

Acknowledgements

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Comments and feedbacks are welcomed. Please contact Bory Seng (Ms.) of NiDA at bory_seng@nida.gov.kh.

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Abbreviations and Acronyms

Automated System for Customs Data	ASYCUDA
Chief Information Officer	CIO
Contents Management System	CMS
Council of Administration Reform	CAR
Database	DB
Environmental Data Management	EDM
European Union	EU
Government Administration Information System	GAIS
Hardware	H/W
Human Resource	HR
Information and Communication Technology	ICT
Information Technology	IT
Investment and Cooperation Department	ICD (MEF)
Japan International Cooperation Agency	JICA
Management Information System	MIS
Ministry of Agriculture Forestry and Fisheries	MAFF
Ministry of Commerce	MOC
Ministry of Culture and Fine Arts	MCFA
Ministry of Economy and Finance	MEF
Ministry of Education Youth and Sports	MOEYS
Ministry of Environment	MOE
Ministry of Foreign Affairs and International Cooperation	MFAIC
Ministry of Health	MOH
Ministry of Industry Mines and Energy	MIME
Ministry of Information	MOInfo
Ministry of Interior	MoInt
Ministry of Justice	MOJ
Ministry of Labor and Vocational Training	MLVT
Ministry of Land Management, Urban Planning & Construction	MLMUPC
Ministry of National Defense	MOND
Ministry of Parliamentary Affairs and Inspection	MONASRI
Ministry of Planning	MOP
Ministry of Post and Telecommunication	MPT
Ministry of Public Works and Transport	MPWT

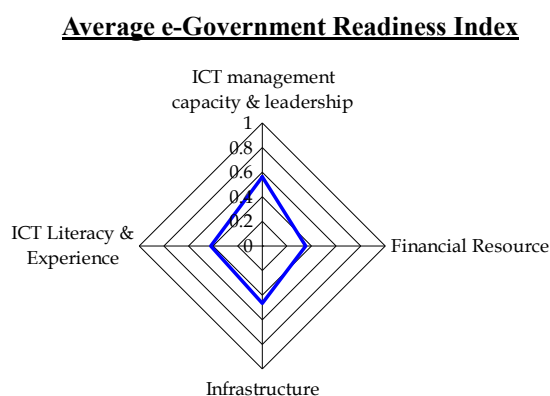
Ministry of Religions and Cults	MRC
Ministry of Rural Development	MRD
Ministry of Social Affairs Veteran and Youth Rehabilitation	MSAVYR
Ministry of Tourism	MOT
Ministry of Water Resources and Meteorology	MWRM
Ministry of Women Affairs	MWA
Multi Service Provisioning Platforms	MSPP
National ICT Development Authority	NiDA
National Information Infrastructure	NII
National Institute of Statistics	NIS
National Social Security Fund	NSSF
Natural Resources Assessment	NRA
Office of the Council of Ministers	OCM
Operation and Maintenance	O&M
Personal Computer	PC
Phnom Penh	PP
Phnom Penh Municipality	PPM
Provincial Administration Information System	PAIS
Software	S/W
State Secretariat of Civil Aviation	SSCA
State Secretariat of Civil Service	SSCS
Synchronous Transfer Module	STM
Technical and Vocational Education and Training	TVET

Executive Summary

Recognizing potential of the new government network, National Information Infrastructure (NII), NiDA has embarked on the study of e-government service deployment plan in order to utilize it to its full-scale. The objective of the study is to identify the needs of e-government applications which contribute to increase internal efficiency, improve public services, and to collect data for policy, and ultimately to come up with a cohesive roadmap to e-government service deployment. The study also covered various aspects of ICT status in the government as pre-conditions of e-government service deployment, such as infrastructure, human resource, ICT literacy, etc. The study targeted 29 government organizations in Phnom Penh, including 25 ministries, the Office of Council of Ministers, Municipality of Phnom Penh and 2 State Secretaries, out of which 25 organizations responded.

ICT Status in the government

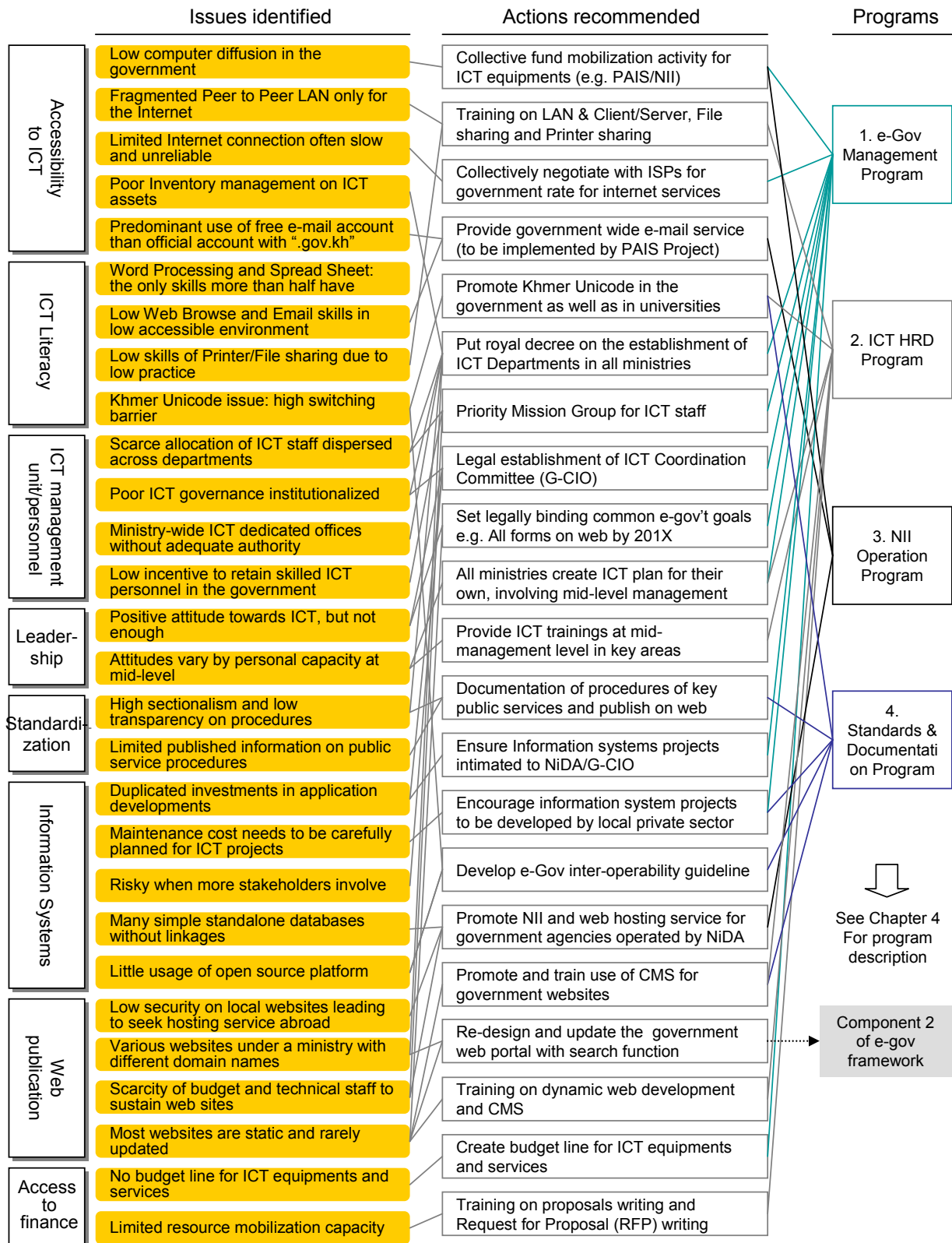
In the situational analysis in Chapter 2, a comprehensive diagnosis was conducted using e-Government readiness index developed for this study, to assess ICT status of each ministry and to identify issues related to ICT usage in government offices. As a result, it revealed that overall ICT status in the government of Cambodia is still at an infant stage and that digital gap exists among government agencies with four agencies far behind others. Twenty-five ministries were categorized among “Advanced,” “Average,” and “Behind.”



Category	Total Index	Ministry/Agencies	Nos
<i>Advanced</i>	> 2.4 points (more than 60%)	OCM, MEF, MFAIC, MoInt, MOP, MOT, PPM	7
<i>Average</i>	< 2.4 points > 1.8 points (45%) (above average)	MOC, MCFA, MOEYS, MOH, MIME, MOInfo, MLVT, MOND, MPWT, MRD, MWRM, SSCS, SSCA	13
<i>Behind</i>	< 1.8 points (45%) (below average)	MOE, MONASRI, MOSAVY, MWA	4
Unknown	Not available	MAFF, MOJ, MPTC, MRC, MLMUPC	5

In addition, 28 issues in various aspects were found to be the challenges for deploying e-government services in the future. Action items are recommended for all the issues identified, which are further grouped into four programs (next page).

Summary of Issues, Actions and Programs recommended



Application Needs

Three lists of applications were studied as follows.

(1) List of existing applications recommended for using NII

Ministry	Dept/agency	Information System
OCM	CAR	Human Resource Management Information System (HRMIS)
MEF	Tax Dept	Real-regime Tax System
	Custom Dept	ASYCUDA
	MEF	FMIS
MOEYS	Planning Dept	Education Management Information System (EMIS)
	Planning Dept	HRMIS for MOEYS
	Financial Dept	Program and Finance Management Information System
	n/a	Non-Formal Education Management Information System (NFEMIS)
MOH	Dept. of CDC	CamEwarn Database
	Planning Dept	HIS(Health Information System)
MoInt	n/a	e-Passport
MLVT	NSSF	NSSF's Labour Information System
MLMUPC	n/a	Land Registration Database (LMAP)
MOP	NIS	Statistical dissemination and GIS
MOT	IT Dept	Tourism Statistics DB

(2) List of new applications required for e-government services

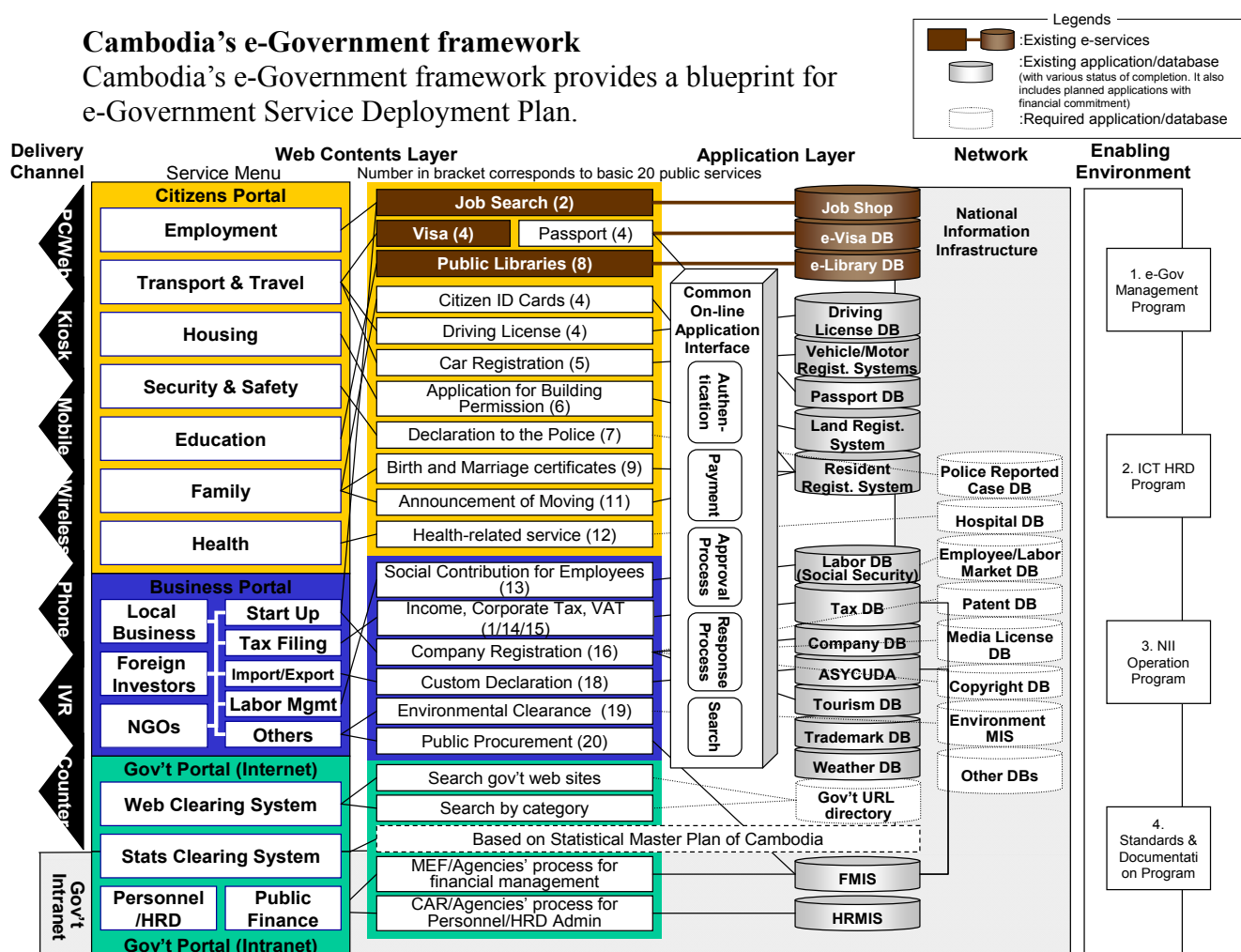
- Social Security Benefits (NSSF, MLVT, MOH)
- Police Declaration to the Police (Ministry of Interior)
- Health related service (MOH/Hospitals)
- Environment related permits (MAFF)

(3) List of new applications proposed by ministries

No	Ministry	Public Service/ Application needs	Division/Department
1	MOInfo	Media Licensing	Media Center
2	MCFA	Copy rights application	Copyright Dept.
3	MLVT	Issuance of Employment Cards, foreign workers' permit	n/a
4	MLVT	Declaration of new company	n/a
5	MOEYS	Online Curriculum System	Teachers in schools
6	MOEYS	Open and Distance Learning Applications	Students/teachers in schools
7	MOEYS	ESP Monitoring System	n/a
8	MIME	Patent Registration	n/a
10	MOT	Tourism sector information management	Statistics and Information Office
11	MOP	Statistics Data Warehouse	internal
12	MOP	Commune Profile System	internal
13	MOE	Environment MIS, Monitoring and Evaluation	Env. data mgmt. office
14	MFAIC	Visa and Document Management	Consulates around the world
15	MOND	Official document management	Internal
16	MOJ	Dissemination of Legal information	Public

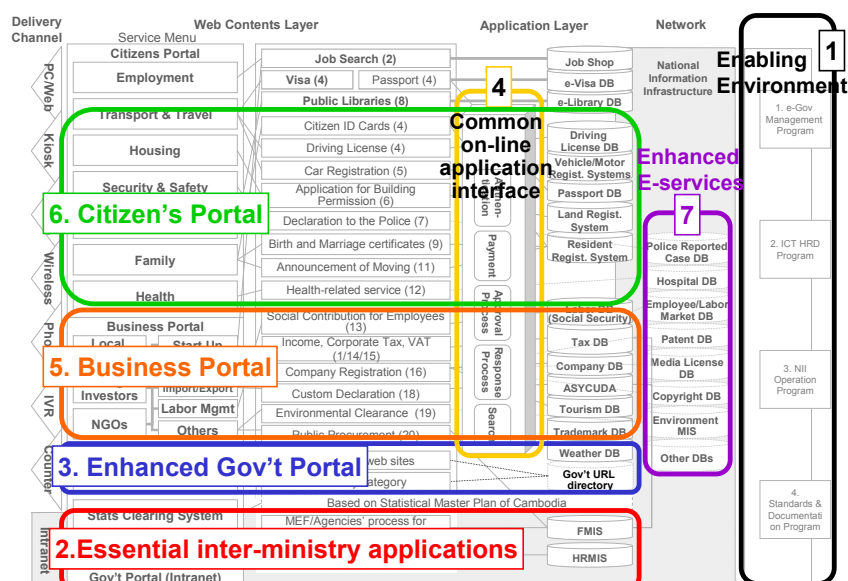
Cambodia's e-Government framework

Cambodia's e-Government framework provides a blueprint for e-Government Service Deployment Plan.



Seven Phases of e-Government Service Deployment Plan

E-Government service deployment plan is divided into seven phases, with brief description provided for each phase.



Phase 1. Enabling environment

For Phase 1, four programs to create environment for e-government services are identified to address issues identified from situational analysis.

1. e-Government Management Program (By 2010)

- (1) Establishment of ICT Departments in all ministries by Royal Decree
- (2) Establishment of ICT Coordination Committee (G-CIO Committee)
- (3) Official endorsement of common targets on e-Government
- (4) Create directives on private sector involvement in ICT projects
- (5) Consider at least one ICT staff in the Priority Mission Group

2. ICT HRD Program (Throughout the plan period)

- (1) Training for all CIOs on ICT planning, proposal and RFP writing
- (2) Training for Director Generals and Directors on the use of network
- (3) Training for CIOs who have ICT projects on Project Management and network
- (4) Training for webmasters on CMS, NII web hosting service
- (5) Training for NiDA technical staff on open source platform for e-Gov
- (6) Training of Khmer Unicode for all computer users in the government

3. NII Operation Program (By 2009)

- (1) NII Campaign
- (2) Activities on Network Security

4. Standards and Documentation Program (By 2013)

- (1) Internal procedural manuals on public services
- (2) Inter-operability guideline for government information systems (By 2011)
- (3) Migration to Khmer Unicode
- (4) Procurement guideline for ICT Equipments and Services
- (5) Government Web Development Guideline: use of open CMS

Phase 2. Essential inter-ministry application (By 2012)

Building essential inter-ministry applications, i.e. HRMIS of CAR and FMIS of MEF, are proposed for second phase.

Phase 3. Enhanced government portal (By 2010)

Enhancing the existing government portal with search engine is proposed for third phase. This includes developing web clearing system which consists of government websites' search engine and an index database described as "Gov't URL directory."

Phase 4. Common on-line application interface (By 2013)

Designing and developing a common e-government portal architecture is proposed as the Phase 4. The common platform should provide modules of authentication, payment, approval process, response process, search engine at least, and other necessary functions identified during the design phase.

Phase 5. Business Portal (By 2015)

Business portal with fully transactional e-services is proposed prior to develop citizen's portal as access to internet will improve faster among business communities than citizens.

Phase 6. Citizen's Portal (By 2020)

Citizen's portal is the ultimate goal of the e-Government Service Deployment Plan. It enables citizens to complete various public services fully on-line.

Phase 7. Enhanced e-services (no timeframe)

The final phase is to develop new e-service applications which are essential for the basic twenty public services. The new applications shall be designed based on the common application interface that already should be in place by the time. Other new e-services can be added as and when the need arises.

Timeframe of e-Government Service Deployment Plan

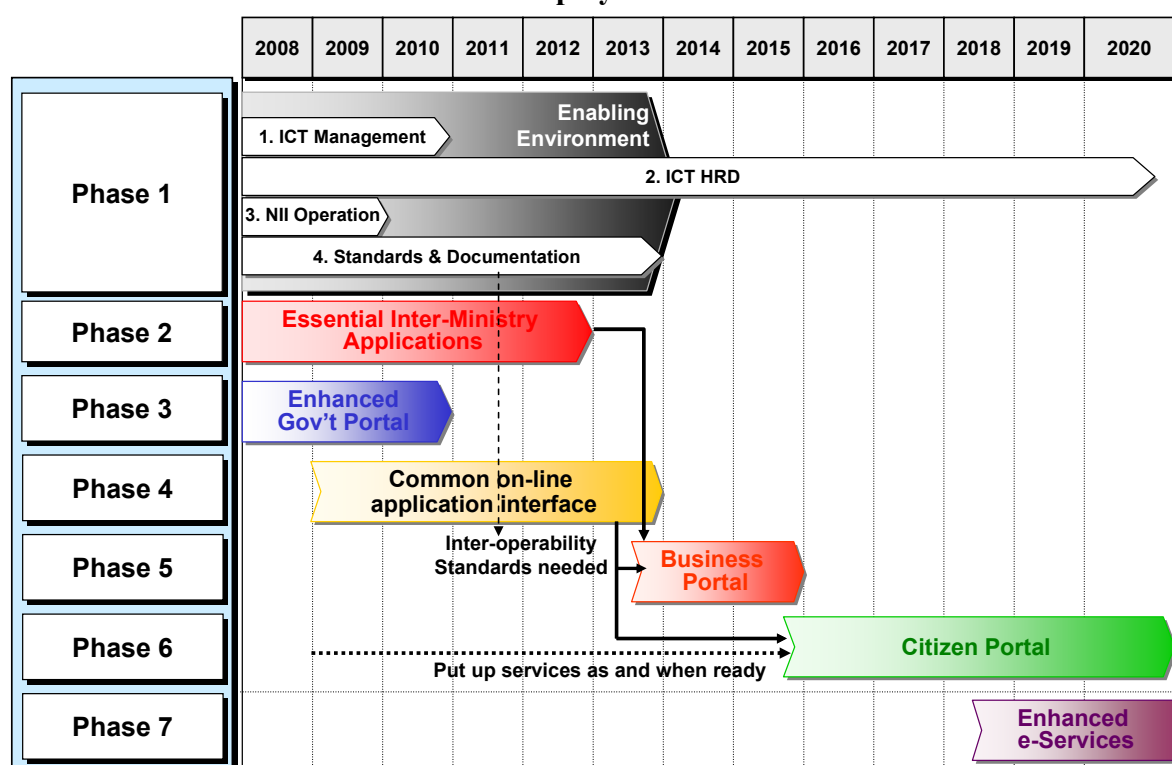


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2. Official letter signed by DPM with attached Khmer assessment sheet (In Khmer)
3. Summary of Assessment Sheets collected from studied ministries
4. Summary of Indicators
5. Draft ICT Plans of ministries participated in the workshop on ICT planning (mostly in Khmer)

Chapter 1. Introduction

1.1. Background

Royal Government of Cambodia is “promoting extensive use of Information Technology in all aspects of governance and government”, according to the National Strategic Development Plan (NSDP), 2006-2010. National ICT Development Authority (NiDA) under the Office of Council of Ministers has been taking this responsibility based on its mandate to formulate and implement IT promotion and development policies. Despite of the government’s commitment, Cambodia’s progress in the field of e-Government is still at an infant stage. For example, in the United Nations Global E-Government Survey 2008, Cambodia is categorized under “Emerging” stage, and is ranked at 139 out of 183 countries¹.

In pursuit of the above policy directive, NiDA has implemented e-Government projects, Government Administrative Information Systems (GAIS) and Provincial Administrative Information Systems (PAIS) which include National Information Infrastructure (NII), government-wide broadband network. GAIS delivered crucial e-Government applications, such as vehicle registration system, motor registration system, and resident registration system. PAIS and NII will be launched by March 2009, connecting more than 130 government offices (including some universities and hospitals) in 10 provinces with high-speed, reliable and secure lines. This infrastructure does not only provide platform for the said applications of GAIS and PAIS, but also provide a wide scope for all government agencies to place their own applications which suite their needs.

Although NiDA certainly has come a long way so far, e-Government has much broader scope beyond GAIS and PAIS. In order for the government to gain maximum return on its investment, NiDA has a critical role to attain optimal utilization of this common asset. In this context, the need for a comprehensive plan towards e-government service deployment has been recognized. To identify the needs of e-Government applications so that NiDA can facilitate the effective use of NII, NiDA has embarked on the study on e-Government Service Deployment Plan as a part of the technical assistance project supported by Japan International Cooperation Agency (JICA), “the Project on Capacity Development of ICT Management at NiDA*”.

* This project was formulated based on “An Action Plan for Developing ICT in Cambodia” which was developed by NiDA and JICA ICT experts in 2004. JICA had dispatched 6 experts in various ICT fields for 2 months to complete the action plan, in response to NiDA’s request for technical assistance in developing a comprehensive master plan for ICT Development in Cambodia. The basic concepts of e-Government presented in the action plan are followed in this

NSDP 2006-2010

Information and Communication Technology section

Policy Objectives

- Develop a cost-efficient and world class post and telecommunications system nation-wide (4.68)
- **Promoting extensive use of Information Technology in all aspects of governance and government (4.69)**

¹ United Nations Department of Economic and Social Affairs, “UN Survey Global e-Government Survey 2008,” 2008. (www.unpan.org/egovkb/global_reports/08report.htm, Accessed September 2008)

study as well.

1.2. Goals and Objectives

The objective of this study is to identify the needs of e-Government applications in achieving the following goals.

- To increase the internal efficiency
- To improve public services
- To collect data for policy analysis

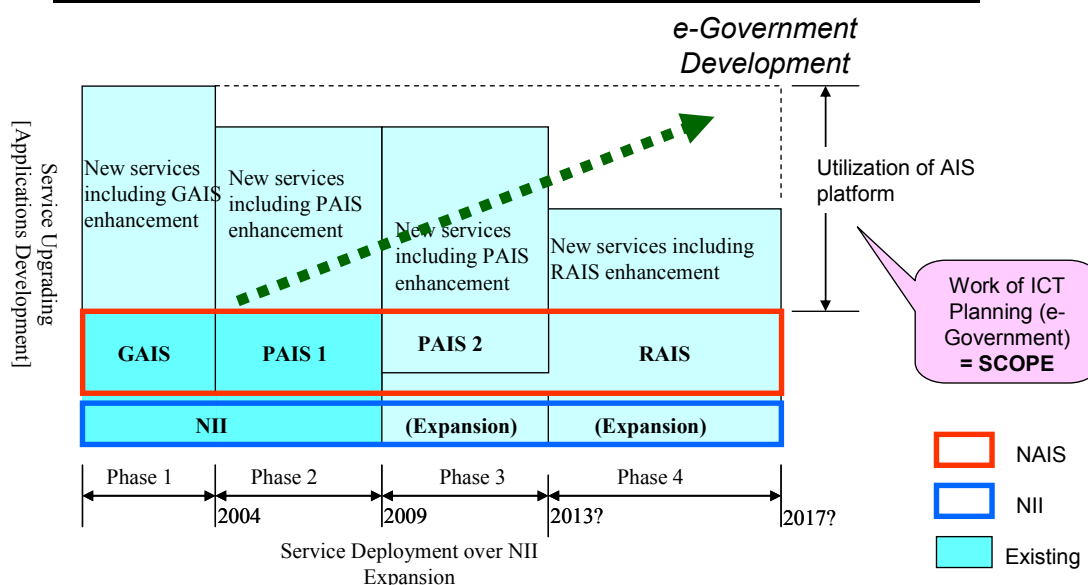
In the course of conducting the study by a team of NiDA staff with JICA expert, the study was carefully designed and carried out to bring about the following results.

- Capacity to conduct similar studies and to update the comprehensive service deployment plan by its own to be developed in NiDA
- Cooperation and collaborative relationships with other government agencies to promote e-Government to be built

1.3. Scope

As depicted in Figure 1, the scope of this study on e-Government Service Deployment Plan covers applications development for upgrading public services, based on Administrative Information Systems platform.

Figure 1. Scope of study on e-Government Service Deployment Plan



AIS: Administration information Systems, GAIS: Government AIS (PP), PAIS 1: Provincial AIS (10 provinces), PAIS 2: Expansion of PAIS 1 (14 provinces), RAIS: Rural AIS, NAIS: National AIS.
Created by Makoto FUSE, JICA chief advisor

The study also considers other critical elements for successful service deployment, such as ICT management capacity, leadership, IT literacy of government employees, and access to ICT equipments and services.

The study targets only the executive branch, which include all 25 line ministries, the

Office of Council of Ministers, Municipality of Phnom Penh and 2 State Secretariats, total 29 government organizations in Phnom Penh (Table 1). It does not study Judicial and Legislative branches. Having followed official procedures of government of Cambodia, 4 ministries could not be visited during the study period. Thus, 25 government organizations are studied in this report.

Table 1. Government organizations studied

NO	Name of Government Organization	Abbreviation
1	Office of the Council of Ministers	OCM
2	Ministry of Agriculture Forestry and Fisheries	MAFF
3	Ministry of Commerce	MOC
4	Ministry of Culture and Fine Arts	MoCFA
5	Ministry of Economy and Finance	MEF
6	Ministry of Education Youth and Sports	MOEYS
7	Ministry of Environment	MOE
8	Ministry of Foreign Affairs and International Cooperation	MFAIC
9	Ministry of Health	MOH
10	Ministry of Industry Mines and Energy	MIME
11	Ministry of Information	MOInfo
12	Ministry of Interior	MoInt
13	Ministry of Justice ^{*1}	MOJ
14	Ministry of Labor and Vocational Training	MLVT
15	Ministry of Land Management, Urban Planning & Construction ^{*2}	MLMUPC
16	Ministry of National Defense	MOND
17	Ministry of National Assembly-Senate Relations and Inspection	MONASRI
18	Ministry of Planning	MOP
19	Ministry of Post and Telecommunication	MPTC
20	Ministry of Public Works and Transport	MPWT
21	Ministry of Religions and Cults	MRC
22	Ministry of Rural Development	MRD
23	Ministry of Social Affairs Veteran and Youth Rehabilitation	MOSAVYR
24	Ministry of Tourism	MOT
25	Ministry of Water Resources and Meteorology	MWRM
26	Ministry of Women Affairs	MWA
27	Municipality of Phnom Penh	MPP
28	Secretariat of Civil Service	SSCS
29	Secretariat of Civil Aviation	SSCA

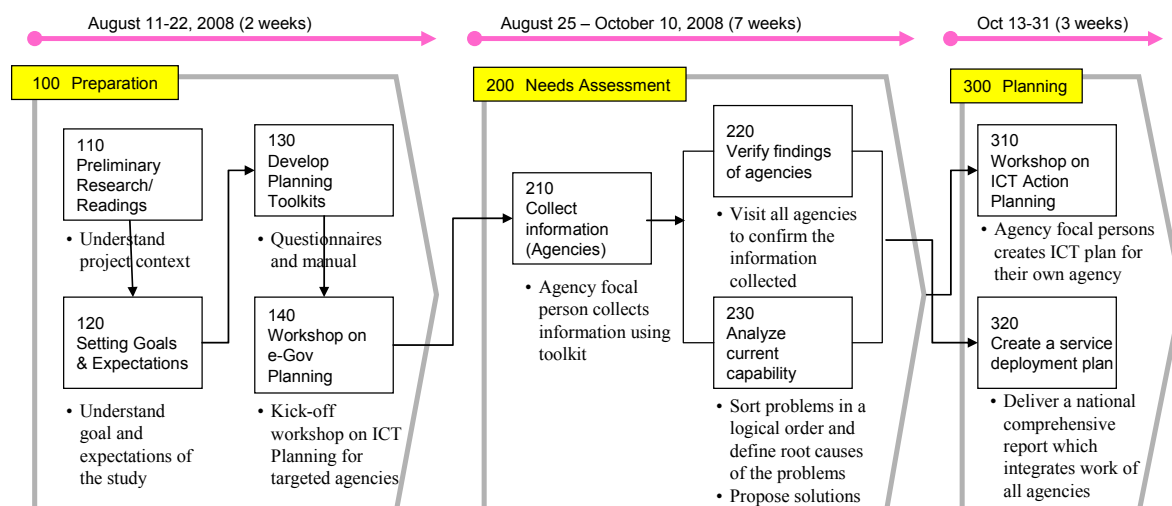
Note: The colored ministries could not be visited. ^{*1}. Information on Ministry of Justice is very limited as answers were not available during the study period. ^{*2}. MLMUPC was not visited but unofficial information was collected at the time of second workshop when a representative of the ministry participated.

1.4. Approach

The study approach is described in Figure 2. It consists of three main phases, preparation, needs assessment, and planning. The approach includes two workshops inviting ICT focal persons from all targeted government agencies. The first workshop is to request for cooperation to this study, while the second workshop is to provide training on ICT planning to the focal points. The second workshop was also be used to collect views and opinions about e-Government services of Cambodia from other agencies, which are reflected in Chapter 2. This approach aims at building

relationships between NiDA and ICT focal points and at contributing towards capacity development of ICT focal points of government agencies.

Figure 2. Planning chart of the study



The ICT Planning Toolkit (Annexure) was developed for NiDA study team as well as for ICT focal points of all ministries. It describes approach and basic process of needs assessment phase and planning phase, with attached questionnaire (Assessment Sheet) for information collection. The Toolkit was used throughout the study to guide NiDA study team, and also as textbook in the second workshop where ICT focal person from every ministry learned how to create an ICT plan for their ministry. Draft ICT plans created in the workshop are attached to this report as reference points to know the current situation and future plans of ICT in each ministry.

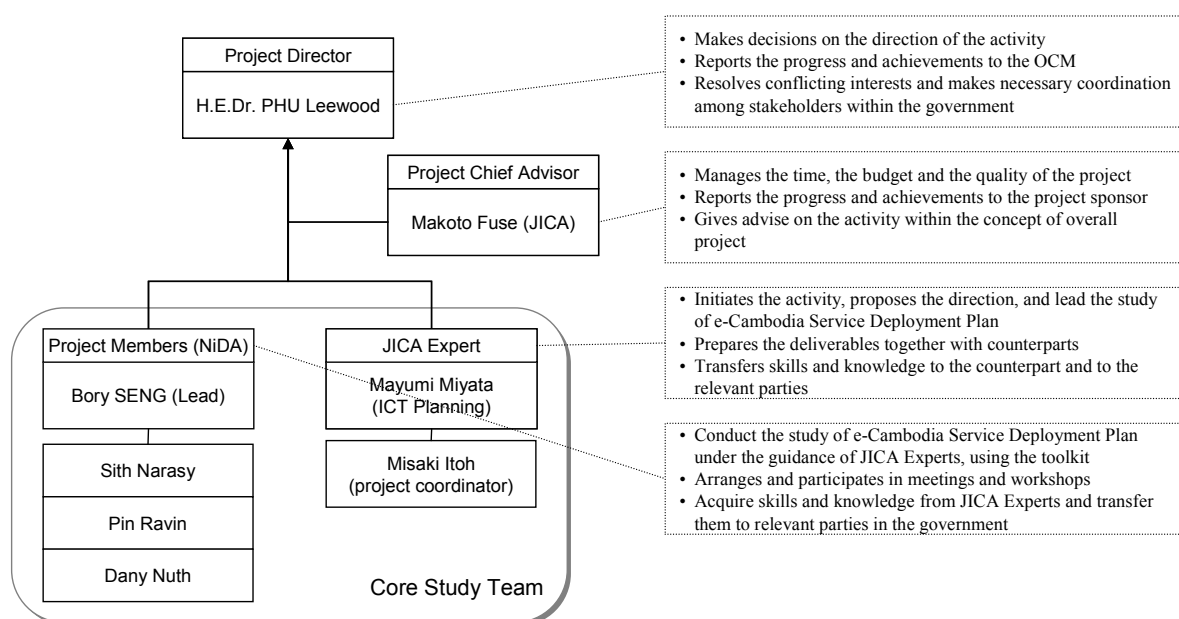
The needs assessment consists of two parts, situational analysis and application needs assessment which correspond to Chapter 2 and 3 of this report. These parts are called “Reality Check” and “Process Review,” subsequently in the toolkit. “Process Review” is to take a look at the ministry’s main public services where computerization could be of value. This part of the study directly contributes to identifying the needs of e-Government applications, which is the main purpose of this study. At the same time, it is important to study the current level of ICT usage in a broader perspective, in terms of human resources, infrastructures, etc., because success of e-Government services depends on many factors. Thus, what we call “Reality Check” is intended to assess the readiness for accepting the new technology into Cambodian government workplace, in other words, precondition of e-Government service deployment plan. Understanding where we stand is critical in any planning, particularly for our plan to be realistic and to include necessary measures to prepare for various e-Government service deployments.

1.5. Study Team

The study team and its structure are described in Figure 3. It is worth noting here that the four core project members of the study team from NiDA are all female staffs, especially to focus on the capacity development of female officers, who can often be in assistant roles. This arrangement is chosen on the expectation that two JICA female

experts would be able to lead their female counterparts to take their own initiatives. The project members were asked to make official appointments, research about government agencies, conduct interviews, and document the interview results. The core study team had regular meetings and members were asked to report on their progress, clarify on uncertain tasks, and express their opinion about the study findings. The lead project member from NiDA had taken the role to facilitate workshops for all government ICT focal points.

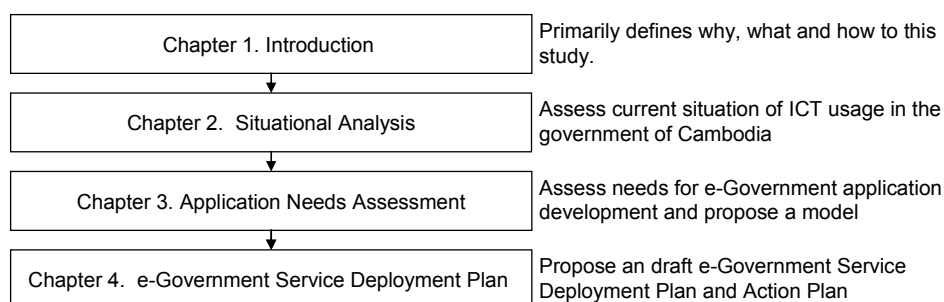
Figure 3. Study Team and Structure



1.6. Structure of this Report

The study report consists of four chapters as described in Figure 4. After Chapter 1, situational analysis on the use of ICT in the government is performed in Chapter 2. In Chapter 3, we assess the existing applications and emerging needs for new e-Government applications. Based on the results from Chapter 2 and 3, the draft e-Government Service Deployment Plan is presented for proposal to the government.

Figure 4. Structure of the study report

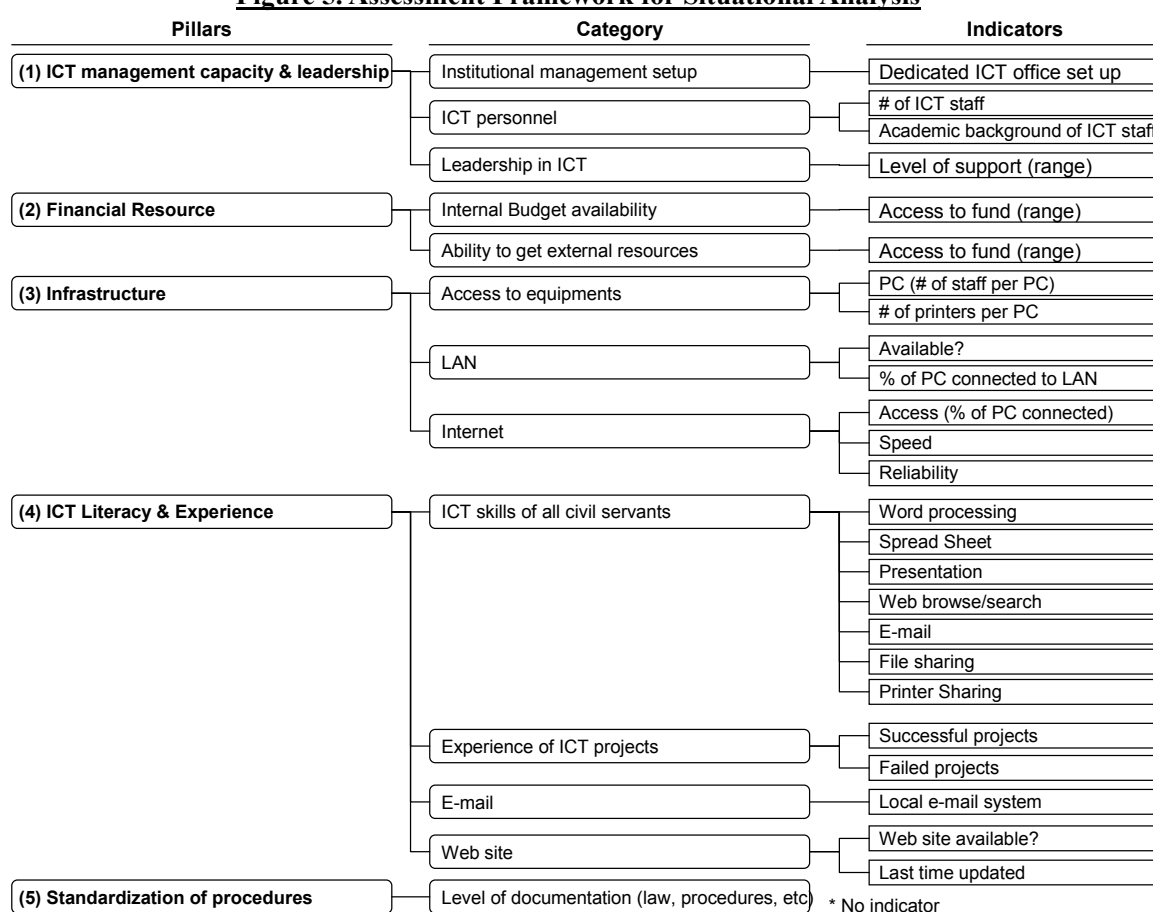


Chapter 2. Situational Analysis

2.1. Methodology

The situational analysis was conducted to assess the level of readiness for accepting information technology into workplace and developing e-government services, as preconditions for e-Government service deployment plan. It takes a broad approach to assess various key factors which e-Government initiatives are said to require, based on experiences of other governments. Assessment framework for situational analysis is shown in Figure 5 below, in which key factors are included. Based on this framework, the assessment sheet (in ICT Planning Toolkit) was developed.

Figure 5. Assessment Framework for Situational Analysis



* Indicator for (5) Standardization of procedure was initially set as % of documented procedures among public services studied in “Process Review”. However, it was not possible to gather reliable information from all ministries. Thus, this point was assessed qualitatively during the interview.

Structured interview was conducted using the assessment sheet. NiDA had sent official letter signed by Deputy Prime Minister, H.E. Sok An, through the Office of Council of Ministers to all ministers requesting for information in the assessment sheet and to meet the study team for interview. Khmer version of the assessment sheet was attached to the letter (Annexure). During the interview, the team confirmed and clarified on the answers given in the sheet.

Information in the assessment sheet was converted into scores according to ratings set in the Table 2. The indexed scores accumulated for four categories are plotted in a diamond shape radar chart, named "ICT Reality Chart", as shown in Figure 6. This index and chart was developed to enable overall comparison among ministries on the e-Government readiness at a glance. It was intended to have each ministry's ICT officers to understand their position within the government and stimulate on their motivation to increase their readiness. However, as it has its own limitation in expressing details, one should look at specific information given in the assessment sheet of each ministry. It was not possible to collect all the numeric figures, which remain as "n/a (not available)".

Table 2. e-Government readiness index

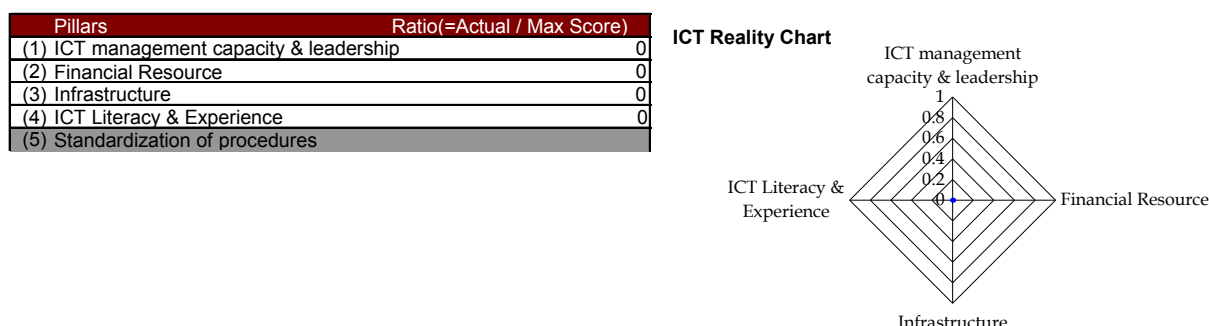
Pillars	Category	Question		Answer	Rate*1	max score
(1)ICT management capacity & leadership	Organization	4-1	Separate ICT unit	Yes	1	1
				No	0	
	ICT personnel	4-2	# of ICT staff = $\frac{\text{Number of PC}}{\text{Number of ICT Staff}}$	High (a staff maintains less than 35PCs)	1	1
				Low (a staff maintains more than 35PCs)	1/2	
				None (no dedicated ICT staff)	0	
		4-3	Academic background of ICT staff	Master, Bachelor, or Diplomas are more than half	1	1
				Master, Bachelor, or Diplomas are less than half	2/3	
				Associate Bachelor or below only	1/3	
				Non-ICT background + short course only	0	
	4-4	Skill variation	Rating based on variation	0-8/8	1	
	Leadership in ICT	7-1	How supportive?	Strong Support	1	1
				Show understanding	4/5	
				Interested	3/5	
				User level	2/5	
				No support/barrier	1/5	
5						
(2)Financial Resource	Internal Budget availability	6-3		Almost impossible	1/5	1
				Difficult	2/5	
				Fair	3/5	
				Not so difficult	4/5	
				Available when needed	1	
	Ability to get external resources	6-4		Almost impossible	1/5	1
				Difficult	2/5	
				Fair	3/5	
				Not so difficult	4/5	
				Available when needed	1	
2						
(3)Infrastructure	Access	5-1 3-1	PC (# of staff per PC) = $\frac{\text{Number of Staff}}{\text{Number of PC}}$	PC for all staff	1	1
				1-5 staff per PC	3/4	
				6-10 staff per PC	1/2	
				11-15 staff per PC	1/4	
				15+ staff per PC	0	
		5-1 5-2	# of printers per PC = $\frac{\text{Number of Printer}}{\text{Number of PC}}$	More than 50%	1	1
				20 - 50%	2/3	
				Less than 20%	1/3	
				no printer	0	
	LAN	5-4	LAN Available?	Yes	1	1
				No	0	
		5-5	% of PC connected to LAN	All	1	1
				more than 33%	2/3	
				less than 33%	1/3	
				No	0	
	Internet	5-6	Access (% of total PC) = $\frac{\text{Number of PC connected}}{\text{Number of PC}}$	more than 50%	1	1
				30-49%	3/4	
10-29%				1/2		
less than 10%				1/4		
no internet				0		
5-6		Speed	above 11.6Kbps/PC	1		

Pillars	Category	Question	Answer	Rate*1	max score	
		5-8	less than 11.6Kbps/PC	0		
		5-9	Reliability	Rating	1	
					7	
(4)Literacy & Experience	ICT skills of general staff	3-3	Word processing (word)	None	0	1
				Less than 20%	1/4	
				20-40%	1/2	
				40-60%	3/4	
				More than 60%	1	
			Spread Sheet (excel)	None	0	1
				Less than 20%	1/4	
				20-40%	1/2	
				40-60%	3/4	
				More than 60%	1	
			Presentation (powerpoint)	None	0	1
				Less than 20%	1/4	
				20-40%	1/2	
				40-60%	3/4	
				More than 60%	1	
			Web browse/search	None	0	1
				Less than 20%	1/4	
				20-40%	1/2	
				40-60%	3/4	
				More than 60%	1	
			E-mail	None	0	1
				Less than 20%	1/4	
				20-40%	1/2	
				40-60%	3/4	
				More than 60%	1	
			File sharing	None	0	1
				Less than 20%	1/4	
				20-40%	1/2	
				40-60%	3/4	
				More than 60%	1	
			Printer Sharing	None	0	1
				Less than 20%	1/4	
				20-40%	1/2	
				40-60%	3/4	
				More than 60%	1	
	Experience of ICT projects		Successful projects	Yes	1	1
				No	0	
			Failed projects (exclude GAIS)	Yes	1	1
				No	0	
	E-mail	5-3	Local e-mail system Available?	Yes	1	1
				No	0	
	Web site	8-1	Web site available?	Yes	1	1
				No	0	
		8-3	Last time updated	Within the same week	1	1
				Within the same month	3/4	
				Within three months	1/2	
				Within a year	1/4	
		Not updated more than a year	0			
					12	
(5) Standardi- zation of procedures*2	Level of legal documents, documentation of procedures	Q4	example: Legal basis Regulation Prakhas Task manuals	Less than 20%	0	1
				20-40%	1/5	
				40-60%	2/5	
				60-80%	3/5	
				More than 80%	4/5	
				All	1	

*1. Rate is set to be maximum 1 point for each item so that weight of questions would be same.

*2. Omit from assessment scope this time due to lack of information

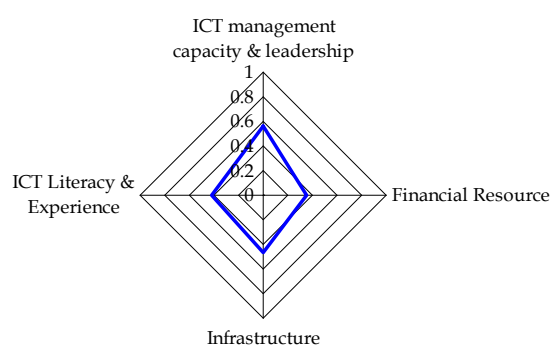
Figure 6. e-Government Readiness Index Chart



2.2. e-Government Readiness: Digital Divide within the government

Although e-Government readiness varies greatly among ministries, leaving some agencies far behind, overall ICT status is found to be at an infant stage. Even at this early stage, digital divide exists among the ministries mainly due to funding availability. The government organizations surveyed are categorized into three, “advanced,” “average”, and “behind”, based on the level of e-Government readiness index (Table 3). The e-Government indexes of all agencies in radar chart shown in the next page. The standard chart plotting average of all agencies is shown on the right, which is about half way in all aspects.

Figure 7. Average e-Government Readiness Index

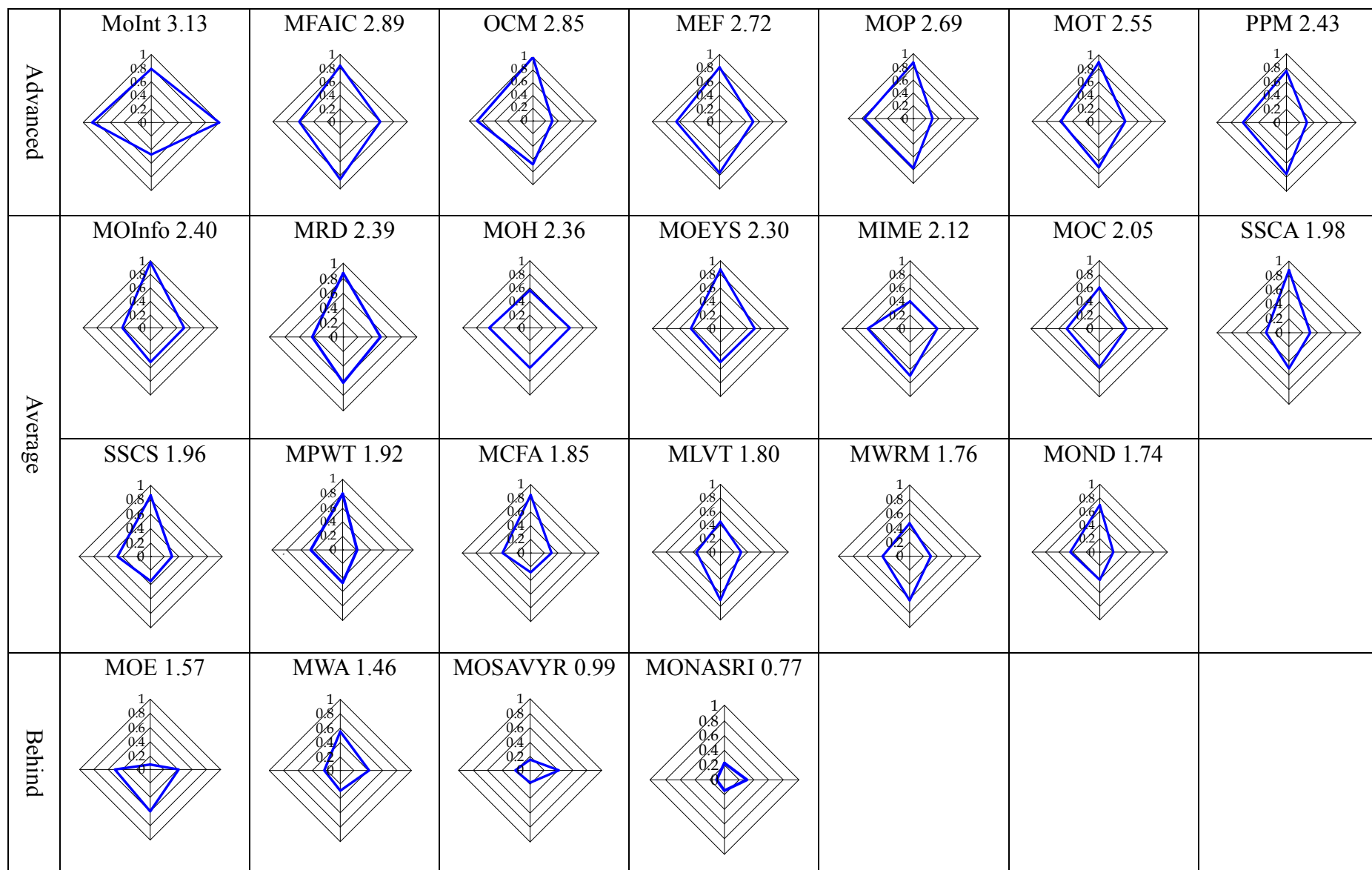


As advanced ministries have their own capacity to develop ICT in their workplace, it is important to bring the behind ones up. The PAIS and NII projects would be helpful in bridging the digital divide. NiDA has an important role to play in this issue.

Table 3. Advanced, Average, and Behind organizations in ICT

Category	Total Index	Ministry/Agencies	Nos	NiDA's main role
<i>Advanced</i>	> 2.4 points (more than 60%)	OCM, MEF, MFAIC, MoInt, MOP, MOT, PPM	7	Provide guidelines on common issues
<i>Average</i>	< 2.4 points > 1.8 points (45%) (above average)	MOC, MCFA, MOEYS, MOH, MIME, MOInfo, MLVT, MOND, MPWT, MRD, MWRM, SSCS, SSCA	13	Provide guidelines on common issues. Advisory and consultancy role as required.
<i>Behind</i>	< 1.8 points (45%) (below average)	MOE, MONASRI, MOSAVY, MWA	4	Initiate and actively involved in ICT developments
Unknown	Not available	MAFF, MOJ, MPTC, MRC, MLMUPC	5	Not enough information

Figure 8. e-Government Readiness Index of all government organization



2.3. Infrastructure

2.3.1. National Information Infrastructure (NII)

A brief overview of National Information Infrastructure (NII) is visited here in order to understand the preconditions of e-Government Service Deployment Plan, and to ensure that the plan has conformity with the development of the government-wide network infrastructure and related services.

NII is a government fiber optic cable network connecting headquarters of all ministries in Phnom Penh and nine other provincial headquarters. Nine provinces include Siem Reap, Sihanouk Ville, Banteay Meanchey, Battambang, Kampong Cham, Kampong Thom, Kandal, Takeo, and Kampot. It is currently under construction (as of October 2008) as a part of Provincial Administration Information System (PAIS) project supported by the government of Korea. NII is expected to be launched by March 2009, with three IT centers in Phnom Penh, Siem Reap and Sihanouk Ville, which are all components of PAIS/NII. It is useful to look at the scope of GAIS and PAIS projects in Table 4, with three components, NII, PAIS and IT center. The PAIS project adds on to the GAIS (Government Administration Information System) project implemented earlier.

Table 4. Scope of GAIS/PAIS project

Category		Details
NII ^{a)}	Network	<ul style="list-style-type: none"> • 27 Ministries' headquarters in Phnom Penh connected. • Phnom Penh's Districts and Communes (7 District and 76 Commune) • PAIS user organizations and some other government offices in 9 provinces (PAIS)
	LAN	<ul style="list-style-type: none"> • 27 Ministries and Phnom Penh's 7 Districts (GAIS) • PAIS user organization in 9 provinces. (PAIS) • Other government offices in 9 provinces. (PAIS)
	Peripheral	<ul style="list-style-type: none"> • Server, PC, Printer, Scanner, Data Backup equipment and auxiliary devices
Application S/W ^{b)}	Residence System	<ul style="list-style-type: none"> • Birth, death, marriage, moving, etc. • Residence Book and Family Book Management
	Real Estate System	<ul style="list-style-type: none"> • Real Estate Management : Registration/cancellation, partition/merge, etc. • Ownership Management : Ownership Transfer, statistics, etc.
	Vehicle System	<ul style="list-style-type: none"> • Vehicle Management : Registration, structure alteration, inspection, registration card, number plaque, and ownership Management
	Motorcycle System	<ul style="list-style-type: none"> • Motor Management: Registration, structure alteration, inspection, registration card, number plaque, and ownership Management
	VoIP & e-mail	<ul style="list-style-type: none"> • VoIP phones will be connected to all offices • E-mail account will be distributed to all civil servants and will be centrally managed by IT center

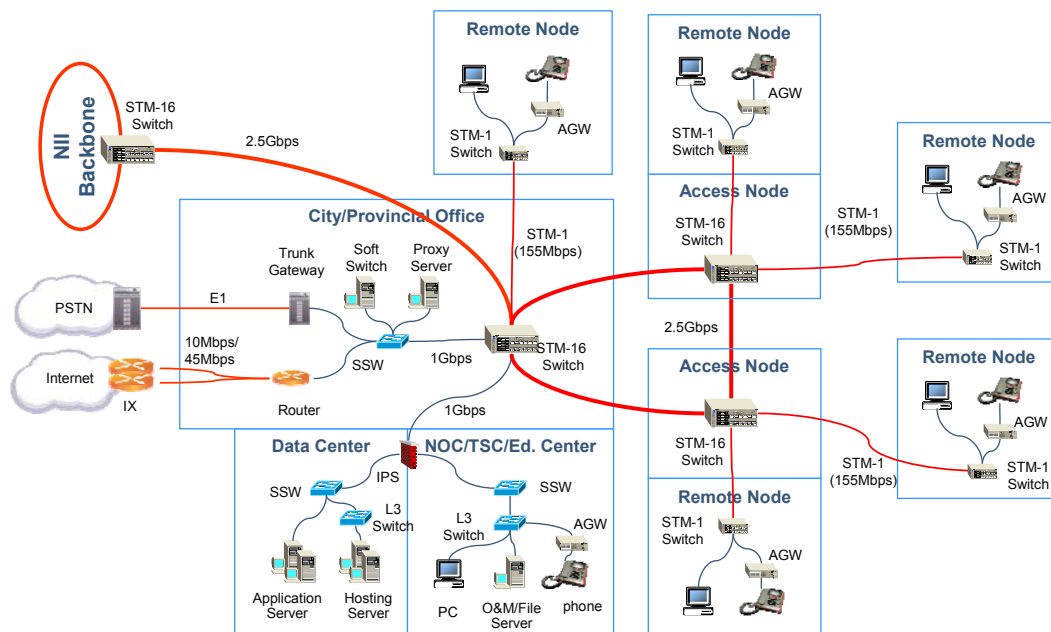
Category		Details
IT Center (Phnom Penh, Siem Reap, and Sihanouk Ville)	Data Center	<ul style="list-style-type: none"> • Provide hosting service for various servers of government organizations and management services for data, backup, security, etc. • Install & operate PAIS Servers of nearby provinces
	NOC (Network Operation Center)	<ul style="list-style-type: none"> • Provide integrated management environment for the network and IT resources located nationwide • Install Management/Security System for NII and IT resources • Monitor and manage the operation/security of network and IT resources
	TSC (Technical Support Center)	<ul style="list-style-type: none"> • Equipped with staffs and equipments required for troubleshooting and technical support to remote offices • Provide tools for technical support and technical support staffs • Provide field technical support for adjacent provinces
	Education Center	<ul style="list-style-type: none"> • Provide technical training to users and IT staffs • Provide education & training facilities for PAIS and NII

Source: Kisan Telecom

- NII replaces GAIS with fiber optic cables.
- Four applications were developed during GAIS. In PAIS project, the applications will be upgraded, interconnected and expanded to 9 other provincial offices. Real Estate System seems to be replaced with the new application developed by Ministry of Land Management, Urban Planning & Construction.

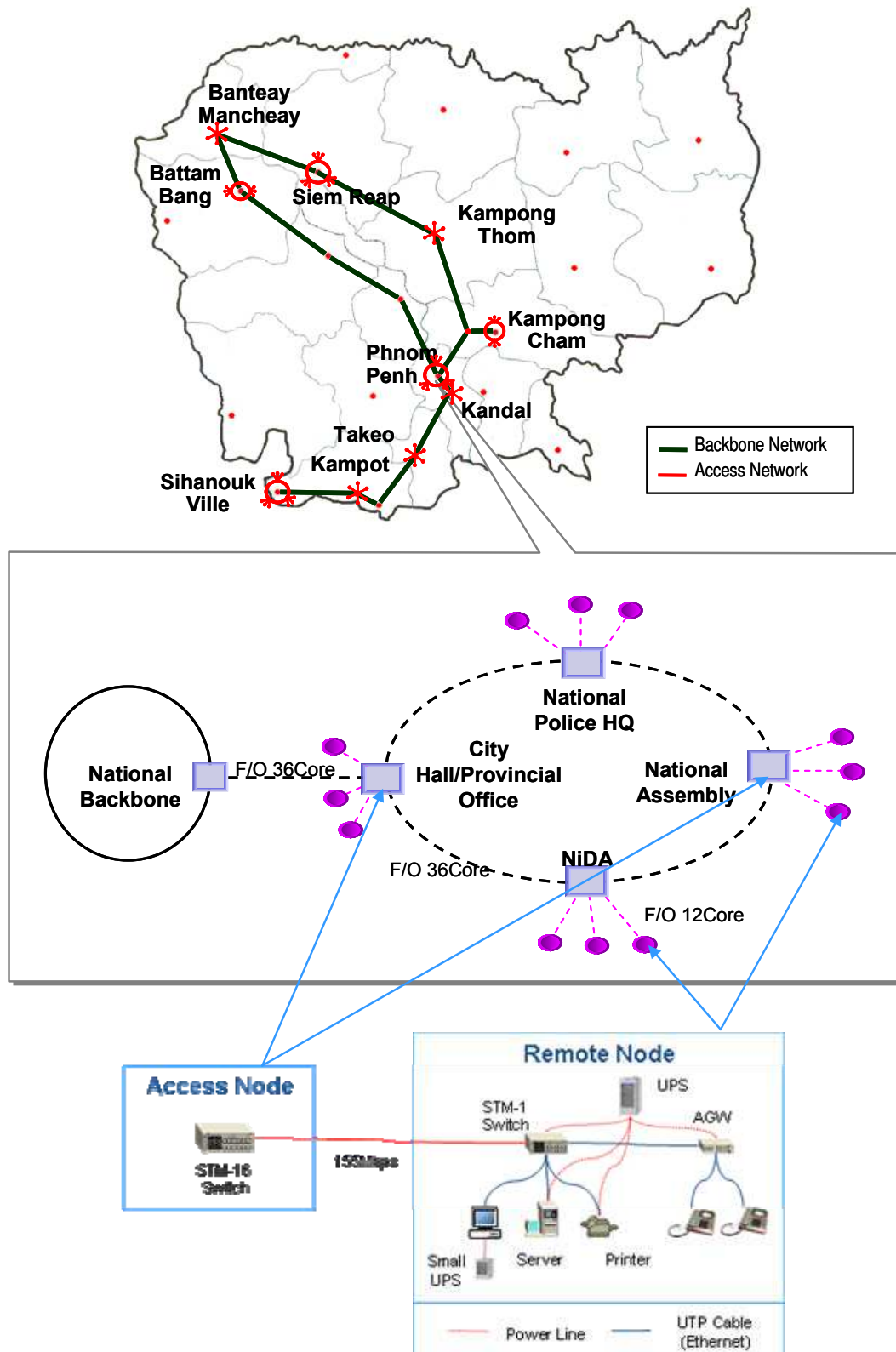
NII consists of Backbone Network, Access Network, and Remote Network (LAN). NII will be connected to the national fiber optic backbone network as its own Backbone Network, through 2.5Gbps MSPP Switch (STM-16). The Access Network is the inner city networks for Phnom Penh and capital cities of nine (9) major Provinces. To an Access Network, Remote Networks are connected in PAIS user offices and other government and public organizations. The connection between Access Node and Remote Node will be STM-1 (155Mbps fiber optic cable). The conceptual network configuration is described in Figure 9 and physical locations and network components are shown in Figure 10. The list of Access Node and Remote Node is also provided.

Figure 9. Logical Network Configuration of NII



Source: Kisan Telecom

Figure 10. Physical location and network components



Source: Kisan Telecom. The study team combined the three layers in this layout.

Table 5. List of Access Node and Remote Node

1. Phnom Penh

No.	Access Node	Remote Node
1	City Hall	Ministry of Information
2		Disaster Management Authority
3		Ministry of Economy and Finance
4		Ministry of Public Works & Transport
5		Ministry of Post and Telecommunication
6		CDC
7		Daun Penh District Office
8	Ministry of Water Resource	Ministry of Women Affairs
9		Ministry of Commerce
10		Ministry of Industry Mines and Energy
11		Secretariat of Civil Aviation
12		Custom Office
13	National Assembly	Ministry of Foreign Affairs and International Cooperation
14		Ministry of Parliamentary Affairs and Inspection
15		Ministry of Environment
16		Royal Palace
17		Ministry of Religions and Cults
18		Ministry of Justice
19	Ministry of Planning	Secretariat of Public Function
20		General Department of Land Management
21		Ministry of Land Management, Urban Planning & Construction
22		Ministry of Social Affairs Veteran and Youth Rehabilitation
23		Chamkamon District Police Office
24		Chamkamon District Office
25	Ministry of Tourism	Ministry of Education Youth and Sports
26		Daun Penh District Police Office
27	Motorcycle Registration	7 Makara District Police Office
28		Dongk kor District Police Office
29		Phnom Penh University
30		Phnom Penh International Airport
31		Red Cross Hospital
32		Royal Academic School
33		Dongk Kor District Office
34	Commisariat Police Office	Meanchey District Police Office
35		Ministry of Culture and Fine Arts
36		Ministry of Interior
37		Royal School Of Administrative
38		Senate
39		Ministry of Agriculture Forestry and Fisheries
40		Meanchey District Office
41	NiDA	Ministry of Rural Development
42		Ministry of Defense
43		Ministry of Labor and Vocational Training
44		Ministry of Health
45		Tax Office (Tax Department, MEF)
46		Office of the Council of Ministers
47		Toulkok District Police Office
48	National Police HQ	Vehicle Registration Office
49		Police Statistic Office
50		Traffic Police Office
51		Reusey Keo District Police Office
52		Reusey Keo District Office

2. Siem Reap

No.	Access Node	Remote Node
1	Provincial Office	Provincial Cadastral Office

2		Red Cross Hospital
3		Department of Tourism
4		Tax Office
5		Department of Women's Affairs
6	Department of Agriculture, Forestry & Fisheries	Department of Finance
7		Motor office & Vehicle Office
8	Provincial Police Office	Customs Office
9		District Office & District Cadastral Office
10		Siem Reap International Airport
11		District Police Office
12	Department of Education	Commune Office
13		Commune Police Office
14		One Window Service Office

3. Sihanouk Ville

No.	Access Node	Remote Node
1	Provincial Office	Department of Water Resource
2		EDC
3		Maritime Port Administration
4		Industry Mines and Energy Department
5		Airport
6		Customs Office (Sihanouk Ville port)
7	Provincial Police Office	Provincial Motor Office & Vehicle Office
8		Department of Education
9		Provincial Cadastral Office
10		Department of Rural Development
11		Cambodia Red cross
12		Department of Woman Affairs
13	Department of Tourism	Department of Commerce
14		Department of Information
15		Department of Agriculture
16		District Office & District Police Office
17		District Cadastral Office
18	Department of Health	No4. Commune Office & No4. Commune Police Office
19		Sihanouk Ville Referral Hospital

4. Kampong Cham

No.	Access Node	Remote Node
1	Provincial Office	Provincial Police Office
2		Provincial Cadastral Office
3		Kampong Cham District Office & Kampong Cham Cadastral District Office
4		Kampong Siem District
5		Provincial Motor Office & Vehicle Office
6	Department of Agriculture, Forestry and Fisheries	Cambodia Red Cross
7		Commune Office
8		District Police Office
9		Department of Information

5. BattamBang

No.	Access Node	Remote Node
1	Provincial Office	Provincial Police Office
2		Provincial Cadastral Office
3		Commune Police Office
4		District Police Office
5		Commune Office
6		District Office & District Cadastral Office
7		Tourism Office
8		Motor Office & Vehicle Office
9	University of Management	Red Cross Hospital

6. Kampong Thom

No.	Access Node	Remote Node
-----	-------------	-------------

1	Provincial Office	Provincial Police Office
2		Provincial Police Office
3		Motor office & Vehicle Office
4		District Office & District Cadastral Office
5		Commune Police Office
6		District Police Office

7. Banteay Meanchey

No.	Access Node	Remote Node
1	Provincial Office	Provincial Police Office
2		Provincial Police Office
3		Provincial Motor Office & Vehicle Office
4		District Office & District Cadastral Office
5		Commune Office
6		District Police Office

8. Kampot

No.	Access Node	Remote Node
1	Provincial Office	Provincial Police Office
2		Provincial Police Office
3		Provincial Motor office & Vehicle Office
4		District Office & District Police Office
5		Provincial Cadastral Office

9. Kandal

No.	Access Node	Remote Node
1	Provincial Office	Provincial Motor office & Vehicle office
2		Takhmao District Office & Cadastral District Office
3		Provincial Cadastral Office
4		District Police Office
5		Provincial Police Office
6		Takhmao Commune

10. Takeo

No.	Access Node	Remote Node
1	Provincial Office	Provincial Police Office
2		Provincial Cadastral
3		District Office & District Cadastral Office
4		Provincial Motor office & Vehicle office
5		District Police
6		Commune

Source: NiDA & Kisan Telecom, as of October 2008.

After the launch of NII, 132 offices will be connected with at least 155 kbps fiber optic line coming to their building. Although estimated volume of network traffic for PAIS applications is not known, we can assume that there is a lot of provisions for other applications to be placed on. At the same time, it is worth noting that not all government offices are connected. For example, many of departments under a ministry in Phnom Penh, which are not in the same compound with the ministry's headquarters, are not connected unless they are specified in the list. Many district offices under various ministries are also not connected as they are not in the same location as the governor's office (Provincial office). However, adding Remote Node is possible with relatively small investment for the offices in the same town, as the network is designed in a scalable manner. Thus, cost of joining to NII should be considered when application development is planned for the offices not yet connected within PAIS/NII project.

Together with the launch of NII, IT centers in three locations will also enter into service. IT centers are expected to be run by NiDA and to provide hosting service, backup

service, and operation and maintenance services, as summarized in the Box below. The services can also be provided for other government agencies upon request. The service deployment plan and ICT plans of ministries shall take these available services into consideration.

Box 1. Services provided by IT Centers of NiDA

■ **Hosting Service**

It is possible to provide various hosting service, with currently acquired IT Center facility and addition to hosting system. The following services can be provided to government agencies.

Service	Description
Co-Location Service	<ul style="list-style-type: none"> The IT Center provide lease of physical facility such as space, rack, power, network, etc., of the acquired hosting area. The customer installs their PC and network equipment to the co-location space. Under the customer care, operate and manage computer, and others.
Server Hosting Service	<ul style="list-style-type: none"> It is to provide lease service of the server acquired from the IT Center. By leasing the server, operate customer owned application S/W. Provide O&M service of the server.
Shared Hosting Service	<ul style="list-style-type: none"> It is to provide lease service of server's disk and CPU acquired from the IT Center. It is to provide O&M service of the server.
Application Hosting Service	<ul style="list-style-type: none"> To provide lease service of generalized application. It is to provider O&M service of the server and S/W.
Management Service	<ul style="list-style-type: none"> The facility that uses hosting service will be provided with following services. Provisioning of H/W and S/W Configuration. Network, Server, Application and traffic Management. Security Management. Facility Management. Call Center and Help Desk service.

■ **Backup Service**

The role of the backup center is as follows;

- Regular automated backup for the gathered/processed/ stored data of the various server of the National IT Center.
- In case fault occurs in the major server of the National IT Center, process work on behalf of the application server.

■ **O&M Service or MSP Service**

O&M Service will monitor and control the IT resources to maintain optimal performance through the integrated enterprise O&M system. Therefore, the O&M systems will monitor operation status of systems at real time and prevent occurrence of problems in advance. Also, it will analyze and report the status, symptom, and

problem solving to network administrators.

Service	Description
Management Service	<ul style="list-style-type: none"> The facility that uses hosting service will be provided with following services. Provisioning of H/W and S/W Configuration Network, Server, Application and traffic Management Fault management, and performance management of H/W and S/W. Security Management Call Center and Help Desk service
Security Service	<ul style="list-style-type: none"> Provide security control service including detection and prevention of security infringement and Anti-Virus. Network security, server security, DB security and desktop security.
User Support Service	<ul style="list-style-type: none"> Help Desk service, technical support, desk-side support, training service.

Source: Kisan Telecom

2.3.2. Accessibility to ICT equipments and basic services

Accessibility to ICT equipments and services in the government is very poor in general. Main challenges concerning accessibility are highlighted in this section. The figures used here are based on answers from ministries, some of which have used their estimated figure. Thus, figures shall be understood as indicative.

Figure 11. Accessibility to ICT by ministry (Indicative figures)

No	Ministry	No. of PCs* ¹	Personnel * ²	PC Coverage	No. of staff sharing a PC	% Connected to	
						LAN* ¹	Internet* ¹
1	OCM	120	1508*	8.0%	12.6	90.0%	90.0%
2	MAFF	n/a					
3	MOC	98	1753	5.6%	17.9	40.8%	30.6%
4	MoCFA	150	2844	5.3%	19.0	21.3%	no Internet
5	MEF	108	n/a	n/a	n/a	37.0%	> 50%
6	MOEYS	540	7747* ³	7.0%	14.3	20.0%	20.0%
7	MOE	53	510	10.4%	9.6	18.9%	47.2%
8	MFAIC	85	595*	14.3%	7.0	> 50%	90.0%
9	MOH	203	502	40.4%	2.5	19.7%	21.2%
10	MIME	162	600	27.0%	3.7	21.6%	24.7%
11	MOInfo	200	3000	6.7%	15.0	15.0%	25.0%
12	MoInt	2000	9798*	20.4%	4.9	15.0%	7.5%
13	MOJ	n/a					
14	MLVT	121	989	12.2%	8.2	12.4%	14.0%
15	MLMUPC	150	2352	6.4%	15.7	73.3%	14.0%
16	MOND	1375	n/a	n/a	n/a	< 33%	> 50%
17	MONASRI	45	733	6.1%	16.3	no LAN	no Internet* ⁴
18	MOP	400	1639	24.4%	4.1	62.5%	25.0%
19	MPTC	n/a					
20	MPWT	150	4895	3.1%	32.6	46.7%	33.3%
21	MRC	n/a					

No	Ministry	No. of PCs* ¹	Personnel* ²	PC Coverage	No. of staff sharing a PC	% Connected to	
						LAN* ¹	Internet* ¹
22	MRD	90	2158	4.2%	24.0	10.0%	12.2%
23	MOSAVYR	179	1590	11.3%	8.9	no LAN	no Internet
24	MOT	90	595	15.1%	6.6	16.7%	44.4%
25	MWRM	200	1451	13.8%	7.3	5.0%	5.0%
26	MWA	152	1015	15.0%	6.7	no LAN	16.4%
27	MPP	100	300	33.3%	3.0	40.0%	30.0%
28	SSCS	25	144	17.4%	5.8	64.0%	no Internet
29	SSCA	83	459	18.1%	5.5	no LAN	9.6%
Average		275.2	1965.7	14.1%	10.9	33.2%	25.5%

*1. Many of them are estimated figures by IT office. Some figures do not reflect the total numbers in all departments.

*2. The number of officers who share the estimated number of PC is also estimated by IT office. Figures with asterisk are taken from Statistical Yearbook 2008.

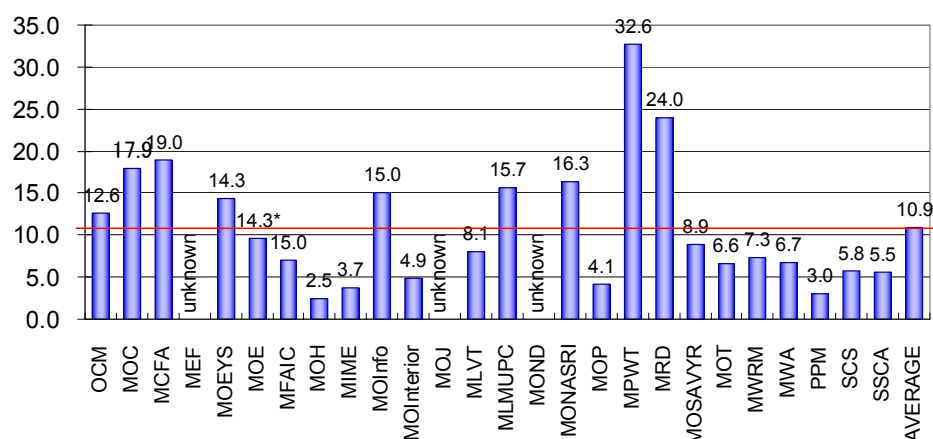
*3. This figure comprises of 1705 provincial EO and 2042 district EO, which are taken from EMIS, and approximately 4000 staff in the head office estimated by IT office.

*4. Internet is available only for the high ranking officials.

▪ Low computer diffusion in the government

On average, approximately 11 officers share one computer. Considering the fact that many civil servants cannot attend office throughout the day, one could understand much less people share, perhaps about 5 officers per PC for example. Even with this subtracted figure, we can see that Cambodia is at a very infant stage of e-Government.

Figure 12. Number of staff sharing one PC (indicative)



▪ Fragmented Peer to Peer LAN only for the Internet

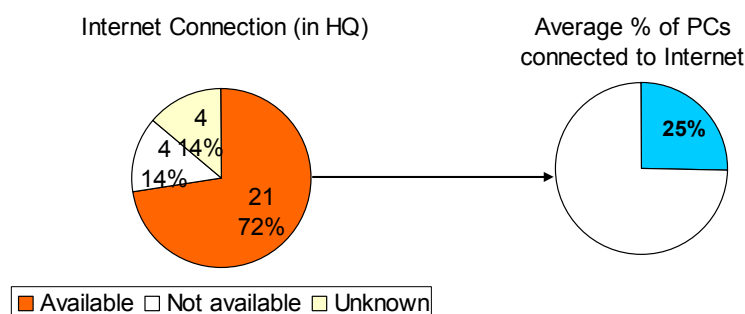
Out of 25 government organizations surveyed, 20 organizations have introduced Local Area Network (LAN). This amounts to 83% of the surveyed, and 69% of all organization in the executive branch. However, no ministry or secretariat has an integrated LAN which covers all computers in the organization. Only 33% of total computers are connected to LAN. This is mainly because LAN is used only for sharing the Internet connection, often based on Peer to Peer network. To secure usable speed for each user, the number of PCs accessible is often

controlled. The Internet connection is very expensive and often sponsored by external funded projects. This is why several small LANs exist independently within an organization even at the same location, subscribing to different ISPs. Few printers are shared, and file sharing has not become a common practice yet.

- **Limited Internet connection often slow and unreliable**

Twenty one government headquarters, amounting to 72%, subscribe to internet connection. Internet access is limited to 25% of all computers in the head offices, on average. It is often the case that only one PC per room or department has internet connection. The speed on average is approximately estimated at 13 Kbps, which is slow but usable as not all access at the same time. Although this figure is a very rough estimate and may not be very accurate, we maybe able to say that a certain speed, though low, is secured as a result of effort to control the number of users as mentioned above. Some ministries do not control the numbers, causing internet connection frequently fail or time out. Overall, the internet connection “occasionally (average 2.95)” fails or times out, according to the survey.

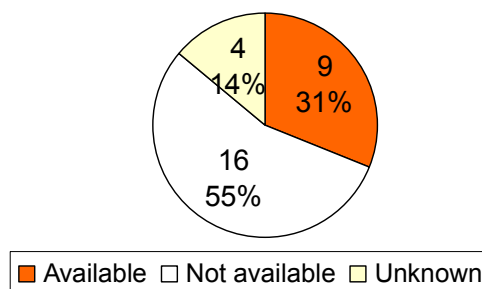
Figure 13. Access to Internet



- **Poor inventory management on ICT assets**

During the course of this study, it became apparent that ICT assets, including computers and peripherals, are not managed centrally in ministries. None of the organization could produce inventory of ICT assets, and a few had exact number of computers and printers in the ministry. This is mainly because procurement of ICT equipments is done independently by finance department or by project office, and not intimated to ICT office. For both sound ICT management and information security reasons, it is essential that ICT office involves in procurement of ICT equipments and centrally manage the ICT assets. This would also be useful for setting standards for equipments and applications.

Figure14. Local email availability



- **Predominant use of free email account than official account with “.gov.kh”**

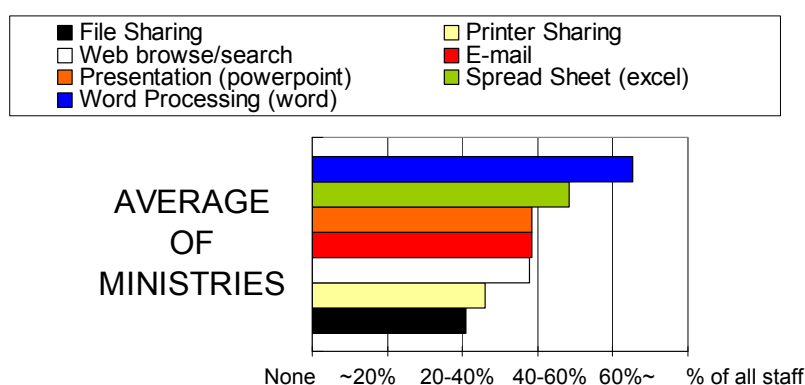
Only 9 government organizations have local e-mail account for their staff, with “.gov.kh” domain name. Most civil servants use free e-mail account, such as

hotmail, yahoo or gmail, even when they have local “.gov.kh” account. Many say that the official e-mail account is unreliable. For those which offer official e-mail account, they provide link to their internal web-mail on their web site. Although this is very convenient for those who do not possess computers, the level of protection from unauthorized access needs to be investigated carefully.

2.4. ICT literacy

In response to a question to estimate the skill level of seven areas, word processing, spread sheet, presentation, e-mail, web browse/search, file and printer sharing, in the rating of (1) to (5), corresponding to (1) none, (2) less than 20%, (3) 20-40%, (4) 40-60 %, (5) more than 60%, the average of all 7 skill rating in all ministries have accounted nearly 3, which means about 40% of staff are estimated to possess basic computer skills. Those ranked as high ICT literacy include MOFA, MIME, MOE and OCM. Excluding field officers like policeman on streets, many senior officers still use only papers and pencils to perform all government works, according to the interview.

Figure 15. ICT Literacy of government officials (Estimated)



- **Word Processing and Spread Sheet: the only skills more than half have**
 Out of seven types of computer skill, more than 60% of government officers are thought to be able to use Word Processing (Word), which is the top rated skill. The second rated skill is Spread Sheet (Excel) scoring 20% to 40%. All other skills are rated lower, marking less than 40% of staff obtained.
- **Low Web Browse and Email skills in low accessible environment**
 Web Browse and Email skills are marked lower than Office application skills, such as word, excel and powerpoint, scoring less than 20%. This is because the Internet connection is a prerequisite for using Web Browse and Email, and these accessibility is low as mentioned in the previous section. Naturally, government officials working for high accessible environment, tend to mark high rate in the use of Web Browse and Email. Accessibility is the key to these skill sets.
- **Low skills of Printer/File sharing due to low practice**
 Printer sharing and file sharing are ranked as lowest of all skills, as the benefit of sharing printers and files seems to be unrecognized. As both printer and file sharing skills are premised on Local Area Network (LAN), low figures in these

skills revealed low practice of sharing. Although LAN is built in 69% of all agencies head offices, only 33.2% of PCs on average are connected. Even for the connected PCs, sharing files and printers are rarely practiced. There are significant needs for networking all PCs to have shared environment, in order to benefit most from the opportunities created by LAN.

2.5. ICT management capacity and leadership

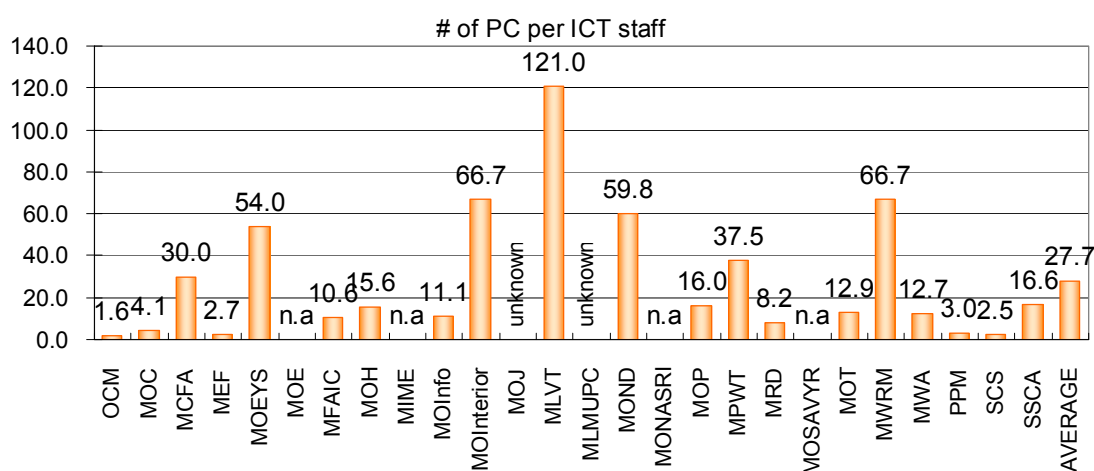
2.5.1. ICT management unit/personnel

Capacity on ICT within ministry, both technical and managerial, is essential for sound e-Government deployment. Having good ICT professionals is the key to successful e-Government initiatives in any government. In Cambodia, this is one of the most difficult aspects as human resource base is scarce in any field. The number of young ICT graduates is emerging, but they often lack practical skills and experiences. For number of reasons, ICT management capacity in the government is generally very poor, mainly due to institutional problems and lack of adequate IT officers as explained below.

- **Scarce allocation of ICT staff dispersed across departments**

Four ministries, MOE, MIME, MONSARI, and MOSAVYR, have no dedicated ICT personnel, and MLVT, with 121 PCs, has only one student studying ICT as intern to look after ICT matters in the ministry. Excluding the four ministries without any ICT staff, for those having ICT personnel, approximately 27.7 PCs covered by one ICT staff on average. This figure is indicative, as reliable number of all ICT staff from personnel department could not be obtained. It seems that many ministries have no clear positions for ICT staff, which makes personnel department difficult to count the number of ICT staff separately. ICT staff is placed on the need basis by various departments, and in most cases, they are working independently reporting to their directors.

Figure 16. Number of PCs per ICT staff (indicative)

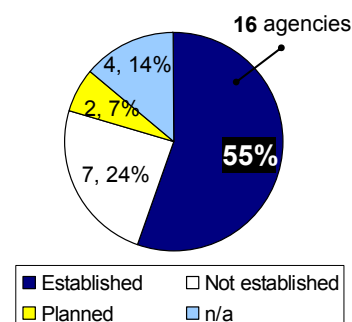


n.a: Not applicable. Ministries do not have dedicated ICT staff at all.

- **Poor ICT governance institutionalized**

There are 16 agencies, 55% of all agencies, which have institutionalized a dedicated ICT office. Remaining half of agencies has no office to look after ICT development in the ministry, often spreading ICT in-charges across departments. Two ministries, Ministry of Health and Ministry of Labour and Vocational Training, are planning to establish one. As mentioned, ICT activities are taken place in various departments independently, with little coordination. This may cause serious problems, such as information security and inter-operability issues, when computers are networked and ICT activities increase.

Figure 17. Dedicated ICT office



- **Ministry-wide ICT dedicated offices without adequate authority**

Even in the government organizations with an established ICT office, ICT governance is found to be poor due to inadequate authority given to it. Only MEF, MOInfo and MOP have department which dedicated to ministry-wide ICT matters, whereas other ICT offices are with or under statistic and planning department or administration department. Most ICT offices are neither authorized to touch computers of other departments nor involved in ICT projects in other departments. For example, whenever other departments have problem with ICT equipments, they call private companies to fix them or replace with a new one without informing ICT office. Poor ICT governance tends to lead organizations to unbalanced and duplicated ICT investments, which are also found prevalent in Cambodia.

- **Low incentive to retain skilled ICT personnel in the government**

One of the main hurdles to retain skilled people is to provide incentives, as many interviewees mentioned. In Cambodia, the salary scale of civil servants is extremely low, while private companies pay much more than government offices for skilled ICT professionals. Thus it is not easy to recruit and retain skilled ICT staff, or even to have recruited ICT officials to be working in their office full time.

2.5.2. Leadership in ICT promotion

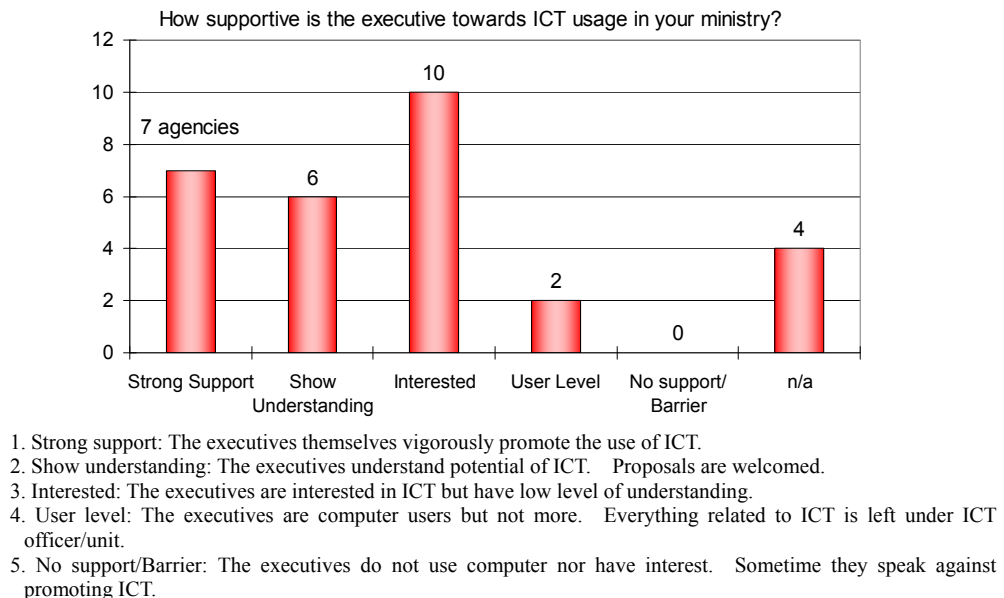
Leadership at the top level is known to be essential in accelerating e-Government services. General attitude towards ICT seems to be divided between the highest level and mid-management level (director level).

- **Positive attitude towards ICT, but not enough**

In Cambodia, there is generally a good understanding of ICT and its benefits at the highest level of the government, but stronger support is desirable for further acceleration. Out of 25 surveyed, about the attitude toward ICT among the executives, 7 agencies answered that they have “strong support”, 6 agencies with “show understanding”, and 10 agencies with “interested”. Only 2 agencies

replied “user level,” which refer to low level of leadership. Many said that ministers are well aware of ICT as they are mostly highly educated in foreign countries. However, it seems that stronger leadership at the national level is needed for all government offices to be active in ICT.

Figure 18. The executives’ attitude towards ICT



▪ **Attitudes vary by personal capacity at mid-level**

Informal conversation during the interview revealed that understanding of ICT at mid-management, such as Director General and Director, depends on the capacity of the person in the position. Some have never touched computers. In other cases, previous bitter experience affects their attitude. Ministry of Health, for example, had once vigorously introduced computers with the top leadership in late 1990, only to disappoint the leaders because few officers could utilize them.

2.6. Standardization of work processes

Although standardizing procedures is one of the first steps for automation, information on the level of standardization of procedures was very difficult to obtain because many interviewees could not understand what it means as well as they had limited authority to investigate the situation. The following points are drawn by the team’s impression during our interviews and web search.

▪ **High sectionalism and low transparency on procedures**

When asked about the public services provided in the ministry, many said they do not know because they have very limited knowledge about what other departments do. Also, it was often the case where our interviewees could not obtain relevant information from departments concerned. It implies that standardized procedures for a particular public service either do not exist or is confidential. In general, the concept of having manual, handbook or guideline for officers was not understood widely.

- **Limited published information on public service procedures**

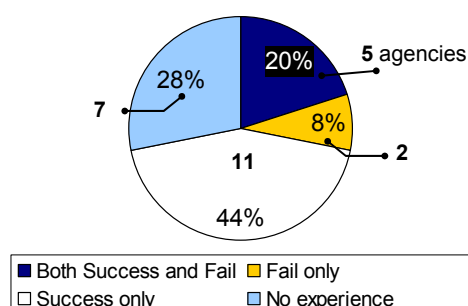
Brief Internet search was conducted to all available contents about public service procedures on government web sites. More information was available for business services, especially for foreign investors, but limited information for services for citizen. Few forms were downloadable from the web site in any service.

2.7. Experience with ICT projects

2.7.1. Information systems

More than 70%, 18 government organizations, have experienced ICT projects either failed, succeeded or both. It can be inferred that, either success or not, these ministries have learnt the benefits and challenges of ICT introduction. About 8 applications have identified as failure, which means that applications were developed but no longer being used. It is important to learn lessons from previous experiences and incorporate mitigation measures to reduce risk of failure for the e-Government service deployment plan.

Figure 19. Experience with ICT projects



- **Duplicated investments in application developments**

Many ministries have invested or have a plan to invest in Human Resource (HR) related applications, some of which have already failed. The following table shows that 10 agencies, one third of all agencies, are planning to create HR related application. Already two HR applications are not in use anymore. These vain efforts and duplicated plans prove a big waste of resources in the government, as well as a great need for coordination among government agencies.

Table 6. Ministries with existing, planned, and failed HR applications

	Existing	Planned	Failed
Ministries	CAR/OCM MOH MOEYS SSCS	MCFA MOEYS (enhance) MFAIC MOH (dept. use) MoInfo MPWT MRD MOSAVYR MWA SSCA	MWRM SSCS
Nos.	4 agencies	10 ministries	2 agencies

- **Maintenance cost needs to be carefully planned for sustainability**

The study team found total of 10 ICT projects which had been developed but no longer being used as listed in Table 7. Although the reasons vary greatly, a typical case is found where an application is developed in an aid project and it is not used after the project period is over. Many say that lack of fund is the main obstacle.

- **Risky when more stakeholders involve**

Inter-ministry applications tend to show more risk of failure. Typical examples are Electronic Approval System and HRMIS. They both deal with information across the government and consensus building became the main hurdle for deployment. In the case of HRMIS, the jurisdiction was shifted to another agency, without transferring the information system. For inter-ministry applications, consensus building must be carefully planned at the early stage of the project.

Table 7. List of applications/databases no longer being used

Ministry	Dept/agency	Information System	Functionalities	Reason for not using (from interview)
OCM	CAR	WINDAW	Similar to HR MIS	MS platform in French language and it was hardware dependent. The technology deployed became obsolete.
OCM	NiDA	Electronic Approval System (EAS)	To share official documents	The consensus on using the system across the government could not be reached after application development.
MOH	Admin	Network System	Sharing File	The technology was too advanced for the staff who could not adopt it. The system left unused.
MOJ	n/a	Criminal record database	Record all the criminals	An external donor just provided one server and 10 computers. Now it is not working.
MOP	NIS	Data Processing	Data Processing	Not applicable for new censuses and surveys
MRD	n/a	Database	Road Inventory	The project is closed. No information for entering.
MRD	n/a	Database	Library	The project is closed. Program is not yet completed to be used.
MWRM	n/a	HRIS	Manage the number of officers, position, salary	No budget for operating and updating. HRIS was sponsored by an external donor and developed by a foreign expert but now it is not operating due to lack of budget.
SSCS	n/a	HRMIS	For printing payroll	Lack of consensus and budget. HRMIS is currently operated by CAR. Previously, it was operated by SSCS.
SSCA	n/a	FMIS	APPAC System. This system is used to manage the Air Navigation's fee (Landing, Transitting...)	It is due to lack of fund to develop and maintain the system (hardware and software). FMIS was first developed in 1999 by a foreign expert with external funding. However, this system is not used from 2005, because private company such as CATs, CAM, SCA are controlling all the operations instead of SSCA.

- **Many simple standalone databases without linkages**

Many non-ICT officers at various departments have developed simple databases for their own use. These applications are mostly operated on standalone environment without any linkages to other databases. For example, HR application of MOH mentioned above is not connected to the central HRMIS at CAR, causing double entry of same personnel information. Although these initiatives are good start, important applications need to be replaced in the future in a scalable, secured and coordinated manner to benefit from the technology at optimum level.

- **Little usage of open source platform**

Most applications are developed based on proprietary platform and only one application, ASYCUDA, was found to employ open source platform. Access and Visual Basic seem to be the most popular combination of development platform for any application. Most operating systems in the government computers are Windows, which are pre-installed at the time of purchase. To reduce cost, to incorporate Khmer Unicode, and to abide by intellectual property obligations, open source platform is highly recommended as government standard IT platform.

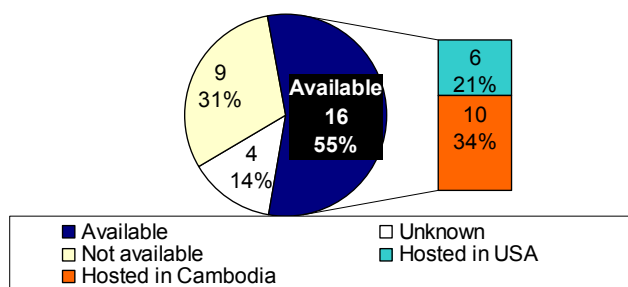
- **Khmer Unicode issue: high switching barrier**

It became apparent in the study that Khmer Unicode, a Khmer character input application developed by Open Forum and promoted by NiDA, has not reached wider users among government organizations. The root cause seems to be high switching barrier from Limon, the most popular Khmer font, which does not use Unicode. Limon font has been around for about 10 years and became comfortable for most of computer users in Cambodia. To continue creating information assets in Limon would raise switching cost in the future, as Limon does not use Unicode. For example, records in a standalone database using Limon would be costly to migrate them into a web application as browsers do not support Limon. It is highly recommended to stop creating information assets in Limon as soon as possible, and to convert them into Khmer Unicode using a converter already developed. To stop using Limon, practical measures to reduce hurdle of switching from Limon to Khmer Unicode would be useful, as well as to ensure that new users become more comfortable using Khmer Unicode than Limon. This issue is investigated in depth in FOSS Master Plan.

2.7.2. Web publication

Sixteen government agencies out of 29 have web presence, which means more than half possess website. Those which eagerly update websites are MOP, PPM and OCM. However, web sites updated within one month on regular bases is only 7 out of 29.

Figure 20. Web presence and hosting location



▪ **Low security on local websites leading to seek hosting service abroad**

The study has found that government agencies tend to host their websites outside the country due to poor level of hosting service provided in the country. The concerns expressed by the web masters include service reliability caused by unstable electric power supply and security vulnerability, such as unauthorized attack. For example, Ministry of Information had formerly hosted in a domestic web server, however it was recently switched to USA after external hacking. In fact, many unauthorized accesses are found to attack Cambodia's government web sites. For example, the web site of "National Community of Population and Development (www.ncpd.gov.kh)" was left hacked (accessed Oct. 27th, 2008). As a result, 4 out of 15 government agencies with web presence are hosted outside the country.

▪ **Various websites under a ministry with different domain names**

A number of websites created by government agencies are developed independently without much coordination, raising unnecessary cost and user-unfriendly web structures. Some examples are shown in the Table 8. They could be integrated into one domain of "www.dept/theme.ministry.gov.kh", or at least have links to all departments under it. The domain name charges can be saved, and it would be much easier for viewers to understand the ministry.

Table 8. Examples of various websites under a same ministry

Ministry	Department/Agency	Web sites' URL
OCM	Head office	www.pressocm.gov.kh
	NiDA	www.nida.gov.kh
	CAR	www.car.gov.kh
	CDC	www.cambodiainvestment.gov.kh
		www.cambodiasez.gov.kh
		www.cdc-crdb.gov.kh/
	SNEC	www.sneec.gov.kh
MEF	Head office	www.mef.go.kh
	Custom office	www.customs.gov.kh
MOC	Head office	www.moc.gov.kh
	Trade Promotion Department	www.tpd.gov.kh
	Cambodia Commercial Laws	www.cambodiacommerciallaws.com
	The Secured Transaction Filing Office	www.setfo.gov.kh

- **Scarcity of budget and technical staff to sustain web sites**

Fourteen agencies without web site, regards the reason of not having it as lack of budget and expertise. In fact, three government agencies, MLVT, SSCS, and SOSAVYR, previously had one but closed for the said reasons. Currently available websites mostly rely on external fund for web hosting or remain donor-driven in the design that contents are limited to ad hoc initiatives. One exception is MOT website, which is funded by the government. MOT case shows that ownership, proper management to update good contents and strong justification are needed to convince the government to continuously fund government web sites and make them sustainable.

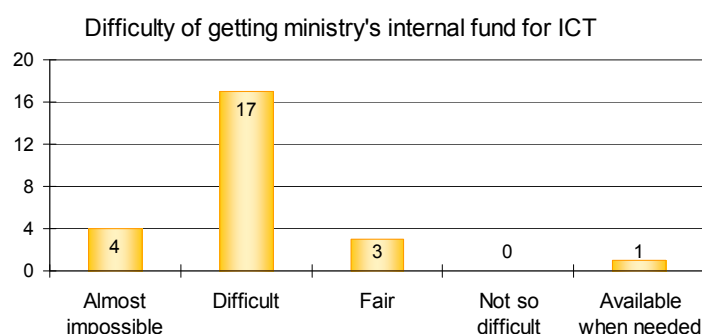
- **Most websites are static and rarely updated**

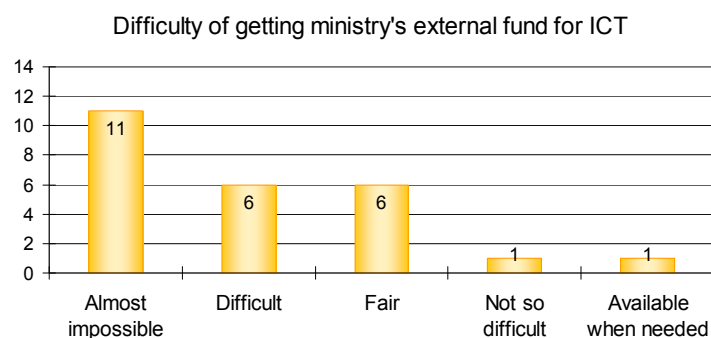
Twenty five out of 29 government agencies web sites have not been updated within a month at the time of study. Seven of them regard the reason as no incentive and motivation though their job. Two of them consider as no expertise and no information to update. The points are well made, as mentioned earlier, but another reason could be updating task is too complicated and tedious. Many of the government websites are static in their design, using HTML files, and not using dynamic pages. By introducing dynamic design or using Contents Management System (CMS), update process of websites could be eased greatly, which may lead to update them more frequently.

2.8. Access to financial resources

Lack of financial resources is often said as one of the biggest obstacles to ICT development in developing countries. In Cambodia, this perception is also persistent. About 70%, 21 agencies out of 25, selected “almost impossible” or “difficult” to access ministry’s internal fund for ICT. Access to external fund is also generally difficult, though there is a certain variation among government agencies as some sectors get more attention from donors than others.

Table 9. Access to Financial Resources





- **No budget line for ICT equipments and services**

Most of the maintenance cost for ICT equipments, especially at the time of troubles, is funded by the government on request basis. Recurrent cost for ICT services such as internet connection fee is paid by both government and external projects, but some external projects funding is mostly time-bound. For the government fund, each request goes to finance department, assessed and approved case by case. This type of expenditure is often executed from general administration category, but there is no budget line for ICT equipments and services. As a result, it is extremely difficult to secure fund for sound ICT environment and to assess ICT related investments of the government over the years.

- **Limited resource mobilization capacity**

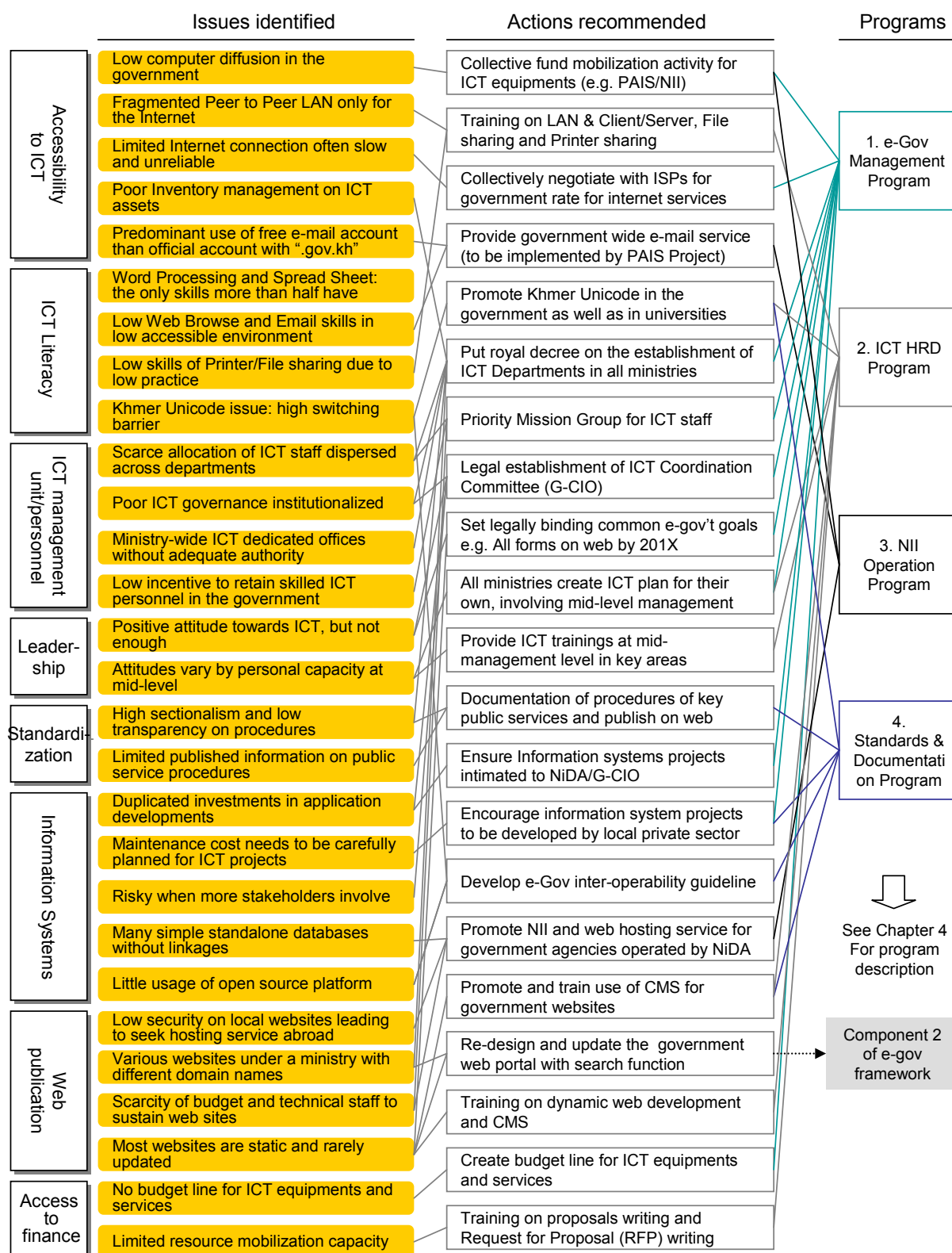
Some ministries with limited ICT human resources require capacity to mobilize fund for enhancing ICT usage in their work. For example, Ministry of Labour and Vocational Training has a lot of potential in introducing ICT in labour related administration, the interviewees had expressed that they lack knowledge on how to approach external funds and they need assistance in the process of resource mobilization.

2.9. Common issues and proposed actions

Based on the findings, the list of actions is proposed for all issues identified above, in the next page. The summary chart in the next page shows the relationship of issues, activities and programs at a glance. Some actions are proposed by CIOs of various ministries during the second workshop.

The activities are grouped into five programs; (1) ICT Governance Program, (2) ICT HRD Program, (3) Network and Security Program, (4) Khmer R&D Program, and (5) Standards and Documentation Program. These programs are essential to create an enabling environment for all government agencies to move forward with ICT usage in their workplace, and ultimately to provide e-Government services. Description of each program and its activities are stated Chapter 4.

Figure 21. Summary of Issues, Actions and Programs recommended

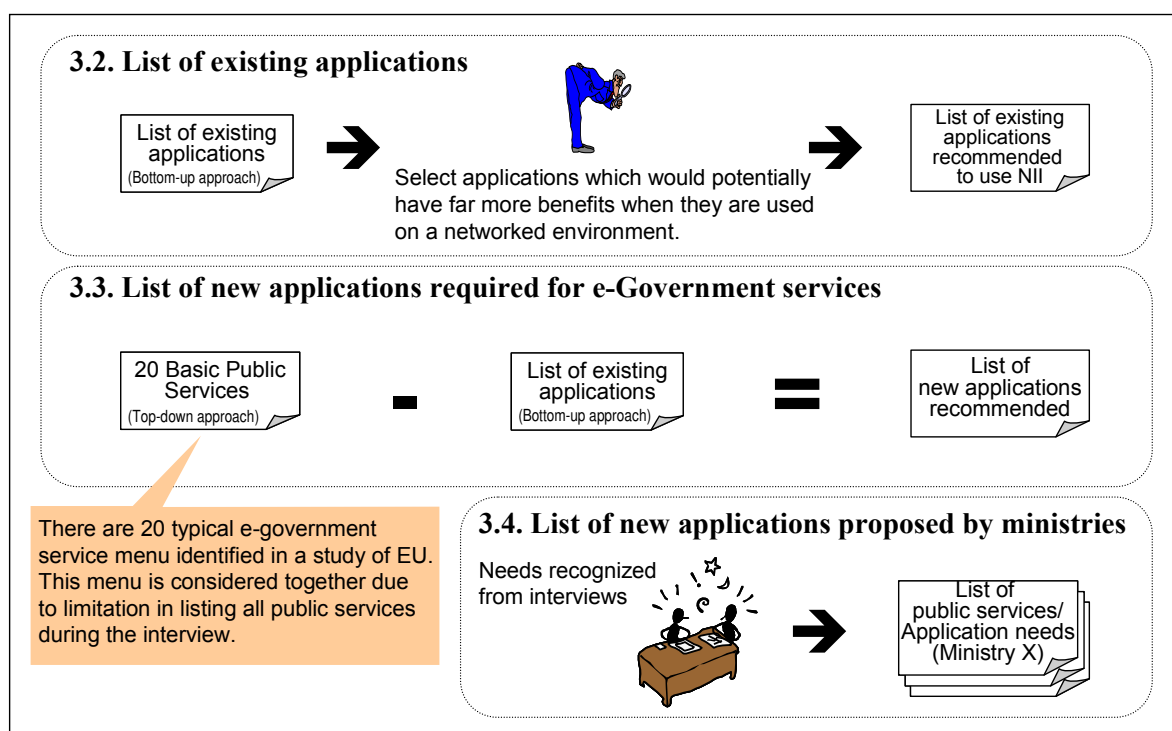


Chapter 3. Application Needs Assessment

3.1. Methodology

This chapter is to identify the needs of e-Government application in all ministries. The approach in studying application needs is simple as depicted in Figure 22. First, existing applications in Cambodia were studied. From the list, selected applications are recommended to use NII, where multiplier impacts are expected. Secondly, we refer to global best practices where 20 basic public services are identified as essential e-Government services studied by EU². Then the ICT statuses of these services were cross-checked with the list of existing applications, in order to understand how ready Cambodia is in providing e-Government services. Lastly, in addition to the twenty basic public services, application needs arise from interviews to all ministries have been listed. Three lists of applications shall be considered for e-Government Service Deployment Plan.

Figure 22. Application Needs Assessment methodology



² Capgemini (2006) "Online Availability of Public Services: How is Europe Progressing? Report of the Sixth Measurement June 2006"

3.2. List of existing applications

Forty seven applications and databases are found to be in operation from 25 government agencies studied. Most of them work standalone or at most shared within an office. The only on-line application which can be completed remotely is e-Visa, issuing tourist visa applied from all over the world. It is important to be noted that this list is not holistic of all applications used in the government, as neither all government institutions were studied nor all applications were reported from ministries.

Table 10. List of Existing Information Systems

Ministry	No	Dept/agency	Information System	Functionalities	Year of installation
OCM	1	CAR	Human Resource Management Information System (HRMIS)	payroll, civil servant statistics, etc. covering all civil servants	2005-6
	2	NiDA	Government Administration Information Systems	e-government (vehicle, motor, residence registration systems) in PP	2004
	3	NiDA	Provincial Administration Information Systems (PAIS)/National Information Infrastructure (NII)	e-government (vehicle, motor, residence registration systems) in 10 provinces. Government-wide intranet	2009
	4	The Council for Agricultural and Rural Development (CARD)	Food Security and Nutrition Information System (FSNIS)	Web-based information portal on food security and nutrition, which facilitates the dissemination of best practices and lessons learned, etc.	2006-7
MCFA	5	National Library	Library Database	Registering and managing published books. Searchable online.	2008
MOC	6	n/a	Trademark Registration System	More than 10,000 trademarks are stored.	1991
MEF	7	Tax Dept	Real-regime Tax System	Taxpayer registration, tax filing, tax dept mgmt. for Real regime tax filing	2007
	8	Tax Dept	Real-regime Tax System for HQ	Taxpayer registration, tax filing, tax dept mgmt. for Real regime tax filing	2005
	9	Tax Dept	Estimated Tax System	Functions for Estimated Regime tax filing (still at design/develop stage)	Under testing
	10	Custom Dept	ASYCUDA	Manage profiles of trading company, freight, place of origin, etc. for custom clearance	under progress
	11	Custom Dept	Manifest Clearance System	Write off from the list of manifests when the custom declaration is done.	n/a

Ministry	No	Dept/agency	Information System	Functionalities	Year of installation
MEF	12	Custom Dept	Container scanning system	Show contains of containers which pass X-ray inspection for imports.	2007
	13	ICD	MIS- Investment and Cooperation Department	statistical information	n/a
	14	CED	MIS –Customs and Exercise Department	statistical information	n/a
	15	MEF	FMIS	Management of government's revenue and expenditure to be operated across all practical levels of Government from central MEF to all line Ministries and provincial Treasuries.	By 2010 (pilot) By 2012 (full)
	16	MEF	DMFA System	Debt Management, under the Depart of Investment and Cooperation	n/a
	17	MEF	Fix Asset Management	n/a	n/a
MOEYS	18	Planning Dept	Education Management Information System	Education statistics	late 1990s
	19	Planning Dept	Human Resource MIS (HRMIS) for MOEYS	Payroll, promotion, training	May-04
	20	Financial Dept	Program and Finance Management Information System	Budgeting and accounting	? Not yet implemented
	21	n/a	Non-Formal Education Management Information System (NFEMIS)	Non Formal Education statistics	Apr-03
MOE	22	Dept. of NRA and EDM.	GIS spatial Data base	Used for particular environmental studies	n/a
	23	Dept. of NRA and EDM.	Environment meta Database	Used for particular environmental studies	n/a
MFAIC	24	e-visa section	e-Visa	Issue Cambodian visa to tourists	2005
MOH	25	Dept. of CDC	CamEwarn Database	Collect weekly Data of 12 diseases surveillance	n/a
	26	Dept. of CDC	Remote SMS System	For sending data from remote area	n/a
	27	Dept. of DDF	EDB.NaDID	can be used to see the stock at CMS (Kh.eng)	n/a
	28	Dept. of HRD	Human Resource DB	Manage Health Officers	n/a

Ministry	No	Dept/agency	Information System	Functionalities	Year of installation
	29	Planning Dept	HIS(Health Information System)	Manage health related statistics	Late 90s
MoInt	30	n/a	e-Passport	Issue Cambodian passport to nationals. Enables to the passport holders to pass through the immigration electronically/	partially installed, under process
	31	PP Municipal	Resident Registration System	Consists of resident affairs, resident operation, and data entry systems. Include basic birth/death information family information, marital status adoption, election, residence card, residence book, residence tax, foreigner, children of school age. Part of PAIS project.	2004
MLVT	32	NSSF	NSSF's Labour Information System	Store Labour information	2007
	33	NSSF	SAP AG 200	Store all Accounting Transaction	2008
	34	TVET	Labour Market Information System (LMIS)	n/a (still at designing phase)	Under development
	35	TVET	Management Information System (MIS)	n/a (still at designing phase)	Under development
MLMUPC	36	n/a	Land Registration Database (LMAP)	Land registration	1995
MOP	37	NIS	Census tracking	Monitoring and Tracking Census	2008
	38	NIS	Census Data Processing	Census and Survey data processing	1993
	39	NIS	Statistical dissemination and GIS	Disseminating statistical information	1995
	40	NIS	Consumer Price Index	Manage consumer price index	2000
	41	NIS	CAMINFO	statistics indicators	2003
MPWT	42	Dept. of Transport	Motor Registration System	Store owner information of motor, issue number. Part of PAIS project.	2004
	43	Dept. of Transport	Vehicle Registration system	Store owner information of vehicle, issue number. Part of PAIS project.	2004
	44	Dept. of Transport	Driving license Registration	Driving examination results, license number, license holder information	n/a
MOT	45	IT Dept	Tourism Statistics DB	Entry the statistic tourism	1998

Ministry	No	Dept/agency	Information System	Functionalities	Year of installation
MWRM	46	Dept. of River Work	Weather Forecast System	The database system to forecast the water level is updating one time everyday especially in the morning.	n/a
SSCS	47	n/a	SSCS personnel MIS	control official document such as new officer, position, salary	2006

From the list of existing applications, the following 15 applications are recommended to use NII, although some of them already have been in negotiation with NiDA. The recommendation excludes applications developed under PAIS project, as they are already planned to use NII.

Table 11. Selected existing applications recommended for using NII

Ministry	No	Dept/ag ency	Information System	Expected impact of using NII
OCM	1	CAR	Human Resource Management Information System (HRMIS)	As many agencies want to develop HR systems for their own internal procedures and the same information need to be submitted to CAR ultimately, tremendous cost can be saved by adding these functions and sharing the application to all the head offices. It also helps eliminating double entry which is practiced now.
MEF	5	Tax Dept	Real-regime Tax System	This Access based database application is now used standalone in all tax offices in provinces. By networking provincial offices and the head office, tax database can be integrated and updated data can be retrieved real-time.
	8	Custom Dept	ASYCUDA	ASYCUDA project is now under Phase 2, where the application is used only in the custom office at Shihanouk ville port. In the next phase, it is planned to be installed in the head office in Phnom Penh, where NII would provide the most suitable network infrastructure for the application. In the future, application can be installed in other custom offices in dry ports, for example. Use of NII is already planned.
	13	MEF	FMIS	FMIS is planned to connect all MEF offices including various departments under it. It is now under planning stage, and the use of NII is already considered.
MOEYS	16	Planning Dept	Education Management Information System (EMIS)	EMIS gathers statistical information from all government educational institutions via provincial offices and head office. Data entry and record management becomes much easier and accurate when it is shared on the network.
	17	Planning Dept	HRMIS for MOEYS	Though this may be integrated to HRMIS of CAR, since it exists already for education sector which employs the most number of civil servants, it will be well utilized when they are accessible from all provincial offices and some schools where NII reach.

Ministry	No	Dept/agency	Information System	Expected impact of using NII
	18	Financial Dept	Program and Finance Management Information System	Same as above.
	19	n/a	Non-Formal Education Management Information System (NFEMIS)	Same as EMIS.
MOH	23	Dept. of CDC	CamEwarn Database	As NII connects Red Cross hospitals in 4 provinces, Siem Reap, Sihanouk Ville, Kampong Cham, and BattamBang, this database might be useful to be shared among these hospitals. Further study is required.
	27	Planning Dept	HIS(Health Information System)	HIS gathers health related statistical information across the country. Data entry and record management becomes much easier and accurate when it is shared on the network. However, human resource requirement need to be looked into.
MoInt	28	n/a	e-Passport	The users of this system belong to different ministries, such as MFAIC, use of NII connecting all government headquarters would be useful.
MLVT	30	NSSF	NSSF's Labour Information System	There are a lot of potential in automating labour related administration. The database can be shared among labour administrative institutions, including MLVT and others. Further investigation is required.
MLMUPC	32	n/a	Land Registration Database (LMAP)	Users of LMAP are spread in provincial offices, thus, NII can be used as network infrastructure to integrate the system.
MOP	35	NIS	Statistical dissemination and GIS	Aiming at sharing statistical information among all government agencies, the use of NII is already considered for use. Discussion is already taken place with NiDA.
MOT	41	IT Dept	Tourism Statistics DB	Tourism offices will be connected to NII in 3 provinces, Siem Reap, Shihanouk ville, and BattamBang. The statistics database can be put on NII to share information and avoid double and error entry.

3.3. Twenty Basic Public Services

The status of twenty basic public services for e-Government in Cambodia is studied here in Table 12 to cross check the public services out-listed in the previous section. The definition of twenty basic public services is taken from a study which was conducted by European Union to benchmark the status of e-Government in its member countries³ (see Table 13 for definition). This study is referred because it is a well generalized service menu for e-Government which is typically provided in many advanced countries. By cross-checking the status of these services, we can incorporate full service menu anticipated for future e-Government services in Cambodia.

Table 12. Status of Twenty Basic Public Services in Cambodia

Target	No	Public Service	Status in Cambodia
Citizen	1	Income Taxes	n/a Income tax is not collected from individual, rather, "Tax on salary" is collected from Large and Medium sized companies via Tax Department under MEF.
	2	Job Search	○ National Training Board has approved the establishment of the National Employment Agency, which provides job search service. The web site is already available at http://www.ntb.gov.kh/jobshop/ , but there is no job posting yet (accessed Oct. 2008)
	3	Social Security Benefits	n/a ✕ Unemployment benefit: not provided. Child allowance: not provided Medical costs: to be provided by NSSF established in 2007. NSSF has introduced labor database but status of medical benefit is not known. Student grants: Managed by universities. Usage of ICT within university is not in the scope of this study.
	4	Personal Documents	✓ Driving license registration system is used within Department of Road Transport. E-passport system is developed for speeding up immigration procedure. Applying for a passport cannot be done online.
	5	Car Registration	✓ Vehicle Registration System and Motor Registration System are already in operation within the Phnom Penh Municipality (not online). The systems will be expanded to 9 provinces by 2009.
	6	Application for Building Permission	✓ Land Registration System including GIS tools and Cadastral database has been introduced under Land Management and Administration Project (LMAP). They are across the country.
	7	Declaration to the Police	✕ Declarations to the Police are not in the form of electronic record yet.
	8	Public Libraries	○ Library database for the public library, National Library, is already in place. It records all books published in Cambodia, whose copyrights are registered with the Ministry of Culture and Fine Arts. Book records are searchable at National Library's web site at www.bnl-nlc.info (see Box)

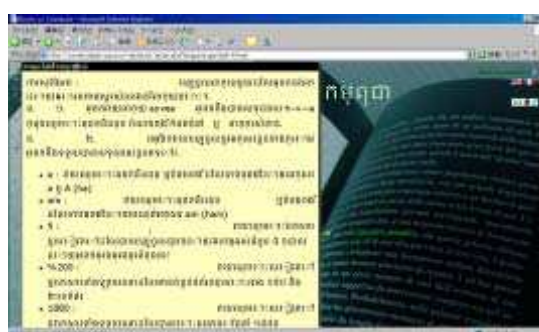
³ In the European strategy for e-government, "e-Europe 2002", the primary objective for e-government was that Member States should ensure "generalized electronic access to main basic public services." The European Commission had developed and published a list of 20 public services, which is used in this study.

Target	No	Public Service	Status in Cambodia
	9	Birth and Marriage Certificates	✓ Resident Registration System is in operation within the Phnom Penh Municipality (not online). This will be expanded to 9 provinces in 2009.
	10	Enrollment in Higher Education	n/a Student enrollment is managed by each university. Application forms for entrance exams and scholarships are sold by university and no on-line application or exam result is available. The usage of ICT within university is not in the scope of this study.
	11	Announcement of Moving	✓ Resident Registration System is in operation within the Phnom Penh Municipality (not online). This will be expanded to 9 provinces in 2009.
	12	Health-related Service	✗ There is no information system to place appointments to hospitals. Radio communication system is placed for community health centers to contact referral or other hospitals.
Business	13	Social Contribution for Employees	✓ NSSF was established in March 2007, mandated to manage this service. NSSF has introduced SAP for their internal processing, but the status of this service or scope of SAP is not known.
	14	Corporate Tax	✓ Real-regime Tax System is installed at tax offices of all provinces to store tax returns from Large and Medium sized companies (around 300 nos.)
	15	VAT	✓ Real-regime Tax System is installed at tax offices of all provinces to store tax returns from Large and Medium sized companies (around 300 nos.)
	16	Registration of a New Company	✓ There is a link from SME portal to “Online Business Registry at Ministry of Commerce” (www.cambodiabusinesssearch.com). This page with the logo of MOC, it provides business directory search and view functions containing 7920 entries (as of October 2008). However, there is no on-line registration function, no link from MOC web site, or government domain name. MOC has a plan to introduce computerized company registration system, but the status could not be verified during the study.
	17	Submission of Data to the Statistical Office	n/a There is no data to be submitted to NIS directly from business entities.
	18	Custom Declaration	✓ ASYCUDA is in the process of implementation for custom clearance within Custom Department for internal processing.
	19	Environment-related Permits	? Information not available (Ministry of Agriculture). EIA is conducted for large investment projects by Ministry of Environment based on applications routed through CDC, to whom the results are sent. Permits/License on forestry/logging, fishery, etc., are issued from MAFF and the status is not known.
	20	Public Procurement	✓ Procurement related function and information will be included in Financial Management Information System (FMIS) under implementation by MEF. MPWT makes public announcement of procurement on the web site.

Legend: ✓ – Application for internal procedure is in place or under development.
 ○ – On-line service is available.
 ✕ – No application for internal procedure or public use is in place or planned.
 ? – Information not available.
 n/a – Not applicable. The public service itself is not yet in place.

Box 2. e-Library at National Library of Cambodia

National Library provides on-line reference service to the public on the Internet. Accessed at www.bnc-nlc.info, the e-Library provides bibliographical references of 3,400 books of the National Library's collection and 2,600 illustrations about Cambodia.



A screen shot of e-Library search result. Results are in either English or French.

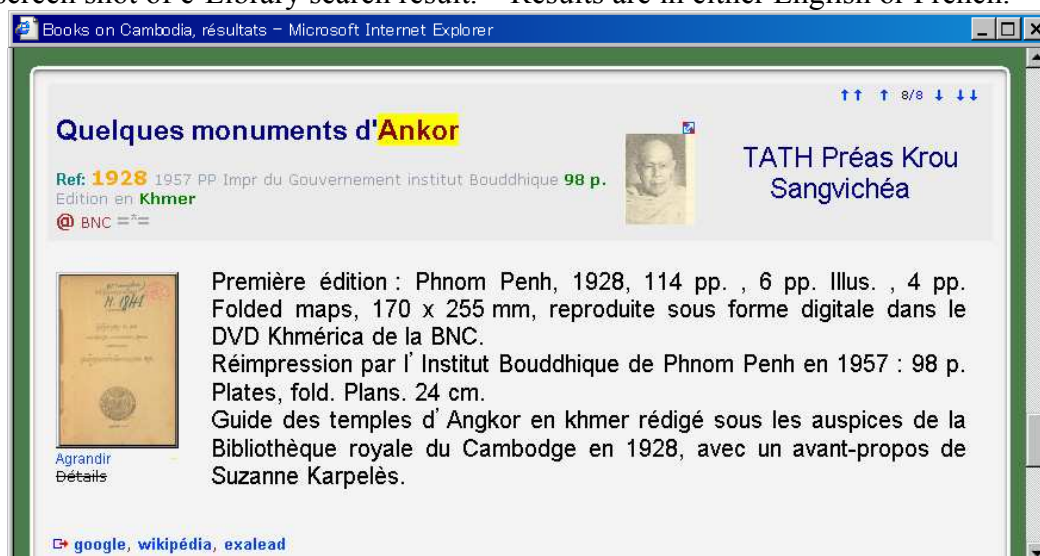


Table 13. Definition of Twenty Basic Public Services for e-Government

Target	No	Public Service	Definition
Citizen	1	Income Taxes	declaration, notification of assessment
	2	Job Search	Standard procedure to obtain job offerings as organised by official labour offices, no private market initiatives.
	3	Social Security Benefits	Standard procedure to obtain social security benefits <ul style="list-style-type: none"> · Unemployment benefit: standard procedure to obtain replacement income in case of unemployment · Child allowance: standard procedure to obtain child allowance · Medical costs: standard procedure to obtain reimbursement of costs covered by obligatory medical insurance · Student grants: standard procedure to obtain student grants for higher education
	4	Personal Documents	Standard procedure to obtain an international passport and standard procedure to obtain a driver's license for a personal vehicle not for professional use.
	5	Car Registration	Standard procedure to register a new, used or imported car.
	6	Application for Building Permission	Standard procedure to obtain a building or renovation permission for a personal building (regular, initial request, i.e. not taking into consideration contesting and appeal).
	7	Declaration to the Police	Standard procedure to officially declare a theft of personal goods (ex. car or home burglary) to a local police office.
	8	Public Libraries	Standard procedure to consult the catalogue(s) of a public library to obtain specific information regarding a specific carrier (Book, CD, ...).
	9	Birth and Marriage Certificates	Standard procedure to obtain a birth or marriage certificate (can be one document out of the National register of persons in some countries).
	10	Enrollment in Higher Education	Standard procedure to enroll students in a university or another institution of higher education subsidized by an official administrative body in the country.
	11	Announcement of Moving	Standard procedure for the announcement of change of address of a private person moving within the country.
	12	Health-related Service	Standard procedure to obtain an appointment at a hospital officially recognized by a national, regional or local authority.

Target	No	Public Service	Definition
Business	13	Social Contribution for Employees	Standard procedure to declare social contributions for employees affected by corporations
	14	Corporate Tax	Standard procedure to declare corporate tax for income from normal activities of a corporation
	15	VAT	Standard procedure for VAT declaration and/or notification for transactions regarding normal activities of a corporation
	16	Registration of a New Company	Most important registration procedure to start a new company
	17	Submission of Data to the Statistical Office	Standard procedure to submit at least one statistical questionnaire with data to the National Institute for Statistics of the country.
	18	Custom Declaration	Standard procedure for customs declarations related to the normal activities of a corporation.
	19	Environment-related Permits	Standard procedure to obtain at least one environment-related permit, delivered at the lowest administrative level, concerning the start of a corporate activity (not taking into consideration contesting and appeal).
	20	Public Procurement	Standard procedure for a tender for public procurement, subject to national public announcement

Source: Capgemini (2006), *Ibid.*

The Table 12 shows that Cambodia is at the stage of getting ready for future e-Government online services, by putting information systems for internal processes. Many of the basic public services, which are already in operation, have introduced or planned information systems for their internal procedures. They can be enhanced to enable online applications for public use in the future. On the other hand, there are some basic public services which are not provided by the government yet, such as social security and social contribution for employees. For these services, application development can be considered after legal framework put in place to launch the services. As a result, the potential needs for the new applications for existing basic public services, which are out-listed from the previous section, are in four areas listed below.

Table 14. New applications required for e-Government services

Ministry	No	Dept/ag ency	Public Service	Functionalities
MLVT MOH	1	NSSF MOH	Social Security Benefits	Claim for medical cost can be automated and put as on-line service in the future. Depending on the public health insurance scheme, it would be useful to have application to claim for reimbursements of health services used by public and private health-care providers.
MoInt	2	Police	Declaration to the Police	An information system is required to store all claims, report of accidents and criminal cases, clearances, etc. The system should consider interface with Resident Information System in Ministry of Interior in identifying persons involved in cases.
MOH	3	MOH/H ospitals	Health related service	Although the making appointment with health-care providers on-line is included as basic public service, the demand would not be so high, given the connectivity in Cambodia. Providing lists of hospitals would be beneficial as a start. Even in advanced countries, the availability is lower than other services.
MAFF	4	MAFF	Environment related permits	Environment clearance needs to be obtained from MAFF after the project is approved from Ministry of Environment. This can be applied through CDC

3.4. List of new applications proposed by ministries

New application needs were submitted by the ministry's ICT offices during our interview. In most cases, it is a wish list of applications from ministries. In some cases, specific application developments are proposed from the study team to concerned ministries, which were identified from laws and regulation and from interviews. As mentioned earlier, many government agencies want to have Human Resource administration software, but they are excluded from the list in this section because expansion of CAR's HRMIS is recommended to cover these functions.

Table 15. List of new application proposed by ministries

No	Ministry	Public Service/ Application needs	Type	Division/ Department	Description of the services/processes	Volume	Issues
1	MOInfo	Media Licensing	G2B	Media Center	Application procedure for press operators, i.e., broadcasting, printing press, newspaper, magazine, etc. After an application form is submitted, the designated department examines the application and decide whether to issue the license or not. When the application is approved, collect licensing fee and issue license. Maintain license information.	300+ newspaper licenses so far	All manual processing. Plan to create database for license information and download forms
2	MCFA	Copy rights application	G2C G2B	Copyright Dept.	Registration of song, film, karaoke, Artists, literary work (related to culture and art). Submission process should be done by the person who created the article.	2,3 clients/day	No equipment to keep the paper document. Lack of HR, fund.
3	MLVT	Issuance of Employment Cards, foreign workers' permit	G2B	n/a	When a company hires new staffs, it applies for employment card. The ministry records the profile of the person with the company which hires him or her. Companies need to get work permit for foreign workers to be employed.	appx. 1.5 million (paid employee from Statistical Yearbook 2006)	Need to check functionality of the labour database with NSSF.
4	MLVT	Declaration of new company	G2B	n/a	When new company is registered with Ministry of Commerce and Ministry of Land Management, Urban Planning & Construction, the company declare it to Ministry of Labor before hiring staff. The new company's information is recorded.	Large: 483, SME: 28,747 (figure of 2005, from Statistical Yearbook 006)	It can be an extended function of company database.
5	MOEYS	Online Curriculum System	G2G	Teachers in schools	Central ministry provides teaching materials in Khmer to teachers at schools.	n/a	Quality of education is a concern but no material in Khmer for teachers to study.
6	MOEYS	Open and Distance Learning	G2C	Students/teachers in	To supplement formal teaching classes, open and distance learning application can provide	n/a	This is categorized as e-Education

No	Ministry	Public Service/ Application needs	Type	Division/ Department	Description of the services/processes	Volume	Issues
		Application		schools	advanced learning materials to teachers and students		
7	MOEYS	ESP Monitoring System	G2G	n/a	n/a	n/a	
8	MIME	Patent Registration	G2B	n/a	Award patent and register patent information.	n/a	-
10	MOT	Tourism sector information management	G2B	Statistics and Information Office	To manage information on HRD of the ministry, Hotel, Guesthouse, Tour Guide, Travel Agencies, Legal Document. It could have e-application component to enable tour business operators to submit applications via web.	Hotel: 50/year, Guesthouse: 50/year, Travel Agent: 60/year, Guide: 550/year	To reduce papers and share information among the Ministries through LAN. Minister can approve from the network.
11	MOP	Statistics Data Warehouse	G2G	internal	Off-the-shelf application to be procured for data mining and warehousing.	n/a	n/a
12	MOP	Commune Profile System	G2G	internal	Store statistical information at commune level.	n/a	n/a
13	MOE	Environment MIS, Monitoring and Evaluation	G2C	Env. data mgmt. office	Manage and publish all kinds of environmental indicators of the country.	n/a	Agreement on which indicators to be monitored is critical but difficult.
14	MFAIC	Visa and Document Management	G2G	Consulates around the world	Visa information is shared between Phnom Penh and consulates via fax. Web based secure application to store visa data, perhaps an extension from e-visa system, is desirable.	100/month	Visa information not shared on time
15	MOND	Official document management	G2G	Internal	Record and view all official documents issued in the ministry.	n/a	It needs to be in Khmer language.
16	MOJ	Dissemination of Legal information	G2C	Public	Publish laws and regulations on internet.		

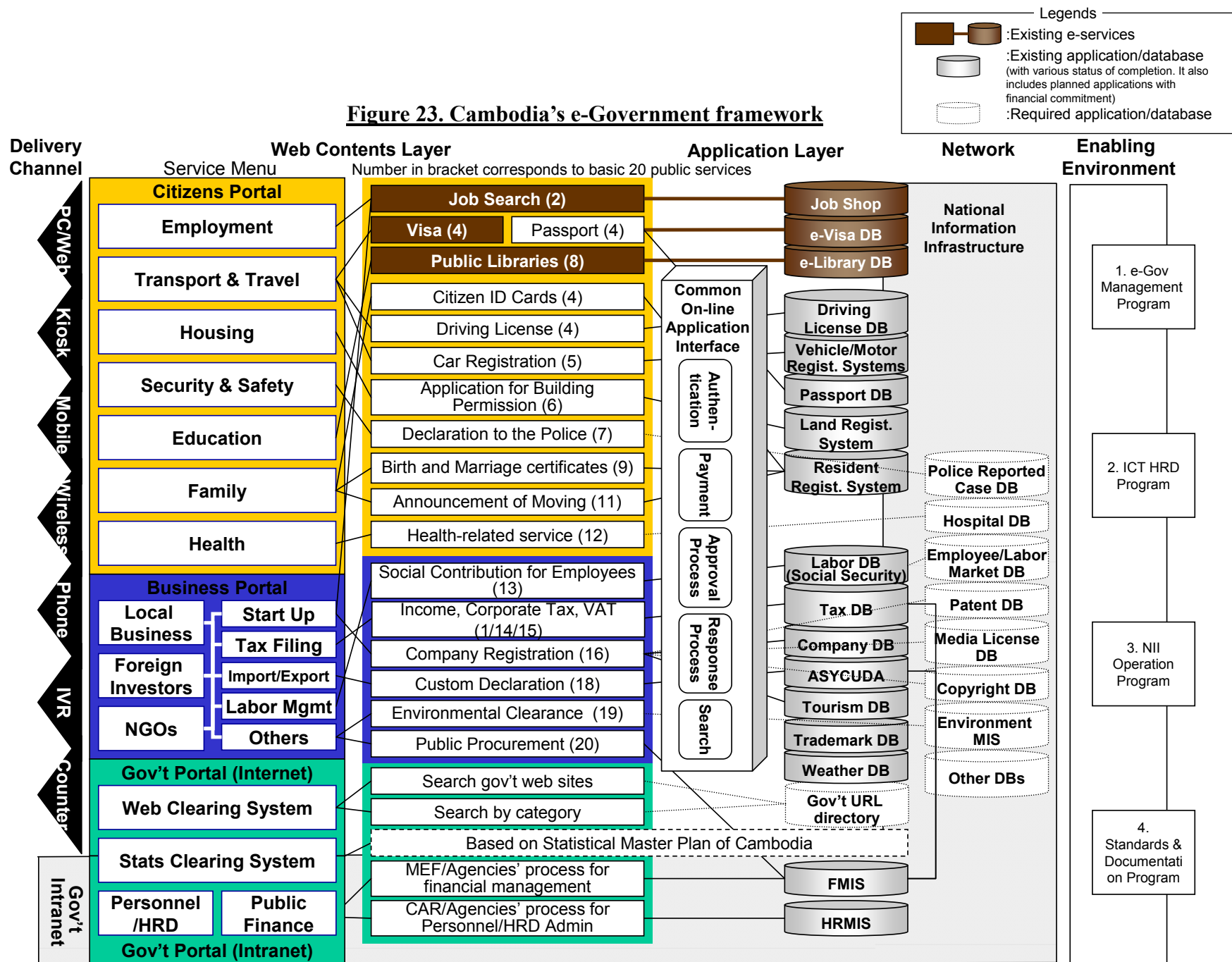
Chapter 4. e-Government Service Deployment Plan

4.1. Cambodia's e-Government framework

Cambodia's e-Government framework, in the next page, provides a blueprint for e-Government service deployment plan. Understanding this big picture is very important for this planning. It shows necessary components to provide basic public services online, excluding the services that do not exist in Cambodia. From left side of the framework, it defines various delivery channels, such as web or mobile, and web contents layer including service menu, application layer, network, and enabling environment. In the application layer, existing e-services are in brown color, existing databases are colored with grey and databases required for e-Government services are in white color. The enabling environment comprises of five programs recommended from situational analysis in Chapter 2.

The framework suggests an integrated e-Government service portal as an entry point for citizen and business communities. Some of the key features that are supported by the framework include: providing Multiple Customer Access Channels; implementing Common Applications Interface; providing Common Portal Content and Services which are citizen-centered, intention-based; and implementing a cooperation bus that provides the integration architecture to existing agencies and systems. The framework takes the principles of life-cycle support for citizen, and one-stop entry point for businesses, and is based on global best practices of many governments, such as Singapore, Malaysia, Australia, etc. A description of each component is provided in the next section by phases of implementation.

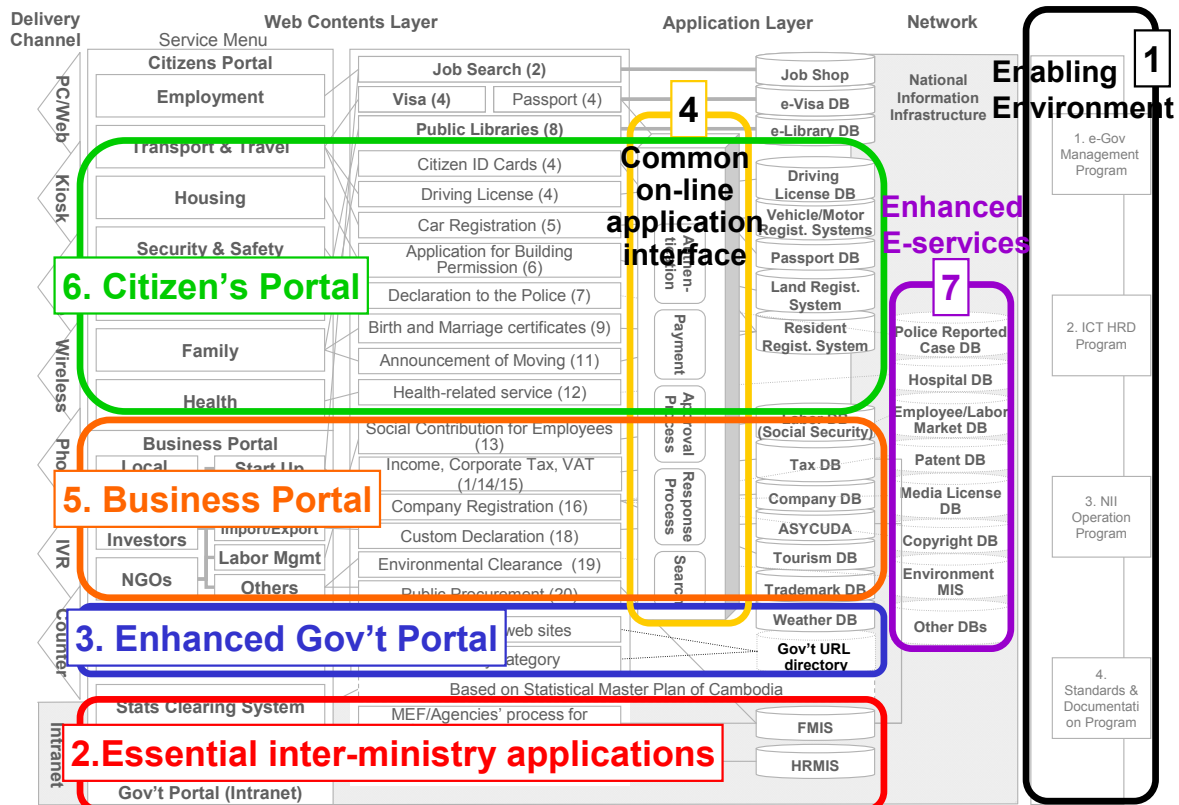
While the framework represents the most cohesive roadmap for the Cambodia's e-government overall program, it is not a monolithic rigid solution. It is a logical framework which integrates various services together, but there will be instances where solutions which reside outside the portal best meet specific agency objectives. For example, existing e-services, such as e-visa, are anticipated to simply be linked to the portal, but already operating screens can be followed after the link. Those options need to be evaluated case by case in the course of implementation.



4.2. Seven phases of e-Government service deployment plan

E-Government service deployment plan is divided into seven phases as in Figure below.

Figure 24. Seven phases of e-Government Service Deployment Plan



Phase 1. Enabling environment

Given the e-Government readiness looked in Chapter 2, creating enabling environment for e-government services is fundamental above all other activities. Thus, the plan can immediately be started off by initiating some of the activities which has little cost implications. Rationales for five programs come from the findings in the situational analysis in Chapter 2. Descriptions of activities in each program are stated hereunder. The timeframe suggested for this phase varies among programs, as some of the programs in this phase continue throughout the plan period, as shown below.

1. e-Government Management Program (By 2010)

In order for all government agencies to accelerate the use of ICT, and ultimately providing e-Services, an enabling environment is essential. Institutionalizing inter-ministerial ICT management structure is the key to strengthen ICT governance in the public sector, as many issues raised in Chapter 2 seem to be related. Establishment of ICT departments in all ministries with proper resources and a central governing body on ICT (ICT Coordination Committee) represented by the ministries' ICT department with proper mandates is highly recommended in order to collect voices from all user agencies, agree on certain standards and rules, and

collectively tackle rising issues.

(1) Establishment of ICT Departments in all ministries by Royal Decree

Having one focal department which manages ministry-wide ICT assets and services is essential for e-Government services deployment. To set the key conditions, ICT Departments

- shall be headed by Chief Information Officer (CIO);
- shall propose ICT plan for the ministry and implement it after its endorsement in the ministry;
- shall provide the most cost-effective and user friendly ICT related services to all departments under the ministry, thus, have the authority to manage all ICT assets and services of the ministry;
- shall coordinate with other government agencies for ICT development in the government, in particular, e-government initiatives;
- shall be involved in all application developments under the ministry, and keep the list of all applications existing, under development and planned;
- shall be involved in all ICT procurement under the ministry, and keep the list off all ICT assets, including number of PCs and computer peripherals;
- shall have budget allocation for ICT equipments and services of all departments under the ministry;
- shall have authority and responsibility over ICT budget and expenditures;
- shall represent in and report to ICT Coordination Committee;
- shall ensure implementation of the decisions taken at ICT Coordination Committee.

(2) Establishment of ICT Coordination Committee (G-CIO Committee)

Legal basis for ICT Coordination Committee is essential for continuous representation from all ministries. ICT Coordination Committee's objectives are three folds:

- To avoid duplicated investments
- To utilize common assets and shared services to the maximum extent
- To act collectively for common interests in ICT development, e.g., negotiate for government rates for internet service

The committee's roles will include, but not limited to:

- ensuring all ICT projects for the government informed (and approved),
- endorsing standards and guidelines for information systems, security, etc., and issue inter-operability rules,
- monitoring and evaluating standards and guidelines, and revise them as and when required.

(3) Official endorsement of common targets on e-Government

Global experiences have learnt that e-Government initiative requires strong leadership from the highest authority at the national level. In Cambodia, in order to implement e-Government service deployment plan, it would be useful to have official endorsement on common targets on e-Government deployment. For example, a clause such as "By 20XX, all government forms should be

downloadable” may be included.

(4) Create directives on private sector involvement in ICT projects

To ensure sustainability of operation of information systems or any other ICT projects, policy on the involvement of private sector needs to be studied. It is highly recommended that private sector takes up ICT projects in public sector after a sound competition.

(5) Consider at least one ICT staff in the Priority Mission Group

To retain skilled ICT officers in public sector, it is recommended that the government consider including an ICT dedicated staff per ministry to be considered in Priority Mission Group. This was proposed from one of the participants at the workshop, to address the issue of difficulty in retaining skilled advancement.

2. ICT HRD Program (Throughout the plan period)

Apart from the specific technical skills development which is required for e-Government service deployment, the following general training programs are necessary, but not limited to, in order to address the issues identified from the situational analysis. Further training needs assessment would be useful to supplement skills requirement for e-Government service deployment.

(7) Training for all CIOs

- Training on ICT Planning (conducted in 2008)
- Training on writing ICT project proposal
- Training on writing Request for Proposals (RFP)

(8) Training for Director Generals and Directors

- Ministry-wide training on ICT and e-Government to mid-level management, with a special focus on effective use of e-mails, file-sharing, and printer sharing.

(9) Training for CIOs who have ICT projects

- Training on Project Management
- Training on the use of NII and security related rules

(10) Training for webmasters

- Training on dynamic web development using open source platform, including the use of CMS
- Training on using NII web hosting service

(11) Training for NiDA technical staff

- Training on the development and customization of open source platform for e-Government

(12) Training of Khmer Unicode for all computer users in the government

- Training on the Khmer Unicode and key boards (already under

implementation by HRD division of NiDA)

3. NII Operation Program (By 2009)

It is highly recommended that NiDA promotes the use of NII and hosts all government web sites with good standard of security and reliability, in order to avoid frequent hacking to government web sites and to ensure sustainability.

(3) NII Campaign

Not many government officials know about NII. It is essential to promote the concept and the use of this common infrastructure. NiDA shall create marketing tools such as brochures, short video, and presentation kit to be placed on the web site, and use them widely in various opportunities where government officials gather. NiDA can also host a seminar inviting government officials as well as international development partners. A special attention shall be paid to services provided, including e-mail and web hosting services.

(4) Activities on Network Security

This is also stated partially in the HRD program, but series of actions are required for network security, especially to operate NII services. Standard security measures need to be introduced in all government offices, especially those connected to NII. Security issues need to be investigated separately in detail to define necessary measures.

4. Standards and Documentation Program (By 2013)

(6) Internal procedural manuals on public services

Prior to automating public services, it is essential to have documented procedures of the services. In order to document procedures, procedures need to be standardized, which is the essential factor for computerization. It is highly recommended to produce manuals on all public service, if not, on selected public services which are identified as required for e-Government services in Chapter 3. It would be desirable if they could be officially approved in the ministry.

(7) Inter-operability guideline for government information systems (By 2011)

Inter-operability issue is anticipated in a current condition where application developments are conducted in uncoordinated manner. Inter-operability shall include technical aspect, especially to enable smooth data exchange required for sound e-Government services. For example, Khmer Unicode would be the standard Khmer character input application used in government applications. Also, open source platform should be strongly encouraged for any government application. All designs for web-based application should suit for Mekhala, for instance. The guideline shall be in place before the Phase 4, when common on-line application interface is to be designed as the guideline

becomes an essential input.

(8) Migration to Khmer Unicode

In order to ensure use of Khmer Unicode based information and avoid creating information assets in Limon, a special attention needs be made in migrating to Khmer Unicode environment. Using the governing structure suggested in e-Government Management Program, it is urgently required to enforce Khmer Unicode to be used in any electronic document or data created in the government. Specific set of actions including training and installing application, as well as converting old documents to Khmer Unicode shall be planned at the central level. Easing typing complexity could be an option in narrowing down the switching barrier faster. For example, adding option to use Limon-typing method in Khmer Unicode application maybe of worth an effort if typing is the biggest users' barrier. Another idea could be to develop a new Khmer input method using phonetic alphabetical text entry similar to ones used in East Asian languages such as Korean and Japanese.

(9) Procurement guideline for ICT Equipments and Services

It would be useful to have a guideline which sets standard specifications of computers and peripherals for procurement purposes. The specifications shall be in accordance with inter-operability guideline and shall take Khmer Unicode environment into consideration. Guideline for ICT services can touch upon useful criteria to be studied before the procurement of ISP services, and the good practices of sharing bandwidths within a ministry.

(10) Government Web Development Guideline: use of open CMS

Having web development guideline can help Cambodian government agencies solve issues of security, usability and sustainability of their websites. Use of open source CMS is recommended as government-wide standard web development platform to reduce cost, to protect from unauthorized attacks, to increase usability, and to enable multiple writers to post various articles so that it is updated regularly.

Phase 2. Essential inter-ministry application (By 2012)

Building essential inter-ministry applications, i.e. HRMIS of CAR and FMIS of MEF, are proposed for second phase. Actually the second phase will proceed in parallel with the first phase as FMIS development is already underway and it is planned to complete by 2012. Funding for extending HRMIS of CAR to inter-ministry application is critical for implementing this phase.

Phase 3. Enhanced government portal (By 2010)

Enhancing the existing government portal with search engine is proposed for third phase. This phase starts during Phase 2 and complete before the Phase 2 completes because it is a relatively small component. This includes developing web clearing system which consists of government websites' search engine and an index database described as "Gov't URL directory." It enables users to easily find websites of all government agencies with "gov.kh" domains, and conduct search by specific key words

or categories. This is intended to be provided from Cambodia's government portal at www.cambodia.gov.kh, as many of existing links to ministries are broken and it is very difficult to find all government websites from one entry point. In this phase, all forms for public services should be downloadable from all ministries' web site.

Phase 4. Common on-line application interface (By 2013)

Designing and developing a common e-government portal architecture is proposed as the next phase. The use of packaged products, such as open source CMS-based e-government solutions (see Box), may be worth considering. The design of this platform would involve tremendous coordination among ministries, where strong commitment from the top is required. Establishment of ICT departments and G-CIO committee should be formed prior to this phase. Inter-operability guideline shall be defined during the planning and design stages of this phase. Function-wise, the common platform should provide modules of authentication, payment, approval process, response process, search engine at least, and other necessary functions identified during the design phase.

Box 3. Common on-line application interface example: Open e-Gov

One sample of open source e-government platform is found in the product of plonegov initiative at www.plonegov.org. There is a product called "Open e-Gov" for the application platform, which is based on CMS such as Plone and Zope. Similar platforms maybe worth exploring.



Phase 5. Business Portal (By 2015)

Business portal with fully transactional e-services is proposed prior to develop citizen's portal as access to internet will improve faster among business communities than citizens. In the framework, the business portal is targeted for local business establishments, foreign investors, and NGOs, which have different conditions for tax, labor, import and export duties, etc. The target group needs to be added when the needs arise from emerging type of organizations.

Phase 6. Citizen's Portal (By 2020)

Citizen's portal is the ultimate goal of the e-Government Service Deployment Plan. It enables citizens to complete various public services fully on-line. The existing face-to-face counter services remain, of course, but various delivery channels shall be provided for rural users. Service menu can be added as and when e-services are ready to be operated. This phase targets information systems which are already in place or planned, thus, e-service component needs to be added with additional resources. Inter-operability guideline, especially on data-exchange, should be in place before this phase.

Phase 7. Enhanced e-services (no timeframe)

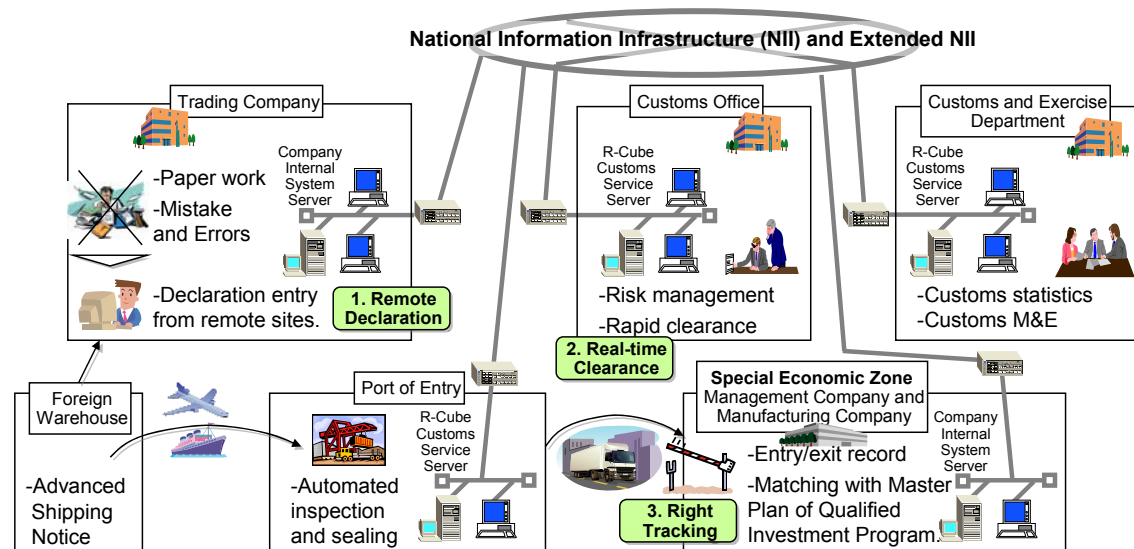
The final phase is to develop new e-service applications which are essential for the basic twenty public services studied in Chapter 3. The new applications shall be designed based on the common application interface that already should be in place by the time. The timeframe is not set because it depends on the resource availability.

Box 4. Extended Custom Service example: R³ (R-Cube) Customs Service

One example of enhanced e-services is proposed in this box, just to through an idea for using NII to provide e-service. This R-Cube Custom Service (tentative name) can be provided by extending existing ASYCUDA system and add components to be used by companies at Special Economic Zone (SEZ). It may be useful in the future for Cambodia when it has many processing trades (importing materials and exporting products manufactured in Cambodia).

R³ Customs Service intended to support trading, manufacturing and public administration when trading volume grows in much greater scale.

1. Remote declaration of customs helps trading with less cost and with more flexibility.
2. Real-time clearance of customs enables the competitiveness of Cambodian industries.
3. Right-tracking of traded goods shows good governance and appeals to global market.

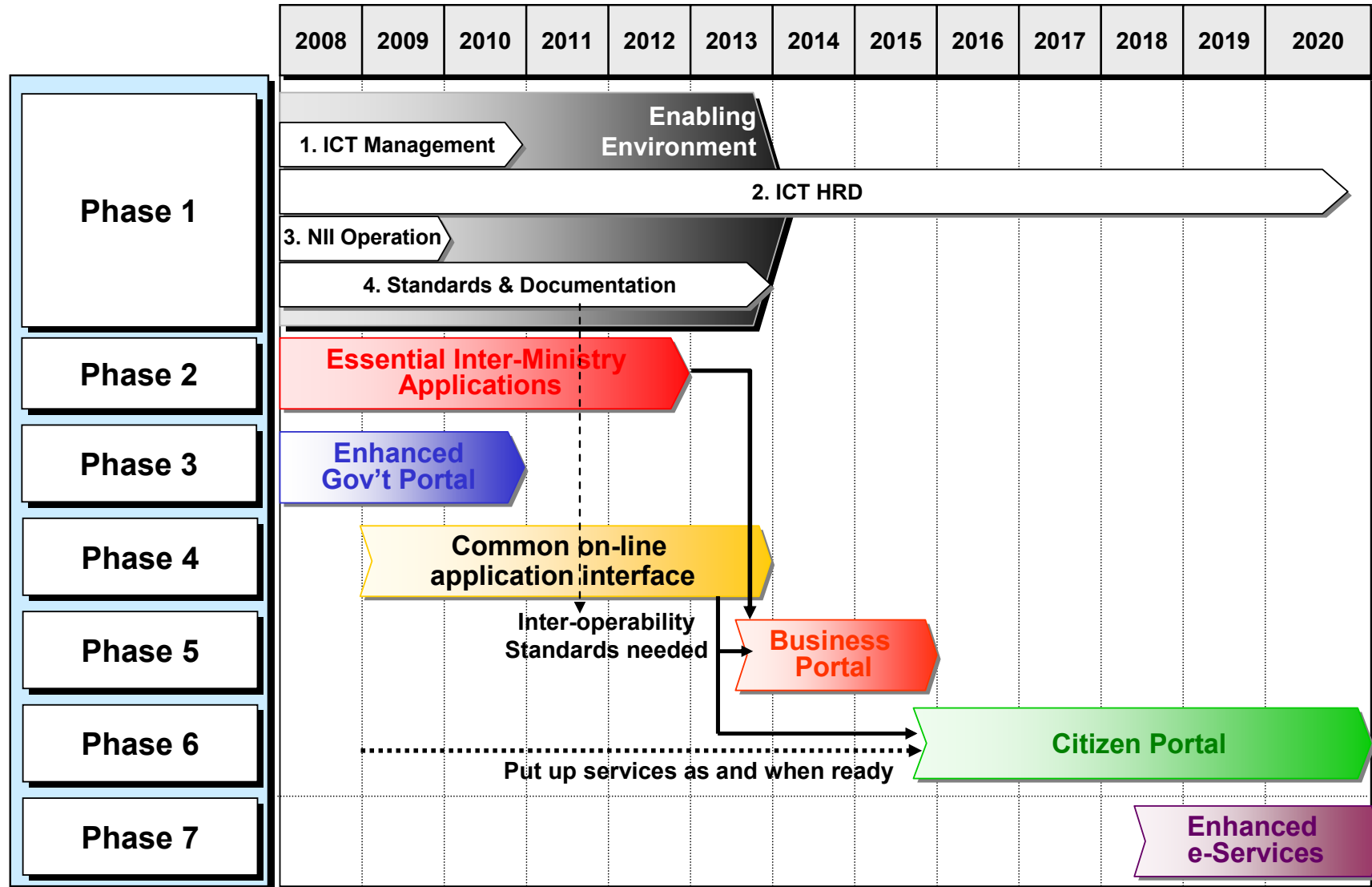


Contributed by Yusuke TANAKA, JICA expert

4.3. Timeframe of e-Government Service Deployment Pan

The proposed action plan with timeframe is proposed in the next page.

Figure 25. Draft Master Schedule for e-Government Service Deployment Plan



Appendix I



ICT Planning Toolkit

For Government Agencies

Version 1.0
October 2008

National Information and Communication Technology
(ICT) Development Authority

Foreword

It is my pleasure to distribute this Information and Communication Technology (ICT) Planning Toolkit to all government CIOs. The objective of this toolkit is to facilitate your organization to come up with your own ICT plan. It guides you through the planning process on how you can effectively use ICT to enhance your organization.

Although NiDA has been promoting the use of ICT in the government since its establishment, the usage is still very limited partially due to lack of infrastructure. We are in the process of constructing the National Information Infrastructure (NII) which connects government agencies in 10 provinces. In addition to its basic services provided to all of you, such as government-wide VoIP phone and e-mail services, we will have IT centers which can provide network management services. To best make use of this common asset, we encourage every government agency to have its own ICT plan. With your ICT plans in place, NiDA can study how we can best coordinate various needs and facilitate ICT development in the government.

To this end, NiDA is working on e-government service deployment plan at the national level, which encompasses your ICT plans. The importance of having e-government service deployment plan is to share ICT requirements of the government and to effectively use existing resources, to avoid duplication, and to mobilize additional resources as RGC as a whole.

We request your cooperation in our effort to come up with the plan and look forward to collaborate with you in materializing your ICT plans.

October 2008

A handwritten signature in blue ink, appearing to read 'Phu Leewood', is written over a horizontal line.

PHU Leewood (PhD.)
Secretary General
National ICT Development Authority
Office of the Council of Ministers

Table of Contents

I NTRODUCTION	1
W HAT IS I CT PLANNING?	3
STEP 1 . SET GOALS	5
STEP 2 . ASSESS SITUATION & NEEDS	8
STEP 3 . CREATE AN I CT PLAN	17

Acknowledgement

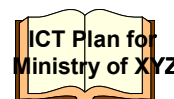
This ICT Planning Toolkit is prepared by Mayumi Miyata, JICA short-term expert in ICT Planning (e-Government), as a part of JICA Technical Cooperation project of Capacity Development on ICT Management at NiDA.

Introduction

Background Information and Communication Technology (ICT) is changing our way of life. It is also changing the way government works. Many governments have been harnessing ICT to make their public services better for the people. Having being fully aware of the potential of ICT, Royal Government of Cambodia has also included “promoting extensive use of Information Technology in all aspects of governance and government”, in the National Strategic Development Plan (NSDP), 2006-2010.


e-Government Service Deployment Plan Mandated to formulate and implement IT promotion and development policy, National ICT Development Authority (NiDA) under the Office of Council of Ministers is promoting the use of ICT in the government. NiDA has implemented e-Government projects, Government Administrative Information Systems (GAIS) and Provincial Administrative Information Systems (PAIS) which include National Information Infrastructure (NII), government-wide broadband network. This infrastructure provides a wide scope for all government agencies to develop applications which suite their needs. To facilitate the effective use of it, NiDA has embarked on the study on e-Government Service Deployment Plan, which deals with common goals, concepts, and issues in promoting e-Government services.


Why ICT Plan? Without incorporating ICT plan of each ministry, e-Government Service Deployment Plan cannot be substantive. However, not many ministries have documented their own ICT plan yet. NiDA understands that it may not be easy to plan how to effectively introduce this technology in daily government works at each unique environment. This is why NiDA intends to build capacity on ICT Planning at each Ministry and to have draft ICT plans of all ministries as a result. The ministry’s ICT plans will feed into the e-Government Service Deployment Plan.



Target users of this toolkit This toolkit has been developed in order to provide guide to identify areas where ICT can be effectively used in any government office. It is targeted to ICT officers at mid-career level, in charge of promotion of ICT in each government organization. The officers who conduct this exercise are desired to have experience in implementing ICT projects, especially in application development. The forms in Appendix are provided as tools and required to be submitted to NiDA at the workshop.

Icons

 **Resources:** This section provides useful resources for further information. Also it also refers to inputs to the activity in some cases.

 **Annex:** This sign shows which tool in the Annexes to be used.

Point  : It shows important point to be remembered.

Contents

This toolkit contains the following topics:

Topic	See Page
What is ICT Planning?	3
Step 1: Set Goals	5
Step 2: Assess situation and needs	8
Step 3: Create an ICT Plan	17

What is ICT Planning?

Definition

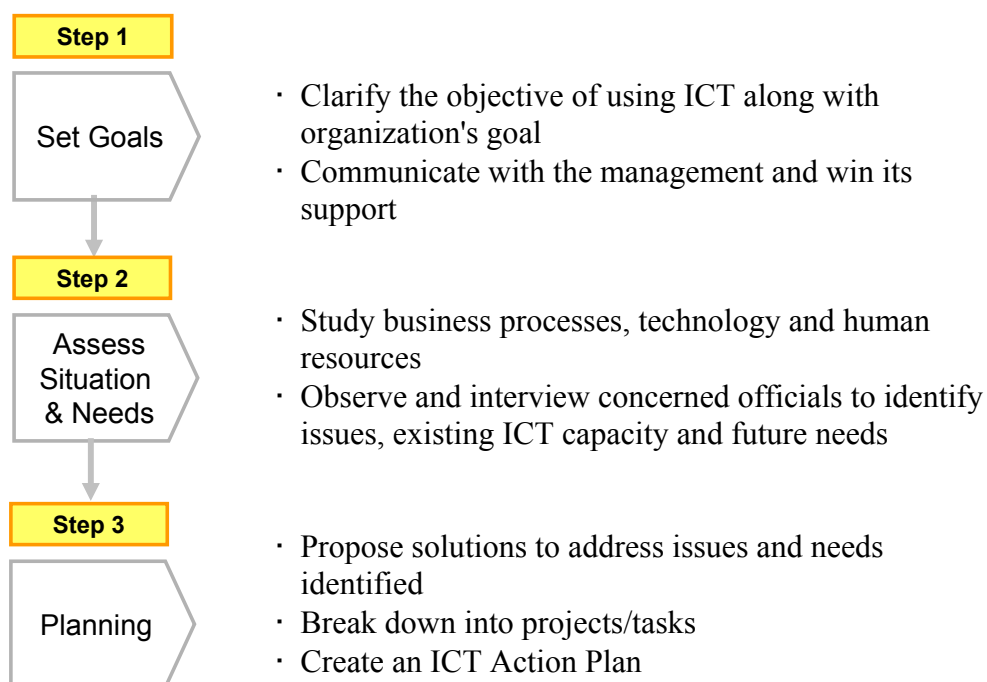
In this toolkit, ICT Planning is defined as “identification of areas where ICT is effective to achieve organizational goals”. Because this is for government agencies, we focus on identifying e-government applications.

ICT Plan typically defines, but not limited to:

- General information about the ministry, including mission and responsibilities
 - Achievements in ICT related activities
 - Objective of ICT plan
 - Current situation and future needs of ICT in the ministry
 - List of action items with expected outcome
 - Timeframe of action items
- ICT Plan Template is attached as Annex I.

Approach

ICT planning can be understood broadly in three steps as described below.

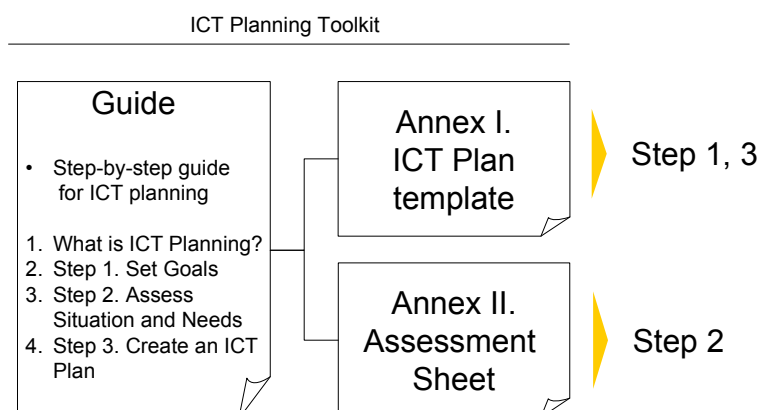


Team

It is highly recommended to formulate an ICT planning team with a senior official as the team leader in each ministry. The members can include representatives from all (general) departments at mid-career level who knows best about each functions of the ministry (deputy directors of departments, for example). This will make your planning process faster and easier, and also effective in tackling ministry-wide issues.

How to use this toolkit

There are three components to this toolkit as shown below, Guide, Assessment Sheet and ICT Plan Template.



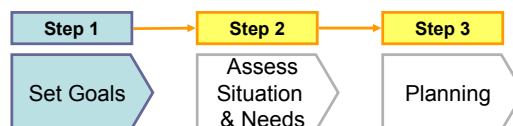
Guide	This booklet is the guide. It takes you throughout the planning process.
ICT Plan Template	Attached as Annex I. In Step 1, write goals on the template. This shall be completed at “Step 3. Create an ICT Action Plan.” Finally, this is going to be the output of this entire exercise.
Assessment Sheet	Attached as Annex II. It is used for “Step 2. Assess Situation and Needs”

📖 Resources

There are a lot of ICT Planning guides for government agencies freely available on Internet. You can search with the key words, “ICT planning guide” or “IT planning guide”, and “government”. Some of good references include:

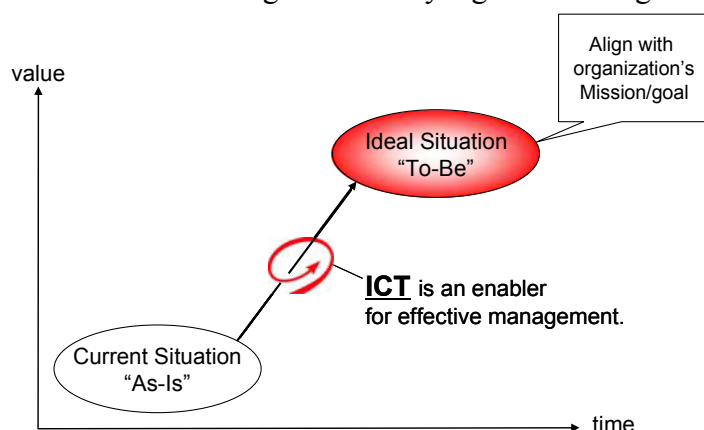
- Strategic IT Planning and Management Guide (US Dept. of Health and Human Services):
www.acf.hhs.gov/nhsitrc/it_planning/strategic_planning/index.html
- State of Mississippi Information Technology Services IT Planning Guide:
www.its.ms.gov/planning_agency.shtml

Step 1. Set goals



Basic Principle

Though we all know, it is still worth reminding that ICT is a tool, not an end in itself. It helps you to achieve your organizational goal. Thus, it is essential to know where exactly you want to reach and what you want to achieve (see below). Make sure that your ICT Plan will contribute towards fulfilling your ministry's mission and achieving the ministry's goals and targets.



Point Align ICT Plan with the ministry's goals.


Step 1-1. Summarize ministry's mission and targets (Annex I)

- What is the mission of your ministry?
- What is the priority issue that ministry is trying to solve in the near future?

If you know the answers,

→ Summarize them onto the first section of Annex I, "1. Ministry's mission and goals."

If you don't know the answers,

→ Collect relevant legal documents, such as Royal Decree, laws, acts, etc., and try to make a summary. If you have ministry's master plan or action plans, these can also be useful inputs (see  Resource section below).



Tips for writing summary:

The summary should include the present and the future visions on what organization is trying to achieve. This is important because the ICT plan should cover the information needs in the future. The description should be brief and broad, summarized within a few paragraphs. Make sure you refer to the sources when you quote!

Step 1-2.
Define
objectives of
ICT Plan

(📎 Annex I)



Based on the ministry's mission and targets, the objectives of ICT Plan can be defined. For this time, NiDA has already provided the following common objectives for all ICT Plans, except for those already been documented.

Common Goals of ICT Plan

1. To increase the internal efficiency
2. To improve public services
3. To collect data for policy analysis

A common set of objectives is necessary for this exercise in order to have consistency in the e-Government Service Deployment Plan at the national level, which focus on improving public service delivery. These objectives shall not contradict with your ministry's mission and targets. Rather, they should guide you in identifying realistic action items in achieving the Ministry's mission and targets. You can rephrase or add to the above common goals in the same line if necessary.

Step 1-3.
Communicate
with the
management

After drafting the ministry's mission and targets, set up a meeting with the management.

In the meeting with the management,

- Explain about the ICT planning, show the statement you drafted to the management and have it validated.
- Ask your management how they think the ministry's mission can be achieved and discuss how ICT can contribute to achieve the mission.
- Assess how well the executives understand the potential of ICT.



It is critical to involve the management from the first stage as your ICT Plan has to be approved by them at later stage to make it official.

Point 🖱 Win support from the Management!

☐ Resources

To summarize the ministry's mission and goals, you can start with reviewing the relevant sections of the "National Strategic Development Plan (NSDP) 2006-2010." It identifies the targets for the planned five-year period.

- National Strategic Development Plan (NSDP) 2006-2010
www.cdc-crdb.gov.kh/cdc/aid_management/nsdp.pdf

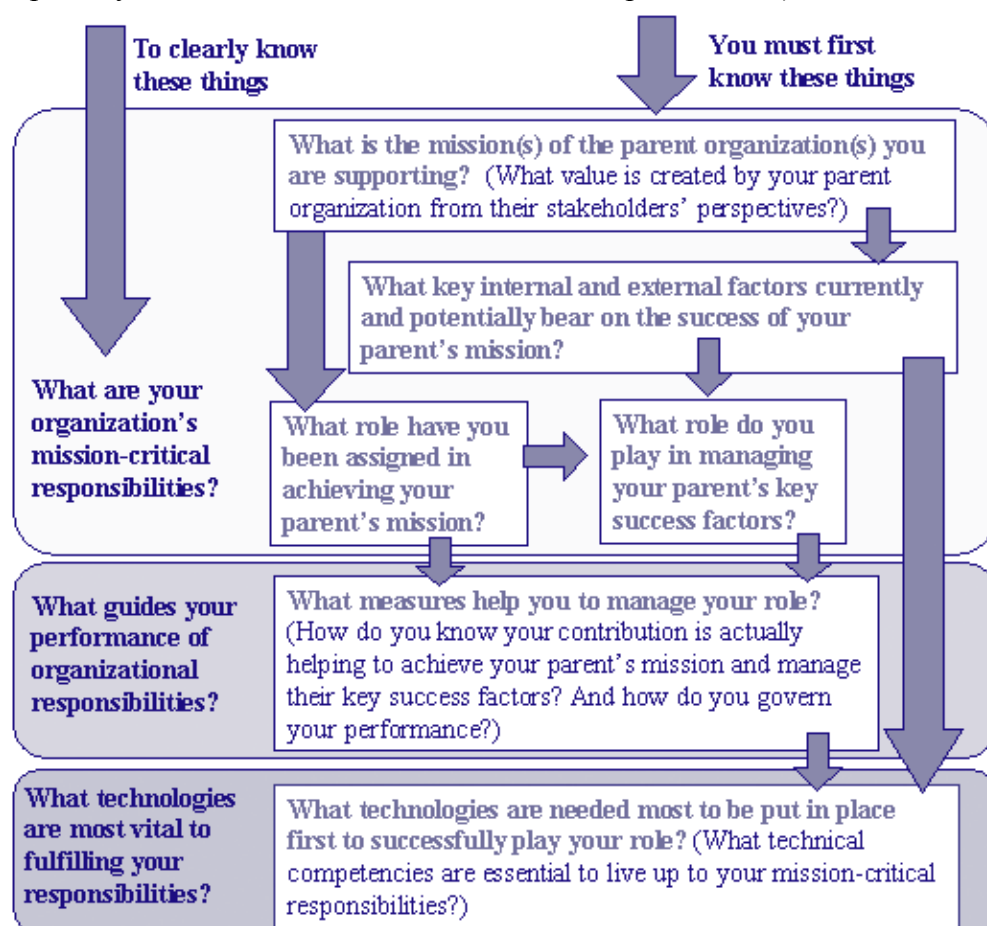
In NSDP, some section already defines the need for critical information, which needs to be mentioned in the summary.

Example: section for "Employment creation and better working conditions"

Develop a labour database and statistical system with disaggregated data by gender, disabilities and other relevant social factors (NSDP pg.69).

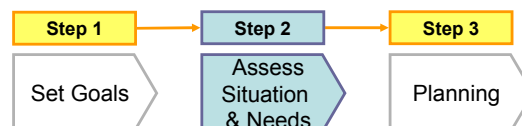


In the reference material cited in the previous chapter, "Strategic IT Planning and Management Guide (US Dept. of Health and Human Services)," it also provides a good guiding chart in defining your goals for ICT plan (see especially the first box about mission-critical responsibilities).



Source: www.acf.hhs.gov/nhsitrc/it_planning/strategic_planning/back.html (accessed in September 2008)

Step 2. Assess Situation & Needs



Basic Principle

The basic principle of the assessment bases on the concept of Business Process Re-engineering (BPR)*, in a very simplified way. The assessment is divided in two folds as follows.

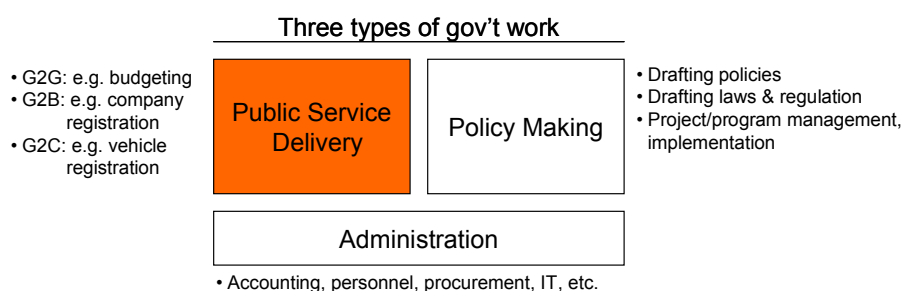
- **Process Review** → Q4 sheet of Assessment Sheet excel file
The process review is normally conducted exhaustively to the targeted organization. However, for this exercise **we limit the target to public services**, as explained in the next section. We should have an exhaustive list of public services of your ministry as a result. This list will be the basis for planning ICT solutions in Step 3.
- **Reality Check** → Q1, Q2, Q3 sheets of Assessment Sheet excel file
It is essential to assess the level of readiness for accepting the new technology into your workplace, especially at an infant stage of technology adaptation. This assessment is intended to avoid plans to become over-ambitious and unrealistic.

* To learn more about BPR:

http://en.wikipedia.org/wiki/Business_process_reengineering

Focus of the Assessment

For the purpose of e-Government Service Deployment Plan, this assessment will focus on public service delivery of each ministry, than other types of work such as policy making or administration work.



Step 2-1.
Check
questions in
the
Assessment
Sheet
(📄 Annex II)



The first step is to simply open Annex II Assessment Sheet in Excel file and review all questions. Identify who has information about them. If your department or unit cannot cover information of all the questions, go to the next step 2-2. If you have almost all the answers, continue from Step 2-3.

Ministry	
1. Information about Q1-Q3 officer	
Contact Person Name	
Designation, Dept., Div., etc.	
Office Address	
Contact Number	Office: _____ Mobile: _____
Email address	
2. Information of your organization	
Department/Division	Responsibilities
Do you have branch offices in provinces? If so, where?	
3. About your employees (excluding support staff such as cleaners, drivers, other workers)	
Number of officers	
Number of officers in PCP (if applicable)	
What is your rating of ICT related work of staff overall? Tick if more than half of your staff use the...	
Use of PC	<input type="checkbox"/> Word Processing <input type="checkbox"/> Presentation <input type="checkbox"/> Job <input type="checkbox"/> Spreadsheet <input type="checkbox"/> Database system <input type="checkbox"/>
Use of Internet	<input type="checkbox"/> E-mail <input type="checkbox"/> Web browser

Step 2-2.
Organize an
internal team
for data
collection
(optional)

If you have many departments and other organizations under the ministry, it will be useful to formulate a team consisting of each member from all departments as mentioned in Step 1-3.



Distribute Annex II Excel file to them and have “Q1-3(internal)” sheet filled for you. You can aggregate the collected information for assessment.

Step 2-3.
Fill up
Assessment
Sheet for
Reality Check
→Q1, Q2, Q3
(📄 Annex II)



- There are 12 groups of questions altogether, including ICT infrastructure, management capacity, information systems, budget, leadership, website, etc. By filling up these questions, you will be able to conduct *Reality Check*.
- Some questions are more difficult than others. In the Excel file, explanations are provided for some questions as comments. Just place your cursor onto the cell which has red mark on the upper right corner. The comment box appears as shown below.

	H9				
	E	F	G	H	
2					
3					
4	our ministry.				
5	Developer	Users	Programming Language		
6					
7					
8					
9					
10					

Example:
Cobol, C, C++, JAVA,
Visual Basic, Java
Script, HTML, etc.

Step 2-4.
Fill up
Assessment
Sheet for
Process
Review → Q4
 (□ Annex II)



- For the sheet Q4, which is for *Process Review*, you can start with listing public services operated in your ministry. Then, contact the person in charge of the service, and try to fill in the entire row together, referring to the instruction and sample given at the top row. Start with at least 3 most used services. Add rows if necessary.
- ☞ It is better to confirm the information in Q4 sheet by yourself especially when you are not familiar with the type of services in question. Visit the site where services are provided, especially to verify the information about areas of improvement.

Point ☞ Visit sites and Verify the information yourself!

Tips for
Interview



Before interview

- Conduct preliminary research about the office you are visiting.
- The first document you should find is their organization chart.
- Try to acquire as much information as possible prior to the visit, such as related laws, regulations, sector programs, handbooks, manuals, and reports.
- Try to understand what their primary tasks are. Review the sector program especially related to ICT. It is useful to use text search (Ctrl+F for Word) and use key words such as “information”, “system”, and so on.
- Confirm the appointment time a few hours before the interview.

On the interview

- When you first meet the interviewees, introduce yourself and thank them for taking time for this interview.
- Clearly state the purpose of interview and show official letter (if any).
- Ask whether they have done any work related to this interview (such as filling up the assessment sheet).
- Take notes to all what the interviewees said, including topics which do not exactly fit to the questionnaire sheet.
- Ask for a copy of related documents, such as laws, regulations, sector programs, handbooks, manuals, and reports.
- If answers are not ready, ask the interviewees to collect and send later.

After the interview

- Complete filling up all the information on the assessment sheet within the same day of the interview. Otherwise, you will forget the details or get mixed up with other interviews.
- Create a supplementary note when the interviewees said many things which cannot be entered into the assessment sheet.
- Follow-up with the interviewee for more information or clarification.

Step 2-5.
Analyse
Collected
Information
→ Reality
Check part
 (□ Annex II)



- Before you start the analysis, make sure that:
 - You have completed assessment sheet;
 - You understand the ICT situation in your ministry roughly.
- Open Annex II. Assessment Sheet excel file, go to “Indicators” sheet, and to 2. Reality Check/ICT Readiness Assessment

Question	Answer	rate	max score	Your Score
4-1	Separate ICT unit	Yes	1	1
		No	0	
4-2	# of ICT staff	High (more than 1staff/100PCs)	1	1
		Low (less than 1staff/100PCs)	1/2	
		None (no dedicated ICT staff)	0	
4-3	Academic background of ICT staff	Master, Bachelor, or Diploma of Engineering/Technology are more than half	1	1
		Master, Bachelor, or Diploma of Engineering/Technology are less than half	2/3	2/3

- Fill in the score which corresponds to your answer in each item. Take the example of the first row corresponding to question number 4-1 in the assessment sheet
 1. The question asks “Do you have a dedicated ICT mgmt unit in the Ministry?” Answer to this question is either “YES” or “NO”.
 2. “Rate” column shows the score you will get from your answer.
 3. If your answer is “YES”, you get 1 point. If your answer is “NO”, you get 0 point.
 4. Enter “1”, under “Your Score” column in corresponding row.

- Rating of each item is self-explanatory. However, for some ratings, you need to calculate from data in the assessment sheet. For example, under (3)Infrastructure, “Access to PC” is calculated by the following equation:

$$= \frac{\text{Number of Staff}}{\text{Number of PC}}$$

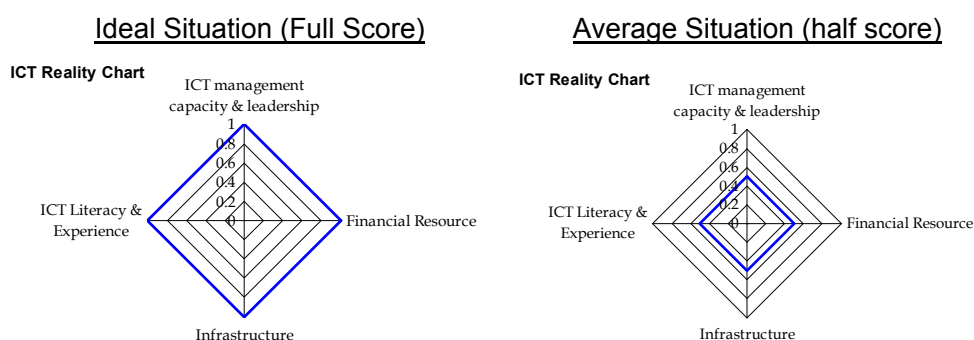
Thus, you need to calculate the equation in order to decide on the rating.

- For “(5) Standardization of procedures”, we omit this part from our assessment this time, due to lack of information. However, it is important to assess the documentation level of all procedures in the ministry. Documentation means provision of laws, regulation, Prakhas, and procedural handbooks, guideline, etc. Little documentation means little standardization of procedures. If procedures are not standardized, it will be difficult to introduce computers to automate such procedures.
- After you fill in all the ratings under “Your Score” column, you will automatically have your own “ICT Reality Chart”, which depicts the status of ICT usage in your ministry (see next section for how to read the chart).

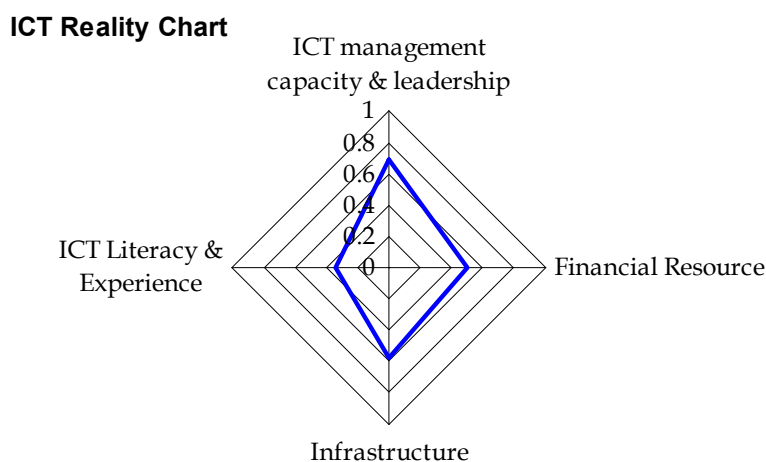
How to assess your chart

The ICT Reality Chart is designed to visually grasp the stage of ICT development within your ministry as compared to others in Cambodia. Also, it is useful to understand the strength and weakness of the ministry in promoting ICT.

When you have full score, you will get full diamond shape as shown below left. Let's say that it is the ideal situation. When you have all half score, you will get half diamond shape as shown below right. This point is merely half points, not average. Let us use this half score as our baseline for assessment.



Bearing the above shapes in mind, you can evaluate your position by looking at distance from the baseline, half score. Let's take the following example.



This organization has overall good position since it has slightly bigger or similar size of diamond in comparison to the baseline. Also, it has more than the average points in “ICT management capacity & leadership” and “Infrastructure,” which are their strength. On contrary, it has lower points in the area of ICT Literacy & Experience. In this case, we can say, for example:

- This ministry needs to strengthen ICT literacy of all staff.
- Due to limited experience in ICT projects, the ministry should estimate more contingency for the upcoming ICT projects.
- Access to infrastructure and financial resource is about half way.



Needless to say, the assessment indicators and the baseline must be reviewed and modified for each survey.

Step 2-6.
Summarize
your
achievements
and current
situation
based on
Reality Check
 (☐ Annex I, II)

Briefly summarize the current situation under “3. Achievements in ICT related activities”, “4. Current Situation of ICT environment of Ministry” section in the Annex I, ICT plan template. It maybe useful to have the heading of four pillars of assessment for section 4:

- Infrastructure
- ICT management capacity & leadership
- Financial Resources
- ICT literacy and experience



You are free to add whatever issues you are facing in your ministry related to ICT usage for administration. Do not be lengthy in any of the items.

Copy and paste the “ICT Reality Chart” from the Annex II. Assessment Sheet to the ICT Plan template. See sample below.

(Sample Description on Annex I. ICT Plan template)

3. Achievements in ICT related activities

- (1) Ministry’s homepage URL: www.moh.gov.kh
 The website contains various policies and programs for health sector, both in Khmer and English. It is fully managed by the Department of Planning & Health Information (DPHI).

(2) Information Systems

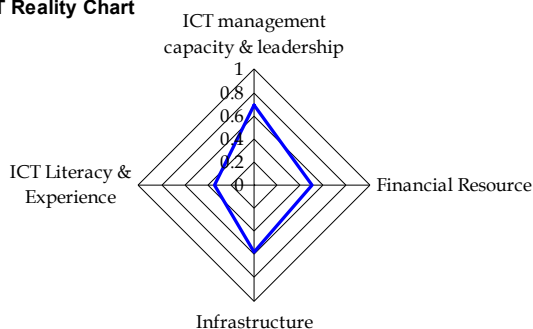
No	Name	Functionalities	Year
1	Health Information System (HIS)	Manage health related statistics and indicators	Late 90s

(3) Other ICT Activities

HIS Strategic Plan 2008-2015 has been created by The Department of Planning & Health Information (DPHI).

4. Current Situation on ICT environment of Ministry

ICT Reality Chart



ICT literacy & experience

- Most employees of the ministry do not possess basic computer skills, such as word processing, spread sheet, and even typing. The ministry needs to strengthen ICT literacy of all staff.

ICT management capacity & leadership

- There is no officer who has ICT background or understands ICT. Recruitment of such personnel is urgently required. ---- (continue)

Step 2-7.
Analyse
Collected
Information
→ Process
Review
 (📎 Annex II)



Q4 sheet is designed to identify needs for computerizing processes in your ministry. By listing public services in the table, you will be able to identify services which have potentially high impact after computerization.

Since we have only listed public services, which are routine in nature, all services have potential for computerization. In this step, we prioritize the services for computerization based on five factors.

Factors	Corresponding Column	Criteria	Rationale
Number of Stakeholders	Other organization involved	Low	High number of stakeholders tends to lead ICT projects into failure. Start computerization with procedures which can be completed within your organization..
Level of Documentation	Law/Regulations/Manuals	High	Little documentation of procedures often means little standardization. Computerization cannot take place without standardization. Consider documentation activity first.
Volume of processing	Volume	High	Computerization of procedures can bring efficiency when the volume is high. If the volume is low, the impact will be very limited. For example, if you have only 100 records to manage, you don't need database but rather use excel sheet.
Duration taken for each process	Lead Time	Long	One of the aspects of improving public services is speed. When lead time is long, there is a scope for speeding up the service delivery.
Relevance to political agenda/ Number of beneficiaries	Other issues	High	Priority will be given to the services related to priority areas of the sector program or minister's agenda. As has been said, ICT is an enabler to achieve organizational goal. Also consider number of beneficiaries directly or indirectly benefit from improving the service.

The above criteria are pre-set for our purpose of this study. These criteria depend on the goal of ICT plan as defined in Step 1. For your future use, you can add to or modify these criteria. For example, add criterion of “cost reduction impact”, if your goal is to reduce cost of public services. This is why it is important that you agree with the goals with the management before you start the assessment survey because it would be difficult add new criteria as relevant information may not be collected.

Step 2-7. Now, try to set priorities for which public service shall be computerized first.
(Continued) How to set priorities?



1. Compare the five factors among the listed services.
2. Review whether the factors match the criteria.
3. Number them in order of priority. The service which has most matching factors will get the first priority.

Let's take a fictitious example below to explain the steps for assessment.

Example (This sample is fictitious.)

14. Potential services/processes for computerization

No	Public Service/ Manual Process	Type	Division/Depart- ment	Description of the services/processes	Other organization involved	Law/Regulati- ons/Manuals	Volume	Lead time	Issues
G u i d e	Name of the process	Select from G2G, G2B, G2C	Which Division/Dept is responsible?	Briefly explain what needs to be done to complete the task.	Who is involved in the process? List all of them.	Where is the procedure documented?	How many processing per year? (e.g. # of application)	How long does it take to process one unit?	What is the problem with this process? Why do you want to computerize?
1	Issuance of Employment Cards	G2B	Dept. of Employment	When a company hires new staffs, it applies for employment card. The ministry records the profile of the person with the company which hires him or her. Issue card from our machine.	The dept's HQ and provincial offices (internal)	Labor Law, Application form	10,000	1 week per card	All done manually and difficult search the data
2	Declaration of new company	G2B	Dept. of Employment	When new company is registered with Ministry of Commerce and Ministry of Land Management, the company applies to Ministry of Labor. The new company's information is recorded.	Ministry of Commerce, Ministry of Land Management , Provincial offices	Labor Law, Application form	100	1 month per company	All done manually. Cross checking with other ministry takes a lot of time
3	Job seekers' registration	G2C	Dept. of Human Resources	Placement office under the Dept. works as job matching agent. Placement officers advice job seekers and give a list of jobs that interest them. Placement office also receive vacancy information from business communities.	Placement offices under Dept. in all provinces (internal)	Labor Law, Guide for placement officers	25,000	Average 1 hour meeting for each job seeker	Unemployment is the new government's priority area. Lack of placement officers in the growing demand. It takes a lot of time to find matching vacancy information.
4	Complaints box management	G2C	Dept. of Labor Inspection	Ministry has a complaint box for any employee who is made to work under unlawful conditions. After screening, selected complaints are investigated. Reports submitted to the Minister.	None	Not available	5,000	Not applicable	All done manually. Harsh/illegal working conditions forced by foreign invested factories are a growing concern.

Steps followed in this example:

1. In comparing factors, it is useful to use a sign (arrow in this case) so that you can understand which service match the most at a glance.
2. Factors meeting the criteria are shown in red. The maximum red marks get the highest priority.
3. See below column "Priority." Numbers are noted based on the number of red (R: matching criteria well) and blue (B: fairly matching criteria).

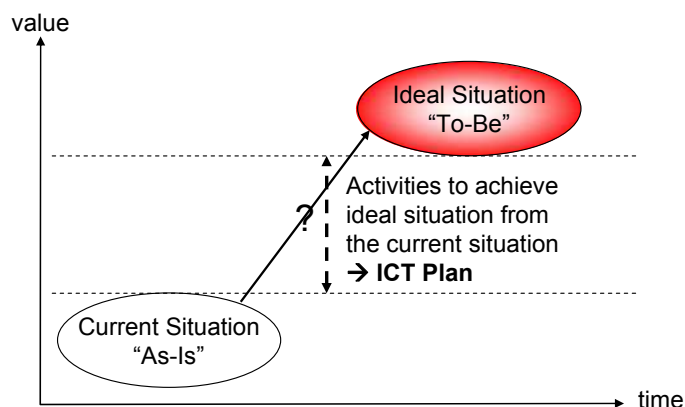
	Number of Stakeholders (Low)	Level of Documentation (High)	Volume of processing (High)	Duration taken for each process (Long)	Relevance to political agenda/ Number of beneficiaries (High)	Priority
	↘	↗	↗	↗	↗	
Employment Cards	1 →	Medium →	10,000 ↗	1 week →	Unknown ?	2 R1+B3
Declaration of new companies	3 ↗	Medium →	100 ↘	1 month ↗	Unknown ?	4 R1+B1
Job seekers' registration	1 →	High ↗	25,000 ↗	One hour →	High ↗	1 R3+B2
Complaint Box Mgmt	0 ↘	Low ↘	5,000 →	N/A ?	Moderate →	3 R1+B2

In this case, job seekers' registration service gets the highest priority for computerization.

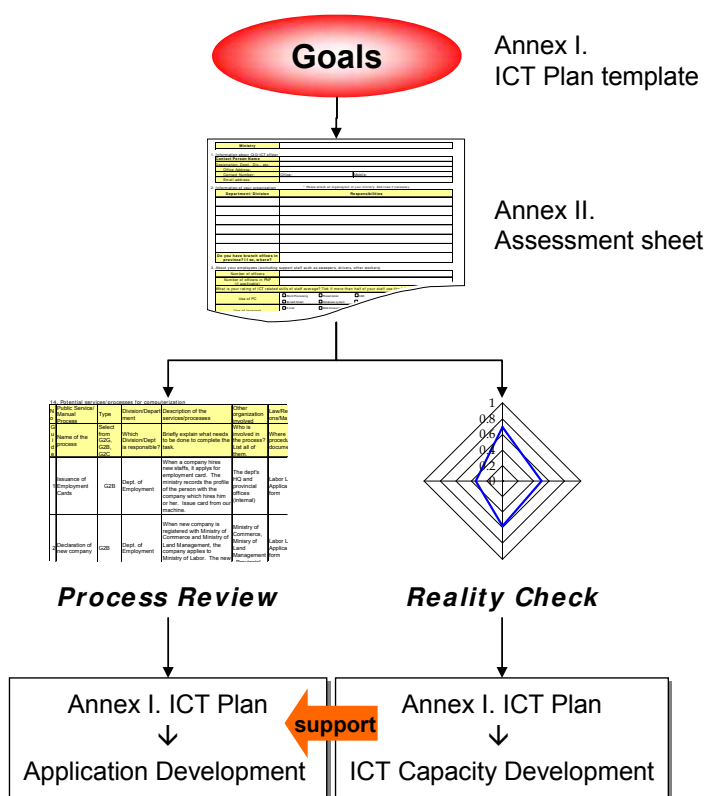
Step 3. Create an ICT Plan

Basic Principle

The basic principle is simply to come up with activities which can fill in the gaps identified between the current situation and the ideal situation.



The relationships of activities Step 1, 2 and 3 are depicted in the chart below. From the assessment sheet (Annex II), we have conducted *Process Review* and *Reality Check*, which are inputs to “Application Development” and “ICT Capacity Development” section of “5. Action Items” in the ICT Plan template (Annex I). Note that “ICT Capacity Development” action items shall support “Application Development” plan as Reality Check was conducted to evaluate the readiness of a ministry to accept new technology in the existing processes.



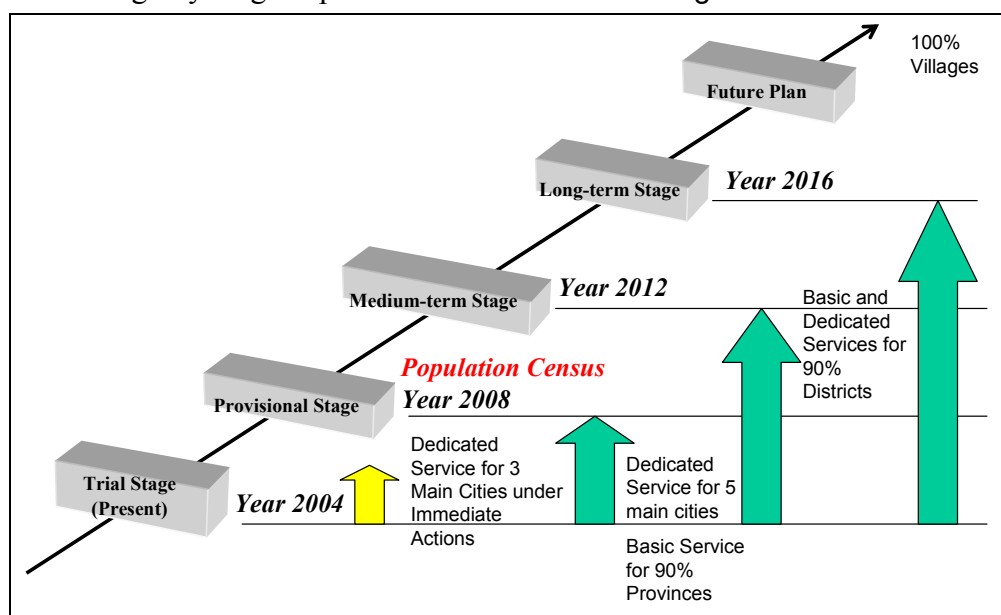
Relationships of activities in ICT planning

Planning concepts for e-Government Service Deployment Plan

The preliminary ICT Planning for the government has already been carried out and the initial concepts of e-government service deployment are already presented in the “An Action Plan for Developing ICT in Cambodia”, written by JICA ICT Experts for NiDA, November 2004. This is a useful input to your ICT plan as well. You can follow the basic concepts below.

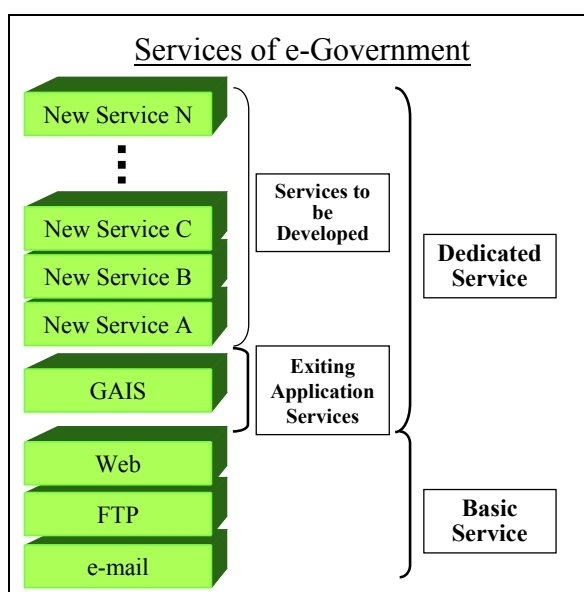
Although the time frame is not valid anymore, the action plan defines the following two main directions:

1. Gradual deployment from *Basic Services* to *Dedicated Services*
2. Stage-by-stage expansion from Cities to Villages



Source: JICA ICT Experts, “An Action Plan for Developing ICT in Cambodia”, November 2004.

The definition of “Basic Service” and “Dedicated Service” is as follows:



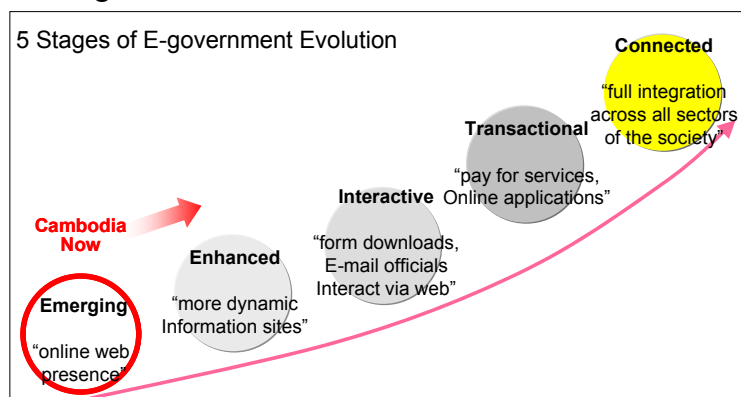
Source: JICA ICT Experts, “An Action Plan for Developing ICT in Cambodia”, November 2004.

- **Basic Services** include e-mail, LAN, file and printer sharing and Web browsing, which can be furnished with IP technology on the intranet (G-WAN) just like the Internet service.
- **Dedicated Services** refer to services exclusively provided over specifically developed applications, including the existing GAIS services.

Some of the *Basic Services* are provided by NiDA, such as VoIP phones and official e-mail account. You can include these into your ICT Plan.

Reference: E-Government Evolution

Refer to the five stages of e-Government evolution defined by the UN “Global E-Government Survey 2008”, with the focus on web based services. First you can think which stage your organization is at, and think of plans to go to the next stage.



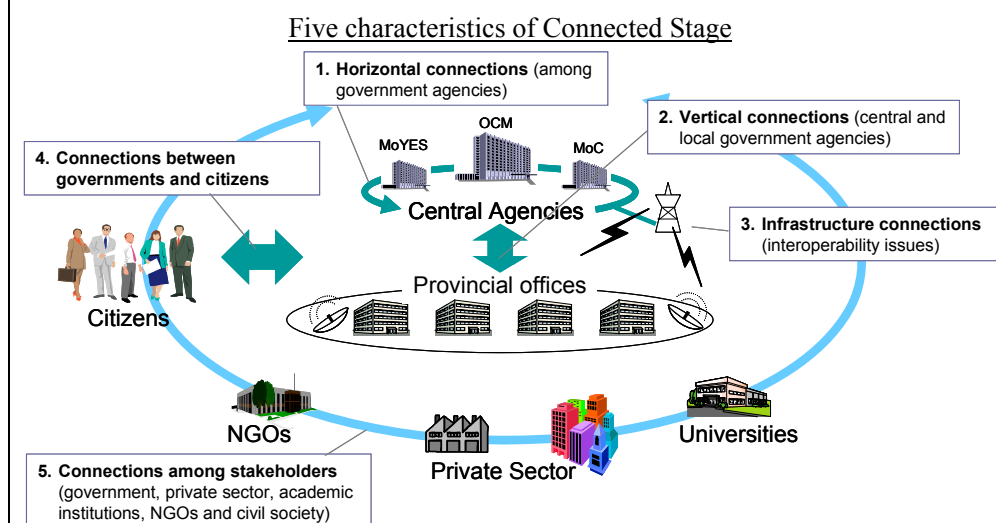
Stage I - Emerging: A government’s online presence is mainly comprised of a web page and/or an official website; links to ministries or departments of education, health, social welfare, labour and finance may/may not exist. Much of the information is static and there is little interaction with citizens.

Stage II - Enhanced: Governments provide more information on public policy and governance. They have created links to archived information that is easily accessible to citizens, as for instance, documents, forms, reports, laws and regulations, and newsletters.

Stage III - Interactive: Governments deliver online services such as downloadable forms for tax payments and applications for license renewals. In addition, the beginnings of an interactive portal or website with services to enhance the convenience of citizens are evident.

Stage IV - Transactional: Governments begin to transform themselves by introducing two-way interactions between ‘citizen and government’. It includes options for paying taxes, applying for ID cards, birth certificates, passports and license renewals, as well as other similar G to C interactions, and allows the citizen to access these services online 24/7. All transactions are conducted online.

Stage V - Connected: Governments transform themselves into a connected entity that responds to the needs of its citizens by developing an integrated back office infrastructure. This is the most sophisticated level of online e-government initiatives and is characterized by 5 factors (as depicted in the following chart). In addition, e-participation and citizen engagement are supported and encouraged by governments in the decision-making process.



Source: United Nations, “Global E-Government Survey 2008”
(http://www2.unpan.org/egovkb/global_reports/08report.htm)

Here are some of the examples to apply the five stages in your planning.

- If you don't have web site regularly updated, think about having one so that you can go to "Emerging" stage.
- If you have web site but it is static and not updated regularly, think about adding dynamic component which enables many people to update it. This can take you to "Enhanced" stage.
- If you have dynamic web site regularly updated but no form is downloadable, think about putting blank form (such as pdf file) for public use. This will bring you closer to "Interactive" stage.
- For "Transactional" stage, you may require additional financial resources to make service available online. If there is information system already in place, it maybe easier and less costly to have existing service online. But if the service does not use any application, computerizing related procedures must take place as the first step.
- The "Connected" stage is illustrated above. It requires connections with citizen and business communities and other stakeholders, which may take some years in Cambodia.

Time Frame

As technology advancement is rapid, ICT plan should be reviewed annually. In this exercise, we will plan for the next **five years**.

Step 3-1. List Action Items

(☐ Annex I)



By reviewing *Process Review* and *Reality Check*, you must be having ideas on how to fill in the gap in effectively reaching your goal. List of actions to fill up the gaps needs to be identified.

In the Annex I ICT plan template, list action items in order to reach your target under "**5. Action Items**". You can think about the action items in the following order. In accordance with level of advancement in ICT of your ministry, you can skip the first and second steps.

- (1) Action Items to provide ministry-wide *Basic Services* in Phnom Penh
Example: Connect at least 5 computers from each department to share an internet connection, files, and printers in Phnom Penh.
- (2) Action Items to provide ministry-wide *Basic Services* in Provinces
Example: Connect at least 1 computer of 9 provinces to NII, send ministry's ordinance to all staff by e-mail.
- (3) Action Items to provide *Dedicated Services* in Phnom Penh.
Example: Design and develop Tourism Management Information System.
- (4) Action Items to provide *Dedicated Services* in Provinces.
Example: Deploy Tourism Management Information System in 10 provinces connected to NII.
- (5) Action Items to develop ICT capacity in the ministry.

Tips

- Use *Process Review* to list for Dedicated Services, in the order of priority.
- Use *ICT Reality Chart* to list for ICT capacity development

In the process of listing actions for ICT capacity development, you can start with answering to the following questions.

Looking at the *Dedicated Services* identified from *Process Review*, what ICT realities need to be changed in order to computerize the identified processes successfully?

- Is your infrastructure enough for such computerization?
- Can your ICT office or officers handle the project?
- Can you identify potential financial supporters?
- Would the staff currently working under the targeted process be able to accept the technology and process changes?

For example, when Ministry of Labour wants to deploy job matching information system for placement officers, the placement officers need to have a minimum basic computer skills.

Step 3-2.

Draw Master

Plan

(Optional)

( Annex I)

You have reached to the final step, which is optional for this exercise.

In this final step, you need to put activity items in time-frame of 5 years. It involves calculating an activity's resources, cost, and schedule based on informed judgments regarding the activity's size and complexity. It is not very simple to make an accurate and feasible plan, because of limited resources. This is why it is optional in this toolkit.

For this exercise, you can simply consider the followings bullet points.

- Consider the precedence relationships of activities and put them in order. For example, you need to document procedures before you start system analysis and application design.
- Roughly estimate how long the activity may take. For the example above, if the procedures to computerize are complex, you may want to take a whole year to complete just documenting procedures and have them officially approved.
- When you have precedence relationships and estimated time duration, you can lay out the lines on the master plan table under “**6. Master Plan**” in Annex I ICT Plan Template.



Item	Type	Year 1	Year 2	Year 3	Year 4
(1)-1	Basic	_____			
(1)-2	Basic				_____
(2)-1	Dedicated		_____	_____	
(3)-1	Capacity	_____	_____	_____	
(3)-2	Capacity			_____	

It would be useful to include estimate required budget for each activity. For some activities, for example, the cost creating a new website, costing is easy because of a lot of similar experiences in the government and in the private sector. On the other hand, for costing of developing a *Dedicated Service*, we need to collect much more information about functionalities of the application.

Congratulation!



Yes!! Now you have a draft ICT Plan for your own ministry!

Please discuss and modify it with your colleagues in your ministry and have it approved!

Appendix II

ICT Plan for Ministry of XYZ (Draft)

October XX, 2008

1. Ministry's mission and targets

Write a brief introduction about your ministry, including a brief history, its mission and responsibility. Some sample sentences are shown below but it is not necessary to follow.

The ministry's mission is to

Currently there are pressing issues on

Main dealing organizations (departments/authorities) include XXX, mandated to,
YYY mandated to, ZZZ mandated to The ministry has set a target to achieve
..... by the year 20XX.

2. Objectives of ICT Action Plan

Objectives of Ministry's ICT Plan are three folds commonly defined at national level:

- To increase the internal efficiency
- To improve public services
- To collect data for policy analysis

The ICT Action Plan will define a series of actions towards the above objectives in the areas which contribute to achieving the ministry's mission and targets.

3. Achievements in ICT related activities

(1) Ministry's homepage (*if applicable*) URL: www.xyz.gov.kh

(2) Information Systems (*if applicable*)

No	Name	Functionalities	Year
1			
2			

(3) Other ICT Activities(*if applicable*)

4. Current Situation on ICT environment of Ministry

Analyze current situation on the Ministry's environment in which ICT is used, in terms of ICT management capacity, Infrastructure, Financial Resources, Leadership, Standardization of procedures, and ICT Experience. Use assessment sheet for the survey and analysis.

5. Action Items

(1) Basic Services *(if applicable)*

No	Action
1	Connect at least XX computers in the ministry's head office and 9 provincial offices (by NiDA)
2	Create web site of the ministry and update it regularly
3	Provide government domain e-mail account to all ministry's staff (by NiDA)

(2) Application Development (Dedicated Services)

List needs of new application system required in the future in priority order.

No	Priority areas for computerization	Functionality	Expected outcome
1			
2			

(3) ICT capacity development

List activities which required for enhancement of ICT usage in your ministry, based on the finding above.

No	Activity	Expected outcome
1		
2		
3		
4		

6. Master Plan (optional)

Item	Type	Year 1	Year 2	Year 3	Year 4	Year 5
(1)-1	Basic	_____				
(1)-2	Basic				_____	
(2)-1	Dedicated		_____	_____		
(3)-1	Capacity	_____	_____	_____	_____	_____
(3)-2	Capacity			_____	_____	_____

Appendix III

ICT Planning Toolkit

Assessment Sheet

Objectives of assessment sheet:

To assess current situation and issues in achieving ministry's goal --> Process Review Q4

To assess the hinderances for ICT promotion and implementation --> Reality Check Q1-3

Answer

How to use this sheet

1. Fill up Q1-3 sheets as much as you can.
2. Collect information for questions requiring specific data, e.g. # of PC.
3. Contact a person in concenred department/division who know most about their tasks
4. Fill up Q4 sheet in consultation with the person above to list out tasks you are targetting.
5. Use Q4 sheet to draw issues and future needs from the interviewee.
6. After collecting all information, fill up the Indicator sheet to aggregate the data

Who should fill up the sheet

A person who is responsible for ICT management in an organization.

To fill up Q4 sheet, it is necessary to have people who know about tasks in concerned division.

ICT Planning Toolkit Assessment Sheet

Annex III - Q1

Ministry	
-----------------	--

1. Information about CIO/ICT officer

1-1	Contact Person Name		
1-2	Designation, Dept., Div., etc.		
1-3	Office Address:		
1-4	Contact Number:	Office:	Mobile:
1-5	Email address:		

2. Information of your organization

* Please attach an organization chart of your ministry. Add rows if necessary.

2-1	Department/ Division	Responsibilities
2-2	Do you have branch offices in province? If so, where?	

3. About your employees

3-1	Number of officers		
3-2	Number of officers in PP (if applicable)		
3-3	What is your rating of ICT related skills of all officers?	Answer	
	Word Processing (word) (1. None 2. Less than 20% 3. 20-40% 4. 40-60% 5. 60% or more)		
	Spread Sheet (excel) (1. None 2. Less than 20% 3. 20-40% 4. 40-60% 5. 60% or more)		
	Presentation (powerpoint) (1. None 2. Less than 20% 3. 20-40% 4. 40-60% 5. 60% or more)		
	Web browse/search (1. None 2. Less than 20% 3. 20-40% 4. 40-60% 5. 60% or more)		
	E-mail (1. None 2. Less than 20% 3. 20-40% 4. 40-60% 5. 60% or more)		
	Printer Sharing (1. None 2. Less than 20% 3. 20-40% 4. 40-60% 5. 60% or more)		
	File Sharing (1. None 2. Less than 20% 3. 20-40% 4. 40-60% 5. 60% or more)		

4. About ICT management capacity

4-1	Do you have a dedicated ICT mgmt unit in the Ministry?	<input checked="" type="radio"/> Yes <input type="radio"/> No	Name:
4-2	How many dedicated ICT personnel do you have?	Total:	
4-3	What is their qualification and designation?	Number of ICT Personnel	Designation
	Master		
	Bachelor		
	Associate Bachelor		
	Diploma of Engineering		
	Diploma of Technology		
	Certificate (short course) only		
	others		
4-4	What practical skills do you have within ICT unit or ICT personnel?	<div style="border: 1px solid black; padding: 5px;"> <input type="checkbox"/> Provide help in using basic Windows applications (Win, MS Office, etc.) <input type="checkbox"/> Provide help in using basic FOSS applications (Khmer OS, Open office etc.) <input type="checkbox"/> Computer maintenance and hardware trouble shoots <input type="checkbox"/> Programming <input type="checkbox"/> Server set-up and network administration <input type="checkbox"/> System Analysis <input type="checkbox"/> Plan and propose ICT projects to the management <input type="checkbox"/> Web site development and hosting </div>	
4-5	What kind of skill is urgently required at the moment?		

ICT Planning Toolkit

Assessment Sheet

Annex III - Q2

Ministry	0	
-----------------	---	--

5. Infrastructure

	Question * all answers must include about provincial offices	Answer
5-1	How many computers do you have?	
5-2	How many printers do you have?	
5-3	Do you have local email system? (e.g. xxx@moef.gov.kh) (1. Yes 2. No)	
5-4	Do you have Local Area Network? (1. Yes 2. No)	
5-5	Approximately how many computers are connected to LAN?	
5-6	Approximately how many computers are connected to the internet?	
5-7	What kind of connection do you have? 1. Wireless 2. DSL 3. Leased Line 4. Satellite 5. Dial-up 6. Others (specify)	Answer
5-8	What is the speed of connection? (Kbps, total in the head office) 1. 64Kbps or less 2. 128Kbps 3. 256Kbps 4. 512Kbps 5. 1M or more(specify)	
5-9	How often does the connection fail/time out? (chose one that best describes the situation) 1. Almost always difficult to access 2. Very often (more than half of times you access) 3. Occasionally (less than half of times you access) 4. Rare (only a few times in peak time) 5. Never fail	

6. Budget for ICT expenditures

	Question * all answers must include about provincial offices	Answer
6-1	What is the average number of computers that you procure in a year?	
6-2	Who has funded the procurement above?	
6-3	How do you rate difficulty of getting ministry's internal fund for services (e.g. internet) and maintenance of ICT equipments (e.g. repair). (1. Almost impossible 2. Difficult 3. Fair 4. Not so difficult 5. Available when needed)	
6-4	How do you rate difficulty of getting external funding for ICT related projects and activities. (1. Almost impossible 2. Difficult 3. Fair 4. Not so difficult 5. Available when needed)	

7. About Leadership in ICT promotion

	Question	Answer -->
7-1	How supportive is the executive towards ICT usage in your ministry? 1. Strong support: The executives themselves vigorously promote the use of ICT. 2. Show understanding: The executives understand potential of ICT. Proposals are welcomed. 3. Interested: The executives are interested in ICT but have low level of understanding. 4. User level: The executives are computer users but not more. Everything related to ICT is left under ICT officer/unit. 5. No support/ Barrier: The executives do not use computer nor have interest. Sometime they speak against promoting ICT.	

8. Web site and other contents

	Question	Answer
8-1	Address of ministry web site:	
8-2	Where do you host the web site?	
8-3	When was the last time you updated?	
8-4	What is the reason for not having or updating web site?	
8-5	Please list regular publications such as official gazette or annual reports.	

ICT Planning Toolkit

Assessment Sheet

Annex III - Q3

Ministry	0
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9. ICT projects

Please provide details of information systems currently operated in your ministry.

Information System	Functionalities	Year of installation	Developer	Users	Programming Language	Database Engine	Is it operated well? Other comments (if any)

Answer

10. Do you have information systems which was developed but is no longer been used?

☐ Yes ☐ No

If yes, please list them with reasons why it is not used any more.

Information System	Functionalities	Reason for not using

11. What is your future plan of introducing ICT in your ministry? Do you have ICT plan?

Plan to develop information systems

Information System	Functionalities	Users	Volume	Main purpose

12. Any other issues related ICT in the ministry. If necessary use additional sheet.

13. Would you like to participate in the second workshop on ICT planning to create a draft ICT plan for your ministry?

ICT Planning Toolkit

Assessment Sheet

Annex III - Q3

Ministry	0
-----------------	---

14. Potential services/processes for computerization

No	Public Service/ Manual Process	Type	Division/Department	Description of the services/processes	Other organization involved	Law/Regulations/ Manuals	Volume	Lead time	Issues
Guide	Name of the process	Select from G2G, G2B, G2C	Which Division/Dept is responsible?	Briefly explain what needs to be done to complete the task.	Who is involved in the process? List all of them.	Where is the procedure documented?	How many processing per year? (e.g. # of application)	How long does it take to process one unit?	What is the problem with this process? Why do you want to computerize?
1									
2									
3									

Answer

ICT Planning Toolkit

Assessment Sheet

Annex III - Q3

Ministry	0
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14. Potential services/processes for computerization

No	Public Service/ Manual Process	Type	Division/Depart ment	Description of the services/processes	Other organization involved	Law/Regulatio ns/Manuals	Volume	Lead time	Issues
Guide	Name of the process	Select from G2G, G2B, G2C	Which Division/Dept is responsible?	Briefly explain what needs to be done to complete the task.	Who is involved in the process? List all of them.	Where is the procedure documented?	How many processing per year? (e.g. # of application)	How long does it take to process one unit?	What is the problem with this process? Why do you want to computerize?
1	Issuance of Employment Cards	G2B	Dept. of Employment	When a company hires new staffs, it applies for employment card. The ministry records the profile of the person with the company which hires him or her. Issue card from our machine.	The dept's HQ and provincial offices (internal)	Labor Law, Application form	10,000	1 week per card	All done manually and difficult search the data
2	Declaration of new company	G2B	Dept. of Employment	When new company is registered with Ministry of Commerce and Ministry of Land Management, the company applies to Ministry of Labor. The new company's information is recorded.	Ministry of Commerce, Ministry of Land Management, Provincial offices	Labor Law, Application form	100	1 month per company	All done manually. Cross checking with other ministry takes a lot of time

ICT Planning Toolkit
Assessment Sheet

Annex III - Q3

3	Job seekers' registration	G2C	Dept. of Human Resources	Placement office under the Dept. works as job matching agent. Placement officers advice job seekers and give a list of jobs that interest them. Placement office also receive vacancy information from business communities.	Placement offices under Dept. in all provinces (internal)	Labor Law, Guide for placement officers	25,000	Average 1 hour meeting for each job seeker	Unemployment is the new government's priority area. Lack of placement officers in the growing demand. It takes a lot of time to find matching vacancy information.
4	Complaints box management	G2C	Dept. of Labor Inspection	Ministry has a complaint box for any employee who is made to work under unlawful conditions. After screening, selected complaints are investigated. Reports	None	Not available	5,000	Not applicable	All done manually. Harsh/illegal working conditions forced by foreign invested factories are a growing concern

Toolkit for ICT Planning
Government Agencies

Last Updated: 8/22/2008

Structure of Assessment Sheet

1. Selection of Service/process --> Q3, Q4 sheet

Type of work	Category	Criteria
1 Policy Making		(out of scope)
2 Administration		(out of scope)
3 Public service delivery	standardized procedures	volume high
		frequency high
		error high
		lead-time long
	Global practices	stakeholders small
		Included In 20 public services (EU model)

2. Reality Check/ ICT Readiness Assessment --> Q1, 2, 3 sheets

Pillars	Category	Question	Answer	rate	max score	Your Score		
(1) ICT management capacity & leadership	Organization	4-1	Separate ICT unit	Yes	1	1		
			No	0				
	ICT personnel	4-2	# of ICT staff = $\frac{\text{Number of PC}}{\text{Number of ICT Staff}}$	High (a staff maintains less than 35PCs)	1	1		
				Low (a staff maintains more than 35PCs)	1/2			
				None (no dedicated ICT staff)	0			
		4-3	Academic background of ICT staff	Master, Bachelor, or Diploma of Engineering/Technology are more than half	1	1		
				Master, Bachelor, or Diploma of Engineering/Technology are less than half	2/3			
				Associate Bachelor or below only	1/3			
	Non-ICT background + short course only			0				
	4-4	Skill variation	Rating based on variation	0-8/8	1			
	Leadership in ICT	7-1	How supportive?	Strong Support	1	1		
				Show understanding	4/5			
				Interested	3/5			
User level				2/5				
No support/barrier				1/5				
					5	0		
(2) Financial Resource	Internal Budget availability 6-3		Almost impossible	1/5	1			
			Difficult	2/5				
			Fair	3/5				
			Not so difficult	4/5				
			Available when needed	1				
	Ability to get external resources 6-4		Almost impossible	1/5	1			
			Difficult	2/5				
			Fair	3/5				
			Not so difficult	4/5				
			Available when needed	1				
					2	0		
(3) Infrastructure	Access	5-1 3-1	PC (# of staff per PC) = $\frac{\text{Number of Staff}}{\text{Number of PC}}$	PC for all staff	1	1		
				1-5 staff per PC	3/4			
				6-10 staff per PC	1/2			
				11-15 staff per PC	1/4			
				15+ staff per PC	0			
		5-1 5-2	# of printers per PC = $\frac{\text{Number of Printer}}{\text{Number of PC}}$	More than 50%	1	1		
				20 - 50%	2/3			
				Less than 20%	1/3			
				no printer	0			
	LAN	5-4	LAN Available?	Yes	1	1		
				No	0			
				5-5	% of PC connected to LAN	All	1	1
						more than 33%	2/3	
	less than 33%	1/3						
	No	0						
Internet	5-6	Access (% of total PC) = $\frac{\text{Number of PC connected}}{\text{Number of PC}}$	more than 50%	1	1			
			30-49%	3/4				
			10-29%	1/2				
			less than 10%	1/4				
			no internet	0				
	5-6 5-8	Speed	above 11.6Kbps/PC	1	1			
			less than 11.6Kbps/PC	0				
	5-9	Reliability	Rating	1-5/5	1			
					7			

Toolkit for ICT Planning
Government Agencies

Last Updated: 8/22/2008

Pillars	Category	Question	Answer	rate	max score	Your Score
(4) Literacy & Experience	ICT skills of general staff	3-3	Word processing (word)	None	0	1
				Less than 20%	1/4	
				20-40%	1/2	
				40-60%	3/4	
				More than 60%	1	
			Spread Sheet (excel)	None	0	1
				Less than 20%	1/4	
				20-40%	1/2	
				40-60%	3/4	
				More than 60%	1	
			Presentation (powerpoint)	None	0	1
				Less than 20%	1/4	
				20-40%	1/2	
				40-60%	3/4	
				More than 60%	1	
			Web browse/search	None	0	1
				Less than 20%	1/4	
				20-40%	1/2	
				40-60%	3/4	
				More than 60%	1	
		E-mail	None	0	1	
			Less than 20%	1/4		
			20-40%	1/2		
			40-60%	3/4		
			More than 60%	1		
		File sharing	None	0	1	
			Less than 20%	1/4		
			20-40%	1/2		
			40-60%	3/4		
			More than 60%	1		
		Printer Sharing	None	0	1	
			Less than 20%	1/4		
			20-40%	1/2		
			40-60%	3/4		
			More than 60%	1		
	Experience of ICT projects		Successful projects	Yes	1	1
				No	0	
			Failed projects (exclude GAIS)	Yes	1	1
				No	0	
	E-mail	5-3	Local e-mail system Available?	Yes	1	1
				No	0	
	Web site	8-1	Web site available?	Yes	1	1
					No	
		8-3	Last time updated	Within the same week	1	1
				Within the same month	3/4	
				Within three months	1/2	
				Withing a year	1/4	
			Not updated more than a year	0		
					12	0
(5) Standardization of procedures	Level of legal documents, documentation of procedures	Q4	example: Legal basis Regulation ministerial ordinance Task manuals	Less than 20%	0	1
Omit from assessment scope this time due to lack of information			20-40%	1/5		
			40-60%	2/5		
			60-80%	3/5		
			More than 80%	4/5		
			All	1		
					1	

Pillars	Ratio(=Actual / Max Score)
(1) ICT management capacity & leadership	0
(2) Financial Resource	0
(3) Infrastructure	0
(4) ICT Literacy & Experience	0
(5) Standardization of procedures	0

ICT Reality Chart

