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**PROMOTING E-GOVERNMENT APPLICATIONS TOWARDS
AN INFORMATION SOCIETY IN ESCWA
MEMBER COUNTRIES**

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Preface

In an attempt to promote e-government applications towards an Information Society in ESCWA Member Countries (EMC), this paper aims at proposing:

- (a) Framework for debate within a roundtable discussion;
- (b) Recommendations regarding priorities, preliminary plans and initiatives that address the key issues and tackle the identified problems in building the Information Society. The recommendations will contribute to the compilation of the final documents for WSIS regional preparatory conference.

This paper is organized into four parts. The first part highlights the principles of Information Society. The second part introduces e-government along with a listing of its goals, classifications, and different development stages. A suggested list of potential projects is provided to enable readers to familiarize themselves with the breadth of e-government applications, and how the latter creates value for the identified Information Society principles. The third part proposes a draft for national and regional priorities, initiatives and suggested e-government pilot projects. At the end, a conclusion summarizes the main issues in this paper and an appendix elaborates on the status of e-government in selected ESCWA countries.

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I. INTRODUCTION: PRINCIPLES OF THE INFORMATION SOCIETY

In its attempts to adopt a universal definition for the “Information Society”, the World Summit on the Information Society (WSIS) is targeting to involve all stakeholders in developing a common vision and understanding of the Information Society and in creating a strategic plan of action to realize this vision for the benefit of all humanity¹. As such several prominent policy exercises including previous WSIS high-level preparatory meetings have come up with a list of principles for the Information Society. The main principles are:

- Universal access: this principle stresses the importance that information needs to be extended to everyone. The public has the right to access basic and relevant information of all aspects of the society;
- Human resources training and development: this principle ensures that every citizen should be equipped with enough skills to be involved in the Information Society;
- Infrastructure development: this principle affirms the need to develop affordable, secure, and reliable information and communication infrastructure on a national level with an efficient connectivity to global networks;
- Formulation and implementation of national ICT strategies: this principle involves government to develop national political commitment tailored to the specific requirements of their countries, and thus to participate in the transition to the Information Society;
- Formulation of coherent regulatory and legislative rules: this principle touches on the new changes needed to deal with the problems and issues of the information age in order to attract investment and fight corruption; the legal framework should handle intellectual property rights, consumer protection, confidentiality and disclosure rules. The regulatory will handle competition, taxation, customs, jurisdiction, and conflict resolution.
- Development of applications and content suited to local needs: this principle acknowledges the importance of developing applications using local languages. Most important ones are e-learning, e-health, e-government, e-commerce, and e-business.

Having presented the above, the following sections introduces e-government and illustrates their breadth of applications.

¹ http://www.itu.int/wsisis/newsroom/newsroom_FAQs.html

II. E-GOVERNMENT CONTRIBUTIONS TO THE INFORMATION SOCIETY

A. DEFINITION OF E-GOVERNMENT

There is no unique definition for e-government. However, the most common definition is the following: E-government, or electronic government, refers to the use of information and communications technologies to improve the efficiency, effectiveness, transparency and accountability of government. E-government is also a tool to enhance the economic competitiveness of businesses and to empower citizens.

B. OVERVIEW OF E-GOVERNMENT

Traditionally, citizens and businesses interacted with government agencies in a government office. With the coming of the information age, it is now possible to deliver governmental services closer to the citizen through the use of personal computer in the home or office, or through the use of kiosks in public spaces².

E-government strives for a better delivery of government services to citizens, for an improved interaction with business and industry, for citizen empowerment through access to information, and for a more efficient government management.

As a result, e-government direct impact on the economy and society can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions.

C. E-GOVERNMENT BENEFITS

The following benefits are recognized as being associated with e-government applications:

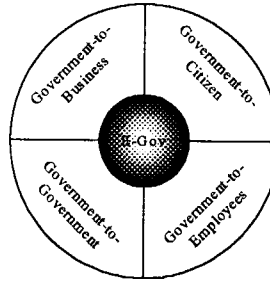
- Better delivery of services and information to businesses and citizens;
- Creating new employment opportunities in public and private sectors;
- Reducing poverty and illiteracy;
- Transparency of government;
- Public sector reform and anticorruption;
- Empowerment through access to information;
- Improving efficiency in government processing;
- Bridging the “digital divide”;
- Contributing to a knowledge-based economy.

D. CLASSIFICATION OF E-GOVERNMENT SOLUTIONS BY SECTOR

E-government solutions are so diversified due to the variety and breadth of government services. In order to better identify and analyze these solutions, it is better to organize them into the following classes:

² Adapted from <http://www1.worldbank.org/publicsector/egov/definition.htm>

Figure 1. E-government solutions classifications



1. Government-to-Government (G2G)

G2G aims at serving both intra and inter-government agencies within a nation and among nations. It is sometimes suggested that government ought to improve and upgrade their internal systems and procedures before electronically transacting with citizens and business; thus making G2G the backbone of e-government. Some G2G applications: inter-agency payments, procurement, and standardized forms.

2. Government-to-Business (G2B)

G2B aims at serving the business sector. It usually receives support because it has a direct impact on the private sector and reduces the cost of conducting transactions with the government. Some G2B applications: procurement, taxation, and licensing.

3. Government-to-Citizen (G2C)

G2C aims at serving the citizen. It facilitate citizen interaction with government by enhancing access to public information through the use of websites and/or kiosks, by reducing the time and cost to conduct a transaction, by attenuating the agency-centric nature of some government functions. G2C is perceived to be the primary goal of e-government. Some government are currently offering a one-stop shopping site for the citizens. Some G2C applications can be civil registration, health, education, and municipal services.

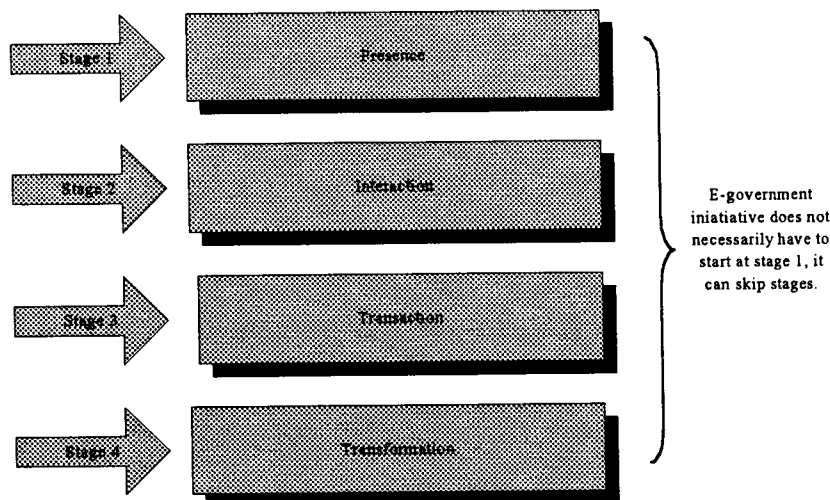
4. Government-to-Employee (G2E)

G2E aims at serving government employees. It usually based on the use of the Intranet/Internet. Some G2E solution is the implementation of a human resource management system with self service functionalities that allows the employee to apply online for a annual leave, check his total number the balance of his remaining vacation, and review his review his salary slip among other things.

E. CLASSIFICATION OF E-GOVERNMENT ACCORDING TO THEIR STAGE OF DEVELOPMENT

E-government has evolved through four stages: presence, interaction, transaction, and transformation as illustrated in figure 2 below³.

Figure 2. Stages of e-government development



1. Presence

The first stage is presence. It is easy and cheap to implement, as it is the most basic level of entry for e-government. A typical example is a web site that lists information on the agency, such as hours of operations, address, phone numbers, and contact person. It has no interaction capabilities. It could be compared to an electronic brochure presenting passive information.

2. Interaction

The second stage is interaction. It helps the citizen avoid a trip to the government office or even make a phone call by providing him with the needed information and the electronic forms that can be filled electronically or printed and then sent by mail.

3. Transaction

The third stage is transaction. It automates government functions and has more streamline capabilities. This stage is more complex and more expensive to implement. It is somehow a self-service operation that allows the citizen to conduct tasks such as completing electronically a license renewal or paying taxes. The activity involved in this stage is usually one way either to government or to client depending on the activity.

4. Transformation

The fourth stage is transformation. It is the most difficult to implement due to technical, fiscal and administrative constraints. It uses workflow and collaborative tools to streamline information in both direction to and from federal agencies and citizens. It removes barriers and promotes customer-oriented

³ Adapted from the final report on "Launching e-government in Jordan: A proposed approach" page 3.2

solutions. This stage has a major impact in the way current governmental agencies are organized; it will transform the existing structure, laws, and procedures and pave the way for a new virtual organizations.

F. OBSERVED GOVERNMENT STRUCTURE FOR IMPLEMENTING ICTs STRATEGY IN ESCWA MEMBER COUNTRIES

Government should establish an organizational structure that ensures proper mechanism for delivering e-government strategy to decision-makers and planners, and at a later stage for implementing viable corresponding solutions.

Most ESCWA/Arab countries adopt one of the following three organizational structures:

- (a) A Ministry of Information and Communications (for example Egypt);
- (b) A High level authority figure championing e-government solutions (for example Dubai);
- (c) A government body headed by a high level authority and composed of several ministers (for example Lebanon).

Thorough studies must be conducted for each of the above organization structure, taking into consideration the government-enabling environment; however, model (a) is a structure mostly found in developed countries and newly industrial countries.

G. PROMOTING E-GOVERNMENT TOWARDS AN INFORMATION SOCIETY

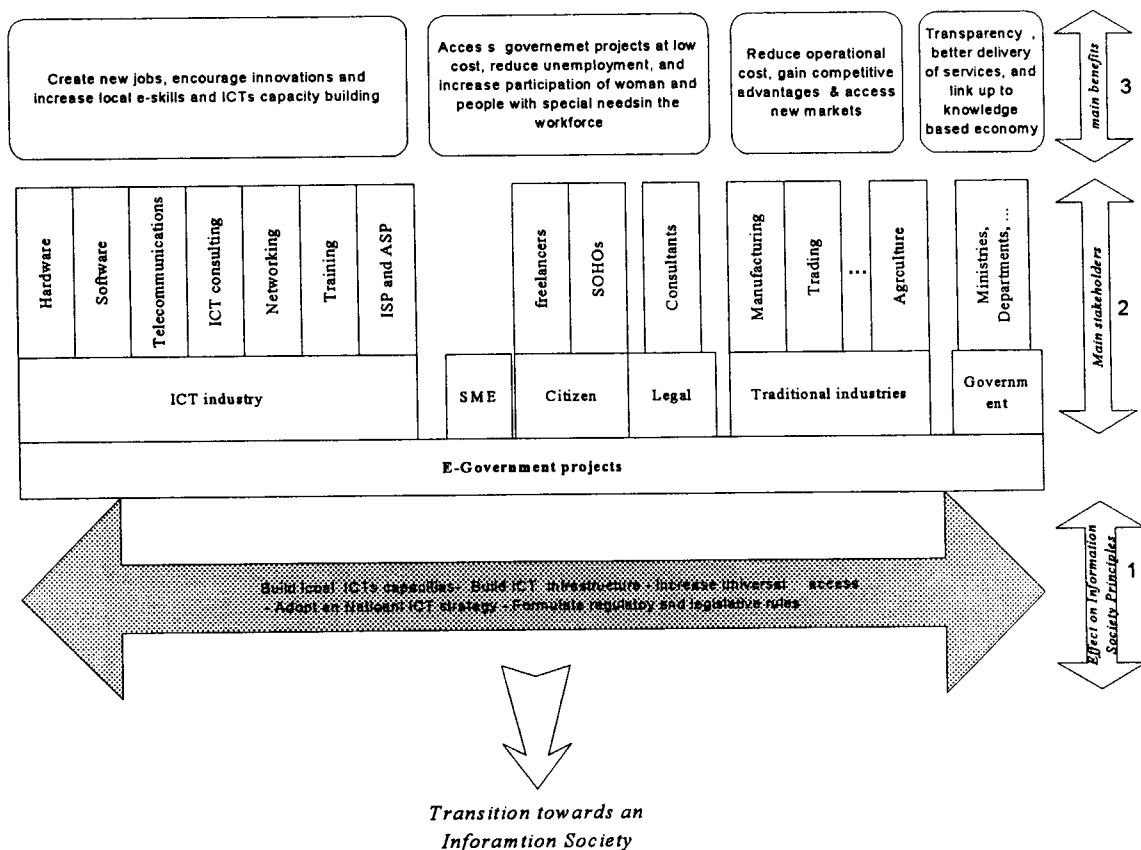
E-government applications are used to offer greater convenience to the citizen and the business society by providing more governmental transparency. E-government solutions have been successfully used in a number of countries in the world to fight corruption⁴, introduce administrative reform, and contribute to revenue growth and /or cost reduction. The efforts of the government should be geared towards creating an enabling framework and political will to improve connectivity and enhance efficiency of private and public services (including rural areas). Hence, ESCWA member countries should adopt e-government solutions as a means to develop the Information Society.

Figure 3 below maps e-government contributions towards an Information Society. Three layers constitute the building blocks of this diagram:

- Layer one highlights the effect of e-government in the transition towards an Information Society.
- Layer two portrays main stakeholders and respective vertical line of business;
- Layer three lists main benefits for each stakeholder.

⁴ Seoul, in South Korea, implemented a web-based system allowing citizens to monitor applications for permits or approvals where corruption is most likely to occur and to raise questions in the event any irregularities are detected.

Figure 3. E-government contributions to the Information Society



A list of the most accepted solutions has been prepared for Arab Governments to choose from based on their priorities.

Government-to-Citizen:

Income taxes, job search services, social security, personal documents, car registration, application for building permission, declaration to the police, public libraries, certificates enrolment into higher education, announcement of moving, health related services, and employment services.

Government-to-Business:

Government interactions with businesses could be grouped into three main functions⁵ as shown in table 1.

⁵ Adapted from final report on "Jordan: Readiness for e-government page 2.1

Table 1. G2B interactions with the business sector

Administration	Trade	Marketing
<ul style="list-style-type: none"> -Regulations -Taxes (Corporation tax VAT) -License renewal -Business registration -Social contribution for employees -Submission of data -Environment-related permit 	<ul style="list-style-type: none"> -Government procurement -Import/Export Customs -Regulations 	<ul style="list-style-type: none"> -Trade and investment promotion -Alliances with other countries

Government-to-Government:

Linking government network authorities together, and budget preparation and Control.

Government-to-Employee:

Human Resources Management, financial back office Enterprise Resource Planning (ERP)⁶, and property management.

⁶ General ledger, account receivables, accounts payable, fixed assets, and budget.

III. PRIORITIES FOR NATIONAL AND REGIONAL ACTION PLANS

A. INTRODUCTION

1. National priorities

National ICTs strategy: As a general rule to build an Information Society, national ICTs strategy should take into consideration the following objectives:

- (a) Increase widespread availability of low cost, high speed Internet access;
- (b) Enhance effectiveness and efficiency of government systems;
- (c) Link up to a knowledge based economy by developing a sound Information Society foundation;
- (d) Increase transparency of its services.

These objectives take into account a very large number of factors linked to a country's socio-economic development; these factors include investment, finance, regulatory frameworks, development of human resources, infrastructures, government, education, health, industry, services, poverty and employment. Refer to Appendix A for a list of few national e-government strategies for selected ECWA member countries.

Legislative, regulatory and trade policies: Existing laws are not applicable or may be detrimental to the development of e-government. Government should operate in an environment where electronic signatures⁷, electronic submission⁸, electronic payment, intellectual property right, and data protection are all legislatively accepted and protected. In addition, regulatory and trade policies should exist to encourage private sector to invest in ICTs. For example: (a) tax exemption of newly established ICTs firms for a defined period of time, (b) government subsidies for certain ICTs sector that require initial high investment, (c) deregulation of the telecomm sector, (d) privatization, (e) low tariffs on hardware and software imports, (f) and foreign exchange regime.

However, before any legislative actions are taken the following four principles are essential for safe electronic transactions as illustrated in table 2:

Table 2. Four essential principles for electronic transactions

Principle	Description
Confidentiality	Keeping information private.
Authentication	Authentication is the process of determining whether someone is, in fact, who he is declared to be.
Integrity	Integrity is the assurance that information, in storage or in transit, can only be accessed or modified by those authorized to do so.
Non-Repudiation	The individual who undertook the transaction cannot subsequently deny at a later stage his or her intentions in the creation or transmission of the information

⁷ Traditional handwritten signature must not be the only way to execute governmental transactions, legislation should recognize digital signatures.

⁸ For example, in some countries, the law dictates that government tenders must be submitted in hard copies in sealed and stamped envelopes, legislation should address electronic submission.

Infrastructure development: The building block for any e-government initiative is to deploy a national infrastructure with high bandwidth backbone and wide covering area. This infrastructure should (a) offer competitive pricing for telecommunications services, (b) integrate information, telecommunication, government ministries, and public institutions/department together; and (c) be equipped with required systems and networks needed for securing safe on-line transaction.

ICTs Human skills development: For effective use of ICTs, ESCWA/ARAB countries should invest in developing local human resources. Potential initiatives would be (a) increasing public expenditure on education and integrating e-learning in the national curricula, (b) providing incentives to reduce brain drain, (c) developing the private sector, (d) leveraging from technical assistance provided by international organizations, (e) and promoting research and development centers in alliance with both the education and the industry sectors.

Fight illiteracy: Even though this topic is related to e-learning, it is still a major handicap for bridging the digital divide and for diffusing ICTs services such as e-government and e-health. Thus, government should fight illiteracy in the region in order to equip people with the necessary skills to use and benefit from ICTs applications.

2. Regional priorities

Other priorities with a broader scope of work are suggested below:

- Research and Development partnership in selected area of ICTs that are capital intensive;
- Exchange of expertise among ESCWA countries; national e-government programme remain unsynchronized and experience are hardly shared. Several times, similar projects were redone from scratch all over again;
- Standardization of Arabic language for Internet usage;
- Implement regional trade policies. For example: free or low tariff of ICTs products and services;
- Establishing a unified Intellectual Property Right body for ESCWA/Arab countries; instead of registering the same product/service in every country.

B. SUGGESTED IMPLEMENTATION MODEL

The suggested model is composed of three parts:

- Sectoral priorities;
- Model building blocks;
- Framework.

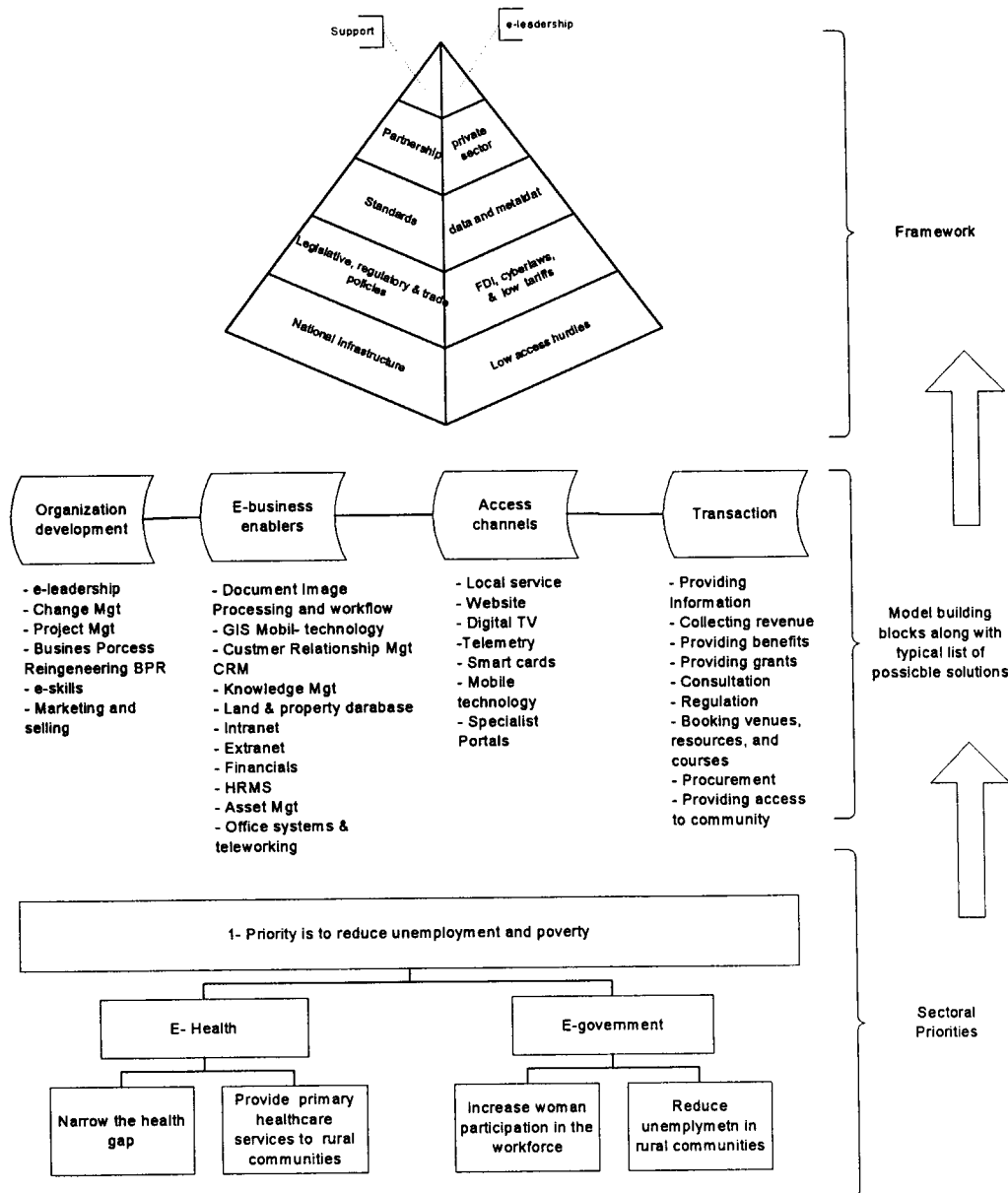
First, sectoral priorities are derived from the national policy. Four priorities are illustrated at the bottom of figure 4. These priorities could be realized through a variety of building blocks organized in four groups. For example, a given priority might be realized by a consultation (transaction), conducted through a portal (channel), supported by knowledge base (e-business enablers), and requires Business Process

Reengineering (organization development). This model allows the identification of building block gaps for different scenarios⁹.

Once the previous steps are achieved, the model continues to complete the big picture by placing the e-organization building blocks and its sectoral priorities within the framework. The framework has a pyramid shape composed of five layers. Figure 4 identifies the five layers on the left-hand side of the pyramid and matches each layer with a typical main application on the right-hand side of the pyramid.

Figure 4. Suggested model

(Adapted from UK office of the Deputy Prime Minister e-gov@ local
 “Towards a national strategy for local e-government” www.local-regions.odpm.gov.uk/consult/egov)

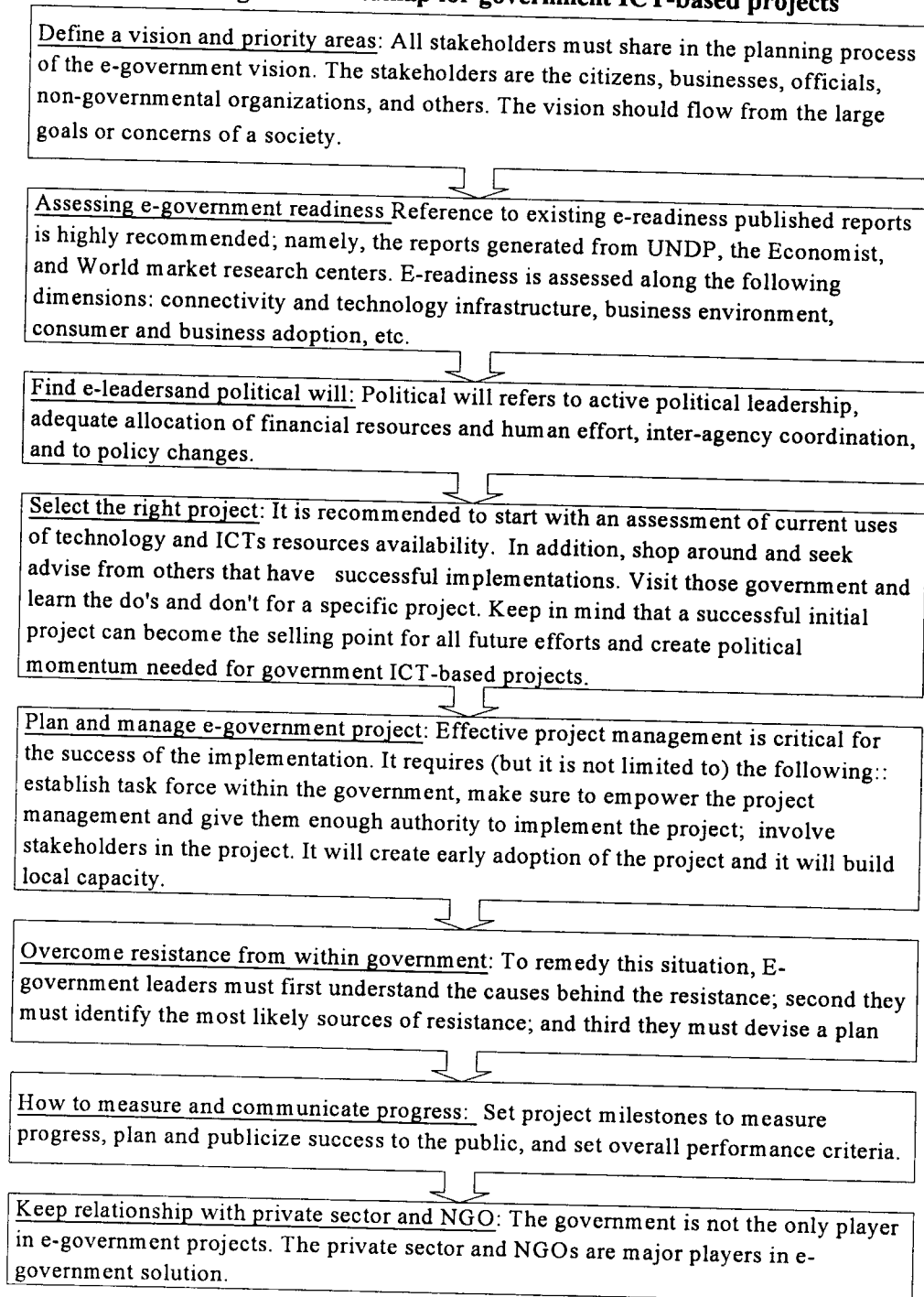


⁹Source: Adapted from UK office of the Deputy Prime Minister e-gov@ local “Towards a national strategy for local e-government” www.local-regions.odpm.gov.uk/consult/egov 23/12/2002.

C. ROADMAP FOR GOVERNMENT ICT-BASED PROJECTS

This roadmap¹⁰ provides a high level framework for defining a strategy and for implementing government ICTs based projects. Figure 5 below depicts the seven major steps that constitute the pillars for this framework.

Figure 5. Roadmap for government ICT-based projects



¹⁰ Adapted from Pacific Council on international policy "the working group on e-government in the developing country world" April 2002.

D. E-GOVERNMENT INITIATIVES TOWARDS AN INFORMATION SOCIETY

E-government initiatives can be grouped in five main areas as listed below¹¹:

1. Increase access: Providing access to all segments of the population enables community members to acquire information related to government services and plans. ICTs should be accessible through a wide diffusion of telephony and/or mobile lines especially in rural areas and by lowering access hurdles. Typical applications could be:

- Private cyber cafés;
- Centers equipped with phones, faxes, photocopies, PCs, printers and Internet;
- Public Internet Kiosks.

2. Important role of Public-Private Partnership: Public-Private Partnership (PPP)¹² is becoming a popular method of implementing e-government projects and developing the ICTs industry¹³. The advantages of forming such alliances lie in the ability to mobilize more capital and to use the private sector expertise in project management and efficient project expenditure. In return, the government will involve the private sector to contribute more in the development of the Information Society, while retaining its responsibilities for public interest matters and guaranteeing delivery of services. Implementation of technopoles and incubators are two approaches for supporting PPP.

3. Promote freeware/shareware: Development of software application based on freeware/shareware technology in ESCWA member countries (EMC) should be encouraged in order to (a) build local capacities in ICTs, (b) bridge the digital divide by providing cheaper solutions to mass market, (c) contribute to the growth of Information Society and knowledge-based economy, and (d) contribute to the growth of Small and Medium Enterprises (SMEs).

4. Administrative reform: E-government, e-health, or any other e-business initiatives should be accompanied by redesigning business processes, introducing quality and audit control mechanism, implementing an e-procurement system, and acquiring technical and project management skills.

5. Promote ICTs entrepreneurial development: The private sector and more specifically SME are a major source for job creation. ESCWA/Arab countries should encourage entrepreneurial development by (a) setting up ICTs incubators, technopoles, and technology parks, (b) attracting Venture Capitals (VCs) to invest in startup enterprises, (b) and removing taxes for at least a defined period of time on ICTs firms.

In all of the above, public and private sectors should implement an audit mechanism to assure quality and to measure the impact on poor population. A suggested approach would be to use local NGOs and international organizations for coordination and technical assistance.

¹¹ Refer to appendix A for the status of e-government initiatives in selected ESCWA member countries.

¹² Prerequisites for successful PPP: (a) administrative reform, (b) entrepreneurship, (c) inexpensive communications connectivity, (d) well defined e-government strategy, (e) ICTs champions in public sectors, (f) abundant IT skills in the private sector, (g) technical qualified government representative in project management and leadership, and (h) proactive government.

¹³ "In the UK, the Government has signed contracts for some 250 projects so far under its Private Finance Initiative (PFI), representing some £20 billion of expenditure achieved. A further 450 projects are in the pipeline over the next 3-5 years" source http://www.tradepartners.gov.uk/public_private_partnership/private_finance_initiative/pfi.shtml.

E. SUGGESTED PILOT PROJECTS

Government, which in most cases is the largest and wealthiest entity to conduct business with, has a duty to support initiatives towards an Information Society. So as an attempt to serve this duty, table¹⁴ 3 provides a list of potential e-government application.

The priorities for the region should be focused on three categories of e-government solutions namely, Government-to-Citizen (G2C), Government-to-Business (G2B), and Government-to-Government (G2G). The remaining category Government-to-Employees (G2E) has a less direct impact on citizens and businesses.

A major concern that needs to be taken into consideration before initiating any of the e-government projects is the centralization and standardization of the common data used by all ministries. In other words, basic information should have one database structure, well-defined metadata, and unique naming convention for data entry. The procedures for storing, accessing, and owning these data should be designed at the very beginning of any e-government initiative.

Table 3. Sample e-government applications

	short term	medium term	Long term	Impact on	
E-government application	1-3 years	4-6 years	7-10 years	Employment	Poverty
Set an e-government policy and strategy	<input checked="" type="checkbox"/>			low	-
Deregulate telecommunications	<input checked="" type="checkbox"/>			high	low
Build Internet enabled infrastructure	<input checked="" type="checkbox"/>			high	low
Develop static content for public information	<input checked="" type="checkbox"/>			medium	-
Build and train local skills in public institutions	<input checked="" type="checkbox"/>			medium	-
Initiate legal framework for e-government application	<input checked="" type="checkbox"/>			low	-
Centralize and implement a governmental procurement application	<input checked="" type="checkbox"/>			low	-
Build e-government portal site	<input checked="" type="checkbox"/>			low	-
Market and promote usage of e-government solution to build trust	<input checked="" type="checkbox"/>			-	-
Linking government network authorities together	<input checked="" type="checkbox"/>			medium	low
Document Management and archiving system	<input checked="" type="checkbox"/>			low	-
Tax and customs declaration	<input checked="" type="checkbox"/>			low	-
Business registration and license renewal	<input checked="" type="checkbox"/>			low	
On-line public library	<input checked="" type="checkbox"/>			-	low
Job search and employment services	<input checked="" type="checkbox"/>			low	low
Personal documents, announcement of moving, car registration	<input checked="" type="checkbox"/>			low	-
Application for building permission	<input checked="" type="checkbox"/>			-	-
Declaration to the police	<input checked="" type="checkbox"/>			-	-
E-government ERP application : Financials, human resource management , property management, etc	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		high	low
Smart cards	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		low	low
Budget preparation and Control		<input checked="" type="checkbox"/>		medium	-
Workflow		<input checked="" type="checkbox"/>		low	-
Knowledge based systems		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	medium	-

¹⁴ This table should be used as checklist. Some of these projects depend on others and have prerequisites such as illiteracy and administrative reform, which should also be taken into consideration. Needless to mention that a phased approach should be adopted for implementing any of the above projects.

The following table elaborates on main functionalities of selected applications for the short and medium terms.

Table 4. Main functionalities of selected e-government components

E-government application	Main functionalities
Unified e-government Portal web site	<p>Portal technologies can integrate content, applications, and processes together. Hence, it can deliver the following:</p> <ul style="list-style-type: none"> ▪ Better communications and collaboration between government ministries/department, citizens, business, suppliers, partners, employees, and customers. ▪ Provide real-time access to information stored in different systems; ▪ Personalize each user interface and interaction with your business; ▪ Integrate and access relevant data application and business processes. <p>The e-government portal will provide a broad range of services for citizens, business, government, and employees; it is usually structured along four gateways:</p> <ul style="list-style-type: none"> ▪ Citizen gateway; ▪ Government gateway; ▪ Business gateway; ▪ Government employee gateway. <p>It is much better to arrange the portal site around customer group's topics, instead of ministries/department names.</p> <p>General services included in the portal are the following:</p> <ul style="list-style-type: none"> ▪ Single login service; ▪ Web access and processing of existing e-government solutions or e-services; ▪ Access to all government ministries/department sites; ▪ Access to government contracts, grants, and tenders; ▪ Ability to customize the portal to a customer need; ▪ Collaborative tools along the traditional e-mail services; ▪ Integration service that can effectively correct business processes and facilitate transactions among separate systems; ▪ Logical structure of information in order to facilitate site navigation; ▪ Frequently asked questions per section or topic; ▪ Support Arabic language with at least one other language; ▪ Citizen and business feedback section.
Centralized e-procurement application	<p>This solution is intended to centralize all government procurement. It should be structured to serve municipalities, states, etc. However, the back-office should be centralized in order to:</p> <ul style="list-style-type: none"> ▪ Reduce cost for suppliers and help SME increase their revenues; ▪ Control the entire bidding cycle from issuing a bid or quote, to posting bid award information online; ▪ Reduce labor, printing and postage costs related to document distribution; ▪ Keep up-to-date information on suppliers as they register, renew

E-government application	Main functionalities
	<p>and maintain their account information online;</p> <ul style="list-style-type: none"> ▪ Build bases for a future knowledge base system on supplier performance, bid prices, project budgeting, etc.
Document management, archiving, and workflow system	<p>Document management and archiving systems are becoming common applications for governments and their functionalities are also becoming standards. However, what is becoming more important are the juridical aspects as listed below:</p> <ul style="list-style-type: none"> ▪ The system should have reasonable controls to ensure integrity, accuracy and reliability; ▪ The system should provide some type of audit trail to prevent and detect unauthorized creation, modification, or deletion of documents; ▪ The system should have the ability to print copies of records; ▪ The system should have documentation on how the software works and how it has been set up; ▪ The system should be able to cross-reference with other systems; ▪ Archived records should be stored on unalterable media. <p>On the other hand, workflow systems complement the document management systems by automating business processes, during which documents are passed from one participant to another for action, based on a predefined set of procedural rules. Workflow systems improve efficiency, provide better process control, enhance citizen service, increase effectiveness of processes, and it is excellent tool to fight corruption.</p>
Business registration and license renewal	<p>This application will enable business sector to conduct the following task on-line:</p> <ul style="list-style-type: none"> ▪ Search for available business names; ▪ Search for businesses by name, principle, agent, type of business; ▪ Query businesses by products/service; ▪ Register new business; ▪ On-line guide for doing business; ▪ Renew licenses and professional permits; ▪ Create and modify commercial registers; ▪ Ability to remind businesses about annual renewal and expired licenses, and to inform them about new regulations; ▪ Etc
E-government Enterprise Resource Planning (ERP) application: Financials, Human resource management, property management, etc	<p>Typical modules by application are the following:</p> <ul style="list-style-type: none"> ▪ For the Financials suite: general ledger, payables, receivables, fixed assets, and cash management; ▪ For human resource management: personnel, payroll, recruitment, training, attendance, graphical organizational structure; ▪ For property management: leasing, renting, maintenance, and portfolio management.
Smart cards	<p>“Smartcards” is another vital application to promote e-government and e-health applications. It can be used for both (a) off-line transactions where it will store personal and clinical data about the citizens and (b) on-line to provide access permissions for multiple applications.</p>
Job search and	<p>This application will assist citizens in:</p>

E-government application	Main functionalities
employment services	<ul style="list-style-type: none"> ▪ Finding a job: search for a job, employment opportunities for people with special needs, employment opportunities for women, job search tips, etc ▪ Getting career information: guide by industry, search career by occupation, labor market information, search for license requirement, identify fast growing occupations, etc ▪ Assessing and upgrading skills: match skills to occupation, learn about credentials, career assessment, find training and educational resources, find skills information, get information about skill shortage, etc. ▪ Learning about employment law: learn about employment and unemployment insurance, find the benefits that employee should get, access the labor law guide and layoff conditions, links to labor unions, etc.

F. MAIN OBSTACLES FOR E-GOVERNMENT APPLICATIONS TOWARDS AN INFORMATION SOCIETY IN ESCWA MEMBER COUNTRIES

ESCWA countries face obstacles that could impede progress of e-government and e-health applications; some of these obstacles are listed below:

- Illiteracy or inadequate education is a major obstacle for the widespread use of e-applications;
- High cost of ICTs infrastructure to reach remote areas and of telecommunication fees;
- Implementation complexity due to political, cultural, organizational, and personal factors;
- Legal structure and current laws;
- Incompatibility of the variety of recently implemented systems used by different governmental bodies;
- Lack of awareness as many citizens belonging to disadvantaged segments of the society are unaware of the benefits and opportunities offered by the Information Society; their priorities are for basic needs such as transportation and housing.

IV. CONCLUSIONS

In summary, this paper highlights the impact of e-government applications in developing an Information Society. It recommends a list of priorities together with a roadmap and model for implementing e-government solutions. The paper is intended to setup a framework for further discussions and development of the initiatives and priorities mentioned in the above sections. The results will contribute to the compilation of the WSIS regional preparatory conference final documents.

Appendix

Appendix A. Status of e-government in selected EMC

Four countries are included in this section; namely Egypt, Jordan, Lebanon, and Emirate of Dubai in UAE.

Egypt

In the last three years, new IT investment has grown consistently to 1.05 billion pounds (\$230 million) in 2001, compared to 620 million in 2000 and 290 million in 1999. The IT sector has created some 10,000 new jobs in the last two years.¹⁵

E-government

Vision: Egypt's e-government vision focuses on redefining the relationship between government and citizens. Egypt is developing a National Communications and Information Plan.

In 1999, the Cabinet Information and Decision Support Centre (IDSC) organized the country's first conference on IT, at which the Government laid out a five-year plan to encourage ICTs in Egypt. Next, the Government created a new Ministry of Communication and Information Technology (MCIT) that was to manage the evolution of Egypt's knowledge society. In 2002, MCIT allocated USD 338 million to develop both private and public sectors to modernize Egypt society¹⁶. In addition, government services are being coordinated through the national portal at: <http://www.alhokoma.gov.eg>.

Egypt has announced launching an e-government initiative with Microsoft Corporation to deliver the technical infrastructure for improving government services and intra-government collaboration. Microsoft will provide consulting services to support the Egyptian e-government initiatives throughout the duration of this agreement.

Responsibility of the e-government project has been assigned to the Ministry of Communications and Information Technology. Other ministries are also involved in this project; namely, the Ministries of State for Administrative Development, Justice, Finance, and Electricity and Power. The Ministry of Communications and Information Technology has proposed a national plan for year the 2002-2003 to be implemented by local firms; the proposed plan contains the following projects:

Proposed Projects¹⁷

- Automating authentication offices.
- Automating real estate commission offices.
- Automating marital dispute offices.
- Automating managing authorities of new communities.
- Automating real estate tax regimes.
- Automating consular services.
- Automating Egyptian Courts.

Three key government projects are now the priority list for the Egyptian government:¹⁸

- Issuance of national ID numbers to all citizens;
- Registration of agricultural land ownership;
- Implementation of projects that enable government agencies to use information technology effectively.

¹⁵ <http://www.mcit.gov.eg/>

¹⁶ http://www.itu.int/osg/spu/wsis-themes/ict_stories/egovernment.html

¹⁷ <http://www.mcit.gov.eg/>

¹⁸ http://www.mcit.gov.eg/national_plan.html

Towards the end of 2002, all of the 26 governorates have a presence on the Internet <http://www.ipgd.idsc.gov.eg/>; and all the 6 ministries have a presence on the Internet through a government online portal <http://www.alhokoma.gov.eg>.

Frame D.3.1. The Information Highway Project

In 1995, the Egyptian Cabinet Information and Decision Support Center (IDSC) initiated the information Highway Project to support the establishment of "Egypt's Information Highway".

Within this project, several pilot networks are being launched:

- Egypt's TourismNet: provides basic information on Egyptian hotels, restaurants, cruise lines, travel agents, transportation firms, and tourist attractions. Egypt's TourismNet contains several search engines that facilitate searching through tourism databases. (<http://www.tourism.egnet.net/>)
- Egypt's LibraryNet: provides search engine in Arabic and English on bibliographical records of 154 libraries in Egypt. (<http://www.library.idsc.gov.eg/>)
- Egypt's HealthNet: contains information on the Egyptian medical centers, physicians, medical firms, and medical laboratories. A search engine is provided for searching the physicians' database. (<http://www.tourism.egnet.net/>)
- Egypt's GovernoratesNet: provides basic statistical information on Egypt's administrative divisions. (<http://www.ipgd.idsc.gov.eg/>)

Jordan

During the past three years, Jordan's ICTs sector has developed from \$60m to \$167m, exports have improved by more than 350 percent, and employment has augmented from 1,250 to 10,000 professionals¹⁹. In 2001, IT firms — excluding the country's three telecom firms — employ around 5,000 people, generated \$130 million in revenues and \$38 million in exports, and attracted \$60 million in foreign investments, according to official figures.²⁰

His Majesty King Abdallah is the driving force behind the establishment of a solid IT sector in Jordan. He is determined to transform Jordan into a knowledge-based economy and to streamline government to improve public services and performance. Currently, a number of initiatives exist in Jordan.

The Reach initiative

REACH is a national strategy to position Jordan as a regional leader and an international exporter of IT products and services. It stands for Regulatory Framework, Estate (Infrastructure), Advancement Programs, Capital, and Human Resource Development²¹.

Developed in 1999, the REACH Initiative has already undergone its first review - resulting in a strategic and actions plan; namely, REACH 2.0 document. And during the first half of 2002, the second review took place resulting in the REACH 3.0 document. The "Jordan ICTs Forum", an annual international ICTs industry event held in Jordan, is the channel through which REACH is presented to stakeholders and potential partners.

E-government

Vision: Jordan's e-government vision focuses on creating a society where electronic government is a contributor to the economic and social development of the Kingdom.

¹⁹ <http://www.intaj.net/resource.cfm>

²⁰ <http://www.intaj.net/news/readnews.cfm?id=558>

²¹ <http://www.intaj.net/resource.cfm>

E-government in Jordan has moved beyond the conceptual state and into the planning and initial stages of implementation. Responsibility for the effort has been assigned to the Minister of Communications and Information Technology. The government is launching awareness campaigns and internationally recognized training programs, one of which is the ambitious plan to ensure that 20,000 receive the International Computer Driving License (ICDL) by the end of 2005.²²

On September 2001, Electronic Data Systems, a leading global information technology services firm, completed a study for the Jordanian government. Electronic Data Systems produced a comprehensive document in which it reviews the technical feasibility of delivering e-government solutions and also developed a blueprint and a roadmap for e-government.²³

Jordan already initiated six fast track e-government solutions. Table D.3.1 lists the fast track services.

Table D.3.1. The Fast track services

Business Registration	G2B
Taxation and Social Security	G2B
Selling to Government	G2B
Telecoms Licensing	G2B
Motoring Services	G2C
Real Estate Services	G2C

Source: Int@j and Jordan e-government initiative Presentation, Business Meets Government: The Jordan e-government opportunities workshop

Lebanon

The Lebanese government has launched a number of ICTs projects. These projects were mostly funded by international and regional funding organizations through the forms of loans or grants. With time the planning for these initiatives became more organized. In fact, the UNDP helped the Office of the Minister of the State for Administrative Reform (OMSAR) establish the Technical Coordination Unit (TCU) whose primary missions is to promote e-government solutions. Consequently, OMSAR has integrated the objective of developing and implementing an e-government strategy into the work plan of its projects with UNDP for the year 2002.

Moreover, the government is striving to become a more focused public sector; this goal is to be achieved, among others, through privatization, administrative reform, and capacity development. As a result, Lebanese parliament approved the decree law on privatization in 2000. The main possibilities for privatization are in the telecommunications, electricity, water and transport sectors. The impact of privatization on ICTs industry should be promising.

List of some ICTs projects²⁴ initiated in Lebanon is shown in table D.3.2. :

Table D.3.2. Some ICT-based government projects initiated in Lebanon

Project title	Description	Beneficiary
Trade efficiency	The aim of the project is to strengthen trade efficiency by reducing trade transaction time and cost; and to identify and outline the scope required for the establishment of a government wide integrated electronic trade data exchange	Ministry of Economy and Trade (Primary) Ministry of Finance, Customs, Port of Beirut, Trade

²² <http://www.mopc.gov.jo/feature.htm>

²³ EDS "Kingdom of Jordan: E-government blueprint and roadmap" Final version 5.0

²⁴ Some of these projects are completed other are still pending. Adapted from www.omsar.gov.lb/english site.

	system accessible to both the private and public sectors based on well defined data standards.	Professionals, Private sector
National Electronic archiving and retrieval system	The National Archives of Lebanon could be considered the "collective memory" of the Lebanese government, being the repository of official and historical documents. The institution now has a large number of holdings that encompass official and historical documents as well as books, magazines, pictures, microfiches, audiotapes, videotapes, films, etc	National Archives of Lebanon (NAR)
Medical and social compensation system for cooperative.	The COOP's major priority activity is developing an integrated information system that links all its branches with the head office, in order to enhance performance and improve productivity, and maintain a data base of its daily activities. The objective of this project is to design and implement a complete automated system for all existing work done by the COOP concerning: <ul style="list-style-type: none"> ♦Medical compensation; ♦Social compensation; ♦Hospitalization compensation. 	Cooperative of Government Employees (COOP)
Commercial Register System	Automating this register comes in a time of particular importance when expectations are rising for many Lebanese and foreign firms to settle in Lebanon and participate in the reconstruction, thereby enriching the economic activity. Hence the growing need for fast and accurate firm information that interests entrepreneurs and managers as well as public and private entities like the Ministry of Finance, the Ministry of Economy & Trade, the Ministry of Industry, the Chamber of Commerce, etc	Ministry of Justice
Insurance Licensing and Control system	ICC will be dedicated to monitoring, testing and enforcing solvency of insurance and reinsurance firms that are licensed to operate under its jurisdiction; for that, it is vested with powers of intervention over these firms should conditions of financial weakness occur. The Ministry of Economy and Trade shall supervise the operations of insurance firms through the Licensing, Monitoring, and Control process.	Ministry of Economy and Trade
Legal decision documents management system	A turnkey automated solution for the Legal Consulting, Research, and Documentation center unit at the Ministry of Foreign Affairs, which shall enhance the efficiency and transparency of decision-making on the administrative, diplomatic, and financial levels. The requested legal document management decision support system shall facilitate the decision making of the center through the implementation of a system, which supports text-based document management and archiving while tracking the location and Project Status of each request/operation.	Ministry of Foreign Affairs
Najm Project ²⁵	The core objective of NAJM is to facilitate Lebanon's international trade while maintaining adequate compliance with national laws and regulations.	Ministry of Finance, Custom's Administration,
COMAP Cadastre Operations Modernization & Automation ²⁶	Software has been especially designed for Lebanon, tailored to the Lebanese legal and administrative processes for land transactions. The project aims to increase efficiency, transparency and reduce corruption. Digital titles and maps can be easily queried and updated, minimizing the complexity and non-transparency of manual process.	The Directorate of Land Registry

²⁵ Source: http://www.customs.gov.lb/customs/english/about/About_najm.htm

²⁶ <http://www.undp.org.lb/programme/governance/institutionbuilding/adminreform/egovernment/comap.html>

United Arab Emirates - Dubai

The UAE has been pushing to diversify into non-oil business sectors; its expenditure program for the ICTs sector is expected to equal US\$1.6 billion over the next three years. Its wealth enables it to constantly expand its programs and implement technologies ahead of others in the region. This sector has experienced a 10-fold increase since 1997.²⁷

H.H. Sheikh Maktoum bin Rashid Al Maktoum, UAE Vice President, Prime Minister and Ruler of Dubai, has fully supported the vision of making Dubai a regional hub for new technology.

He recently has announced the establishment of Dubai Silicon Oasis located on a 6.5 million sqm. Dubai Silicon Oasis will be the first industrial park for the semiconductor industry in the Middle East; it has already signed to host Communicant Semiconductor Technologies AG, a German high quality semiconductor foundry based in Frankfurt. Dubai Silicon Oasis will contain an incubation center and an institute of technology to help train and develop local technical talent and expertise.

In addition, H.H. Sheikh Maktoum bin Rashid Al Maktoum launched the incubation component of the Dubai Free Zone Authority for Technology, E-commerce and Media, the Dubai Ideas Oasis, with an initial funding of \$30 million.

Frame D.3.2. Dubai Internet City

In February 2000, H.H. Sheikh Maktoum bin Rashid al-Maktoum issued a decree setting up a free-trade zone for electronic commerce and technology. The decree established an independent body, the free zone authority headed by Crown Prince Sheikh Mohammed bin Rashid al-Maktoum, which would operate under the Dubai government to spearhead the emirate's drive to become a regional center for electronic commerce, technology and information.

Opened in October 2000, Dubai Internet City is a complete Informational Communication Technology center build inside a free trade zone. It was conceived and built within one year²⁸.

Dubai Internet City provides an environment that attracts every element of the ICTs value chain. Currently, it hosts a cluster of over 200 firms²⁹ with different specialization in the ICTs industry. Its value proposition encompasses an environment rich with networking opportunities, 100% tax free, 100% foreign ownership, access to knowledge resources, straightforward laws and regulations, high-end technology infrastructure, and housing/recreational facilities.

Dubai Internet City, along with Dubai's liberal economic policies and regulations, is contributing to the growth of the knowledge base economy of the United Arab Emirates.

E-government

Vision: Dubai's e-government vision focuses on easing the lives of people and businesses interacting with government and on contributing in establishing Dubai as a leading economic hub. Dubai is automating the entire Government of Dubai for all of their Shared Services processes, and other areas including services, Municipalities, etc.

In April 2000, H.H. Sheikh Maktoum bin Rashid al-Maktoum launched Dubai's Information Technology quest to revolutionize the government services. During 2000 and 2001, each of the 24 departments heavily equipped themselves with the skills and technology to deliver e-government. It took 18 months for Dubai

²⁷ http://www.austrade.gov.au/ci_display/0%2C1257%2CContentGroup%253Dcountryindust%2526ContentType%253Dcountryindust%2526MetaRID%253DPWB189860%2C00.html

²⁸ <http://www.yelwan.com/internetcity.asp>

²⁹ Some global ICT companies in Dubai Inter City: Microsoft, Oracle, HP, IBM, Compaq, Dell, Siemens, Canon, Logica, Sony Ericsson, Computer Associates Middle East and Cisco.

government to build the infrastructure needed and to launch its e-government single sign-in portal www.dubai.ae site. Frame D.3.3 provides a list of the major services provided by www.dubai.ae.

Frame D.3.3. Some of the online services provided by www.dubai.ae

Dubai government Paying bills and fines services:

- Emirates Telecommunications Corporation (Etisalat): Etisalat provides bills inquiry and payments for telecommunication services to the United Arab Emirates and is one of the leading service providers in the Middle East.
- Dubai of Electricity and Water Authority: citizen enrolled for this service can view and pay bills online, as well as receive monthly e-mails notifying them that their bill is ready.
- Parking fines inquiry: This service is aimed at providing the public with information about outstanding parking fines. The fines are updated twice daily, giving the assurance of clear and accurate information at all times.
- Traffic fines and fees: citizen can inquire about his traffic fines through Dubai Police either by ID number, driving license, car plate or ticket number.

Dubai government running your business services:

- Department of Economic Development: businesses can now renew, modify, and cancel online a business license.
- Dubai Chamber of Commerce: businesses can now register online as a member of chamber, and they can also request online a certificate of origin.

