

Interim Report

For the Consulting Services of
Report on Design and Implementation of e-Government
(CS-01)

Institutional Capacity Building on ICT Policies in Thailand
Grant No.: TF097929

Submitted to
Office of the Permanent Secretary
Ministry of Information and Communication Technology

By
Institute for Information Technology Innovation
Kasetsart University, Thailand

17 April 2013

Inception Report			
Project Title	Report on Design and Implementation of e-Government (CS-01) Institutional Capacity Building on ICT Policies in Thailand		
Project Details	<i>Project Reference:</i> IBRD Grant No. TF097929		
	<i>Project Starting Date:</i> 17 December 2012		
	<i>Project Ending Date:</i> 13 August 2013		
Country	Thailand		
Client	<table border="0" style="width: 100%;"> <tr> <td style="width: 30%;">Ministry of Information and Communication Technology (MICT)</td> <td>The Government Complex, Bldg. B 7th Fl. Chaeng Watthana Rd., Laksi, Bangkok 10210, Thailand Tel. +662 141 6843 Fax. +662 143 8024...5 Mr. Teekayu Sritoh (Project Coordinator)</td> </tr> </table>	Ministry of Information and Communication Technology (MICT)	The Government Complex, Bldg. B 7 th Fl. Chaeng Watthana Rd., Laksi, Bangkok 10210, Thailand Tel. +662 141 6843 Fax. +662 143 8024...5 Mr. Teekayu Sritoh (Project Coordinator)
Ministry of Information and Communication Technology (MICT)	The Government Complex, Bldg. B 7 th Fl. Chaeng Watthana Rd., Laksi, Bangkok 10210, Thailand Tel. +662 141 6843 Fax. +662 143 8024...5 Mr. Teekayu Sritoh (Project Coordinator)		
Consultant	<table border="0" style="width: 100%;"> <tr> <td style="width: 30%;">Institute for Information Technology Innovation (KU-INOVA)</td> <td>Faculty of Engineering Kasetsart University 50 Ngamwongwan Rd., Ladyao, Jatujak, Bangkok 10900, Thailand Tel./Fax +662 797 0999 ext. 1138 Assist. Prof. Somnuk Keretho, Ph.D. (Project Director)</td> </tr> </table>	Institute for Information Technology Innovation (KU-INOVA)	Faculty of Engineering Kasetsart University 50 Ngamwongwan Rd., Ladyao, Jatujak, Bangkok 10900, Thailand Tel./Fax +662 797 0999 ext. 1138 Assist. Prof. Somnuk Keretho, Ph.D. (Project Director)
Institute for Information Technology Innovation (KU-INOVA)	Faculty of Engineering Kasetsart University 50 Ngamwongwan Rd., Ladyao, Jatujak, Bangkok 10900, Thailand Tel./Fax +662 797 0999 ext. 1138 Assist. Prof. Somnuk Keretho, Ph.D. (Project Director)		
Report Submission	<i>Date of Report:</i> 17 April 2013		
	<i>2nd Performance Period:</i> 16 January – 17 April 2013		
	<i>Submitted by:</i> Institute for Information Technology Innovation		

Table of Contents

Section 1. Introduction	1
Section 2. Interoperability	3
2.1. Introduction	3
2.2. Study of Existing E-Government Services and Infrastructure in Thailand by KU-INOVA Consultant Team.....	3
2.2.1. Existing E-Government-Related Infrastructures.....	4
2.2.2. E-Government Services in Thailand.....	8
2.2.3. Citizen Inclusion and E-Participation	20
2.3. Thailand's Business Cases of Interoperability	23
2.3.1. Thailand National Single Window (TH-NSW)	24
2.3.2. Agriculture Disaster Relief Information System (Aggie DRIS).....	25
2.3.3. e-Saraban/e-Document.....	26
2.3.4. National Research Indexing Hub	28
2.4. Studies of E-Government Interoperability Frameworks and Models of Foreign Countries	29
2.4.1. E-Government Interoperability Models.....	29
2.4.2. Influencing Factors for E-Government Interoperability	30
2.4.3. Problems and Obstacles to E-Government Interoperability Development.....	31
2.4.4. Criteria for e-GIF Standard Selection	32
2.5. Thailand e-Government Interoperability Framework (TH e-GIF).....	32
2.5.1. TH e-GIF Goals	33
2.5.2. Major Elements of TH e-GIF.....	33
2.6. Governance Model for Ensuring Interoperability and Data Sharing	35
2.7. Multi-Channels for Public Access in Thailand	37
2.7.1. Household with ICT and ICT Usage in Thailand	37
2.7.2. Thailand's Government Projects for Public Access to Government Services...40	
2.8. Conclusion.....	48
Section 3. Institutional Structures and Governance.....	55

3.1.	Introduction	55
3.2.	Studies on e-Government Institutional Structures and Governance in Selected Countries	55
3.2.1.	The World Bank Study on Models and Functions of National E-Government Institutions	56
3.2.2.	E-Government Policy Structure and Governance Mechanisms in the U.S.	63
3.2.3.	E-Government Policy Structure and Governance Mechanisms in the Republic of Korea	69
3.2.4.	Institutional Structure for E-Government of Vietnam	69
3.2.5.	E-Government Governance in Singapore	75
3.2.6.	Institutional Structure for e-Government Implementation in Switzerland	77
3.3.	Thailand's E-Government Institutional Structures and Governance	81
3.4.	Conclusion.....	90
Section 4.	Innovation in Public Services	93
4.1.	Introduction	93
4.2.	International E-Government Initiatives and the Advancement.....	93
4.2.1.	E-Government in Africa	94
4.2.2.	E-Government in the United States of America	96
4.2.3.	E-Government in Asia	97
4.2.4.	E-Government in Europe	100
4.2.5.	E-Government in Oceania.....	101
4.3.	Selected Case Studies of IT-enabled Innovations in Public Services	102
4.3.1.	Singapore Government	102
4.3.2.	E-Services in Korea	104
4.3.3.	Australia Government.....	106
4.3.4.	Innovative E-Government in the United Kingdom.....	107
4.3.5.	Innovation in E-Government Services in the United States of America	108
4.3.6.	Innovation in E-Government Services in Austria.....	110
4.3.7.	Open Source Strategy in Spain	111
4.3.8.	Open Source Initiatives of European Commission.....	112
4.4.	Current Innovation Programs for Online Public Services in Thailand	112
4.4.1.	Organizations Involved in Promoting Innovation in Online Public Services..	112

4.4.2. Innovation E-Service/E-Government.....	114
4.5. Conclusion.....	117
Section 5. Doing More with Less for More.....	119
5.1. Introduction.....	119
5.2. Studies on Strategies and Implementation Concepts and Cases of Public Services Re-engineering in Selected Countries.....	119
5.2.1. Malaysia.....	119
5.2.2. Ireland.....	125
5.2.3. United Sates of America.....	133
5.2.4. United Kingdom.....	147
5.3. Conclusion.....	152
Section 6. Other Related Tasks.....	155
6.1. Introduction.....	155
6.2. Design of International Study Visit on e-Government.....	155
6.2.1. Proposed Countries and Programs for Option 1: Policy-Level Visit to European countries.....	155
6.2.2. Proposed Countries and Programs for Option 2: Middle-Management Level Visit to Republic of Korea / Singapore / U.S.A.	164
6.3. Progress on Workshop Arrangement.....	171
6.4. Progress on Proposal of Recommendations on Thailand’s direction for the development of e-government to align with related directions of the Roadmap for an ASEAN Community (2009-2015)	171
Appendix A: Data of e-Government Online Services in Thailand (January-March 2013) Surveyed by KU-INOVA	173
References.....	203

List of Tables

Table 2-1: Thailand's e-Government Development Index and Rankings (2008-2012) by U.N8	
Table 2-2: Results of E-Government Services Survey in Thailand (January-March 2013)	14
Table 2-3: Thailand's E-Participation Rankings during 2003-2012 by U.N.	21
Table 2-4: Improvement of Cargo Clearance through TH-NSW	24
Table 2-5: Improvement of Trade Efficiency through TH-NSW	24
Table 2-6: Percentage of Households with ICT in Thailand during 2008-2012.....	37
Table 2-7: Percentage of Household Internet Connection in Thailand Classified by Internet Type	40
Table 3-1: Models for E-Government Institutions in Selected Countries	59
Table 3-2: Roles and Responsibilities of Federal Agencies in the E-Government Building Process (2002).....	64

List of Figures

Figure 2-1: Government Information Network Diagram.....	5
Figure 2-2: GIN2.0 Connectivity Diagram.....	6
Figure 2-3: Cloud Computing Initiative: Governance Model.....	8
Figure 2-4: E-Government Services Development in Thailand (January-March 2013).....	13
Figure 2-5: Development of Thailand e-Government Services at Stage 2.....	15
Figure 2-6: Development of Thailand e-Government Services at Stage 3.....	16
Figure 2-7: Development of Thailand e-Government Services at Stage 4.....	17
Figure 2-8: Advancement of E-Government Services Development in Thailand in Average.....	18
Figure 2-9: Thailand e-Government Portal.....	19
Figure 2-10: E-Information Activities/Tools to Enhance E-Participation in Thailand.....	22
Figure 2-11: E-Consultation Activities/Tools to Enhance E-Participation in Thailand.....	22
Figure 2-12: E-Decision Making Activities/Tools to Enhance E-Participation in Thailand.....	23
Figure 2-13: Function of Aggie DRIS.....	26
Figure 2-14: System Architecture of e-Saraban.....	27
Figure 2-15: Electronic Correspondence Management System (e-CMS).....	28
Figure 2-16: Research Data Interoperability through National Research Indexing Hub.....	29
Figure 2-17: Interoperability levels.....	30
Figure 2-18: E-Government Interoperability Model.....	31
Figure 2-19: Percentage of Thai Population aged 6 years up with a Mobile Phone by Region.	38
Figure 2-20: The Use of Computers, Internet and Mobile Phones in Thailand during 2008- 2012.....	39
Figure 2-21: Percentage of Internet and Computer Users Classified by Ages Surveyed among Thai Population aged from 6 years up.....	39
Figure 2-22: Percentage of Internet Usage in Thailand Classified by Locations.....	40
Figure 2-23: Thailand's UniNet Network.....	43
Figure 2-24: E-Filing for Tax Payment by Revenue Department.....	45
Figure 2-25: Traffic Voice Information Service < http://www.tvvis.nectec.or.th/ >.....	45
Figure 2-26: Royal Rain (Fonluang) Making Information Service.....	46
Figure 2-27: Water4Thai by the Secretariat of the Prime Minister.....	46
Figure 2-28: Web Page of Thailand Government Hot line www.1111.go.th	47
Figure 2-29: Service on EGA Smart Box.....	48
Figure 3-1: Characteristics of e-Government Institutions –Thailand's focus.....	62
Figure 3-2: E-Governance Structure for E-Government, U.S.A. (2002).....	68
Figure 3-3: Organizational Structure for Implementation of e-Government Strategy in Switzerland.....	77
Figure 3-4: Organizational Structure of MICT, Thailand.....	84
Figure 3-5: Organization Structure of E-Government Agency (EGA), Thailand.....	85

Figure 4-1: Advances in regional e-government development in the last decade	94
Figure 4-2: Taxation e-Service of Seychelles Revenue Commission.....	95
Figure 4-3: Top Ranked Countries in Africa for E-Government Development (2012)	96
Figure 4-4: E-government leaders in Asia (2012)	98
Figure 4-5: Korea’s Government Platform Sharing Services	100
Figure 4-6: The VANguard Solution for Government Authentication.....	102
Figure 4-7: eCitizen of Singapore Government.....	103
Figure 4-8: Example of Korean’s Mobile Application	105
Figure 4-9: Difference between Old Public Administration and New Public Management .	110
Figure 5-1: An Integrated Approach to Public Service Reform in Ireland.....	126
Figure 5-2: Cloud Sourcing Models (CIO Council 2010)	135
Figure 5-3: IT Shared Services Concept Overview	137

Section 1. Introduction

This 'Interim Report' is the second deliverable of the consulting services of 'Report on Design and Implementation of e-Government'. It is aimed to provide the study results of existing e-Government-related work processes in selected foreign countries as the case studies and in Thailand so as to understand the present work situations, problems, and obstacles and to figure their possible solutions. The best practice benchmarking with those selected cases in e-Government development around the world will be further analyzed to learn from their effective e-Government implementation. Their successes and failures will be used for further synthesizing proper improvement recommendations for Thailand's cases in the subsequent reports.

The report contains totally six sections, which are 1) Introduction; 2) Interoperability; 3) Institutional Structures and Governance; 4) Innovation in Public Services; 5) Doing More with Less for More; and 6) Other related tasks including the design of international study visits and workshop arrangement.

Section 1: Introduction summarizes the project tasks/activities and results and also the structure of this Interim Report.

Section 2: Interoperability presents the study results on existing e-government services and infrastructure in Thailand which has been done by desk research, interview, survey, web access, and automatic search engine.. The study reveals the current status of e-government online services and infrastructure in Thailand. The assessment has been done based on the principles used in the United Nations e-Government Survey 2012 to allow us to learn its development gaps and how to fulfill citizen-centric e-Services and online-service integration or interoperability in the public services in Thailand. Another comparative study is also reported to describe and compare how connected e-government services have been promoted in many countries through national interoperability and policy frameworks. Thailand e-Government interoperability framework, so called TH e-GIF, along with its actual applications and lessons learn are also analyzed in this section.

Section 3: Institutional Structures and Governance reports the e-government institutional structures and governance available in the public sectors of other foreign countries around the world and Thailand. It includes the descriptive roles and responsibilities of government officials and some mechanisms for cross agency collaboration and coordination for effective management and oversight of e-government programs and initiatives in those countries.

Section 4: Innovation in Public Services explores and presents the strategies and approaches of fostering innovation in the delivery of public services in foreign countries. The study has been made specially on how those countries pursue open government initiatives with a focus

on transparency and citizen participation and how they develop government business applications using open source components and cloud-based infrastructure so that we learn more how these developments help to structure an approach to embedding innovation in public services.

Section 5: Doing More with Less for More presents the strategies and implementation concepts of radical re-engineering/reform and radical cost reduction in the use of and investment in IT that have been best practiced in foreign countries. The study reveals that the re-engineering/reform ideas for cost reduction are possible in many areas such as sourcing, e-procurement, ICT data center consolidation especially with cloud computing platforms and e-government integration.

Section 6: Other Related Tasks proposes details of alternative designs of international study visit on e-government for Thai government officials for further consideration and arrangement. The designs have been made through coordination with the representatives of proposed organizations and by desk researches. The status of workshop arrangement is also reported.

Section 2. Interoperability

2.1. Introduction

This section presents the current status of existing infrastructures related to information and communication technology that supports e-government development, and the progress of online public services in Thailand. The surveys have been made by the KU-INOVA consultant team through desk research and search engines with reference to the methodologies used in the United Nations e-Government Survey 2012. The team has searched into around 1,200 web sites of 303 government units approximately (i.e. ministries, departments, divisions, sections, units, and group of independent public agencies) to learn the status of their online services provided to the public. As well, Thailand e-Government Interoperability Framework is generally mentioned.

The report also presents the results of comparative analysis of e-government development and e-government interoperability frameworks and models in foreign countries, including their successful and difficult experiences. Those will help to understand concepts and ways of effective implementation in a broader aspect to lay ground for proper recommendations to be made for Thailand. Furthermore, there are some business cases of connected government raised to show their capacity and advancement of online transactions provided for social and economic benefits. They are especially the cases of e-government interoperability across different government agencies such as the National Single Window system which facilitates import and export processes by linking 36 government agencies and the Agriculture Disaster Relief Information System collaboratively developed to connect 7 government agencies for managing timely assistance for disaster victims.

The topics of governance model for ensuring interoperability and data sharing and the multi channels for public access are described in the report.

2.2. Study of Existing E-Government Services and Infrastructure in Thailand by KU-INOVA Consultant Team

The KU-INOVA consultant team has conducted the desk research and survey to learn the status of existing e-government services and related information and communication technology (ICT) infrastructures in Thailand¹. The survey has searched into around 1,200 web sites of 303 government units (i.e. ministries, departments, divisions, sections, units, and group of independent public agencies) to learn the status of their online services provided to the general public. The analysis was done with reference to the methodologies used in the United Nations e-Government Survey 2012. The assessment of electronic information, e-

¹ Survey for data collection during January - March 2013

forms, e-transactions and connected e-services available at the ministry levels, department levels and any online-accessible administrative levels are performed.

2.2.1. Existing E-Government-Related Infrastructures

2.2.1.1. Government Information Network

In response to the priority policy of e-government interoperability, the Cabinet designated the Ministry of Information and Communication Technology (MICT) to establish the national information network for government, namely *Government Information Network (GIN)* in year 2005 for connecting all public administrative agencies and for enhancing effectiveness of online communication and e-services in the government sector. The objectives of GIN can be described as following:

- 1) To connect information of all government agencies and to support high volume of government information
- 2) To support multi-media contents of e-government services
- 3) To deliver effective, secure, and reliable online services all over the country
- 4) To upgrade the government internet gateways by allocating bandwidth suitable for government use
- 5) To upgrade government data bandwidth for speedy information transfer
- 6) To save costs for hiring internet gateways being used in the government sector

The operation of GIN since its first establishment is performed into three phases, as follows:

- The first phase (2006 – 2007) was for setting up communication equipments and networks to connect between ministries, departments, state enterprises, independent public agencies, and courts in and outskirt Bangkok for about 274 agencies in total. The 10 mbps (megabit per second) bandwidth is assigned for the ministry level and 2 mbps bandwidth for the department level².
- The second phase (2007 – 2008) was about the setting up and expanding communication equipments and network to connect 200 local administrative agencies in 35 provinces with the bandwidth of 128 kbps (kilobit per second)-2 mbps (megabit per second)³.
- In the third phase (2008 – 2009) was to further extend communication equipments and network to connect the rest of local administrative agencies in 37 provinces with the bandwidth of 128 kbps – 2 mbps⁴. This

² http://www.mict.go.th/article_attach/traffic_flow.pdf

³ <http://www.opdc.go.th/uploads/files/arrow.pdf>

⁴ Ibid

makes GIN covering total 300 local administrative agencies all over the country.

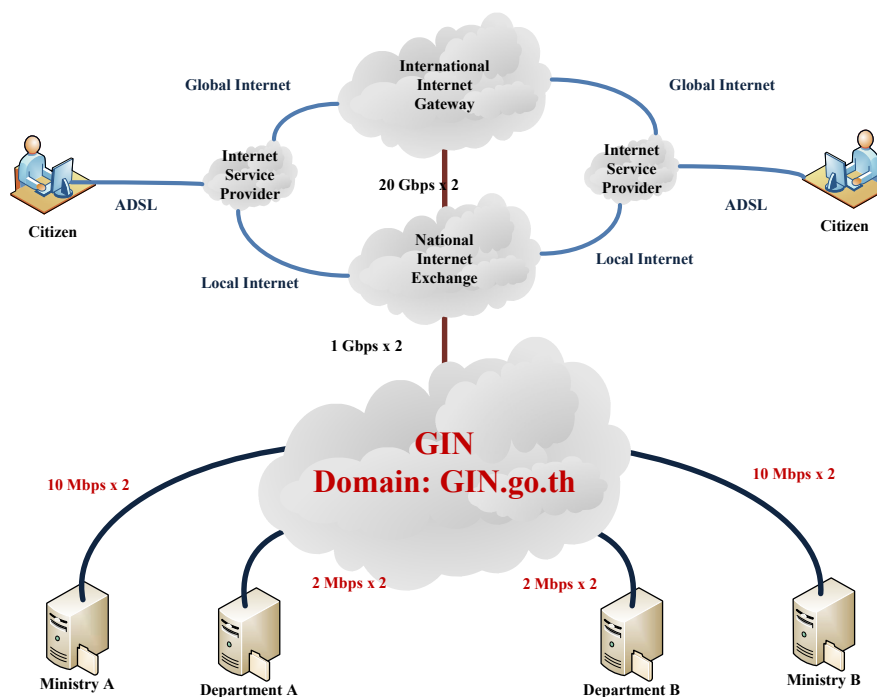


Figure 2-1: Government Information Network Diagram⁵

At present, GIN is responsible by the Electronic Government Agency (Public Organization) (EGA)⁶, governed by MICT, to further develop and improve the network operations for quality e-government services and interoperability according to the MICT's policy.

In 2012, EGA has improved GIN based on GIN2.0 platform and IPv6 standard to enhance its capability to support e-government interoperability for all public administrative agencies with many more needed quantities of addresses of connected equipments and access points. Furthermore, GIN2.0 can utilize several advanced features such as the time stamps, single sign-on, advanced VDO conference services and system center configuration manager (SCCM), which makes it enable government data connection and interoperability. For example, as developed on GIN2.0, the electronic civil registration system, hosted by the Department of Local Administration under the Ministry of Interior, can share and exchange some important data via GIN2.0 such as citizen identification number and citizen information for other agencies (under the established agreement).

⁵ http://www.mict.go.th/article_attach/traffic_flow.pdf

⁶ Ibid

Moreover, EGA is also addressing collaboration with many agencies for development of e-government interoperability systems. For example, it collaborates with the Comptroller General’s Department to develop the Government Fiscal Management System (GFMS) based on GIN2.0 to provide financial information services and real time transfer of budget progress report from other government offices to the Comptroller General’s Department.

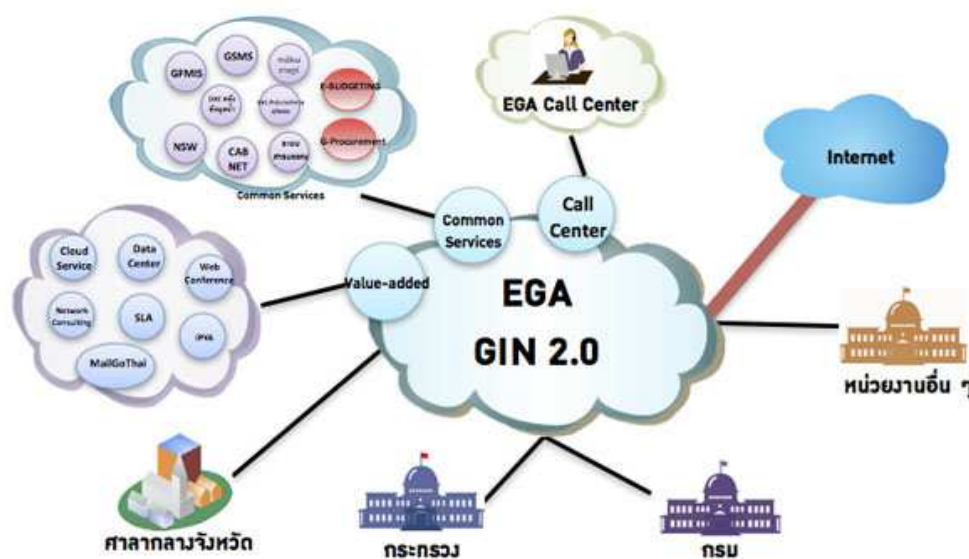


Figure 2-2: GIN2.0 Connectivity Diagram

For local administrative offices in the remote or rural areas not yet covered by GIN can still be connected to the Internet through the local Internet Service Providers (ISPs), however, maybe with less security and reliability than GIN.

Presently, all 20 ministries are already electronically connected through GIN. There are also around 1,199 from 4,000 government offices (inclusive of all sub offices and local administrative offices) that are connected online.

In the fiscal year 2012, EGA has provided new connectivity to other 850 administrative agencies in the capital and provincial areas. By the fiscal year 2013, EGA is implementation more connectivity to local administrative agencies in district areas. With the budget proposal by MICT, the next generation of network infrastructure called Super GIN has already been recommended which is the extensible and superhighway version of GIN with higher bandwidth covering more agencies in the last-kilometer district areas.

2.2.1.2. Cloud Computing Service for Government Agency

Electronic Government Agency (EGA) implemented Cloud Computing technology for enabling government agencies to optimize available resources and achieve high efficiency. By consolidating all services together to offer one-stop service, redundancy will be eliminated while the access to information and services as well as information security is enhanced. Users can still work on Cloud Computing-based systems as if they were based on an organization's own network. This enables an organization to save cost on network or particular system management. This project directly addressed the government's policy item 23: To promote energy saving through Cloud Computing development in the government sector, accelerate e-government services and strengthening confidence in secured electronic transaction in order to reduce time and travel expenses related to contacting a government agency. The aim is to achieve the same level of success as the Revenue Department which successfully implemented online tax submission system.

EGA implemented website for providing information related to Cloud Computing-based service (<http://cloud.ega.or.th/index.php>) and arrange trainings for representatives of interested organizations. At present, 33 organizations are using Cloud computing service and the total number of Cloud Computing-based technology is 58 and goal 80 systems in year 2015. Major systems include:

- Rice mortgage information monitoring and integration of the Prime Minister's Office Secretariat
- Women's Development Fund by the Prime Minister's Office Secretariat
- Prime Minister Operation Center by the Prime Minister's Office Secretariat
- Strategic Water Management Project monitoring system, for the Prime Minister's Office Secretariat
- Rehabilitation of people affected by the unrest in the three southern border provinces by the Southern Border Province Administration Center
- E-SAR by the Office of Public Sector Development Commission
- IT system management in disaster and crisis by the Department of Disaster Prevention and Mitigation
- EduStore under the One Tablet per Child Project (OTPC)
- ICT Care website <http://www.ictcare.or.th>



Figure 2-3: Cloud Computing Initiative: Governance Model

2.2.2. E-Government Services in Thailand

This part is intended to present the status of e-government services in Thailand surveyed by the consultant team during January-March 2013. The assessment of online services is based on and comparable with the development levels of online public services classified by the UN E-Government Survey 2012. The survey was conducted using search engine into the web sites of government offices of all levels (from ministries to office units). The findings reported in the most recent UN e-Government Survey Report are discussed here, while our own online service assessment will be discussed in the following parts.

2.2.2.1. Thailand’s E-Government Services in the U.N. Survey

According to the U.N. E-Government Survey Report 2012, Thailand has been ranked 92 out of 193 countries around the world for its advancement of e-government development, with the score of 0.5083 averaged from the three indices: Online service index, Telecommunication index, and Human capital index.

Year	Rank	Index Value	Online Service Index	Telecommunication Infrastructure Index	Human Capital Index	Total Countries
2012	92	0.5093	0.1699	0.0787	0.2606	193
2010	76	0.4653	0.1133	0.0576	0.2943	192
2008	64	0.5031	0.1683	0.0503	0.2843	192

Table 2-1: Thailand’s e-Government Development Index and Rankings (2008-2012) by U.N

Mathematically, the e-Government Development Index (EGDI) of U.N. is a weighted average of three normalized scores on the most important dimensions of e-government. The below is how U.N. EGDI is calculated.

$$\begin{aligned} U.N. \text{ e-Government Development Index (EGDI)} = & (1/3 \times \text{Online Service Index}) + \\ & (1/3 \times \text{Telecommunication Infra. Index}) + \\ & (1/3 \times \text{Human Capital Index}) \end{aligned}$$

$$\text{Each individual index} = (\text{Country's Value} - \text{Min. Value}) / (\text{Max. Value} - \text{Min. Value})$$

Considering the online service index, the UN e-Government Survey Report adopts an assessment method to benchmark different progresses of e-government online services by classifying this online service index into four development stages with their meaning descriptions, as follows:

- ***Stage 1 - Emerging Information Services***

Government websites provide information on public policy, governance, laws, regulations, relevant documentation and types of government services provided. They have links to ministries, departments and other branches of government. Citizens are easily able to obtain information on what is new in the national government and ministries and can follow links to archived information.

- ***Stage 2 - Enhanced Information Services***

Government websites deliver enhanced one-way or simple two-way e-communication between government and citizen, such as downloadable forms for government services and applications. The sites have audio and video capabilities and are multi-lingual, among others.

- ***Stage 3 - Transactional Services***

Government websites engage in two-way communication with their citizens, including requesting and receiving inputs on government policies, programs, regulations, etc. The government websites are open for citizen interaction and participation in online public services and transactions with government.

- ***Stage 4 - Connected Services***

Government websites are proactive in communicating with their citizens, such as the request for information and opinions from the citizens using Web 2.0 and other interactive tools. E-services and e-solutions cut across the departments and ministries in a seamless manner. Information, data and knowledge are transferred from

government agencies through integrated applications. Governments have moved from a government-centric to a citizen-centric approach, where e-services are targeted to citizens through life cycle events and segmented groups to provide tailor-made services.

The survey reported that the development of online services of Thailand at stage 1 is fully achieved (100%). This implies all Thai government agencies have the web sites with basic information services. The development stage 2 gets 55% for having the government websites delivering enhanced one-way or simple two-way e-communication between government and citizen. Stage 3 is 31% developed for having the government websites that are open for citizen interaction and participation in online public services and transactions with government. And stage 4 is 39% developed for having proactive government websites in communicating with their citizens.

It is evident that the development of online government services of Thailand at stage 2, 3 and 4 need improvements. The question is how to improve them. We see that the online service index of the U.N. can provide us with some clues for improvement as experienced by many countries. It needs to compare and conduct a gap analysis of the current e-government services with the function and features suggested in the UN e-Government report. A further detailed discussion will be followed in the subsequent part.

The gap analysis based on the survey index will consequently suggest good recommendations for further improvement of Thailand's online public services for better ranking probably 10 levels higher. One possible way is that, for example, the Cabinet establishes key performance indicators (KPI) and mandates all agencies to achieve them in their development of online services. For example, in achieving development stage 2, all government offices are mandated to put on their web sites downloadable e-forms, audio and visual presentation of information, online contents both in Thai and English languages, etc. It is forecasted that if those kinds of online services are in place, Thailand's e-government ranking can be probably scrolled up to no. 77 in the next assessment. As well, when looking into the telecommunication index in 2012, it is relatively depressed since Thailand's ranking in this category is at no. 103 while our neighboring countries are in the far better rankings (Malaysia no. 56 and Vietnam no.69). However, Thailand trends shall be hopefully improved with the provision of high-bandwidth third generation mobile network (3G) in 2013, which would result in a better online public services and rankings for Thailand.

2.2.2.2. Study of Existing E-Government Services in Thailand by KU-INOVA Consultant Team

A survey of e-government services in Thailand is conducted during the first quarter of 2013 by the KU-INOVA consultant team with reference to the methodologies used for the UN e-Government Survey 2012. The survey explores into 1,200 web sites approximately to learn about the online services of 303 government units in all 20 ministries ranging from the ministries, departments, divisions downward to section or unit levels. The survey includes a group of several independent public agencies, state enterprises, and other concerned agencies. However, it excludes public agencies at the provincial and district areas. This is to learn the position of Thailand at present in term of its development stage of e-government and online public services within the timeframe of the project.

The survey is also based on the data of Thailand e-Government (e-GOV)⁷ gained from the web site survey by Electronic Government Agency (Public Organization) (EGA). Those surveyed data include the basic information and services of public organizations, together with data of inter-agency interoperability acquired from the survey on data standardization for cross-agency interoperability in the project of Thailand e-Government Interoperability Framework (TH e-GIF). The analysis of those acquired data is further undertaken using search engines so as to learn the development stage of existing e-government services provided by the government sector. The survey and analysis on e-government services in Thailand done with 303 government units in total delivers the result as detailed below.

Methodology/Calculation

- ***Stage 1 - Emerging Information Services***

Achieving the development stage 1, which is comparable to 100%, will earn the weighted score of 7 (The full score of 100 equals to the full weighted score of 7 for the development stage 1).

- ***Stage 2 - Enhanced Information Services***

In achieving this development stage 2, the weighted score of 24 will be counted for full development. For this project survey, the enhanced information services provided by each government unit (from ministries to department and division levels) are divided into four parts and scored individually. Those scores will be calculated to get the average score of public service at the ministerial level. The 4 divided parts of information services and their scores are as follows:

⁷ Thailand e-Government (e-GOV): <http://www.egov.go.th/>

- a) Having downloadable forms is counted for 25%
- b) Having audio and video capabilities is counted for 25%
- c) Being multi-lingual website (Thai and English languages) is counted for 25%
- d) Having interaction with citizen through one-way or two-way communication (e.g. open forums, online notification, e-mail correspondence, Q&A, social media,) is counted for 25%

- **Stage 3 – Transactional Services**

Achieving fully this development stage 3 will earn the weighted score of 30. For Thailand's survey, the project researchers have allocated the weighted scores of transactional services into four parts as described below. The scores of all levels of government agencies will be calculated to get the average score of transactional services at the ministry level.

- a) Having public opinion polls on a website is counted for 25%.
- b) Having online application services on a website is counted for 25%.
- c) Having fee payment service on a website is counted for 25%.
- d) Having full-transaction services on a website (e.g. end-to-end process of online application, tracking, and approval) is counted for 25%.

- **Stage 4 - Connected Services**

Achieving the development stage 4 will earn the weighted score of 39. The project researchers have allocated the weighted scores of connected services of each government unit into two parts as described below:

- a) Having connected e-government services and data interoperability systems for automated data interchange across agencies is counted for 50%.
- b) Providing citizen-centric services through integrated/connected applications with less paper at one-stop service point is counted for 50%.

The below is the formula to mathematically calculate for the percentage of each development stage in each individual ministry.

$$\% \text{stage}_{(2,3,4)} \text{ of Ministry}_A = \frac{(\% \text{stage}_{(2,3,4)} \text{ of agency}_a + \% \text{stage}_{(2,3,4)} \text{ of agency}_b + \dots + \% \text{stage}_{(2,3,4)} \text{ of agency}_n)}{\text{Number agencies of Ministry}_A}$$

The calculation for total e-services value in each individual ministry is based on the following formula:

$$\% \text{Total E-Services Value of Ministry}_A = (\% \text{stage}_1 \times \text{weighted score } 7\%) + (\% \text{stage}_2 \times 24\%) + (\% \text{stage}_3 \times 30\%) + (\% \text{stage}_4 \times 39\%)$$

Results and Findings of E-Government Services Survey

The survey on e-government services in Thailand conducted during the first quarter of 2013 produces the results as shown below in Figure 2-4 and Table 2-2.

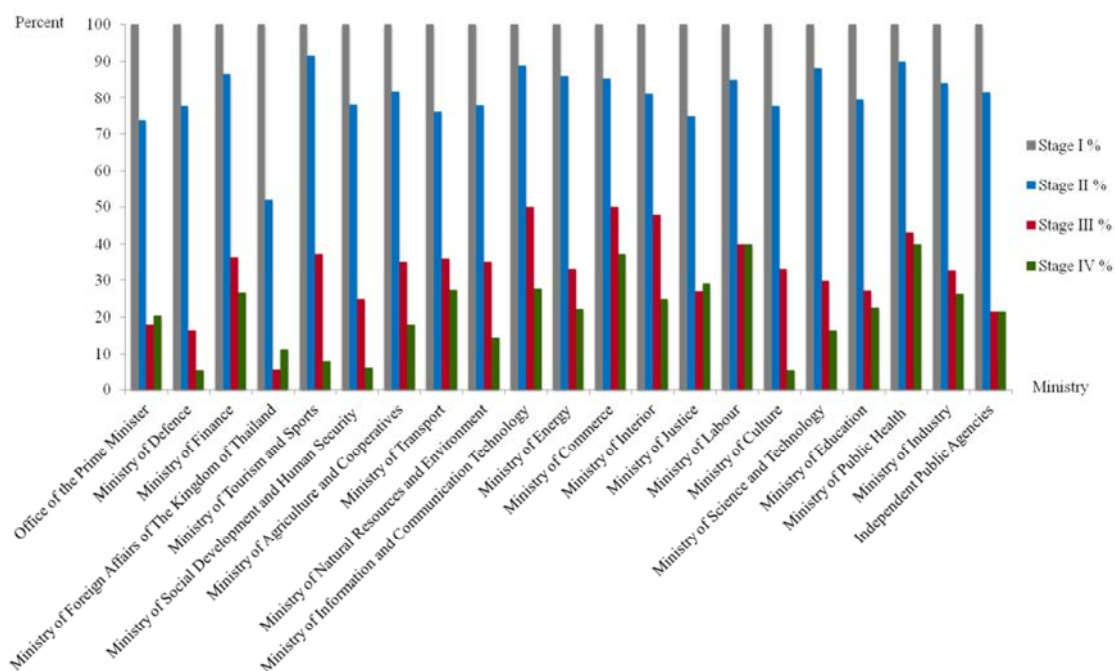


Figure 2-5: E-Government Services Development in Thailand (January-March 2013)

No.	Government Agencies	Development Stage (%)				Total (%)
		1	2	3	4	
		Weighted score				
		7%	24%	30%	39%	100%
1	Office of the Prime Minister	100	74	18	20	38
2	Ministry of Defense	100	78	17	6	33
3	Ministry of Finance	100	87	37	27	49
4	Ministry of Foreign Affairs	100	52	6	12	26
5	Ministry of Tourism and Sports	100	92	38	8	44
6	Ministry of Social Development and Human Security	100	78	25	6	36
7	Ministry of Agriculture and Cooperatives	100	82	35	18	44
8	Ministry of Transport	100	76	36	28	47
9	Ministry of Natural Resources and Environment	100	78	35	15	42
10	Ministry of Information and Communication Technology	100	89	50	28	54
11	Ministry of Energy	100	86	33	22	46
12	Ministry of Commerce	100	85	50	38	57
13	Ministry of Interior	100	81	48	25	51
14	Ministry of Justice	100	75	27	29	45
15	Ministry of Labour	100	85	40	40	55
16	Ministry of Culture	100	78	33	6	38
17	Ministry of Science and Technology	100	88	30	17	44
18	Ministry of Education	100	80	27	23	43
19	Ministry of Public Health	100	90	43	40	57
20	Ministry of Industry	100	84	33	26	47
21	Independent Public Agencies	100	82	22	22	42
Average		100	82	33	22	45

Table 2-2: Results of E-Government Services Survey in Thailand (January-March 2013)

- **Stage 1 - Emerging Information Services**

The survey finds that all selected Thai government agencies provides online information services such as policy, governance, laws, regulations and other associated information. They have also web links for public access to websites of other ministries and public agencies. People can reach both present and past information. Thus, the development at stage 1 is fully scored 100%.

- **Stage 2 – Enhanced Information Services**

The survey reveals that the Thai government websites provide interactive e-communication between government and citizens, assessed for the average development score of 82%. The first top three agencies with their websites providing enhanced information services are Ministry of Tourism and Sports (92%), Ministry of Public Health (90%) and Ministry of Information and Communication Technology (89%) respectively. Meanwhile, the least score is for the Ministry of Foreign Affairs (52%). Maybe this is because the websites of some departments and divisions still lack downloadable forms, audio and visual information, and other e-communication channels to reach directly those offices.

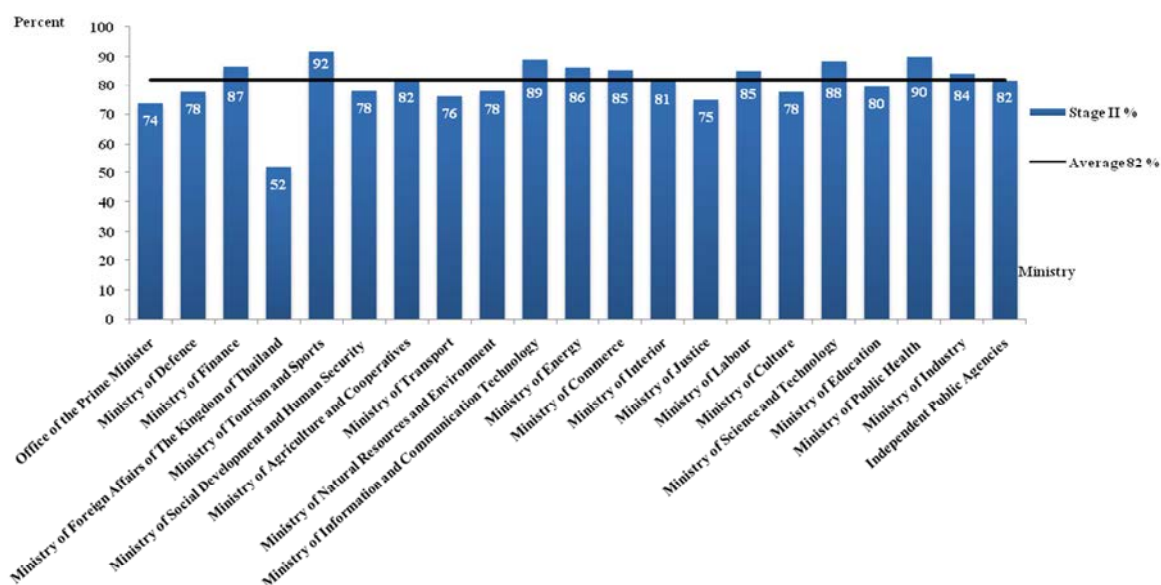


Figure 2-6: Development of Thailand e-Government Services at Stage 2

- **Stage 3 – Transactional Services**

The development of Thailand’s e-government services at stage 3 is assessed at 33%. The top developed agencies are Ministry of Information and Communication Technology and Ministry of Commerce (50% equally), Ministry of Interior (48%), and Ministry of Public Health (43%). The least is Ministry of Foreign Affairs (6%) of which some offices have no transactional services due to their nature of work with not much direct relation to citizens, such as the Department of Protocol and the Department of International Organizations.

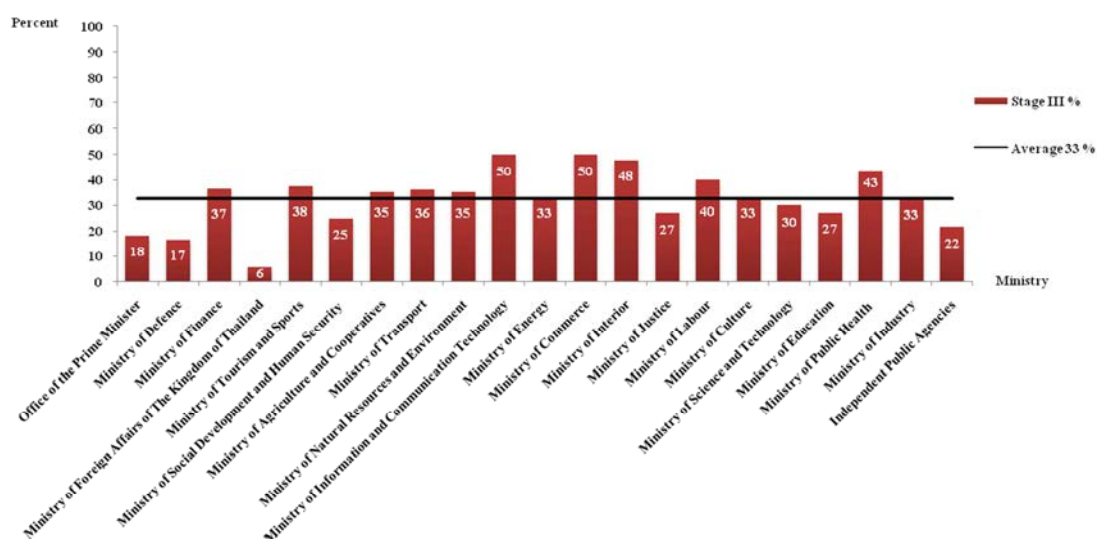


Figure 2-7: Development of Thailand e-Government Services at Stage 3

- **Stage 4 – Connected Services**

The development of Thailand’s e-government services at stage 4 is assessed for 22%. The most scored are Ministry of Labour and Ministry of Public Health (40% equally), Ministry of Commerce (38%), and Ministry of Justice (29%) respectively. The agencies with least score are Ministry of Defense, Ministry of Social Development and Human Security, and Ministry of Culture (6% equally). The survey found that all government agencies have already had at least one cross-agency interoperability system in place. There are some on-going projects that are not taken in assessment. However, it is quite evident that the overall public services are not citizen-centric yet. It is because some government agencies implement their own interoperability systems specifically applicable for their scope of work only.

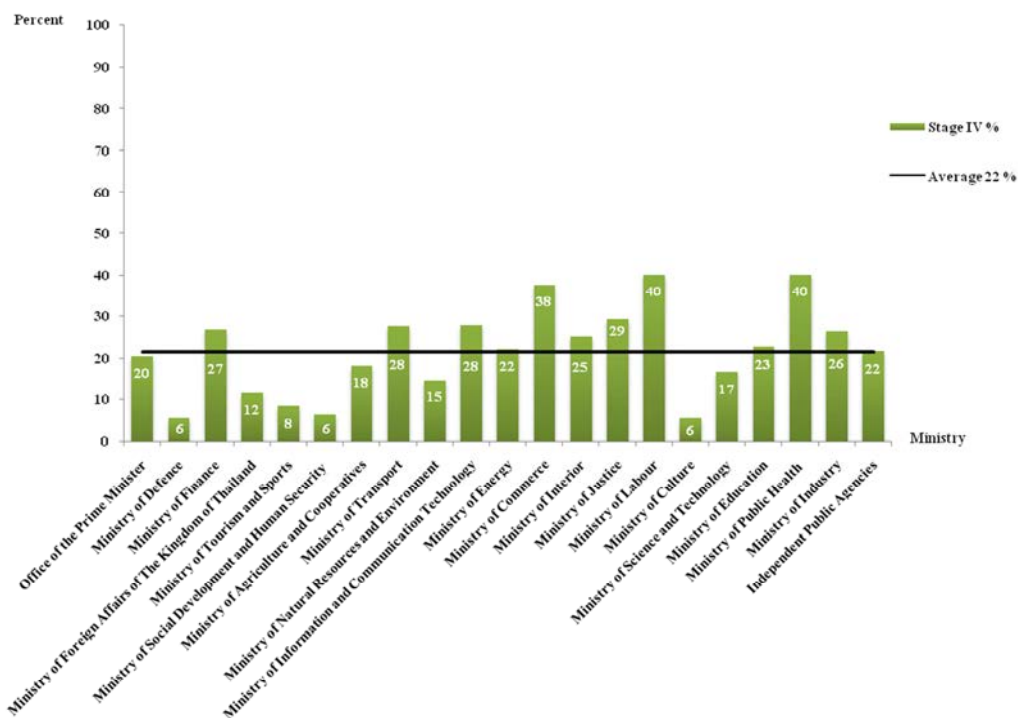


Figure 2-8: Development of Thailand e-Government Services at Stage 4

In summary

As shown in the above Table 2-2 *Results of E-Government Services Survey in Thailand (January-March 2013)*, the average score of e-government services development of all government agencies is 45% (please refer to the number in the last row and last column of the Table). This means the average of country’s advancement of e-government development is quite modest. Among all 20 ministries and a group of independent public agencies, there are 10 government agencies that can advance their online service development above the average while the other 10 agencies and the group of independent public agencies are below the average (Figure 2-9).

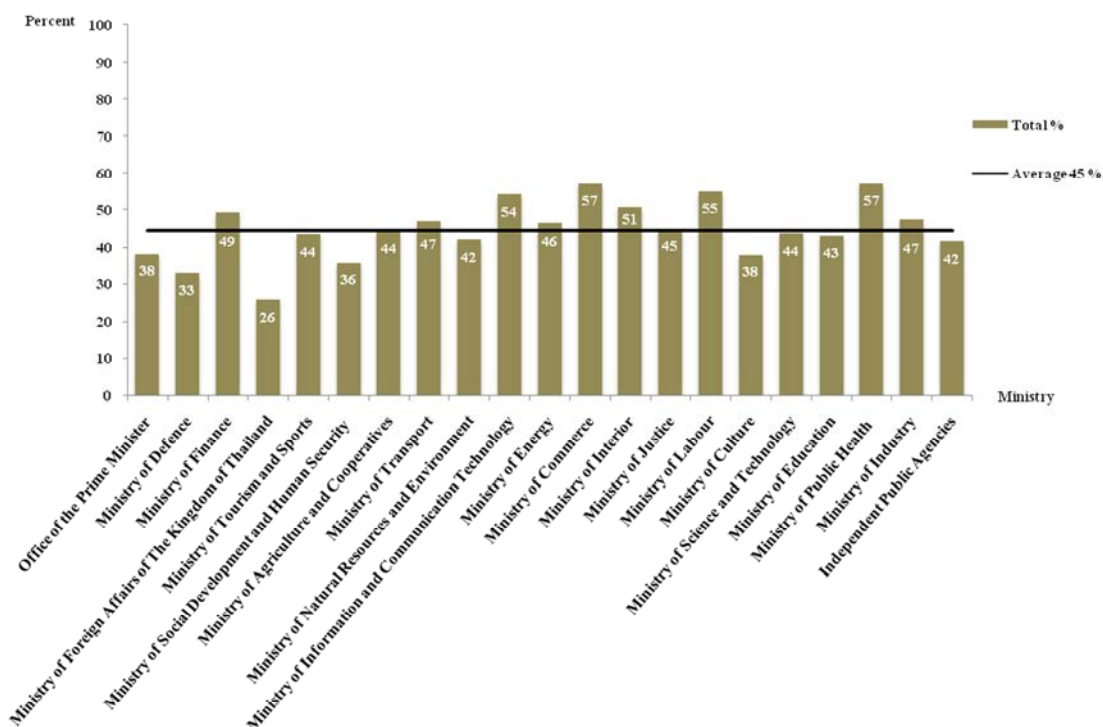


Figure 2-9: Advancement of E-Government Services Development in Thailand in Average

The survey found that the websites of some public agencies contain only bilingual topics and headings but the content is just in Thai language, and that the bilingual websites are provided just by the department and divisions levels.

It is found that if the development stage 2 reaches the full extent of 100%, the ranking could be improved possibly at least 10 levels (i.e. from the 92th up to 82th approximately) for Thailand, however, with the case that development of other countries is least. Meanwhile, the further improvement to leverage the other next development stages, even to some certain levels below 100%, could definitely boost up the rankings. For example, if the development stage 2 is fully achieved while the development stage 3 could reach only 50 % of its full extent, the rankings could be improved from the 92th (2012) up to the 75th.

However, the survey has not yet addressed some issues such as easy-to-access services, user convenience, and service tracking. So, when to exploit information provided in the Annex A, it is suggested to explore more into the integrity, completeness, and readiness of existing services not only for the benefits of leveraging the ranking of Thailand in the global assessment but also for the advantage of further development of effective and quality citizen-centric services.

2.2.2.3. e-Government Portal

The e-Government Portal offers one-stop e-service center which can be accessed through SMS and Web Portal, etc. The system also serves as an efficient tool for the government to communicate with various government agencies, the business sector and the general public. At the same time, it efficiently reduces the government's e-services costs related to person identification.

At present, there are 25 systems linked with the e-Government Portal to provide e-services through the Single Sign-On system, such as:

- Disaster warning system by the Department of Disaster Prevention and Mitigation
- Data system for rehabilitation of people affected by the unrest in the three southern border provinces by the Southern Border Province Administration Center
- Bankruptcy check system, the Legal Execution Department
- Sirindhorn National Medical Rehabilitation Center (SNMRC), Department of Medicine

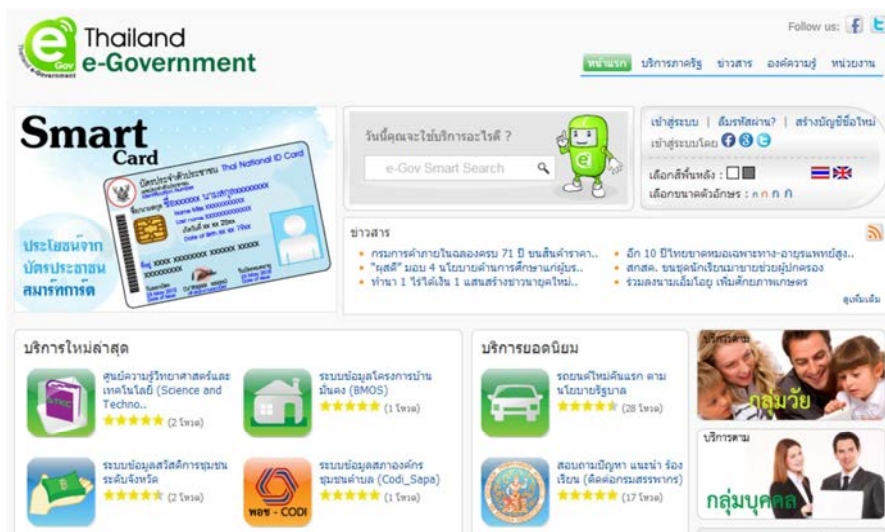


Figure 2-10: Thailand e-Government Portal

2.2.3. Citizen Inclusion and E-Participation

Having people participation in e-government implementation helps to enhance transparency of government operation. Through the use of ICT as a tool to facilitate access to public information and promote interaction of people in public services, e-participation is driven in alignment with the principle of “open government”, comprising of transparency, collaboration, and citizen participation. It is aimed to build trust and confidence for people and businesses to sustain e-government development with citizen-centric and cross-agency interoperable systems. Citizen inclusion and e-participation become the important policy and issue that call increasingly attention from countries around the world. According to the UN e-Government Survey 2012, e-participation is classified into 3 levels, which are:

1) *E-Information* - The government websites provide basic information, such as government policy, laws, regulations, program implementation, and other related services for people. To achieve the level of e-information, the following information shall appear on the government websites, as guided by U.N.:

- Government Structure
- Policies and Programs
- Points of Contact
- Budget
- Laws and Regulations and Other Information of Public Interest
- Community Networks
- Blogs
- Web Forums
- Text Messages
- Newsgroups
- e-Mail Lists

2) *E-Consultation* – The government websites are open for citizen inputs such as their opinions and suggestions towards e-government services through the tools such as chat rooms, opinion polls, social media, newsgroups and other interactive tools to support citizen inclusion and e-participation. To promote e-consultation, the public websites should activate the followings, as per the U.N.’s guide:

- Online Polls
- Online Surveys or Feedback Forms
- Chat Rooms or Instant Messaging
- Web Access History
- ListServe or Newsgroup

3) *E-Decision Making* – The government websites shall allow interaction between people and government officials and are open for people engagement in the process of policy and decision making through such channels as online voting or e-petition. The suggested tools are, for example:

- Online Discussion Forums
- Archive of Past Discussion Forums
- Government Officials Respond to Citizen Input
- Government Officials Moderate e-Consultations
- Online Petitions
- Online Voting
- Real-Time Delphi Survey (online questionnaire)

4) *E-Decision Making* – The government websites shall allow interaction between people and government officials and are open for people engagement in the process of policy and decision making through such channels as online voting or e-petition. The suggested tools are, for example:

- Online Discussion Forums
- Archive of Past Discussion Forums
- Government Officials Respond to Citizen Input
- Government Officials Moderate e-Consultations

The U.N. e-Government Survey 2012 assessed the performance of countries around the world in citizen inclusion and e-participation and ranked Thailand the 48th out of 193 countries⁸, with the index value of 0.3158 for this. The below Table shows the past year records of Thailand’s rankings in e-participation development.

Year	Rank	Index Value	Countries
2012	48	0.3158	193
2010	110	0.0857	192
2008	41	0.2955	192
2005	28	0.2540	191
2004	25	0.2131	191
2003	31	0.1030	191

Table 2-3: Thailand’s E-Participation Rankings during 2003-2012 by U.N.

To find how citizen inclusion/e- participation activities are performed in Thailand, the KU-INOVA consultant team has explored the web sites of 20 ministries during January-April 2013 and found the implementation of e-participation by Thai government agencies based on the U.N.’s three levels of e-participation as follows:

⁸ <http://unpan1.un.org/intradoc/groups/public/documents/un/unpan048065.pdf>

1. *E-Information* : The government websites contains these information: Government structure; policies & programs; points of contact; laws/regulations/other information of public interest; community networks; blogs; web forums; newsgroup; and e-mail lists.

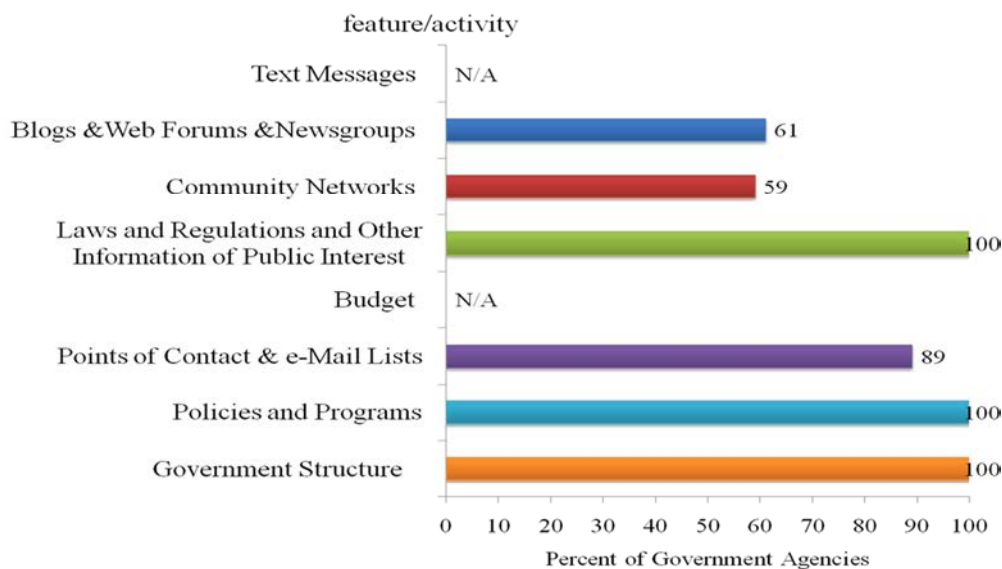


Figure 2-11: E-Information Activities/Tools to Enhance E-Participation in Thailand (January-April 2013)

2. *E-Consultation*: The government websites activate the followings: Online polls; online surveys or feedback forms; chat rooms/instant messaging/blogs

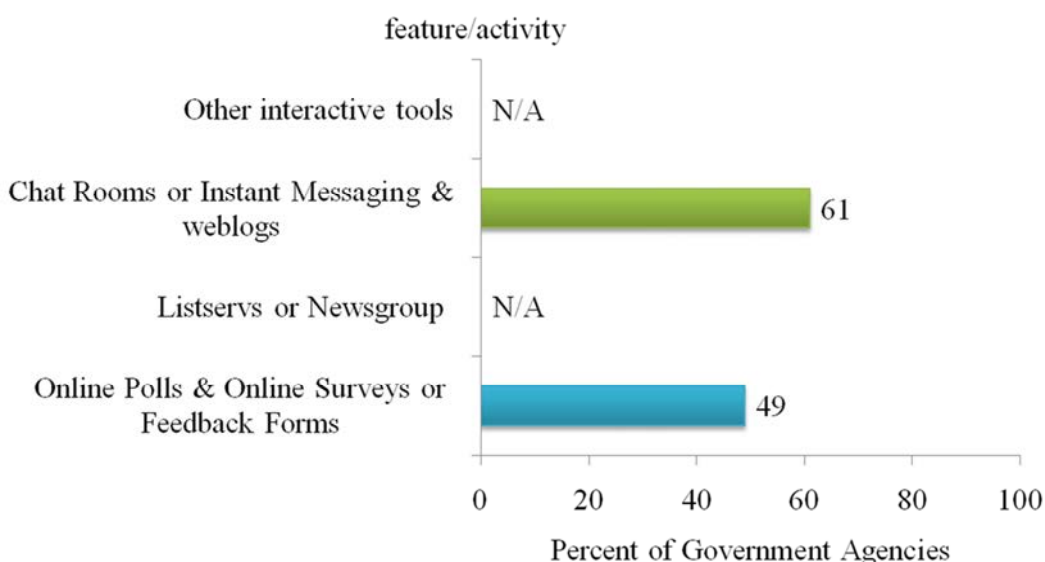


Figure 2-12: E-Consultation Activities/Tools to Enhance E-Participation in Thailand (January-April 2013)

3. *E-Decision Making*: The government websites use these tools for people engagement in decision making processes: Government officials respond to citizen Input & online petition.

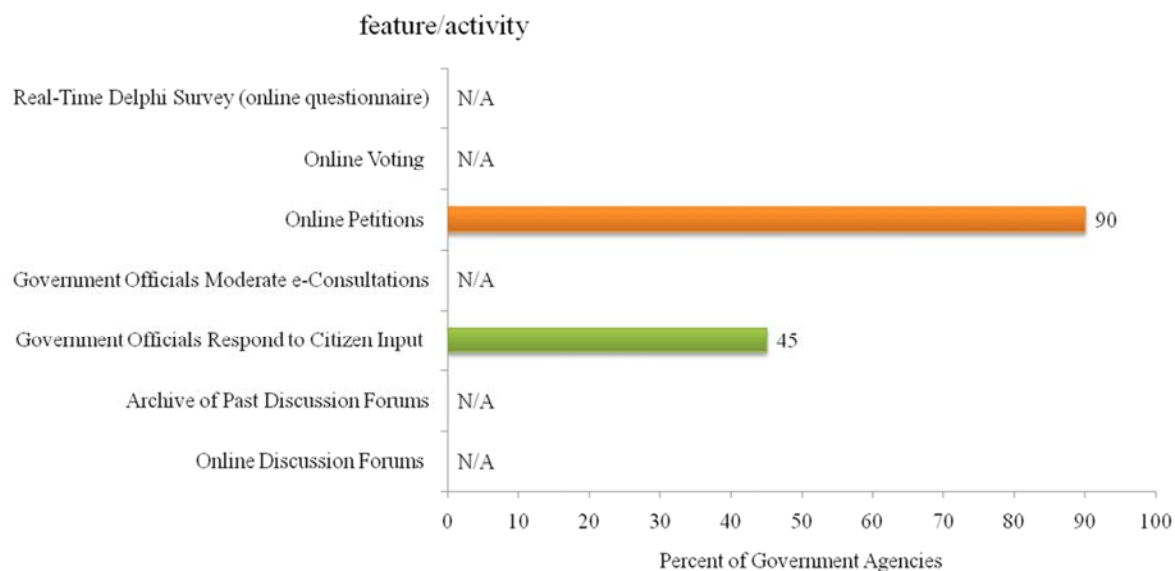


Figure 2-13: E-Decision Making Activities/Tools to Enhance E-Participation in Thailand (January-April 2013)

The Thai Government has adopted citizen inclusion/e-participation as a key in providing citizen-centric service and tried to find ways for improvement to the maximal level. To promote e-participation in Thailand, Electronic Government Agency (EGA) and GotoKnow⁹ (the online community network of members from government sector, public health sector and civic sector) has jointly run the project called “EGA asks for knowledge” to promote e-participation for further development of e-government. The past project activity related to e-government development was the discussion and exchange of knowledge on issues of dream ID card, government websites, technological problems and solutions, and e-Trust.

2.3. Thailand’s Business Cases of Interoperability

This part presents the cases of e-government interoperability among Thai public agencies, considered as an essential strategy to enhance the integration, effectiveness, and transparency of e-government services.

⁹ <http://www.gotoknow.org/>

2.3.1. Thailand National Single Window (TH-NSW)

The development of Thailand National Single Window involves 36 public authorities to collaborate under the signed Agreement in connecting their IT systems to enable e-document exchange online. The TH-NSW is aimed to facilitate trade transaction and streamline import and export processes of the country. At present, there are 11 government agencies that can exchange electronic certificates and permits among themselves while the others are developing their internal systems to enable cross-agency interoperability for better trade in the long run. For example, in 2007 MICT had allocated the budget for 15 public agencies to develop their IT systems for interoperability of G2G services and NSW.

Government agencies and trading communities have gained significant benefits from participating in the TH-NSW service since 2008, as illustrated in the below Tables. It is estimated that logistics cost savings from the implementation of the TH-NSW may reach US\$ 1.5 billion annually¹⁰.

Customs Clearance	Before 1998	1998 - 2007	2008 – 2011
Customs intervention	6-8 steps	2-4 steps	0 step (green line) 1 step (red line)
Document requirement	5 copies	1-3 copies	0 copy (green line) 1 copy (red line)
Intervention time	3-10 days	½ - 1 day	0 hour (green line) 0.5-1 hour (red line)
Turnaround time (per declaration)	3-10 days	10- 30 minutes	95% < 5 minutes

Table 2-4: Improvement of Cargo Clearance through TH-NSW

Trading across border	2007	2008	2009	2010	2011
Export					
No. of Documents to Export (number)	9	7	4	4	4
Time to Export (days)	24	17	14	14	14
Cost to Export (US\$ per container)	848	615	625	625	625
Import					
No. of Documents to Import (number)	12	9	3	3	3
Time to Import (days)	22	14	13	13	13
Cost to Import (US\$ per container)	1042	786	795	795	795

Table 2-5: Improvement of Trade Efficiency through TH-NSW

¹⁰ <http://www.unescap.org/tid/unnext/pub/brief8.pdf>

2.3.2. Agriculture Disaster Relief Information System (Aggie DRIS)

Agriculture Disaster Relief Information System (Aggie DRIS) is the interoperability system collaboratively developed and implemented among 7 public agencies: the Office of Permanent Secretary of Ministry of Agriculture and Cooperatives; Department of Agricultural Promotion; Department of Livestock Development; Department of Fisheries; Department of Cooperative Promotion; Office of the Rubber Replanting Aid Fund; and Bank for Agriculture and Agricultural Cooperatives, for handling timely assistance to be directly delivered to agricultures/farmers who suffer from natural disaster. The Aggie DRIS will manage to streamline the process of application to receive financial assistance from the government.

In the traditional system, suffering farmers have to apply for government assistance at the offices where their mandates fit to provide help each individually one at a time. For example, the agricultural farmers encountered the suffering from flooding are necessitated to submit the request for financial assistance at the district offices of Agriculture Promotion Department. But if those agricultural farmers also do livestock farming and they unfortunately suffer from the loss of their animals in the disaster, as well, the victim farmers need to apply for help again at the local offices of the Department of Livestock Development separately. These processes take time and cost of farmers for paying several physical visits to government offices and for filling necessary forms repeatedly. It takes time of government officials also for checking information submitted by a number of suffering farmers. Moreover, the officials cannot monitor thoroughly to learn if there is duplication of provided assistance.

The Aggie DRIS is developed to enable data interoperability of those 7 public agencies. Victim farmers can submit the requests once to seek for all applicable public assistance. The database of registered farmers in different agencies are connected electronically and can be mutually used by different offices for online check of data integrity and correctness, such as data check of farmers' registration, residential areas, bank account status for money transfer, so that the officials will process assistance for farmers more effectively in a transparent and appropriate manner.

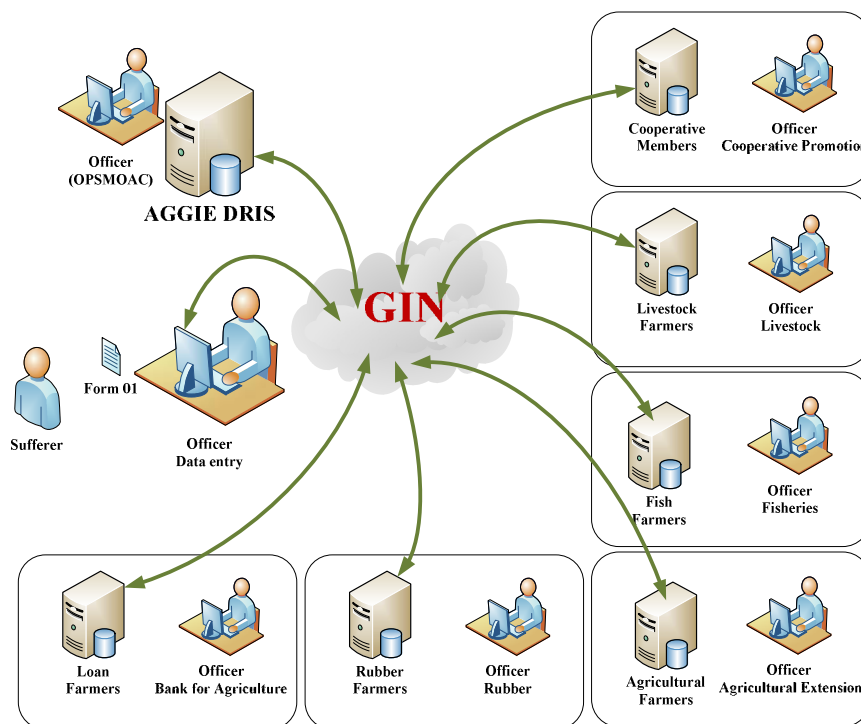


Figure 2-14: Function of Aggie DRIS

The benefits of Aggie DRIS could be briefly described as follows:

- It helps suffering farmers to receive assistance more speedily and precisely.
- It enables, for the first time, the data interoperability of “Farmers Registers” of 3 government authorities, which are Department of Agricultural Promotion (for agriculture farmers), Department of Livestock Development (for livestock farmers), and Department of Fisheries (for fishermen), and activates automated data interchange and data search.
- It provides real-time information and report of operations in both local level (individual farmer, villages, districts, provinces) and central/country level (ministry and prime minister’s war room/operation center).
- The system is further improved by adding map coordinates data to illustrate clearly harvesting and farming areas and other related information useful for disaster management.

2.3.3. e-Saraban/e-Document

e-Saraban or e-Document is the government information and document exchange system that has been developed in response to the strategic agenda of smart government development and Thailand e-Government Interoperability Framework (TH eGIF) for the benefits of time and cost reduction. At present, there approximately 26 government agencies involved in e-Saraban/e-Document system implementation.

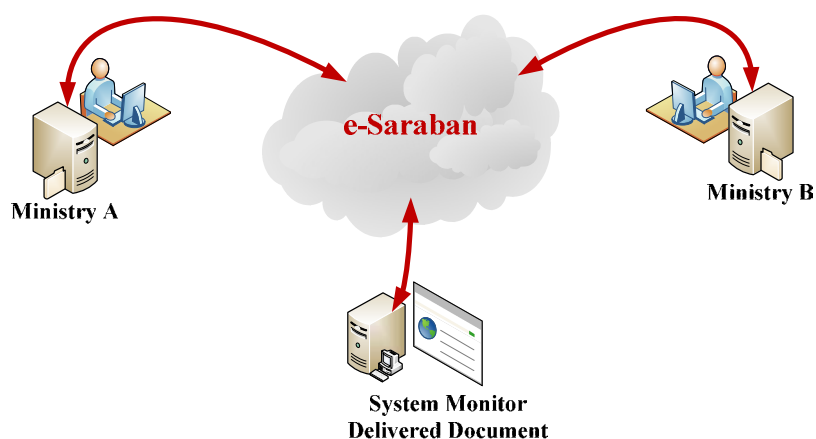


Figure 2-15: System Architecture of e-Saraban.

Later, Electronic Government Agency (EGA) of MICT has developed further to operate e-Saraban interoperability among government agencies to achieve cross-platform interconnection¹¹ with the aim to save operational cost and time. The components to fulfill e-Saraban interoperability are:

- GIN (Government Information Network) - communication network for all public administrative agencies to exchange information and official document across agencies through e-Saraban systems
- e-CMS (Electronic Correspondence Management System) – Web services that manage the process of document and information interchange based on the established data standards for interoperability and technology neutral principle
- XML Schema¹² - used for describing and expressing constraints about XML documents to be used for e-Saraban interoperability, based on TH-eGIF

¹¹ <http://saraban.ega.or.th/ecms/>

¹² XML Schema is a language for expressing constraints about XML documents.

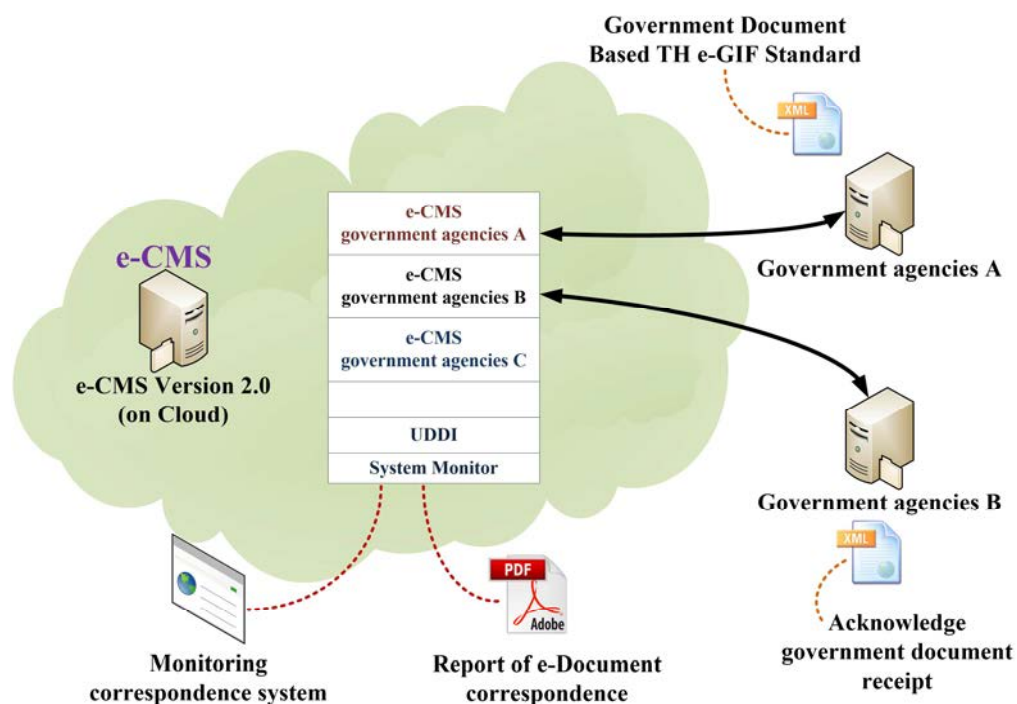


Figure 2-16: Electronic Correspondence Management System (e-CMS)

e-Saraban interoperability is enabled by e-CMS. e-CMS captures metadata relating to internally and externally generated agency correspondence; draft responses (including versions); scanned (.pdf) copies of incoming correspondence, outgoing responses and final documents; and electronic versions of supporting documents. The application also captures information relating to workflows, including which agency employees created, modified, reviewed, or concurred on the documents in the application and when they did it. The system is available for use agency-wide. Documents are either scanned or keyed into the system and routed through the review and approval process. The system has predefined templates for responses and can import documents from other databases. After signature, the final signed document is scanned into the system.

2.3.4. National Research Indexing Hub

The National Research Indexing Hub is an activity under the National Research DataBase (NRDB) project, having been supported by National Research Council of Thailand. It is aimed to collect and classify all research work in Thailand for easy access and development of information system for public use. National Research Council of Thailand serves as a secretariat to promote the integration of national research information to enhance research data interoperability across agencies in accordance with TH-eGIF strategic agenda and public opinions on research system reform.

Presently, there are 50 databases from 37 agencies enabled for research data interoperability¹³ activated by using 65 standardized data sets¹⁴. It is available for public use at <http://www.vijai.net/search.jsp>.

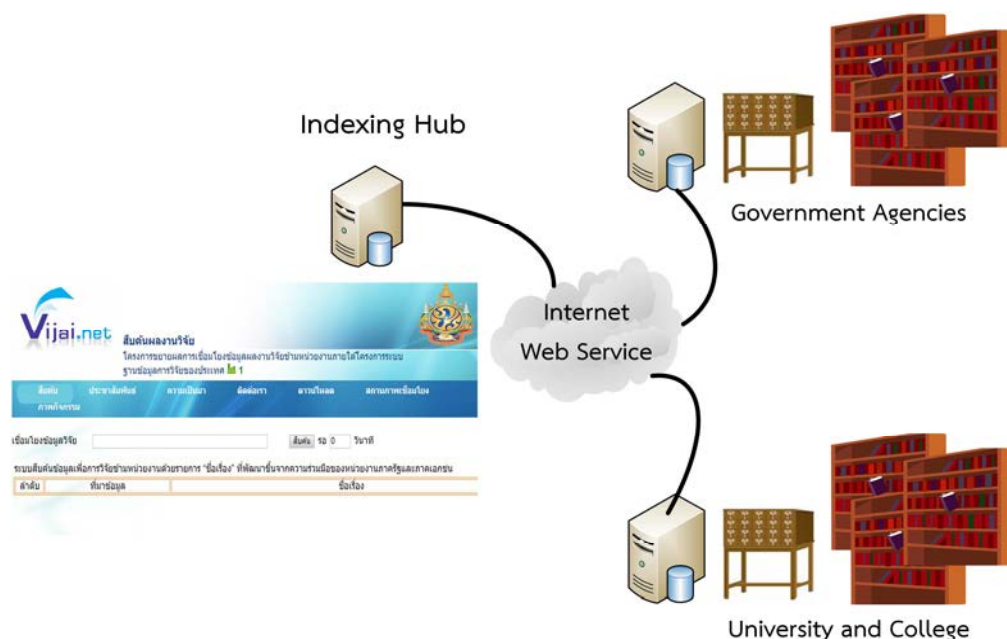


Figure 2-17: Research Data Interoperability through National Research Indexing Hub

2.4. Studies of E-Government Interoperability Frameworks and Models of Foreign Countries

The study has been made on e-government interoperability frameworks and models in foreign countries to learn from them how to develop e-government interoperability systems in an internationally comparable manner that can deliver integrated online services effectively. Also their success factors and obstacles in implementing and recommendations for improvement are presented as lessons learnt for appropriate application to Thailand's case.

2.4.1. E-Government Interoperability Models

The study of e-government interoperability models in the U.S. by Carnegie Mellon University in 2011¹⁵ proposed a model for interoperability in the e-government context starting from the basic goals of interoperability and then map these goals to levels of

¹³ <http://www.vijai.net/partner.htm>

¹⁴ http://www.vijai.net/test/doc/doc3/standard_data.pdf

¹⁵ *Interoperability in the e-Government Context*, Marc Novakouski, Grace A. Lewis, SEI/CMU, 2011. Available at <http://www.sei.cmu.edu/reports/11tn014.pdf>

interoperability. There are three primary goals associated with achieving interoperability in any system: data exchange, meaning exchange, and process agreement.

- *Data Exchange* - This goal deals with whether data can be exchanged between two computer systems in terms of data types, size of data exchanged, data structures
- *Meaning Exchange* – This goal deals with the exchange of meaning i.e. all participants in a given communication assign the same meaning to data that is exchanged and interpret the meaning of data in the same way.
- *Process Agreement* - The goal with respect to interoperability is agreement on how to act on information/data that has been exchanged. All participants must agree in advance about what to do with the data they receive in the exchange.

On the basis of those interoperability goals, the following interoperability levels are established:

- *Technical Interoperability* maps to the goal of data exchange and is placed at the base level of interoperability. Systems with technical interoperability can exchange data regardless their meanings.
- *Semantic Interoperability* maps to the goal of meaning exchange and is placed above the technical interoperability level. Systems with semantic interoperability can exchange meaningful data.
- *Organizational Interoperability* maps to the goal of process agreement and is placed at the top level. Systems with organizational interoperability can participate in multi-organization business processes.

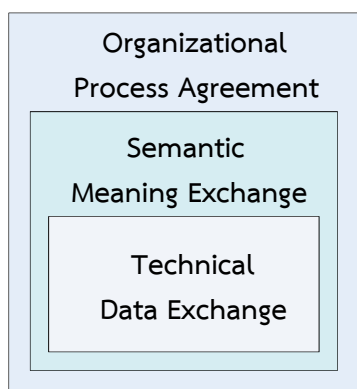


Figure 2-18: Interoperability levels

2.4.2. Influencing Factors for E-Government Interoperability

The impact of legal, political, and socio-cultural issues on the e-government context are represented as influencing factors in interoperability model. The impact of each is different, depending on the situation. These factors become an additional critical

dimension of the interoperability problem and any e-government effort must address them.

- *Legal factors* - Identifying legal issues inherent to public services is critical to enable appropriate e-government services and to identify services that are not appropriate for e-government context
- *Political Factors* - This factor is critically important to success of any e – government effort. A government administration that has political will and power to organize, manage, and fund an e – government interoperability project in a way that addresses all the interrelated issues will have a much better chance for success.
- *Sociocultural Factors* - The potential sources of impact in this area vary widely, depending on the context effort. Other socio-cultural factors such as religion and language may also affect e-government interoperability efforts. A multi-channel approach to compensate sociocultural disparities and multilingualism is a key factor for building interfaces to public services.

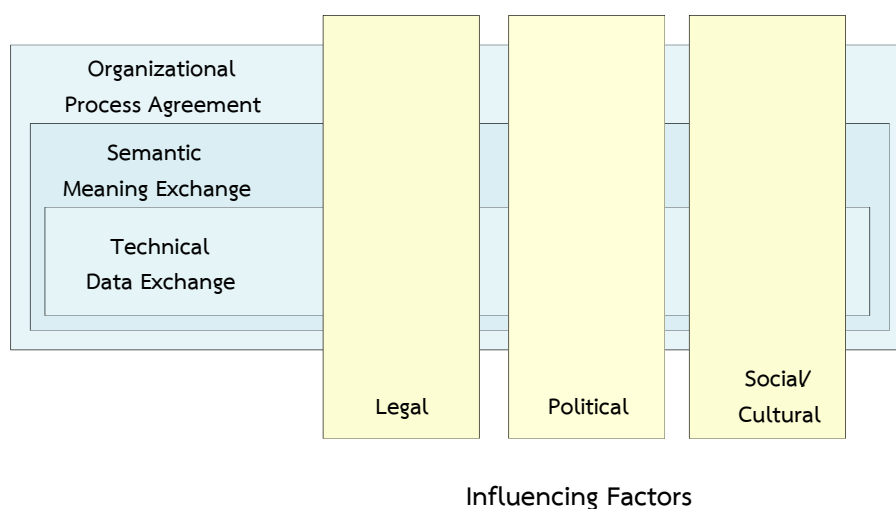


Figure 2-19: E-Government Interoperability Model

2.4.3. Problems and Obstacles to E-Government Interoperability Development

This part is summarized from the study on e-government interoperability in foreign countries entitled “e-Government Interoperability (e-GIF): A comparative analysis of 30 countries”¹⁶ (2011) by CS Transform¹⁷. In addition to main content of development, the

¹⁶ http://www.cstransform.com/resources/white_papers/InteropAnalysisV2.0.pdf

comparative study of national e-GIF in 30 countries presents the major common obstacles that most work on e-government interoperability suffered from. These will help us learn how to manage the e-GIF-related projects and handle problems well from various aspects and different contexts of society, politics, culture and economics. The three major obstacles that draw back e-government interoperability development are as follows:

- *Over-engineering*: e-Government Interoperability Frameworks in many countries focus too much on technical detail which nowadays is unnecessary due to the matured markets of solutions, and pay less attention on other more important issues, such as driving policy, creating mechanisms for cooperation, organizational reform for IT reduction.
- *Lack of focus on government-wide business transformation*: The development is focused very much around improving the efficiency of each individual agency and much less focused on transforming the relationship of citizens with the government as a whole.
- *Inadequate implementation*: A published e-government framework is often found difficult to translate into sustained and transformational change in practice.

2.4.4. Criteria for e-GIF Standard Selection

The study of CS Transform on e-GIF recommends to specify the minimum technical standards to ensure system and data interconnectivity for a national e-government program through an inclusive and transparent process which is open to all stakeholders. It is recommended to select standards which are:

- open and developed through an open decision-making process
- matured for some time and therefore are tried and tested
- internationally accepted in nature and not for use in any specific country or region
- easily deployable and openly published with no restrictions on reuse
- well-supported and gain acceptance in the marketplace and broadly adopted by users

2.5. Thailand e-Government Interoperability Framework (TH e-GIF)

Thailand e-Government Interoperability Framework (TH e-GIF) was initiated in 2006 in response to the policy of MICT for promotion of automatic interoperability between different

¹⁷ CS Transform is a specialist global consulting business, focused on delivering Citizen Service Transformation in the public sector, led by the senior management team from the UK Prime Minister's office that delivered the UK's e-Transformation strategy between 1999 and 2004. (source: <http://www.cstransform.com/>)

public agencies and to achieve the target of a one-stop service electronic business process between e-government information systems. It was firstly developed by the e-Government Promotion and Development Bureau of MICT as TH e-GIF version 1.0 and later improved in 2010 as TH e-GIF version 2.0 which is enforced until present. Further development of TH e-GIF shall be based on the project management principle and aimed to improve technical standards for e-government interoperability.

2.5.1. TH e-GIF Goals

The TH e-GIF is a framework that aims to push forward policies and practices in the development of e-government interoperability for cross-agency interconnection. It suggests ways to develop integrated e-government systems for effective online services to consequently achieve SMART Collaborative e-Government. The main goals of TH e-GIF are as follows:

- 1) To support and encourage the development of citizen-centric e-government services that facilitates citizens to be able to access a range of services from a single point with streamlined service processes enabled by e-government interoperability system
- 2) To support and encourage the development of e-government interoperability systems to activate cross platforms interconnection for electronic document exchange by defining national standardized data set and document formats.
- 3) To promote the use of open and international standards for developing e-government interoperability systems broadly allowed for connected online transactions both at national and international levels
- 4) To define common data naming rules and national standardized data set for development of e-government interoperability systems to enable cross-platform interconnection
- 5) To foster stakeholders collaboration in selecting and improving technical standards to inspire them to willingly adopt and deploy those standards
- 6) To appoint lead agencies for implementation and application of e-government interoperability framework at each level

2.5.2. Major Elements of TH e-GIF

The major elements of TH e-GIF are in alignment with those of other national e-GIF around the world, as earlier presented. The six elements of TH e-GIF are:

- *Element 1 Political Will:* The successful implementation of e-government interoperability depends to a large degree on political will and commitment at the highest level. It is essential to secure political support and funding for initial investment and maintenance of the program from top executives.

- *Element 2 Inter-Agency Collaboration and Social/Cultural Change:* The mechanisms to generate and maintain collaboration among stakeholders are vital to cope with the challenges arising from the inter-organizational nature of the project. The need to coordinate among numerous government agencies and the business community cannot be over-emphasized. The following “to-do” list would be useful in promoting coordination and collaboration between many players.
- *Element 3 Legal Power:* The related laws and regulations must be identified, reviewed, and adjusted carefully to ensure a legally enabling environment for e-government interoperability efforts.
- *Element 4 Process Agreement:* To achieve process agreement, all participants must participate in analysis of existing business processes and mutually agree in advance about new business processes. Lack of process agreement often manifests as a need for the consumer to provide the same information to multiple government services in response to a single event.
- *Element 5 Meaning Exchange Agreement:* Meaning exchange is fundamentally different from data exchange because of the aspect of misinterpretation. It is much more difficult because there is no implicit guarantee that all participants will interpret the meaning of the data in the same way. The meaning exchange agreement is, therefore, necessary to facilitate exchange of same meaningful data for successful data interoperability across different systems.
- *Element 6 Technical Development:* To ensure effective e-government interoperability, concerned parties and stakeholders need to mutually agree on common protocols and standards for system development. Mostly, the open standards and technology are often recommended because they are well supported and gain acceptance in the marketplace

In addition, the coordination, supervision, monitoring and continual improvement of technical interoperability are considered key factors for boosting capabilities of information systems to be able to provide smart collaborative e-services to citizens in the future. The concepts of change management and interoperability governance are given priority as enablers for cross platform interconnection and cross-agency interoperability.

In summary, according to the U.N. Survey 2012, many countries are moving from a decentralized single-purpose organization model to an integrated unified whole-of-government model aimed at centralizing the entry point of service delivery to single portal where citizens can access all government-supplied services, regardless of which government authority provides them. Based on those international e-GIF models and

whole-of-government approaches, TH e-GIF contains all elements necessary for effective development and implementation of e-government interoperability system to provide efficient and effective public service delivery.

2.6. Governance Model for Ensuring Interoperability and Data Sharing

The development and implementation of e-government interoperability are inter-organizational in nature, involving various key players from various sectors. To cope with such project challenge, it is suggested to bring in the project management principles to support for successful e-government interoperability project. The project management principle divides a project into 5 phases as follows:

- ***Phase 1 - Inception Phase***

The primary goals of inception phase are to achieve consensus among all stakeholders on the project objectives and to obtain funding. The primary focus is the initiating and planning processes.

The project will start with conducting a feasibility study on e-government interoperability implementation using the Enterprise Architecture methodology to cover all 4 aspects of potential development, which are business architecture, data architecture, application architecture and technology architecture.

- 1) *Business Architecture* describes the service strategy, and the organizational, functional, process, information, and geographic aspects of the business environment. In some cases, key elements of the Business Architecture may be done in other activities; for example, the enterprise mission, vision, strategy, and goals may be documented as part of some wider business strategy or enterprise planning activity that has its own lifecycle within the enterprise.
- 2) *Data Architecture* describes data elements, data structures, and data types for data interoperability across organizations. It enables the Business Architecture and the Architecture Vision, while addressing stakeholder concerns.
- 3) *Application Architecture* describes components and sub-systems of online service systems and e-government interoperability systems.
- 4) *Technology Architecture* describes characteristics of infrastructures such as computer network, computer server systems, software, correlation of features/components to group transactions. It introduces new technology building blocks or re-defines existing technology building blocks to ensure

interoperability and fit-for-purpose within the specific Technology Architecture.

- ***Phase 2 - Elaboration Phase***

The primary goal of the elaboration phase is to prove the architecture for the system to be developed. The point is to ensure that the team can actually develop a system that satisfies the requirements.

This phase is intended to study, analyze, design and mutually agree among stakeholders on “new business process” based on new requirements, “new document formats”, “potential IT systems and e-document exchange systems based on legal implication and technological standards and features” and “Application Architecture”

- ***Phase 3 - Planning Phase***

The planning phase involves creating of a set of plans to help you to manage time, cost, quality, change, risk and issues. They will also help you manage staff and external suppliers, to ensure that the project is delivered on time and within budget.

This phase is for planning technical requirements and specifications, size, capabilities and volume of hardware, software specifications and budget, based on the details of new business process, new document formats, and so on that are agreed upon in phase 2 (Elaboration)

- ***Phase 4 - Construction Phase***

The focus of the construction phase is to develop the system to the point where it is ready for pre-production testing. It is the phase where system developers work technically in more detail to design, develop, and install the required interoperable systems, networks, software and hardware

- ***Phase 5 Adoption Phase***

The adoption phase describes the acceptance and bringing into use of a new product or innovation. E-government interoperability systems shall be enforced by policy makers and introduced for all stakeholders, concerned parties and citizens to widely adopt and seriously deploy them.

2.7. Multi-Channels for Public Access in Thailand

This part presents about how people and businesses are equipped with necessary infrastructures for their accessibility to public information and services, considered from the statistics of household use and having ICT surveyed by National Statistics Bureau, MICT. The report also includes the government projects aimed to enhance public internet access. It is intended to illustrate that those given necessary infrastructures/equipment have been, somehow, put in places providing multiple channels for people to access to public information and services.

2.7.1. Household with ICT and ICT Usage in Thailand

The survey has been made by National Statistics Bureau in 83,880 households to explore their having and usage of ICT in 2012¹⁸ by interviewing family leaders and family members aged 6 year old up.

2.7.1.1. Households with ICT

During 2008-2012 the number of households that have fixed line telephones decreases from 22.6% to 15.6% but the number of households that have computers increases from 19.6% to 26.9% and that have internet access increases from 8.6% to 18.4%

Year	Total number of households (in Thousands)	Percentage of households with ICT			
		Fixed Line	Fax	Computer	Internet
2008	18,279.8	22.6	1.8	19.6	8.6
2009	19,060.2	21.4	1.5	20.3	9.5
2010	19,644.9	20.9	1.7	22.8	11.4
2011	19,786.4	18.6	1.6	24.7	13.4
2012	20,025.4	15.6	1.7	26.9	18.4

Table 2-6: Percentage of Households with ICT in Thailand during 2008-2012.

The survey found that from the total number of 62.9 million population aged 6 years up, there are 44.1 million mobile phone users, counted for 70.2%. Those are users in Bangkok for 84%, central area 75.1%, the North 68.9%, the South 67.8% and the North-East 64.1%.

¹⁸ http://service.nso.go.th/nso/nsopublish/themes/theme_5-1-3.html

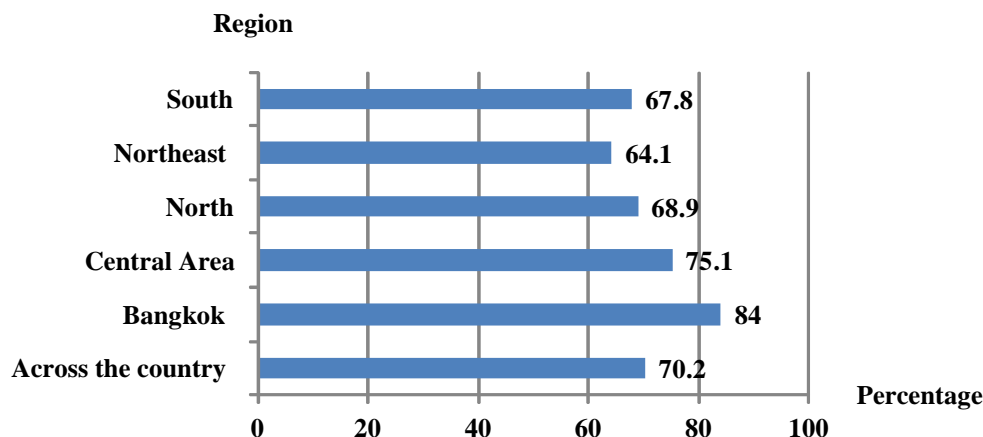


Figure 2-20: Percentage of Thai Population aged 6 years up with a Mobile Phone by Region.

2.7.1.2. Use of Computers, Internet, and Mobile Phones

The survey in 2012 reported that among the total 62.9 million population aged from 6 years up, there are:

- 21.2 million computer users (33.7%)
- 16.6 million internet users (26.5%)
- 44.1 million mobile phone users (70.2%)

Comparing to the statistics of the past five years (2008-2012), it is found that:

- the number of computer users increases from 28.2% (17 million population) to 33.7% (21.2 million)
- the number of internet users increases from 18.2% (11 million) to 26.5% (16.6 million)
- the number of mobile phone users increases from 52.8% (31.9 million) to 70.2% (44.1 million)

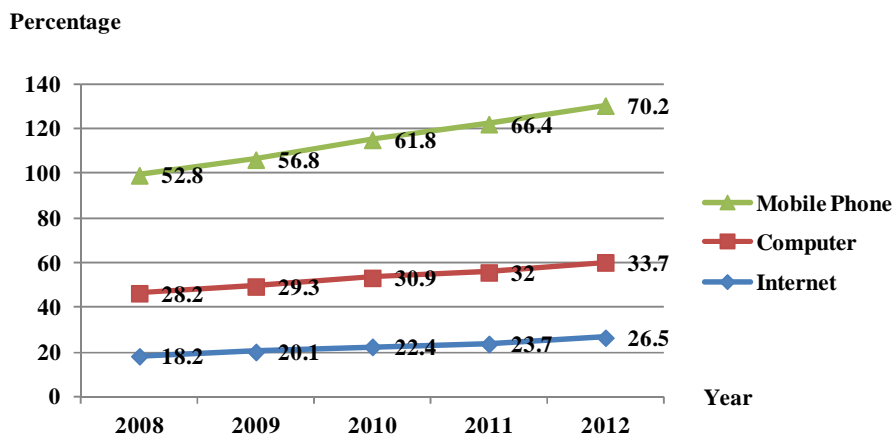


Figure 2-21: The Use of Computers, Internet and Mobile Phones in Thailand during 2008-2012

The survey on internet use classified by user ages in 2012 showed that the group of 15-24 age is the top internet user group counted for 54.8%, followed by the 6-14 age group for 46.5%, 25-34 age for 29.7%, 35-49 age for 17.1%, and the least internet user group is the age group of 50 up, counted for 6.2%. Meanwhile, the survey on computer use reported that the top computer user group is the age of 6-14, counted for 75.3%, 15-24 age for 59.6%, and 25-34 for 35.5%.

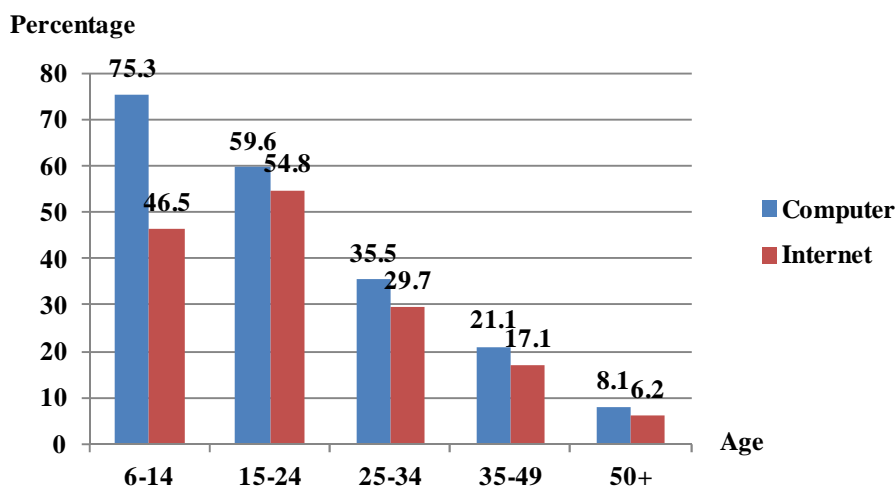


Figure 2-22: Percentage of Internet and Computer Users Classified by Ages Surveyed among Thai Population aged from 6 years up

The survey on places for internet use in 2012 showed that most population use internet at home for 50.6%, at academic institutions for 47.3%, and at workplace for 30.7%. It was found that more than half of internet population (53.3%) tends to use internet in the afternoon for 1-4 days per week and 40.6% regularly use it for 5-7 days a week.

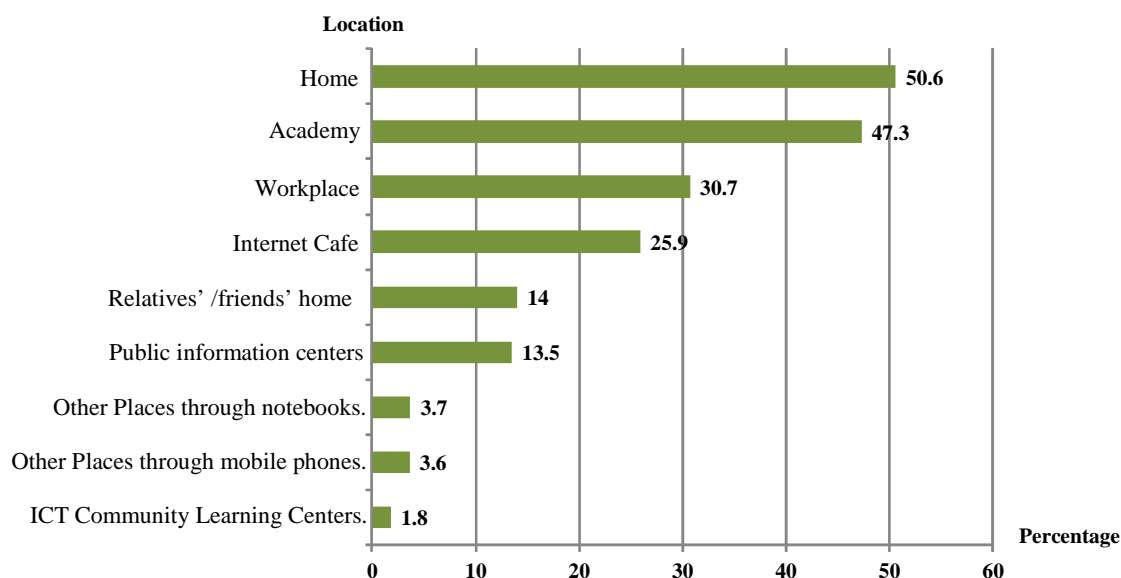


Figure 2-23: Percentage of Internet Usage in Thailand Classified by Locations

Most Internet connection in 2012 is made with fixed broadband, counted for 55.7%, 2G mobile wireless broadband for 14.7%, and 3G for 9.7%

All over Thailand.	Number of households with Internet use. (Thousands)	Type of Internet.				N/A
		Narrowband		Broadband		
		Analogue modem, ISDN	2G Mobile Phone	Fixed broadband	3G Mobile Phone	
	3,686.7	15.3	14.7	55.7	9.7	4.6

Table 2-7: Percentage of Household Internet Connection in Thailand Classified by Internet Type

The survey on household use of ICT in 2012 in Thailand showed the increasing tendency in internet use by Thai population, including in the trend of 3G mobile phones use due to the 3G channel system allowed through the concession granted to 3G mobile phone service providers in the country. The 3G mobile phone services will be launched in Thailand in April 2013

2.7.2. Thailand's Government Projects for Public Access to Government Services

The Royal Thai Government has put great efforts over years to implement a lot of ICT projects to bridge the digital gap between urban and rural communities for the benefits of Thai citizens to thoroughly and equally reach public information for their better livings. This part presents the ICT-related projects having been operated by the government

during the past years to provide channels of communications and access to government services for citizens, especially the projects in relation to public internet access.

2.7.2.1. ICT Community Learning Center¹⁹

Ministry of Information and Communication Technology has established a policy to spread knowledge and information and communication technology to communities around the country to help bridge the digital gap between urban and rural communities and encourage community members to bring acquired knowledge and learning tools into use in their everyday lives.

ICT Community Learning Center is a tool available for people of all ages and genders to equally access information, knowledge, and public services. It allows community entrepreneurs to open up markets for their products and keep contact with materials manufacturers in other regions. Moreover, the ICT Community Learning Center will serve as a knowledge source to collect, store, preserve, and disseminate local knowledge, wisdom, culture, and tradition, by using ICT.

There are currently 1,887 ICT Community Learning Centers established all over the country, accounted for 23.59% (information as of 12 February 2013) of the total target of 8,000 centers nationwide.

2.7.2.2. Universal Service Obligation (USO)

Universal Service Obligation (USO)²⁰ was established to reduce the disparity in access to telecommunications services in urban and rural communities and allows people to equally access public information and services. It is enforced under the notifications of National Broadcasting and Telecommunication Commission (NBTC) (year 2005 and 2009)

The five-year action plan of USO (2012 – 2016) is aimed to achieve 100% for voice telecommunication service provided in all residential areas and 90% in providing high-speed internet to target areas. The USO NET is established to provide online services through at least 2 mbps speed internet for minimum 500 areas where there is no commercial potential and internet access.

There are now 419 USO NET centers established and officially announced for operation by NBTC. The establishment of USO NET centers is based on a license scheme. A licensee is required to complete the USO NET establishment within one year from the date granted the assignment from NBTC. After that the established USO NET will be in charge by that local community.

¹⁹ <http://www.thaitelecentre.org/>

²⁰ http://usonet.nbt.go.th/th/?page_id=35

2.7.2.3. SchoolNet Thailand

SchoolNet Thailand, a computer network for Thai schools, was launched by the National Electronics and Computer Technology Center (NECTEC) in 1995 to link secondary schools in Bangkok Metropolitan and provincial areas to the Internet. Under NECTEC's eight-year development for increasing quality of education, the SchoolNet project has more than 5,000 schools²¹ as members. Since then, SchoolNet has become a part of EdNet, the national education network that aims to provide Internet connections to schools all over the kingdom, which is about 38,000 schools²². The purposes of SchoolNet Thailand are to develop information technology skills for teachers and to create online lessons covering subjects such as computer, mathematics, science, foreign and Thai languages, as well as develop its website for exchange news and information on activities and training. SchoolNet is the student-centric educational network that provides equal opportunities for students to get access to the Internet, and the contents and delivery of educational services. Based on NECTEC's evaluation report in 2005, the problem of Internet connection still exists in small secondary schools and some schools that have limited budget.

2.7.2.4. University Network (UniNet)

The national inter-university network (UniNet), established in 1996, is a government project aiming to establish a high-speed network between major universities and academic institutes in Thailand in order to distribute knowledge more efficiently across universities. The Thai government has a policy of providing more educational opportunities for local people in all regions of the country so that they will have equal educational opportunities and will be able to use local wisdom as a human resource to develop their own communities. UniNet is also connected directly to the Internet²³ which provides ultra-high speed Internet links with universities worldwide. It aims to become the research and educational network hub for the entire Indochina region²⁴ to provide opportunities for the transfer of knowledge and technology to students, teachers and ordinary people. It will also promote the sharing of resources among educational institutes both within Thailand and internationally.

The UniNet to implement the latest version of Internet protocol, IPv6 would benefit universities in provincial areas and enhance education and research by providing faster access to academic resources. It will also facilitate interactive distance learning, and provide knowledge with equal opportunities for students in metropolitan and

²¹ <http://www.nectec.or.th/schoolnet/farewell/index.htm>

²² <http://eis.moe.go.th/eis/stat54/html/T001.html>

²³ Internet2 is an exceptional community of U.S. and international leaders in research, academia, industry and government who create and collaborate via innovative technologies. Its partners accelerate research discovery, advance national and global education, and improve the delivery of public services. (Source: <http://www.internet2.edu/about/>)

²⁴ http://nationmultimedia.com/2009/01/15/technology/technology_30093303.php (2009)

upcountry areas. Moreover, the network will allow the educational sector to provide telemedicine, tele-education and tele-meetings for students as well as disseminating technology locally, regionally and internationally. A distribution network and system is developed to allow local universities to directly access both local and international education networks. The UniNet's distribution nodes would be educational networks located at local universities, helping them to reduce the costs of connecting with other networks throughout the region.

UniNet has already covered 3,097²⁵ higher educational institutions across the country and enhances its internet services with the Internet infrastructure upgrade from 25 gigabits per second (Gbps) to 30 Gbps.

Beyond this, UniNet will enable educational networks in Laos, Myanmar and Cambodia to connect with global research and education networks such as the Asia-Pacific Advanced Network (APAN), the China Education and Research Network (CERNET), and the Trans-Eurasia Information Network (TEIN2).

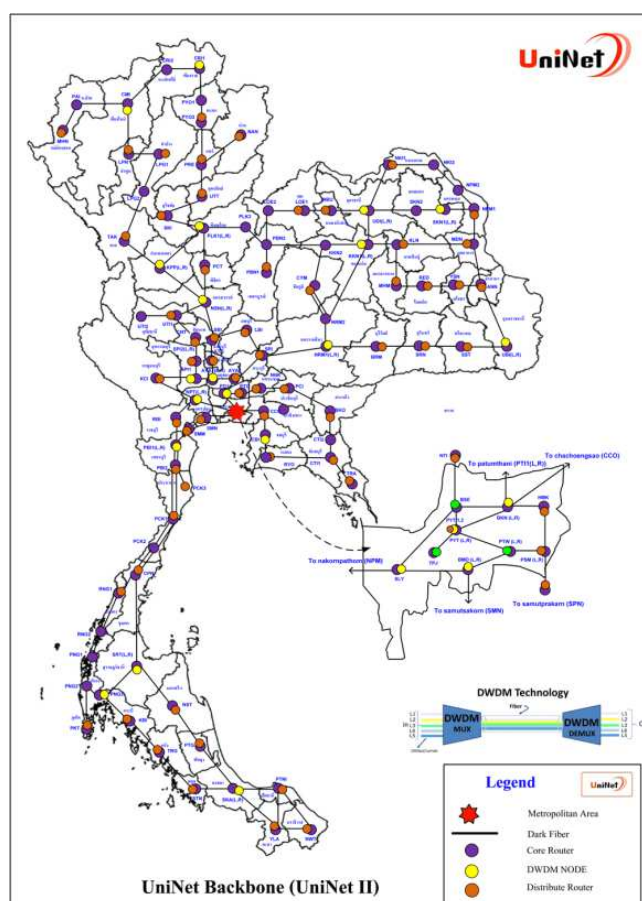


Figure 2-24: Thailand's UniNet Network

²⁵ <http://webapp.uni.net.th/UniNet/index.php>

2.7.2.5. One Tablet Per Child (OTPC)

One Tablet Per Child (OTPC) Project is operated by MICT as per the Cabinet's assignment in 2013. MICT takes charge to provide tablets, Wi-Fi network, network security, and project management to concerned parties. Currently, the total 858,885 tablets valued approximately 80,000 USD have already been distributed to students in schools all over the country through various related agencies such as Ministry of Education, Office of the Basic Education Commission, Office of the Private Education Commission, Office of the Higher Education Commission, Border Patrol Police, Bangkok Metropolitan, and Pattaya City.

2.7.2.6. Wi-Fi Network for OTPC

Wi-Fi Network for OTPC Project provides Wi-Fi network connection and access point equipments and log file systems in response to the Computer Crime Act B.E. 2550 to support tablet usage of students in schools. The project is starting operation with primary schools in 2013 and high schools in 2014. In this regard, TOT Public Company Limited and CAT Telecom Public Company Limited take the role for actual implementation.

2.7.2.7. e-Government Services via mobile phones

According to the National Statistics Bureau (NSB), the use of mobile phones in Thailand is increasing, supported by the NSB survey in 2012 with the finding that 70.2% of Thai population has mobile phones. The Thai Government, therefore, puts efforts to provide e-services on mobile phones for people's access to government services, such as:

1) e-Filing by the Revenue Department

An e-Filing service, initiated by the Department of Revenue, Ministry of Finance, is provided for people to pay taxes via mobile phones / smart phones. The people who want to pay taxes through the e-filing system must have the application installed in the handset before using the e-filing service through smart phones without cost.



Figure 2-25: E-Filing for Tax Payment by Revenue Department

2) **Traffic Voice Information Service** by National Electronics and Computer Technology Center (NECTEC)

Traffic Voice Information Service is an automatic system that reports traffic information in Bangkok. With an integrated speech recognition system, TVIS allows a user to request information via voice. To obtain traffic information, the user can say the name of a major road in Bangkok. Moreover, TVIS can retrieve the image from a nearby CCTV to show traffic situation. Application that centers around traffic information on Android platform. Traffroid is an application that aggregates traffic news and information throughout Bangkok to your device. Traffroid offers traffic news including road closure, incident, accident news and photo feeds from several CCTVs and VMS board installed in Bangkok and its vicinities. This data is provided by Traffy from NECTEC.

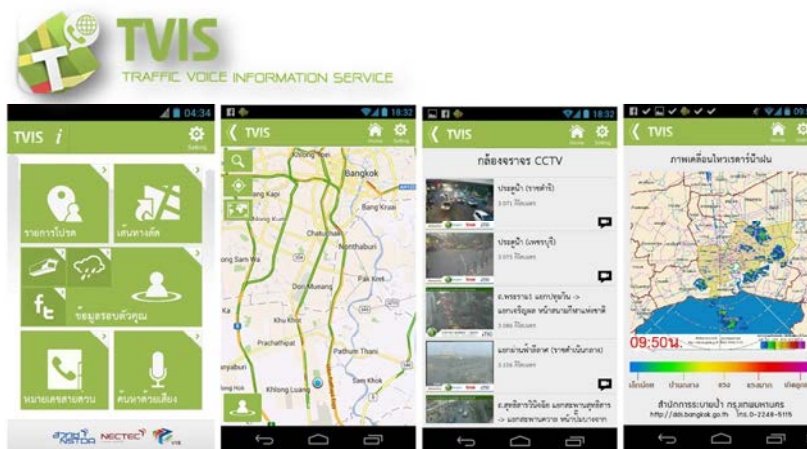


Figure 2-26: Traffic Voice Information Service <<http://www.tvis.nectec.or.th/>>

3) Royal Rain (Fonluang) Making Information Service by Ministry of Agriculture and Cooperatives

The Royal Rain Project initiated by His Majesty King Bhumibol Adulyadej as the pioneering work in rain-making to relieve drought and to increase water reservoirs has been collaboratively implemented by Bureau of Rainmaking and Agricultural Aviation and ICT Center under the Ministry of Agriculture and Cooperatives to provide three main information services: daily temperature and weather reports in various provinces of Thailand; target and operating areas for rainmaking in various regions around the country; and information about the royal rain making (www.royalrainmaking.thaigov.net)

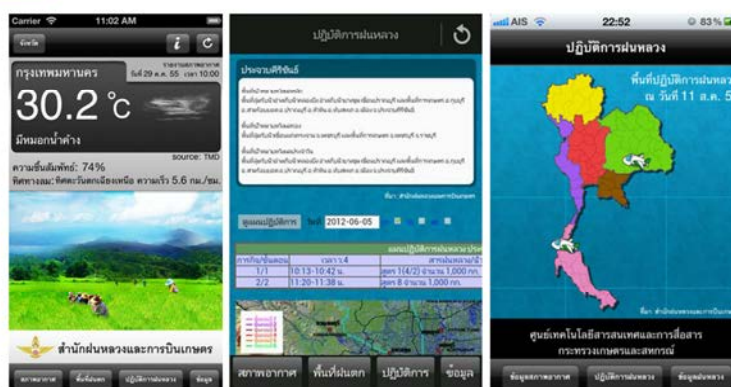


Figure 2-27: Royal Rain (Fonluang) Making Information Service

4) Water4Thai by the Secretariat of the Prime Minister

Office of the National Water and Flood Management Policy has developed e-service called 'Water4Thai' for people to access information of water situations in Thailand through their mobile phones.



Figure 2-28: Water4Thai by the Secretariat of the Prime Minister

5) Thailand Government Hot line by the Office of the Prime Minister

Thailand Government Hot Line is established to enhance citizen inclusion in government work. It is open to receive complaints, petition, criminal notification, comments and opinions from people through such channels as mails, telephone calls, fax, and the web site “www.1111.go.th” for all time with timely response from the Government.



Figure 2-29: Web Page of Thailand Government Hot line www.1111.go.th

6) Smart Province by Electronic Government Agency (EGA)

The Smart Province Project has started by running a pilot project at Nakhon Nayok province under the Smart City initiative to allow the general public to have easy access to the government services through the assistance of effective IT system, according to the MOU between the MICT and Ministry of Interior. At present, the progress of the Smart Province Project has achieved 70% of the target. Progress in the three areas is as follows:

- a. IT infrastructure in Nakhon Nayok Province: government agencies in the province now have access to information via GIN which is linked with the Provincial Administration office and four Amphur offices. Government Cloud is also implemented as a channel to distribute information related to the province (www.ny-thailand.net). E-Saraban is also available on Government Cloud.

- b. IT System: to increase public service efficiency, especially via MailGoThai, Web Conference System and Tele Presence System which is under development
- c. Significant information service: Through Smart Box in each village, the general public can access to Department of Public Administration, Social Security Office, National Health Security Office, Department of Agricultural Extension, and Ministry of Education. EGA is working with Nakhon Nayok in preparing for Smart Box installation in cooperation with stated government agencies and prototype development

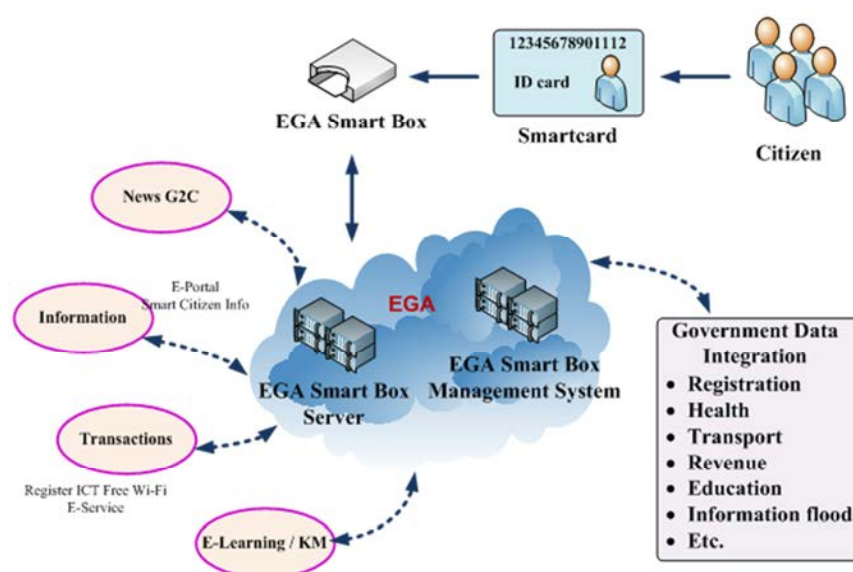


Figure 2-30: Service on EGA Smart Box

In summary, the Thai Government has continuously improved infrastructure access for the general public nationwide so that it can exploit all possible delivery channels to provide services/e-services and information to as many people as possible, particularly the disadvantaged and vulnerable groups. The e-service provision through multi-channels is expected to respond to diverse needs and demands of citizens nationwide.

2.8. Conclusion

The results of the studies on existing e-government services and infrastructures and other topics related to e-government interoperability are summarized as shown in the below Table. These will be based on for further analysis and recommendations for the subsequent reports respectively. The topics of draft privacy and data sharing privacy and draft supplier management guidelines for ensuring interoperability will be studied and presented in the next report.

Study Topics	Existing Status / Findings
1. E-Government-Related Infrastructure	<p>Government Information Network (GIN) - a national information network for government of Thailand</p> <ul style="list-style-type: none"> - developed as a national information network for government to connect all public administrative agencies and to enhance online communication and e-services in the government sector - based on GIN2.0 platform & IPv6 standard to enhance e-government interoperability - connecting all 20 ministries (already 1,199 offices + more 850 agencies in 2012) electronically - expanding connectivity to district administrative agencies in the provinces by 2013 - ‘SuperGIN’ considered as extensible &superhighway version <p>Cloud Computing Service for Government Agency Electronic Government Agency (EGA) has implemented Cloud Computing technology to enable government agencies to optimize available resources and achieve high efficiency. EGA implemented the website to provide information related to Cloud Computing-base services http://cloud.ega.or.th/index.php and arrange trainings for representatives of interested organizations. At present, 33 organizations are using Cloud computing services</p>
2. E-Government Services	<p>Thailand’s progress on e-services development based on the four development stages set out by U.N.</p> <p>Stage 1 - Emerging Information Services - All 20 ministries & a group of independent agencies have achieved full development (100%) of their web sites to provide basic and necessary information as per the U.N.’s guide</p> <p>Stage 2 - Enhanced Information Services – The progress of web site development by government agencies at stage 2 for delivering simple two-way communication between government & citizen is at the average of 82%. The range of development of all ministries is 52-92%.</p> <p>Stage 3 – Transactional Services - The progress of web site development by government agencies at stage 3 is at the average of 33% for providing e-transaction services. Only 2 ministries can advance their web site development up to 50% while the other 18 ministries can do it within the range of 6-48%</p> <p>Stage 4 - Connected Services - The progress of web site development by government agencies at stage 4 is at the average of 22% for providing connected services. The range of development of all ministries is between 6-40%.</p> <p>The overall average score of e-services development in Thailand is 45%. Among all 20 ministries and a group of</p>

Study Topics	Existing Status / Findings
	<p>independent public agencies, there are <i>10 government agencies able to advance their online service development above the average while the other 10 agencies and the group of independent public agencies are below the average.</i></p> <p>e-Government Portal www.egov.go.th - offers one-stop e-Service center which can be accessed through SMS and Web Portal, etc. The system serves as an efficient tool for the government to communicate with various agencies, the business sector and the general public. There are presently 25 systems linked to e-Government Portal through the Single Sign-On system to enhance e-services.</p>
3. Citizen Inclusion/ E-Participation	<p>Thailand's progress on implementation of e-participation based on the U.N.'s three levels of e-participation</p> <p>1. E-Information : The government websites contains these information: Government structure; policies & programs; points of contact; laws/regulations/other information of public interest; community networks; blogs; web forums; newsgroup; and e-mail lists.</p> <p>2. E-Consultation: The government websites activate the followings: Online polls; online surveys or feedback forms; chat rooms/instant messaging/blogs</p> <p>3. E-Decision Making: The government websites use these tools for people engagement in decision making processes: Government officials respond to citizen Input & online petition.</p> <p>In summary, the Thai Government has adopted citizen inclusion/e-participation as a key in providing citizen-centric service and tried many ways to improve it to the maximal level.</p>
4. Thailand's Business Cases of Interoperability	<p>Thailand National Single Window (TH-NSW) - developed to facilitate trade transaction & streamline import-export processes with estimated logistic cost savings of 1.5 billion USD/year. The project has involved 36 government agencies for implementation.</p> <p>Agriculture Disaster Relief Information System (Aggie DRIS) - developed to enable data interoperability of 7 public agencies to streamline the process for suffering farmers to receive financial assistance from the government more speedily and precisely.</p>

Study Topics	Existing Status / Findings
	<p><i>e-Saraban or e-Document</i> - developed as the government information and document exchange system for the benefits of time and cost reduction.</p> <p><i>National Research Council of Thailand</i> - to promote integration of national research information to enhance research data interoperability across agencies in accordance with TH-eGIF strategic agenda and public opinions on research system reform.</p>
<p>5. E-Government Interoperability Frameworks and Models</p>	<p><i>E-government interoperability models</i> based on goals & levels of interoperability (U.S. Study):</p> <ul style="list-style-type: none"> - Technical Interoperability for <i>data exchange</i> (base interoperability level) - Semantic Interoperability for <i>meaning exchange</i> (above the technical interoperability level) - Organizational Interoperability for the goal of <i>process agreement</i> (the top interoperability level) <p>Influencing Factors for E-Government Interoperability Models (U.S. Study): Legal factors; Political factors; Socio-cultural factors</p> <p>Thailand e-Government Interoperability Framework (TH e-GIF) Six elements of TH e-GIF: 1) Political Will; 2) Inter-Agency Collaboration & Social/Cultural Change; 3) Legal Power; 4) Process Agreement; 5) Meaning Exchange Agreement; 6) Technical Development</p> <p>Many countries are moving toward an integrated unified whole-of-government model aimed at centralizing the entry point of service delivery to single portal where citizens can access all government-supplied services, regardless of which government authority provides them. Based on those international e-GIF models and whole-of-government approaches, TH e-GIF contains all elements necessary for effective development and implementation of e-government interoperability system to provide efficient and effective public service delivery.</p>
<p>6. Governance Model for Ensuring Interoperability and Data Sharing</p>	<p>Governance model based on a project management principle that divides a project into 5 phases is the suggested reference model mostly accepted by government agencies in Thailand:</p> <p>Phase 1 - Inception Phase: To achieve consensus on the project objectives and to obtain funding with the primary focus on the initiating and planning processes</p> <p>Phase 2 - Elaboration Phase: To study, analyze, design and mutually agree on new business process/new system</p>

Study Topics	Existing Status / Findings
	<p>based on new requirements</p> <p>Phase 3 - Planning Phase: To help manage time, cost, quality, change, risk and issues to ensure that the project is delivered on time and within budget</p> <p>Phase 4 - Construction Phase: The phase where system developers work technically in more detail to design, develop the system to the point where it is ready for pre-production testing, and install the required interoperable systems, networks, software and hardware</p> <p>Phase 5 Adoption Phase: Describes the acceptance and bringing into use of a new product or innovation</p>
<p>7. Multi-Channels for Public Access in Thailand</p>	<p>Multi-Channels for Public Access to Government Services in Thailand</p> <ul style="list-style-type: none"> - Household well equipped with ICT and increasing use of computers, internet, and mobile phones - Thailand’s Government Projects to enhance public access to government services <ul style="list-style-type: none"> o ICT Community Learning Center o Universal Service Obligation (USO) o SchoolNet Thailand o University Network (UniNet) o One Tablet Per Child (OTPC) o Wi-Fi Network for OTPC o E-filing (for tax payment via mobile phone) o Traffic Voice Information Service (via mobile phone) o Royal Rainmaking Information Service (via mobile phone) o Water4Thai (via mobile phone) o Thailand Government Hot line (1111) www.1111.go.th (for online petition) o Smart Province (enhancing public access from provincial areas to government services) <p>In summary, the Thai Government has continuously improved infrastructure access for the general public nationwide so that it can exploit all possible delivery channels to provide services/e-services and information to as many people as possible, particularly the disadvantaged and vulnerable groups. The e-service provision through multi-channels is expected to respond to diverse needs and demands of citizens.</p>

Section 3. Institutional Structures and Governance

3.1. Introduction

Development and implementation of e-Government initiatives inevitably lead to changes in existing agencies, structures, work processes, roles and responsibilities. Driving the changes to deliver a connected e-Government means pursuing a substantial shift in culture and the nature of relationships. If the roles and responsibilities of concerned parties for each stage of development are not well defined and the relationship between each group and position is not well understood, it may result in conflict and waste. Defined accountabilities and roles of each organizational unit (e.g. minister, department, division, staff) in a change process assist in shaping the overall network of inter-dependencies, reliance on resources, and timeframes for delivery and results. Leadership and commitment from the top of government are crucial to the change process.

The crosscutting nature of e-government makes it important to devise suitable institutional arrangements that can ensure coordination among various government agencies. For e-government to succeed, it will be important to establish organizational and institutional structures that can avoid duplication and waste, overcome departmental silos, and help achieving integration in order to offer citizen-centric services in an efficient and transparent manner.

This section presents the studies and analysis of current e-Government institutional structures and governance mechanisms in selected countries as the cases to learn their national institutional frameworks and models used to lead and manage their e-government programs. Those studies are based on the World Bank study on national e-Government institutional models in various countries, the studies of Institutional Structure for e-Government in the U.S.A., Republic of Korea, Singapore, Switzerland, and Vietnam. Also the existing e-government institutional structures and governance of Thailand are explored. Those comparative studies with selected cases will help us to learn the importance of best fit based on country circumstances and the need for continued institutional innovation for the benefit of proper applications to the case of Thailand.

3.2. Studies on e-Government Institutional Structures and Governance in Selected Countries

This part of case studies aims to present existing national institutional frameworks and models used to lead and manage e-government programs in several countries around the world so that the institutional and governance mechanisms to deliver e-government programs successfully are learnt for continual adaptation and application.

3.2.1. The World Bank Study on Models and Functions of National E-Government Institutions²⁶

The World Bank (2009) had surveyed and studied from various experiences of 30 developed and developing countries to learn the functions and models of national e-Government institutions. The report describes a national institutional framework used by governments to lead the e-government agenda and fulfill the key functions of strategy and policy making, governance and coordination, and facilitation of implementation, into four basic models. Those basic different models of national e-Government institutional frameworks are 1) Policy and investment coordination; 2) Administrative coordination; 3) Technical coordination; and 4) Shared or no coordination. These models ranged from highly centralized institutional structures to highly decentralized ones. However, the World Bank used these institutional models only for comparative analysis and for detecting patterns and trends in a rich, complex institutional reality. A regular mechanism for monitoring, updating, and evaluating countries' institutional arrangements is, therefore, suggested.

Model 1: Policy and Investment Coordination

This model works from the ministry of finance (or treasury, economy, budget, or planning) giving the entity responsible for governing and coordinating e-government activities direct access to the funding it needs. In addition, it enables easy control over funds required by other ministries in pursuing e-government goals set for them. It also facilitates integration of the e-government agenda with the country's overall economic development agenda. This model seems to work relatively well in countries that have a powerful central agency with cross-cutting mandates. It enforces policies and priorities through the budget process, yet allows effective decentralization of implementation. Most countries using this model started adopting e-government initiatives early on and made sustained commitments.

Model 2: Administrative Coordination

This model led by the ministry of public administration (or services, affairs, interior, state, or administrative reform) to coordinate e-government within the framework of their good governance agendas. It facilitates the integration of e-government efforts with administrative reform, simplification, and decentralization. It raises the visibility of the e-government agenda and encourages broad participation across agencies. This model is outcome-oriented rather than technology-driven.

²⁶ This part summarizes and directly extracts from *IC4D 2009: Extending Reach and Increasing Impact* (Chapter 6), 2009, The International Bank for Reconstruction and Development/The World Bank. Available at <http://www.worldbank.org/ic4d>

Model 3: Technical Coordination

This model is to govern and coordinate e-government activities under a technical ministry such as the ministry of ICT (or science and technology or industry) to address ICT issues. This approach to e-government is normally focused on infrastructure development.

Model 4: Shared or No Coordination

In this model, e-government development and implementation functions are distributed among existing ministries. Thus, each ministry is responsible for the part of the e-government strategy that falls within its field of expertise. This model does not involve any new coordination mechanisms and is the least politically demanding, making it the easiest to adopt for the short term. Funding for e-government activities comes from the ministries' budgets. However, agencies set up their own information systems—and in some cases, proprietary communications networks—leading to duplication and impairing information sharing. This approach is likely to result in uneven development across ministries and missed opportunities to leverage economies of scale in shared infrastructure, applications, and support services. The choice of institutional location for e-government governance and coordination may reflect more general tendencies or legacies: faced with a new challenge, a government may have a preference about where it locates responsibility. While administrative control can be wielded to ensure cross-agency coordination, placement of e-government responsibility under each model has clear advantages and disadvantages that should be borne in mind—and perhaps complemented by capacity building and cross-agency policy and strategy mechanisms.

Alternative Models

In addition to those four institutional models with focuses on the leading or central institution for e-government strategy and policy making, and governance and coordination, governments have increasingly created and experimented with new arrangements outside the ministerial structure—including establishment of ICT agencies and councils of CIOs—to overcome sectoral silos and civil service constraints and to create a new capability to engage various stakeholders and agencies in facilitating implementation of e-government

- *ICT agency*

Several countries have created dedicated executive ICT agencies in their civil services but have given them special autonomy and salary structures to attract and motivate the best technical talents. Such agencies prioritize investments and coordinate and monitor implementation of e-government, often under the

supervision of an inter-ministerial committee that sets policies and strategies. The chiefs of these agencies sometimes serve as national CIOs. Moreover, such agencies are often charged with developing mechanisms that encourage all stakeholders to become involved in e-government and the exchange of information, experience, and best practices through focus groups, workshops, seminars, and online tools.

Such an agency typically has a government-appointed board of directors, the chair of which reports directly to the head of state, and is composed of representatives of key stakeholders from the private sector and civil society. The agency's responsibilities may cover only the central leadership of e-government or extend to the entire range of the e-development agenda. The national chief information officer may be the chief executive of such an agency.

Having a focal ICT agency also makes it easier and more effective to focus on e-government goals. The creation of such an agency typically involves adopting comprehensive approaches to integrate e-government with broader development strategies.

- *Council of Chief Information Officers*

This approach combines centralized governance and coordination with decentralized implementation and ownership. The role of such councils has evolved and become increasingly critical to e-government development. These councils vary in mandate but often involve addressing common CIO concerns and challenges, such as investment planning, IT procurement practices, information security policies, and IT human resource development. They also have been engaged in CIO capacity development by providing inputs into defining core competencies, accrediting CIO education and training programs, and sharing information and best practices among CIOs. CIO councils are expected to play an increasing role in consensus building, vertical and horizontal communication, team-based problem solving, and knowledge sharing. National ICT agencies or CIO councils may help tap synergies and coordinate investments across all the key elements of e-development.

Model	Countries	Benefits	Drawbacks
<i>Policy and investment coordination</i> (cross-cutting ministry such as finance, treasury, economy, budget, or planning)	Australia, Brazil, Canada, Chile, China, Finland, France, Ireland, Israel, Japan, Rwanda, Sri Lanka, U.K., U.S.A.	Has direct control over funds required by other ministries to implement e-government. Helps integrate e-government with overall economic management.	May lack the focus and technical expertise needed to coordinate e-government and facilitate implementation.
<i>Administrative coordination</i> (ministry of public administration, services, affairs, interior, state, or administrative reform)	Bulgaria, Arab Republic of Egypt, Germany, Republic of Korea, Mexico, Slovenia, South Africa	Facilitates integration of administrative simplification and reforms into e-government	May lack the technical expertise required to coordinate e- government or the financial and economic knowledge to set priorities.
<i>Technical coordination</i> (ministry of ICT, science and technology, or industry)	Ghana, India, Jordan, Kenya, Pakistan, Romania, Singapore, Thailand , Vietnam	Ensures that technical staffs are available; eases access to non-governmental stakeholders (firms, NGOs, and academia).	May focus too much on technology or industry and disconnected from administrative reform.
<i>Shared or no coordination</i>	Russian Federation, Sweden, Tunisia	Least demanding and with little political sensitivity (does not challenge the existing institutional framework & responsibilities of ministries).	May lead to rivalries among ministries. No cross-cutting perspective. Fails to exploit shared services and infrastructure and economies of scale.
Alternative Models			
<i>ICT agency</i>	Bulgaria, Ireland, Republic of Korea, Singapore, Sri Lanka -- having adopted variations of central ICT agencies	Free from government bureaucratic requirements and flexible to react swiftly to changing demands.	May not receive political & financial support if not directly linked to a powerful ministry or prime minister's office. The public sector bureaucracy may reassert control over the agency. Political interference may reduce effectiveness of agency staff & undermine its businesslike culture.
<i>Council of Chief Information Officers</i>	Australia, Canada, Singapore, South Africa, U.K., U.S.A.	n/a	n/a

Remark: Extended Table based on the original source created by Hanna and Qiang 2009, IC4D 2009: Extending Reach and Increasing Impact (Chapter 6), World Bank

Table 3-1: Models for E-Government Institutions in Selected Countries

Functions of E-Government Institutions

The study summarizes key functions of effective e-government institutions into three areas which are strategy and policy making; governance and coordination; and facilitation of e-government implementation.

- *Strategy and policy making* – Strategy formulation process must be institutionalized to secure ownership and commitment to the strategy and to ensure that e-government goals, policies, and strategies are consistent with the country's overall development. Having an inter-ministerial committee chaired by the head of state indicates that high priority and leadership are given to e-government strategy and policy making.
- *Governance and coordination* – E-government institutions should be able to perform several governance and coordination functions include the followings:
 - Developing government-wide information infrastructure, shared networks, data centers, business processes, and one-stop service delivery centers
 - Formulating e-laws and frameworks for IT (information technology) governance
 - Mobilizing, prioritizing, and allocating resources for e-government infrastructure and services
 - Monitoring, evaluating, and communicating lessons of experience, providing feedback, and ensuring accountability.
- *Facilitation of e-government implementation* -- E-government institutions should facilitate partnership in e-government investments and operations and promote collaboration among government agencies for process innovation and integrated solutions. It is handled in most countries by a single ministry responsible for e-sector (vertical e-government) applications. Ministries involved with vertical or sectoral applications often need technical support to implement their e-services. A key function of e-government institutions is human resource development and capacity building to help government agencies absorb and manage ICT.

Common support services—such as IT human resources development, public-private partnerships, and IT procurement and contract management—may be provided by a specialized central agency. In some countries, ICT agencies or councils of chief information officers (CIOs) help share experiences and lessons across ministries.

Characteristics of e-Government Institutions

The study describes the characteristics of e-government institutions in 30 selected countries, as follows:

- Strategy formulation
 - no steering committee, or
 - by steering/inter-ministerial committee/office
- E-government program coordination
 - Policy and investment coordination (cross-cutting ministry such as finance, treasury, economy, budget, or planning)
 - Administrative coordination (ministry of public administration, services, affairs, interior, state, or administrative reform)
 - Technical coordination (ministry of ICT)
- Choices of Facilitators for implementation
 - No facilitator
 - Ministry of ICT
 - ICT agency under other ministries (e.g., public services, finance)
 - CIO council
 - Public-private partnership/quasi-public ICT agency

The below is the analysis of the characteristics of e-government institutions in Thailand:

- performing the strategy formulation through steering/inter-ministerial committee/office chaired by the head of government or cabinet office
- conducting the e-government program coordination based on the institutional models of policy and investment coordination led by the Ministry of Finance and also the technical coordination model lead by the Ministry of ICT to develop government-wide information infrastructures, shared networks, data centers, and common business processes and formulate e-laws and framework for IT governance
- having the Ministry of ICT as a facilitator of the e-government implementation

Country	E-government program coordination								
	Strategy formulation		Policy and investment coordination (ministry of finance, treasury, economy, budget, or planning)	Administrative coordination (ministry of public administration, services, affairs, interior, state, or administrative reform)	Technical coordination (ministry of ICT)	Facilitator of implementation			Public-private partnership/quasi-public ICT agency
	No steering committee	Steering/inter-ministerial committee/office				No facilitator	Ministry of ICT	ICT agency under other ministries (e.g., public services, finance)	
Singapore		X	X ^c		X ^{ab}		X ^{ef}	X ^f	
Slovenia	X			X ^{abcd}				X ^f	X
South Africa	X			X ^{abd}					X ^f
Sri Lanka	X		X ^{abc}						X
Thailand		X ^g	X		X ^{ab}		X		
Tunisia		X ^g	X ^g					X	
United Kingdom		X	X						X
United States		X	X ^{cd}						X ^{ef}
Vietnam		X			X ^{bd}		X		

Source: Authors' analysis.

Note: CIO = chief information officer.

a. Develop governmentwide information infrastructures, shared networks, data centers, and common business processes.

b. Formulate e-laws and frameworks for IT governance.

c. Mobilize, prioritize, and allocate resources for e-government infrastructure and services.

d. Monitor, evaluate, and communicate lessons of experience, providing feedback, and ensuring accountability.

e. Handle ICT procurement.

f. Process reengineering.

g. Chaired by the head of state, head of government, or cabinet office.

Source: IC4D 2009: *Extending Reach and Increasing Impact* (Chapter 6), 2009, *The International Bank for Reconstruction and Development/The World Bank*

Figure 3-1: Characteristics of e-Government Institutions –Thailand's focus

The study (World Bank 2009) presents, in conclusion, these observations and suggestions for further development of e-government institutional and governance mechanisms:

- Identifying **appropriate institutional functions and capabilities** should guide institutional development and capacity building efforts for better governance and coordination of e-government programs.
- **The appropriate level of centralization and decentralization** is a key consideration in the design of national e-government institutions. The balance is often determined by a country's general political and institutional architecture and the availability and distribution of local capacity.
- Another key institutional design issue is the **balance between**, on the one hand, **technological leadership** to invest in sound technologies and manage complex systems development projects and, on the other hand, **business and institutional leadership** to ensure general management ownership and true business process and service transformation. Shifts to recent and hybrid models suggest that e-government programs have evolved from computerization and online front-end delivery of

services to organizational transformation. Governments are experimenting with and learning to manage this new paradigm—but it has taken about a decade for leading governments to appreciate this paradigm shift.

- Another key lesson is the importance of **cross-sector partnerships**. Adopting a national e-government strategy will always demand a comprehensive policy approach. The cross-cutting nature of ICT makes it highly challenging to use traditional institutional arrangements that designate the entire agenda to a single ministry. E-government requires strong coordination of activities among various government agencies. Public leadership styles need to change from silo thinking and turf protection to management through collaboration and partnerships across agencies. Equally important is the need to build partnerships among government, the private sector, and civil society to account for the needs and capabilities of the private sector and civil society.
- **Top-down leadership and institutional coordination** must be **complemented by bottom-up collaboration and local initiative**. Centrally driven coordination alone will not be sufficient for e-government to mature and lead to continuous innovation in governance, service provision, and citizen participation. It must be complemented by bottom-up initiatives, knowledge sharing, and incentives for collaboration across bureaucratic boundaries. Implementation facilitation and peer-to-peer coordination are essential complements to central coordination. National e-government institutions and CIO councils are increasingly used to support their counterpart state- and municipal-level e-government institutions and councils. Countries continue to innovate and experiment with institutional arrangements to maintain an appropriate balance. These innovations should be identified, evaluated, and disseminated.
- **Further research** is urgently **needed** to understand the governance and institutional mechanisms needed to guide e-government.

3.2.2. E-Government Policy Structure and Governance Mechanisms in the U.S.²⁷

To answer the question of why e-government initiatives which are commonly implemented to achieve similar policy goals produce different outcomes in different countries, the study examines e-government policy structure, which has been regarded as one of the most important institutional arrangements for e-government promotion. This

²⁷ This part summarizes and directly extracts from *The Institutional Dimension of e-Government Promotion: A Comparative Study on Making 'Business Reference Model (BRM)' in the U.S. and Korea*, Seok-Jin Eom, Soon Chun Hyang University, NCDG (National Center for Digital Government) Working Paper No. 10-001, February 2010 --- The Business Reference Model (BRM) is one of the reference models of the U.S. Federal Enterprise Architecture framework considered a 'blue print' for building effective and efficient e-government both the U.S. and Korea

study examined the e-government policy structure of the Bush Administration in the U.S. The issues of organizational arrangements and managerial tools for control and coordination for e-government are parts of this study report.

Organizational Arrangements

Public organizations had participated in the e-government building process, carrying out their own functions as illustrated in the below Table. In addition, the departments or the agencies which were concerned with the e-government initiatives were designated ‘Managing Partners’ of the initiatives. For example, the Department of Education was the Managing Partner of ‘Online Access for Loans’, which was one of the initiatives of the ‘Government for Customers (G4C)’ area. The Managing Partners took charge of supporting implementation of e-government and mobilizing resources.

Agency	Functions
Department of Commerce (NIST)	- Establishing policies for IT standards
General Service Administration (GSA)	- Administrating E-Government Fund - Supporting CIO Council - Providing framework for interoperability of electronic signature
Office of Personnel Management (OPM)	- Analyzing the personnel needs related to IT and IRM - Identifying demand of information resource management, training, personnel needs - overseeing training methods and training on IT - assessing the training of Federal employees in IT disciplines
Office of Federal Procurement Policy (OFPP)	- Developing effective e-procurement - Supporting the innovative e-procurement policy
Office of Information and Regulatory Affairs (OIRA)	- Administrate information policy for federal government - Collaborating with Office of e-Government on e-government policy such as capital planning and investment control; the development of Enterprise Architecture (EA); information security; privacy; etc.
Each federal agency	- Complying with the requirements of the E-Government Act of 2002 - Ensuring that information resource management policies and guidance established - Supporting the e-government policy of OMB and GSA - Developing performance measures of e-government - Avoiding diminishing access - Enhancing the accessibility to people with disabilities - Sponsoring activities that use information technology to engage the public in development and implementation of policies and programs - Making and submitting E-Government Status Report - Taking responsibility to use or manage IT to deliver government information and services

Source: *The Institutional Dimension of e-Government Promotion: A Comparative Study on Making ‘Business Reference Model (BRM)’ in the U.S. and Korea, NCDG Working Paper No. 10-001, 2010*

Table 3-2: Roles and Responsibilities of Federal Agencies in the E-Government Building Process (2002)

The Office of E-Government assumed a leadership role for e-government building in the Bush administration. It was delegated its managerial tools via the legal framework and supported by the President's Management Council (PMC) as well as other Office of Management and Budget (OMB) staffs, members of the CIO, CFO, and Procurement Executive and Human Resources Councils.

In order to enhance its leadership, daily management and coordination, the Office of E-Government set its organizational structure as follows. First, the Office hired four Portfolio Managers for each of the four citizen segments: G2C, G2B, G2G, and Internal Efficiency and Effectiveness (IEE). Each portfolio manager reported to the Associate Director for E-Government and IT, who was responsible for overseeing progress in the field of E-Government initiatives. To promote coordination among e-government initiatives, portfolio steering groups were formed to focus on E-Government in cooperation with other federal management councils, federal agencies, local governments and the CIO Council. The Committees also support their corresponding portfolio manager, an OMB employee, who is responsible for making government more citizen-centered through daily interaction with the managing partners who they oversee.

Managerial Tools for Control and Coordination

a) Tools based on authority

The OMB developed several evaluation frameworks for control and coordination in e-government building. Firstly, the OMB developed the 'traffic-light' scorecard. With this framework, each federal agency's e-government initiatives results as well as other President Management Agenda (PMA) had been monitored over a quarter of a year. The results were reported during a cabinet meeting and related to the allocation of budget for e-government initiatives. In addition, the Office of e-Government developed evaluation framework only for e-government initiatives. For example, the indexes such as (1) Adoption/Participation; (2) Usage; and (3) Customer Satisfaction, were adopted for evaluating e-government initiatives. Moreover, the OMB set the midterm performance and production baselines for each e-government initiative and had monitored whether they were achieved or not. Particularly, in order to check each agency's implementation of the FEA, the Office developed an assessment tool for agencies to evaluate their enterprise architectures and for the OMB to monitor each agency's improvement of the FEA adoption

b) Tools based on budget

The Office of e-Government has used control and coordination tools based on budget. Firstly, the Office could utilize the e-Government Fund of the fiscal years under the E-Government Act of 2002. In the course of distributing the Fund, the Administrator of the

Office should establish procedures for accepting and reviewing proposals for funding and assist the Director in coordinating resources that agencies receive from the Fund with other resources available to agencies for similar purpose.”

Second, **the Office of e-Government strengthened its collaboration with the budget office of the OMB.** The two offices held regular meetings based on the E-Government Act of 2002 and discussed the status of e-government initiatives and budget allocations for them. This collaboration provided the institutional background for the ‘budget power’ of the Office of e-Government. That is, the budget threats were, to counter the resistance from agencies who were against the OMB’s e-government policy principles, have been used through the linkage of e-government initiatives and budget process.

Thirdly, **the evaluation frameworks** of the e-government initiatives were linked to budget allocations. The results of the evaluations were directly reflected in the up-coming year’s budget because they were carried out by the OMB. Hence the two types of the managerial tools have had a synergetic effect on performance management of e-government initiatives

c) Tools based on persuasion

The Office of E-government joined established committees and made new forums which were responsible for enhancing the degree of collaboration and sharing of experiences and information among federal agencies. First, the Office participated in the established committees. For example, it established a partnership with the President’s Management Council (PMC) whose members consisted of high-ranking officials in federal agencies. By that time, the first administrator in the Office of E-Government, let the members of the PMC participate in important decision-making processes, such as the selection of e-government initiatives, serving as representatives of each federal agency. In taking this approach, he tried to establish the political legitimacy of e-government policy.

In addition, the CIO council served as a cross-agency forum used to discuss e-government promotion. The Administrator of the Office should lead activities of the Council on behalf of the

Deputy Director of Management, a chairperson of the Council according to the E-government Act of 2002. The members of the CIO council also participated in a steering committee for the Office of E-government, which was intended to enhance collaboration related to e-government policy.

Second, the Office established new committees and forums. For example, it formed ‘Portfolio Steering Committees’ which served under the Administrator. The Committee members were from agencies that make up the project teams for each of the initiatives.

And the steering committees will advise agency program managers concerning their initiatives and help remove barriers to the implementation of the initiatives. In addition, the Office set the forum for each initiative. For example, Chief Architect Forum (CAF) was newly formed by the Office to encourage chief architects of agencies to share their experiences and advise the Federal Chief Architect at the Office throughout the course of implementing the FEA.

*E-Governance Structure for E-Government*²⁸

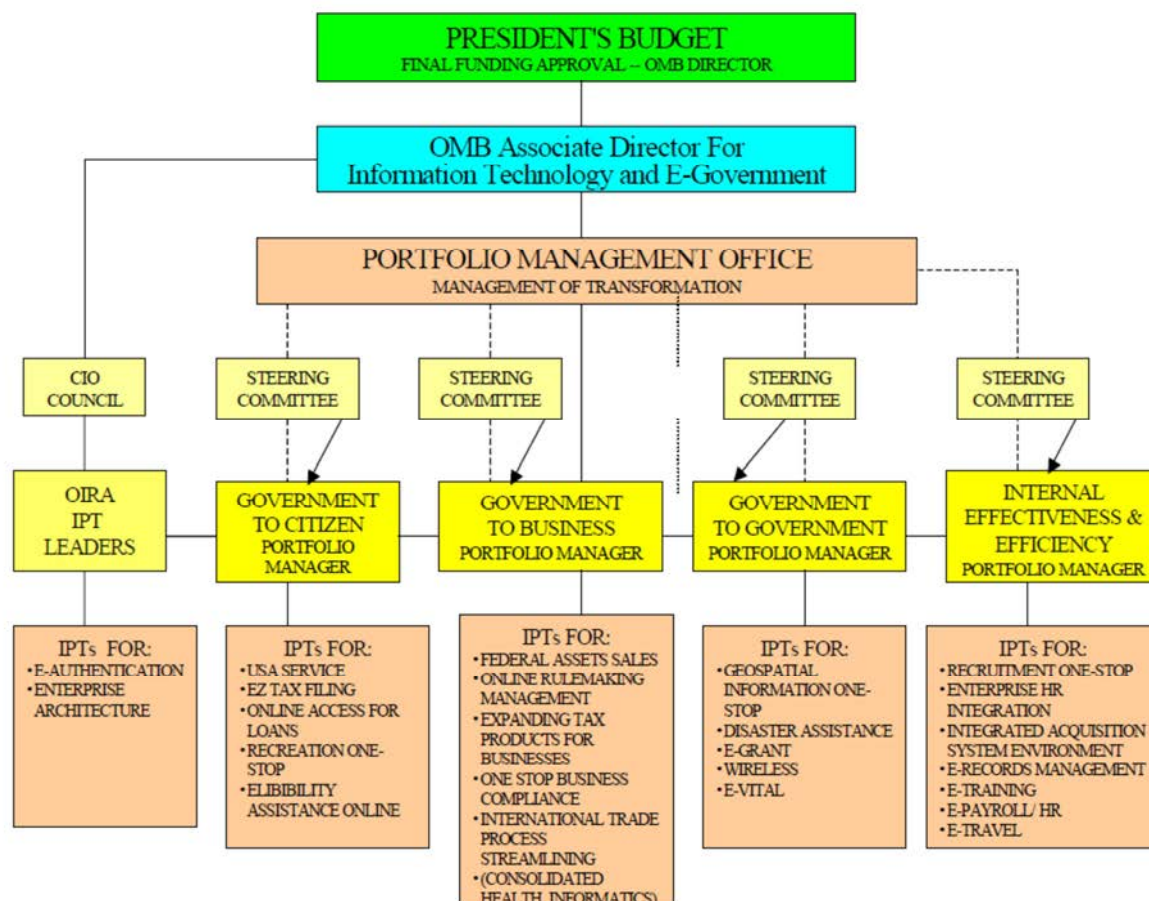
One of the most significant barriers to successful implementation of e-government is the resistance of organizations to change. To succeed will require an effective governance structure to overcome the barriers and implement the changes necessary. This includes substantial, long-term commitment by senior management. The Administration is using the President's Management Council (PMC) to ensure this management commitment.

PMC members volunteered to be “managing partners” for each of the initiatives. Other members volunteered to participate in those efforts as partners. The managing partners are establishing program offices to ensure that the initiatives are implemented, and the partners will cooperate in the planning and implementation of the initiative. OMB is overseeing this process and working with the agencies on adequate funding for the initiatives. Consequently, OMB has hired four Portfolio Managers, reporting to the Associate Director for IT and e-government, who are responsible for overseeing progress in the E-Government initiatives.

The PMC will also focus on organizational and process changes across government agencies to facilitate citizen-centered transformation. As such, the Council will be a key component of governance for the transformation of the federal government to e-government. To help this transformation, the CIO Council, with participation from the other federal management councils, will form portfolio steering groups to focus on e-government in each of the four citizen segments: G2C, G2B, G2G, and Internal Efficiency and Effectiveness. Portfolio Steering Group members will be from agencies that make up the project teams for each of the initiatives. In addition, the G2G Steering Committee will include representation from official state and local government organizations. The steering committees will advise agency program managers concerning their initiatives and help remove barriers to the implementation of the initiatives. The Committees will also support their corresponding portfolio manager, an OMB employee who is responsible for making government more citizen centered through daily interaction with the managing partners who they oversee.

²⁸ This part summarizes and directly extracts from *E-Government Strategy*, Executive Office of the President, Office Of Management And Budget, February 2002

Metrics will be used to track progress both for the agency and the cross-agency e-government. The President's Management Council will be closely involved and track e-government progress at its regular meetings. OMB will be working with Department and agency e-government leaders, as well as their CIOs, to ensure success. Progress will be tracked for each e-government initiative, and agency success and cooperation will be documented in the President's Management Agenda Scorecard.



Source: E-Government Strategy 2002

Note: CIO- Chief Information Officer, HR- Human Resources; IPT -Integrated Project Team

Figure 3-2: E-Governance Structure for E-Government, U.S.A. (2002)

3.2.3. E-Government Policy Structure and Governance Mechanisms in the Republic of Korea²⁹

This study examined the e-government policy structure of the administration in Republic of Korea. The issues of organizational arrangements and managerial tools for control and coordination for e-government are parts of the study report.

Organizational Arrangements

Several public organizations had participated in the e-government building process. The Special Committee, the Ministry of Government Administration and Home Affairs (MoGAHA) and the Ministry of Information and Communication (MIC) were the major actors in the process. The Ministry of Planning and Budget (MPB) was another important actor because it possessed budget power. In addition, other government agencies participated in e-government initiatives following the guidance and technological advice of the Special Committee, the MoGAHA, and the MIC. However, the Special Committee was lastly transformed into just an ‘advisory committee’ for e-government policy.

Managerial Tools for Control and Coordination

The only workable tool is the tool based on persuasion. The Special Committee itself was established for enhancing persuasion and coordination among government agencies, especially among the major departments related to e-government. The executives of the MoGAHA, MIC and MPB were included as representatives of ministries along with members from the private sector. The Special Committee with several subcommittees were established according to service fields. The team leaders were members of the Special Committee and high-ranked officials of ministries participated in the subcommittees. It was these sub-committees having restrictively enhanced the communications and collaboration among ministries in the course of e-government building.

3.2.4. Institutional Structure for E-Government of Vietnam³⁰

The development of e-government of Vietnam is aimed to ensure the timely delivery of necessary information and gradually provide online public services and one-stop shop

²⁹ This part summarizes and directly extracts from the *Institutional Dimension of e-Government Promotion: A Comparative Study on Making ‘Business Reference Model (BRM)’ in the U.S. and Korea*, Seok-Jin Eom, Soon Chun Hyang University, NCDG Working Paper No. 10-001, February 2010

³⁰ This part summarizes and directly extracts from *Institutional Structure and Enabling Environment for e-Government of the Government of Vietnam*, presented in the Workshop on Capacity-Building on Back Office Management for E/Mgovernment in Asia and the Pacific Region, 2008, United Nations Division for Public Administration and Development Management, Department of Economic and Social Affairs.

services to citizens and businesses at any time. This was seen to help its citizens and businesses work with government offices quicker, more convenient and timely. Therefore, to achieve the e-government development, the Government of Vietnam has reformed the organization, management, and supervision to make it more active, transparent, efficient and effective based on the comprehensive support of ICT and IT. It definitely included the direct participation and full commitment of the highest-ranking leaders in its development of e-Government.

In strengthening the organization, management and supervision, the Government of Vietnam had encouraged and promoted the following activities:

- Consolidating ICT application programs in government offices for the development of e-government in Vietnam to facilitate the management and supervision.
- Having the projects owned by ministries and localities working under the supervision and management of such ministries and localities.
- Strengthening the ICT National Steering Committee
- Having the Ministry of Information and Communications be the standing office.

The institutional structure for e-government of Vietnam is described as follows:

A. Ministry of Information and Communications (MIC)

The Ministry of Information and Communications of the Socialist Republic of Vietnam is the policy maker and state regulator in the field of press, publication; posts and postal delivery; telecommunications and Internet; transmission; radio frequency; information technology, electronics; broadcasting and national information infrastructure; public services of all sectors, fields under its legal functions.

Organization of MIC

(a) Consultative boards

- Department of Posts
- Department of Telecommunications
- Department of Information Technology Industry
- Department of Science & Technology
- Department of Planning & Finance
- Department of International Cooperation
- Department of Legal Affair
- Department of Organization and Human Resources
- Department of Inspection

- Ministry Office

(b) Functional units

- Radio Frequency Department
- Posts and ICT Quality Control Directorate
- Directorate for IT Application Promotion

(c) Member unit

- National Institute of Information and Communications Strategy
- National Institute of Software and Digital Content Industry of Vietnam (NISCI)
- Vietnam Internet Network Information Center (VNNIC)
- Posts and ICT Information Center
- Posts and Telecommunications Journal
- Vietnam Posts and ICT Newspaper
- Posts and ICT Publishing House
- Vietnam Public-utility Telecommunication service Fund
- Viet Nam Computer Emergency Response Teams (VNCERT)

(d) Enterprise

- Vietnam Multimedia Corporation (VTC)

Responsibilities of MIC to E-Government.

- 1) To manage and coordinate with concerned ministries and ministerial-level agencies in organizing information technology application in state agencies' operations
- 2) To submit to the Prime Minister for promulgation a national program on information technology application in state agencies' operations
- 3) To formulate professional criteria of ranks of information technology staffs
- 4) To assume the prime responsibility for formulating a standard design for national information systems
- 5) To coordinate with concerned agencies in guiding the formulation and effective implementation of information technology application projects in state agencies
- 6) Other tasks provided for in the Decree and relevant law

B. Ministry of Home Affairs (MOHA)

Responsibilities of MOHA to E-Government

- 1) To assume the prime responsibility for, and coordinate with the MIC in guiding the functions, tasks, powers and payroll of specialized information technology units in state agencies
- 2) To formulate and promulgate criteria of the title of chief information technology officer and guide ministries, ministerial-level agencies, government-attached agencies and provincial-level People's Committees to uniformly apply these criteria
- 3) To elaborate and promulgate regulations on the storage of digital information by state agencies

C. Government Office

Responsibilities of Government Office to E-Government

- 1) To assume the prime responsibility for, and coordinate with the Ministry of Home Affairs and concerned agencies in, providing for e-forms used for transactions among ministries, ministerial-level agencies and government-attached agencies
- 2) To assume the prime responsibility for, and coordinate with the Ministry of Home Affairs and concerned agencies in, guiding the improvement, standardization and application of common work processes so as to ensure synchronous work processes among state agencies

D. Government Cipher Committee

Responsibilities of Government Cipher Committee to E-Government

- 1) To assume the prime responsibility for elaborating, and proposing the promulgation of, legal documents on coding in information safety and confidentiality
- 2) To elaborate, and propose the promulgation of, standards and technical regulations on coding in information safety and confidentiality
- 3) To test, assess and certify coding products used in activities of state agencies
- 4) To put to operation systems to protect coded state secrets

E. Ministry of Public Security (MPS)

Responsibilities of MPS to E-Government

The Ministry of Public Security shall ensure security in information technology application; investigate and handle crimes in the information technology domain.

F. Ministries, ministerial-level agencies, government-attached agencies and provincial-level People's Committees

Responsibilities to E-Government

- 1) To elaborate, and organize the implementation of, five-year and annual plans on information technology application in their operations
- 2) To perform or request responsible agencies to perform defense and security tasks and other urgent tasks in accordance with law
- 3) To evaluate the impact of information technology on the fulfillment of their functions, tasks and powers, including:
 - a. Public administrative services
 - b. Labor productivity and efficiency
 - c. Renewal of organization and operation

G. Heads of state agencies

Responsibilities of Heads of state agencies to E-Government

- 1) To personally direct and take personal responsibility for information technology application in their respective domains, localities, organizations or agencies
- 2) To direct the elaboration of five-year plans and approve annual plans on information technology application in their respective domains, localities, organizations or agencies
- 3) To decide on measures for effective implementation of information technology application plans
- 4) To decide on the organizational apparatus, personnel and operation of specialized information technology units in their organizations or agencies

H. Systems of specialized information technology units in state agencies

Mandate

- 1) Ministries, ministerial-level agencies and government-attached agencies shall designate one subordinate unit to be in charge of information technology in their branches.
- 2) State management agencies in charge of information technology in provinces and centrally run cities shall act as specialized information technology units in their respective localities.
- 3) Ministries, ministerial-level agencies, government-attached agencies and provincial-level People's Committees shall specify the functions, tasks, organizational apparatus and operation of specialized information technology units in their respective branches or localities.

Major functions and tasks of specialized information technology units

- 1) To propose, elaborate, and organize the implementation of, five-year and annual plans on information technology application
- 2) To elaborate regulations and rules on information technology application activities in their respective branches or localities and submit them to heads of agencies for consideration and decision and organize these activities
- 3) To collect, store and process information in service of their agencies' leaders' direction and administration work
- 4) To manage, operate, and guide the use of, information infrastructure in service of direction, administration and professional work in their respective branches and localities; to assure technical and information safety
- 5) To build and maintain the operation of websites of their respective branches or localities; to organize and ensure technical issues for the provision of public administrative services

Chief information technology officers

Heads of specialized information technology units in state agencies shall hold the post of chief information technology officer and be responsible for organizing and administering information technology application activities.

Major tasks and powers of chief information technology officers

- 1) To directly advise and assist their agencies' leaders in formulating strategies, policies and plans on information technology application in their respective branches or localities

- 2) To organize and administer the implementation of information technology application plans already approved
- 3) To direct the elaboration of regulations and guidance on technical and professional management in information technology application in conformity with prescribed technical standards and regulations; to propose, and direct the formulation of standards and technical regulations on information technology
- 4) To participate in directing coordination with other state agencies in formulating and organizing the implementation of inter-sector information technology application projects

I. Coordination among state agencies

To encourage ministries, ministerial-level agencies, government-attached agencies and provincial-level People's Committees to realize information technology application initiatives, programs and projects, the coordination of two or more agencies aims at:

- 1) Enhancing compatibility between information infrastructures of state agencies
- 2) Facilitating e-transactions among state agencies and between state agencies and organizations or individuals

3.2.5. E-Government Governance in Singapore³¹

Singapore developed the first national ICT plans in 1980. Successive plans and e-government institutions have become increasingly broadened, deepened, and decentralized.

Singapore's e-government started in the early 80s with the goal of transforming the Government into a world-class user of information technology. The Civil Service Computerization Programme (CSCP) automated work functions and reduced paperwork for greater internal operational efficiencies.

Implementation of e-government in Singapore is led by the Ministry of Finance (MOF). As the e-government owner, MOF sets the policy direction on use of ICT in the Government, provides funding for whole-of-government programs and projects, and champions whole of government ICT initiatives.

Working closely with MOF, the Infocomm Development Authority of Singapore (IDA) acts as the Chief Information Officer for the Government (Government CIO). IDA was created in 1999 with the merger of the National Computer Board and the Telecommunications Authority of Singapore. The Authority operates under the Ministry

³¹ Source: <http://www.egov.gov.sg/about-egov-e-governance> and <http://www.ida.gov.sg>

of Information, Communications, and the Arts. As the Government CIO, it drives the implementation of Singapore's e-government action plan and provides the technical expertise for various e-government programs, under the guidance and oversight of the inter-ministerial E-government Policy Committee and the Ministry of Finance's E-government Office. IDA provides technical advice and recommendations, master planning and project management services to MOF and other government agencies in the implementation and management of e-government programs. It also plays a key role in defining government-wide ICT policies, standards and procedures and conceptualizing and managing whole-of-government projects.

The Assistant Chief Executive of IDA currently holds the position of the Government Chief Information Office (CIO) of Singapore. The responsibilities are to champion and oversee whole-of-government ICT initiatives to maintain Singapore Government's leadership position as an innovative user of infocomm technologies to provide public services; and to co-create and connect with its people.

To secure ownership of e-government by civil servants, the InfoComm Development Authority has been empowering public officers with training and resources for ICT-enabled innovation and knowledge sharing. The InfoComm Education Program was launched to equip officers with needed ICT skills, and the Knowledge Management Experimentation Program provided seed funding to encourage public agencies to pioneer knowledge management projects that nurture knowledge sharing. Some of the technical expertise developed in the public sector under the InfoComm Development Authority was subsequently transferred to semipublic enterprises such as National Computer Services to deliver e-government advisory services beyond Singapore³².

Meanwhile, every government agencies also appoints the agency CIOs who are responsible for agency-specific infocomm technologies, infrastructure and services within their own organizations. Agency CIOs assist Permanent Secretaries of Ministries, Heads of Organs of State and Chief Executive Officers of Statutory Boards to

- articulate the organization's vision in the exploitation of ICT;
- align ICT policies, standards, projects, systems and infrastructure with those of the central authority, to meet business needs and priorities;
- provide leadership in the planning and prioritization of IT initiatives, in alignment with the eGov2015 master plan
- ensure appropriate management attention, manpower and monetary resources are given to implement infocomm technology initiatives.

³² Hanna and Qiang 2009, IC4D 2009: Extending Reach and Increasing Impact (Chapter 6), World Bank

3.2.6. Institutional Structure for e-Government Implementation in Switzerland³³

Institutional Structure

The organizational structure for implementation of the ‘e-Government Strategy Switzerland’ is governed as follows by the Framework Agreement under Public Law on e-Government Cooperation in Switzerland.



Figure 3-3: Organizational Structure for Implementation of e-Government Strategy in Switzerland

Steering Committee

The Steering Committee is responsible for the coordinated implementation of the e-Government Strategy Switzerland. A Steering Committee with three high-ranking representatives each from the Confederation, the cantons (provinces/districts), and the municipalities constitutes the core of this organization.

Members:

- Federal Councillor, Federal Department of Finance (FDF) -- Chair
- Federal Councillor, Federal Department of Economic Affairs (FDEA)
- Federal Chancellor, Federal Chancellery (FC)
- Governing council, canton of Jura
- Governing council, canton of Lucerne
- State writer, canton Thurgovia

³³ Source: <http://www.egovernment.ch/en/index.php>

- Cantonal Councillor, Member of the Committee of the Swiss Association of Municipalities
- President of Municipality of Tobel-Tägerschen (TG)
- President of City of Winterthur (ZH)

Responsibilities:

According to the Framework Agreement, the Steering Committee has the following responsibilities and powers in particular:

- 1) Define and update the Catalogue of Priority Projects (services and prerequisites).
- 2) Designate lead organizations for the implementation of priority projects and, where necessary, supports in the drafting of special agreements
- 3) Take note of the special agreements submitted to it by the lead organizations.
- 4) Steer and monitor implementation of the Strategy, in particular, also the elaboration of laws, and decide on updated planning and implementation instruments, and periodically review the progress of implementation.
- 5) Mediate disputes between contracting parties, advocating an amicable settlement.
- 6) Brief the Federal Council, the Conference of the Cantonal Governments (CCG), the Association of Cities, the Association of Municipalities, and other interested bodies on its decisions.
- 7) Designate the members of the Advisory Board

Advisory Board

The Advisory Board is composed of a maximum of nine experts from administration, the private sector, and academia. It advises the Steering Committee, the Programme Office, and the organizations in charge of implementation projects on legal, technical, and organizational issues. The Delegate for Federal IT Steering is member of the Advisory Board.

Members:

- Representative of Federal IT Steering Unit (FITSU) -- President
- Representative of Federal Office of Justice (FOJ)
- Representative of Cantonal administration of Fribourg
- Representative of Swiss Federal Statistical Office (FSO)
- Representative of City of Bülach
- Representative of “Centro sistemi informativi (CSI)”, Ticino
- Representative of Competence Centre Public Management and E-Government, Bern University of Applied Sciences

- Representative of LeShop.ch
- Representative of State Secretariat for Economic Affairs (SECO)

Responsibilities:

According to the Framework Agreement, the Advisory Board has the following responsibilities:

- 1) Review the technical aspects of the upcoming agenda items and projects, and issue recommendations to the Steering Committee.
- 2) Advise the Program Office and the lead organizations on the implementation of priority projects with respect to technical, and organizational questions.

Program Office

As the administrative unit of the Steering Committee, an e-Government Switzerland Program Office contained within the Federal IT Steering Unit (FITSU) will coordinate implementation of the strategy.

Office Staff / Collaborators:

- Manager of Program Office E-Government Switzerland
- Program-Monitoring
- Program-Communication
- Project Manager

Responsibilities:

According to the Framework Agreement, the Program Office has the following responsibilities:

- 1) Prepare the agenda items of the Steering Committee and the Advisory Board and keep minutes of the meetings, and monitor implementation of the decisions of the Steering Committee
- 2) Act as the contact point for lead organizations and is responsible for the development and cultivation of the network of relationships with the cantons and the involved federal offices.
- 3) Support the lead organizations in their preparation of special agreements and, in cooperation with the Swiss IT Conference (SIK/CSI), supply financing models and sample contracts.
- 4) Ensure the necessary transparency through appropriate communication measures, maintain and update the implementation instruments on behalf of the Steering Committee and publish them on the internet.

- 5) Work together with the Conference of Government Chancellors and the Secretariat of the SIK/CSI as a communication and coordination hub for the cantons and the municipalities.
- 6) Ensure controlling of the implementation of the e-Government Strategy.
- 7) Observe the e-Government activities in Switzerland and abroad, and identify duplications and potential synergies
- 8) Submit an annual report on the status of implementation to the Steering Committee.

Project Leader Organizations

Due to the diversity of the priority projects in the e-government catalogue, sponsorship and financing are defined in accordance with the applicable demands and, where necessary, set out in a special agreement. For this purpose, the Steering Committee designates lead organizations for each priority project. The suitable organizations are :

- those with suitable and sufficient resources and experience to take on the role;
- those whose scope of responsibilities covers such projects; and
- those which have already undertaken preparatory work for the project.

Responsibilities:

The responsibilities and powers of the lead organizations are governed by the Framework Agreement:

- 1) Designate their project leaders
- 2) Be responsible, in cooperation with other participating stakeholders, for lawmaking concept and a sustainable financing and organizational concept
- 3) Guarantee compliance with standards, monitor interoperability of the solutions developed, and regularly report to the Programme Office as part of a monitoring process on the status of work
- 4) May approach, via the Programme Office, the Advisory Board for technical support
- 5) may submit applications, via the Programme Office, to the Steering Committee for the financing of projects;

Partner Organizations

e-Government in Switzerland only works if all three levels of government (Federal Administration, provinces/districts, cities / municipalities) are linked and work together with associations, universities, and universities of applied sciences.

Controlling Process

The controlling process for the e-Government Strategy Switzerland encompasses information gathering and evaluation as well as the derivation and execution of corrective measures to steer implementation of the Strategy. As a steering instrument, it uses goal-oriented presentation of information to support the decision-making and steering processes.

There four dimensional control of management are:

- Implementation of priority projects
- Implementation of the Framework Convention in the cantons and municipalities
- Positioning of the e-Government Switzerland in international comparison
- Evaluation of e-government from the perspectives of target groups/end users

3.3. Thailand's E-Government Institutional Structures and Governance

This part explores what Thailand has and implements presently in relevance to e-government institutional structures and governance. And later, lessons learned and the best practices benchmarking will be compared with selected success cases such that some improvement and more effective mechanisms that best fits to Thailand's case can be further proposed in the subsequent report.

Relevant e-Government Development Strategies

The development of e-Government in Thailand has been driven and supported by certain policy frameworks and master plans, namely Thailand Information Technology (IT) Policy Framework (2001 – 2010), followed by Thailand Information and Communications Technology (ICT) Master Plans (2002-2006 and 2009-2012), and then currently the Thailand Information and Communications Technology (ICT) Policy Framework of 2011-2020, with the aim to manage government office systems for their enhanced efficiency and transparency and to create opportunities for people to access government services thoroughly and equally.³⁴ Those ICT policy frameworks and master plans laid the development strategies to promote the smart government and e-governance by establishing a central agency for driving e-government and setting the mechanisms for cross-agency collaboration and coordination between public and private sectors in delivering government services.

³⁴ Executive Summary, Thailand Information and Communication Technology (ICT) Policy Framework (2011-2020): ICT2020, May 2011. Available at <http://unpan1.un.org/intradoc/groups/public/documents/ungc/unpan048145~1.pdf>

The Thailand ICT Policy Framework for the year 2011-2020 (ICT 2020) had laid the strategy to build the smart government using ICT for government service innovation and good governance. This strategy aims to develop the smart government that is characterized by intelligence, integration, inclusion, and good governance, through the following activities:

- *Setting up a central agency responsible for driving e-government* by drafting a plan that will guide e-government and design the government ICT architecture to be used as the development framework for ICT systems of government agencies. It will also set ICT standards and implementation guidelines, with an emphasis on open standards, in order to allow different technologies to work together. Stipulate approaches in developing and providing common services which are needed for government agencies, to optimize resource use and participation in budget allocation for ICT and large ICT government projects. Approaches and methods should be set in encouraging cooperation between public and private sector in delivering government services.
- *Setting up and strengthening the Government CIO Council*, which will be composed of CIOs from various government agencies at the central and local levels.

The second Thailand ICT Master Plans for the year 2009-2012 had also laid the ICT development strategy of using ICT to improve governance in administration and services of government agencies.³⁵ A citizen-centric approach is adopted to provide services in an efficient, effective, transparent and fair manner and also participation from all relevant sectors is encouraged. An established central agency shall take charge of designing the government ICT architecture, devising a policy framework for information and information sharing, and setting needed ICT standards in line with global standards. This will allow all government agencies to link and exchange information in a united and efficient manner. In addition, the mechanisms to encourage collaboration between government agencies and with private sector need to be developed

Administrative decentralization from the center to the local level was an important issue in the 2007 Thai Constitution. It puts emphasis on promoting local governance, public participation and continuously increasing decentralization by giving power to local administrative organizations. The transfer of duties includes several areas such as public administration, human resource management, fiscal management, ICT infrastructure development and development of monitoring and evaluation systems. Public participation in the management of local administrative organizations has also been promoted, as appropriate. The role of ICT as an important tool will expand in helping to ensure that public

³⁵ Executive Summary, Second Thailand information and Communication Technology (ICT) Master Plan (2009-2012) (Revision), November 2008. Available at [http://eng.mict.go.th/images/stories/File/epublic/no10_Executive_summary\[Eng\].pdf](http://eng.mict.go.th/images/stories/File/epublic/no10_Executive_summary[Eng].pdf)

administration is transparent and accountable, with information that is accessible to the public. It will also help in providing a channel for the public to express itself and give input into decision-making by the government and local administrative organizations on various issues. This will have both positive and negative impacts on people's lifestyles, in accordance with the democratic approach. It will become a gathering hub that transcends limits and borders. Furthermore, it will also be a tool in strengthening individuals, communities and local areas, in matters related to politics, society and the economy. E-government is a primary mechanism in moving Thailand towards information society, and becomes an important tool in undertaking public administrative reform, allowing it to become more modern, more flexible and more effective.

e-Government Institutionalization

To drive the ICT development in Thailand, *Ministry of Information and Communication Technology (MICT)* was established in 2002 by the Bureaucratic Restructuring Act of B.E. 2545 (2002) with the following agencies and state enterprises under its aegis: Office of the Minister; Office of the Permanent Secretary; Department of Post and Telegraph; Meteorological Department; National Statistical Office; Software Industry Promotion Agency (Public Agency), TOT Public Company Limited, CAT Telecom Public Company Limited and Thailand Post Company Limited. Its duties concern with planning, promoting, developing, and conducting activities related to information and communication technology, meteorology, and statistics, and other civil services.

According to the above-mentioned Act of B.E. 2545 (2002), it is the Office of the Permanent Secretary of MICT (by the e-Government Promotion and Development Bureau) that has performed the duties to plan and promote the e-government development of Thailand and also coordinate among concern parties in both government and business sectors. In achieving this, the Office of the Permanent Secretary has undertaken several related flagship projects, including, for example, the Thailand e-Government Interoperability Framework (TH-eGIF) as a policy guide and methodology for developing SMART connected e-Government platforms that enable the seamless flow of information interchanges across government agencies for better government administration and better services to citizens in various sectors.



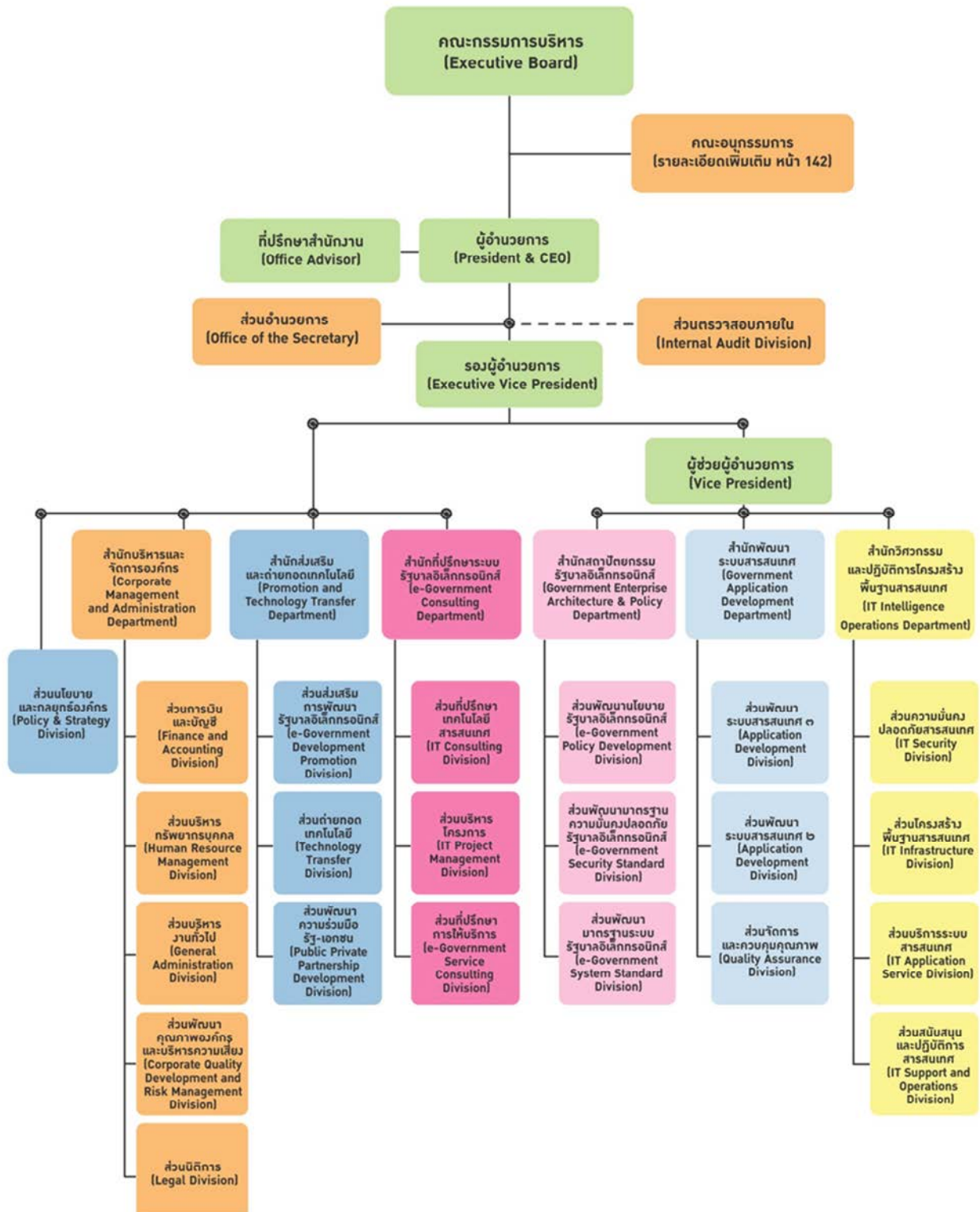
Source: MICT (2012)

Figure 3-4: Organizational Structure of MICT, Thailand

However, with the view to enable the government to materialize its policy for the best benefits of the public and business sectors, in 2011 the Cabinet approved the establishment of *Electronic Government Agency (Public Organization) (EGA)*³⁶ as a government body under the Ministry of Information and Communication Technology. Its main responsibility is to drive the implementation of electronic government activities, encourage the implementation of public online service and increase opportunities and equal access to the government services.

One of EGA's goals is to fulfill and increase security in the government's electronic services. Other responsibilities of EGA include the research, development and management of e-government infrastructure, architecture and standards for e-Government system. At the same time, EGA provides consultancy to government offices in applying information and communications technologies related to e-Government services to achieve a single standard that is in line with the international standard. Other than that, skill enhancement for IT personnel working in supporting the e-government services and proper information dissemination are under EGA's hands.

³⁶ Source: <http://www.ega.or.th>



Source: <http://www.ega.or.th>

Figure 3-5: Organization Structure of E-Government Agency (EGA), Thailand

Governance Mechanisms

Ministry of Information and Communication Technology of Thailand (MICT) also serves as the secretariat of the National ICT Committee that is chaired by the Prime Minister and responsible for initially approving national ICT policies prior to seeking official approval of the Cabinet. However, a mechanism is to be set for coordinating and linking the National ICT Committee with other national committees that are responsible for related work to ensure that moving forward the ICT development agenda and the overall implementation will be unified and make effective use of national resources.

A mechanism in coordinating work across agencies as well as across sectors effectively, leading to lateral integration is set to allow delivering services in a seamless manner, keeping a user-centric approach. National resources would be; therefore, used effectively, eliminating duplication, with a Government Chief Information Officer (CIO) Council in place. The Government CIO is expected as the central body in coordinating across ministerial works. It cooperates with the Government CIO Council and/or CIOs of government agencies in different areas, including in the preparation and review of the ICT budget. This is to ensure that the budget will be allocated efficiently and in accordance with the principle of good governance in management. For cross-sectoral ICT development, the ministries and public agencies with most relevant mandates will be assigned by the Cabinet to take charge of those specific sectoral missions and host the implementation of related tasks. The mostly-used mechanism is to set up an inter-agency committee for management and control.

MICT has taken the lead to develop governance mechanisms to establish the high-level management control and supervision in the implementation of e-government programs and for cross-agency collaboration and coordination with the private sector. In 2011, MICT set up the working group, comprising of representatives from ministries and businesses and chaired by the Deputy Permanent Secretary of MICT, to especially consider the governance mechanisms for effective e-government implementation in Thailand, in particular, the standardization of e-government interoperability to ensure the development of integrated services across government organizations for delivering citizen-centric public services.

The working group mutually agreed, after series of meetings, on the two options of managerial schemes for control and coordination of e-government implementation, depending upon the timeframe of bureaucratic process required for official approval. Those optional schemes are the establishment of either 1) the *Committee for e-Government Integration and Development* committee or 2) the *Committee for Standardization of Interchanged Government Information*.

The process in establishment of the Committee for e-Government Integration and Development committee is more complicated and takes some time since it needs to seek the Cabinet's approval while the establishment of the Committee for Standardization of

Interchanged Government Information can be approved with the authority of Ministry of Information and Communication Technology. However, the MICT has already proposed the first option to the Cabinet for consideration and is currently on-going process.

The composition and duties of both proposed committees are as follows:

- a) *Committee for e-Government Integration and Development* is proposed for establishment as a sub-committee under the National Information and Communication Technology Commission (NITC)³⁷ with approval of the Cabinet. The following composition and duties of the Committee are proposed:

Composition

- 1) Minister of MICT (Chairman)
- 2) Permanent Secretary of MICT (Vice Chairman)
- 3) CIO/Representative from Ministry of Finance
- 4) CIO/Representative from Ministry of Agriculture and Cooperatives
- 5) CIO/Representative from Ministry of Transport
- 6) CIO/Representative from Ministry of Natural Resources and Environment
- 7) CIO/Representative from Ministry of ICT
- 8) CIO/Representative from Ministry of Energy
- 9) CIO/Representative from Ministry of Commerce
- 10) CIO/Representative from Ministry of Interior
- 11) CIO/Representative from Ministry of Justice
- 12) CIO/Representative from Ministry of Labour
- 13) CIO/Representative from Ministry of Science and Technology
- 14) CIO/Representative from Ministry of Education
- 15) CIO/Representative from Ministry of Public Health
- 16) CIO/Representative from Ministry of Industry
- 17) CIO/Representative from Office of the Prime Minister
- 18) CIO/Representative from Office of the Public Sector Development Commission
- 19) Deputy Permanent Secretary of MICT (Secretary)
- 20) Director of e-Government Promotion and Development Bureau, MICT (Assistant Secretary)

Duties: The Committee shall perform the following duties:

- 1) Formulate/establish policies, strategies, and action plans of ICT development such as the development of Government Information Network: GIN), information standardization, CIO Council, funding approval for ICT projects

³⁷ National Information and Communication Technology Commission (NITC) established under the rule/regulation of the Office of the Prime Minister to oversee the country's ICT development and chaired by the Prime Minister

valued over 100 million bath, and settle solutions to related problems and obstacles

- 1) Formulate/establish policies to promote collaboration among partners and stakeholders or encourage agreements on ICT development among concerned agencies
- 2) Support, oversee, monitor and evaluate ICT development
- 3) Appoint working groups to perform specific assignments for the Committee

b) *Committee for Standardization of Interchanged Government Information* is proposed for establishment under the supervision and with approval of MICT. The following composition and duties of the Committee is proposed:

Composition

- 1) Permanent Secretary of MICT (Chairman)
- 2) Deputy Permanent Secretary of MICT (Vice Chairman)
- 3) CIO/Representative from Ministry of Finance
- 4) CIO/Representative from Ministry of Agriculture and Cooperatives
- 5) CIO/Representative from Ministry of Transport
- 6) CIO/Representative from Ministry of Natural Resources and Environment
- 7) CIO/Representative from Ministry of ICT
- 8) CIO/Representative from Ministry of Energy
- 9) CIO/Representative from Ministry of Commerce
- 10) CIO/Representative from Ministry of Interior
- 11) CIO/Representative from Ministry of Justice
- 12) CIO/Representative from Ministry of Labour
- 13) CIO/Representative from Ministry of Science and Technology
- 14) CIO/Representative from Ministry of Education
- 15) CIO/Representative from Ministry of Public Health
- 16) CIO/Representative from Ministry of Industry
- 17) CIO/Representative from Office of the Prime Minister
- 18) CIO/Representative from Office of the Public Sector Development Commission
- 19) Representative of e-Government Promotion and Development Bureau, MICT (Secretary)

Duties: The Committee shall perform the following duties:

- 1) Formulate/establish policies, strategies, and action plans of ICT standards for government information exchange, and settle solutions to related problems and obstacles
- 2) Support, oversee, monitor and evaluate ICT standards for government information exchange according to the national ICT strategic plan

- 3) Formulate, approve and announce implementation guidelines and standards supportive to government information exchange
- 4) Appoint sub-committee/working groups to perform specific assignments for the Committee

Other Related Institutional Mechanism for Large-Scale e-Government Project

This part of the report briefly discuss a specific case study about institutional inter-agency mechanism related to a very large-scaled connected e-government project. During the course of developing the Thailand National Single Window (TH NSW) as a strategic agenda for the electronic-logistics platform of the country, there is a number of critical factors that helped successfully establishing and operating it. To ensure the success of implementing a single window system, it is essential that the lead agency needs to collaborate with relevant entities from both Government and business communities, particularly in terms of business process analysis and reforms in order to simplify and streamline relevant business processes end to end. Acceptance of new business processes and reforms in the electronic operation environment needs to be discussed and agreed among relevant Government and business sectors through coordination. The setup of an Inter-Agency Committee is somehow a mechanism that helps.³⁸

The establishment of TH NSW was initiated in accordance with the Association of Southeast Asian Nations (ASEAN), in particular commitments laid out in the “Agreement to establish and implement the ASEAN Single Window”. According to this Agreement, 10 NSW systems of ASEAN Member States would be gradually integrated and operated in an electronic environment in line with the establishment of the ASEAN Economic Community (AEC) in 2015. In December 2005, the Government of Thailand appointed the Customs Department, Ministry of Finance to be the lead agency for establishing the National Single Window with other relevant agencies as partners.

As a lead agency, Customs Department initiated a working group to serve as an organizational mechanism to facilitate communication and coordination among NSW stakeholders including representatives from 36 regulatory agencies and at least 8 different business sectors. The working group had representatives from controlling government agencies as well as relevant trade and transport community. Two sub-working groups were formed. One worked on streamlining business processes and aligning data requirements. The other dealt with technical communication protocol and related security issues. With close communication among stakeholders, interests and expectations on the system were regularly addressed, managed and aligned by the lead agency.

³⁸ *Harnessing Interagency Collaboration in Interorganizational Systems Development: Lessons Learned from an E-government Project for Trade and Transport Facilitation*, Thayanan Phuaphanthong, Tung Bui, and Somnuk Keretho, International Journal of Electronic Government Research (IJEGR), 2010 (the research focuses on the organizational and managerial aspects of interagency collaboration in the implementation of a large-scale e-government project)

The need to improve efficiency and effectiveness of the national trade and transport facilitation system was strengthened after Thailand officially signed the Agreement to Establish and Implement the ASEAN Single Window. Such political commitment created a platform for interagency collaboration and strengthened the justification for budget allocation. After the need was perceived, most stakeholders of the NSW were identified. The Cabinet appointed a National Committee on Logistics Development (NCLD). NCLD consists of permanent secretaries from economic-related Ministers and representatives from trade-related associations. NCLD's members are responsible for planning and monitoring sub-projects carried out under each ministerial boundary. While the engagement of NCLD in the project reinforced strategic integration and thus mutual commitment among high-level decision-makers, the appointment of NCLD was a tactical move. The commitment at this level made relevant stakeholders accountable to the project and obligated them to render collaboration.

The Cabinet also appointed a linkage team to lead and manage the project implementation, particularly the development of the NSW exchange system and the integration of other components with the NSW exchange system. The appointment was based on existing organizational role, responsibility, and capability. Recognizing that Customs Department possesses in-depth knowledge of the business domain and relevant technologies, the Cabinet designated Customs Department as a lead agency to coordinate/lead NSW implementation and drive the information exchange between Thailand's NSW and NSWs of other ASEAN countries. The Cabinet also designated Ministry of Information and Communication Technology (MICT) as an agency responsible for managing projects, handling allocated budget, and identifying the best appropriate business model for a smooth operation of NSW. Nevertheless, having one agency in charge of the implementation and another in charge of the project management has proved to be a disadvantage. The ministerial bureaucracy held back budget allocation that lead to project implementation delay.

The Thailand Single Window e-Logistics was renamed as the Thailand National Single Window in January 2008 in order to enhance understanding of the single window development and facilitate integrated data linkage among government and business sectors as well as resource mobilization related to National Single Window and ASEAN Single Window implementation.

3.4. Conclusion

The basic different models of national e-government institutional frameworks, according to the U.N., are 1) Policy and investment coordination; 2) Administrative coordination; 3) Technical coordination; and 4) Shared or no coordination. These models ranged from highly centralized institutional structures to highly decentralized ones. In addition to those four

institutional models, there are new arrangements outside the ministerial structure which are establishment of ICT agencies and CIO councils. The governance could be performed using managerial tools for control and coordination such as tools based on authority, tools based on budget, and tools based on persuasion.

The existing Thailand's models studied by the U.N. are policy and investment coordination and technical coordination with the establishment of CIO Council. There is the Steering/Inter-ministerial Committee to undertake the strategy formulation and MICT as the facilitator of implementation.

The institutionalized structures to lead and manage e-government programs have mostly engaged top political leadership in their e-government programs. Responsibility for overseeing and implementing the e-Government initiatives has been variously allocated, depending on the level of accountability assigned to ministers for the e-Government strategy. Many countries have pursued a decentralized model for project implementation, within a "controlled" environment that has been centrally defined, agreed, and facilitated, e.g. principles of design using process reengineering, whole-of-government procurement, compliance with enterprise architecture principles and technology standards, and regular reporting on performance and progress³⁹.

The next project study will be on the topics of mechanisms for cross-agency collaboration and collaboration with private sector, collaboration tools/dashboards, and capacity building and training, and the results will be presented in the next report.

³⁹ *infoDev*/World Bank, 2009. e-Government Primer, Washington DC; *infoDev*/World Bank. Available at <http://www.infodiv.org/publications>

Section 4. Innovation in Public Services

4.1. Introduction

The objective of this chapter is to present several approaches and successful case studies on innovation in public services enabling by ICT around the world. Prior to that, the topic of advancement of e-government initiatives of foreign countries is, however, briefed to give backgrounds that may probably influence them to conceptualize ‘innovation’ for leveraging their public services. The current organizational structure fostering the innovation in Thailand is also reported to conceptualize innovation that shall be suitable to Thailand’s context in term of government services enhancement. Meanwhile, the matters of strategy and actionable recommendations on fostering future ICT-enabled innovation in the delivery of public services in Thailand will be formulated accordingly in the subsequent report.

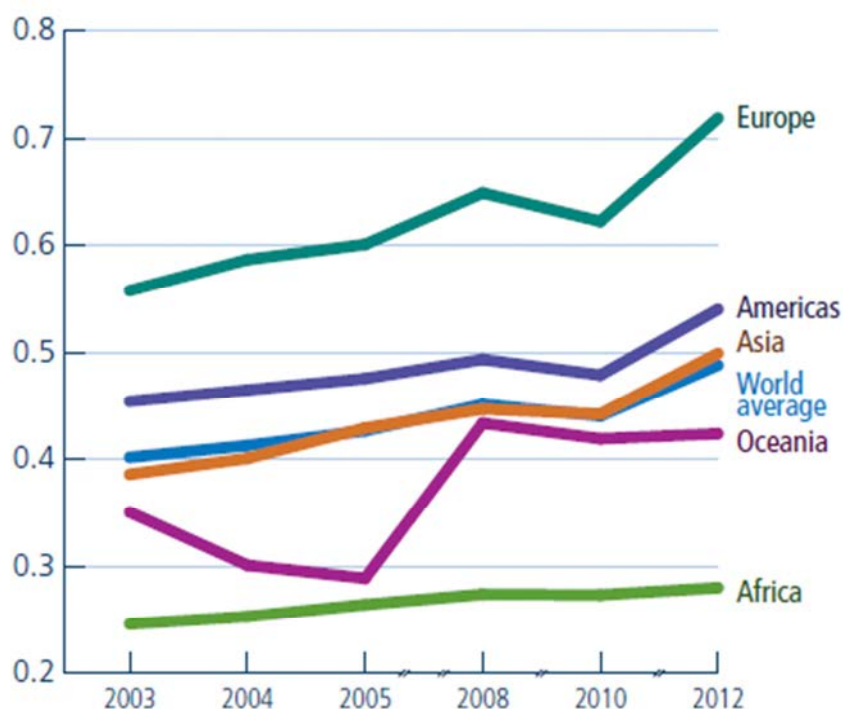
4.2. International E-Government Initiatives and the Advancement

The information and communications technologies (ICT) have power for delivering much needed sustainability in social and economic services to citizens. e-Government innovation and development can position the public sector as a driver of demand for ICT infrastructure and applications in the broader economy.

Several trends are surveyed including the **cloud-based government services** which are now emerging in many countries. The cloud-based services offer the integrity of services, data security and privacy, and regulatory environment in most countries around the world, which will need continued reform in governance systems and a continued focus on strengthening institutional linkages. Many of these countries have invested considerable resources in e-government in the last few years. They have expanded infrastructure and human skills on which to build further advances in service delivery and employ the full potential of information technologies for long-term sustainable development. Some of the developing countries have found ways to leapfrog traditional development cycles by deploying **mobile technology for bridging the digital divide**. They have reoriented their public sector governance systems towards user-centric approaches visible on their websites through **multichannel service delivery features**.

The U.N. e-Government Survey 2012 measured e-government development and innovation in many countries by using the e-government development index (EGDI) to learn the capacity of national administrations to use information and communication technology to deliver public services. The EGDI is a weighted average of three normalized scores on the most important dimensions of e-government, namely: scope and quality of online services,

development status of telecommunication infrastructure, and inherent human capital. A comparative e-government basis that rates each country relative to all other Member States, is as shown in Figure 4-1



Source: United Nations E-Government Survey 2012

Figure 4-1: Advances in regional e-government development in the last decade

The Survey 2012 showed that e-government development, compared to the last two years, increased more than 10 percent in the world average. All regions of the world have steadily improved their e-government development in terms of sustained integration, expansion and consolidation of online government services. Highlights on innovation of public services in each region around the world will be discussed in the following part.

4.2.1. E-Government in Africa

According to the U.N. e-Government ranking in 2012, **Seychelles** is ranked the number one in the Africa region followed by **Mauritius**. These two countries are ranked 84 and 93 respectively among 193 countries.

Seychelles took the initiative to enhance its e-government service offerings in line with an **integrated and interdependent strategic approach**, which focuses on ICT infrastructure, legal and regulatory framework, human resource development, ICT industry and improvements in the efficiency of the government. E-Services are available

through the government e-Service Gateway that provides a **secure single point of entry** for all online government services for residents and organizations to communicate and transact with the Government. Major improvements in mobile telecommunication and **integration of thematic services in education, health, and finance** with the national portal allowed it to improve its world ranking. **Taxation e-Service** and **Import-Export Permits** are e-Services that Seychelles's citizen can easily access.

Taxation e-Service facilitates taxpayers' compliance with regards to **the monthly submission of their payroll** to Seychelles Revenue Commission (SRC) by allowing them to submit it online electronically. The e-service is available 24 hours a day, 7 days a week via the internet as shown in Figure 4-2

Welcome Nafissatou DIALLO, LE CHANTIER DENTAL CLINIC PTY LTD | [My Account Settings](#) | [Organisation Settings](#) | [Logout](#)

SeyGov Connect e-Service Gateway

My Citizen | Non-Residents | Businesses

Welcome to The E-Service Gateway whereby, as an employee, you can transact on various online government services on behalf of your organisation.

Account Administrator(s)

- Nafissatou DIALLO

Gateway Links

- SEYGOV Connect
- Government
- Citizens & Residents
- Businesses
- Non-Residents

Change Security Details

Password should be a minimum of 6 characters with at least a number and a non-alphanumeric character

e-ID: 23274029996

Account Status: Active

Last Login: 8/9/2010 1:14:42 PM

Last Password Change: 8/9/2010 1:14:42 PM

Security Question: what is my pet name

Security Answer: White dog

Password: [masked]

Confirm Password: [masked]

[Save](#)

Copyright © 2009 Government of Seychelles | [About E-Service Gateway](#) | [Terms of Use](#) | [Privacy Policy](#) | [Sitemap](#)

Source: <https://eservice.egov.sc/egateway/>

Figure 4-2: Taxation e-Service of Seychelles Revenue Commission

Mauritius improved its offerings around 10 percent with **the national portal providing facilities for services such as appointments for vehicle inspections, scholarships and work permits**. Although it ranked the second place in the Eastern Africa region, its efforts could not keep pace in comparison to peers, leading to a decline in its global ranking.

The e-government challenges of Africa remains the widespread lack of infrastructure and functional literacy. As shown in Figure 4-3, Africa has improvement in e-Government through developing websites for government ministries and agencies.

Rank	Country	E-gov. development index		World e-gov. development ranking	
		2012	2010	2012	2010
1	Seychelles	0.5192	0.4179	84	104
2	Mauritius	0.5066	0.4645	93	77
3	South Africa	0.4869	0.4306	101	97
4	Tunisia	0.4833	0.4826	103	66
5	Egypt	0.4611	0.4518	107	86
6	Cape Verde	0.4297	0.4054	118	108
7	Kenya	0.4212	0.3338	119	124
8	Morocco	0.4209	0.3287	120	126
9	Botswana	0.4186	0.3637	121	117
10	Namibia	0.3937	0.3314	123	125
Regional Average		0.2780	0.2733		
World Average		0.4882	0.4406		

Source : United Nations E-Government Survey 2012

Figure 4-3: Top Ranked Countries in Africa for E-Government Development (2012)

4.2.2. E-Government in the United States of America

As part of their effort to advance citizen services, developed countries are paying greater attention to the concepts of **an integrated government portal** and the **re-engineering of back-office processes** in designing their e-government capabilities. E-government strategies in the Americans are geared towards **user centric solutions**, which serve to synergize **governance processes and systems across multiple public administration domains**.

According to a quarterly report on the American Customer Satisfaction Index E-Government Satisfaction Index (Q3/2012) from ForeSee (an international customer experience analytics firm, based in America)⁴⁰, the results, compiled from about 300,000

⁴⁰ http://www.federalnewsradio.com/pdfs/egovernment_customer_satisfaction_3rd_quarter.pdf

respondents and measuring 106 federal websites showed that **the Social Security Administration's online application portal**⁴¹ and the Health and Human Services Department's Web-based **medical library**⁴² have remained high through most of 2012.

The Social Security Administration's online applications deliver social security that meets the changing needs of the public. The services through a nationwide network and presence in U.S. embassies around the world, which allows users to apply for benefits online claim for Retirement, Medicare, Disability and Extra help with prescription drug costs.

Meanwhile, the National Library of Medicine (NLM) is the world's largest biomedical library. NLM maintains and makes available a vast print collection and produces electronic information resources on wide range of topics. It also supports and conducts research, development, and training in biomedical informatics and health information technology.

The Digital Services Innovation Center⁴³ is a key component supporting the goals of the "Digital Government" strategy. The portal at sites.usa.gov is a shared service to help agencies focusing on creating great content rather than on building systems to deliver that content.

The United States leads this region followed closely by **Canada**. Since the United Nations Survey started tracking e-government development in 2003 both countries have been among the top world leaders with integrated portals and increasingly inclusive citizen services spread across themes, functionally and now by life cycles and events. Early recognition of the use of ICT for rolling out citizen centric services has contributed to the United States' top ranking in the last decade.

4.2.3. E-Government in Asia

Asia as a whole continues to expand e-government services further. Investments were made horizontally to expand infrastructure, including support for broadband and mobile access, while at the same time governments reached out to provide greater online services and improve e-governance. In 2012 three of the world's top 20 e-leaders are from Asia, and the region as whole has a higher level of e-government development than the world average.

⁴¹ <http://socialsecurity.gov/>

⁴² <http://www.nlm.nih.gov/>

⁴³ <http://gsablogs.gsa.gov/dsic/>

Rank	Country	E-gov. development index		World e-gov. development ranking	
		2012	2010	2012	2010
1	Republic of Korea	0.9283	0.8785	1	1
2	Singapore	0.8474	0.7476	10	11
3	Israel	0.8100	0.6552	16	26
4	Japan	0.8019	0.7152	18	17
5	United Arab Emirates	0.7344	0.5349	28	49
6	Bahrain	0.6946	0.7363	36	13
7	Kazakhstan	0.6844	0.5578	38	46
8	Malaysia	0.6703	0.6101	40	32
9	Saudi Arabia	0.6658	0.5142	41	58
10	Cyprus	0.6508	0.5705	45	42
Regional Average		0.4992	0.4424		
World Average		0.4882	0.4406		

Source : United Nations E-Government Survey 2012

Figure 4-4: E-government leaders in Asia (2012)

The Republic of Korea Government's main website has developed into an integrated portal where citizens can find almost every service they want, on both national and local level through multiple channels.

The Republic of Korea offers around 87 percent of all services assessed in the United Nations E-Government Survey 2012. The country's emergence as the world leader in information and communication technologies in fields such as broadband, semiconductors and third generation mobile devices – has guaranteed its fast growth and development in the area of e-government.

A key reason for continued leadership in world e-government progress is significant development and provision of **downloadable mobile applications** that are available from its national portal. The cross sector mobile apps for citizens are both iPhone and Android compatible including for **e-Learning**, which allows students to learn on their mobile

phone in areas such as social studies, math and English⁴⁴. For employment opportunities, Jobcast provides **information on availability of jobs** in the Republic of Korea along with the relevant legislation governing labour.

Examples of M-Government services provided by Republic of Korea:

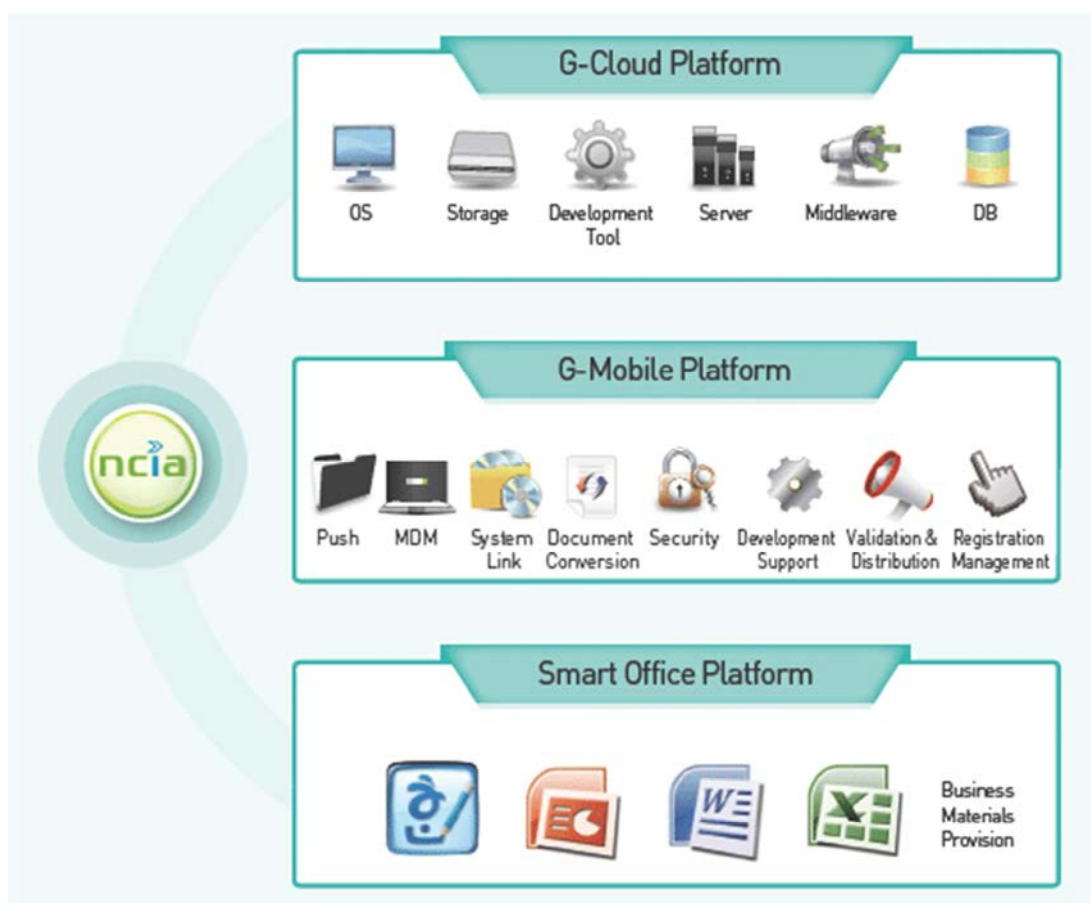
- **The People's Online Petition & Discussion Portal (e-People)**⁴⁵: by allowing real-time reception of civil complaints and policy suggestion on mobile websites, for facilitating citizen participation in policy-making.
- **Single Window for Business Support Services**⁴⁶: introducing various information services required for business activities such as industry information, business news and government aid programs on a single mobile website. Moreover, it provides information on the progress of test inspection and certification application registered online by businesses and offers services issuing and retrieving performance reports and certificates.
- **Mobile Public Procurement Service**: providing 'smart electronic procurement service' through mobile phones, allowing users to search for bidding information and participate in bidding. The mobile procurement services supporting dual authentication procedures that consist of PIN authentication of smart security token and fingerprint identification for mobile bidding participation. The mobile procurement service (wireless) is based on the Republic of Korea's fixed electronic procurement service which won the UN Public Service Award in 2003 and the AFACT e-Asia Award in 2007.

The Innovation of the core national information infrastructure begins with **the National Computing & Information Agency (NCIA)** which provides the e-Government infrastructure and service for the people to use reliably and conveniently, including development and operational services of modularized platforms that can be shared by several ministries.

⁴⁴ <http://www.kocw.net> , Korea Open Courseware (KOCW) provided services and education teaching materials to share in conjunction with the local universities and overseas educational materials Public Open Educational Resources (OER) movement council

⁴⁵ www.minwon.go.kr/new_info/customer/AA090_CM010_mobile_info.jsp

⁴⁶<http://m.g4b.go.kr/svc/mob/sma/aut/mIndex.do>



Source: <http://korea.ncia.go.kr/>

Figure 4-5: Korea's Government Platform Sharing Services

4.2.4. E-Government in Europe

Europe region has been in the vanguard of information technology and setting the pace for others to follow. Building on the existing strength of high levels of human capital and infrastructure, the transformative role of ICT has been recognized and adopted to further streamline e-government services. Moving beyond improving public sector efficiency, Europe is now looking to adapt innovative technologies to human development and economic sustainability in the future.

The European region has the highest level of e-government development, which is around 50 percent higher than that of the world as a whole.

Innovative E-Government Practices

- **Regelhulp⁴⁷ – Simplifying Online Applications for Social Services:** is a digital guide government of Netherland for anyone who is looking for care or support. The web portal will provide updated information in the field of health care, welfare, parenting and social security. Regelhulp organizes these information according to life events. It helps beneficiaries of the system, their caregivers and professionals to find their way to all the information, forms and provisions in the area of care and social security. The site provides information by pooling all the available resources, and enables visitors to apply for provisions directly by means of a single flexible application module.
- **Zanzibar⁴⁸** - is a web-based purchase-to-pay (P2P) and electronic market place solution, developed by UK Government Organizations and Office of Government Commerce (OGC), providing a common hosted platform for e-Purchasing and e-Invoicing. By bringing together government contracts in a single platform, Zanibar enables collaboration across all public sector buying organizations and provides access to the pricing and transactions ready by suppliers.

4.2.5. E-Government in Oceania

Australia continues to be the leader in the Oceania region. The national portal (<http://australia.gov.au>) acts as a one-stop-shop that connects citizens to the information and services of around 900 government websites and state and territory resources. Information can be quickly and easily accessed through the ‘People’ and ‘Topics’ sections, which categorically filter specific content while the ‘Services’ section allows citizens to perform many functions such as making payments for taxes, driver license renewals, vehicle and business registrations, lodging online forms and making online inquiries.

- **VANguard⁴⁹ – Government Authentication Services:** Securing online transactions for business and government, allows business users to conduct transactions with government agencies (Federal, State or local government) securely online using a digital credential in enabling a government agency to accept a business user's digital credential and then direct that credential to VANguard for authentication. VANguard verifies the digital signature and validates the certificate using an appropriate certification authority within a secure environment.

⁴⁷ <http://www.regelhulp.nl> (Netherlands)

⁴⁸ <http://www.procsolve.com/solutions/zanzibar/>

⁴⁹ <http://www.vanguard.business.gov.au>



Figure 4-6: The VANguard Solution for Government Authentication

- **Human Service⁵⁰** - The site is a convenient, single entry point for health, social and welfare payments and services through the Medicare program, Centrelink program, Child Support program, CRS Australia and Australian Hearing.

4.3. Selected Case Studies of IT-enabled Innovations in Public Services

The objective of this section is to highlight and discuss case studies of IT-enabled innovations in public services. Including driven open source and shared services for establishing/developing in public services. Successful applications of several selected countries are explored such that some of those innovative ideas and critical success factors in establishing such environments are studied. This report chooses to study the countries and cases based on the wide variety of regions, size of the population, levels of economic development, and excellence in ICT innovations for public services. Any lessons learned and recommendations for Thailand shall be further analyzed and proposed in the subsequent report.

4.3.1. Singapore Government

Singapore is among the leaders in the use of private cloud computing for leveraging ICT infrastructure and services. Singapore's citizen's portal provides an extensive range of online payment services that lists by agency as well as bill type. Payments range from taxes, fees, fines and licenses that can be made through multi-channels such as credit card, direct debit as well as internet banking and even by phone.

The Singapore government's innovations are divided into four main targets including information services of government, citizens or residents, businesses and not residents.

⁵⁰ <http://www.humanservices.gov.au/>

- **The [www.gov.sg Portal](#)**⁵¹ serves as a convenient gateway for anyone to locate information about the Singapore Government - such as news and speeches, information resources, e-services, events calendar and contact information of public service agencies. This service is also available on smart phone (both android and iOS devices).
- **[eCitizen](#)**⁵² is organized to serve users' needs without having to know which government agency is responsible for a particular service, policy or programme. There are 3 main service areas including Topics, eServices and Highlights as shown in Figure 4-7.
 - **Topics** are quick guides to help citizens perform their tasks. The tools provide the key information the citizens need, and show the users where they can find more details they may be interested in. The services are grouped by areas of interest such as, “Sports & Recreation”, “Transport & Motoring”, “Health” and “Housing” for easy browsing.
 - **eServices** is a directory of all eServices offered by the Government. The users can easily find an eService using search, or by filtering the agency and type of services.
 - **Highlights** keep the users updated with the latest news and upcoming events.

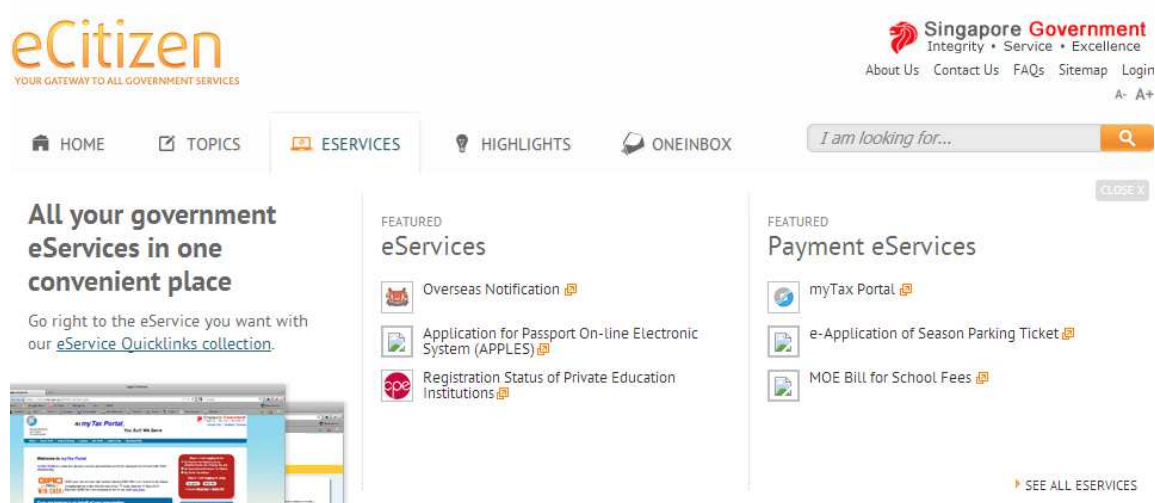


Figure 4-7: eCitizen of Singapore Government

- **[EnterpriseOne](#)**⁵³ serving Singapore’s business community is a comprehensive network where the business users can find the help and answers they need to start, grow and sustain their business. If the users need business advisory services, they can go to any Enterprise Development Centres (EDCs) located throughout the

⁵¹ http://www.gov.sg/government/web/content/govsg/classic/about_us

⁵² <http://www.ecitizen.gov.sg/Pages/AboutUs.aspx>

⁵³ <http://www.enterpriseone.gov.sg/en/AboutUs.aspx>

country. A wealth of government information and e-services can also be found here at the EnterpriseOne portal and at the Enterprise Development Centres (EDCs). The EnterpriseOne Portal offers a single point of access at anytime and anywhere to a whole range of comprehensive information on government assistance programmes, regulations and e-services for businesses from 52 partners. Aspiring entrepreneurs, start-ups and businesses can easily find the business information and services relevant to their needs from the interactive tools.

- **The Non-Residents Portal**⁵⁴ is a one-stop portal to help anyone who wants to settle down in Singapore. The available information includes:
 - visiting Singapore
 - relocating to Singapore
 - working in Singapore
 - studying in Singapore, and
 - doing businesses in Singapore.

4.3.2. E-Services in Korea

Republic of Korea is one of the leading countries in Asia and the Pacific that has deployed several successful innovative public services. The following are some case examples.

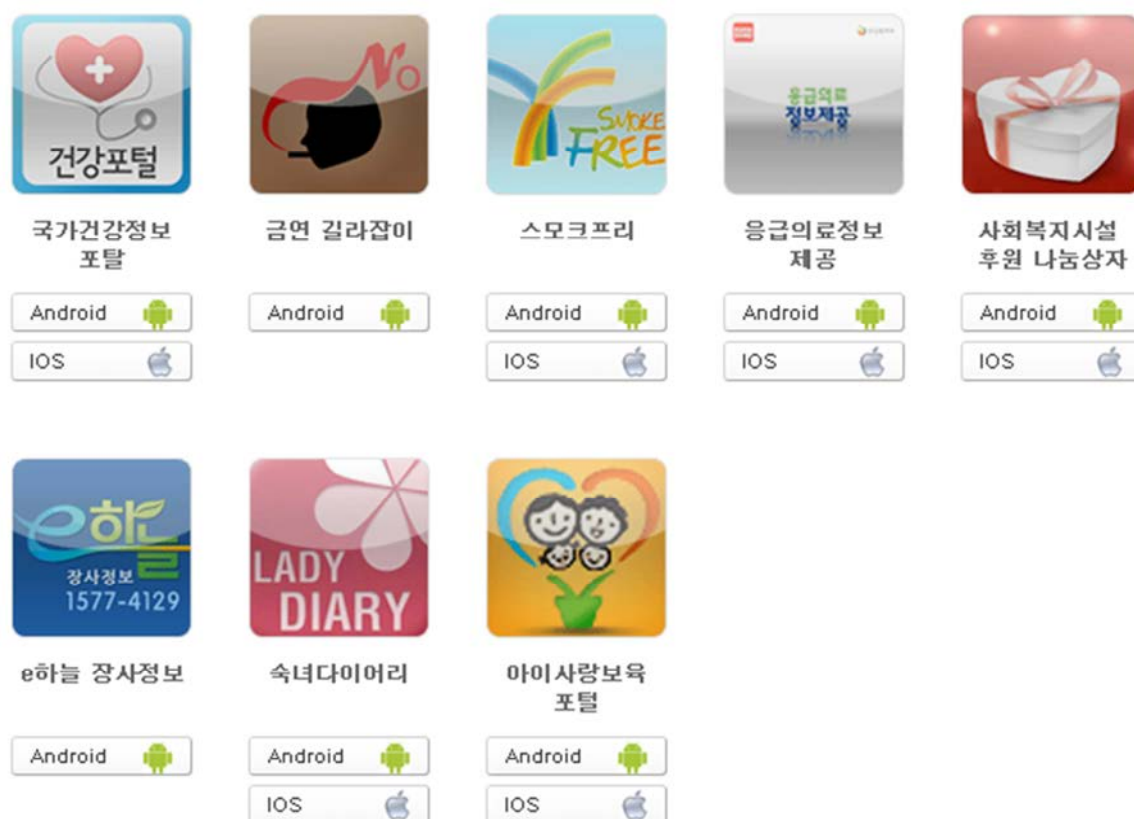
- **National Tax Service (NTS)**⁵⁵ provides several major IT services for Taxpayers including:
 - **Tax Integrated System (TIS)** is an electronic processing system which deals with all tax affairs on functional basis. It processes tax work categorized by function such as taxpayer registration, filing, audit, collection and helps each function systematically linked. This system also links regional tax offices and district tax offices nationwide via network.
 - **NTS Homepage** (www.nts.go.kr) provides tax-related information to taxpayers and improves relationship with taxpayers.
 - **Hometax** (www.hometax.go.kr) is a web application which taxpayers can perform tax-related affairs such as filling, payment, notification, certificate issuance and appeals.
 - **Simplified Year-end Settlement Service** (www.yesone.go.kr) is a one-stop service for collecting various record (e.g. receipts) to claim income deduction for wage and salary income and can print out from the website.
 - **Cash Receipt System** (www.taxsave.go.kr) is a system recording cash transaction.

⁵⁴ <http://www.ecitizen.gov.sg/Pages/NonResidents-AboutUs.aspx>

⁵⁵ <http://www.nts.go.kr/>

- **Tax Consulting System (call.nts.go.kr)** is a consulting center for any taxpayers who need consultation and advice related any tax-related cases.
- **National Tax Law Information System (taxinfo.nts.go.kr)** provides taxpayers with information about tax-related laws and ordinances.

M-Government is the adoption of mobile technologies to support and enhance government performance and foster a more connected society. By empowering citizens for access to existing services, m-government is improving the quality of life. Specifically, mobile technologies enable convenient access to public information services. Mobile technologies also facilitate financial transactions (e.g. process cash transfers, deposits and withdrawals, payroll credits, international remittances and similar banking activities) and allow the delivery of educational content to students who would normally have limited access to public education.



Source: <http://stat.mw.go.kr/front/notice/infoList.jsp?menuId=110&pmenuId=4>

Figure 4-8: Example of Korean's Mobile Application

4.3.3. Australia Government⁵⁶

In fostering innovation in the Australian public service, the Department of Industry, Innovation, Science, Research and Tertiary Education of the Australia Government plays the role to help shape Australia's future economy through skills, learning, discovery and innovation to accelerate productivity growth and secure Australia's prosperity in a competitive global economy. There are a number of blogs on innovation and related topics, though not necessarily with a public sector focus which may assist in understanding innovation issues more broadly. These include:

- **AGIMO**⁵⁷ – the blog of the Australian Government Information Management Office which includes posts on Gov 2.0⁵⁸ matters. AGIMO fosters the efficient and effective use of information and communications technology (ICT) by Australian government departments and agencies. It provides advice, tools, information and services to help Australian government departments and agencies use ICT to improve administration and service delivery – often referred to as e-government. AGIMO also works with governments and other bodies at the local, state, national and international levels to develop and maintain Australia's position as a world leader in e-government.
- **eGov Au**⁵⁹ – a blog on e-Government and Gov 2.0 thoughts and speculations from an Australian perspective. It is a national government service directory and including listing of all Australian Government department and agency websites with link to their homepages. Services can also be found under Topics, People and Life events. There we can find commonly sought information such as: Public holidays, Consumer affairs and fair trading authorities, Justices of the peace, Birth, deaths and marriages registries.
- **Innovation Leadership Network blog**⁶⁰ – a blog on innovation written by two academics from the Technology & Innovation Management Centre in the School of Business at the University of Queensland touching on many issues of managing innovation
- **Public Sector Innovation blog**⁶¹ – news and information from the Innovation Capability Team at the UK Department for Business Innovation and Skills

⁵⁶ <http://innovation.govspace.gov.au/innovation-101/would-you-like-to-know-more/>

⁵⁷ <http://agimo.gov.au/>

⁵⁸ Gov 2.0 describes scenarios and tools which apply to agency Government 2.0 activities, including engaging with the public and releasing government data online.

⁵⁹ <http://australia.gov.au/>

⁶⁰ <http://timkastelle.org/about/>

⁶¹ <http://webarchive.nationalarchives.gov.uk/+/http://blogs.bis.gov.uk/publicsectorinnovation/>

- **Public Services Lab blog⁶² and Policy Innovation blog⁶³** – two blogs from the UK’s National Endowment for Science, Technology and the Arts (NESTA) on innovation in services and policy.
- **Apps Services** serve applications to access to Australian Government resources from the palm of the user's hand by mobile phone.

4.3.4. Innovative E-Government in the United Kingdom

The websites of central government departments and other organizations start moving to **GOV.UK**. until 2014, here the users are able to find everything they need from government in one place. It makes simpler, clearer and faster to explore how government works.

The Technology Strategy Board⁶⁴ is the UK’s innovation agency. Its goal is to accelerate economic growth by stimulating and supporting business-led innovation. Sponsored by the Department for Business, Innovation and Skills (BIS), the Technology Strategy Board brings together business, research and the public sector, supporting and accelerating the development of innovative products and services to meet market needs, tackle major societal challenges and help build the future economy, spread knowledge, bringing people together to solve problems or make new advances⁶⁵. Innovation platforms focus on specific societal challenges where the UK Government is taking action through policy, regulation, procurement or fiscal measures to tackle the problem. By improving co-ordination between the key players from industry, academia and government, innovation platforms can identify barriers to meeting the challenge, map possible routes to overcoming the barriers and align activities to support innovative solutions. Innovation platforms aim to fundamentally change the ability of UK businesses to provide solutions for the global marketplace, boost UK economic performance, and provide higher quality of public services. The Technology Strategy Board innovation platforms are:

- **Assisted Living Innovation Platform (ALIP)** is promoting independent living and improved quality of life by making technology better, cheaper and more desirable for quality of life, health and well-being.
- **Detection and Identification of Infectious Agents (DIIA) Innovation Platform.**
- **Low Carbon Vehicles Innovation Platform** aims to maximize the benefit to UK-based businesses of the rapidly-developing low carbon vehicles market, and to help accelerate the adoption of low carbon vehicles in the UK.

⁶² http://www.nesta.org.uk/blogs/public_services_lab_blog

⁶³ http://www.nesta.org.uk/blogs/policy_innovation_blog

⁶⁴ www.innovateuk.org

⁶⁵ <https://www.gov.uk/government/news/science-minister-gives-business-boost-at-innovate>

- **Low Impact Buildings Innovation Platform** aims to help the UK construction industry deliver buildings with a much lower environmental impact.
- **Stratified Medicine Innovation Platform** aims to help accelerate the rate of development and uptake of stratified medicines in the UK, for the benefit of patients, healthcare providers and business.
- **Sustainable Agriculture and Food Innovation Platform** aims for development of new technologies that will increase food productivity, while decreasing the environmental impact of the food and farming industries. Investment is made in innovative technological research and development in areas such as crop productivity, waste reduction and management, and greenhouse gas reduction.

G-Cloud⁶⁶ is the Government Cloud under the direction of the CIO Delivery Board as part of the Government ICT Strategy. It provides a secure and resilient shared environment through which public sector bodies can resource ICT services at greater speed and lower cost. At present there are 4 categories of services: Infrastructure, Software, Platform and Specialist Services.

4.3.5. Innovation in E-Government Services in the United States of America

E-government services in the U.S.A. is provided on the web site of “**USA.gov**” which collects and consolidates all information and services for citizens in one place, including agency services at the state and local level, which vastly increases the effectiveness of user search and uptake.

- **healthfinder.gov** is a government web site collecting information and tools to help the individual citizens stay healthy. The services also include finding out risk for a disease or condition by online questionnaire⁶⁷.
- **Election Assistance Commission (EAC)**⁶⁸ is committed to openness and transparency by using the OpenEAC portal (eac.gov/open) to give the public an opportunity to provide input on the Open Government Plan and efforts to promote transparency, public participation and collaboration. The citizen can easily access high-value data sets, Freedom of Information Act, grant amounts and recipients, and federal voting system certification information. The citizens can also learn about current open-government activities. One of EAC's top priorities is providing assistance to election officials. By issuing guidance, advisories and best practices to help officials comply with the Help America Vote Act and make other election administration improvements and enhancements. Voters can use the National Mail

⁶⁶ <http://gcloud.civilservice.gov.uk/>

⁶⁷ <http://www.healthfinder.gov/HealthTools/OnlineCheckUps.aspx>

⁶⁸ <http://www.eac.gov/>

Voter Registration Form to register to vote, update registration information due to a change of name, make a change of address, or register with a political party.

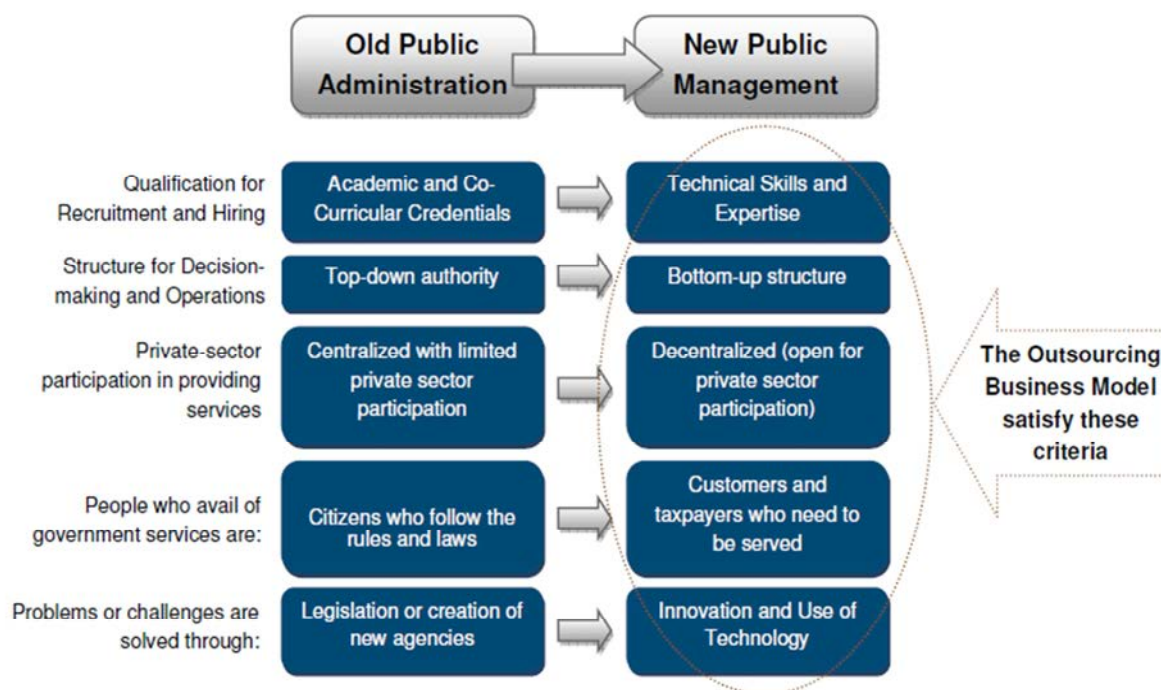
- **American Red Cross Tornado App**⁶⁹, which is available on the Android and iOS platforms, provides information for the citizens to prepare for a tornado. The app includes a high-pitched siren and “tornado warning” alert that signals when a tornado warning has been issued in the area – even if users have the app closed. There will be a clear alert to users when a tornado warning has expired or has been cancelled.

The Open Government Platform (OGPL)⁷⁰ is based on an open source that Data.Gov partners with the Government of India National Informatics Centre. The first module released is the Data Management System, which provides the tools and capabilities for an automated process for publishing data in the Open Government Platform. This open source product designed to facilitate governments around the world to set their own open government data sites. Any government adopting the Open Government Platform will be able to download and use the DMS code to submit, approve, and update catalog data electronically on the Open Government Platform websites and view management metrics reports also.

Government Sector Outsourcing is an innovative Public Management idea emphasizing and prioritizing on efficiency and cost effectiveness in spending taxpayer money for public service improvement. It puts paramount importance to expertise in performing certain functions within the government. This initiative advocates the use of technology in improving the often slow and overbearing bureaucratic protocols experienced in government transactions. This business model combines the use of technology with technical expertise.

⁶⁹ http://howtomobile.apps.gov/2013/03/21/american-red-cross-tornado-app/?utm_content=%23mobile+%23gov20&utm_source=twitterfeed&utm_medium=twitter

⁷⁰ <http://www.data.gov/welcome-open-government-platform>



Source: www.Tholons.com

Figure 4-9: Difference between Old Public Administration and New Public Management

4.3.6. Innovation in E-Government Services in Austria

Austria Government has developed the web site “**HELP.gv.at**” as a "one-stop shopping" portal and the application of the citizen card as a uniform system of electronic identification in Austria contributed significantly to its success. Entire procedures are able to be carried out electronically without changes in the type of media (e.g. switching between electronic and paper format), starting from filling out an application form and paying fees, to internal processing and delivering official documents and notifications. The HELP.gv.at website has been offering online services according to the one-stop principle since 2001 and continues to successively develop new services.

Electronic identification is recognized through the "citizen card" that can also be used to sign documents securely and electronically. Since the implementation of the mobile phone signature (citizen card with mobile phone function) at the end of 2009, using the citizen card means that:

- proving someone's identity securely and electronically saves them not to go to a public administration office in person.
- with the help of electronic signatures, users can submit a declaration of intent without any difficulty, which can easily be checked for its authenticity.

The e-card is the key to the health system for the citizen card functionality. It also becomes the key to the e-Government services for public administration in Austria. Since the end of 2009, mobile phones can be equipped with the citizen card functionality (mobile phone signature) free-of-charge, so the citizen card is the identification and authentication instrument, which makes it a secure replacement for extraneous username/password combinations. New applications are constantly being developed that can be carried out on the Internet with the citizen card. The most important public authority procedures can already be carried out using the citizen card today.

The citizen card is part of the security framework and is available for more than just citizens. Businesses can even offer their own online services and ensure that communication with their customers is secure by making use of the security-related functions on the citizen card.

An electronic mandate can be used with the citizen card. The use of representatives as is common in conventional business, is also available in e-Government.

Electronic mandates are especially interesting for businesses since they can be stored on the citizen card (with both the card-based and mobile phone signature options), whether for authorized signatories or business managers in a company. Using the citizen card, the representatives can sign contracts and conduct business matters on behalf of the company.

Applying to register a mandate on the citizen card can be carried out at the Mandate service of the SourcePin Register Authority for **the Austrian Data Protection Commission**⁷¹ (Datenschutzkommission, or DSK). The only prerequisite is that a conventional mandate for the business or public authority already exists. This means that the existing mandate will simply be represented in electronic form. It allows the representative to carry out procedures electronically on behalf of the principal (the one who grants the mandate).

An information service would allow principals to see who they have allowed to represent them using a citizen card. This web service would also allow them to revoke the mandate on the citizen card at any time⁷².

4.3.7. Open Source Strategy in Spain⁷³

Spain uses the open source strategy that is based on legislation for re-use, sharing, and collaboration in IT systems and interoperability between public administrations. This strategy has supported a program to develop several open source software applications

⁷¹ <https://vollmachten.stammzahlenregister.gv.at>

⁷² <https://vollmachten.stammzahlenregister.gv.at/mandates/>

⁷³ <https://joinup.ec.europa.eu/software/studies/issues-open-source-procurement-european-public-sector-ii>

and support the free re-use among public administrations promoted by the Technology Transfer Centre of the Department of Public Administration.

- **CENATIC (National Center for the Application of Information Technologies and Communications)**⁷⁴ is a strategic national center of the Government of Spain to promote the awareness and use of free software and/or open source in all areas of the society. Several projects have created with the focus and collaboration among government, businesses, the technology sector providers, development communities and users of free technologies.

4.3.8. Open Source Initiatives of European Commission

- **PEOPLE**⁷⁵ is an initiative for Open Source Services created for the “Smart Cities” and developed within the framework of European projects.
 - **HOYRESPIRO**⁷⁶ is a service developed as the pilot project in which provides geo-referenced information to citizens about the air quality in and around the city, the pollen levels, the weather forecast and the weather information (updated every 10 minutes). The service uses the existing network for the environmental control of the city and the indicators developed with the data recollected. The network consists of weather stations measure atmospheric variables related to pollution and levels of pollen in the air.
 - **Geocur** is another service providing information about learning offer in the city including calendar of courses as classified by sectors of activity. The users are able to find places and resources for self-learning such as libraries, foundations, schools, e-learning centers, and technological centers and any service centers developing learning activities or promoting self-learning resources.

4.4. Current Innovation Programs for Online Public Services in Thailand

This section provides a brief survey of the current organizations and their work programs related to e-government development and innovation in Thailand.

4.4.1. Organizations Involved in Promoting Innovation in Online Public Services

- **e-Government Promotion and Development Bureau** is a bureau under Ministry of Information and Communication Technology, Thailand. This bureau is

⁷⁴ <http://www.cenatic.es/sobre-cenatic>

⁷⁵ http://www.people-project.eu/portal/index.php?option=com_content&view=article&id=53&Itemid=27

⁷⁶ <http://hoyrespiro.people-project.eu/>

responsible for developing e-government related policy and promoting e-government implementation in the country and providing national ICT infrastructures, including formulating Thailand Electronic Government Interoperability Frameworks (TH e-GIF)

- **Electronic Government Agency (Public Organization) (EGA)**⁷⁷ was established in 2011 according to the Cabinet resolution under the supervision of the Minister of Information and Communication Technology. Its main responsibility is to drive the implementation of electronic government activities, encourage the implementation of public online services and increase opportunities and reliable access to the government services. Its work programmes include research, development and management of e-Government infrastructure for Thailand, architecture and standards for e-Government system. This agency also provides consultancy services to government offices in applying information and communications technologies related to e-Government services to achieve a common standard that is in line with the international standards.
- **Electronic Transactions Development Agency (Public Organization) (ETDA)**⁷⁸ was established under the recommendations of the Electronic Transactions Commission (under the Ministry of Information and Communication Technology) to develop, promote and support the country's electronic transactions. These transactions effectively result in added economic value, better quality of life, and increased competitiveness for the country. ETDA is a public organization established to develop, promote, and support electronic transactions or electronic transaction services in both the public and private sectors. Its role in driving forward, developing, promoting, and supporting the country's online transactions. These efforts aim at creating a secure environment that builds confidence and trust in transactions services and activities online or by electronic means.
- **National Electronics and Computer Technology Center (NECTEC)**⁷⁹ is a statutory government organization under the National Science and Technology Development Agency (NSTDA), Ministry of Science and Technology. Its main responsibilities are to undertake, support and promote the development of electronics and computer technologies through research and development activities. Several current flagship projects include, for example, smart services in the industry like Smart Farm⁸⁰, Smart Health⁸¹, Smart Tourism, and Smart Education.

⁷⁷ <http://www.ega.or.th>

⁷⁸ http://www.etda.or.th/etda_website/eng/mains/display/35

⁷⁹ <http://www.nectec.or.th/>

⁸⁰ Developed easy-to-use kits to support farmers, aids the detection of macroscopic fungi, or parasites such as quarantine pests in aquatic plants.

- **National Innovation Agency (NIA)**⁸² is a government agency focusing on fostering strategic innovation and sectorial-industry innovation, which enhances national productivity, encourages economic restructuring and social development as well as promoting national competitiveness. NIA functions as the key engine driving national innovation by coordinating, networking, fostering, and partnering different organization from various fields such as academia, technology, industry, finance, and investment. Its main focus is on utilizing knowledge management to achieve innovation, particularly to foster "innovation on cluster platform" which uses innovation as the principal tool in improving quality of life and driving towards an increasingly competitive economy. In conjunction with its principal strategy of knowledge management. NIA is focusing on three strategic areas for supporting the innovation development namely; Bio-Business, Eco-Industry, and Design & Solutions.
- **Department of Business Development (DBD)**⁸³ is a government department under the Ministry of Commerce with the mandate to promote and assist business enterprises in the country. The role and responsibilities of the Department of Business Development are comprised mainly of business registration, business promotion, business supervision and creation of corporate governance including being the complete business information center for businesses. The juristic person database has been analyzed and disseminated for decision-making and business development. Innovative service of DBD is such as e-Certificate⁸⁴
- **Each Individual Government Department** in most of the Ministries has also developed their own innovation e-government online services with their regular budgets. Some of the government departments have advanced well in their online public services, particularly for example, the e-Revenue services of Department of Revenue, and Business Registration System by the Department of Business Development. The following is an innovative application provided by one government department as a case study.

4.4.2. Innovation E-Service/E-Government

The organizations mentioned above have initiated several ICT infrastructures and developed online public service. Some of the highlighted programs are provided below.

⁸¹ Developed the prototype of a National Health Information System (NHIS), which is a patient-information project. And also developing tools for converting huge data loads and analysis information on patients, so that the information is securely protected and correct treatment is administered.

⁸² <http://www.nia.or.th/en/>

⁸³ <http://www.dbd.go.th/mainsite/index.php?id=1&L=1>

⁸⁴ E-Certificate is an electronic juristic person certificate/certified true copy, using technologies "electronic signature".

- **Government Information Network (GIN)**⁸⁵: MICT encourages other government organizations to use and share the central and nation-wide network system. This is a secure, reliable and high-speed Government Intranet network. Government agencies across the board from ministry, department, provincial and local levels have already been connected to this centralized network. This Government secure Intranet can support secure information exchange for all government agencies. Common services provided by different government agencies were integrated and offered on GIN. At the present, eight strategic e-government application systems are running on GIN, including Government Fiscal Government Information System (GFMIS), CABINET of the Secretariat of the Cabinet, National Single Window by the Customs Department and Government Strategic Management System (GSMS) of the Office of Public Sector Development Commission.
- **Government Cloud Services**⁸⁶ Electronic Government Agency (EGA) provides the Cloud Computing services to government agencies. These services and their benefits include providing ICT infrastructure and information systems of government agencies, reducing the redundancy of information technology in the public sector budget, and optimizing the systems provided to the public and to the Government.
- **Government e-Portal**⁸⁷ is a central system for easy access to information and e-services provided by the government in the single sign-on system. At present 25 systems are linked to the portal, including the bankruptcy information verification system by the Department of Legal Execution, the legal information query services by the Office of the Attorney General, and the tax inquiry system by the Revenue Department.
- **Smart Citizen Info**: creates a mechanism for information integration of government units that use the 13-digit citizen ID number system to provide services to the general public. The system allows anyone to check all the benefits and information through the Smart Box⁸⁸ and EGA plans to expand the service to enable users to use Free Wi-Fi and also through Smart box.
- **Free Public WI-FI service**⁸⁹: has been started in the first phase at 20,000 spots in Bangkok and its vicinity. The spots are located in government offices, educational institutions, hospitals, and other public places. Another 20,000 Wi-Fi hotspots will be provided later this year (2013). A total of 250,000 Wi-Fi hotspots around the country are expected in the next five years. The project targets to expand high-

⁸⁵ <http://203.113.25.35/gin/index.htm>

⁸⁶ <http://cloud.ega.or.th/>

⁸⁷ <http://www.egov.go.th/>

⁸⁸ Smart Box an integrated device that provide connectivity and delivers government services through smart card authentication, currently is the pilot project in Nakhon Nayok.

⁸⁹ <http://www.mict.go.th/main.php?filename=SmartNetwork>

speed broadband network to cover 80 percent of the population in the next 3 years and 95 percent in the year 2020.

- **ASEAN CIO Forum**⁹⁰ : is organized and supported by Association of South-East Asian Nations (ASEAN), having MICT as a secretariat, and co-planned by 'CIO 16 Association'⁹¹ of Thailand. The goal of this forum is to tie possible relationship in both critical sector of public and private to drive all business intentions, building pillars and pushing for adoption to support ASEAN economy, communities and competitiveness. This will surely serve ASEAN relentless effort with the world to prove a mark in ICT space.
- **Thailand e-Government Interoperability Framework (TH e-GIF)**⁹² is the national policy framework and guidelines to drive the development of connected e-government systems for different government agencies to exchange information electronically. There are several innovative and collaborative e-government exchange systems adopting this framework and methodology, e.g. connected e-government for improving the public transport safety⁹³, the Agriculture Disaster Relief Information System (Aggie DRIS)⁹⁴
- **e-Doing Business**⁹⁵: To continue the success of the e-Starting Business project, Department of Business Development incorporation with Department of Revenue and Social Security Office jointly develop a connected e-Government system to link and exchange information among these three agencies such that a new business can be registered with these three agencies with single application form and single identification. This new procedure help reduce redundant procedures that the citizen normally needs to visit physically in three different locations and three different sets of documents. This new service expects to be reduce the time and cost of the operator to not less than 30 percent. This cooperation is the recent phenomenon of the business that makes it easier, faster and cheaper by the exchange of information between government agencies. The launch of innovation services is to provide a **single point, single form, single document** and **single number**. It can shorten service time of 4 days to 60 minutes to open around the country since October, 2010 through the acquisition was received very well by the operator.

⁹⁰ <http://www.aseancioforum.com/Home.aspx>

⁹¹ CIO 16 are the group of chief executives who are in the sixteenth or 2004 CIO training course which organized by Office of Civil Service Commission and NECTEC in order to serve the cabinet resolution in 1998 on the management of information and communication technology within the government entities and state own enterprises.

⁹² <http://egif.mict.go.th/>

⁹³ The exchange information, Driving history of the driver between government agencies (Department of Land Transport, Bangkok Mass Transit Authority (BMTA), The Transport Co.,LTD)

⁹⁴ The exchange information, relevant to the farmers who disaster victims. Which request for help from relevant government agencies.

⁹⁵ <http://www.manager.co.th/iBizchannel/ViewNews.aspx?NewsID=9540000058160>

4.5. Conclusion

The main goal of integrating e-government is to increase the efficiency and effectiveness, and deliver better public services to citizens. Several kinds of innovation especially those enabled by ICT have been applied in public sectors of many countries including the adoption of public services through mobile phones and cloud computing, which mobile phone is a channel where people can access to easily everywhere. The cloud computing also reduces the cost of maintenance and expansion of ICT infrastructure for government agencies. It also can be used for some services together with shared services and shared solutions model. The participation of citizens and communities can be leveraged also through software development, public crowdsourcing, and shared government solutions. From the lessons learned around the world, the efforts of countries at all levels of development, are still affected by the lack of administrative integration, simplification with e-government, lack of infrastructure and human resource capacity and the gap between e-services demand and supply. These are also the same challenges for Thailand. These information and findings will be later comparatively analyzed with organizational structures and practices in other countries as provided also in the previous section, but it will be provided in the subsequent report. As well, the topics of strategy, mechanisms, and funding requirements to drive and support innovation in public services will be explored and presented in the next report.

Section 5. Doing More with Less for More

5.1. Introduction

The approach of “doing more with less for more” is to deliver better public services at lower costs while impacting more people. One way to minimize the financial costs that e-government generates is to reduce duplicative systems. Improvement for faster, better and more cost effectively services is; therefore, essential. Reengineering enables radical redesign of business processes to achieve dramatic improvements. It requires radical changes that often involve fundamental changes in the various components of a process such as jobs, structures, technology, people, values and beliefs, management and measurement systems. With the latest advancements of information technology (IT) field and the enabling effects of its numerous systems and applications, the public services have incorporated extensive use of IT in further strengthening the strategy of radical re-engineering in IT investment and the use of IT for delivering government services.

This section reports the strategies and implementing concepts of radical/frugal re-engineering and radical cost reductions and initiatives having been taken up by different governments to achieve radical cost reductions in four selected countries, namely Malaysia, Ireland, U.S.A. and the United Kingdom. Several case studies have been explored and reported here, then lessons learned, strategies and recommendations suitable and relevant to Thailand will be further identified.

5.2. Studies on Strategies and Implementation Concepts and Cases of Public Services Re- engineering in Selected Countries

5.2.1. Malaysia⁹⁶

In the case of the Malaysian public service re-engineering⁹⁷, the initial efforts lied in the *Excellent Work Culture Movement* that took off strongly since the early 1990s. This movement was to engage a culture of excellence in public sector agencies, based on the core values of quality, productivity, innovation, integrity, discipline, accountability and professionalism. Culture was seen the most important factor to be considered when the concept of change management was applied. Nations have their own cultures which are unique and peculiar in their own ways. Organizations too, private or public, have their

⁹⁶ This part is based on the article of *Reengineering the Malaysian Public Service and the Use of Information Technology in Promoting Efficiency and Quality*, Muhammad Rais Bin Abdul Karim, Asian Review of Public Administration, Vol. VIX, No. 1 (January-June 1997), p. 57-69 and *Reengineering Public Services Through ISO 9000*, Zakaria Ahmad, Asian Pacific Development Centre Malaysia, Asian Review Of Public Administration, p. 108-119

⁹⁷ According to the author (Muhammad Rais Bin Abdul Karim) of the reference article, “reengineering” was defined as “a deliberate and planned initiative that rethinks and reformulates current strategies and approaches in the public service aimed at bringing about change in the way the public service operates so as to enhance its performance and service delivery.”

own cultures. Even among public organizations, different cultures, and subcultures exist. Therefore, application through adaptation is very vital in introducing change which affects the work culture.

The drive towards excellence and quality in the public sector coincided with a **transformation** in the role of the Malaysian public service—from its primary role as **the custodian of law and order** to that of **pace-setter and facilitator** to the private sector as well as service providers to the people at large. The word “administrative reforms” have been commonly used such that sometimes they have very little impact on the public service performance.

The Malaysian Government used six principal strategies to reengineer the public service through administrative reforms. With the latest advancements of information technology (IT) and the enabling effects of its numerous systems and applications, the public service has incorporated the extensive use of IT in further strengthening these strategies, which are:

- a) Providing customer-oriented services;
- b) Improving systems and work procedures to strengthen administrative support mechanisms;
- c) Streamlining organizational structures and strengthening human resource development;
- d) Enhancing accountability and discipline;
- e) Inculcating values of excellence and best practices; and
- f) Strengthening public-private sector cooperation.

The introduction of IT into government administration necessitates re-engineering the internal workings of government agencies. The manner to use, maintain, store and retrieve information in government has to be re-conceptualized. This will require that an effective inter- and intra-agency application landscape be put in place. Such a landscape should be capable of dramatically improving productivity, communication and information-sharing capability as well as enhancing core operational capacities and functions of the relevant agencies.

A major component of the change to the internal workings of government agencies is seen in terms of the reengineering of processes, systems and procedures. While reengineering will help bring about efficient processes and systems within an agency, much more will be required if the ultimate aim is the creation of a seamless government.

The key to seamless government is, of course, connectivity and communications within and between the various components of government. The introduction of inter-connected and networked databases will mean that service delivery is no longer confined to the counters of the agency that provides the service. With multi-channel service delivery such

as through kiosks, PCs, web-TVs, telephone and others, the face of government itself will see a tremendous change. That is only the front-end of the process. The back-end requires that individual agencies have sufficiently reengineered their internal workings to meet this new paradigm. IT-based systems are set to bring about a new way of operations for government agencies. The IT systems do not only cater to the requirements of their own needs but they should examine how their own internal systems are integrated into the overall info structure demands of a seamless government characterized by interconnectivity and inter-networking.

The reform initiative that has huge reengineering implications for the public service in Malaysia is the implementation of electronic government. E-government is a multimedia networked paperless administration linking government agencies within the new Federal administrative center at Putrajaya and Government centers around the country. It is intended to facilitate a collaborative government environment that is capable of providing the best services to business and citizens. The vision for e-government hopes to:

- Transform the administration process of government by using leading edge IT
- Drastically improve the performance of government processes
- Provide high-quality, low-cost administrative services to citizens and business
- Employ multimedia technology to foster government effectiveness
- Attract world-class multimedia web shapers to Malaysia.

In achieving the process of public service reengineering, Malaysia takes the following steps:

- a) Defining a **vision** for the organization. This vision must be clear and precise and must reflect what is the future that needs to be created. It must be communicated to all employees;
- b) **Articulating and recording important assumptions.** This involves answers to questions such as why change is needed; what are the consequences to remain with the status quo; who demanded the changes, and what are the required changes;
- c) **Plan development.** This includes the establishment of the objectives, who will reengineer, identifying the core business, development of strategies, identifying the processes that need reengineering, and managing communication and expectations;
- d) **Business Analysis.** This focuses on information gathering on capabilities and competencies, and evaluating organizational issues, customer needs and information technology capabilities;

- e) **Business Redesign.** Redesign involves designing new process towards completeness and conformance which may lead to:
- (1) Several jobs being combined into one;
 - (2) Workers making decisions;
 - (3) Work being performed where it most make sense;
 - (4) Controls and checks being reduced;
 - (5) Reconciliation tending to be minimized; and
 - (6) A case manager generally providing a single point of contact.
- f) **The implementation phase** which addresses the following issues:
- (1) The parts of the structures that will not be changed but will be affected by the change;
 - (2) Identifying the changes that will be made in future rounds;
 - (3) Testing the new design to evaluate the initial performance;
 - (4) Making initial refinement and initiating a continuous review process.
- g) **Measuring the performance gains.** This is an important stage of the re-engineering process which evaluates results, identifies further opportunities to be addressed, improves processes, and shares learning and to communicate results.

The Case of Implementing Electronic Procurement (E-Perolehan)⁹⁸ in Malaysia

In developing e-government systems, the Malaysia Government uses ICT to streamline the procurement processes within the public sector. Electronic procurement known as e-Perolehan was started in Malaysia in 1999 as one of the projects under the Electronic Government Flagship. Implemented within the e-government flagship application under Malaysia's Multimedia Super Corridor (MSC) initiative, this project is envisioned to restructure the public sector's procurement and supply chain processes into a new dimension.

This e-procurement project was launched with the objective of ensuring value for money as well as transparency and accountability in the public procurement process. The project seeks to reengineer and automate the existing manual procurement system within the public sector to transform it into an online marketplace for suppliers and government agencies. With the project implemented in phases, the government and suppliers are allowed to conduct procurement activities electronically. It allows the suppliers to present their products on the internet, receive, manage, and process purchase orders and

⁹⁸ This part is summarized and extracted mostly from the paper entitled *Innovations in Governance and Service Delivery: E-Government Experiments in Malaysia*, Dr. Noore Alam Siddiquee, University of Brunei Darussalam, presented in the Workshop on Innovations in Governance and Public Service to Achieve a Harmonious Society (2005) arranged by Asian Development Bank, and the article of *Implementing Electronic Procurement in Government: A Case Study On E-Perolehan In Malaysia*, Maniam Kaliannan and Halimah Awang, University Malaya, Public Sector ICT Management Review (January - June 2008 VOL. 2 NO. 1), p.44-51

eventually receive the payment from government agencies *via* Internet. It allows the government agencies to approve and submit the purchase orders and also select items to be purchased, initiate approval process - all electronically. Thus, e-procurement system supports the entire procurement cycle from submission of tender/contract to approval and payment including alert notifications to the potential bidders. For the government, it would lead to cost savings through shortened procurement cycle (due to electronic retrieval and submission of quotations) and the creation of centralized products and supply databases across agencies. It would also enable the government to be smart buyer as well as improve control and accuracy in ordering and billing process. The suppliers – small or large - will also benefit from increased transparency and faster and accurate payment through electronic fund transfers. With the creation of electronic catalogue with internationally recognized product classifications, suppliers will also be able to reach new customers on a global scale.

By subscribing to the e-Perolehan system, suppliers will be able to participate in the procurement exercise by the government. Upon final implementation of the e-Perolehan system, full services will be available to all four types of procurement namely:

Phase 1:

- a. Supplier Registration
- b. Central Contract

Phase 2:

- a. Direct Purchase
- b. Quotation and Tender

e-Perolehan is the single point of registration for the suppliers. All approvals of the application for registration remain with the Registration Department of Ministry of Finance. Services available in the supplier registration module include the following (www.commercedc.com.my):

- a. Supplier registration can be done online via the Internet using the e-Perolehan website
- b. e-Perolehan routes all successful suppliers' applications for online approval by the relevant authority upon full submission of completed documents.
- c. e-Perolehan facilitates generation of certificate for registered and successful supplier.
- d. The supplier registration module supports online renewal of registration by the suppliers.
- e. The supplier registration allows online application for registration of additional category or "bidang".

- f. e-Perolehan supports online suspension or termination of the supplier registration.

From the government's perspective and research findings, the e-Perolehan system also is stated to lower the operational cost for the government over time. In addition, the government will be able to reduce administration and operational costs through the usage of e-Perolehan as business processes are reduced and streamlined.

E-Procurement by government ministries is not only reducing the government's procurement costs but also making the operations faster and steadier contributing to the satisfaction of all parties. For the private contractors, the introduction of e-Procurement has meant a significant increase in overall efficiency since it has led to the reduction of the time taken for application for registration and approval of supplies from 36 days to 20 days; number of lost supplier registration documents has fallen from 5 to 1 percent.

Just recently that e-Perolehan claims to have saved government RM14 billion (approx. US\$ 4,500 million). A key benefit of the e-Perolehan system is the 10% to 30% cost savings generated through lower operational costs, overheads and supplier price. It is projected to increase to RM20 billion (approx. US\$ 6,400) by 2014, according to Commerce Dot Com Sdn Bhd (CDC), which provides the IT solution for e-Perolehan.⁹⁹

What is found interesting is that the Government of Malaysia has established the office namely **Malaysian Administrative Modernization and Management Planning Unit (MAMPU)**¹⁰⁰ to spearhead public sector transformation to improve the well-being of the people and to strengthen national competitiveness through innovative and strategic enhancement of organizational management and ICT.

As the central agency for the modernization of Public Service administration and transformation of the delivery system, MAMPU carries out four (4) main roles:

- (a) Catalyst and Change Agent in the Administration and Management of the Public Service - *To introduce and promote new initiatives in the administration and management of the public service, as well as evaluate and award Government agencies for their performance in the public service delivery system of the country, towards achieving an efficient, effective and responsive Civil Service.*
- (b) Planner and Leader in the Development of Communication and Information Technology (ICT) in the Public Sector - *To plan, devise, coordinate and assess*

⁹⁹ Business Circle (a digital magazine and one-stop portal for intelligent discussions revolving around the Malaysian economic landscape) issue of 7 January 2013. <<http://www.businesscircle.com.my/overcoming-the-hurdles-of-e-procurement/>>

¹⁰⁰ http://www.mampu.gov.my/web/bi_mampu/profile

the implementation of ICT development in the public sector towards strengthening the service delivery of the Government.

- (c) Consultant in the Areas of Organizational Management and Communication and Information Technology (ICT) for the Public Sector - *To provide consultation services to ensure the structure, system, work procedures and implementation of ICT development are in line with efforts to improve the Government's delivery system.*
- (d) Facilitator in Modernization Program and Transformation of the Public Service Delivery System - *To synergize knowledge, expertise and resources (from public, private and NGOs) towards enhancing the modernization and transformation of the public sector.*

5.2.2. Ireland¹⁰¹

For a modern public service to continually improve and deliver services faster, better and more cost effectively, Ireland sets innovation, flexibility and the delivery of streamlined services as the heart of a reformed public service. The Public Service Reform Plan of Ireland addresses a wide range of issues such as:

- (a) implementation of **shared services models for HR, payroll, pensions** etc;
- (b) evaluation of **new business models for the delivery of non-core services**;
- (c) reform of **public procurement processes** and property rationalization; and
- (d) reducing costs, addressing duplication and eliminating waste to support **job creation**.

The Public Service Reform Plan addresses a set of cross-cutting initiatives which are focused on delivering the necessary structures, processes, ways of working, technologies and capabilities across all of Government. Within this context, the reform agenda focuses on the following five major commitments to change to address the need to improve the customer experience and address costs:

- (a) Placing customer service at the core of everything;
- (b) Maximizing new and innovative service delivery channels;
- (c) Radically reducing costs to drive better value for money;
- (d) Leading, organizing and working in new ways; and
- (e) Strong focus on implementation and delivery.

The comprehensive approach to public service reform is centered on strong leadership at all levels across the public service to deliver agreed commitments and realize sustainable

¹⁰¹ Summarized and directly extracted from *Public Service Reform*, Department of Public Expenditure and Reform, Ireland, December 2011

benefits. The Reform Plan underpins delivery ensuring that the primary focus is on the core objectives of improving customer service and reducing costs.

The approach to reform aligns a number of key elements, including the Program for Government, the Comprehensive Review of Expenditure, delivery of reform to frontline services within individual sectors, coordinated delivery of key cross-cutting reforms and the Public Service Agreement. The Figure below illustrates this integrated approach:



Figure 5-1: An Integrated Approach to Public Service Reform in Ireland

The Sectoral Reform, focusing primarily on frontline services, will continue to be a priority for relevant Government Departments and related organizations. The Public Service Reform is complementary, focusing on delivering the necessary structures, processes, ways of working, technologies and capabilities across all of Government. The Reform Plan is a set of cross-cutting initiatives enabling the delivery of quality and cost-effective frontline services to citizens. These initiatives will **reduce duplication and support delivery of more streamlined services and support structures**. The 14 public service reform initiatives are:

- 1) **Implementation** – It is described as the oversight of the implementation plans focusing on robust project delivery and benefits realization and establishment of dynamic and outcome focused governance structures and processes.
- 2) **E-Government, ICT, Information Sharing and Customer Service** – To leverage Information and Communications Technology (ICT) to better deliver services and information in a more cost effective manner; deliver online services, data sharing and new cross government capabilities and to simplify and enhance the customer experience by providing integrated services, reducing the information burden and by engaging with customers in service design and delivery.
- 3) **Shared Services** – To rationalize core structures and business processes that are duplicated across the public service by establishing shared operations to drive greater efficiencies and promote joined-up government through improved information sharing and process improvement.

- 4) ***Business Process Improvement*** – To improve efficiency in priority areas across the public service through business process and organizational improvements, including cross-organizational initiatives.
- 5) ***Procurement Reform*** – To deliver greater value for money through increased use of common procurement frameworks, increased professionalism and more innovative use of technology.
- 6) ***Property Asset Management*** – To deliver greater value through efficient management of the government estate through a smaller physical footprint meeting the needs of a reformed public service.
- 7) ***External Service Delivery*** – To evaluate alternative models for the delivery of non-core services in a more cost effective and flexible approach, with a focus on customer service improvement.
- 8) ***Rationalization and Re-organization*** -- Further rationalization and re-configuration of the public service to deliver streamlined services and greater value for money, and to promote greater integration and cooperation across organizations and sectors.
- 9) ***Public Expenditure Reform*** – To improve expenditure management across the public service including implementation of Medium-Term Expenditure Frameworks, performance budgeting, accrual accounting and the publication of balance sheets.
- 10) ***Government Level Performance Management*** – To evaluate Government-wide operational performance management focusing on Departmental objectives, operational metrics and performance assessment.
- 11) ***Organizational Performance*** – To renew the focus on organizational performance through initiatives such as Strategy Statements, enhanced reporting of performance and progress, the Organizational Review Programme and legislative change to clarify accountability arrangements.
- 12) ***Leadership/Individual Performance*** – To improve capacity and capability across the public service including a strong focus on leadership skills through the creation of the Senior Public Service (SPS). Enhance staff development and performance at all levels across the Public Service, through the implementation and consolidation of performance management systems.
- 13) ***Public Service Numbers/Workforce Planning & Redeployment*** – To implement new resourcing policies supported by strategic workforce planning, effective redeployment and a significant reduction in public service numbers by 2015. This will include a more proactive identification and allocation of resources to priority activities where necessary.

- 14) **Legislation and Political Reform** – To devise and implement legislation to advance political reform and to underpin relevant aspects of public service reform.

To implement the public service reform plan/initiatives, the recommendations and action plans specifically in relevance to cost reduction in IT use and investment are, such as:

- Increase the take-up of electronic services and self-service facilities and reduce dependence and traffic on offline channels, to reduce the costs of service provision and facilitate the redeployment of staff to other priorities.
 - (a) *Analyze existing legislation, regulations, and service procedures to examine provisions that could mandate the use of online/self-service channels, and thereby eliminate non-electronic delivery where possible and desirable; and/or facilitate the implementation of both positive and negative incentives that would encourage the use of online service offerings. Each public body will do this.*
- Ensure implementation of the **Public Services Card (PSC)** and its rollout as the access mechanism for the vast majority of public services.
 - (a) *Agree on an investment program and the allocation of required resources.*
 - (b) *Develop an awareness program for both Public Service bodies and for residents on the availability of the card and its potential.*
 - (c) *Seek Government approval to mandate all public bodies to use the PSC as the means of accessing their high-value services or explain to the Department why this is not possible.*
 - (d) *Examine the best way of using the PSC and its underlying registration facilities and data services as the means of accessing public services over electronic channels*
- Implement measures to reduce the costs of ICT provision in Public Bodies.
 - (a) *Enhance the self-sufficiency of public bodies and reduce their reliance on external resources within the terms of **Employment Control Frameworks**.*
 - (b) **Consolidate ICT infrastructure by rationalizing the number of data and computer centers in use throughout the public service.**
 - (c) *Assess the potential for data containers and new cooling technologies to reduce operational costs.*
 - (d) *Examine the potential for developing shared pools of ICT staff resources to develop centers of excellence, maximize productivity, and reduce duplication of activities.*
- Implement shared services
 - (a) *Rationalize core structures and business processes that are duplicated across the public service by establishing shared operations to drive*

greater efficiencies and promote joined-up government through improved information sharing and process improvement

In Ireland, the Department of Public Expenditure and Reform is to provide central leadership working closely with all Government Departments and senior managers across the wider public service to deliver reform. Within this context, the critical success factors for public service reform are:

- Prioritization of activities to ensure a focus on delivering the most important outcomes first;
- Effective communication engaging the right stakeholders at the right time;
- A robust delivery capability supported by strong leadership across the public service;
- A pragmatic and effective governance model underpinning the delivery of reform;
- Senior management ownership of reform including delivery of the benefits; and
- Appropriate approaches to encourage innovation and prevent risk avoidance.

As a first step, the Minister for Public Expenditure and Reform will engage with the relevant Committees in this regard.

*The Cases of Public Service Reform in Ireland*¹⁰²

1) Implementing Electronic Procurement

An estimated €9 billion is spent by public bodies annually on the public procurement of supplies and services. This is a very significant portion of overall spending and it is essential that the Public Service is achieving maximum value for money and operational efficiency in its approach to public procurement. It is for this reason that public procurement is one of the major projects of key strategic importance under the Public Service Reform Plan of Irish Government.

The implementation of mandatory arrangements in respect of centralized frameworks organized by the National Procurement Service (NPS), and the increased use of collaborative procurement arrangements across the public service are among the actions relating to **public procurement** that have been considered by the Government.

In order to maximize the savings on a range of goods and services purchased widely across the public service, Circular 06/12: Public Procurement (Framework

¹⁰² Extracted from *Progress on the implementation of the Government's Public Service Reform Plan*, Department of Public Expenditure and Reform, Government of Ireland, September 2012. Available at <<http://per.gov.ie/wp-content/uploads/Statement-on-Public-Service-Reform-Plan-6th-Sept-2012.pdf>>

Agreements)¹⁰³, issued by the Department of Public Expenditure and Reform in July 2012, requires public service bodies to avail of national contracts put in place by the NPS. The NPS is working to expand the range of categories covered by its national contracts and will continue to facilitate cross sectoral collaborative procurement arrangements. A range of ICT procurement frameworks are in place for use by all public bodies, yielding an estimated €30-€40 million in cost reductions per annum. An external review of the capacity and capability of the central procurement function examines procurement structures and processes with a view to identifying the actions required to realize substantial savings in public procurement in the short to medium term. The review will result in proposals to improve efficiency in central procurement and to radically reduce costs through greater centralization, integration of procurement operations and policy, and reduction in duplication

A radical new consolidated approach to public procurement has been agreed, with the establishment of a National Procurement Office to be headed by a Chief Procurement Officer. The integration of public procurement policy and operations and the much greater level of centralization will lead to reductions in the cost of goods and services; better procurement services at lower cost; introduction of technical standardization; greater attention to contract management and better problem resolution; greater levels of professionalism among staff responsible for procurement; and better performance management of the central procurement function.

A recently completed Review of the Central Procurement Function found that of the estimated €9 billion spend referred to above, there is a procurement addressable spend of approximately €7 billion and that significant savings that could be achieved through the implementation of a transformational change to the central procurement model. The report estimates that implementation of its recommendations, over a three-year period, could yield potential annual savings in the range of €249 million to €637 million, depending on the approach taken. In order to realize these savings, the Review recommends the actions below:

(a) Establish Chief Procurement Officer role and a National Procurement Office

- Appoint a new Chief Procurement Officer (CPO) accountable for national procurement strategy, policy, implementation and an effective compliance framework.
- Establish a National Procurement Office (NPO) under the aegis of the Department of Public Expenditure and Reform.

¹⁰³ The purpose of this Circular is to inform public bodies of the mandatory requirement to utilize central contracts, put in place by the NPS, when procuring a range of commonly acquired goods and services. Such central arrangements are targeted at securing best value for money and facilitating contracting authorities to deliver services within their budgetary constraints. (source:http://www.procurement.ie/sites/default/files/dper_circular_6-2012-1_public_procurement_framework_agreements.pdf)

- Transition the current National Procurement Service (NPS) and National Public Procurement Policy Unit (NPPPU) procurement functions, including responsibility for all aspects of procurement policy (including EU and National procurement law). Related Centre for Management and Organisational Development (CMOD) processes should also be considered.

(b) Establish organizational alignment

- NPO to manage all strategic spend for common categories of goods and services and to be responsible for strategic and operational procurement policy and implementation of an effective compliance framework across sectors.
- Transition some experienced resources from individual procurement teams within each sector to the new NPO.
- Establish a fulltime Procurement Officer within each sector (Health, Education, Local Government, Justice and Defence) to be responsible for procurement across relevant Departments and Agencies.
- Establish a robust governance model for procurement with Assistant Secretary level involvement and sponsorship from sectors.

(c) Enable savings delivery and compliance

- Implement Spend Analytics to capture, cleanse and accurately categorize all State spend by type, location and vendor.
- Develop detailed spend and savings targets across sectors with detailed integrated plans for delivery by the NPO and sector procurement.
- Secretaries General to be accountable to provide monthly reports to the CPO.

(d) Program and transition management

The report recommends five major implementation work streams be established to complete the transition to the new structure:

- Establishment of governance and operating model;
- Creation and transition of NPO function from current organizations;
- Planning and implementation of Strategic Sourcing;
- Design and implementation of Spend Analytics; and
- Planning and implementation of Procurement Operational Shared Services.

2) *Consolidating ICT across the Public Service: e-Government and Cloud Computing*

Progress is being made on the consolidation of ICT across the public service of Irish Government. For example, a shared, high-speed Government network has been implemented, a considerable number of bodies have already moved their backend computer infrastructure in whole or in part into data centers operated by the Revenue Commissioners and the Department of Agriculture, and command and control solutions for emergency services are being implemented on a shared basis.

Significant progress on e-Government has been achieved in recent years. About 400 informational and transactional services can be accessed via www.gov.ie. These services include Revenue Online Services for businesses, Motor Tax Online, applications for a Higher Education Grant, and accessing Companies Registration Office online facilities.

The success of the Irish Government's approach has been recognized internationally. *The European Commission's Digital Agenda Scorecard 2012* acknowledges Ireland's good performance regarding public e-Procurement adoption by enterprises and the use of e-Government by citizens. The EU Commission has also acknowledged that Ireland has turned to e-Government to help maintain quality public services in a time of unprecedented restrictions on resources and notes that "e-Government use has witnessed one of the largest increases going from 37% in 2010 to 44% in 2011, pulling the country from below to above EU27 average. Business use has increased to 90%, well above EU average (84%)".

The eGovernment Strategy 2012-2015, approved by Government, sets out a new approach to e-Government for the Irish public service. This strategy was developed by the Department of Public Expenditure and Reform in conjunction with the Public Service Chief Information Officer (CIO) Council. The new strategy is founded on five basic principles for e-Government which are consistent with the overall approach of the Public Service Reform Plan:

- The **needs of citizens and businesses** are at the center of e-Government;
- Public services should be delivered through the **most appropriate channels**;
- E-Government should **reduce the administrative burden** for citizens and businesses;
- E-Government projects **should reflect Business Process Improvements**, delivering demonstrable efficiency, effectiveness and value for money gains; and
- Public bodies should work to ensure that **the online channel is the most attractive option for customers**.

Following on from the e-Government Strategy, the Government published its *Cloud Computing Strategy for the Public Service*.

5.2.3. United States of America¹⁰⁴

“The Obama Administration is changing the way business is done in Washington and bringing a new sense of responsibility to how we manage taxpayer dollars. We are working to bring the spirit of American innovation and the power of technology to improve performance and lower the cost of government operations. (CIO Council 2010)”

Streamlining government services into an easy-to-use web interface is costly. The estimates of e-government cost were based on: the cost of developing, implementing, and maintaining a federal portal, funding interagency projects, creating an office for information security, technology training and education, and studying national disparities in Internet access. A major justification for federal e-government funding was that it would help to reduce long-term costs. Once in the Clinton Administration, the ultimate goal of the U.S. government (since 1990) was that “works better and costs less.”

The important issue is minimizing the costs of e-government implementation and maintenance. One way to minimize the financial costs that e-government generates is to reduce duplicative systems. According to the FY 2009 Information Technology Budget, many agencies were reporting the “**retirement and shutdown of legacy and redundant systems via e-government**”. This type of strategy minimizes costs by streamlining common and often redundant systems. **As an example of the cost savings, the report stated that approximately \$508 million dollars were saved through shutdowns and line of business (LOB) initiatives in 2007.** Such initiatives have already proven to be effective in reducing the burden of cost associated with e-government, and the report suggests that LOB strategies will continue to be used in the future.

Through IT Reform, the Federal Government has made progress in foundational execution areas such as **adopting “light technologies” (e.g. cloud computing), shared services (e.g. commodity IT), modular approaches for IT development and acquisition, and improved IT program management.** The strategy leverages this progress while focusing on the next key priority area that requires government-wide action: *innovating with less to deliver better digital services*. It specifically draws upon the overall approach to increase return on IT investments, reduce waste and duplication, and improve the effectiveness of IT solutions defined in the Federal Shared Services Strategy

¹⁰⁴ This part is based on *Digital Government: Building a 21st Century Platform to Better Serve the American People*, the U.S. Government, May 2012; *State of Public Sector Cloud Computing*, Vivek Kundra (Federal Chief Information Officer), CIO Council, May 2010; and *E-Government in the United States: Steps to Advance its Success*, Kim Mathews, advised by Professor Terry Usrey, May 2010

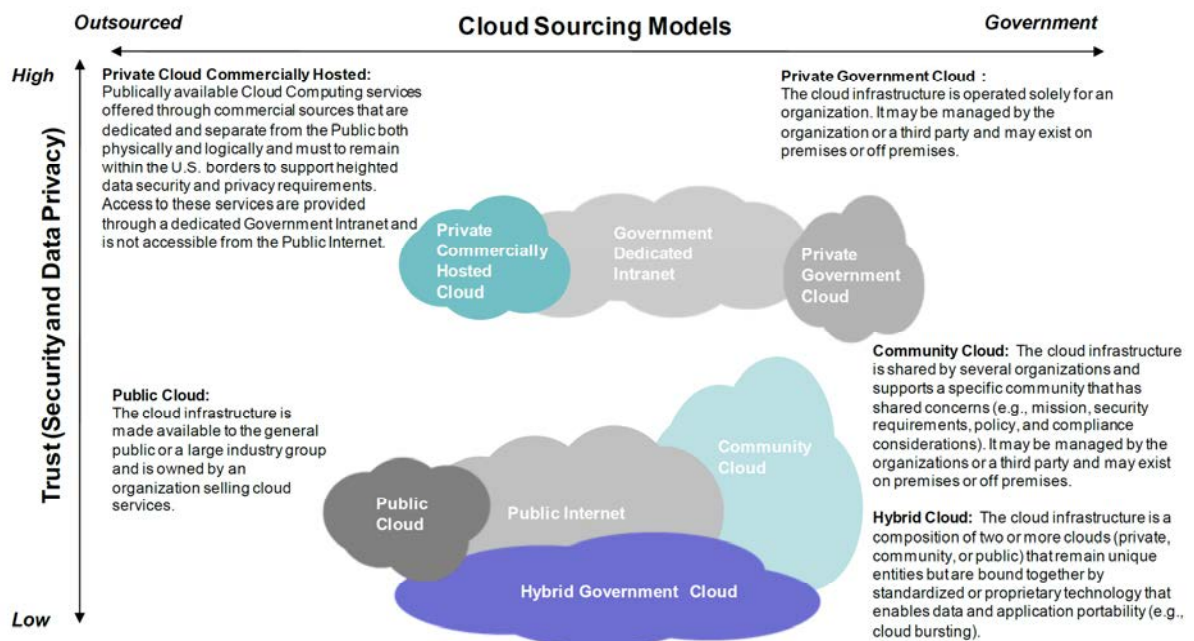
Adopting Cloud Computing

The United States Government is the world's largest consumer of information technology, spending over \$76 billion annually on more than 10,000 different systems (CIO Council 2010). Fragmentation of systems, poor project execution, and the drag of legacy technology in the Federal Government have presented barriers to achieving the productivity and performance gains. In September 2009, the Federal Government's Cloud Computing Initiative was announced with a view that 'Cloud Computing' has the potential to greatly reduce waste, increase data center efficiency and utilization rates, and lower operating costs. As part of the Federal Cloud Computing Initiative, the National Institute of Standards and Technology (NIST) is leading and facilitating the development of cloud computing standards which respond to high priority security, interoperability, and portability requirements.

The Office of Management and Budget's *Implementation Plan to Reform Federal Information Technology Management* **seeks a fundamental shift from building custom systems to shared solutions and light technologies, such as cloud computing.** Key points of the plan that are aimed at reducing IT infrastructure growth include a "Cloud First" policy for services and shrinking the number of data centers by at least 800 by 2015.

Cloud computing reduces costs by leveraging IT infrastructure at 60-80+ percent utilization and provisioning services as needed. Cloud computing also increases efficiency and agility through automation and significantly reduces the administrative burden on internal IT resources. In addition, buying cloud services on demand eliminates the need for large, upfront capital expenditures and is considered an operating expense.

The federal "Cloud First" policy requires agency CIOs to identify three "must-move" services by March 2011 and to create a plan for migrating those services to the cloud. At least one service must be fully migrated within 12 months, with two more services migrated within 18 months. Migration plans will include major milestones, execution risks, adoption targets, required resources and a retirement plan for legacy services. The below Figure illustrates the cloud sourcing models by the General Services Administration of the State Government.



Original source: General Services Administration, "Cloud Sourcing Models" (government document, 2010).

Figure 5-2: Cloud Sourcing Models (CIO Council 2010)

Adopting Shared Services Approach

Furthermore, there are common challenges that all agencies face in trying to deliver better digital services at a lower cost to the American people and employees. Approaching these challenges as one government will enable agencies to focus their time and money on developing innovative, mission-facing solutions rather than re-inventing the new one. A "shared platform" approach is one among the four overarching principles based on for driving the transformation for digital government, which will help reduce costs and streamline development in public services. Those four principles are:

- An "**Information-Centric**" approach— To move from managing "documents" to managing discrete pieces of open data and content which can be tagged, shared, secured, mashed up and presented in the way that is most useful for the consumer of that information.
- A "**Shared Platform**" approach— To help work together, both within and across agencies, to reduce costs, streamline development, apply consistent standards, and ensure consistency in how we create and deliver information.
- A "**Customer-Centric**" approach—To influence how to create, manage, and present data through websites, mobile applications, raw data sets, and other modes of delivery, and allows customers to shape, share and consume information, whenever and however they want it.

- A platform of “**Security and Privacy**”— To ensure this innovation happens in a way that ensures the safe and secure delivery and use of digital services to protect information and privacy.

To make the most use of resources and “*innovate with less*”, **it needs to share more effectively, both within the government and with the public.** It also needs to share capacities to build the systems and processes that support efforts, and be smart about creating new tools, applications, systems, websites and domains. Ultimately, **a shared platform approach to developing and delivering digital services and managing data not only helps accelerate the adoption of new technologies, but also lowers costs and reduces duplication.** To do so, it needs to rapidly disseminate lessons learned from early adopters, leverage existing services and contracts, **build for multiple use cases at once, use common standards and architectures, participate in open source communities, leverage public crowdsourcing, and launch shared government-wide solutions and contract vehicles.**

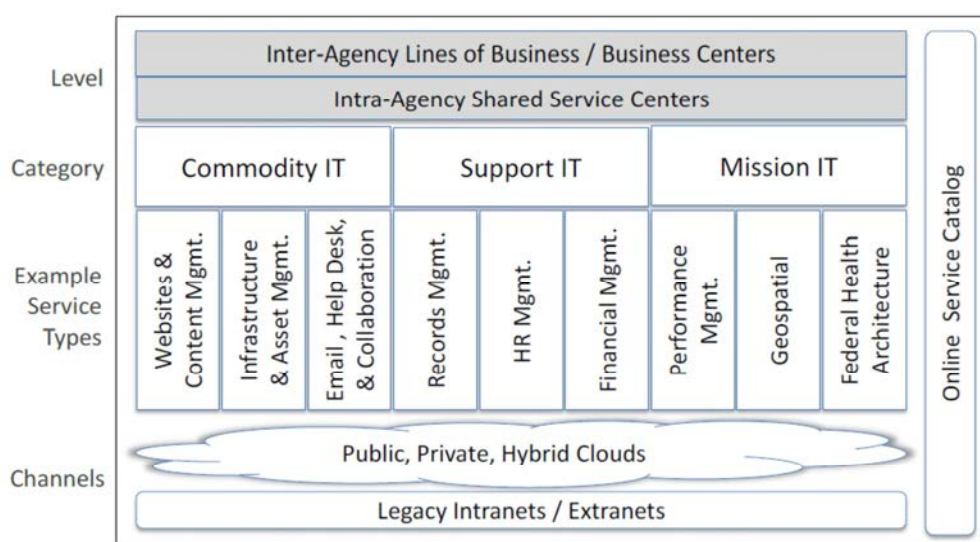
Identifying opportunities for sharing existing solutions at agencies and building new solutions for government-wide use requires strong leadership, coordination, and support. To operationalize the **principle of “build once, use many times”**, General Services Administration (GSA) has to expand its current efforts and establish **a Digital Services Innovation Center.** The Center will work with agencies to establish shared solutions and training to support infrastructure and content needs across the Federal Government (e.g. **source code sharing tools, video captioning, language translation, usability and accessibility testing, web hosting, and security architectures**). The Innovation Center will support agencies lacking these capabilities, not supersede agencies’ existing capabilities, and function as a cooperative enterprise that draws on resources from across government and leverages the expertise of forward-leaning agencies.

At the outset, to support strategy implementation, the Innovation Center will focus on three initial actions:

- **Identify shared and open content management system (CMS) solutions** and support implementation through training and best practices. This will offer agencies an alternative to building their own platforms in isolation and enable code sharing and modular development.
- **Help agencies develop web APIs** and unlock valuable data by providing expert resources and other support to enable developers, entrepreneurs, and other end users take advantage of government data and content.
- **Launch a shared mobile application development program**, in conjunction with the Federal CIO Council, that will help agencies develop secure, device-

agnostic mobile applications, provide a development test environment to streamline app delivery, foster code-sharing, and validate official government applications.

The shift to a shared platform culture will require strong leadership at the government-wide and agency levels. Agencies must begin to look first to shared solutions and existing infrastructure when developing new projects, rather than procuring new infrastructure and systems for each new project. They must also share ownership of common service areas, both within and across agencies, instead of creating multiple websites on the same topic. To alleviate the burden on individual agencies, prevent duplication, and spur innovation, The central support shall be provided for the adoption of new technologies, development of better digital services, and strengthening of governance.



Source: Federal IT Shared Services Strategy, May 2, 2012

Figure 5-3: IT Shared Services Concept Overview

Adopting a shared services approach and consolidating mobile device and wireless service contracts will not only reduce costs but also improve ability to track usage, analyze pricing, secure devices, and deliver mobile applications. This is in line with the Administration's overall effort to consolidate the acquisition and management of commodity IT services through mechanisms such as the Federal Strategic Sourcing Initiative¹⁰⁵, the PortfolioStat process¹⁰⁶, and the Administrative Efficiency Initiative.

¹⁰⁵ Federal Strategic Sourcing Initiative (FSSI) is the structured and collaborative process of critically analyzing an organization's spending patterns to better leverage its purchasing power, reduce cost and improve overall performance. The primary goals of FSSI are: Strategically source across federal agencies; Establish mechanisms to increase total cost savings, value, and socioeconomic participation; Collaborate with industry to develop optimal solutions; Share best practices; and, Create a strategic sourcing community of practice. (source: <http://www.gsa.gov/portal/category/25623> and <https://strategicsourcing.gov/about-fssi>)

¹⁰⁶ PortfolioStat is a new tool that agencies use to assess the current maturity of their IT portfolio management process, make decisions on eliminating duplication, augment current CIO-led capital planning and investment control processes, and

The critical next steps to help build a digital government that innovates with less are outlined within the Digital Government Strategy. One of its series is to ensure that as the government adjusts to the new digital world, the modern infrastructure needed is built to support digital government efforts and leverage the Federal Government's buying power to reduce costs. Establishing a Digital Services Innovation Center and Advisory Group helps to lay the foundation for a well-coordinated approach toward the objectives.

Adopting Data Center Consolidation

The federal government spends more than \$20 billion each year on IT infrastructure. It operates and maintains more than 2,100 data centers with server utilization rates as low as 7 percent. These and other compelling facts are fueling aggressive reforms in how the federal government purchases and uses IT.¹⁰⁷

The Federal Data Center Consolidation Initiative (FDCCI)¹⁰⁸ was created in 2010 to reverse the historic growth of Federal data centers. The FDCCI seeks to curb this unsustainable increase by reducing the cost of data center hardware, software, and operations; shifting IT investments to more efficient computing platforms; promoting the use of Green IT by reducing the overall energy and real estate footprint of government data centers; and increasing the IT security posture of the government.

To drive this effort, the CIO Council launched the Federal Data Center Consolidation Task Force that serves as a forum for best practices and lessons learned. It has led ongoing inventory validation and verification mechanisms to ensure the accuracy of this data and monitor the execution of agency consolidation plans. The Task Force is addressing topics such as, but not limited to, cost modeling, the government-wide marketplace detailed in the IT Reform Plan, technical approaches to consolidation, acquisition modalities, and the coordination of the FDCCI with Federal real property and sustainability efforts.

By shutting down and consolidating under-performing data centers and optimizing the data centers in the Federal inventory, the Government saves taxpayers billions of dollars and curb spending on underutilized infrastructure. This means a shift from a model that risks procuring duplicative and wasteful infrastructure that utilizes only a fraction of the computing power purchased to a newer model, where that risk is reduced as the government purchases IT infrastructure as a service, deployed in a scalable and rapid fashion.

move to shared solutions in order to maximize the return on IT investments across the portfolio. (source: <https://cio.gov/maximizing-value/portfoliostat/>)

¹⁰⁷ Issue Brief, CGI (partnering with federal agencies to provide end-to-end solutions for defense, civilian and intelligence missions.

Available at <<http://www.cgi.com/files/white-papers/us-federal-cloud-computing-initiatives-white-paper.pdf>>

¹⁰⁸ <https://cio.gov/maximizing-value/data-center-consolidation/>

The below Table¹⁰⁹ illustrates how the Federal Information Technology FY 2013 Budget Priorities is implemented to maximize return on investment (ROI) of Federal IT as “Doing More with Less” through the strategic use of Federal Information Technology.

<p>Maximizing ROI of Federal IT</p> <ul style="list-style-type: none"> ○ <i>TechStat Investment Reviews;</i> ○ <i>Data Center Consolidation;</i> ○ <i>Federal Risk and Authorization Management Program;</i> ○ <i>Shared IT Services</i> 	<p>Department of Defense (DOD) is saving up to \$300 million in FY 2013 from the closure of 100 data centers.</p> <p>Environmental Protection Agency (EPA) saved \$10 million since FY 2011 by consolidating IT procurements and standardizing help desks.</p>
<p>Productivity Gap and 21st Century Government</p> <ul style="list-style-type: none"> ○ <i>Future First;</i> ○ <i>Mobile Strategy;</i> ○ <i>Entrepreneurs in Residence;</i> ○ <i>Expert Resources;</i> ○ <i>Presidential Technology Fellows</i> 	<p>Ministry of Commerce will fully deploy its Patent End-to-End platform in FY 2013, enabling the Patent and Trademark Office to improve the time it takes to issue a patent decision, advance patent examination quality, and enhance the patent appeal/post-grant processes.</p> <p>Internal Revenue Service will improve and expand e-filing, and build on the FY 2012 conversion to daily tax processing through CADE 2 (Customer Account Data Engine program) to continually improve the taxpayer experience and agency staff capability.</p> <p>Social Security Administration is modernizing earnings reporting systems to speed the reporting process, reduce employer burden, improve inter-agency data sharing and reduce improper payments.</p>
<p>Business and Citizen Interaction and National Priorities</p> <ul style="list-style-type: none"> ○ <i>Making Government Work Better for American Business; –Federal Permitting Dashboard –BusinessUSA</i> ○ <i>Citizen-centric .Gov Web Reform</i> ○ <i>Mobile Strategy</i> 	<p>DOD and Department of Veterans Affairs have been working together to enhance the eBenefits Portal which provides service members, veterans, and their dependents self-service access to comprehensive healthcare and benefits information online, and includes transactional and interactive capabilities for applying and managing those benefits.</p> <p>Ministry of Commerce and Small Business Administration (SBA) launching an online platform to streamline small business interactions with the Federal Government.</p>
<p>Cybersecurity</p>	<p>Department of Homeland Security is investing an additional \$202 million to support continuous monitoring.</p> <p>Federal Risk and Authorization Management Program (FedRAMP) will provide provisional security authorizations for re-use by all agencies, establishing initial operating capability in Q3 of FY 2012.</p>

Meanwhile, what to expect in FY 2012 were:

- Shared First
 - Release Shared Services Strategy

¹⁰⁹ Extracted from the presentation on *Federal Information Technology FY 2013 Budget Priorities: Doing More with Less*, Steven VanRoekel (U.S. Chief Information Officer), Executive Office of the President of the United States. <www.whitehouse.gov>

- Launch Government-wide Portfolio reviews
- Stand up contract vehicles for Cloud and Commodity IT services
- Establish FedRAMP Initial Operating Capability (IOC)
- Future First
 - Data.gov Transformation
 - Release Federal Mobility Strategy
 - Issue guidance to support modular approaches in acquisition and development
 - .gov strategy
- Return on Investment
 - Accelerate OMB (Office of Management and Budget)-led TechStats¹¹⁰
 - Expand “TechStat” model to the bureau level
 - Create a Government-wide marketplace for data center availability
 - Cloud First
- People
 - Ensure to have the highly qualified staff in need through Presidential Tech Fellows Program and new standards for the IT Program Manager career track
 - Enable IT program manager mobility across government and industry
- Cyber security

The Cases of Public Services Reform in U.S.A.

1) Data Center Consolidation by U.S. Environmental Protection Agency¹¹¹

Over the past three years (approx. 2008-2010), the Environmental Protection Agency (EPA) consolidated small data centers and server rooms in various locations across the country with plans to gain more efficiencies. Virtualization is already used extensively to support database hosting, and EPA is expanding virtualization to support Web and application servers. The Agency completed a phased virtualization program across its primary data center that included optimizing the efficient use of floor space and turning off air handlers. And EPA is hosting more than 200 individual Agency business applications in an innovative, shared hosting environment offering many of the features of private cloud services.

EPA’s enterprise application hosting is highly centralized: 19 of 21 EPA Capital Planning and Investment Control (CPIC) major applications and 66 of 82 non-major applications are hosted in a highly virtualized, shared services context at the National Computer

¹¹⁰ A TechStat is a face-to-face, evidence-based accountability review of an IT investment; it enables the Federal Government to intervene to turn around, halt or terminate IT projects that are failing or are not producing results for the American people. (source: <https://cio.gov/maximizing-value/techstat/>)

¹¹¹ U.S. Environmental Protection Agency Data Center Consolidation Plan, September 2011

Center (NCC). Because EPA enterprise applications are already consolidated to a single data center, EPA's consolidation plan focuses on achieving efficiencies via virtualization within EPA's four primary data centers and the smaller server rooms that service local productivity and business support services for EPA Headquarters, regional offices and research laboratories.

With full implementation of these initiatives, EPA expects to realize several efficiencies:

- Minimize data center energy consumption.
- Minimize long-term growth in IT operations costs.
- Maximize server and storage utilization.
- Maximize standardization and agility.
- Reduce long-term growth of IT infrastructure costs.

EPA is pursuing the following activities to maximize efficiencies across the Agency's widely distributed geographic locations.

- A. **Network Optimization:** EPA's network optimization was a fundamental prerequisite for server consolidation, as bandwidth is a critical risk factor for server migration. EPA's network optimization initiative leveraged the General Services Administration (GSA) Network contract to move EPA's Wide Area Network (WAN) and Trusted Internet Connection (TIC) services to commercial cloud services. EPA completed the initial transition in March 2010 and continues to expand the use of cloud services provided under this contract. In 2012 EPA has migrated its e-mail gateways and remote access services to the commercial cloud service.
- B. **Standardization and Enterprise Procurement:** EPA established standards and enterprise procurement for e-mail, virus protection, vulnerability management, directory services, asset management and patch management. In 2010, EPA established server and software standards for x86/64 virtualization platforms and established an enterprise platform for infrastructure monitoring. By 2013, EPA will evaluate and procure enterprise solutions for backup and disaster recovery, desktop virtualization and collaboration. These efforts will consolidate redundant software products to drive enterprise efficiencies in procurement, deployment and application administration.
- C. **Local Optimization:** In 2009, EPA began migrating x86/64 servers to virtualized platforms. These virtualization efforts are paired with infrastructure refresh efforts so that they can be financed within existing operating budgets and maximize return on investment. Virtualization infrastructure is accounted for in the target reductions for the Windows, Linux and UNIX servers. EPA

has achieved substantial gains in virtualization. Nine percent of physical servers are virtual machine hosts and 32 percent of EPA servers are virtual machines. By 2015, the Agency plans to increase virtual hosts to 30 percent of physical machines with 60 percent of EPA servers operating as virtual machines.

D. E-mail Optimization: EPA's e-mail optimization will consolidate e-mail from over 180 Lotus Notes servers distributed across 45 locations to a private cloud infrastructure across its four primary data centers. This initiative modernizes, standardizes and improves EPA's e-mail service; achieves substantial reductions in servers, storage and energy consumption; and facilitates migration to external cloud services beginning in 2014. In 2012, EPA has migrated its e-mail internet gateway services to AT&T's cloud services under GSA's Network contract.

E. Enterprise COOP and DR: The goal of enterprise COOP (continuity of operations) and DR (disaster recovery) is to provide for the COOP and DR services using shared services that are hosted in the four primary data centers. COOP and DR services are currently provided using site-specific solutions. Enterprise COOP and DR services must provide remotely accessible data and applications to support continued operations and emergency response to EPA regions or field offices. The initial provisioning of enterprise COOP and DR at the four primary data centers by 2013 is a key component of EPA's data center optimization and server reduction strategy.

Cost Savings - EPA completion of the network optimization initiative reduced EPA's monthly WAN (Wide Area Network) costs by over 50 percent from \$179 to \$83 per megabit. These cost savings enabled a doubling of EPA WAN capacity to support server consolidation efforts within EPA's existing operating budget. WAN capacity is a critical path dependency for consolidation. EPA re-competed labor contracts responsible for approximately 44 percent of server operations. The new contracting model provides for increased competition through a multi-award contract with annually renewable tasks. These reduced labor costs enable EPA to accommodate approximately \$1.5M in annual server consolidation costs within EPA's existing operating budgets.

2) *Implementing the Open Government and Crowdsourcing Initiatives*

The Open Government Directive was initiated by the Obama administration in December 2009 to increase civic participation and engagement and create a culture of transparency, participation and collaboration across US Federal agencies.

- Data.gov <<http://www.data.gov/>>

An integral component of the US Open Government initiative, Data.gov aims "to increase public access to high value, machine readable datasets generated by the Executive Branch of the Federal Government".

As a priority Open Government Initiative for President Obama's administration, Data.gov increases the ability of the public to easily find, download, and use datasets that are generated and held by the Federal Government. Data.gov provides descriptions of the Federal datasets (metadata), information about how to access the datasets, and tools that leverage government datasets. The data catalogs will continue to grow as datasets are added. Federal, Executive Branch data are included in the first version of Data.gov. Data.gov was launched in 2009 with 47 datasets of government information that was previously unavailable to the public. The motivation was that this data belongs to the American people, who should not only have the information, but have the ability to use it. Currently, there are more than 375,000 datasets available, which have been downloaded 2.9 million times. More than 1,250 governments apps have been developed using this data – 103 of them are for mobile usage. Citizens have used the data to develop 236 apps (Whitehouse 2013).

A primary goal of Data.gov is to improve access to Federal data and expand creative use of those data beyond the walls of government by encouraging innovative ideas (e.g., web applications). Data.gov strives to make government more transparent and is committed to creating an unprecedented level of openness in Government. The openness derived from Data.gov will strengthen the Nation's democracy and promote efficiency and effectiveness in Government.

Public participation and collaboration will be key to the success of Data.gov. Data.gov enables the public to participate in government by providing downloadable Federal datasets to build applications, conduct analyses, and perform research. It will continue to improve based on feedback, comments, and recommendations from the public. Individuals are encouraged to suggest datasets they'd like to see, rate and comment on current datasets, and suggest ways to improve the site.

A centralized website for government data offers 389,730 raw and geospatial datasets from a myriad of federal agencies. A "**Developers' Corner**" teaches users to develop applications making use of the available data; as of June 2011, Data.gov had 236 citizen-developed applications. Notable member applications are featured in their "Apps Showcase" site (<http://www.data.gov/developers/showcase>).

A "Data.gov Communities" section (<http://www.data.gov/communities/>) attempts to "bridge policy makers, technologists, data owners, and citizens", by inviting them to recommend data to be shared, create applications to make the data more user-friendly, share views on the policies to improve government transparency, and exchange ideas with each other. Citizen feedback is an integral component of Data.gov, with various channels for users to rate and comment on the datasets released, as well as to request datasets they want to see in the future.

- Reboot.FCC.gov <<http://reboot.fcc.gov/>>

The Federal Communications Commission (FCC) is committed to a continuous, fact-based process of agency reform. To ensure openness as well as best involve the public in this process, Reboot.FCC.gov serves to highlight various initiatives. For example, through engagement program, the FCC is reevaluating how citizens engage in government and exploring new ways to increase public participation through the use of new media tools.

FCC provides easy-to-search databases with over 150 downloadable datasets, and connects with citizens over a variety of online and social media channels. Reboot.fcc.gov is dedicated to ideas for transforming the organization into "a model of excellence". Using **the social media tool IdeaScale¹¹², citizens can submit, comment and vote on ideas.** IdeaScale sieves through the multitude of ideas received and floats the ones which have garnered the most votes and comments to the top of the list, giving decision-makers a better sense of the concerns felt on the ground.

3) Cases of Open Source

The federal government promotes and uses open source software as a way of making it easier for the government to share data, improve tools and services, and return value to taxpayers. To mark the completion milestone for Federal IT reform, in June 2012, with the Department of Homeland Security (DHS) Accomplishments, CIO Council highlighted several DHS's initiatives with focus including the shift to a Cloud-first policy and establishment of strong governance of the Department's IT investments. DHS became a leader in putting the government's Cloud-first policy into practice by awarding a task order using the General Services Administration's (GSA's) Blanket Purchase Agreement (BPA) for Infrastructure as a Service (IaaS). This led the transformation of Government-to-Citizen (G2C) services by establishing the **DHS Public Cloud- the cost-effective,**

¹¹² IdeaScale is an easy-to-use, yet powerful solution for the collection of feedback and ideas. IdeaScale was born in the cloud in 2008. In its first year, IdeaScale garnered high-profile government contracts with many prestigious clients like the VA, FCC, and the Office of the President of the United States. Web Site: <<http://ideascale.com/>>

best-of-breed open source platform that enabled Web site and services hosting for DHS.gov, FEMA.gov, and USCIS.gov among others (CIO Council, June 2012).

However, some interesting cases of open source implementation in the U.S. are presented as follows:

- *NASA World Wind*¹¹³

Since World Wind provides the infrastructure for information exchange, efforts to provide value can concentrate on solutions. In this way National Aeronautics and Space Administration (NASA) stimulates entrepreneurial enterprise, provides the government with control over the information exchange medium, and enhances the ability for the world to communicate and share information. NASA World Wind was awarded the NASA Software of the Year in 2009.

World Wind is an open source 3D interactive world viewer originally created by NASA's Learning Technologies project. It develops a cross-platform Java SDK (software development kit) so that developers can embed World Wind technology into their own applications.

World Wind technology also provides the government with absolute control over use of the technology, as well as absolute security due to code visibility, while also making industry and the world community more competitive in the area of solutions based on use of this open and standardized technology. World Wind technology focuses on standardized and optimized delivery of pixels, while allowing others to use this technology as the medium for information exchange. The primary goal of the project is to establish a national spatial data infrastructure (SDI), serving the criteria identified by the U.S. SDI, the European Commission INSPIRE directive and the United Nations SDI.

A strategy of supporting a fully open community allows actors from outside of government to participate in the project, furthering the adoption of the software and broadening its use in a range of applications

- *Law Enforcement Automated Data Repository (LEADR)*¹¹⁴

Law Enforcement Automated Data Repository (LEADR) system is an open source Comprehensive Collection and Information Sharing Toolset. It was initially designed by several local agencies (counties) to share law enforcement information across

¹¹³ <http://opensourceforamerica.org/papers/case-studies/nasa-world-wind/>

¹¹⁴ <http://opensourceforamerica.org/papers/case-studies/law-enforcement-automated-data-repository-leadr/>

jurisdictional boundaries and today is in use by hundreds of agencies in the Southeastern United States.

The LEADR system is a software suite that provides the necessary tools to ensure effective and efficient sharing of critical law enforcement information. Its elements include:

- *Sharing Capabilities.* Information must be shared to increase its value. This is especially true when trying to analyze criminal patterns or linkages between individuals, property, addresses or phone numbers. The sharing component of LEADR assists in determining potential precursors of criminal and terrorist activities.
- *Web-Based Records Management.* A user friendly, comprehensive, cost-effective records management solution for small agencies to enter law enforcement information to be shared statewide. By using an integrated open source web-based Records Management System (RMS), agencies have the ability to integrate incident information rapidly in a cost efficient manner without being tied to a specific vendor.
- *LEADR sharing portal.* This is the information sharing warehouse and portal that will allow Regional Planning Authorities (RPA) to integrate further RMS systems into the sharing solution without requiring new participants to abandon existing RMS solutions. It is this set of functionality that will allow the RPA to continue to affectively broaden its information sharing depth both at the local, state and federal levels.
- *Gang Data Collection and Reporting.* The Gang component of the LEADR system assists law enforcement in battling the growing threat of gang violence within their jurisdiction while allowing them to share this critical information with other agencies nationwide. It is the first repository to allow law enforcement agencies to access the FBI's Violent Gang and Terrorist Organization File (VGTOF) system integrated seamlessly with LEADR. It provides identification of gang members, associated property, vehicles and locations.
- *The Suspicious Activity Reporting Module.* A tool designed for law enforcement personnel to record suspicious activities before they are considered incidents. These reports are integrated into the Web RMS system so that they can be converted to incident reports with ease when needed.

LEADR is currently in use by hundreds of law enforcement agencies in multiple states with agencies submitting over 20,000 queries per month.

5.2.4. United Kingdom¹¹⁵

Due to strong fiscal pressures on the public services across the United Kingdom in 2010, and in many other countries as well, the political pressure will be for reforms that cut the cost of government and the public services while minimizing any loss of quality and quantity.

The Commission on 2020 Public Services was launched to develop a practical but compelling vision for public services of the U.K. in 2020, appropriate to the conditions of the times. It recommends the characteristics of a new public services settlement appropriate for the future needs and aspirations of citizens, and the best practical arrangements for its implementation. It sets out the urgency for change, the limits of current public services settlement, and the need for a systematic and long-term approach to reform.

The Commission is developing a practical but compelling vision of the priorities for public action to address the emergent challenges facing society in 2020. It sets out the broad directions of change – three mutually reinforcing, systemic shifts. Together they form the basis of a new model for public services, in tune with times. They are:

- A shift in culture: from social security, to social productivity.
- A shift in power: from the center to citizens.
- A shift in finance: reconnecting financing with the purposes of public services.

Each of these shifts could result in significant improvements to the public services. But these improvements would be unsustainable in an otherwise unchanged system. Together, the three shifts are mutually reinforcing, offering a coherent new model for 2020 public services. This more democratized approach to public services would solve many of the identified problems. But it would also create new tensions.

1) A shift in culture: from social security to social productivity

‘Social productivity’ is an approach focusing less on passive protection from social risks, and more on the active involvement of citizens in the creation of public (and private) value. Citizens are actively engaged in the identification of priorities for public action. Value is then created in multiple ways, as citizens interact with services, and combine with other citizens. A shift from ‘passive and closed’ to ‘active and open’ public services

¹¹⁵ This part is based on *Beyond Beveridge: Principles for 2020 Public Services*, The 2020 Public Services Trust, March 2010 and *Reflections on Public Service Reform in a Cold Fiscal Climate*, Christopher Hood, The 2020 Public Services Trust, June 2010

will offer many new opportunities for citizens to benefit themselves and their communities. In this approach, problems and solutions are viewed from a citizen perspective, not through a service or departmental lens. Emphasis is not only placed on limited fiscal resources, but on other resources that citizens and communities already have – such as expertise, skills and time.

The Case of NYC Service

http://www.nycservice.org/service_initiative.php

The NYC service aims to harness people power by encouraging volunteers to provide better services at lower cost. Volunteer projects – from tidying parks to mentoring teenagers – are advertised on a website where volunteers can sign up. Special projects such as the NYC Civic Corps structure volunteering activity around the most urgent needs in the city, such as working on health and education projects.

2) A shift in power: from the centre to citizens

2020 public services cannot be ‘engineered’ from the centre, nor can people’s increasingly diverse needs be met by services delivered through departmental silos. It calls for a re-balancing of power by encouraging the devolution of decision making and commissioning authority to the lowest appropriate level, based on communities of need, interest, and place. The current regime of centrally-set and departmentally-defined targets should be streamlined. Locality budgets should bring together all streams of public expenditure, with a growing proportion of revenue raised locally.

The Case of Connected Care

<<http://www.turning-point.co.uk/commissionerszone/centrefexcellence/Pages/ConnectedCare.aspx>>

Turning Point’s Connected Care is a toolkit for community-led commissioning of integrated, bespoke services. By focusing on the individual’s experience of services, it makes services easier to use and more effective. By integrating health, housing and social care services – and intervening earlier – it achieves better results at lower cost. It also gives communities the opportunity to run services.

3) A shift in finance: reconnecting finance with purpose

The way money is raised and spent is as important as what it is spent on. All three should reinforce the overall purposes of public services in a transparent way.

- 1) Clearer lines of sight between how money is raised and how it is spent would increase legitimacy.
- 2) A closer connection between what individuals contribute and the services they use would encourage responsible and effective use of services.
- 3) Considering contributions and benefits over the lifecycle would encourage individuals and policy makers to take a longer term perspective, encourage

preventative spending, and put individuals in greater control of their own lives.

- 4) Bringing other financial resources into play would broaden the resource base.

Given such conditions of fiscal stringency, there are three main reform strategies for public services. They are termed

- *'resetting recent reforms'* (taking reform themes of the recent past, such as targets and rankings, and reorienting them for an age of fiscal consolidation),
- *'system redesign'* (involving more radical changes in the ways services are provided or basic incentive structures for public services, for instance over funding mechanisms for devolved governments and local government) and
- *'East of Suez moments'* (involving choices about areas of public services to be abandoned to focus resources on existing or new ones).

Those three types are not mutually exclusive, none of them is a monopoly of one political party or ideology as against another, all of them have accompanying disadvantages, but the first and third may be more quickly deployable than the second.

Major funding cuts have put the UK public sector under pressure to 'do more with less'. That means delivering the same, or better, services with much smaller budgets. The Research Report on 'More With Less: The New Performance Challenges for the UK Public Sector (2011 And Beyond)'¹¹⁶ summarizes the findings of the largest independent study into public sector performance in the UK. The reports finds that many public sector leaders predict service deteriorations and see the key challenges in coping with the financial constraints, dealing with reduced staff morale and finding ways to deliver better service in a more cost effective way. Public sector leaders believe that management practices have to become more intelligent and decision-making more evidence-based.

The demands, from central Government and citizens alike, will force public sector organizations to do "more with less". If organizations are to continue to maintain or even improve service levels in this era of financial cuts and constraints then they have to improve the way they manage performance. Excellent performance management disciplines are no longer a "nice to have" but the key to survival.

Being tasked with the non-negotiable doing "more with less" means that developing such capabilities must move to the top of the agenda of public sector organizations. Citizens and central Government will demand that management becomes more intelligent and evidence-based. Based on the findings of this research, the key recommendations are made as follows:

¹¹⁶ More With Less: The New Performance Challenges for the UK Public Sector (2011 And Beyond), Research Report by Bernard Marr And James Creelman, Advanced Performance Institute, published by Palgrave Macmillan (2011), ISBN 978-0-230-28356-5

1. Public sector organizations have to revise their strategy in light of the current spending cuts and identify a smaller set of vital strategic priorities they have to deliver. A one-page plan outlining the real outcome deliverables and nonnegotiable core activities would be useful to help everyone understand and focus.
2. Public sector organizations need to identify what information they require to answer their big unanswered questions and then collect meaningful and relevant data that will help them answer their key questions. They need to take ownership of management information and analysis and ensure they turn their data into better decision-making and insights that lead to actual performance improvements.
3. Public sector leaders have to take a lead in instilling a performance and improvement culture in their organizations. The need for more intelligent and fact-based decision-making has to be led from the top which in turn helps to instill accountability for data collection and analysis right through the organization.
4. Public sector organizations need to better align their management processes to overcome management and information silos and to ensure they create an integrated and aligned management system that brings together processes such as strategic planning, budgeting, analytics, risk management, project and program management.
5. Overall, public sector organizations have to move from a culture of pen-pushing and form filling to one that tackles the performance challenges in ways successful commercial companies had to do when they were facing the challenges of a global recession over the past few years.

The Case of Public Crowdsourcing in the U.K.

The U.K. has set up www.data.gov.uk to consolidate government data in a single searchable website. The goal is to "help people understand how government works and how policies are made." To date, there are over 5,400 datasets searchable through the website, from across government departments and local authorities. Citizen developers can download "raw datasets" to create and share applications for public use. Feedback, comments, recommendations, suggestions and requests are also actively solicited.

The UK Civil Service has adopted a range of tools to encourage discussion and crowdsourcing among civil servants. The portal www.communities.idea.gov.uk is a safe platform for knowledge sharing across the public sector where users can set up or join communities around specific issues. The intranet-only Civil Wiki is a secure knowledge sharing and collaboration tool for civil servants. The content generated is moderated by its users.

To encourage the public crowdsourcing, the U.K. Government launched the project of "Making A Difference with Data" or *MADwDATA* (<http://www.madwdata.org.uk/>) seeking to "spread understanding about open data and transparency in local public services". The initiative demonstrates how government information can be used by citizens to "raise issues, campaign and otherwise influence things that affect local communities". Projects promoted through the site include gathering of feedback from citizens on the data they would like to access, publishing of good data visualization and application examples, and guidance material for citizens planning to campaign on various local issues. The project is funded by Communities and Local Government (CLG) in partnership with Improvement and Efficiency West Midlands (IEWM) and is supported by the Local Public Data Panel.

The MADwDATA project shows how information obtained from public authorities such as the police and local councils can be used by citizens to raise issues, campaign and otherwise influence things that affect local communities. It will share knowledge about how individuals and organizations can obtain such information, and show how Government policy is encouraging greater transparency and openness by public authorities.

The project has developed a number of activities that will be promoted through this site. The project activity includes:

- ***Collecting feedback*** from elected representatives, citizen activists, and hyperlocal bloggers about the sort of data and information they would like to get hold of from public authorities, but find hard to access. Examples might include information about public health, details of local land/property ownership, and spending by councils and other local authorities on specific services or activities. Feedback will be collected through interviews, case studies and short video or audio recordings.
- ***Gathering examples*** of good uses of data from public bodies, for publishing on this site. Examples might include cycle accident maps, town or city development plans, crime or transport data visualization, etc. Six content editors are working to gather, describe and publish links to this material from this microsite.
- ***A workshop for bloggers*** and citizen activists in the West Midlands to inform the information gathering and guidance to develop around finding and using open data.
- ***A workshop for elected representatives*** in the West Midlands to inform the information gathering and guidance to develop around finding and using open data.

- ***Development of guidance material*** for citizens looking to campaign on a local issue like saving the local library or putting pressure on the authorities over crime or anti-social behavior or lack of facilities in a particular location.
- ***Recruitment of speakers*** prepared, on a voluntary basis, to present material on the benefits of releasing public data at local conferences and events. Development of slides and other material from this project for these speakers.
- ***Securing of speaker slots*** at key events to promote open data initiatives and open data best practice
- ***A conference*** on local open data and transparency. This will be an opportunity to present and discuss findings from this project and brief policy practitioners on the challenges and issues around the transparency agenda.

5.3. Conclusion

The public service reform initiatives in the studied countries are commonly put into practice through these approaches and activities:

- ***Reform/Implementation plan*** - Establishing and overseeing the implementation plans focusing on robust project delivery and outcome focused governance structures and processes
- ***Information Sharing and Customer Service*** - Leveraging Information and Communications Technology (ICT) to better deliver services and information in a more cost effective manner; delivering online services, data sharing and new cross government capabilities; providing integrated services to enhance customer experiences, and engaging customers in service design and delivery to reduce information burden
- ***Shared Services*** - Rationalizing core structures and business processes that are duplicated across the public service by establishing shared operations to drive greater efficiencies and promote joined-up government through improved information sharing and process improvement.
- ***Business Process Improvement*** - Improving efficiency in priority areas across the public service through business process and organizational improvements, including cross-organizational initiatives.
- ***Procurement Reform*** - Delivering greater value for money through increased use of common procurement frameworks, increased professionalism and more innovative use of technology.
- ***External Service Delivery*** - Evaluating alternative models for the delivery of non-core services in a more cost effective and flexible approach, with a focus on customer service improvement.

- *Rationalization and Reorganization* - Further rationalizing and re-configuring the public service to deliver streamlined services and greater value for money, and to promote greater integration and cooperation across organizations and sectors.

However, there are some more interesting initiatives that need consideration for actual implementation, as well, in complement with those actions to achieve the intended overall reform. They are such as the evaluation of Government-wide operational performance management focusing on Departmental objectives, operational metrics and performance assessment; improvement of capacity and capability across the public service including a strong focus on leadership skills, staff development and performance at all levels through the consolidation of performance management systems; renewal of the focus on organizational performance and enhanced reporting of performance and progress. Also, the resourcing policies supported by strategic workforce planning with a more proactive identification and allocation of resources to priority activities where necessary are important.

Section 6. Other Related Tasks

6.1. Introduction

This section is aimed to present the progress on operation of other related tasks of the project, which are 1) the design of international study visit on e-government, 2) workshop arrangement for presenting the project results, and 3) recommendations on Thailand's direction for the development of e-government to align with related directions of the Roadmap for an ASEAN Community (2009-2015). For the part of international study visit, this report presents two proposed plans for arrangement of the study visit for senior officials from the Government of Thailand including the coordination of meetings with identified institutions for knowledge sharing to achieve the benefits of e-government development in Thailand.

6.2. Design of International Study Visit on e-Government

In the Inception Report, the two alternative plans for international study tour have been proposed for consideration, which are a policy-level visit to European countries, and a middle-management-level visit for senior and operational officials to Republic of Korea, Singapore, and U.S.A.

This Interim Report presents in detail the proposed visit programs and names of organizations including some contact points and also the target topics/content expected to be learnt from these proposed visits. The desk research and coordination via e-mails with partners and institutions in some target countries, such as Austria, Switzerland, and Poland, have been made to explore and identify interesting organizations for further arrangement of a visit.

6.2.1. Proposed Countries and Programs for Option 1: Policy-Level Visit to European countries

The destination countries, visit programs and contact points for further coordination of meetings are proposed, based on their best practices in modern e-government development, online public services and e-participation of citizens in the government processes, as well as the creation of pan-European e-government. The proposed countries are Switzerland, Austria, and Poland (in sequence of farthest distance and flight duration). In coordination with the existing partner of KU-IONA in Europe, the Europe visit programs could be designed in more detail with support of the partner having assisted in approaching some potential organizations in advance.

1) Switzerland

Switzerland is ranked the 15th of top twenty world leaders in e-government development while ranked the 9th of top ten leaders in e-government development in Europe region, according to the world e-government rankings by the United Nations E-Government Survey 2012¹¹⁷. As well, the e-Government project «geo.admin.ch» (by the Coordinating Agency for Federal Geographical Information, aimed to foster the exchange of geodata in a significant way) of Switzerland has achieved the 2nd place in the 2012 United Nations Public Service Award¹¹⁸ in the category of “Advancing Knowledge Management in Government”.

Target Topics: e-Government strategy (especially the principles of ‘develop once, use many times and open standards’); e-Government architecture; Open government; Federal Office Automation; Implementation of cloud computing strategy; Nationwide exchange standard for electronic records and documents for interoperability in e-government

Proposed Organizations and Programs

(a) Federal IT Steering Unit (FITSU)

(Informatiksteuerungsorgan Bund ISB <http://www.isb.admin.ch/>)

FITSU ensures implementation of the ICT strategy of the Federal Council. For this purpose, it issues guidelines for the administrative units and centrally manages the standard services of information and communication technologies (ICT) i.e. IT services that the administrative units of the Federal Administration require with the same or similar functionality and quality. FITSU coordinates cooperation between the Confederation, the cantons and the communes in the field of e-Government, and manages the Reporting and Analysis Centre for Information Assurance (MELANI). The Programme Office of eGovernment Switzerland of FITSU takes the role to facilitate coordination of eGovernment Switzerland activities between the Confederation, the cantons/districts, as well as the cities and municipalities

Related Initiatives of FITSU:

- Federal Office Automation

The Federal Office Automation program aims to introduce uniform electronic workplaces throughout the entire Federal Administration by 2012. This helps bundle

¹¹⁷ The UN e-government assessment in 2012 focused on the concept of integrated services that exploit inter-linkages among different public services on a functionally and/or thematically similar one-stop-shop portal.

¹¹⁸ The United Nations Public Service Awards is claimed the most prestigious international recognition of excellence in public service. It rewards the creative achievements and contributions of public service institutions that lead to a more effective and responsive public administration in countries worldwide. Web site <<http://www.unpan.org/unpsa>>

purchasing volumes and takes advantage of technical synergies, thereby significantly reducing IT costs in the Federal Administration.

- eGovernment Map Switzerland

The eGovernment Map aims to further improve the networking of e-government efforts and thus to achieve a major synergy effect. This promotes the nationwide reusability of services. The principle "develop once, use many times" will be promoted especially for basic infrastructures.

- Open Government Data

Data generated in the course of administrative activity may be of benefit to the population and the private sector. They contain major potential for innovation and added value when reused and refined by the private sector and may create greater transparency for government and administrative activity. The administration aims to make all non-personal data generated in the course of administrative activity accessible and reusable, to the extent possible according to the principles of the Open Knowledge Foundation (<http://okfn.org>).

Proposed Visit Program

Meeting with the Director of FITSU for discussion on such topics as e-government strategy and how to formulate and realize the action plans, how to get involvement and collaboration from several government agencies and stakeholders, how to achieve the federal office automation and open government data initiatives.

Duration:

0.5 day approximately

Location:

Federal IT Steering Unit

Schwarztorstrasse 59, CH-3003 Bern, Switzerland

Tel. +41 (0)31 322 45 38, Fax. +41 (0)31 322 45 66

(b) Bern University of Applied Sciences

(*Berner Fachhochschule BFH*, <http://www.bfh.ch/>)

Bern University of Applied Sciences has the 'Competence Centre for Public Management and e-Government' established as a scientifically independent service, research, and development institution for public management and e-government. The nationally and internationally oriented Competence Centre is part of the Research and Services Division of the Business and Administration Department. The Competence

Center for Public Management and e-Government is managed by Prof. Dr. Reinhard Riedl. He is also an editor-in-chief of "e-Gov Präsenz" scientific periodical journal (two issues per year).

Proposed Visit Program

It is proposed that if the delegation from Thailand will agree on participation in 1-2 lessons-learned presentations, a half-day workshop* could be organized with the scientists from the University. The subjects will be about the e-government in Switzerland, the interrelation between e-government and open government, the current strategy and state-of-the-art of e-Government in Thailand (by members of the Thai delegates), and discussion (*Note: This can be decided to make it a public workshop, open for researchers and students of the University.)

Proposed Tentative Agenda of a Workshop

- Welcome address by the Head of the Department (Prof. Dr. Jürg Römer - former Chief of the Government ICT Strategy Board)
- E-government in Switzerland (presentation by Prof. Dr. Reinhard Riedl, Director of Competence Center for Public Management and e-Government)
- The E and the O of the Government: the interrelation between e-government and open government (presentation by Prof. Dr. Thomas Myrach, Director of the Institute of ICT at the University of Bern)
- Presentation of the current strategy and state-of-the-art of e-government in Thailand (by members of the Thai delegations)
- Panel-mutual discussion of the participants
- Open questions from other participants
- Conclusions

Duration

0.5 day approx.

Location

Bern University of Applied Sciences
Falkenplatz 24, CH-3012 Bern, Switzerland
Tel. +41 31 848 33 00, Tel. +41 31 848 33 51 (International Relations Office)

- (c) During the visit to FITSU and to Bern University of Applied Sciences, a discussion meeting with the Vice-Minister in charge of economical development at the Ministry of Economy may be arranged for exchange of views on how Switzerland can participate in e-government development in Thailand. (within the duration of 0.5 - 1 hour)

Contact Person for Switzerland Visit:

Professor Bogdan Lent, Ph.D.

University of Applied Sciences, Bern, Switzerland

University of Technology and Life Sciences at Bydgoszcz, and National Defense Academy, Poland,

E-mail: <bogdan.lent@lent.ch>

2) Austria

Austria and Portugal belong to the leading e-Government countries in the European Union, ranking first and third respectively, in terms of full online availability of public services. From the results of the ninth e-Government Benchmark 2010 Austria was declared the 'European Champion in e-Government' for the fourth time in a row. Also Austria is ranked by the United Nations E-Government Survey 2012 as the first emerging leader in e-government development while ranking the 7th of the top ten leading countries in e-government development in Western Europe.

Target Topics: Innovative e-Government platform, citizen-centric e-government, inclusive e-government (e-inclusion), Pan-European Public Procurement Online, e-Health directory service

Proposed Organizations and Programs

(a) *Federal Computing Centre*

(*Bundesrechenzentrum BRZ <http://www.brz.gv.at/>*)

The Federal Computing Center is the market leader in IT services and e-Government partner for the Austrian federal government. The BRZ has one of the largest data centers in Austria. With the latest hardware and software, and a parallel data center, it offers high system availability and reliability.

Proposed Visit Program

Half a day visit for operations experience in managing e-Government applications with the following tentative agenda:

- Welcome by the Head of the BRZ (Dr Roland Jabkowski)
- Government Cloud: pro and cons, by Chief e-Gov at BRZ (Dr. Klaus John)
- Premises of the BRZ in Vienna (operations experience in managing e-Gov applications)
- Conclusion and closing

Duration

0.5 day approximately

Location

Federal Computing Centre (Bundesrechenzentrum GmbH)
Hintere Zollamtsstraße 4, A-1030 Vienna, Austria
Tel: +43 (0) 1 71123 0
E-Mail: <Kundenservice@brz.gv.at>

(b) *Ministry of Finance*

(<http://www.bmf.gv.at/> or <http://english.bmf.gv.at/>)

The Ministry of Finance has developed innovative e-Government solutions and has already received multiple awards as a result. The aim of the Federal Ministry of Finance is to offer both citizens and businesses the best possible service and to structure an increasing number of official channels electronically so as to render them in a simple, swift and efficient way. The BMF serves as a central electronic service platform for public administration in Austria entrepreneurs.

Proposed Visit Program

1-2 hours meeting and experience exchange in subjects of financing of the e-Government effort in Austria and business plans of the e-Government.

Duration

1-2 hours approximately

Location:

Ministry of Finance
Hintere Zollamtsstraße 2b, 1030 Vienna, Austria
Tel: +43 (0)1 51433 0

(c) *Vienna University of Technology (upon interest)*

(<http://www.tuwien.ac.at/> or http://www.tuwien.ac.at/en/tuwien_home/)

Vienna University of Technology (TU Vienna) is located in the heart of Europe, in a cosmopolitan city of great cultural diversity. For nearly 200 years, the TU Vienna has been a place of research, teaching and learning in the service of progress. The TU Vienna is among the most successful technical universities in Europe and is Austria's largest scientific-technical research and educational institution. Its mission is "technology for people".

Proposed Visit Program

Possibility to arrange a half-day workshop on e-Government Strategy Implementation in Austria, implementation risks and experiences, and e-government implementation experiences in Thailand (by members of the Thai delegates) at Vienna University of Technology, with this tentative agenda

- Welcome by the senior University member (person to be chosen)
- e-Gov Strategy Implementation in Austria by Chief e-Gov at BRZ (Dr. Klaus John) or other person
- Implementation risks and experiences, presentation by Dr. Andreas Ehringfeld (researcher of Industrial Software Institute at TU Vienna)
- e-Gov implementation: experiences of Thailand by member of Thai delegation
- Discussion and conclusion

Duration

0.5 day approx.

Location

Vienna University of Technology
Karlsplatz 13, 1040 Vienna, Austria
T: +43 (0)1 58801 0

Contact:

Mag. DI Dr. Andreas Ehringfeld
Industrial Software Institute, TU Vienna (<http://www.inso.tuwien.ac.at/>)
Wiedner Hauptstraße 76, Stiege 2, 2. Stock; 1040 Vienna, Austria
E-mail: <andreas.ehringfeld@inso.tuwien.ac.at>

(d) *The Austrian Federal Chancellery*
(*Bundeskanzleramt* <http://www.bka.gv.at/>)

In addition, the coordination has been made to facilitate a visit of Thai delegates to the Austrian Federal Chancellery for discussion on e-government policy issues

Duration

2 hours approx.

Location

Federal Chancellery (Bundeskanzleramt)
Ballhausplatz 2, 1014 Vienna, Austria

Tel: +43 (0)1 531 15 0

Contact Persons for Austria Visit:

Dipl.-Ing. (FH) Klaus J. John

Professional Architect

E-Government

Federal Computing Centre, Dept. E-DC,

Hintere Zollamtsstraße 4, 1030 Vienna, Austria

Tel: +43 (0)1 71123 3424, Mobile: +43 664 8340306

E-mail: klaus.john@brz.gv.at

Professor Bogdan Lent, Ph.D.

E-mail: bogdan.lent@lent.ch

3) Poland

European Union raised the Electronic Communication System for Public Administration (SEKAP) initiative of Poland as an example of innovative regional solutions to e-government and good practice for other regions. Other interesting initiatives are such as e-Court, e-Tax, e-Land and mortgage systems. Poland is ranked the fifth of the top ten countries in e-government development in Eastern Europe.

Target Topics: Security issues in e-government, Electronic communication system for public administration/SEKAP Project (innovative regional solution to e-government), Reforming organizational structures of public administration, Coordination of interoperability between the administration systems, Government Cloud

Proposed Organizations and Programs

(a) *Ministry of ICT and Administration / Ministry of Administration and Digitization*
(<https://mac.gov.pl/> or <https://mac.gov.pl/eng/>)

The Ministry works in response to the governmental strategies, especially on the digitization for a digital boost for the country's development, based on the state's needs to focus on developing the broadband infrastructure, support the development of web content and services and promote digital literacy among its citizens. Efficient digitization is promoted based on three pillars: providing Internet access; developing web content and resources; and promoting digital literacy.

Proposed Visit Program: One day visit for the following tentative agenda:

- "Panstwo 2.0" (Country 2.0) -- Poland's strategy in e-Gov developments
- State organization of the e-Government Project selection

- Relation of the governmental processes and EU-policies (Innovation Economy)
- Polish experience with implementing e-Government
- ICT Centre of the Polish Government
- Discussion
- Closing remarks and conclusion on possible further cooperation

Duration

1 day approx.

Location

Ministry of Administration and Digitization

27 Królewska St., 00-060 Warsaw, Poland

Tel: (+ 48) 22 245 59 31 (The Minister's Office)

Tel: (+48) 22 245 59 10 (Department of Public Administration)

(b) *National Defence Academy* (<http://www.aon.edu.pl>)

(*This can be arranged with at least 6-8 months advance notice.)

Proposed Visit Program

1-day conference or workshop on "Security issues in e-Government" with the tentative agenda such as:

- Security policy of the Ministry of ICT
- Data security
- Access security
- Government Cloud issues
- Panel discussion on topics of e-government security
- Closing

Duration

1 day approx.

Location:

National Defence Academy

Al. gen. Antoniego Chruściela "Montera" 103, 00-910 Warsaw, Poland

Contact Person for Poland Visit:

Professor Bogdan Lent, Ph.D.

University of Technology and Life Sciences at Bydgoszcz, and National Defense, Poland

E-mail: bogdan.lent@lent.ch

6.2.2. Proposed Countries and Programs for Option 2: Middle-Management Level Visit to Republic of Korea / Singapore / U.S.A.

The countries for a middle-management and implementation level visit are proposed including Republic of Korea, Singapore, and U.S.A., depending upon specific interests of MICT. The visit programs to those proposed countries have not yet been designed in details due to the lack of potential contact persons or partners.

1) Republic of Korea

The e-Government of Korea is cited as a major success case in numerous international economic indexes, and has served as one of the most successful best practice models in the global community. Republic of Korea is the top world e-government development leader ranked by the United Nations e-Government Survey 2012.

Target Topics: Smart e-government, m-Government, broadband policy, institutional governance, single sign-on integrated services, and uTradeHub/NSW for paperless trade.

Proposed Organizations

(a) *Informatization Strategy Office, Ministry of Public Administration and Security*
(<http://www.mopas.go.kr/gpms/view/english/about/about06.jsp>)

Ministry of Public Administration and Security (MOPAS) develops policies and implements services for Korea's e-government, which received first place in the 2010 UN e-Government Survey. In promoting smart administrative services, MOPAS provides different smart services to raise users' convenience and satisfaction such as smart civil affairs service, smart security, smart disaster management. The Ministry has established the Smartwork Center in selected regions, allowing long-distance commuters to work closer from their homes. MOPAS plans to create mobile offices using smart phones and tablet PCs.

The Informatization Strategy Office is responsible to coordinate policies on national informatization and e-government; operate e-government services and portal; promote global cooperation in informatization and e-government; develop policies related to personal information protection and cyber security, as well as promotion of healthy information societies.

Duration

0.5-1 day approx.

Location

Ministry of Public Administration and Security
209 Sejong-daero(Sejong-ro)
Jongno-gu, Seoul, Republic of Korea

Contact:

Bo Young Rhim
e-Government
Tel: +82-2-2100-3518
E-mail: byrhim@mopas.go.kr

(b) *National Computing Information Agency* (affiliated organization of Ministry of Public Administration and Security) (<http://korea.ncia.go.kr/index2.html>)

National Computing Information Agency (NCIA) manages computerized administrative systems of government agencies and promptly responds to cyber attacks such as DDoS (Distributed Denial-of-Service), hacking, and computer viruses. For economical operation of national information resources, the national information communication network and e-Government enables integrated purchase and usage of information resources, thus promoting more cost-efficient way of information management. Furthermore, to respond to a fast changing administrative environment to support smart e-government infrastructure with cutting-edge technology, NCIA works with MOPAS to further promote smart work, mobile administration, and cloud computing services. It develops and provide modular platforms to be shared by ministries: G-Cloud platform service; G-Mobile platform service; and Smart Office platform service. The interesting activities of NCIA are that it has established the e-ANSI (Advanced National Security Infrastructure) – a comprehensive e-government security monitoring system (2011), deployed G-Cloud – a government cloud computing platform for e-government, and recently opened the Mobile e-Government Service Support Center (2012).

Duration:

1 day approx.

Location:

National Computing Information Agency
305-718 793 Daedeokdae-ro
Yusung-gu Daejeon, Republic of Korea

Tel: +82 42 250 5000 up to 5114

Tel: +82 42 250 5270 (general)

E-mail: nciaadm@korea.kr

(c) *Korea Trade Network Co. Ltd (KTNET)*

(http://homepage.ktnet.co.kr/company_eng/global_01.jsp)

The Ministry of Knowledge Economy and the Korea International Trade Association ("KITA") have carried out a project to build "e-Trade (paperless trade) services" as a part of the "e-Government agenda" since 2003. As a result, the uTradeHub was introduced as a new concept of a national e-Trade network and as a single online window for trading activities. The uTradeHub processes overall trade affairs seamlessly ranging from marketing to settlement by linking networks of trading related entities for each process.

The uTradeHub has simplified complicated trading procedures by providing online services, making it unnecessary to visit banks or trade-related authorities.

The Ministry of Knowledge Economy designated KTNET as the e-Trade service provider for operating the uTradeHub services and systems under the e-Trade promotion law.

Duration:

0.5 day approx.

Location:

Korea Trade Network Co., Ltd.(KTNET)

Room 1104, World Trade Tower

Samsung-dong, Kangnam-gu, Seoul, 135-729 Republic of Korea

Tel: +82 2 6000 2114

2) Singapore

Singapore is recognized as an e-government leader by international benchmarking agencies. It is consistently ranked amongst the top 3 in the e-government indices of the World Economic Forum Global IT Report from 2009 to 2011. As well, Singapore is ranked the world's top 10 e-government leaders and also the 2nd top e-government leaders in Asia, after Republic of Korea, by the UN E-Government Survey 2012.

Target Topics: e-Citizen, Cloud computing for government, Cloud security standard, Whole-of-Government Enterprise Architecture and e-Service Development,

collaborative social-networking platform for public offices, government web services exchange, m-Government/Services, Cluster development and Government Chief Information Office (GCIO)

Proposed Organizations

(a) *Infocomm Development Authority of Singapore*
(<http://www.ida.gov.sg/>)

As the Chief Information Officer (CIO) for the Singapore Government, Infocomm Development Authority of Singapore (IDA) is responsible for master planning, project-managing and implementing various infocomm systems and capabilities for the Government. It oversees IT standards, policies, guidelines and procedures for the Government, and manages the infocomm security of critical infocomm infrastructure and the implementation and management of e-government programs (Ministry of Finance :MOF) is the e-government owner, responsible to set the policy direction on use of ICT in government, champions and provides funding for whole-of-government programs and projects.)

IDA also works with other public agencies to increase the reach and richness of e-Government services. Connecting the industry's innovative solutions to the Government's needs, about 1,600 public sector services are available online today. To make these services even more accessible, IDA is working closely with agencies to make them available on mobile platforms for users to transact with the Government while on the move.

IDA oversees whole-of-government ICT initiatives to maintain Singapore Government's leadership position as an innovative user of infocomm technologies to provide public services; and to co-create and connect with its people. This includes eGov2015 master plan and sectoral infocomm initiatives to support the transformation of the education, financial, tourism, trade, healthcare sectors.

eGov2015 seeks to bring integration of systems, processes and service delivery from within the Government to beyond the Government. The vision of eGov 2015 is to be a Collaborative Government that Co-creates and Connects with our People. To achieve the vision of a Collaborative Government, the new master plan focuses on three strategic areas: Co-creating for Greater Value; Connecting for Active Participation; Catalysing Whole-of-Government Transformation

Duration

2 days approx.

Location

Infocomm Development Authority of Singapore
10 Pasir Panjang Road, #10-01 Mapletree Business City
Singapore 117438
Tel: +65 6211 0888 (mainline), +65 6211 2100 (general inquiries)
Fax: +65 6211 2222

3) *United States of America*

U.S.A. is the top five world e-government development leader, according to the UN E-government Survey 2012, and the top ranked country in the Americas. U.S.A. was found a best practice example of an integrated portal that provides easy to navigate design and collects and consolidates all information and services for citizens in one place, including agency services at the state and local level, which vastly increases the effectiveness of user search and uptake.

Target Topics: e-government business process outsourcing, open government initiative, e-participation, cloud IT services, mobile government, cyber security, and data privacy.

Proposed Organizations

(a) *Office of Citizen Services and Innovative Technologies and Federal Risk and Authorization Management Program (FedRAMP) – the Agencies under the U.S. General Services Administration*

- *Office of Citizen Services and Innovative Technologies (OCSIT)*
(<http://www.gsa.gov/portal/category/25729>)

The Office of Citizen Services and Innovative Technologies (OCSIT) is the nation's focal point for data, information and services offered by the federal government to citizens. In addition, it is also a leadership role in identifying and applying new technologies to effective government operations and excellence in customer service in the government e.g. GSA open government initiatives, mobile government, Cloud IT Services, Data Center Services.

The Office of Innovative Technologies focuses on initiatives that enable agencies to deliver most effective and efficient services to citizens, Information technology initiatives that advance the President's technology agenda, including e-Government initiatives and Cloud computing initiatives under the Federal Cloud Computing Program Management Office (PMO.)

- *Federal Risk and Authorization Management Program (FedRAMP)*
(<http://www.gsa.gov/portal/category/102371>)

FedRAMP is a government-wide program that provides a standardized approach to security assessment, authorization, and continuous monitoring for cloud products and services. It is the result of close collaboration with cyber-security and cloud experts from GSA, NIST (National Institute of Standards and Technology), DHS (Department of Homeland Security), DOD (Department of Defense), OMB (Office of Management and Budget Policy), the Federal CIO Council and its working groups, as well as private industry.

The FedRAMP assessment process is initiated by agencies or cloud service provider (CSPs) beginning a security authorization using the FedRAMP requirements which are FISMA (Federal Information Security Management Act) compliant and based on the NIST 800-53 rev3 (Information Security - Recommended Security Controls for Federal Information Systems and Organizations).

Duration

1- 1.5 days (for open government initiatives, mobile government, Cloud IT Services, FedRAMP)

Location:

U.S. General Services Administration
One Constitution Square
1275 First Street, NE, Washington, DC 20417
Tel: +202 501 1231
Tel: +202 501 0705 (Office of Citizen Services and Innovative Technologies)

Contact points of OCSIT

Gwynne Kostin
Tel: +202 501-1797
E-mail: gwynne.kostin@gsa.gov

Leader Authority of OCSIT

Mr. David L. McClure
Associate Administrator
Tel: +202 501 0705
E-mail: david.mcclure@gsa.gov

(b) *Department of Homeland Security (DHS)* <http://www.dhs.gov/>

- *DHS Privacy Office* (<http://www.dhs.gov/about-privacy-office>)

The mission of the Privacy Office is to protect all individuals by embedding and enforcing privacy protections and transparency in all DHS activities. It works with every component and program to ensure that privacy considerations are addressed when planning or updating any program, system or initiative. It strives to ensure that technologies used at the Department sustain, and do not erode, privacy protections. The Privacy Office uses the DHS Fair Information Practice Principles (FIPPs) as its policy framework to enhance privacy protections by assessing the nature and purpose for all personally identifiable information (PII) collected to fulfill the Department's mission. The CIO Council has just released new 'Recommendations on Standardized Digital Privacy Controls' in December 2012.

- *International Trade Data System (ITDS)* <http://www.itds.gov/>

ITDS provides all appropriate agencies a single point of access to consolidated import information through a secure web portal, and will continue to expand existing public-private partnerships in order to seek and share recommendations and best practices within the importing community. It is the program that assists Participating Government Agencies (PGAs) in identifying, documenting, and executing their plan to leverage ACE (Automated Commercial Environment) to improve business operations and further agency missions. The ITDS's mission is to implement a secure, integrated, government-wide method for the electronic collection, storage, use, and dissemination of international trade data. ITDS' overarching goal is the utilization of the concept commonly known as the Single Window that will provide the trade with the ACE functionality through which they can electronically submit all information to comply with CBP (Customs and Border Protection) and other government regulations. The information would then be assessed electronically by the relevant government departments and agencies, resulting in border-related decisions which would be transmitted electronically back to the trade.

The U. S. Customs and Border Protection (CBP) International Trade Data System (ITDS) Concept of Operations (ConOps) was developed (published 2010) to serve as the foundation to incorporate the future vision of CBP business practices into the modernization effort called ACE (Automated Commercial Environment). This document is the first step towards achieving the concept most notably known as the automated "single window." This CBP ConOps includes the modernization of CBPs cargo processing in ACE and the creation of the single window data input. It also includes data sharing between Trade and federal agencies, between federal agencies

themselves, and accomplishes significant objectives of the CBP Trade Vision and Strategy.

Duration:

1-1.5 days (for privacy and cybersecurity-related issues and single-window ITDS services for secure trade)

Location:

Department of Homeland Security
245 Murray Lane SW, Washington, DC 20528-0075
Tel: +202-343-1717 (Privacy Office)
Email: privacy@dhs.gov

6.3. Progress on Workshop Arrangement

The workshop to present the study results is scheduled to take place tentatively either toward the end of July or early in August 2013, however, depending upon further discussion with MICT and the World Bank.

6.4. Progress on Proposal of Recommendations on Thailand's direction for the development of e-government to align with related directions of the Roadmap for an ASEAN Community (2009-2015)

The Roadmap of an ASEAN Community (2009-2015) has been roughly explored by the KU-INOVA consultant team to find that the part of ASEAN Economic Community Blueprint contains the related content of e-government development and interoperability. This will be further studied and carefully perused to come up with the recommendations to be proposed in the subsequent reports.

Appendix A: Data of e-Government Online Services in Thailand (January-March 2013) Surveyed by KU-INOVA

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2				Stage 3				Stage 4		Stage 2 (%)	Stage 3 (%)	Stage 4 (%)																					
	a	b	c	d				a	b	c				d																				
				1	2	3	4				1	2	3																					
1. สำนักงานนายกรัฐมนตรี (Office of the Prime Minister)																																		
1.1	สำนักงานปลัดสำนักนายกรัฐมนตรี (Office of the Permanent Secretary, The Prime Minister's Office)													✓	✓	✓	✓	✓		✓	✓		✓	✓	100	50	100							
1.2	กรมประชาสัมพันธ์ (The Public Relations Department)														✓	✓			✓	✓		✓					75	25	0					
1.3	สำนักงานคณะกรรมการคุ้มครองผู้บริโภค (Office of the Consumer Protection Board)													✓			✓	✓	✓	✓	✓	✓							50	50	100			
1.4	สำนักเลขาธิการคณะรัฐมนตรี (The Secretariat of the Cabinet)													✓		✓				✓									75	0	0			
1.5	สำนักเลขาธิการนายกรัฐมนตรี (The Secretariat of the Prime Minister)													✓		✓	✓			✓	✓								75	25	0			
1.6	สำนักข่าวกรองแห่งชาติ (National Intelligence Agency)													✓						✓										50	0	0		
1.7	สำนักงบประมาณ (The Bureau of the Budget)													✓		✓	✓	✓			✓	✓								75	50	0		
1.8	สำนักงานสภาความมั่นคงแห่งชาติ (Office of the National Security Council)													✓	✓					✓	✓									75	0	0		
1.9	สำนักงานคณะกรรมการกฤษฎีกา (Office of the Council of State)													✓	✓	✓	✓	✓	✓											100	0	0		
1.10	สำนักงานคณะกรรมการข้าราชการพลเรือน (ก.พ.) (Office of the Civil Service Commission)													✓		✓	✓	✓			✓	✓								✓	✓	75	50	100

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2							Stage 3					Stage 4		Stage 2 (%)	Stage 3 (%)	Stage 4 (%)			
	a	b	c	d				a	b	c	d			a				b		
				1	2	3	4				1	2	3							
1.11	สำนักงานคณะกรรมการพัฒนาระบบราชการ (ก.พ.ร.) (Office of the Public Sector Development Commission)	✓		✓	✓	✓	✓	✓	✓								75	50	0	
1.12	สำนักงานคณะกรรมการพัฒนาการเศรษฐกิจและสังคมแห่งชาติ (Office of the National Economic and Social Development Board)	✓	✓	✓	✓			✓		✓						✓		100	25	50
1.13	สำนักงานกองทุนสนับสนุนการวิจัย (หน่วยงานอิสระ) (The Thailand Research Fund)	✓		✓		✓	✓	✓								✓	✓	75	0	100
1.14	กองบัญชาการรักษาความมั่นคงภายในราชอาณาจักร (Internal Security Operations Command)	✓						✓										50	0	0
1.15	สำนักงานคณะกรรมการสุขภาพแห่งชาติ (The National Health Commission office)	✓		✓	✓			✓	✓									75	0	0
1.16	สำนักงานรับรองมาตรฐานและประเมินคุณภาพการศึกษา (องค์การมหาชน) (Office for National Education Standards and Quality Assessment (Public Organization))	✓	✓	✓				✓										100	0	0
1.17	สำนักงานกองทุนหมู่บ้านและชุมชนเมืองแห่งชาติ (National Village and Urban Community Fund Office)	✓			✓	✓	✓	✓										50	0	0
1.18	องค์การบริหารการพัฒนาพื้นที่พิเศษเพื่อการท่องเที่ยวอย่างยั่งยืน (องค์การมหาชน) (Designated Areas for Sustainable Tourism Administration (Public Organization))		✓	✓	✓	✓	✓	✓										75	0	0
1.19	สำนักงานส่งเสริมการจัดประชุมและนิทรรศการ (องค์การมหาชน)	✓	✓	✓		✓	✓	✓		✓								100	25	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2							Stage 3					Stage 4		Stage 2 (%)	Stage 3 (%)	Stage 4 (%)		
	a	b	c	d				a	b	c	d			a				b	
				1	2	3	4				1	2	3						
(Thailand Convention & Exhibition Bureau (Public Organization))																			
1.20 สำนักงานบริหารและพัฒนาองค์ความรู้ (องค์การมหาชน) (Office of Knowledge Management and Development (Public Organization))	✓	✓		✓	✓	✓	✓		✓								75	25	0
1.21 สถาบันบริหารจัดการธนาคารที่ดิน (องค์การมหาชน) (The Land Bank Administration Institute (Public Organization))																	0	0	0
1.22 บริษัท อสมท จำกัด (มหาชน) (รัฐวิสาหกิจ) (MCOT Public Company Limited)	✓	✓	✓	✓	✓	✓	✓		✓								100	25	0
2. กระทรวงกลาโหม (Ministry of Defence)																			
2.1 สำนักงานปลัดกระทรวงกลาโหม (Office of the Permanent Secretary for Defence)	✓		✓	✓		✓	✓		✓						✓		75	25	50
2.2 กรมราชองครักษ์ (Royal Aide-De-Camp Department)	✓							✓	✓								50	25	0
2.3 กองบัญชาการกองทัพไทย (Royal Thai Armed Forces Headquarters)	✓	✓	✓	✓	✓	✓	✓	✓									100	25	0
2.4 กองทัพบก (Royal Thai Army)	✓	✓	✓	✓		✓	✓	✓									100	25	0
2.5 กองทัพเรือ (Royal Thai Navy Headquarters)		✓	✓		✓	✓	✓		✓								75	25	0
2.6 กองทัพอากาศ (Royal Thai Air Force)	✓	✓		✓	✓	✓			✓								75	25	0
2.7 องค์การสงเคราะห์ทหารผ่านศึกในพระบรมราชูปถัมภ์ (The War	✓																25	0	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2								Stage 3					Stage 4		Stage 2	Stage 3	Stage 4	
	a	b	c	d				a	b	c	d			a	b	(%)	(%)	(%)	
				1	2	3	4				1	2	3						
	Veterans Organization of Thailand Under Royal Patronage of His Majesty the King)																		
2.8	สถาบันเทคโนโลยีป้องกันประเทศ (องค์การมหาชน) (Defence Technology Institute (Public Organization))	✓	✓	✓				✓									100	0	0
2.9	บริษัท อู่กรุงเทพ จำกัด (รัฐวิสาหกิจ) (The Bangkok Dock Company (1957) Limited)	✓	✓	✓				✓									100	0	0
3. กระทรวงการคลัง (Ministry of Finance)																			
3.1	สำนักงานปลัดกระทรวงการคลัง (Office of the Permanent Secretary for Finance)	✓	✓	✓		✓	✓	✓	✓					✓			100	25	50
3.2	กรมธนารักษ์ (The Treasury Department)	✓		✓	✓	✓		✓	✓	✓				✓			75	50	50
3.3	กรมบัญชีกลาง (The Comptroller General's Department)	✓		✓	✓	✓		✓	✓	✓				✓	✓		75	50	100
3.4	กรมศุลกากร (The Customs Department)	✓		✓	✓	✓		✓	✓	✓	✓	✓		✓	✓		75	100	100
3.5	กรมสรรพสามิต (The Excise Department)	✓	✓	✓	✓	✓	✓	✓	✓		✓			✓	✓		100	75	100
3.6	กรมสรรพากร (The Revenue Department)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓		100	100	100
3.7	สำนักงานคณะกรรมการนโยบายรัฐวิสาหกิจ (State Enterprise Policy Office)	✓	✓	✓	✓			✓	✓					✓			100	25	50
3.8	สำนักงานบริหารหนี้สาธารณะ (Public Debt Management Office)	✓	✓	✓	✓	✓	✓	✓	✓					✓			100	50	50
3.9	สำนักงานเศรษฐกิจการคลัง (The Fiscal Policy Office)	✓	✓	✓	✓	✓	✓	✓	✓					✓			100	25	50

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2							Stage 3						Stage 4		Stage 2	Stage 3	Stage 4
	a	b	c	d				a	b	c	d			a	b	(%)	(%)	(%)
				1	2	3	4				1	2	3					
3.10	สถาบันคุ้มครองเงินฝาก (Deposit Protection Agency)	✓	✓	✓	✓	✓		✓								100	0	0
3.11	กองทุนบำเหน็จบำนาญข้าราชการ (Government Pension Fund)	✓	✓	✓	✓	✓		✓								100	25	0
3.12	กองทุนเงินให้กู้ยืมเพื่อการศึกษา (กยศ.) (Student Loans Fund (SLF))	✓	✓		✓	✓		✓								75	25	0
3.13	สำนักงานคณะกรรมการกำกับและส่งเสริมการประกอบธุรกิจประกันภัย (คปภ.) (Office of Insurance Commission)	✓	✓	✓	✓	✓		✓	✓		✓	✓				100	75	0
3.14	สำนักงานความร่วมมือพัฒนาเศรษฐกิจกับประเทศเพื่อนบ้าน (องค์การมหาชน) (Neighboring Countries Economic Development Cooperation Agency (Public Organization))	✓	✓	✓			✓									100	0	0
3.15	สำนักงานสลากกินแบ่งรัฐบาล (The Government Lottery Office)		✓			✓	✓	✓								50	0	0
3.16	โรงงานยาสูบ (Thailand Tobacco Monopoly)	✓		✓	✓	✓		✓		✓						75	50	0
3.17	ธนาคารออมสิน (Government Savings Bank)	✓	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓	100	75	100
3.18	ธนาคารอาคารสงเคราะห์ (The Government Housing Bank)	✓	✓	✓		✓		✓		✓						100	25	0
3.19	ธนาคารกรุงไทย จำกัด (มหาชน) (Krung Thai Bank Public Company Limited)	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓				100	75	0
3.20	ธนาคารเพื่อการเกษตรและสหกรณ์การเกษตร (Bank of Agriculture and Agricultural)	✓	✓	✓		✓	✓	✓	✓							100	25	0
3.21	ธนาคารเพื่อการส่งออกและนำเข้าแห่งประเทศไทย (Export-Import Bank of Thailand)	✓		✓				✓								75	0	0

ชื่อหน่วยงาน (Names of Public Agencies)		Stage 2							Stage 3					Stage 4		Stage 2	Stage 3	Stage 4	
		a	b	c	d				a	b	c	d			a	b	(%)	(%)	(%)
					1	2	3	4				1	2	3					
3.22	ธนาคารพัฒนาวิสาหกิจขนาดกลางและขนาดย่อมแห่งประเทศไทย (Small and Medium Enterprise Development Bank of Thailand)	✓	✓	✓			✓	✓								100	0	0	
3.23	ธนาคารอิสลามแห่งประเทศไทย (Islamic Bank of Thailand)	✓	✓	✓		✓	✓	✓								100	0	0	
3.24	บริษัทประกันสินเชื่ออุตสาหกรรมขนาดย่อม (Thai Credit Guarantee Corporation)	✓	✓	✓		✓	✓	✓	✓	✓						100	50	0	
3.25	บริษัทตลาดรองสินเชื่อที่อยู่อาศัย (บตท.) (Secondary Mortgage Corporation)	✓				✓		✓	✓							50	25	0	
3.26	ตลาดหลักทรัพย์แห่งประเทศไทย (The Stock Exchange of Thailand)	✓	✓	✓		✓	✓	✓		✓	✓	✓				100	75	0	
3.27	บริษัท สหโรงแรมไทยและการท่องเที่ยว จำกัด (The Syndicate of Thai Hotels and Tourists Enterprises Limited)							✓								25	0	0	
3.28	บริษัทบริหารสินทรัพย์ไทย (Thai Asset Management Corporation)			✓				✓								50	0	0	
4. กระทรวงการต่างประเทศ (Ministry of Foreign Affairs)																			
4.1	สำนักงานปลัดกระทรวงการต่างประเทศ (Office of the Permanent Secretary for Foreign Affairs)	✓	✓	✓			✓	✓	✓					✓		100	25	50	
4.2	กรมการกงสุล (Department of Consular Affairs)	✓	✓				✓	✓				✓		✓	✓	75	25	100	
4.3	กรมพิธีการทูต (Department of Protocol)						✓									25	0	0	

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2								Stage 3						Stage 4		Stage 2	Stage 3	Stage 4
	a	b	c	d				a	b	c	d			a	b	(%)	(%)	(%)	
				1	2	3	4				1	2	3						
4.4	กรมยุโรป (Department of European Affairs)	✓			✓			✓	✓							50	25	0	
4.5	กรมเศรษฐกิจระหว่างประเทศ (Department of International Economic Affairs)	✓						✓								50	0	0	
4.6	กรมสนธิสัญญาและกฎหมาย (Department of Treaties and Legal Affairs)							✓								25	0	0	
4.7	กรมสารนิเทศ (Department of Information)	✓						✓								50	0	0	
4.8	กรมองค์การระหว่างประเทศ (Department of International Organizations)							✓								25	0	0	
4.9	กรมอเมริกาและแปซิฟิกใต้ (Department of American and South Pacific Affairs)							✓								25	0	0	
4.10	กรมอาเซียน (Department of ASEAN Affairs)	✓	✓					✓	✓							75	0	0	
4.11	กรมเอเชียตะวันออก (Department of East Asian Affairs)	✓						✓	✓							50	0	0	
4.12	กรมเอเชียใต้ ตะวันออกกลางและแอฟริกา (Department of South Asian, Middle East and African Affairs)			✓		✓		✓								50	0	0	
4.13	สำนักงานความร่วมมือเพื่อการพัฒนาระหว่างประเทศ (Thailand International Development Cooperation Agency)	✓		✓				✓								75	0	0	
5. กระทรวงการท่องเที่ยวและกีฬา (Ministry of Tourism and Sports)																			
5.1	สำนักงานปลัดกระทรวงการท่องเที่ยวและกีฬา (Office of the Permanent Secretary for Tourism and Sports)	✓	✓	✓	✓	✓		✓	✓	✓				✓		100	50	50	

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2							Stage 3					Stage 4		Stage 2	Stage 3	Stage 4	
	a	b	c	d				a	b	c	d			a	b	(%)	(%)	(%)
				1	2	3	4				1	2	3					
5.2	กรมพลศึกษา (department of physical education)		✓	✓			✓	✓	✓	✓						75	50	0
5.3	สถาบันการพลศึกษา (Institute of Physical Education)	✓	✓				✓	✓								75	25	0
5.4	กรมการท่องเที่ยว (Department of Tourism)	✓	✓	✓	✓	✓	✓		✓							100	25	0
5.5	การกีฬาแห่งประเทศไทย(กกท.) (Sports Authority of Thailand)	✓	✓	✓	✓	✓		✓	✓							100	25	0
5.6	การท่องเที่ยวแห่งประเทศไทย (Tourism Authority of Thailand)	✓	✓	✓	✓	✓	✓	✓	✓							100	50	0
6. กระทรวงการพัฒนาสังคมและความมั่นคงของมนุษย์ (Ministry of Social Development and Human Security)																		
6.1	สำนักงานปลัดกระทรวงการพัฒนาสังคมและความมั่นคงของมนุษย์ (Office of the Permanent Secretary for Social Development and Human Security)	✓	✓	✓	✓		✓	✓	✓						✓	100	25	50
6.2	กรมพัฒนาสังคมและสวัสดิการ (Department of Social Development and Welfare)	✓	✓	✓	✓	✓		✓	✓	✓						100	50	0
6.3	สำนักงานกิจการสตรีและสถาบันครอบครัว (Office of Women's Affairs and Family Development)				✓		✓	✓								25	0	0
6.4	สำนักงานส่งเสริมสวัสดิภาพและพิทักษ์ เด็กเยาวชน ผู้ด้อยโอกาส และผู้สูงอายุ (Office of Welfare Promotion, Protection and Empowerment of Vulnerable Groups)	✓	✓	✓	✓		✓	✓	✓							100	25	0
6.5	สำนักงานส่งเสริมและพัฒนาคุณภาพชีวิตคนพิการแห่งชาติ (National Office for Empowerment of Persons with Disabilities)	✓		✓	✓		✓	✓	✓	✓						75	50	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2							Stage 3					Stage 4		Stage 2	Stage 3	Stage 4	
	a	b	c	d				a	b	c	d			a	b	(%)	(%)	(%)
				1	2	3	4				1	2	3					
6.6	สถาบันพัฒนาองค์กรชุมชน (องค์การมหาชน) (Community Organizations Development Institute (Public Organization))	✓	✓	✓			✓	✓								100	0	0
6.7	การเคหะแห่งชาติ (รัฐวิสาหกิจ) (National Housing Authority)	✓		✓	✓		✓	✓	✓	✓						75	50	0
6.8	สำนักงานธรรมาวุธ (รัฐวิสาหกิจ) (Office of the Government Pawnshop)			✓			✓	✓								50	0	0
7. กระทรวงเกษตรและสหกรณ์ (Ministry of Agriculture and Cooperatives)																		
7.1	สำนักงานปลัดกระทรวงเกษตรและสหกรณ์ (Office of the Permanent Secretary for Agriculture and Cooperatives)	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	100	25	100
7.2	กรมชลประทาน (Royal Irrigation Department)	✓		✓	✓	✓	✓	✓	✓					✓		75	50	50
7.3	กรมตรวจบัญชีสหกรณ์ (Cooperative Auditing Department)	✓	✓	✓	✓				✓	✓						100	50	0
7.4	กรมประมง (Department of Fisheries)	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓	✓	100	75	100
7.5	กรมปศุสัตว์ (Department of Livestock Development)	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓				100	50	0
7.6	กรมพัฒนาที่ดิน (Land Development Department)	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	75	75	100
7.7	กรมวิชาการเกษตร (Department of Agriculture)	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓				100	50	0
7.8	กรมส่งเสริมการเกษตร (Department of Agricultural Extension)	✓	✓		✓	✓	✓	✓	✓							75	50	0
7.9	กรมส่งเสริมสหกรณ์ (The Cooperative Promotion Department)	✓		✓	✓		✓	✓	✓					✓		75	25	50
7.10	สำนักงานปฏิรูปที่ดินเพื่อเกษตรกรรม (Agricultural Land Reform Office)	✓	✓	✓	✓			✓	✓							100	25	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2							Stage 3					Stage 4		Stage 2 (%)	Stage 3 (%)	Stage 4 (%)		
	a	b	c	d				a	b	c	d			a				b	
				1	2	3	4				1	2	3						
7.11	สำนักงานมาตรฐานสินค้าเกษตรและอาหารแห่งชาติ (National Bureau of Agricultural Commodity and Food Standards)	✓	✓	✓	✓		✓	✓		✓							100	75	0
7.12	สำนักงานเศรษฐกิจการเกษตร (Office of Agricultural Economics))		✓	✓	✓		✓										75	25	0
7.13	กรมการข้าว (Rice Department)	✓			✓			✓									50	25	0
7.14	กรมหม่อนไหม (The Queen Sirikit Department of Sericulture)		✓		✓		✓	✓									50	25	0
7.15	สำนักงานพัฒนาการวิจัยการเกษตร (องค์การมหาชน) (Agricultural Research Development Agency (Public Organization))	✓			✓												50	0	0
7.16	สถาบันวิจัยและพัฒนาพื้นที่สูง (องค์การมหาชน) (Highland Research and Development Institute (Public Organization))	✓	✓	✓	✓												100	0	0
7.17	สำนักงานพิพิธภัณฑ์เกษตรเฉลิมพระเกียรติพระบาทสมเด็จพระเจ้าอยู่หัว (องค์การมหาชน) (The Golden jubilee Museum of Agriculture Office (Public Organization))		✓				✓	✓									50	0	0
7.18	องค์การสวนยาง (Rubber Estate Organization)		✓	✓	✓		✓	✓	✓								75	25	0
7.19	องค์การสะพานปลา (Fish Marketing Organization)	✓	✓		✓	✓		✓		✓							75	25	0
7.20	องค์การส่งเสริมกิจการโคนมแห่งประเทศไทย (Dairy Farming Promotion Organization of Thailand)	✓	✓	✓			✓	✓	✓								100	25	0
7.21	สำนักงานกองทุนสงเคราะห์การทำสวนยาง (Office of the Rubber Replanting Aid Fund)	✓	✓	✓			✓	✓	✓	✓							100	50	0
7.22	องค์การตลาดเพื่อเกษตรกร (The Marketing Organization for	✓		✓	✓			✓		✓							75	25	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2				Stage 3				Stage 4		Stage 2	Stage 3	Stage 4					
	a	b	c	d				a	b	c	d		a	b	Stage 2 (%)	Stage 3 (%)	Stage 4 (%)	
				1	2	3	4				1	2						3
Farmers)																		
8. กระทรวงคมนาคม (Ministry of Transport)																		
8.1	สำนักงานปลัดกระทรวงคมนาคม (Office of the Permanent Secretary for Transport)	✓		✓	✓	✓		✓	✓	✓				✓	✓	75	50	100
8.2	กรมการขนส่งทางบก (The Department of Land Transport)	✓				✓			✓	✓	✓			✓		50	75	50
8.3	กรมเจ้าท่า (Marine Department)	✓		✓	✓	✓		✓	✓	✓				✓	✓	75	50	100
8.4	กรมทางหลวง (The Department of Highways)	✓		✓	✓	✓	✓	✓	✓							75	25	0
8.5	กรมทางหลวงชนบท (Department of Rural Roads)	✓	✓	✓	✓	✓	✓	✓								100	0	0
8.6	สำนักนโยบายและแผนการขนส่งและจราจร (Office of Transport and Traffic Policy and Planning)	✓	✓	✓	✓	✓	✓									100	0	0
8.7	กรมการบินพลเรือน (The Department of Civil Aviation)	✓		✓				✓								75	0	0
8.8	การทำเรือแห่งประเทศไทย (Port Authority of Thailand)	✓		✓		✓		✓		✓	✓	✓		✓	✓	75	75	100
8.9	การรถไฟแห่งประเทศไทย (The State Railway of Thailand)	✓		✓			✓	✓								75	0	0
8.10	องค์การขนส่งมวลชนกรุงเทพ (Bangkok Mass Transit Authority)	✓		✓	✓			✓	✓							75	25	0
8.11	บริษัท การบินไทย จำกัด (มหาชน) (Thai Airways International Public Company Limited)	✓	✓	✓	✓	✓		✓		✓	✓	✓		✓		100	75	50
8.12	บริษัท ท่าอากาศยานไทย จำกัด (มหาชน) (Airports of Thailand Public Company Limited (AOT))	✓	✓	✓	✓		✓	✓								100	0	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2								Stage 3					Stage 4		Stage 2	Stage 3	Stage 4
	a	b	c	d				a	b	c	d			a	b	(%)	(%)	(%)
				1	2	3	4				1	2	3					
8.13	บริษัท วิทยุการบินแห่งประเทศไทย จำกัด (Aeronautical Radio of Thailand Company Limited)	✓		✓	✓	✓		✓		✓	✓					75	50	0
8.14	บริษัท ขนส่ง จำกัด (The Transport Company Limited)		✓	✓			✓	✓	✓	✓				✓		75	50	50
8.15	บริษัท ไทยเดินเรือทะเล จำกัด (Thai Maritime Navigation Company Limited)							✓								25	0	0
8.16	การทางพิเศษแห่งประเทศไทย (Expressway and Rapid Transit Authority of Thailand)	✓	✓	✓	✓	✓		✓		✓	✓			✓	✓	100	50	100
8.17	การรถไฟฟ้าขนส่งมวลชนแห่งประเทศไทย (Mass Rapid Transit Authority of Thailand)		✓	✓				✓	✓							75	25	0
8.18	สถาบันการบินพลเรือน (Civil Aviation Training Center)	✓	✓	✓	✓	✓	✓		✓							100	25	0
8.19	บริษัท โรงแรมท่าอากาศยานสุวรรณภูมิ จำกัด (Suvarnabhumi Airport Hotel Company Limited)					✓	✓		✓	✓	✓					25	75	0
8.20	บริษัท ไทย-อะมาดิอุส เซาท์อีสต์ เอเชีย จำกัด (THAI-Amadeus Southeast Asia Company Limited)	✓		✓		✓	✓	✓		✓	✓	✓				75	75	0
9. กระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม (Ministry of Natural Resources and Environment)																		
9.1	สำนักงานปลัดกระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม (Office of the Permanent Secretary for Natural Resources and Environment)	✓			✓	✓		✓	✓	✓				✓	✓	50	50	100
9.2	กรมควบคุมมลพิษ (Pollution Control Department)	✓		✓	✓	✓		✓								75	0	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2							Stage 3					Stage 4		Stage 2	Stage 3	Stage 4	
	a	b	c	d				a	b	c	d			a	b	(%)	(%)	(%)
				1	2	3	4				1	2	3					
9.3	กรมทรัพยากรทางทะเลและชายฝั่ง (Department of Marine and Coastal Resources)	✓	✓	✓	✓		✓		✓							100	25	0
9.4	กรมทรัพยากรธรณี (Department of Mineral Resources)	✓	✓	✓	✓			✓	✓	✓				✓		100	50	50
9.5	กรมส่งเสริมคุณภาพสิ่งแวดล้อม (Department of Environment Quality Promotion)	✓	✓	✓	✓		✓	✓	✓							100	25	0
9.6	กรมอุทยานแห่งชาติ สัตว์ป่า และพันธุ์พืช (National Park, Wildlife and Plant Conservation Department)	✓	✓	✓		✓		✓	✓		✓					100	75	0
9.7	สำนักงานนโยบายและแผนทรัพยากรธรรมชาติและสิ่งแวดล้อม (Office of Natural Resources and Environmental Policy and Planning)	✓			✓		✓	✓	✓	✓						50	50	0
9.8	กรมป่าไม้ (Royal Forest Department)	✓		✓	✓	✓	✓		✓			✓	✓		✓	75	50	100
9.9	กรมทรัพยากรน้ำ (Department of Water Resources)	✓			✓		✓	✓	✓	✓						50	50	0
9.10	กรมทรัพยากรน้ำบาดาล (Department of Groundwater Resources)	✓		✓	✓	✓	✓		✓							75	25	0
9.11	องค์การบริหารจัดการก๊าซเรือนกระจก(องค์การมหาชน) (Thailand Greenhouse Gas Management Organization (Public Organization))	✓	✓	✓		✓	✓	✓	✓							100	25	0
9.12	สำนักงานพัฒนาเศรษฐกิจจากฐานชีวภาพ(องค์การมหาชน) (Biodiversity-Based Economy Development Office (Public		✓	✓			✓	✓								75	0	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2								Stage 3						Stage 4		Stage 2 (%)	Stage 3 (%)	Stage 4 (%)
	a	b	c	d				a	b	c	d			a	b				
				1	2	3	4				1	2	3						
Organization)																			
9.13 องค์การสวนสัตว์ในพระบรมราชูปถัมภ์ (The Zoological Park Organization under The Royal Patronage of H.M. The King)	✓	✓	✓	✓					✓								100	25	0
9.14 องค์การสวนพฤกษศาสตร์ (The Botanical Garden Organization)	✓			✓	✓	✓	✓		✓								50	25	0
9.15 องค์การจัดการน้ำเสีย (Wastewater Management Authority)	✓		✓	✓	✓	✓	✓	✓	✓								75	50	0
9.16 บริษัทไม้อัดไทย จำกัด (Thai Plywood Company Limited)			✓				✓										50	0	0
9.17 องค์การอุตสาหกรรมป่าไม้ (Forest Industry Organization)	✓	✓	✓	✓		✓	✓	✓	✓	✓							100	75	0
10. กระทรวงเทคโนโลยีสารสนเทศและการสื่อสาร (Ministry of Information and Communication Technology)																			
10.1 สำนักงานปลัดกระทรวงเทคโนโลยีสารสนเทศและการสื่อสาร (Office of the Permanent Secretary for Information and Communication Technology)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓			100	50	50
10.2 กรมอุตุนิยมวิทยา (The Meteorological Department)			✓	✓	✓		✓		✓								50	25	0
10.3 สำนักงานสถิติแห่งชาติ (National Statistical Office)	✓		✓	✓		✓	✓	✓						✓			75	25	50
10.4 สำนักงานส่งเสริมอุตสาหกรรมซอฟต์แวร์แห่งชาติ (Software Industry Promotion Agency (Public Organization))	✓	✓	✓			✓	✓	✓									100	25	0
10.5 สำนักงานรัฐบาลอิเล็กทรอนิกส์ (องค์การมหาชน) (Electronic Government Agency (Public Organization))	✓	✓	✓	✓		✓	✓	✓	✓					✓	✓		100	50	100
10.6 สำนักงานพัฒนาธุรกรรมทางอิเล็กทรอนิกส์ (องค์การมหาชน)	✓	✓	✓		✓	✓	✓	✓									100	25	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2				Stage 3				Stage 4		Stage 2	Stage 3	Stage 4					
	a	b	c	d				a	b	c	d		a	b	(%)	(%)	(%)	
				1	2	3	4				1	2						3
(Electronic Transactions Development Agency (Public Organization))																		
10.7 บริษัท กสท โทรคมนาคม จำกัด (มหาชน) (ส่วนกลาง) (CAT Telecom Public Company Limited)	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓				75	100	0
10.8 บริษัทไปรษณีย์ไทย จำกัด (ส่วนกลาง) (Thailand Post Company Limited)	✓	✓	✓		✓	✓	✓		✓	✓				✓		100	50	50
10.9 บริษัท ทีโอที จำกัด (มหาชน) (ส่วนกลาง) (TOT Public Company Limited)	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓					100	100	0
11. กระทรวงพลังงาน (Ministry of Energy)																		
11.1 สำนักงานปลัดกระทรวงพลังงาน (Office of the Permanent Secretary for Energy)	✓	✓	✓	✓			✓							✓		100	0	50
11.2 กรมพัฒนาพลังงานทดแทนและอนุรักษ์พลังงาน (Department of Alternative Energy Development and Efficiency)	✓	✓	✓	✓	✓		✓	✓	✓							100	50	0
11.3 กรมเชื้อเพลิงธรรมชาติ (Department of Mineral Fuels)	✓	✓	✓			✓	✓							✓		100	0	50
11.4 กรมธุรกิจพลังงาน (Department of Energy Business)	✓		✓	✓	✓		✓	✓	✓	✓	✓			✓	✓	75	100	100
11.5 สำนักงานนโยบายและแผนพลังงาน (Energy Policy and Planning Office)	✓	✓	✓				✓									100	0	0
11.6 สำนักงานคณะกรรมการกำกับกิจการพลังงาน (Office of the Energy Regulatory Commission)	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓				100	100	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2				Stage 3				Stage 4		Stage 2	Stage 3	Stage 4						
	a	b	c	d				a	b	c	d		a	b	Stage 2 (%)	Stage 3 (%)	Stage 4 (%)		
				1	2	3	4				1	2						3	
11.7	สถาบันบริหารกองทุนพลังงาน (องค์การมหาชน) (The Energy Fund Administration Institute (Public Organization))	✓															25	0	0
11.8	การไฟฟ้าฝ่ายผลิตแห่งประเทศไทย (The Electricity Generating Authority of Thailand)		✓	✓				✓									75	0	0
11.9	บริษัท ปตท.จำกัด (มหาชน) (PTT Public Company Limited)	✓	✓	✓		✓		✓	✓								100	50	0
12. กระทรวงพาณิชย์ (Ministry of Commerce)																			
12.1	สำนักงานปลัดกระทรวงพาณิชย์ (Office of the Permanent Secretary for Commerce)	✓		✓	✓			✓	✓					✓			75	25	50
12.2	กรมการค้าต่างประเทศ (Department of Foreign Trade)	✓	✓	✓	✓			✓		✓	✓		✓	✓			100	50	100
12.3	กรมการค้าภายใน (Department of Internal Trade)	✓	✓		✓	✓		✓	✓			✓		✓			75	75	50
12.4	กรมเจรจาการค้าระหว่างประเทศ (Department of Trade Negotiations)		✓	✓			✓	✓	✓					✓			75	25	50
12.5	กรมทรัพย์สินทางปัญญา (Department of Intellectual Property)	✓	✓	✓	✓	✓		✓	✓	✓				✓			100	50	50
12.6	กรมพัฒนาธุรกิจการค้า (Department of Business Development)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		100	100	100
12.7	กรมส่งเสริมการค้าระหว่างประเทศ (Department of International Trade Promotion)	✓	✓	✓	✓	✓	✓	✓						✓			100	25	50
12.8	ศูนย์ส่งเสริมศิลปาชีพระหว่างประเทศ (องค์การมหาชน) (The SUPPORT Arts and Crafts International centre of Thailand (Public Organization))		✓	✓			✓	✓	✓	✓	✓						75	100	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2								Stage 3						Stage 4		Stage 2 (%)	Stage 3 (%)	Stage 4 (%)	
	a	b	c	d				a	b	c	d			a	b					
				1	2	3	4				1	2	3							
12.9	สถาบันวิจัยและพัฒนาอัญมณีและเครื่องประดับแห่งชาติ (องค์การมหาชน) (The Gem and Jewelry Institute of Thailand (Public Organization))	✓		✓					✓									75	0	0
12.10	สำนักงานคณะกรรมการกำกับการซื้อขายสินค้าเกษตรล่วงหน้า (The Office of the Agricultural Futures Trading Commission)	✓	✓	✓					✓		✓							100	25	0
12.11	ตลาดสินค้าเกษตรล่วงหน้าแห่งประเทศไทย (The Agricultural Futures Exchange of Thailand)	✓		✓				✓	✓		✓	✓	✓					75	75	0
12.12	องค์การคลังสินค้า (Public Warehouse Organization)	✓		✓	✓	✓			✓	✓								75	50	0
13. กระทรวงมหาดไทย (Ministry of Interior)																				
13.1	สำนักงานปลัดกระทรวงมหาดไทย (Office of the Permanent Secretary for Interior)	✓	✓		✓				✓	✓	✓						✓	75	50	50
13.2	กรมการปกครอง (Department of Provincial Administration)	✓	✓		✓			✓	✓	✓	✓						✓	75	50	50
13.3	กรมการพัฒนาชุมชน (The Community Development Department)	✓	✓	✓	✓			✓	✓	✓	✓	✓						100	75	0
13.4	กรมที่ดิน (Department of Lands)	✓			✓				✓	✓							✓	50	25	50
13.5	กรมป้องกันและบรรเทาสาธารณภัย (Department of Disaster Prevention and Mitigation)	✓	✓	✓	✓	✓	✓	✓		✓								100	25	0
13.6	กรมโยธาธิการและผังเมือง (Department of Public Works and Town & Country Planning)	✓	✓		✓			✓	✓	✓	✓							75	50	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2							Stage 3					Stage 4		Stage 2	Stage 3	Stage 4	
	a	b	c	d				a	b	c	d			a	b	(%)	(%)	(%)
				1	2	3	4				1	2	3					
13.7	กรมส่งเสริมการปกครองท้องถิ่น (Department of Local Administration)	✓	✓	✓	✓		✓	✓		✓				✓		100	25	50
13.8	การประปานครหลวง (The Metropolitan Waterworks Authority)	✓	✓	✓	✓	✓	✓	✓		✓	✓			✓		100	50	50
13.9	การประปาส่วนภูมิภาค (Provincial Waterworks Authority)	✓			✓	✓		✓	✓					✓		50	50	50
13.10	การไฟฟ้านครหลวง (Metropolitan Electricity Authority)	✓		✓		✓	✓	✓	✓	✓						75	75	0
13.11	การไฟฟ้าส่วนภูมิภาค (Provincial Electricity Authority)	✓	✓	✓	✓		✓	✓	✓	✓	✓					100	100	0
13.12	องค์การตลาด (The Market Organization)	✓	✓		✓		✓	✓								75	0	0
14. กระทรวงยุติธรรม (Ministry of Justice)																		
14.1	สำนักงานปลัดกระทรวงยุติธรรม (Office of the Permanent Secretary for Justice)	✓	✓	✓	✓	✓	✓	✓	✓					✓		100	50	50
14.2	กรมคุมประพฤติ (Department of Probation)	✓	✓	✓	✓		✓	✓						✓		100	0	50
14.3	กรมคุ้มครองสิทธิและเสรีภาพ (Rights and Liberties Protection Department)	✓			✓		✓	✓	✓	✓						50	50	0
14.4	กรมบังคับคดี (Legal Execution Department)	✓			✓	✓			✓	✓				✓		50	50	50
14.5	กรมพินิจและคุ้มครองเด็กและเยาวชน (Department of Juvenile Observation and Protection)	✓		✓						✓				✓		50	25	50
14.6	กรมราชทัณฑ์ (Department of Corrections)	✓	✓	✓	✓	✓		✓	✓	✓				✓		100	50	50
14.7	กรมสอบสวนคดีพิเศษ (Department of Special Investigation)	✓	✓	✓	✓			✓	✓	✓				✓		100	50	50

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2								Stage 3						Stage 4		Stage 2 (%)	Stage 3 (%)	Stage 4 (%)
	a	b	c	d				a	b	c	d			a	b				
				1	2	3	4				1	2	3						
14.8	สำนักกิจการยุติธรรม (Office of Justice Affairs)	✓	✓				✓	✓									75	0	0
14.9	สถาบันนิติวิทยาศาสตร์ (Central Institute of Forensic Science)	✓			✓			✓	✓								50	25	0
14.10	สถาบันเพื่อการยุติธรรมแห่งประเทศไทย (องค์การมหาชน) (Thailand institute of Justice (Public Organization))						✓										25	0	0
14.11	สำนักงานคณะกรรมการป้องกันและปราบปรามยาเสพติด (Office of the Narcotics Control Board)	✓	✓	✓		✓		✓	✓					✓			100	25	50
14.12	สำนักงานคณะกรรมการป้องกันและปราบปรามการทุจริตในภาครัฐ (Office of Public Sector Anti-Corruption Commission)	✓	✓	✓			✓	✓									100	0	0
15. กระทรวงแรงงาน (Ministry of Labour)																			
15.1	สำนักงานปลัดกระทรวงแรงงาน (Office of the Permanent Secretary for Labour)	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓			100	50	50
15.2	กรมการจัดหางาน (Department of Employment)	✓		✓		✓	✓	✓	✓								75	25	0
15.3	กรมสวัสดิการและคุ้มครองแรงงาน (Department of Labour Protection and Welfare)	✓		✓	✓	✓	✓	✓	✓					✓			75	25	50
15.4	กรมพัฒนาฝีมือแรงงาน (Department of Skill Development)	✓	✓		✓	✓	✓	✓	✓								75	25	0
15.5	สำนักงานประกันสังคม (Social Security Office)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		100	75	100
16. กระทรวงวัฒนธรรม (Ministry of Culture)																			
16.1	สำนักงานปลัดกระทรวงวัฒนธรรม (Office of the Permanent	✓	✓	✓	✓		✓	✓	✓	✓				✓			100	50	50

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2							Stage 3					Stage 4		Stage 2	Stage 3	Stage 4	
	a	b	c	d				a	b	c	d			a	b	(%)	(%)	(%)
				1	2	3	4				1	2	3					
Secretary for Culture)																		
16.2 กรมการศาสนา (Religious Affairs Department)	✓	✓		✓	✓	✓	✓	✓	✓			✓				75	75	0
16.3 กรมศิลปากร (The Fine Arts Department)	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓				75	75	0
16.4 กรมส่งเสริมวัฒนธรรม (Office of the National Culture Commission)	✓	✓		✓		✓	✓									75	0	0
16.5 สำนักงานศิลปวัฒนธรรมร่วมสมัย (Office of Contemporary Art and Culture)	✓	✓	✓	✓		✓		✓								100	25	0
16.6 สถาบันบัณฑิตพัฒนศิลป์ (Bunditpatanasilpa Institute, Ministry of Culture)	✓			✓		✓	✓	✓								50	25	0
16.7 ศูนย์มานุษยวิทยาสิรินธร (องค์การมหาชน) (Princess Maha Chakri Sirindhorn Anthropology Centre (Public Organization))		✓	✓	✓		✓	✓	✓								75	25	0
16.8 หอภาพยนตร์ (องค์การมหาชน) (Film Archive (Public Organization))	✓	✓				✓	✓									75	0	0
16.9 ศูนย์คุณธรรม (องค์การมหาชน) (Moral Promotion Center (Public Organization))	✓	✓		✓		✓	✓	✓								75	25	0
17. กระทรวงวิทยาศาสตร์และเทคโนโลยี (Ministry of Science and Technology)																		
17.1 สำนักงานปลัดกระทรวงวิทยาศาสตร์และเทคโนโลยี (Office of the Permanent Secretary for Science and Technology)	✓	✓	✓	✓		✓	✓	✓	✓					✓		100	50	50
17.2 กรมวิทยาศาสตร์บริการ (Department of Science Service)	✓	✓	✓			✓	✓		✓							100	25	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2							Stage 3					Stage 4		Stage 2 (%)	Stage 3 (%)	Stage 4 (%)		
	a	b	c	d				a	b	c	d			a				b	
				1	2	3	4				1	2	3						
17.3	สำนักงานปรมาณูเพื่อสันติ (Office of Atoms for Peace)	✓	✓	✓	✓		✓	✓	✓	✓							100	50	0
17.4	สถาบันมาตรวิทยาแห่งชาติ (National Institute of Metrology (Thailand))	✓		✓	✓	✓	✓		✓								75	25	0
17.5	สำนักงานพัฒนาวิทยาศาสตร์และเทคโนโลยีแห่งชาติ (National Science and Technology Development Agency)	✓	✓	✓		✓	✓	✓	✓	✓				✓	✓		100	75	100
17.6	สำนักงานคณะกรรมการนโยบายวิทยาศาสตร์ เทคโนโลยีและนวัตกรรมแห่งชาติ (หน่วยงานในกำกับ) (National Science Technology and Innovation Policy Office)	✓	✓	✓				✓	✓								100	25	0
17.7	สำนักงานนวัตกรรมแห่งชาติ (องค์การมหาชน) (National Innovation Agency (Public Organization))	✓	✓	✓			✓	✓		✓							100	25	0
17.8	สำนักงานพัฒนาเทคโนโลยีอวกาศและภูมิสารสนเทศ (องค์การมหาชน) (Geo Informatics and Space Technology Development Agency (Public Organization))	✓	✓	✓			✓	✓	✓	✓				✓	✓		100	50	100
17.9	สถาบันวิจัยดาราศาสตร์แห่งชาติ (องค์การมหาชน) (National Astronomical Research Institute (Public Organization))	✓	✓	✓			✓	✓									100	0	0
17.10	สถาบันวิจัยแสงซินโครตรอน (องค์การมหาชน) (Synchrotron Light Research Institute (Public Organization))	✓		✓	✓	✓	✓	✓		✓							75	25	0
17.11	สถาบันเทคโนโลยีนิวเคลียร์แห่งชาติ (องค์การมหาชน) (Thailand Institute of Nuclear Technology (Public Organization))	✓		✓	✓		✓	✓		✓							75	25	0
17.12	สถาบันสารสนเทศทรัพยากรน้ำและการเกษตร (องค์การมหาชน)		✓	✓			✓	✓		✓							75	25	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2							Stage 3					Stage 4		Stage 2 (%)	Stage 3 (%)	Stage 4 (%)		
	a	b	c	d				a	b	c	d			a				b	
				1	2	3	4				1	2	3						
	(Hydro and Agro Informatics Institute (Public Organization))																		
17.13	ศูนย์ความเป็นเลิศด้านชีววิทยาศาสตร์ (องค์การมหาชน) (Thailand Centre of Excellence for Life Sciences (Public Organization))	✓		✓	✓	✓		✓									75	0	0
17.14	องค์การพิพิธภัณฑ์วิทยาศาสตร์แห่งชาติ (รัฐวิสาหกิจ) (National Science Museum THAILAND)	✓						✓	✓								50	0	0
17.15	สถาบันวิจัยวิทยาศาสตร์และเทคโนโลยีแห่งประเทศไทย(รัฐวิสาหกิจ) (Thailand Institute of Scientific and Technological Research)	✓	✓	✓	✓			✓	✓								100	50	0
18. กระทรวงศึกษาธิการ (Ministry of Education)																			
18.1	สำนักงานปลัดกระทรวงศึกษาธิการ (Office of the Permanent Secretary for Education)	✓	✓	✓	✓	✓	✓	✓		✓	✓						100	50	50
18.2	สำนักงานคณะกรรมการการศึกษาขั้นพื้นฐาน (Office of the Basic Education Commission)				✓			✓	✓								25	0	50
18.3	สำนักงานคณะกรรมการอาชีวศึกษา (Office of the Vocational Education Commission)	✓	✓					✓	✓								75	25	50
18.4	สำนักงานเลขาธิการสภาการศึกษา (Office of the Education Council)		✓	✓				✓	✓								75	0	0
18.5	สำนักงานคณะกรรมการการอุดมศึกษา (Office of the Higher Education Commission)	✓			✓	✓		✓	✓	✓							50	50	50

ชื่อหน่วยงาน (Names of Public Agencies)		Stage 2						Stage 3						Stage 4		Stage 2 (%)	Stage 3 (%)	Stage 4 (%)	
		a	b	c	d				a	b	c	d			a				b
					1	2	3	4				1	2	3					
18.6	สำนักงานคณะกรรมการส่งเสริมสวัสดิการและสวัสดิภาพครูและบุคลากรทางการศึกษา (Business Organization of the Office of the welfare Promotion Commission for Teachers and Educational)	✓	✓		✓	✓		✓									75	0	0
18.7	สำนักงานเลขาธิการคุรุสภา (Secretariat Office of the Teachers Council of Thailand)	✓	✓	✓	✓			✓	✓	✓			✓				100	75	0
18.8	สำนักงานส่งเสริมการศึกษานอกระบบและการศึกษาตามอัธยาศัย (Office of the Non-Formal and Informal Education)	✓	✓	✓	✓	✓	✓	✓						✓			100	25	50
18.9	สถาบันส่งเสริมการสอนวิทยาศาสตร์และเทคโนโลยี (The Institute for the Promotion of Teaching Science and Technology)		✓	✓			✓	✓		✓							75	25	0
18.10	สถาบันระหว่างประเทศเพื่อการค้าและการพัฒนา (องค์การมหาชน) (International Institute for Trade and Development (Public Organization))	✓	✓	✓			✓	✓	✓								100	25	0
18.11	สถาบันทดสอบทางการศึกษาแห่งชาติ (องค์การมหาชน) (National Institute of Educational Testing Service (Public Organization))	✓	✓	✓		✓		✓	✓								100	25	0
19. กระทรวงสาธารณสุข (Ministry of Public Health)																			
19.1	สำนักงานปลัดกระทรวงสาธารณสุข (Office of the Permanent Secretary for Public Health)	✓	✓	✓	✓	✓	✓	✓		✓	✓			✓			100	50	50
19.2	กรมการแพทย์ (Department of Medical Services)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓			100	75	50

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2							Stage 3					Stage 4		Stage 2 (%)	Stage 3 (%)	Stage 4 (%)		
	a	b	c	d				a	b	c	d			a				b	
				1	2	3	4				1	2	3						
19.3	กรมควบคุมโรค (Department of Disease Control)	✓	✓	✓	✓	✓	✓	✓	✓	✓							100	75	0
19.4	กรมพัฒนาการแพทย์แผนไทยและการแพทย์ทางเลือก (Department for Development of Thai Traditional and Alternative Medicine)	✓	✓	✓	✓	✓		✓	✓								100	50	0
19.5	กรมวิทยาศาสตร์การแพทย์ (Department of Medical Sciences)	✓	✓	✓	✓	✓	✓	✓	✓					✓			100	50	50
19.6	กรมสนับสนุนบริการสุขภาพ (Department of Health Service Support)	✓	✓	✓	✓	✓	✓	✓	✓								100	50	0
19.7	กรมสุขภาพจิต (Department of Mental Health)	✓	✓	✓	✓	✓	✓	✓									100	25	0
19.8	กรมอนามัย (Department of Health)	✓		✓	✓	✓	✓	✓	✓					✓			75	50	50
19.9	สำนักงานคณะกรรมการอาหารและยา (Food and Drug Administration)	✓	✓	✓	✓	✓	✓	✓	✓		✓			✓	✓		100	75	100
19.10	สถาบันวิจัยระบบสาธารณสุข (Health Systems Research Institute)	✓	✓	✓			✓	✓						✓	✓		100	0	100
19.11	สำนักงานหลักประกันสุขภาพแห่งชาติ (สำนักงานหลักประกันสุขภาพแห่งชาติ)	✓		✓	✓		✓	✓	✓					✓			75	25	50
19.12	สถาบันการแพทย์ฉุกเฉินแห่งชาติ (National Institute for Emergency Medicine)	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓		100	50	100
19.13	สถาบันรับรองคุณภาพสถานพยาบาล (องค์การมหาชน) (The Healthcare Accreditation Institute (Public Organization))	✓		✓	✓	✓		✓		✓							75	25	0

ชื่อหน่วยงาน (Names of Public Agencies)		Stage 2				Stage 3			Stage 4		Stage 2	Stage 3	Stage 4						
		a	b	c	d				a	b	c	d			a	b	(%)	(%)	(%)
					1	2	3	4				1	2	3					
19.14	สถาบันวัคซีนแห่งชาติ (องค์การมหาชน) (National Vaccine Institute (Public Organization))	✓			✓												50	0	0
19.15	องค์การเภสัชกรรม (The Government Pharmaceutical Organization)	✓		✓			✓	✓			✓	✓			✓		75	50	50
20. กระทรวงอุตสาหกรรม (Ministry of Industry)																			
20.1	สำนักงานปลัดกระทรวงอุตสาหกรรม (Office of the Permanent Secretary for Industry)	✓	✓	✓			✓	✓			✓				✓		100	25	50
20.2	กรมโรงงานอุตสาหกรรม (Department of Industrial Works)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		100	75	100
20.3	กรมส่งเสริมอุตสาหกรรม (Department of Industrial Promotion)	✓	✓	✓	✓		✓	✓	✓	✓							100	50	0
20.4	กรมอุตสาหกรรมพื้นฐานและการเหมืองแร่ (Department of Primary Industries and Mines)	✓	✓	✓	✓	✓			✓	✓	✓	✓					100	100	0
20.5	สำนักงานคณะกรรมการอ้อยและน้ำตาลทราย (Office of the Cane and Sugar Board)	✓			✓			✓	✓	✓		✓	✓		✓	✓	50	75	100
20.6	สำนักงานมาตรฐานผลิตภัณฑ์อุตสาหกรรม (Thai Industrial Standards Institute)	✓	✓	✓	✓			✓									100	0	0
20.7	สำนักงานเศรษฐกิจอุตสาหกรรม (Office of Industrial Economics)	✓		✓		✓	✓	✓	✓	✓					✓		75	50	50
20.8	สำนักงานคณะกรรมการส่งเสริมการลงทุน (Thailand Board of Investment)	✓	✓	✓		✓	✓	✓	✓	✓							100	50	0
20.9	สำนักงานส่งเสริมวิสาหกิจขนาดกลางและขนาดย่อม (Office of	✓		✓	✓	✓	✓	✓									75	0	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2							Stage 3					Stage 4		Stage 2 (%)	Stage 3 (%)	Stage 4 (%)		
	a	b	c	d				a	b	c	d			a				b	
				1	2	3	4				1	2	3						
	Small and Medium Enterprises Promotion)																		
20.10	การนิคมอุตสาหกรรมแห่งประเทศไทย (Industrial Estate Authority of Thailand)	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓		✓	✓	100	75	100
20.11	สถาบันไทย - เยอรมัน (Thai-German Institute)	✓		✓	✓		✓	✓									75	0	0
20.12	สถาบันเพิ่มผลผลิตแห่งชาติ (Thailand Productivity Institute)	✓	✓			✓	✓	✓									75	0	0
20.13	สถาบันอาหาร (National Food Institute)	✓		✓		✓	✓	✓	✓	✓							75	50	0
20.14	สถาบันพัฒนาอุตสาหกรรมสิ่งทอ (Thailand Textile Institute)	✓			✓		✓	✓	✓								50	25	0
20.15	สถาบันรับรองมาตรฐานไอเอสโอ (Management System Certification Institute (Thailand))	✓					✓	✓									50	0	0
20.16	สถาบันยานยนต์ (Thailand Automotive Institute)	✓	✓	✓				✓	✓					✓			100	25	50
20.17	สถาบันไฟฟ้าและอิเล็กทรอนิกส์ (Electrical and Electronics Institute)	✓		✓	✓		✓	✓						✓			75	0	50
20.18	สถาบันเหล็กและเหล็กกล้าแห่งประเทศไทย (Iron and Steel Institute of Thailand)	✓	✓	✓	✓		✓	✓	✓								100	25	0
20.19	สถาบันพัฒนาวิสาหกิจขนาดกลางและขนาดย่อม (Institute for Small and Medium Enterprises Development)	✓	✓	✓	✓			✓									100	0	0
21. ส่วนราชการอิสระไม่สังกัดกระทรวง (Independent Public Agencies)																			
21.1	สำนักพระราชเลขานุการ (The Office of His Majesty's Principal	✓	✓					✓	✓								75	25	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2							Stage 3					Stage 4		Stage 2 (%)	Stage 3 (%)	Stage 4 (%)			
	a	b	c	d				a	b	c	d			a				b		
				1	2	3	4				1	2	3							
	Private Secretary)																			
21.2	สำนักพระราชวัง (Bureau of the Royal Household)		✓		✓													50	0	0
21.3	สำนักงานพระพุทธศาสนาแห่งชาติ (National Office of Buddhism)	✓	✓	✓	✓	✓			✓									100	25	0
21.4	สำนักงานคณะกรรมการพิเศษเพื่อประสานงานโครงการอันเนื่องมาจากพระราชดำริ (Office of the Royal Development Projects Board)	✓	✓	✓	✓			✓	✓									100	25	0
21.5	สำนักงานคณะกรรมการวิจัยแห่งชาติ (National Research Council of Thailand)	✓	✓			✓	✓	✓	✓	✓					✓	✓		75	50	100
21.6	ราชบัณฑิตยสถาน (The Royal Institute)			✓	✓		✓	✓										50	0	0
21.7	สำนักงานตำรวจแห่งชาติ (Royal Thai Police)	✓	✓		✓	✓	✓	✓		✓					✓	✓		75	25	100
21.8	สำนักงานป้องกันและปราบปรามการฟอกเงิน (Anti-Money Laundering Office)	✓		✓				✓	✓	✓			✓					75	75	0
21.9	สำนักงานอัยการสูงสุด (Office of the Attorney General)	✓	✓		✓	✓		✓	✓	✓								75	50	0
21.10	รัฐสภาไทย (Thai National Assembly)	✓	✓					✓		✓					✓			75	25	50
21.11	สถาบันพระปกเกล้า (King Prajadhipok's Institute)		✓	✓			✓	✓	✓									75	25	0
21.12	สำนักงานคณะกรรมการการเลือกตั้ง (Office of the Election Commission of Thailand)	✓	✓	✓	✓		✓	✓		✓								100	25	0
21.13	สำนักงานศาลรัฐธรรมนูญ (Office of the Constitutional Court)	✓	✓	✓	✓		✓	✓										100	0	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2							Stage 3					Stage 4		Stage 2 (%)	Stage 3 (%)	Stage 4 (%)		
	a	b	c	d				a	b	c	d			a				b	
				1	2	3	4				1	2	3						
21.14	สำนักงานผู้ตรวจการแผ่นดิน (Office of the Ombudsman Thailand)	✓		✓		✓	✓		✓	✓					✓		75	50	50
21.15	สำนักงานศาลปกครอง (Office of the Administrative Court)	✓		✓		✓											75	0	0
21.16	สำนักงานคณะกรรมการป้องกันและปราบปรามการทุจริตแห่งชาติ (Office of the National Anti-Corruption Commission)	✓	✓	✓		✓		✓		✓							100	25	0
21.17	สำนักงานการตรวจเงินแผ่นดิน (Office of the Auditor General of Thailand)	✓	✓	✓		✓		✓		✓					✓		100	25	50
21.18	สำนักงานคณะกรรมการสิทธิมนุษยชนแห่งชาติ (Office of the National Human Rights Commission of Thailand)	✓	✓	✓	✓			✓	✓	✓							100	50	0
21.19	สำนักงานศาลยุติธรรม (Office of the Court of Justice)	✓	✓	✓	✓			✓	✓						✓		100	25	50
21.20	สภากาชาด (The Thai Red Cross Society)	✓		✓	✓			✓									75	0	0
21.21	สำนักงานทรัพย์สินส่วนพระมหากษัตริย์ (The Crown Property Bureau)	✓	✓	✓													75	0	0
21.22	ธนาคารแห่งประเทศไทย (The Bank of Thailand)	✓	✓	✓			✓								✓		100	0	50
21.23	สำนักงานคณะกรรมการกำกับหลักทรัพย์และตลาดหลักทรัพย์ (ก.ล.ต.) (Securities and Exchange Commission Thailand)	✓	✓	✓	✓	✓	✓		✓						✓	✓	100	25	100
21.24	ศาลอุทธรณ์ (The Court of Appeal)	✓			✓			✓									50	0	0
21.25	ศาลแพ่ง (Civil Court of Thailand)	✓		✓	✓	✓		✓									75	0	0

ชื่อหน่วยงาน (Names of Public Agencies)	Stage 2				Stage 3				Stage 4		Stage 2	Stage 3	Stage 4					
	a	b	c	d				a	b	c	d		a	b	(%)	(%)	(%)	
				1	2	3	4				1	2						3
21.26 ศาลอาญา (Criminal Court)	✓			✓											50	0	0	
21.27 สำนักงานคณะกรรมการกิจการกระจายเสียง กิจการโทรทัศน์ และ กิจการโทรคมนาคมแห่งชาติ (Office of the National Broadcasting and Telecommunications Commission)	✓	✓	✓	✓					✓					✓	✓	100	25	100
21.28 ศูนย์อำนวยการบริหารจังหวัดชายแดนภาคใต้ (Southern Border Provinces Administration Centre)	✓	✓	✓	✓			✓	✓	✓							100	25	0
21.29 สำนักงานปฏิรูประบบสุขภาพแห่งชาติ (National Health System Reform Office)	✓		✓				✓	✓								75	0	0
21.30 ศาลาว่าการกรุงเทพมหานคร (Bangkok Metropolitan Administration)	✓		✓	✓	✓	✓	✓	✓	✓							75	50	0

Remarks

✓ = Agency has that feature/activity in a stage.

Stage 2 :

a = downloadable forms/e-form
b = audio-visual capabilities
c = multi-lingual
d-1 = web board
d-2 = online feedback
d-3 = social media
d-4 = e-mail contact or online Q & A

Stage 3 :

a = e-voting/e-poll
b = online application
c = online payment transaction
d-1 = end-to-end online transaction
d-2 = e-certification
d-3 = digital signature for transaction

Stage 4 :

a = Connected e-Government
b = Citizen Centric Services

References

1. Ahmad, Z., "Reengineering Public Services Through ISO 9000". *Asian Review of Public Administration*; pp. 108-120. Available from:
<http://unpan1.un.org/intradoc/groups/public/documents/eropa/unpan001416.pdf>
2. Cabinet Office, January 2010. "Government ICT Strategy". London, United Kingdom. Available from:
http://webarchive.nationalarchives.gov.uk/+http://www.cabinetoffice.gov.uk/media/317444/ict_strategy4.pdf
3. Department of Public Expenditure and Reform, 2011. "Public Service Reform". November 17, 2011. Available from: <http://per.gov.ie/wp-content/uploads/Public-Service-Reform-181120111.pdf>
4. Department of Public Expenditure and Reform, September 2011. "Progress on the implementation of the Government's Public Service Reform Plan". Available from: <http://per.gov.ie/wp-content/uploads/Statement-on-Public-Service-Reform-Plan-6th-Sept-2012.pdf>
5. Design Council, December 2011. "Design for Innovation". London, United Kingdom. Available from:
http://www.designcouncil.org.uk/Documents/Documents/OurWork/Insight/DesignForInnovation/DesignForInnovation_Dec2011.pdf
6. Division for Public Administration and Development Management, United Nations Department of Economic and Social Affairs, June 2012. "Compendium of Innovative E-Government Practices". Volume IV, United Nations Publication, New York, United States. Available from:
<http://unpan1.un.org/intradoc/groups/public/documents/un/unpan048064.pdf>
7. Eibl and others, September 2011. "Administration on the Net". MediaGuide VerlagsGesmbH, Vienna. Available from:
<http://www.austria.gv.at/DocView.axd?CobId=44576>
8. Executive Office of the President, Office of Management and Budget, February 2002. "E-Government Strategy". Available from:
http://www.usa.gov/Topics/Includes/Reference/egov_strategy.pdf
9. Hood, C., June 2010. "Reflections on Public Service Reform in a Cold Fiscal Climate", The 2020 Public Services Trust. Available from:
http://clients.squareeye.net/uploads/2020/documents/esrc_hood.pdf
10. infoDev/World Bank, 2009. "e-Government Primer". infoDev/World Bank, Washington, DC. Available from: <http://www.infodev.org/en/Document.823.pdf>

11. Jhoana, M., March 2010. "Government Sector Outsourcing" . Tholons, Available from: http://www.tholons.com/nl_pdf/Government_Outsourcing.pdf
12. Kaliannan, M. and Awang, H., 2008. "Implementing Electronic Procurement in Government: A Case Study On E-Perolehan In Malaysia", Public Sector ICT Management Review, Vol.2, No.1; pp.44-51. January-June, 2008. Available from: <http://unpan1.un.org/intradoc/groups/public/documents/UNPAN/UNPAN034699.pdf>
13. Ministry of Information and Communication Technology, November 2008. "Executive Summary, Second Thailand Information and Communication Technology (ICT) Master Plan (2009-2012) (Revision)". Available from: [http://www.mict.go.th/download/ICT_masterplan/no10_Executive_summary\[Eng\].pdf](http://www.mict.go.th/download/ICT_masterplan/no10_Executive_summary[Eng].pdf)
14. Muhammad Rais Bin Abdul Karim, 1997. "Reengineering the Malaysian Public Service and the Use of Information Technology in Promoting Efficiency and Quality". *Asian Review of Public Administration*, Vol. VIX, No.1; pp. 57-69, January-June, 1997. Available from: <http://unpan1.un.org/intradoc/groups/public/documents/EROPA/UNPAN001414.pdf>
15. National Electronics and Computer Technology Center, National Science and Technology Development Agency, Ministry of Science and Technology, May 2011. "Executive Summary, Thailand Information and Communication Technology Policy Framework (2011-2020): ICT2020". Ministry of Information and Communication Technology, Thailand. Available from: <http://unpan1.un.org/intradoc/groups/public/documents/ungc/unpan048145~1.pdf>
16. National Tax Service Republic of Korea, 2011. "e-Service in KOREA". November 21, 2011. Available from: http://www.hasil.gov.my/sgatar/pdf/07%20-%20South%20Korea/41SGATAR_KR_WP_TP2.pdf
17. Phuaphanthong, T., Bui, T., and Keretho, S., 2010. "Harnessing Interagency Collaboration in Inter-organizational Systems Development: Lessons Learned from an E-government Project for Trade and Transport Facilitation". *International Journal of Electronic Government Research (IJEGR)* 6(3); pp. 42-56, July-September, 2010. Available from: <http://www.irma-international.org/viewtitle/45740/>
18. Seok-Jin Eom and Soon Chun Hyang University, 2010. "The Institutional Dimension of e-Government Promotion: A Comparative Study on Making 'Business Reference Model (BRM)' in the U.S. and Korea". National Center for Digital Government, No. 10-001, February 6, 2010. Available from: <http://scholarworks.umass.edu/cgi/viewcontent.cgi?article=1036&context=ncdg>

19. Siddiquee, N.A., 2005. "Workshop on Innovations in Governance and Public Service to Achieve a Harmonious Society: Innovations in Governance and Service Delivery: E-Government Experiments in Malaysia", in Network of Asia-Pacific Schools and Institutes of Public Administration and Governance (NAPSIPAG) Annual Conference 2005, Asian Development Bank. December 5-7, 2005. Beijing, People's Republic of China. Available from: http://www.napsipag.org/pdf/EGovernment_Malaysia.pdf
20. Steven, V., (U.S. Chief Information Officer). "Federal Information Technology FY 2013 Budget Priorities: Doing More With Less"
21. The 2020 Public Services Trust, March 2010. "Beyond Beveridge: Principles for 2020 Public Services". Available from:
http://clients.squareeye.net/uploads/2020/documents/2020_interim_report_aw_single_page.pdf
22. The International Bank for Reconstruction and Development/ The World Bank, 2009. "Extending Reach and Increasing Impact". The World Bank, Washington, DC.
23. U.S. Government, May 2012. "Digital Government: Building A 21st Century Platform To Better Serve The American People". Available from:
<http://www.whitehouse.gov/sites/default/files/omb/egov/digital-government/digital-government-strategy.pdf>
24. Novakouski, M. and Lewis, G. A., 2011. "Interoperability in the e-Government Context", Software Engineering Institute, Carnegie Mellon University. Available from:
<http://repository.cmu.edu/sei/702>
25. United Nations Department of Economic and Social Affairs, 2012. "United Nations E-Government Survey 2012", United Nations Publication, New York, United States. Available from:
<http://unpan1.un.org/intradoc/groups/public/documents/un/unpan048065.pdf>
26. United Nations, 2008. "Institutional Structure and Other Enabling Environment for e-Government of the Government of Vietnam". in Capacity-Building on Back office Management for E/M-Government in Asia and the Pacific Region, May 26, 2008. Shanghai, People's Republic of China. Available from:
<http://unpan1.un.org/intradoc/groups/public/documents/un/unpan030564.pdf>