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Building Digital Bridges
MoST's Vision of the Information Society

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* The Opinions expressed are those of the author and do not necessarily reflected the views of ESCWA.

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I. INTRODUCTION

The past decade has demonstrated in countless ways the transforming effects that information and communication technologies (ICT) can have on the way we live, learn, work, play, and interact with the people and institutions around us. The ICT revolution has had an impact perhaps even more profound than that of the industrial revolution so many years ago. Now, as then, individuals, businesses, and countries are at a critical turning point. To compete, to remain relevant in a rapidly changing technological landscape and an increasingly global economy, countries must make a firm commitment to upgrade their human capabilities and technological and legislative infrastructures to embrace these new developments and use them to their advantage.

Iraq remains firmly committed to its goal of bridging the digital divide -- to ensure that Iraq, its citizens, and its businesses derive the maximum benefit from information and communication technology. This commitment to fostering a transition to an Information Society is made not as an end in itself but rather as a means to the more fundamental goals of the Iraqi government: improved public services, a stronger economy, increased productivity and greater opportunities for all.

This document outlines MoST's vision of building the Information Society and bridging the digital divide. With MoST's Information Society Initiative, the Iraqi government will witness a developed framework to move the country into the information era. The initiative promotes partnerships of public, private, non-profit, civil society and multilateral stakeholders and fosters the development of new models of leadership and collaboration. Private sector involvement is of strategic importance in this area not only to provide technological expertise and innovation but also to take the lead in devising market-based solutions that are socially responsible and invest the capital required to build the infrastructure to put ICT at the service of development.

The national information society initiative will be the basis for Iraq's input to the declaration of principles and plan of action of the World Summit on the Information Society (WSIS). The WSIS is the venue for world leaders and the ICT community to seek consensus on a common vision and better understanding of the information society through the adoption of a declaration and plan of action. The objective of the WSIS action plan is to ensure that developing countries including Iraq fully benefit from the emergence of the global Information Society to achieve their national objectives. Iraq hopes that the initiative can serve as a useful guide for other countries with comparable experiences. We present this document in the hope that it will generate constructive dialogue and provide an opportunity to exchange experiences with partners from around the world.

II. THE INFORMATION SOCIETY AND NATIONAL DEVELOPMENT

A. THE INFORMATION SOCIETY

ICT has become a critical factor driving growth and productivity in global economies. More than half of gross domestic product (GDP) in the economies of wealthy nations comes from information-driven industries such as information technology. The vast diffusion of information and communications technologies (PCs, Internet, telephones, etc.) and their integration in nearly all aspects of everyday life is altering economic activity and the social environment. The emergence of an Information Society will impact relationships between individuals, organizations and countries, as elaborated below.

1. *Dynamic Economic Development*

ICT has changed the structures of production and activities, breaking down barriers between market players and causing a historical shift known as the "techno-economic shift". In the industrial age, businesses and organizations were vertically integrated. In the network age, with the costs of communications and information down to almost zero, market players have become horizontally networked. Production is increasingly organized among separate players: suppliers, consultants, educators, and distributors creating value chains that drive the technology-based global economy. In the modern world, competitiveness is heavily based on the diffusion of technology and knowledge. New technologies allow for new methods of production and new types of consumption.

2. *New Patterns of Education and Employment*

The new technologies demand new skills and new work conditions. In this new environment, adaptability to change and flexible structures in employment are vital for economic efficiency and competitiveness. The emphasis on knowledge and skills creates the need for continued life-long learning and imposes changes in education and training systems. The real issues in the Information Society revolve more around ICT usage and skills rather than wired access or computer ownership.

3. *Improved Quality of Life*

Creating an Information Society has the potential to improve the quality of life of citizens. ICT -- if perceived as a means and not an end in itself -- can become a powerful enabler of development goals for developing countries and offer effective tools to address key economic and social issues at both the micro and national level. ICT applications provide the means for better health and welfare services, improved and safer transportation, and conservation of language and cultural heritage, among many other services. The challenge is to ensure that ICT is employed effectively and integrated in all development efforts to positively foster development goals according to national priorities.

B. *The Digital Divide*

Paradoxically, the emergence of a global Information Society is likely to be associated with disparities between developed and developing countries or uneven access in ICT, creating new divisions between information haves and have-nots known as the "Digital Divide".
The contribution of the Information Society to economic growth and performance depends on the way new information technologies are used by individuals and businesses. With the emergence of the Information Society, the growing interest of policy makers in the digital divide, the gap between information rich and information poor, and universal access issues, the demand for indicators on access to and use of ICT has increased.

The nature of the new divide which has been expressed in the growing gap between emerging countries and lesser developed countries is shifting from basic to advanced communications and from quantity to quality. New gaps are emerging, notably in terms of access to the Internet.

Cyber-optimists believe that the Information Society is a "digital opportunity" since the development of the Internet has the capacity to reduce, although not wholly eradicate, the gap between information-rich and poor both between, and within, societies. They see the potential for ICT to help developing countries leapfrog and take advantage of new technologies to address their social and economic problems.

C. Strategic Challenges and Opportunities for Iraq

Iraq shares with other developing countries many of the challenges of building an Information Society. In order to bridge the digital divide, developing countries must overcome the barriers that constrain the use and spread of the new communication and information technologies and their applications. In Iraq, efforts for ICT development are government-led, hopefully, in close partnership with the business community and civil society.

1. *Awareness and Advocacy*

Awareness and advocacy are two key challenges. Like citizens of most developing countries, many Iraqi's lack awareness of the potential benefits and application of the new technologies. The government should promote awareness of the potential of ICT among all levels of society, and should conduct developing programs to highlight and communicate throughout the country the uses and benefits of ICT. The government functions as policy maker, educator, advocate, and facilitator.

2. *Universal and Inclusive Access*

Governments are key for providing universal access to their citizens. Governments must develop national and regional policies to promote the use of ICT and guarantee that those wanting to use the new technologies will not be faced with the brick wall of impossibly high costs or nonexistent hardware. A major challenge is to ensure "access for all," finding ways to bridge the digital divide in order to spread more widely the potentially positive benefits of ICT use and digital opportunities. It is the role of the universal service policy to ensure that all of its citizens, regardless of the traditional barriers of social class, education, gender, or economic level, have access to the tools they need to function and excel in the new Information Society.

3. *Eradication of Illiteracy*

Despite the fact that information and communication technologies can make the world a better place, by improving the delivery of education, illiteracy in itself can be a major challenge for bridging the digital divide. The government of Iraq is well aware of that. Various efforts are exerted on a national scale to eradicate illiteracy.

4. *Linguistic Diversity and Cultural Identity*

Bridging the digital divide is not solely a technological issue; there are cultural and ethical issues that may hinder the efforts for digital inclusion. One major issue is the language barrier. Language is a key enabler for creating compelling Internet content. According to a recent study, more than two thirds of web content is displayed in the English language.

Development of Arabic content is necessary for people in Iraq to use the Internet. The lack of content in Arabic is a major factor hindering ICT usage in Iraq. Arabic is the sixth most widely spoken language in the world with 175 million speakers but the share of Arabic content on the Internet remains low.

5. *Development of Local Content: Citizen-Driven Information*

In addition to the issue of language, the web must provide information of interest to the local population. Content providers must develop content and provide services that encourage citizens to access the web and use it in their everyday lives, and therefore many efforts are needed to further develop the skills.

6. *The Skills Gap*

A main concern in building an information society is developing appropriate skills. The most important barriers in the Digital Divide concentrate more around usage of the technologies than wired access or computer ownership. A person can own a home computer or have access to a work computer and still do very little beyond email or word-processing.

The following sections highlight some of MoST's responses to these challenges.

III. BRIDGING THE DIGITAL DRIVE: THE MOST INFORMATION SOCIETY INITIATIVE

Developing Iraq into an Information Society is a top priority. With these key words, MoST's Minister Dr. Omar gave impetus to the development of information and communication technologies (ICT) in Iraq, linking them to the economic and social development of the country. The government of Iraq as a major stakeholder in the global Information Society is committed to building an Iraqi Information Society, offering every individual, business and community the opportunity to harness the benefits of the new information era to achieve national priorities.

A Cabinet Information and Decision Support Center (IDSC) should be established by the Iraqi government as soon as possible to build up Iraq's IT industry and governmental decision support infrastructure. The Chief Information Officer (CIO), its counterpart, which is now hosted by the Ministry of Science & Technology, evolved from the Government's commitment to join the international IT revolution. One of its primary objectives was to provide public access to information, with a particular emphasis on aiding business and investment. Over the past six months, CIO has successfully sponsored many IT initiatives in legislative reform, public sector reform, human resources development and job creation, access to the Internet, commercial registration, natural resources management, cultural heritage preservation, urban planning, and sectoral development projects at the ministerial and governorates level, among many other areas. CIO is currently focusing on decision support for the Cabinet.

In October 2003, Minister Omar announced the inauguration of a national program for the development of the information technology sector. The national program goals were to create the Information Society in Iraq, and an export oriented ICT industry. In Late 2003, a new Ministry of Science and Technology (MoST) was formed to facilitate Iraq's transition into the global Information Society, in addition to other major function of course.
The new ministry was charged, among other duties, with the task of creating an Iraqi Information Society and began its work by preparing the National Plan for Information Technology. MoST's IT projects are geared towards supporting and empowering the Information Society in Iraq in close coordination with relevant government agencies and with the private sector. These commitments have been translated into developing and expanding the telecommunications infrastructure, establishing hundreds of information technology clubs, expanding the pool of IT skilled labor and creating national information systems and databases.

A. THE FIRST BRIDGE: E-READINESS: EQUAL ACCESS FOR ALL

The Information Society should enable all citizens to have easy and affordable access to the opportunities offered by new technologies. Developing an appropriate communication infrastructure is a prerequisite for achieving this universal access.

B. THE SECOND BRIDGE: E-LEARNING: NURTURING HUMAN CAPITAL

ICT is a complementary tool for higher standards of education at all levels and for upgrading the skills and productivity of the citizenry. This initiative aims to promote the use of ICT in education and to develop a new generation of citizens who understand and are comfortable with the use of ICT in their daily lives.

C. THE THIRD BRIDGE: E-GOVERNMENT: GOVERNMENT NOW DELIVERS

The Information Society should be able to deliver high quality government services to the public where they are and in the format that suits them. The goal of this initiative is to reach a new level of convenience in government services, offer citizens the opportunity to share in the decision making process, and greatly improve efficiency and quality.

D. The Fourth Bridge: E-Business: A New Way of Doing Business

ICT is an important tool for robust economic growth. With the creation of new technology-based firms, the improvement of workforce skills, the use of electronic documents, and the development of e-payment infrastructure, ICT can be a significant catalyst to increase employment, create new jobs and improve the competitiveness of Iraqi industries. This initiative should be designed to foster the creation of a new industry evolution in e-commerce and e-business.

E. The Fifth Bridge: E-Health: Increasing Health Services Availability

The application of ICT in the health sector could provide a better quality of life to the citizens and a more efficient work environment for physicians and health care workers. ICT can be used wherever it has a clear added value, such as reaching remote populations, providing continuous training for doctors, and offering the tools for building a national health network.

F. The Sixth Bridge: The E-Culture: Promoting Iraqi Culture

ICT should be used to document Iraqi cultural identity through the use of tools to preserve manuscripts, archives and index materials, offer worldwide access to cultural and historical materials, and generate and promote interest in Iraqi cultural life and heritage.

G. The Seventh Bridge: ICT Export Initiative: Industry Development

This initiative should be designed to foster the creation of an export-oriented ICT industry. The development of an ICT industry can be a powerful engine for export growth and job creation.

There are several critical factors for successful implementation of these initiatives. These include strong governmental support; a suitable legislative and investment environment, as well as a state of the art infrastructure and investment in human resources.

The following titles outlines some of the effort that should be sponsored by different Iraqi sectors in e-government development:

- In Geographical Information Systems (GIS)
- In Science and Technology
- In Human Resources Management
- In the Media

In Economic Activities:

- In the Judicial System
- In the Environmental Sector

In the International Cooperation Sector:

IV. MOST'S MESSAGE TO THE GLOBAL INFORMATION SOCIETY

Iraq will make a significant contribution to the growth and diffusion of ICT on the national, and regional levels. The changes brought by the Information Society are the most important since the industrial revolution. Managing this transformation requires cooperation and partnerships to ensure steady and successful progress towards the goal of a fully developed Information Society.

In order to generate growth, connectivity and technology need to be translated into economic activities offering services; applications and content that create new markets reduce costs and eventually increase productivity throughout the economy. It is important to note that while information and communication technologies (ICT) are generally adaptable, their effectiveness in addressing development issues still depends on their use.

The World Summit on the Information Society is a very important and opportune event in which heads of states and governments meet to develop a common declaration on the Information Society and an action plan to bridge the digital divide. By attending the summit, heads of state and government will have the opportunity to make sure that the visions and concerns of developing countries about the Information Society are considered and incorporated.

Iraq's message stems primarily from the region to which it belongs, while addressing issues of relevance to the regional and international community. Accordingly, we call for the adoption of the following as the main elements of a common vision of the Information Society:

Use information and communication technologies to:

- Accelerate development, promote good administration governance, improve social services and health care, and foster stability;
- Increase employment, create a vibrant private sector, reduce poverty, and support underprivileged groups, especially women;
- Enhance the natural assets and human capacity of the region and minimize internal inequalities;
- Join the global information Society as a fully contributing member.

MoST calls for the following policies and strategies to be used as guidelines:

- Make information, communication, and their underlying technologies central to the development of the region. Today this is of fundamental importance given the circumstances that affect countries within the region and the region itself vis-à-vis the rest of the global community;
- Make information, communication, and their underlying technologies known, available to and accessible by the public, regardless of gender, age, religion, financial status, location, and race;
- Establish an information and communication sector and foster growth and employment generation in this area, using not only innovative private-public partnerships between government and the private sector but also partnerships with civil society and nongovernmental organizations;
- Ensure governments' understanding and use of ICT at all levels to promote efficiency and transparency and provide cost-effective ICT-based information services to citizens. This includes fostering regional e-procurement and sharing of e-government applications, technologies, and best practices;
- Promote ICT education in schools and universities and ICT skills training in the workplace and foster exchanges in faculty;
- Initiate and maintain a comprehensive assessment of the ICT situation in Arab states and establish a benchmark, using relevant, realistic indicators. This requires updating the findings periodically and presenting them to the regional and global community. Governments also need to ensure that data pertaining to return on investment related to ICT is made available to donors, so that funds can be appropriately prioritized and earmarked to develop the sector;

- Ensure that best practices are followed and ICT experiences are exchanged horizontally across countries within Arab states and with the international ICT community;
- Ensure that computers and Internet are made available to all levels of society by providing low cost alternatives, such as the free Internet model and payment in installments for low cost personal computers;
- Ensure that countries have developed their national e-strategies as a roadmap to any effort in this sector;
- Benefit from communications and experiences of neighboring regions.

The Information Society must be built on the concerted efforts of various stakeholders, each one having a specific role in serving the citizens. These various roles, individually and collectively, are vital to the development of the Information Society.

Governments through their policymaking mechanisms, have the primary responsibility in the development of the regional Information Society and in filling the gaps that have been at the basis of the digital divide. The private sector in the long run will be at the core of the Information Society. Private sector companies are able to scale up activities and achieve a larger impact than government or donors alone. Civil society organizations can substantially increase the impact that government initiatives will have on the population. Non-governmental and civil society organizations often liaise across donors groups, governments and citizens and are capable of promoting change, delivering skill training and implementing projects in a cost-effective manner. The partnerships forged across these three segments and the recognition of each other's critical function and responsibilities are a further step towards the creation of the Information Society.

To achieve those objectives, we shall seek the following:

A. Regional Integration.

Regional integration on the Arab level would pool resources and is an essential condition to lower the cost of ICT services. This target could be achieved by either call/data traffic reshaping, offering preferential status when procuring hardware and equipment from foreign markets, and/or by exchanging the expertise available in the region instead of importing outside experts. Regional integration is an initial step to counter the often negative impact of globalization and the associated opening of Arab markets to foreign competition by creating entities that can compete on economies of scale. These types of projects would be attractive to foreign investment and provide opportunities to encourage the repatriation of Arab expertise from countries outside the region.

Examples of integrated regional projects include the establishment and development of a regional backbone that is essential for the provision of low-cost Internet service. The cost efficiencies inherent in this project would lead subsequently to a drastic drop in the cost of many elements related to providing Internet service, such as the cost of bandwidth, which is currently on the average higher than the international cost. This project is expected to generate a steadily increasing demand in the coming period corresponding to the increase in demand in broadband applications.

B. Universal Access to Information

In an information society, one of the purposes of ensuring that information is provided to all segments of the population is to decrease marginalization and increase the equitable distribution of opportunities and resources. Access to information is the first step in achieving this. Unfortunately, the capacity of poor and marginalized people in the region to pay for access is limited, unless innovative solutions are found to decrease costs, improve information quality and content delivery, and encourage the acquisition of new skills. In a region with a substantial amount of illiteracy, it is of critical importance to ensure that, when discussing high-level, technology-oriented policies, the basic and fundamental skills, such as literacy, are appropriately addressed. Innovative solutions that are discussed in other sections include the creation of IT centers as information outlets and training hubs.

C. INFRASTRUCTURE DEVELOPMENT

One of the critical components in the drive to establish an Information Society is an infrastructure that guarantees universal, easy, affordable and rapid ICT access for all citizens. To develop this infrastructure, it is recommended that governments and public/private partnerships take the following actions:

- Establish a strong boadband national and regional strategy for Iraq and the region;
- Promote the implementation of new communication technologies to increase the penetration of communication services in rural areas;
- Establish a regional backbone for high-capacity telecommunication networks, in order to transfer information through high-capacity systems guaranteeing the optimum way of linking developing countries. Such a backbone would utilize the already existing fiber-optic networks in a number of countries;
- Enable several levels of access and linking to information networks and making them available to low-income brackets of the society, while providing alternative ways for linking to the internet;
- Provide a minimum level of universal ICT services for all brackets, by giving the support necessary to achieve this objective;
- Increase the flow of information among developing countries and eliminate bottlenecks by obtaining group capacities;
- Conduct adequate studies to evaluate the current situation of communication infrastructure in Arab states, as well as in other regional conglomerates in order to identify the steps required to move to the new generation of high capacity networks by the year 2005;
- Provide all Arab requirements of addresses and domain names and support the trend to coordinate, plan, and manage Internet resources with a higher international contribution;
- Provide personal computers and Internet access at a low cost and adopt innovative methods of payment;
- Expand ICT access in community centers and establish national and regional networks to link these centers.

D .HUMAN CAPITAL DEVELOPMENT

Human resource development is not only critical with respect to the technical capacity to create, distribute, and use information but also in terms of the more practical capacity to leverage information for socioeconomic development. Human capital is a major cornerstone for building the Information Society. Information and communication technologies offer the promise of new business and employment opportunities along with higher productivity gains, but also make new demands on skills. To develop the human capital of countries in the region, governments and public/private partnerships must take the following actions:

- Maximize the utilization of the potential offered by ICT for speeding up the process of illiteracy eradication;
- Expand the introduction of ICT to curricula of schools and universities and exchange experiences among Arab states, focusing on developing basic skills;
- Consider Arabic and local languages as the main approach to achieve Arab integration in the field of information and preservation of cultural identity. Make use of the competitive edge offered by the unity of language in the Arab World to establish a strong Arab content industry capable of competing internationally;
- Conduct intensified training courses with specialized educational and training institutions to qualify individuals in ICT and promote the use of the Internet for continuous self training. This process should be designed to meet the market demands of the new information economy;
- Ensure that by the year 2008, all preparatory schools will have access to the telecommunications infrastructure and the Internet and will have a computer lab, however small, available to students and teachers in both urban and rural areas.

E .ERADICATION OF ILLITERACY

There is heightened awareness today that illiteracy should be tackled through a concerted effort by all responsible governmental and nongovernmental bodies. Iraq cannot develop a true Information Society nor become an important player in the new global economy while some segments of its population cannot read or write. ICT can play a crucial role in efforts to eradicate illiteracy. The inclusion of ICT in the secondary and post-secondary curricula is also a critical factor that requires a multi-pronged inter-ministerial approach, not only to bring technological innovation in schools and universities, but also to create and modernize content and courseware accordingly. To develop effective programs to combat illiteracy and teach basic computer skills, governments and public/private partnerships must work in unison to ensure concerted effort is made to tackle and substantially reduce illiteracy by the year 2008, using all available methods and media, including television, and leveraging the investment made in community IT clubs.

F. SERVING CITIZENS

Most governments are now committed to moving towards an information society in which citizens are empowered to be more informed and productive through access to information, communications and their underlying technologies (ICT). The developing countries' approach to providing their citizens with access to information emphasizes enabling people to reach their full capacity, both because informed citizens are more productive and because connected citizens are the driving force behind the transition to an information society.

The region's vision for the information society is based on the broad and genuine participation of citizens, including traditionally marginalized segments of the population. The governments of Arab states should be committed to using the transition to the digital age to broaden access to opportunities by promoting equity for groups that sometimes have been excluded from the benefits of development. These include, for example, rural populations, women, the poor and minorities. By better serving these and other citizens through the tools of the new information society, the region will foster socio-economic growth, reduce poverty, and improve people's lives in key areas such as health, education, and employment.

To that end, governments must foster the creation of the information society by providing better services to citizens, using ICT to leverage scarce resources and overcome obstacles of time and distance. The following objectives have particular regional significance:

- Establishing information outlets that ensure that the majority of citizens have access to the benefits of the information society;
- Ensuring that non-governmental organizations (NGOs) and civil society organizations have tools and incentives for acting as agents of change for the information society;
- Creating information portals that offer national and local level multilingual information that is useful to citizens;
- Committing to using ICT to offer citizens a full range of e-government services.

G. CONNECTING CITIZENS TO LOCAL CONTENT

Governments need to commit to strategies that can be implemented immediately to connect citizens with ICT, allowing them to participate fully in the transition to an information society. Experience has shown that a critical mass of connected users is necessary to sustain initiatives to provide electronic alternatives to established ways of interacting and transacting by governments and the private sector.

Already, some developing countries have been leaders in efforts to broaden citizen access by establishing community centers offering access to ICT. These ICT centers typically provide training courses and services such as telephones; fax machines, Web and e-mail access, photocopy machines, and desktop application and printing.

ICT clubs have the potential to help break down some of the largest barriers to development. ICT clubs as community centers provide immediate benefits to traditionally disenfranchised populations in Arab states, such as those in rural areas. Through ICT clubs, small farmers can receive critical information, such as weather predictions or the market price of their goods, giving them more leverage in negotiating with middlemen. The unemployed can obtain information about available jobs and training resources. Women can get information on their legal rights and available opportunities, such as for micro loans for small business startups. ICT clubs offer a valuable point of information access and skills building for these and other underserved groups. Once again, in order to be useful, web content must be available in the local language.

Governments must invest time and resources to ensure that content of interest to the community is available in the local language. The combination of state investment with private sector development of public information and virtual service systems acts as stimulus to the development of an indigenous ICT sector, especially if contracts are awarded to private entities on a merit basis.

Special focus should be placed on the development of an industry for content in Arabic and local languages. Following are specific policy recommendations to develop and foster local content:

- Ensure parallelism among the establishment of infrastructure, founding a strong Arabic and local language industry for content, and provide innovative and practical means for funding projects of that vital industry which stands as the basic pillar in building the information society;
- Survey modern content produced in both paper and electronic forms, and in parallel develop projects to deposit electronic copies of modern content and digitize sources of heritage, literary and artistic innovation, and Arabic media production for preservation by e-archiving;
- Pay attention to issues related to intellectual property and accede to international agreements in this field, while ensuring the removal of obstacles against providing needed hardware and software;
- Encouraging schools and universities to contribute to content production and utilization and promote non-traditional ICT specializations and coursework requiring innovation, creativity, and entrepreneurship.

H. Bringing Governments into the Digital Age

Government efficiency has always been at the forefront of political, financial, and social debates. The relation between citizens and their governments in the region is often overly complex and interactions slow and difficult. This hampers development and curbs entrepreneurial efforts and success. Governments should recognize that to rapidly move to an information society, much effort should be devoted to re-engineering business processes, re-equipping government employees to enable them to use these processes, and opening new services to citizens to accelerate socioeconomic growth. It is also evident that much has to be learned at the government level about practices and procedures, budgeting for e-government and new technologies and systems, their effectiveness and cost, and the learning curve for implementing new processes and systems.

In general, e-government systems apply ICT to improve service quality and quality control, make services more accessible and relevant to citizens, improve feedback, and foster transparency and openness in government. e-government systems can also expand the outreach of government recruitment, making jobs available to citizens in secondary centers. Other efficiency-boosting applications include e-procurement and monitoring and evaluation systems to, for instance, follow the effectiveness of poverty alleviation schemes and identify service delivery problems. Internal operations, such as intra-government correspondence and information exchange, can be more effectively conducted using ICT.

Specific actions should include:

- Conducting regional training for government managers to provide awareness on the diversified aspects of e-government and the requirements for its implementation;

- Expanding e-services for citizens so that all sectors are covered and providing services for remote areas and marginalized brackets;
- Promoting the participation of the business sector in developing the work of government institutions in order to accelerate the transformation from traditional paper to electronic means;
- Reaching a unified standard form for unclassified governmental documents and removing the constraints against circulation;
- Removing or decreasing duties on electronic transactions in order to encourage use.

Specific recommendations include:

- Promoting startup businesses, building technological incubators, acquiring capital and support from international and regional organizations and international funding agencies, and offering appropriate ways of funding through cooperation between government and business;
- Supporting research in the high-demand fields such as natural language processing, bioinformatics, e-learning, and security of information networks.

I. Promoting Community Partnerships

Community partnerships will be critical to institutionalizing ICT at the grass roots level and to developing applications and content that reflects local needs. Governments are encouraged to take the following actions:

- Encourage diverse partnership patterns between business and public institutions;
- Offer numerous, innovative alternatives for e-business as a form of partnership between public and business sectors;
- Adopt easier procedures and attract regional and foreign investments in order to accelerate the process of establishing infrastructure and developing a significant local content industry;
- Provide and periodically update the information essential for investment, in addition to providing such information for regional and international communities, and encourage investors to outsource to local partners.

J. Ensuring that NGOs and Civil Society Organizations Become Agents of Change

Experience has shown that in order to move towards an information society, key stakeholders must act as agents for promoting technology to citizens. NGOs and civil society organizations can serve as change agents for information in two ways. First, they can shift to information-based methods in assisting their constituents. In doing so, they will expose citizens to the benefits of ICT. Second, they can inform citizens about available information access points such as ICT clubs and/or offer training on using ICT tools. Specific policy recommendations include:

- Allowing participants to identify areas in which NGO and civil society activities might be strengthened through ICT applications;
- Providing NGOs and civil society organizations with the opportunity to share best practices in the use of ICT and plan how they might coordinate their purchases to take advantage of the savings available through bulk orders;
- Giving policymakers the opportunity to discuss with NGOs and civil society groups how these organizations could better educate citizens about and connect them to ICT.

These ambitious objectives and activities will require significant resources. These needs can be met in large part by using and/or refocusing existing programs. There is a need for a new partnership model for the region. The policy of Arab investors, businessmen, and investment banks should be to develop financial resources to fund joint investments within the region.

It is very important in light of current world developments to create regional economic blocks. Regional integration is no longer an option; it is imperative to create sufficient economies of scale to overcome the fragmentation of the market. Regional mergers and acquisitions are a very important

aspect of the overall integration process. The previously proposed mechanisms will help pave the way in the pre-merger stage and promote ideas. Arab funds for ICT development and integration are essential to help foster the merger and acquisition process and to provide funding for regional initiatives and the purchase of ownership in international companies. In addition, governments need to encourage business partnerships to increase technology transfer and build intellectual capital in developing countries and foster alliances with multinationals and technology providers.

Regional cooperation will be one of the keys of success. Governments and organizations can benefit from the experience of international, regional, and multilateral organizations, particularly the ITU, ESCWA, UNESCO, and UNDP, and learn from the experiences of different countries in developing the components of an Information Society.