of principles for an ICT governance framework is Australia's ICT governance principles, namely:

1. **Establish clearly understood responsibilities for ICT** – Ensure that individuals and groups within the organization understand and accept their responsibilities for ICT.

2. P**lan ICT to best support the needs of the organization** – Ensure that ICT plans fit the current and ongoing needs of the organization and that the ICT plans support the corporate plans.

3. **Acquire ICT validly** – Ensure that ICT acquisitions are made for the right reasons in the right way, on the basis of appropriate and ongoing analysis. Ensure that there is appropriate balance between costs, risks, long-term and short-term benefits.

4. **Ensure ICT performs well whenever required** – Ensure that ICT is fit for its purpose in supporting the organization, is kept responsive to changing business requirements, and provides support to the business at all times when required by the business.

5. **Ensure ICT conforms** – Ensure that ICT conforms to all external regulations and complies with all internal policies and practices.

6. **Ensure ICT use respects human factors** – Ensure that ICT meets the current and evolving needs of all of the people in the process.[73]

Something To Do

Ranking ICT Governance Principles
Rank Australia's Principles of ICT Governance in terms of the most difficult to the easiest to implement in your country.

72 National Computing Centre, "IT Governance," http://www.nccmembership.co.uk/pooled/articles/BF_WEBART/view.asp?Q=BF_WEBART_298897.
73 Standards Australia Limited, "Australian world-first ICT governance Standard," http://www.standards.org.au/cat.asp?catid=66&ContentId=82&News=1.

Decision-making hierarchy

The second element of an ICT governance framework is a decision-making hierarchy. Adapting Weill and Ross's IT governance archetypes[74] for the public sector provides us with examples of decision-making hierarchies. The ICT governance archetypes are:

- **Business monarchy** – the Minister/Secretary or Secretary General (or the government counterpart of business executives or individual executives) makes the ICT decisions
- I**T monarchy** – ICT professionals in government (like the Government CIO or gCIO) make the decisions
- **Feudal** – heads of operating units (i.e. bureaus, offices and/or departments) make the ICT decisions
- **Federal** – senior officials in the Ministry/Department and heads of offices make the decision; may also include IT executives as additional participants
- **IT duopoly** – ICT executives (gCIO) and one other group (e.g. bureau, department) make the ICT decision
- **Anarchy** – each individual user makes the decision

Something To Do

Who Makes ICT Decisions?
Diagnose your agency's (current) ICT decision-making structure using the governance archetypes adapted from Weill and Ross.

Creating a decision-making hierarchy for ICT is not new to governments. Many governments already have a national agency in charge of ICT. From current practice, we can identify at least four types of ICT decision-making bodies: Ministry/Department, Commission, Authority and Council. Table 1 below enumerates the characteristics of existing ICT bodies in Asia that represent these types.

74 Based on Weill and Ross, *IT Governance,* 58-63.

Table 1. Comparative Matrix on ICT Bodies in Asia

Name of ICT Body	Mandate/Functions	Relationship with Other National Government Agencies
MINISTRY **Department of IT, Ministry of Communications and IT (India)**	Policy matters relating to IT; Electronics; and Internet (all matters other than licensing of Internet Service Providers). Promotion of Internet, IT and IT-enabled services. Assistance to other departments in the promotion of e-Governance, e-Commerce, e-Medicine, e-Infrastructure, etc. Promotion of IT education and IT-based education. Matters relating to Cyber Laws, administration of the Information Technology Act 2000 (21 of 2000) and other IT-related laws. Matters relating to promotion and manufacturing of Semiconductor Devices in the country excluding all matters relating to Semiconductor Complex Limited Mohali; The Semiconductor Integrated Circuits Layout Design Act, 2000 (37 of 2000). Interaction in IT-related matters with International agencies and bodies — e.g. Internet for Business Limited, Institute for Education in Information Society and International Code Council. Initiative on bridging the digital divide: Matters relating to Media Lab Asia. Promotion of standardization, testing and quality in IT and standardization of procedure for IT application and Tasks.	One of the thrusts of the Department is to facilitate and catalyze adoption of e-governance packages in the Central and State Governments, as the nodal agency for the implementation of the National e-Governance Action Plan. Being implemented as part of its 10-Point Agenda: • To bring about transparency in administration and make government functioning more citizen-centric, the Department would stress on expeditious implementation of the National e-Governance Plan. • Migration to New Internet Protocol IPv6 — To provide policy framework and promotional measures in the country to enable network providers to migrate to IPv6. • Security and Digital Signature — To concentrate on Cyber Infrastructure Protection and to promote the use of Digital Signatures in the financial sector, judiciary and education.

»

Name of ICT Body	Mandate/Functions	Relationship with Other National Government Agencies
	Electronics Export and Computer Software Promotion Council. National Informatics Centre. Initiatives for development of hardware/software industry including knowledge-based enterprises, measures for promoting IT exports and competitiveness of the industry. Matters relating to personnel under the control of the Department.	
COMMISSION **High Level Commission for ICT (Nepal)**	Oversee the implementation of the National IT Policy and strategy, and provide strategic policy direction and support to the government. Play a key role in the formulation of appropriate policy instruments for the ICT sector to harness ICTs for development, economic growth and poverty reduction.	Provides related policy feedback and support on a regular basis to the Government of Nepal by maintaining close relationship with the private sector, academia and donor community. Provides quality control support to the government by helping articulate and enforce quality standards of ICT related educational institutions established through private, public-private partnership and foreign investments arrangements. Establishes, develops, assists and manages existing as well as future physical and virtual IT parks within the kingdom. In conjunction with National Planning Commission, government line ministries, private sector, donor community, professional organizations, academia and research institutions, prepares national IT plans/programmes, and ensure their implementation.

»

Name of ICT Body	Mandate/Functions	Relationship with Other National Government Agencies
		Helps prepare requisite legal, regulatory and operational instruments in the form of acts, regulations and guidelines within the larger purview of development and growth of ICT sector in the country.
AUTHORITY **National Information Communications Technology Development Authority (NIDA) (Cambodia)**	Formulate IT promotion and development policy for the short, medium and long term. Implement IT policy to ensure maximum economic growth. Monitor and audit all IT related projects in the Kingdom of Cambodia. NiDA is both a regulator and a promoter. These are not a contradictory roles but rather an integrated approach to ensure that the regulatory role is aligned with the development objectives (as provided in their website).	Virtually connected the Central Government; next is to connect local governments – documents to be processed electronically and the following services made available online: vehicle, real estate and resident registration. Provides trainings/awareness seminars on IT for public officials.
COUNCIL **Brunei Darussalam IT Council (Brunei)**	Establish and provide the ICT leadership and direction at the national level. Provide linkages and interactions of ICT development in the public and private sectors. Integrate the various major ICT initiatives, programmes and projects currently carried out by various government agencies and access that required participation of the private sectors.	Scans strategic and leading edge ITs and promotes their effective diffusion in Brunei Darussalam through research and development and dissemination. Appraises, studies and further proposes the steps to implement the e-government programme in government offices. Through the relevant agencies, formulates where appropriate the policies and establishes the framework, measures and activities to promote the strategic development and use of IT.

The issue for countries with an existing ICT agency is whether the current arrangement is effective for their needs. For countries without an ICT agency, the issue is finding a suitable arrangement for effective ICT governance.

Reporting and monitoring processes

The third element of an ICT governance framework is a tailor-made suite of reporting and monitoring processes. The Better Practice Checklist for ICT Asset Management developed by the Australian Government's Information Management Office is an example of the third component of the ICT governance framework. This checklist is reproduced below.

Better Practice Checklist – ICT Asset Management[75]

In general
- Do you understand the asset management life cycle?
- Are you familiar with the principles of asset management?

Develop an ICT management framework
- Have you developed policies to cover ICT asset management?
- Have you linked asset registers to procurement and disposal processes?
- Have you considered environmentally friendly acquisition and disposal options?
- Have you developed usage policies for notebooks and other portable equipment?
- Have you considered issues of system security?
- Have you considered using advanced systems to enhance ICT asset management?
- Have you considered innovative approaches to streamline ICT asset management?
- Have you established a robust control framework?

Establish and manage asset registers
- Have you identified who is responsible for management of the asset register?
- Have you established an asset register that records all physical and intangible ICT assets?
- Have you recorded all ICT assets, excluding information assets and intellectual property on the asset register?
- Have you established an integrated software asset register?
- Have you established a personal issue items register?
- Have you developed usage policies for portable assets?
- Have you developed stocktaking procedures to maintain and reconcile asset registers?

Audit ICT assets
- Have you monitored compliance with policies and legislation?
- Have you monitored software compliance?

This ICT Asset Management checklist is only one example of many reporting and monitoring instruments that governments must develop and implement to have an effective ICT governance framework.

75 Australian Government Information Management Office, *Better Practice Checklist – 24. ICT Asset Management* (Commonwealth of Australia, 2007), http://www.finance.gov.au/e-government/better-practice-and-collaboration/better-practice-checklists/asset-management.html.

3.2 Governing ICT Investments

An important ICT governance issue is prioritizing ICT investments. There are many useful and necessary ICT projects that will require funding but there will not be enough funds. While it is clear that each situation is unique, there are general rules that can be adopted to help resolve the issues.

One way of determining ICT investment priorities is to use the NEA as a determining factor for funding. As previously explained, the NEA is a framework for explaining the relationship among government's ICT projects and managing change.[76] The Danish government describes its NEA as "a common framework that ensures general coherence between public sector IT systems at the same time as the systems are optimized in terms of local needs."[77] In this approach only ICT projects that are consistent with the NEA will be funded.

Another way to determine priorities for ICT expenditure is by adopting an 'ICT Investment Principle' that will specify the criteria and process for securing project funds. Australia's Whole-of-Government ICT Investment Principle (see Box 6) provides a useful guide to policymakers seeking to find a better way to prioritize ICT expenditures.

Box 6. Australia's 'Whole-of-Government ICT Investment Principles'

Principle 1: Government should be provided with sufficient information from an agency and whole-of-government perspective to enable appropriate assessment of allocation of funds for ICT-enabled business change programmes and projects.

Principle 2: Agencies are responsible for the effective, efficient and ethical use of resources to deliver the Government's requirements... Agencies will ensure they have adequate governance and monitoring processes in place to achieve this.

Principle 3: Investments in new business capability involving ICT should be justified by and measured against costs and benefits.

Principle 4: Agencies are responsible for measuring the outcomes achieved by ICT and the return on the investment in ICT and for sharing learnings across government at key points in each project's life cycle.

Principle 5: (The Department of) Finance is responsible for developing, in consultation with agencies, the Frameworks that assist agencies to achieve the efficient and effective use of ICT by the Australian Government. (The Department of) Finance will do this through: facilitating re-use, interoperability, sharing and collaboration; encouraging use of standards; and strategic guidance to agencies and advice to Government on ICT investment.

Principle 6: Central agencies will support agencies to enhance skills in managing ICT investments by coordinating the provision of information, tools and training.

Source: Abridged from Australian Government Information Management Office, *ICT Investment Framework* (Commonwealth of Australia, 2006), http://www.finance.gov.au/budget/ict-investment-framework/docs/ICT_Investment_Framework_.pdf.

76 UNDP, *e-Government Interoperability: Guide* (Bangkok: UNDP Regional Center, 2007), 23, http://www.apdip.net/projects/gif/GIF-Guide.pdf.
77 Ibid.

Questions To Think About

1. What are the advantages of a whole-of-government approach to ICT investments?
2. What is your government's policy on ICT investments?

Unfortunately, despite the importance of ICT governance, very few governments have adopted an ICT governance framework (i.e. principles, decision hierarchy, and routinized monitoring and evaluation processes) at the level of government as a whole or within each government agency. This is also true of ICT Investment Principles.

One final point: Good ICT governance is a product of effective leadership at the highest levels.

Policymakers seeking to play a leadership role in creating an ICT governance framework in their respective countries should start by considering Weill and Ross's 'Top Ten Leadership Principles of ICT Governance'.[78] These principles, adapted for the public sector context, are reproduced below.

Top Ten Leadership Principles of ICT Governance

1. Actively design governance
Management should actively design ICT governance around the enterprise's objectives and performance goals.

Actively designing governance involves senior executives taking the lead and allocating resources, attention and support to the process.

2. Know when to redesign
A change in governance is required with a change in desirable behaviour.

But because thinking about the whole governance structure requires that individuals learn new roles and relationships, governance redesign should be infrequent.

3. Involve senior officials
Senior management necessarily gets involved in strategic decisions.

CIOs must be effectively involved in IT governance for success. Other senior managers must participate in the committees, the approval process and performance reviews.

78 Adapted from Weill and Ross, *IT Governance,* 222-230.

4. Make choices

It is not possible for ICT governance to meet every goal, but governance can and should highlight conflicting goals for debate. As the number of trade-offs increases, governance becomes more complex.

5. Clarify the exception-handling process

Exceptions are how enterprises learn. In IT terms, exceptions challenge the status quo, particularly the Enterprise Architecture. Some requests for exceptions are frivolous, but most come from a true desire to meet business needs. If the exception proposed by a business unit has value, a change to the Enterprise Architecture could benefit the entire enterprise.

6. Provide the right incentives

A common problem in ICT governance is the misalignment of incentive and reward systems with the behaviours the ICT governance arrangements were designed to encourage. A major governance and incentive alignment issue is business unit synergy. If IT governance is designed to encourage business unit synergy, autonomy, or some combination... the incentives of the executives must also be aligned.

Avoiding financial disincentives to desirable behaviour is as important as offering financial incentives.

7. Assign ownership and accountability for ICT Governance

ICT governance must have an owner and accountabilities. Ultimately, the head of government is responsible for all governance, but the head of government will expect or delegate an individual (the ICT Minister) or group (ICT Ministry, or ICT Coordinating Council) to be accountable for IT Governance design, implementation, and performance. In the private sector, the CIO owns IT governance in the majority of sizeable firms today.

Three key issues:

- ICT governance cannot be designed in isolation from other key assets of government (financial, human, etc).
- The person or group cannot implement ICT governance alone. The head of government must make it clear that all Ministers are expected to contribute to ICT governance as they would contribute to governance of financial or any other key asset.
- ICT assets are more and more important to the performance of most governments.

8. Design governance at multiple organizational levels

The starting point is government-as-a-whole ICT governance driven by a small number of government-wide strategies and goals. Ministries require a separate but connected layer of ICT governance.

The lower levels of governance are influenced by mechanisms designed for higher level... Start with the government-as-a-whole

ICT governance as it will have implications for the other levels of governance.

9. Provide transparency and education
It is virtually impossible to have too much transparency or education about ICT governance. Transparency and education often go together — the more education, the more transparency, and vice versa. The more transparency of the governance process, the more confidence in the governance.

10. Implement a common mechanism across the six key assets (i.e. human assets, financial assets, physical assets, intellectual property, information and IT, relationships)
In designing ICT governance, review the mechanism used to govern the other key assets and consider broadening their charter (perhaps with a subcommittee) to ICT rather than creating a new, independent ICT mechanism.

Enterprises using the same mechanisms to govern more than one of the six key assets have better governance.

Test Yourself

1. What is ICT governance and why is it important?
2. What are the elements of an ICT governance framework?
3. Enumerate Australia's ICT investment principles.

Further Reading

Australian Government Information Management Office. ICT Governance Committees. Commonwealth of Australia. http://www.finance.gov.au/e-government/strategy-and-governance/ict-governance-committees.html.

Department of Commerce, Government Chief Information Office. *ICT Governance. New South Wales Government* (Australia). http://www.gcio.nsw.gov.au/ict-key-strategies/ict-governance/ict-governance.

Ross, Jeanne W., Peter Weill and David Robertson. 2006. *Enterprise Architecture as Strategy: Creating a foundation for business execution.* Boston: Harvard Business School Press.

Shatten, Allen. 2007. Town Planning The Path To ICT Governance. *Information Age* (17 August). http://www.infoage.idg.com.au/index.php/id;1125477169;fp;4;fpid;119792017.

Weill, Peter and Jeanne W. Ross. 2004. *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results.* Boston: Harvard Business School Press.

Ziolkowski, Richard and Eugene Clark. 2005. Standards of ICT Governance: The Need for Stronger Epistemological Foundations in Shifting Sands. *The Asia Pacific Journal of Public Administration* 26, No. 1 (June): 77-90. http://sunzi1.lib.hku.hk/hkjo/view/51/5000806.pdf.

SUMMARY

This module consists of three sections. The first section describes the process of developing ICTD policy, the second highlights key elements in a national ICTD policy and their implementation strategies, and the third discusses ICT governance.

The first section identifies the steps in formulating ICTD policies and strategies, and describes the role of the state, market and civil society in the policymaking process. The section also discusses the need for legal and regulatory reform in light of new ICT developments, particularly Internet technologies and the convergence of technologies. Some key points from the first section are:

- Policymakers need to asses the context and the potential impact of ICTD interventions to minimize unintended consequences.
- ICT policymakers need to strike the right balance in the participation of the state, market and civil society in ICTD policymaking and implementation.
- Policymakers cannot temporize in the face of technical change because problems arise when old regulation governs new technology and its effects.
- Policymakers (and regulators) should assess the extent to which current laws and established regulations hinder the spread of new technology and the development of new businesses.

The second section highlights issues related to three elements in a comprehensive national ICTD policy, namely, capacity building, building the ICT sector of the economy, and e-governance. Two broad issues in ICT capacity development are discussed: ensuring that all citizens have the basic competencies to succeed in the Information Age, and developing specialist ICT skills so that the country's ICT sector and economy in general can expand in a sustained manner. With respect to building the ICT industry, policies and strategies adopted by different national governments in ICT manufacturing, offshoring and Global Software Development, and the digital content industry are examined. The section also discusses government's role in developing a free and open source software policy and achieving interoperability. Some key points made in this section are:

- Developing ICT capacity is an important policy objective for any country seeking to harness the power of ICT for development.
- ICT in Education programmes that focus only on the technology and are not underpinned by appropriate pedagogy are likely to fail.
- In today's global economy, governments need to act swiftly and decisively to ensure that they provide the right environment for the ICT sector to flourish and to play its role in driving national economic and social development.
- Connected governance refers not only to enhanced cooperation among government agencies but also active and effective consultation and engagement with citizens, and a greater involvement with multi-stakeholders regionally and internationally.

The third section discusses ICT governance and describes a framework for specifying decision rights and accountability in the use of ICT. The framework consists of a set of principles, a decision-making hierarchy, and a tailor-made suite of reporting and monitoring processes. The need to prioritize ICT investments is also discussed. A key point made in this section is that good ICT governance is a product of effective leadership at the highest levels.

ANNEX

Glossary

Capacity	The ability of people, organizations and society as a whole to manage their affairs successfully.
Capacity development	The process whereby people, organizations and society as a whole unleash, strengthen, create, adapt and maintain capacity over time.
Civil society organizations	A voluntary, non-profit group or association organized to achieve particular social objectives or serve particular constituencies; more popularly known as non-governmental organizations.
Communications and Multimedia Act (CMA) of Malaysia	(Enacted in 1999) Established a regulatory framework designed explicitly to reflect and accommodate convergence. In particular, the CMA introduced a technology- and service-neutral licensing regime for telecommunications and broadcasting that reduced that country's 31 service-specific licenses to four generic categories of licenses. See also convergence.
Connected governance	Refers not only to enhanced cooperation among government agencies through the use of ICT but also to "active and effective consultation and engagement with citizens, and a greater involvement with multi-stakeholders regionally and internationally."
Convergence	The occurrence of two or more things coming together. It is used to refer to the merging of gadgets, types of content, and/or industries made possible by digitization.
Copyright	A legal concept, enacted by most governments, giving the creator of an original work exclusive rights to it, usually for a limited time.
Digital content industry	Comprises the creation, design, management and distribution of digital products and services and the technologies that underpin them. Specific sectors include visual effects and animation (including virtual reality and 3D products), interactive multimedia (e.g. websites, CD-ROMs), computer and online games, educational multimedia (e-learning), and digital film & TV production and film & TV post-production.
Digital economy	Characterized by a shift from the production of things to the creation of ideas; also known as the 'knowledge economy', 'networked economy' or 'new economy'.
Digital signature	Functionally equivalent to a 'written' signature. It is a type of asymmetric cryptography that is not normally accepted as a means to perfect contracts under the laws of an increasing number of countries.
e-Governance	The use of ICT in society's 'essential steering function', which includes coordination, arbitration, networking and regulation. Specifically, it is using 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.
e-Government	The use of ICTs to improve the activities of public sector organizations.
Global Software Development	"Software work undertaken at geographically separated locations across national boundaries in a coordinated fashion involving real time (synchronous) and asynchronous interaction."

Government Interoperability Framework	A set of standards and guidelines that a government uses to specify the preferred way that its agencies, citizens and partners will interact with each other. It includes high-level policy statements, technical content, process documentation, implementation and compliance regimes.
ICT governance	"Specifying the decision rights and accountability framework to encourage desirable behaviour in the use of ICT." It determines who makes the final decisions on ICT in the organization.
ICT Governance Framework	A guide for governments aiming to maximize the use of ICT in the pursuit of development goals. This framework is usually comprised of 1) a set of principles; 2) a decision-making hierarchy; and 3) a tailor-made suite of reporting and monitoring processes.
ICT Investment Principle	Specifies the criteria and process for securing funds for ICT Projects. This is another way to determine priorities for ICT expenditure.
ICT principles	A related set of high-level statements about the use of ICT. See also *ICT Governance Framework*.
Interoperability	The ability of two or more systems or components to exchange information and to use the information that has been exchanged.
Liberalization	The process of making government policies less constraining of economic activity. In international trade it usually means reduction of tariffs and/or removal of nontariff barriers. In telecommunications it is associated with the end of monopoly in the provision of telecommunications services.
Market-based reforms	Generally policies that allow market forces to set prices, quantities and quality, and in some instances, to determine the services to be provided. Governments usually start reform in three ways: privatization, liberalization or a combination of both.
National Enterprise Architecture	A framework or umbrella for explaining the relationships among government's ICT projects and for managing change.
National Information Infrastructure	A broadband network capable of carrying voice, data, text, image and video (multimedia) information in an interactive mode serving the information needs of a country.
Non-governmental organizations	See *civil society organizations.*
Offshoring	The trend where job functions are moved overseas to lower cost centres.
Open source	Software where the source code is open, extensible and freely distributable. It is also used in a broader sense as "model of operation and decision making that allows concurrent input of different agendas, approaches and priorities, and differs from the more closed, centralized models of development."
Outsourcing	The hiring of an outside company to perform a task that would otherwise be performed internally by an organization. These are generally undertaken in logistics, sourcing and distribution services; information technology services, including the creation of software and the management of computer centres; and business process outsourcing areas, such as call centres, financial transaction processing and human resources management.
Policy	A plan of action, which is formally defined as "a set of interrelated decisions taken by a political actor or group of actors concerning the selection of goals and the means of achieving them within a specified situation where those decisions should, in principle, be within the power of those actors to achieve."

Privatization	Refers to the process of converting government-owned or controlled enterprises into privately owned ones.
Public policy	A government's response to issues related to the common welfare or good. It is embedded in a country's laws (legislation), regulations, decisions and actions of government. It is what is both articulated and practiced by governments. See also *policy*.
Rapid Appraisal of Agricultural Knowledge Systems	An actor-oriented method that has been developed for appraising stakeholders and their networks in a systematic and participatory manner.
Regulation	"Rule or order issued by an agency of the executive branch of government that has the force of law. It must be authorized by the statute and generally provide more details on a particular subject than does the authorizing statute."
Service-neutral licensing	Allows license holders to take cues from the market as to which services are most in demand or most cost-effective.
Stakeholders	Individuals, groups or organizations who have an interest in the policy being formulated. They have different interests and bring different agenda to the table.
Stakeholder analysis	Refers to a range of tools for the identification and description of stakeholders on the basis of their attributes, interrelationships, and interests related to a given issue or resource.
Technology neutral legislation or regulation	Means that laws and/or government issuances should not favour specific technology. This is not only to prevent giving a technology an advantage in the marketplace but also to prevent obsolescence as a technology specific act or order is likely to become useless once there is technological improvement.
Washington consensus	A development strategy named after the city that hosted the World Bank and IMF meeting that emphasized smaller role for government in the economy through deregulation, liberalization and privatization.
Post-Washington Consensus	The successor of the Washington consensus that underscores the importance of effective but light-touch regulation and civil society participation.
21st century skills	Skills that are to be developed in an Information Society. These are creativity, problem-solving abilities, information literacy, communication skills and other higher-order thinking skills.

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 module 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.

Using the Module

Each section of the present module begins with a statement of learning objectives and ends with a set of 'Test Yourself' questions. Readers may use the objectives and questions as a basis for assessing their progress through the module. Each section also contains discussion questions and practical exercises that may be accomplished by individual readers or used by trainers. These questions and exercises are designed to enable readers to draw on their own experience to benchmark the content and to think reflectively on the issues presented.

Case studies form a significant part of the module content. These are intended for discussion and analysis, particularly in terms of the extent to which the key concepts and principles presented in the module work in real-world projects and programmes. It is important for readers to appreciate the need to adapt ICT-based and ICT-supported approaches and models to suit local conditions. Trainers may encourage participants to cite other cases and examples from their own experience to substantiate the content of the module.

Structuring the Sessions

Depending on the audience, time available and local settings and conditions, the content of the module can be presented in different structured time capsules. What could be covered in sessions of different durations is outlined below. Trainers are invited to modify the session structure based on their own understanding of the country and audience.

For a 90-minute session

Provide an overview of the module. Refer to the 'Summary' and introductory parts of each section to build your workshop content, and emphasize issues of most relevance to the participants. You may also choose to focus on an issue in a sub-section, for example, the ICT development model presented in section 1 or building the ICT industry (from section 2), depending on the interests of the participants.

For a three-hour session

This would be an expansion of the 90-minute session structured to provide greater focus on certain sections. Depending on the background of participants, you may wish to run through the module overview and then focus on particular sub-sections from one or two of the sections, such as multi-stakeholder ICT policy development from section 1, ICT capacity development from section 2 and/or the ICT governance framework from section 3.

A three-hour session may also be divided into two 90-minute sessions. The first session can cover a summary of a relevant section and a case study discussion, and the next session can be spent on a group exercise. Please see the 'Something To Do' boxes for ideas for a group exercise.

For a full day session (6 hours duration)

Use three two-hour sessions to cover all three sections. Provide an overview of each section and focus on issues in one or two sub-sections (because there will not be time to cover all). Within each two-hour session, the delivery method could vary. For the first session, you may wish to ask each participant to address the challenges they face in ICTD policymaking. This could be documented by each individual or by a facilitator/trainer. For the second session, you may wish to discuss a case study from section 2, either with the entire class or in groups. For the third session, you may wish to assign a group exercise and see how ICT governance can address some of the challenges identified by participants in the first session.

Alternatively, the one-day session can focus on just one section of the module. The three sub-sections of Sections 1 and 2 can be covered in three two-hour sessions, while the two sub-sections of Section 3 can be covered in two three-hour sessions. Encourage group discussions and assign practical exercises in between PowerPoint presentations.

For a three-day session

Dedicate one day for each section, starting with section 1 on the first day and ending with section 3 on the third day. Provide an overview at the beginning of each day and sum up the section at the end of the day. On the final day, the last 90 minutes can be used for an open discussion and sharing of experiences related to the module content. A field visit could be arranged on the second day to complement the discussion of sections 2 and/or 3.

For a five-day session

This time frame should, for the most part, allow you to cover the module fully. Begin with a high-level overview of the module, and then expand into each section. To sustain audience interest throughout the five days, ensure plenty of audience interaction and use the practical exercises as both a break from content presentation and as a means for making the subject matter more interesting. Refer to the 'Something To Do' and 'Questions To Think About' boxes for ideas. A field visit could also be arranged on the second or third day.

Training Materials

Trainers are encouraged to adapt for use the slide presentations available at APCICT's website (http://www.unapcict.org/academy).

Trainers should use the lists of further readings, and look up the original documents and websites cited. Trainers may also use other relevant case studies, with appropriate referencing.

About the Author

Emmanuel C. Lallana is Chief Executive of ideacorp, an independent, non-profit organization. He leads a number of ICTD training and research projects in the Philippines and across the Asia Pacific region. From 2004 to 2007, Dr. Lallana served as Commissioner in the Philippine Commission on Information and Communications Technology (CICT). The CICT is the primary ICT policy, planning, coordinating, implementing, regulating and administrative entity of the executive branch of the Philippine government.

UN-APCICT

The United Nations Asian and Pacific Training Centre for Information and Communication Technology for Development (UN-APCICT) is a subsidiary body of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). UN-APCICT 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'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 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 9 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 eight initial 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.

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 Millennium Development Goals.

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 – Network and 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.

These modules are being customized with local case studies by national *Academy* partners to ensure that the modules are relevant and meet the needs of policymakers in different countries. The modules are also been translated into different languages. Furthermore, these modules will be regularly updated to ensure their relevance to policymakers, and new modules will be developed that focus on ICTD for the 21st century.

APCICT Virtual Academy (AVA – http://ava.unapcict.org)

- An online distance learning platform for the *Academy*.
- Designed to ensure that all the *Academy* modules including virtual lectures, presentations and case studies are accessible online.
- Enables learners to study the materials at their own pace.

e-Collaborative Hub (e-Co Hub – http://www.unapcict.org/ecohub)

- A resources portal and knowledge sharing network for ICTD.
- Provides easy access to resources by module.
- Users can 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.

Register online to fully benefit from the services provided in AVA and the e-Co Hub at http://www.unapcict.org/join_form