Government of Afghanistan

Ministry of Communications

Draft Information and Communication Technologies (ICT)

Policy Paper

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1. Vision

> To enable Afghanistan's use of ICT to expeditiously improve government and social services and foster the rebuilding process, increase employment, create a vibrant private sector, reduce poverty and support underprivileged groups. To enable Afghanistan to further benefit from ICT by fully becoming part of the global information society within the next five to seven years.

2. Background

The term Information and Communication Technologies, (ICT) describes the use of various technologies among which are the Internet, the telephone infrastructure and broadcast media that make information and communication services available to a wide range of users. The term is used broadly to address a range of established and relatively new technologies and increasingly the use of computers. Among them, an emerging and now critical technology is the Internet, which provides the mechanism for transporting data in a number of formats including text, images, sound and video. Additionally, ICT deals with the application layer, the systems that enable information to be collected and distributed, analysed and processed.

This document presents the policy guidelines and describes critical areas for the development of the ICT sector in Afghanistan, recognising its critical importance. It is important to note that while ICT are generally adaptable to different information needs and circumstances, their effectiveness in solving development issues still depends on their use and their content. Further, in developing countries, ICT have relevance both vertically and horizontally. Vertically, ICT constitute a sector of their own. The acquisition of human resources and technical capacity, the procurement of equipment, the programming of software and the installation of networks has made ICT a substantially important market in almost all countries and more critically so in countries whose development directly depends on the capacity to communicate, as in Afghanistan. This market has been fuelled by the growth of the Internet and the World Wide Web and by new web-enabled applications, ranging in scope from e-government to e-commerce solutions. Horizontally, as a cross-cutting requirement for all sectors, ICT provide the means to support activities that benefit from prompt and reliable information, including the amelioration of conditions of underprivileged groups and poverty reduction efforts. For instance, in social service areas, ICT has made remote health care more comprehensive and affordable through tele-medicine and education more effective through distance learning.

A dependable information system is also essential for efficient management and operation of the public and private sectors. This includes areas such as internal government information, citizen's services, trade, banking, and international relations.

Over the last few years, many nations have taken advantage of the opportunities afforded by ICT within a policy framework, laid down guidelines and proceeded with the formulation of a national ICT strategy as a part of the overall national development plan. A step by step regulatory process including a coordinated and multi-pronged strategy is essential to achieve the development of the sector. In this, education, investment opportunities and infrastructure availability play a major role. Afghanistan intends to use ICT as the key driving element for socio-economic development. This policy paper aims at building a society fully benefiting from ICT services by the year ----. In view of this, a country-wide ICT infrastructure will be developed to ensure that information will be used by citizens to facilitate their endeavours and enhance democratic values and norms for sustainable human development.

3. Objectives

ICT policies and a sectoral framework will be developed by 2003 to pursue the following objectives:

1. Make information, communication and their underlying technologies central to the development of the country.
2. Make information, communication and their underlying technologies known, available to and accessible by the public, regardless of gender, age, religion, location and race;
3. Establish the information and communication sector and foster growth and employment generation in this area;
4. Ensure Government's understanding and use of ICT at all levels to promote efficiency and transparency;
5. Ensure ICT education in schools and universities and ICT skills training in the workplace.
6. Present the state of ICT in Afghanistan at international events with a well articulated, focus and comprehensive strategy. Among these events will be discussions held at the WSIS, WTO, ICANN, etc.
7. Present the needs and requirements of ICT in Afghanistan to donor and international community.

4. Strategic Components

In order to accomplish the objectives highlighted above, the following strategic ICT components will be implemented in a fair and competitive environment. Through the Ministry of Communication (MoC), the Government of Afghanistan with close private/public partnership:

1. Will act as a facilitator and regulator, by actively promoting the development of the sector and fostering the adoption of ICT internally in the form of E-Government;
2. Whenever possible, will support and encourage the development of the ICT private sector and use ICT for poverty alleviation and employment generation;

3. Will foster the development of human capacity, with the involvement of both public and private sectors, for sustainable development and expansion of ICT;
4. Will support computer and IT education at the secondary and tertiary school levels;
5. Will invest and create an environment favourable to domestic and foreign investment for the development of ICT and infrastructure related to ICT;
6. Will encourage the use of ICT for trade and economic growth and will promote e-commerce;
7. Will encourage the use of ICT for the delivery and improvement of social services;
8. Will encourage the use of ICT in the development of secondary centres and rural areas;
9. Will promote an ICT Techno-park;
10. Will promote the creation of a healthy, transparent and competitive environment for companies and individuals operating in the ICT sector and will encourage a pro-growth taxation regime.

5. ICT Policies

Acting through the MoC, the policies pursued by the Government of Afghanistan for the implementation of the above-mentioned strategies will be as follow:

1. Recognising that information and communication are cross-cutting resources vital and critical to the development of all other sectors, the Government of Afghanistan (GoA) declares the ICT sector a priority sector. This prioritisation may include concessions in terms of funding and availability of human resources;
2. To create an environment conducive of investment from the private and public sector, keeping in view the important role that the private sector will play in the development of ICT, the GoA will provide a favourable environment and taxation regime including but not limited to import duties and taxes levied on profits;
3. In order to foster the creation of an environment which will allow in the near future the capacity to trade goods and services by electronic means (e-commerce) the GoA will draft appropriate legislation and will establish the necessary mechanisms to create and regulate the sector while protecting the rights of consumers and the interests of operators.
4. Recognising the importance of the development of infrastructure including rural areas within the national territory, the GoA will provide, through a competitive market environment, universal access to information and communication facilities including the Internet to rural areas of Afghanistan. By the year 2008, 50% of the population of Afghanistan will have full access to communication facilities and by the year 2010, 99% of the population will be covered;

5. Recognising the importance of building a skilled workforce capable of understanding, entering and benefiting from the digital age, the GoA through the MoC, the Ministry of Education and Ministry of Higher Education and associated institutions <u>will support efforts to establish effective ICT training courses</u> at secondary and tertiary level. Moreover the GoA will build partnerships with the Private Sector to implement corporate training facilities as needed.

6. Anticipating the <u>convergence</u> among telephony, data transmission and broadcast through Internet broadband, the GoA through the MoC will ensure adequate planning to enable the country to embrace new communication modalities once they are established;

7. Recognising the importance of government efficiency the GoA will assist in the computerisation of all central governmental entities by the year ----. The <u>GoA will support efforts to enhance its effectiveness by using e-government technology and by establishing one or more national data centres</u>. Recognising the importance of ICT as a vital tool for improving social services, the GoA will actively support the use of ICT to promote education, health, employment, industrial development, infrastructure building, citizen services such as identity cards, cadastral information, certificates, etc, by the year ----. GoA will give particular attention to services to benefit underprivileged groups and the poor.

6. Action Plan and Strategy

The following action plan expands the seven key policies of the GoA and describes the necessary actions to implement them. The action plan will be further elaborated and updated by an official yearly work plan and status report.

Recognition of ICT as a key sector and the role and responsibilities of MoC

The MoC will implement the following steps to ensure that the ICT sector will advance appropriately through Afghanistan in the following years and that it will become a driving force in the development of the country.

1) In order to guarantee that Information and Communication services will be made available in Afghanistan on a cost-effective basis and that these services will expand and be able to satisfy demand as the country develops, the MoC will be designated as the leading organism for ICT and as the regulator of ICT activities including, but not limited to, voice and data communication, frequency spectrum management and other communication mechanisms including new ones as they will become available. To reflect this, the designation of the Ministry will be changed to Ministry of Communication and Information Technology (MCIT) effective {date}.

2) The MoC is charged with the coordination and regulation of all ICT services in the country. The primary responsibility of the MoC will be to pursue an effective and rapid development of ICT in Afghanistan and to attract investment. This will include the development of policies and legislation, the development of human resources, and the development of ICT infrastructure and applications.

3) Pursuant to point two, MoC will obtain appropriate budgetary allocation to establish and maintain a market-driven, rapidly-growing modern and transparent ICT environment in the country with adequate management and technical capacity.

3) In order to more effectively become the coordinator and regulator of ICT in Afghanistan, the MoC will spin off its operational arm by corporatising Afghanistan Telecom (AT), licensing it and rendering it independent. Although licensing of additional operators may be available in the future, AT will become the primary provider of telecom-based services in the country.

4) Recognising the importance of a transparent and open process to the development of ICT the MoC will chair a National Information Technology Council. The Council's mandate will be to provide advisory services to the Government in all matters related to ICT and act as a coordinating focal point. The Council will be hosted and chaired by the Minister MoC. The Council, through the formulation of a National Information Technology Agenda (NITA), will chart a path for the development of the country's ICT sector. The council should be operational by January 1st 2004. A description of the operation of the Council is reported in the Annex.

Investment policies

The development of the country's ICT capacity will be greatly accelerated and improved by the participation of the private sector and national and foreign investors. In order to obtain the level of investment required to meet the targets described in the next section the MoC, in cooperation and agreement with other appropriate Ministries and Government institutions, will establish a coordinated approach to foster investment in ICT in the country while maintaining a high quality of service and encourage the development of human resources and universal access.

1) Licensing

The MoC will establish a licensing regime for the operation of the ICT infrastructure and its services in Afghanistan. This regime will be pro-growth and pro-investment and will be based on the principles of market self-regulation. The licensing regime will include class licenses and operator (individual) licenses. The MoC will review license applications and process them expeditiously. The MoC will establish an official website of the procedures and licensing requirements necessary to apply for and obtain a license.

2) Taxation Regime
In cooperation with the Ministry of Finance, a favourable taxation regime for the ICT sector will be considered. This shall include import duties and taxes levied on receipts (profits) and may be available in a specific area such as within the limits of a Techno Park.
Considering the high base price of certain equipment and the cost of delivery to Afghanistan, and to foster the rapid development of the sector, the MoC will compile and submit to the financial authorities a list of items that it recommends to subject to a temporary tax break of xx% of the current tax amount for import duties into Afghanistan. This list may include personal computers, software, peripherals such as

printers and power supplies and other equipment for personal or business use. It may not include high-end equipment such as telecom switches, mainframe computers and industrial computer-based equipment.

Additionally, to encourage additional investment in ICT-related activities which may be particularly beneficial to the country, companies that operate in certain fields such as software development or ICT education and training may be benefiting from a temporary reduction of taxes related to their profits.

3) Techno Park
In order to spur investment in and growth of the sector, the MoC will establish, in cooperation with the appropriate Government Agencies and Ministries, an ICT Techno Park based in Kabul. This will be centred in a building or other suitable compound or area and will host ICT operators and companies engaged in this sector. A description of the Techno Park is offered in the Annex.

4) Investment laws
Should be considered in all ICT-related policies and legislation and vice versa.

5) Chamber of Commerce
Should be enabled to take advantage of ICT to create added interest in investment in the country and publish investment information through a specialised website.

ICT in Commerce and Trade

The application of ICT to commerce and trade today (e-commerce) has transformed the global market environment and allowed financial operations not possible before. For a country such as Afghanistan it is important to initiate building the future framework for e-commerce while at the same time protecting local commercial initiatives and consumers rights. Without an umbrella legislation and specific policies dealing with the flow of commerce-based information and transactions, Afghanistan risks to either becoming marginalised or remaining only a buyer of other countries' services. The end point of legislation will be to enable national enterprises and consumers to benefit from the same tools as other, already developed, countries. In order to achieve this, the GoA in cooperation with the MoC and the Ministry of Finance will:

Support the creation of a secure network for inter-banking payment system in electronic form. This will be done in conjunction with Central Bank initiatives and will also include preparatory elements to ensure that ATM and other customer-oriented services can be rolled out in the near future.

Adopt, ad-interim if necessary, basic e-commerce legislation. Example s and model laws, adopted by several countries exist. Foremost is the United Nations Commission On International Trade Law (Uncitral) *Model Law on Electronic Commerce* (1996-8). The introduction of this model law, which has been already adopted by several countries, states that [it]: 'will assist all States significantly in enhancing their legislation governing the use of alternatives to paper-based methods of

communication and storage of information and in formulating such legislation where none currently exists."

Adopt, ad-interim if necessary, basic digital signature legislation such as the Uncitral "*Model Law on Electronic Signatures* (2001)." This Law applies where electronic [digital] signatures are used in the context of commercial activities.

Establish a national certificate of authority (CoA) or adopt a foreign CoA to enable electronic business to business transactions. The CoA is the electronic equivalent to a letter of credit. The CoA establishes verifiable and secure means to validate electronic transaction and enable electronic payments.

Moreover, recognising the need for customer and investor protection, the GoA will draft the necessary legislation to provide a legal framework for the use of ICT.

ICT Infrastructure

The development of modern, technically efficient and cost-effective ICT infrastructure, both terrestrial and aerial, domestic and international is of critical importance to establish communication services in Afghanistan. ICT infrastructure has a critical role in the rebuilding process of the country's other infrastructure areas, as communication is an enabling factor and a pre-condition to the development and maintenance of roads, power generating and distribution utilities, water and sanitation, etc., let alone social and administrative services.

As previously stated, the MoC will act as a regulator of the telecommunication industry, including fixed and wireless infrastructure and domestic and international communication, frequency management and broadcast. The MoC will set up a licensing regime and will grant licenses to telecommunication, data and broadcast operators as needed.

Recognising then the importance of the establishment of infrastructure, the MoC will create and render independent Afghanistan Telecom (AT), the national entity for domestic and international telecommunication. While the details of this operation will be covered by separate documentation, AT will be organised as an independent Corporation, fully owned by the Government of Afghanistan until such time when the GoA will decide to make shares available to the other companies or to the public or to privatise it entirely. AT will provide fixed based data and voice communication, international gateway services, wireless local loop and other services as needed. A major priority for AT and for its subcontractor and subsidiaries will be to expeditiously elevate Afghanistan's tele density.

Hence, while fostering the improvement of existing and the implementation of new infrastructure in major urban centres, the MoC will ensure that appropriate policies and regulation be put in place to guarantee that tele-density will increase steadily by at minimum of -- % a year. This will be effected through the following schedule:

Tier 1 cities, encompassing of --% the population by the year ----

Cities	Population
Kabul	2,500,000
Herat	1,168,000
Jalalabad	1,072,000

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Kandahar      869,000
Mazar         854,000
Kunduz         806,000
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Tier 2 centres encompassing --% of the population by the year ----

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Pulekhomri    733,000
Parwan        715,000
Juzjan         433,000
Khost          296,000
Ghazni         916,000
Faryab        770,000
Takhar        738,000
Helmand        734,000
Badakhshan     704,000
Paktikya      346,000
Farah         333,000
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Tier 3, rural areas.
Population

As previously stated, the MoC will act as a regulator of the Telecommunication industry, including fixed and wireless infrastructure and domestic and international communication, frequency management and broadcast. The MoC will set up a licensing regime and will grant licenses to Telecommunication, data and broadcast operators as needed.

Public access phones will be located in all remaining areas to guarantee service within ten kilometres of 95% of the population by the year ----.
Universal access will hence be achieved through the rehabilitation of the present system and the implementation of new infrastructure including wireless (GSM) telephony. The expansion of GSM services and coverage will be ensured by a competitive process and will be market driven. The MoC will license a sufficient amount of GSM operators to cover Tier 1 areas as expeditiously as possible but not beyond the year ----. MoC will ensure that by ----- --% of the population of Tier 1 cities and {main highways} will be within range of wireless telephony.

The MoC will also foster the expansion of Internet services by establishing a licensing regime and opening up the provision of services to private operators (ISP). Recognising that Internet access is critical to the development of the country in general and to trade, investment and other economic activities, to the delivery of social services including health and education, the MoC will ensure that the best and most effective combination of international access, national data distribution and applications will be made available to users through a competitive and transparent process. MoC expects that dial-up and leased line Internet services in Tier 1 areas will be available at cost-effective rates similar to that of neighbouring countries by the year ----. Tier 2 locations will be progressively connected through the year ----

The MoC will also oversee the management of the .AF top level domain and the process of domain registration under it. The .AF domain will be managed according

to accepted techniques and domain offered at a cost comparable to that of similar countries.

Additionally, and in order to make data services equally accessible to urban and rural communities, the MoC will equip --% of Post Offices with Internet terminals and communication capability by the year ----. These upgraded post-office will double as tele-centres and will offer services including e-mail.

ICT and Education

Education is universally recognized as key to spurring economic growth and alleviating poverty both locally and nationally. For individuals, education enhances opportunities and improves socioeconomic conditions. In an increasingly technology-oriented and globalizing world, the use of ICT has become a critical factor in enabling more people to gain an education, which in turn ensures that a country's workforce is skilled and prepared to meet the challenges of development.

The establishment of ICT infrastructure in Afghanistan is therefore essential to promoting education and its subsequent benefits. Together with the purchase and installation of computers and related equipment, ICT can facilitate education and training. In turn, both distance learning—which has proven to be a highly cost-beneficial investment for developing countries worldwide—and in-service training to improve the skills and knowledge of the existing labour force will be facilitated.

ICT is particularly critical in countries where large segments of the population (including women) are educationally disadvantaged or live in rural areas, as is the case in Afghanistan. For this reason, the GoA through the MoC will take steps to:

a. Mobilize resources to purchase ICT equipment and educational materials and to improve technological connectivity at schools and universities.
b. Support the Ministry of Education (MoE) with the assistance of the MoC to develop ICT curricula at both the secondary and tertiary levels and to promote participation in related courses (such as computer science, multimedia, communications, and engineering).
c. Support the MoC in developing teacher training and training-of-trainers courses in ICT-related subjects.
d. Create opportunities through which students, in particular those in remote locations, can be exposed to technology. These could include Mobile Internet Units, i.e., buses equipped with computers and Internet access that visit schools; Networking Academies that give students and teachers the skills to design, build, and maintain computer networks; and tele-centres that would be operational in schools during and after class hours.
e. Explore and support opportunities for distance education, including through the establishment of centres that provide access to international online courses. Distance education expands resources available to both students and employees and can compensate for a lack of trained faculty and supervisors.
f. Establish partnerships with the private sector to develop and provide ICT training for business personnel.

     g. Work toward the preparation and official international adoption of official computer-based fonts applicable to the educational and business languages of Afghanistan

     h. Coordinate with public agencies to train civil servants in ICT skills and applications.

     i. Enhance public access to information and opportunities through educational radio programs; distribution of written materials where appropriate; and establishment of Kiosks at public locations (such as airports, ministry departments etc.

Education is a cornerstone of the development process because it directly involves individuals and communities and engages a range of actors from both public and private sectors. By emphasizing ICT in educational efforts through the pursuit of the actions outlined above, the GoA can "leapfrog" some presumed stages of development, and be better prepared to enter the global economy of the 21st century.

ICT and Government

As ICT becomes more and more entrenched in all public functions, it is imperative that the GoA quickly employs e-government strategies to develop an efficient, cost-effective and transparent public sector while granting in the nearest future access to information and services to citizens, investors, the international community and others.

Through the MoC the GoA will establish a National Data Centre charged with the task to provide the following critical services to Ministries, Administrative units and other Government Departments:

1. Networking and Internet Access;
2. Common Government Email;
3. Electronic Data Processing (EDP) and Applications;
4. File storage and Government printing services;
5. Intranet hosting, Website hosting;
6. Security;
7. Redundancy, backup and virus protection;
8. Common Government Procurement;
9. Strategy, planning, budgeting and system upgrades;
10. Drafting of user policies, standards and procurement guidelines.

Additionally the MoC will establish and manage:

1. A Government Help Desk to quickly respond to maintenance needs related to the Data Centre Infrastructure and services,
2. A Training Centre to improve the skills of public servants on ICT applications and ICT processes management. This Training Centre could be implemented using the Mobile Unit concept where one or more large busses are fitted as training centres and circulate periodically to train employees in Kabul and other major Government Centres.

In order to achieve the above the GoA will also appoint an Information Systems Manager for each Ministry and Department. These managers will be tasked with liaising between their units and the Data Centre, Help Desk and Training Centre.

The GoA will establish through the MoC and in cooperation with other agencies a Network Security Plan to secure the ongoing functioning of voice and data networks and protect them against malicious internal and external attacks.

Additionally, the MoC will lead the drive toward the establishment of e-government services. This will be done through analysis of needs and requirements in terms of data infrastructure at Government level. The MoC will strive to establish, through the data centre, a common Internet presence for the Government to achieve level one of the e-government models reported in the Annex by the end of 2003. This level will enable the Government of Afghanistan to be visible to the outside word in a coordinated fashion and avoid the common pitfall as many other countries have experienced of a disjointed web presence. The MoC will directly manage the registration services of the .gov.af domain.

Through the MoC, the GoA will ensure that initiatives will be established to make information and communication technologies accessible to underprivileged groups, with special consideration given to women. The role of women within families and communities makes their active participation in the development and use of ICT essential. The tools that technology offer in the areas of education, health, social services, rights and overall development will, directly or indirectly be made available to underprivileged groups in order to build up a strong and democratic society. Women's particular role in these areas makes their knowledge of and participation in ICT critical.

Convergence

Information-based societies benefit today from information, electronic media and communication technologies that support the exchange of information across a large range of users and applications. In order to achieve this, modern networks have become increasingly faster and more and more carry both broadcasting and telecommunications merging them into the same transport protocol called the Internet. The term convergence refers to the consolidated distribution of different media through the Internet and via a broadband network. The advantages of such system are enhanced efficiency and cost-effectiveness over traditional mechanisms.

In Afghanistan it is presently premature to discuss convergence and broadband at policy level as a number of preconditions must be established first. It is however important to monitor communication trends within the country and build new infrastructure either directly broadband-compatible or capable of future upgrades to accommodate convergence of various media. This is particularly important in the choice of Internet equipment and networking architecture. The MoC will ensure that these considerations will be incorporated on contractual agreements with solution providers when applicable.

Monitoring

In order to verify that progress has been made and to identify potential bottlenecks to the implementation and enforcement of these policies, the MoC on behalf of the GoA, under the auspices of the NITC (see Annex) and through independent consultants will conduct at least biennially an E-readiness Assessment (ERA). The Annex includes

additional information on the conduction of an ERA. The reports from the ERA will be made publicly available and will constitute the basis for forward ICT planning.

7. Budget considerations

Budgeting appropriations necessary to implement the policies proposed by this paper will be done through three major avenues:

    a. Allocation of Government budget for items directly related to Government services;

    b. Grants and loans provided by the international community and the ARTF.

    c. Private sector partnership, licensing fees and proceeding from interest in Ministry of Communication activities.

From the budgeting view point the following considerations apply:

    a. The MoC will act as a provider of ICT services to Government. Internal budget rebalancing for service rendered must be initiated and made operative by the -----

    b. New budget lines should be created for all Ministries and Departments to accommodate ICT expenditures;

    c. ICT projects and services should be designed with long-term sustainability in mind, either to be spin-off to appropriate Government bodies or to be commercialised and managed by private sector operators.

It is important to consider that best practices indicate that budget figures will double in every fiscal year and the requirement for skilled workforce will increases accordingly. This consideration is important for planning and budgeting purposes

8. Annex

National Information Technology Council

Operation of the Council. The Council will be self-regulated and its membership selected through expression of interest. It will consist of representatives from:

    a) The user community drawn from civil society organisations and Internet user groups;

    b) Government representatives from the office of the Prime Minister and the Ministries of Information, Domestic and Foreign affairs, Security, Education, Finance and Public Health and Social Welfare and others as applicable;

    c) Private sector and the business community: representatives from the banking and financial sector including investors, IT industry, manufacturing and retail sectors (with strong interest in e-commerce), private Internet service providers, service industry (transport, etc.);

    d) Representatives of accredited NGOs and civil society organisations; and,

    e) Representatives from academia and other associations and educational institutions such as Afghan Computer Science Association (ACSA)

Mandate of the Council:
1. Assess the present state of the sector, trends and potential opportunities;
2. Draft medium and long-term ICT action plans setting a national agenda and a strategy for the achievement of realistic milestones in the development of this sector, establishing citizen access to information as right rather than a privilege;
3. Foster reform in the ICT sector;
4. Foster private-public partnerships and market competition;
5. Participate to the international regulatory process, including initiatives of the WSIS, WTO, WIPO, ICANN and other bodies. Cooperate with other institutions abroad to better represent their joint interests and highlight transitional country needs and realities;
6. Facilitate the adoption of and compliance with international technical standards;
7. Foster R&D (technical and scientific research and development) and sector development;
8. Ensure that policies and related budget allocations are concentrated on education and training and information-based social services and develop a forward-looking policy anticipating future needs;
9. Establish a balance between the right to privacy and secure data transmission and the need for oversight by ensuring that, whenever possible, information systems enhance the transparency of all public-sector activities. Public-sector information systems which include a public website and a built-in regular reporting function are strongly encouraged;
10. Assist in the reformulation of economic indicators to reflect the role of ICTs, e-commerce and other aspects of the information economy;
11. Make all Council proceedings open to the public and transparent. Lead by example, by actively using ICT tools and public websites; and,
12. Encourage investment in infrastructure, such as networks and public access points.

Establishment of a Techno-park

Objective

To create an environment in which established and emerging members of Afghanistan's business sector can operate, expand, collaborate, and thrive. To this end, the Techno-park will provide businesses with facilities based on relevant, needed information and communication technology (ICT), as well as consulting services. With firms conveniently located in close proximity to each other, the Techno-park will serve as a cohesive centre for business development and exchange.

Services and Opportunities

The future of high technology industries depends largely on producing innovative products and services at competitive prices. Even the best ideas will remain only on paper if the necessary conditions and a conducive environment do not exist. The time it takes to move a product to market is very short, and the window of opportunity does not remain open for long in today's competitive, global business environment.

Ensuring that Afghanistan has a strong cadre of qualified entrepreneurs requires that conditions for converting innovative ideas into commercial successes be developed and implemented. As many developing countries have recognized, this process can be facilitated through the establishment of a Techno-park.

The primary mandate of such a facility is the promotion of entrepreneurship, employment, and a skilled labor force. A key advantage for businesses choosing to locate in the Techno-park is that they will be exempt from ▬ % of the national income tax, and many imports will be duty free or (depending on the items imported) about ▬ % of the normal duty will be imposed.

The first step in the establishment of a Techno-park is the development of a business incubator facility known as the Techno-park Business Innovation Centre (TBIC). The TBIC will provide resident businesses with finished office space and a range of office services, including:

·   Heating and Air-conditioning
·   Furniture
·   Uninterrupted power supply (UPS), back-up power generation
·   Maintenance services
·   Networking
·   Reception and lobby area
·   Conference rooms
·   Storerooms
·   Common security systems
·   Common facilities such as restrooms and cantina

In addition, the TBIC will make available to businesses a pool of consultants in the following areas:

·   Technology
·   Management
·   Accounting
·   Legal and policy
·   Marketing
·   Training
·   Quality control

Serving Entrepreneurs

Afghanistan's *emerging entrepreneurs* are generally recent graduates from science and technology institutions who have innovative ideas for developing businesses. Technical experts from a range of public and private sectors and faculty from premier educational institutions also fall into this category.

New entrepreneurs will receive maximum support from the TBIC, through which they could qualify for assistance in the preparation of business plans; the purchase of office

space, furniture, and equipment; the procurement and use of computers and software; and management, accounting, legal, and marketing services.

Experienced entrepreneurs from business and industry and persons who previously pursued entrepreneurial activities will also be eligible for assistance for their enterprises, in particular with regard to the preparation of business plans and purchase of office space and furniture. Management, accounting, legal, and marketing services will also be available.

Finally, *business entrepreneurs* from established companies wishing to diversify into advanced technology fields or transfer their operations to the Techno-park will have access to all of the facilities available at the TBIC.

Business Support Services

Resident companies will have onsite access to services provided by the Techno-park, all of which aim to foster and enhance the technological potential of businesses. The Park's Support Centre will assist firms in accessing and using video-conferencing links, advanced multi-media facilities, the Internet, and the World Wide Web (WWW).

The Centre will also provide advice on information technology and telecommunications products, access to experts and consultants, current information from colleges and universities, training, on-site technology audits, and information databases. In addition to the office services noted above, the Techno-park's facilities will include the following:

- Direct access to the Internet and the World Wide Web
- iSDX switchboard
- ISDN direct dial telephone lines
- Voice mail and call attend
- 24 hour access, 365 days a year
- Help desk
- Refreshment area
- Security services
- Off-street parking
- Raised floors

Budget

In planning for the development and establishment of the Techno-park, the Government of Afghanistan will have to take into consideration a wide range of factors and budget items.

Personnel will have to be hired and trained to serve as managers, accountants, consultants, help desk technicians, security guards, and support staff.

Equipment will have to be procured, including computer systems, power systems, and multimedia, LAN, Internet, and video conferencing tools.

Operational costs will be incurred in the form of building rent, renovations, furniture, transportation, electricity and water, telephone and Internet connections, and miscellaneous supplies and services.

E-Readiness Assessment (ERA)

This annex outlines specific areas analysed by an ERA. The objective of the ERA is to describe in the form of a report presented biennially, the capacity of a given country to leverage ICT to further development, increase productivity, foster good governance, generate employment and prepare the background for investment and private sector participation to socio-economic growth from the qualitative and quantitative viewpoints. This report will establish a benchmark upon which subsequent reports will build. This will represent a significant asset for planning, strategic and monitoring purposes.

The Sections suggested for an ERA are as follows:
1. Executive Summary
2. SWOT analysis: strengths, weaknesses, opportunities and threats;
3. Infrastructure. Statistics and service data (including prices) related to Telecommunication, Internet, Wireless and Broadcast. (data is compared against existing ITU statistics when possible).
4. Education. Statistics related to the number of students in the IT sector, type of training, school penetration of computer and ICTs, corporate training, private IT courses, certification, etc.
5. Society. Penetration of ICT and Internet in public and private life, rural and urban. ICT Associations. User groups.
6. Statistics, demographics of computer users. Website sampling, portals.
7. Economy. Import export statistics and trends, type of ICT activities, companies offering ICT services. E-commerce and e-commerce related activities (B2C, B2B). Technology used (digital signature, COA). Techno parks, incubators. Piracy.
8. Policies. ICT Legislation, Acts, Decrees. Cyber-laws (telemedicine, IP, etc.). Regulatory mechanisms, policy-making mechanisms. Upcoming Legislation.
9. Government. Use of ICTs, E-government, decision support systems.
10. Recommendations and action plan

The Four Phases of Electronic Government

A short paper by the Gartner group offers a good model for the establishment of a road map for the deployment of e-government services. It is recommended that this or a similar model be considered as a guideline for the implementation of e-government systems in developing countries. The model describes four phases:

Phase 1 — Presence: This phase of e-government development is characterized by the land rush to simply have a cyberspace placeholder on the Internet. The primary goal is to post information such as agency mission, addresses, opening hours and possibly

some official documents of relevance to the public. In the United States to date, federal, state and local governments have implemented more than 10,000 Web sites to inform the public about government agencies.

Phase 2 — Interaction: This phase is characterized by Web sites that provide basic search capabilities, host forms to download, and linkages with other relevant sites, as well as e-mail addresses of offices or officials. This stage enables the public to access critical information online and receive forms that may have previously required a visit to a government office.

Phase 3 — Transaction: This phase is characterized by allowing constituents to conduct and complete entire tasks online. The focus of this stage is to build self-service applications for the public to access online, but also to use the Web as a complement to other delivery channels. Typical services that are migrated to this stage of development include tax filing and payment, driver's license renewal, and payment of fines, permits and licenses. Additionally, many governments put requests for proposals and bidding regulations online as a precursor to e-procurement. This is the current stage for several agencies and the most immediate target for many e-government initiatives worldwide. It not only highlights the benefits of 24x7 availability but also provides opportunities to develop cross-agency common, shared services.

Phase 4 — Transformation: This phase is the long-term goal of almost all national and local e-government initiatives. It is characterized by redefining the delivery of government services by providing a single point of contact to constituents that makes government organization totally transparent to citizens. This phase relies on robust customer relationship management tools and new methods of alternative service delivery capabilities that reshape relationships between citizens, businesses and governments. It also enhances the ability of constituents to participate more directly in government activities (e.g., "e-referendums and "e-voting"). Examples of transformation include highly tailored Web sites, or "virtual agencies," where government information is pushed to citizens, and where they can pay local property taxes, renew state driver's licenses and apply for federal passports all in one place, with seamless interfaces back to the respective agencies involved in the transactions. This phase will also include the development of state-of-the-art intranets that can link government employees who work in different agencies. Governmental transformation will also include the design of extranets that allow the seamless flow of information and collaborative decision-making among federal, state and local government agencies; private and not-for-profit sector partners; and the public.
(© Gartner Group Inc. 2000).

State of ICT in Government Agencies as of January 2003

Although ICT have been used in the country by the government, mainly in the form of telecommunications, and by the development community, there is still very limited ICT awareness among the general public. Computers, where present, are used mainly for word processing. Other capabilities, especially in the area of communication and Internet, are rarely known and used. The new government is very supportive of efforts to build ICT skills among its staff. The Afghan Assistance Coordination Authority

(AACA), a governmental organization, has started a special project to strengthen the capacity of government employees in different departments including the usage of computers and related technologies.

Another very important project regarding ICT in the country was launched as collaboration between the MoC and the United Nations Development Programme (UNDP). The project has three components:

- Establishment of ICT centres across the county. The first of these centres opened in November 2002 and is located in the Telecom Training Centre of MoC. Its main role is to train government employees from Ministry of Communication and other ministries.
- The CISCO Academy in Kabul University, which started classes on 1 September 2002.
- Drafting of the national ICT policy. This is the most important part of the project. A workshop to initiate drafting of the policy was held in Kuala Lumpur in October 2002. It was organized and hosted by Asia-Pacific Development Information Program (APDIP) UNDP. A delegation of high officials from the government and ICT professionals took part in the workshop.

The private sector is also playing vital role in building the capacity of people using ICT in their day to day life. There are now computer training centres in different main cities of the country like Jalalabad, Kabul, Mazar-e-Sharif, Herat and Kandahar. The main problem regarding these centres is the lack of a standardized curriculum. The present curriculum covers   office automation and basic software. There are no centres which provide training on software development.

Education

The people of Afghanistan have always demonstrated great enthusiasm for education, but unfortunately, due to limited resources no promising steps had been taken in this sector in
the past. There were two universities operating in the country 30 years ago. One was located in Kabul and the other in Jalalabad. After the Soviet invasion, many Afghans were forced to leave the country, and started living in the neighbouring countries where they had very limited opportunities for education. The average number of schools per province was 50. Only a very small number of students from the different provinces could enroll with the universities because of the stiff competition for places and the limited resources. There are now eight universities in the country located in Kabul, Jalalabad, Herat, Mazar-e-Sharif, Khost, Kandahar, Badakhshan and Takhar. Educational institutions in the country at present do not benefit from modern technologies, and their curriculum have not been updated for several years. Two of the universities have a Department of Computer Science. These are Kabul University which started its department in 1995 and the Islamic University for Science and Technology (IUST) located in Jalalabad which opened its Department of Computer Science in 2001. Both universities offer bachelor degree courses. The curriculum in these universities is not updated and is not of international standards to meet the requirements of the country in this era of information. There is no sign of the ICT related subject matter in the curriculum for high schools.

Human resources

The civil war in the country forced the universities to remain closed for much of the time during the duration of the conflict. This seriously affected the continuity of studies and the progress of students in the country. Afghans living abroad received training on computing at different levels. As of the year 2002, there were approximately 20 bachelor and master degree holders. The number of individuals who have completed short computer training courses is approximately 1000.

Human resource in the field of ICT are scarce. The capacity of government employees is modest, as the government ICT uptake is at its early stages. Universities play a very important role in the human resource development, but only 19 students have graduated from the Department of Computer Science of Kabul University since 1995.

Internet facilities

The UN offices, embassies and certain NGO's were the first to be connected to the Internet using satellite connections with 1.2 and 1.8 meter dish antennae operating on the KU band. Some of the offices were also using satellite telephones. There are no Internet Providers (ISPs) in the country by 2002. However the VSAT links being installed by the MoC in the five main cities of the country will soon make it possible to provide the people in these cities with Internet access. The private sector has a potentially important role to play in this sector. As the IT policy for the country evolves, a clear strategy for the participation of the private sector will be announced to facilitate the entry of both national and international companies to the market.

In the year 2002 the internet penetration rate was 0.00227 in the country. Most of the number of users having access to the Internet is in Kabul. There are only two Internet cafés in the country at this time, both are located in Kabul.

Computer hardware

There is a small, fledgling computer hardware market in Afghanistan at present (2002). This comprises of a few computer shops in Kabul, Herat, Kandahar and Mazar-e-Sharif. The total turnover is estimated at US$800,000. The hardware being sold at the moment include: desktop computers, printers, scanners, uninterrupted power supply units, and networking equipment (hubs and switches).

Computer software

An immediate challenge is the lack of national language fonts. The official languages of the country are Pashto and Dari. All official documentation is done in these two languages. There is currently only Farsi language support in the Microsoft operating system, which fulfils the requirements of the Dari language; but as about 60% of the population are native Pashto speakers this does not support and meet their requirements. A project for the Pashto and Dari character set registration with ISO is on the way, which will enable the flow of information in the local languages across the government offices and organizations.

Content

There are hundreds of websites designed and run by Afghans living in different parts of the world as access to the Internet in the country is very limited so this prevents the local content development market to flourish.

Service providers

There are a number of organizations and companies which provide software development, networking, website development, consultancy and other services:

Afghan Computer Science Association (ACSA)

This organization was started in 1999 by a group of Afghan computer science students at the International Islamic University Islamabad. ACSA is a non-profit and nongovernmental trust, which aims to motivate people in the country to explore the field of IT. ACSA is involved in developing software for the business and administration sectors of the country. It is also developing educational and entertainment software for the use of the youth and children. The department endeavors to design software for universities, schools, hospitals, government offices and businesses in the country.

As there is no standardized computer science curriculum in the country, the association is working on a curriculum for high schools. The Education Department of the association is publishing a bimonthly magazine *The Computer Science*, which is the first computer magazine ever published in Pashto and Dari. One of the priorities of the association is to promote professional networking among the computer scientists of the country. The Relations Department is helping to establish good relationships among the different governmental and nongovernmental organizations and associations, working in the field of computing and IT, and will motivate them to work in collaboration for the advancement of the IT sector.

Asia Soft
The first Afghan IT Company founded in 1992 with the main focus on developing fonts   for the Pashto, Dari and Urdu languages to be used with Windows 98, XP and 2000 operating systems. The company was the first to attempt to provide Internet connectivity to the country in 1998, but government constraints at that time forced the project to be abandoned. The company has recently started working on the localization of Windows XP/2000 and is currently also developing a curriculum which will enable computer users to learn which software to use and how to use it for a specific task. The company has recently opened their office in Kabul.

Center for Research and Technical Support (CeReTechs)
CeReTechs was created in 1994 to provide a full suite of information technology products and services, including technical support, IT consulting and implementation toiInternational and local aid agencies working throughout Afghanistan and Pakistan. CeReTechs works with many international aid agencies in Afghanistan, including ACTED, AREA, AWN, CHA, DHSA, Islamic Relief (UK), and Swiss Peace. CeReTechs, in collaboration with the MoC and with partial funding from the Department for International Development (DFID) of the United Kingdom, is establishing ISPs, to offer high speed, low-cost wireless Internet access to Kabul, Herat and Kandahar cities.

This service will allow organizations to access the Internet with data transfer speeds ranging from 56KB to 11MB per second, well beyond the speeds of other systems now used in Afghanistan. The service will provide unlimited data transfe r at no additional cost, potentially offering organizations significant savings. The service will also accommodate intranet connections and communication among bases within the surrounding areas. In relation to software development, CeReTechs has developed a number of systems for accounting and financial information management; personnel management, inventory management, and program management information which are very practical and popular among the CeReTechs partners.

The Afghan Computer Center (ACC)
The Afghan Computer Center (ACC) was founded in 1970. The centre was a member of UNESCO, RINSCA (Regional Informatics Network for South and Central Asia) and ESCAP. The centre's shareholders were the Ministry of Finance, Da Afghanistan Bank, ARIANA Airways, National Insurance and Central Statistics Department. The main functions of the centre were:
• Keeping records on foreign trade.
• Maintaining updated information of pension beneficiaries.
• Issuing bills for utilities.
• Operating a database for the bank.
• Maintaining a statistical database
• Managing the ticketing and reservations system for ARIANA Airways.
The first system installed was an IBM 360 which was imported in January 1971 by Afghan Business Machine (ABM). It was based at the Inter-Continental Hotel, Kabul. ABM was founded jointly by the Afghan National Bank, ARIANA Airways and Afghan Textile. In 1978, ABM processed all the statistics of the country under the supervision of the Central Statistics Department. In the same year UNDP donated two IBM 34 systems and two printers.

In the early 1980s ACC purchased two mainframe EC-1055 systems from Robot Ron, a German company. ACC was operating 21 personal computers in 1991. ACC was also conducting training programs in both hardware and software. In 1992 ACC purchased two mainframe IBM 4381-R14 from TELTRAD. The centre has not been operational since 1993 and there are no immediate plans to rehabilitate the organization.

Donor Community Contribution
The donor community and UN organizations such as UNDP, UNISCO, USAID are involved in a number of projects regarding ICT by providing personal computers to government offices and arranging hands-on training for the employees.

The World Bank in partnership with the MoC has installed a large system, which provides Internet connectivity to a number of ministries and an inter-ministerial intranet, which will facilitate these ministries and governmental organizations to share their documents and exchange mail. The following are the ministries and government organizations covered by this project:

• Ministry of Finance

- Ministry of Foreign Affairs
- Ministry of Reconstruction
- Ministry of Communication
- Da Afghanistan Bank (Central Bank)
- Presidential Palace
- Afghan Assistance Coordination Authority

There are two Distance Learning Centers (DLC) in the project, one located in the AACA office and the second in Kabul University. The former is operational and provides video-conferencing facilities to government officials, NGO's and other donor agencies. The project has also provided telephone facilities through PABX technology, which connects with the various ministries providing them with international telephone connections. The technology used, is a VSAT link using C band at the central hub with 1.5mbs, which is connected to other sites via E1 microwave technology. This project is funded by the World Bank and facilitated by UNDP and AACA. The project is part of the Global Distance Learning Network.

UNDP has an ISP project on the list of its up-coming projects in partnership with the MoC. UN organizations have a number of projects regarding the Internet. UNDP has provided a KU band satellite connection to an ICT centre to TTC MoC, UNDP has also helped connect a computer training centre in the Ministry of Women Affairs to the Internet facility in the UNDP main office through an E1 microwave link. UNISCO has installed KU band satellite connections in a number of locations: the Main Library and Faculty of Journalism of Kabul University, the Ministry of Culture and Information, ARMAN News, Karwan Democracy office, AINA Media Center. The Ministry of Education will be connected to the Ministry of Culture and Information through a microwave link.

State of ICT Projects in the Country as of January 2003

Organisation	Title	Intended Results
ARTF		
UNDP		
World Bank		
Ministry of Finance		
Ministry of Communication		