

**The National Communications and  
Information Technology Plan  
The Vision Towards the Information Society**

**MINISTRY OF COMMUNICATIONS AND  
INFORMATION TECHNOLOGY  
KINGDOM OF SAUDI ARABIA**

**1426H**

This is an unofficial Translation of the Arabic text of the National Communications and IT Plan

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## Preface

The Kingdom of Saudi Arabia is witnessing noticeable growth and development in all aspects of life, which have led –by virtue of God- to its progress and prosperity. During the past few years, the Kingdom has paid increased attention to rapidly growing and fast evolving sectors; one of which is Information and Communication Technology (ICT) sector. The wise leadership of the Kingdom has realized the vital role of ICT in building Information based society, characterized by the production, penetration and processing of information. The transformation of world countries and their societies to the Information Society supports their advancement and progress, accelerates the rate of growth and development and boosts their economies. It also consolidates the continued success of sustainable economic and social development programs. In view of this, came the kind directive to formulate a National Communications and Information Technology Plan (NCITP) for the Kingdom and implement it.

In response to this directive, a comprehensive ICT plan for the Kingdom has been prepared. The plan consists of a long-term vision for ICT in the Kingdom for the next twenty years plus a five-year plan that projects the long-term vision for the first five years of the plan.

The plan is composed of seven general objectives in addition to a set of sixty-two implementation policies and twenty-six specific goals and ninety-eighth projects.

The NCITP has been prepared through direct participation of a group of specialists belonging to various governmental, academic and private sectors. In addition, workshops were conducted in preparing the plan. The participation and cooperation of these specialists has had its obvious impact on the quality and comprehensiveness of the plan.

And God is the Grantor of success,

**The Minister of Communications & Information Technology**

**Eng. Mohammed Jameel Bin Ahmed Mulla**

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## Executive Summary

Many countries around the world have realized the impact of ICT and the important role it plays in developing societies, boosting economies and increasing income for states and individuals. The world is witnessing a rapid transformation of societies to “information societies”, which rely on information and communication technologies more than relying on conventional resources. One indication of the degree of attention paid to ICT worldwide is its contribution to the international Gross Domestic Product (GDP), which grew from 5.5% in 1993 to 6.75% in 2004. The size of ICT sector in 2004 has reached 2.6 trillion dollars worldwide.

The effect of ICT on productivity and GDP is quite substantial and one illustration of this is the average annual growth rate of US economy, which increased from 1.5% (for the period 1974-1995) to 2.5% (for the period 1995-2000). This increase has been largely attributed to the increased productivity in various sectors of the society, with ICT contribution of 50%-74; in Australian economy ICT increased productivity in all economic sectors by 25%.

A further positive impact of ICT is that its industries are effectively helping in diversification of income sources and creation of new high paying job opportunities, thus reducing unemployment and increasing income of an average individual. Ireland is a good example, where ICT contributed more than 16% to Gross Domestic Product in year 2001 and in Korea, ICT contributed more than 12% for 2001. In Ireland, ICT industries helped in reducing unemployment from 17% in 1988 to only 4% in 2001.

The above figures indicate that radical shift in attitude towards ICT and high priority accorded to it in some countries has led to fundamental changes in their economies. The change in attitude towards ICT is reflected in the level of expenditure on ICT. Some countries increased their spending on ICT to more than 7% of their GDP as it is in New Zealand and China in 2004, while in the US and Korea it exceeded 6% of their GDP for ICT 2004.

Another feature of ICT is its penetration in different fields as a general purpose “enabling technology” providing a platform for all sectors, in addition to being available as an independent service by itself. And the growth of ICT employment has exceeded 4% of their total manpower in 2003, as is it in Sweden, Canada and Finland. Evidence has shown that due to ICT, radical changes and profound effects have taken place in different societies and economies of many countries around world. It is apparent from current state of affairs that ICT effectively helped to increase GDP, productivity and efficiency of all sectors; reduced expenditure in middle and long terms, provided new major sources of income, reduced immigration to cities, created new job opportunities, reduced unemployment, enabled teleworking and facilitated the utilization of capacities of women.

The National Communications and IT Plan (NCITP) composed of the two components;

- A long-term perspective for Communications and IT in the Kingdom.
- The first five-year plan for Communications and IT in the Kingdom.

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The perspective consists of long-term vision and sets of general objectives , while the first five year plan is a progression towards the long term perspective. The long-term vision for ICT in the Kingdom of Saudi Arabia is:

The transformation into an information society and digital economy so as to increase productivity and provide Communications and IT services for all sectors of the society in all parts of the country and build a solid information industry that becomes a major source of income.

To realize the above long-term vision, seven general objectives have been formulated. These objectives are concerned with promoting public services, achieving prosperity for the society, raising productivity of all sectors and consequently raising the Gross Domestic Product. The objectives also concentrate on supporting ICT industries, innovation, creativity, invention and development so as to diversify income sources and achieve sustainable economic growth, create high paying job opportunities, and raise efficiency of education and training systems through the employment of ICT. Another aim of the objectives is to bridge digital divide by enabling all societal sectors to reach and access ICT services easily within reasonable costs, in addition to enhancing National Identity and patriotism and support of Arabic language and consolidation of civilizational mission of Islam.

The five-year plan recommends directions that will consequently lead to long-term vision, through twenty-six particular objectives, sixty-two implementation policies, ninety-eight projects. Several of the aforementioned are already in progress. The main feature of these aforementioned is their comprehensive coverage of all aspects of ICT use such as e-government, e-commerce, teleworking, telemedicine, e-learning, digital Arabic and Islamic content. It also covers ICT industry, research, development, innovation, international cooperation, technology transfer, bridging the digital divide, provision and processing of information. These projects include general objectives for specific indicators.

Achieving the expected results of five-year plan in particular and long-term vision in general will depend greatly on an effective follow-up mechanism that will monitor the progress of implementation. The main purpose of the follow-up mechanism is to monitor progress towards the future vision, identify obstacles and difficulties, suggest solutions and provide alternative courses of action, and continuously evaluate the Kingdom's ICT international position and prepare for future plans.

Accordingly, the plan suggests a follow-up mechanism that relies on a set of indicators, which have been collectively given the name "Transformation to the Information Society Indicators". These indicators should closely be monitored by the Ministry of Communications and Information Technology. It is suggested that an annual report should be prepared under the title "A Report on the Kingdom's Progress Towards the Information Society". This report should clearly reflect the progress in realizing the ICT future vision in the Kingdom using current values of the abovementioned indicators at the national, sector and region levels in addition to comparison of the current domestic status with international standards. The report should be submitted to the highest royal authority.

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For an effective and complete implementation of the five-year plan, prevalence of the following is a must; continuous support from top leadership at all levels, proper organizational structuring of establishments, formulation of the necessary government regulations and laws, provision for a conducive investment environment to attract domestic and foreign capital. Additionally, good services environment that provides reliable basic services such as mail and logistic support is also imperative. Transformation to information society requires the promotion and development of educational curricula, teaching and learning methods as well as dissemination of new constructive concepts and values in the society that encourages innovation, invention, creativity, work perfection, productivity, raising initiatives and acceptance of failure.

An expectation to substantial achievements in social structure eventual goals, at the end of the five-year plan includes:

- The provision of a new income source for the state.
- Increasing the Gross Domestic Product.
- The size of locally developed ICT products to reach SR5 billion.
- Increase local and international investments in ICT to more than SR 30 billion.
- The number of jobs in the ICT sector to reach 3% of the total number of jobs, which implies a reduction in unemployment and new job opportunities. It is expected that ICT will greatly facilitate the effective employment of women and utilization of their capacities.
- The percentage of teleworking employees to reach 1% of the total workforce.
- The establishment of a Free Technology Zone, two technology parks and six ICT incubators.
- Creation of about sixty ICT manufacturing companies, based on innovation and invention.
- Establish an e-government portal through which several government services will be provided electronically.
- Dissemination of hospital and health care center management systems in more than 20% of government hospitals, all private hospitals and more than 25% of Ministry of Health centers to increase their efficiency and capabilities.
- Raising the percentage of university students in ICT specializations to 5% of the total number of higher education,
- Raising the number of Bachelor's degree graduates in ICT specializations to about 4000 students annually.
- Rehabilitation of approximately 16000 graduates from high schools and universities in ICT.
- About 400 students will be sent on scholarships abroad to study for Masters and PhD in ICT specializations.
- Training approximately a million nationals and employees on the use of ICT.
- Raising the penetration of fixed line telephones to 25 per 100 inhabitants and mobile to reach 80 per 100 inhabitants.
- The penetration of PC's will reach 30 per 100 inhabitants and penetration of Internet usage will reach 30 per 100 inhabitants.
- Introduction of computer and internet courses at all levels of education.
- Raising the percentage of interactive electronic content to 30% of educational curricula for intermediate and higher educational levels.

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- Dissemination of ICT systems and Internet connectivity in all schools.
  - Creation of a website for each school or educational institute; a portal for each academic level and a webpage for each subject.

The implementation of this plan is a collective responsibility that embraces a wide range of government sectors, private companies and professional societies. In order to achieve this, high spirits of cooperation between the various sectors should prevail.

May Allah, the Almighty, the Greatest make this plan a cause of honor and glory for this nation and help those responsible for ICT to bear the responsibilities entrusted to them.

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## **CHAPTER 1**

# **Information Technology: Importance, Bases, Reality and Aspirations**

# CHAPTER 1

## **Information Technology: Importance, Bases, Reality and Aspirations**

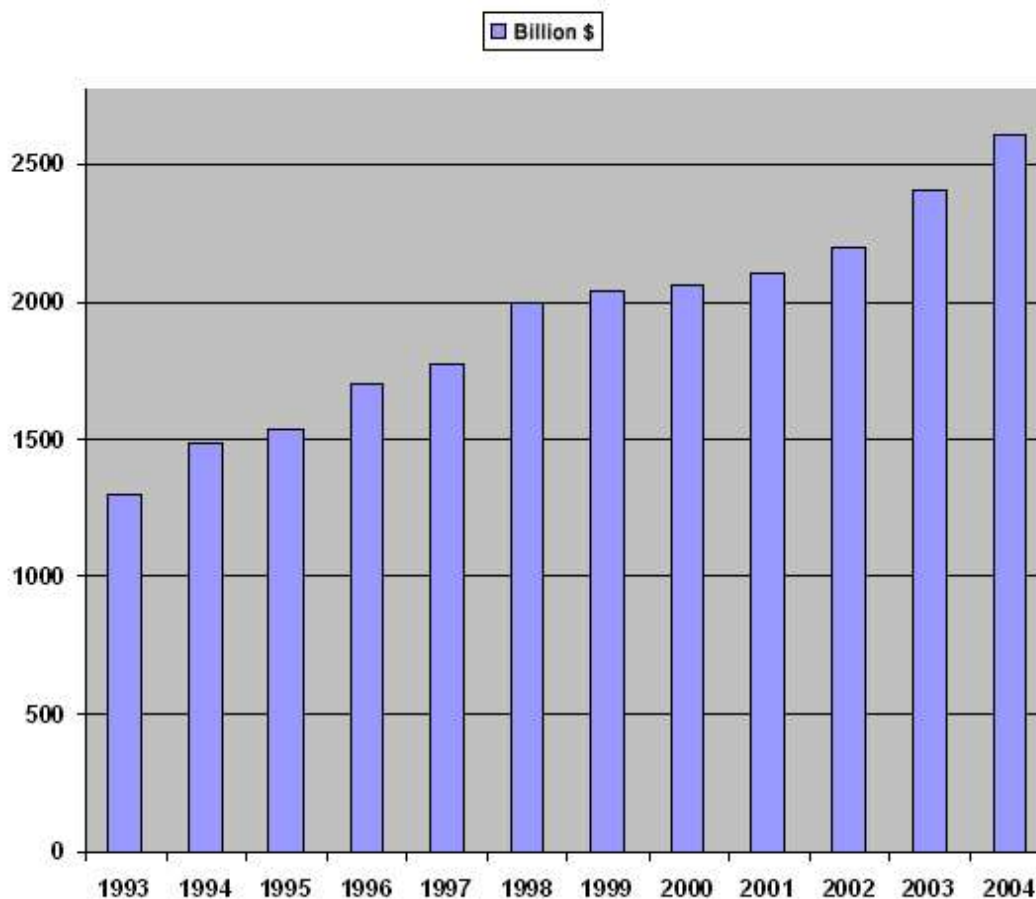
The chapter starts by highlighting and revealing the vital role played by information technology in shaping economies and improving the lives of individuals and societies in today's world. It then elucidates the bases and goals of the Kingdom's policies regarding ICT by showing what is being done relating to it in development plans in general, what is being done in ICT plans in particular and the progress that has been achieved in some related fields. After this, the chapter reviews the current status of ICT in the Kingdom

### **1.1 The Importance of Information and Communication Technology (ICT)**

Many countries have realized the importance of ICT in developing the life of an individual and society, and its role in boosting the economy and income for the individual and the state. The continuously increased use of information and communication technology (ICT) worldwide over the last decade has led to huge profits for countries and companies that invested in its production and utilization. The high degree of attention paid to information and communication technologies (ICT) in these countries led to the transformation of their societies into "information societies", societies that rely on the power of information and knowledge more than relying on other conventional resources. As a consequence, these countries attained and developed a new type of economy founded on the basis of information and communication technologies.

One of the indicators of the level of attention accorded to ICT in these countries and their involvement in its production and utilization is the size of international ICT economy, which exceeded 2.6 trillion dollars in the year 2004, as shown in figure 1, which represents 6.75% of the international Gross Domestic Product in 2004, and is still growing. And the size of this sector in Middles East is less than 2% (approximately 50billion dollars) of international ICT Sector

**FIGURE 1: THE SIZE OF THE ICT SECTOR FROM 1993 TO 2004**

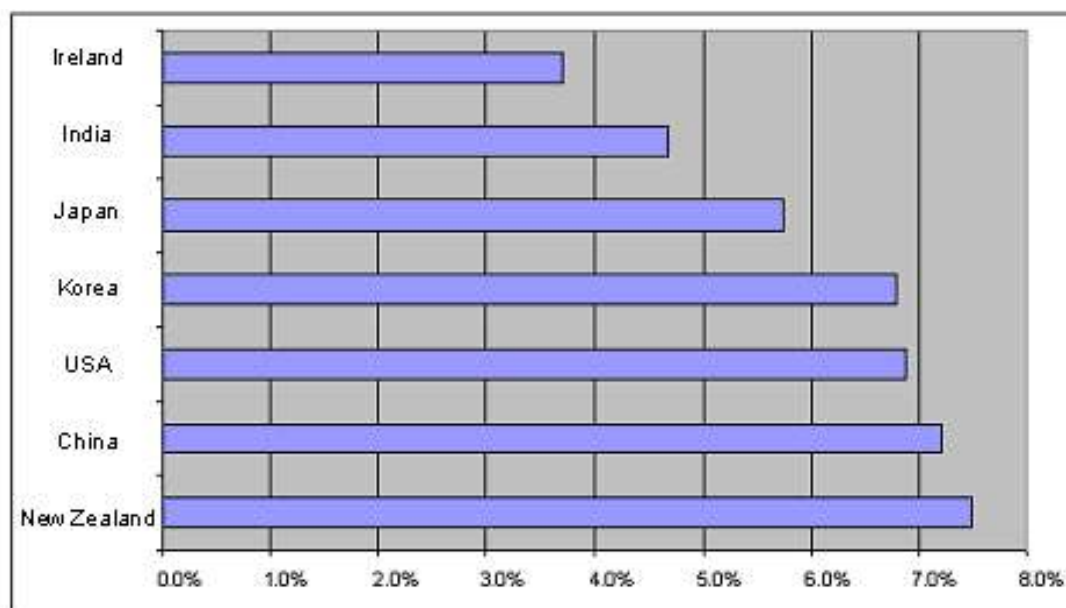


Source: IDC, WITSA

Figure 2 below shows the level of expenditure on ICT in some countries for New Zealand 7.5%, china 7.2% and Korea 6.8%.

The various components of ICT contribute differently globally Gross Domestic Product. As apparent from figure 3 below, the software industry contributed about \$260bn in 2003 (10% of the global size, the ICT equipment industry contributed around \$468bn (18%). ICT services contributed around \$494bn (19%). The Communication sector 1,378 billion dollars (53%) as shown in figure 3.

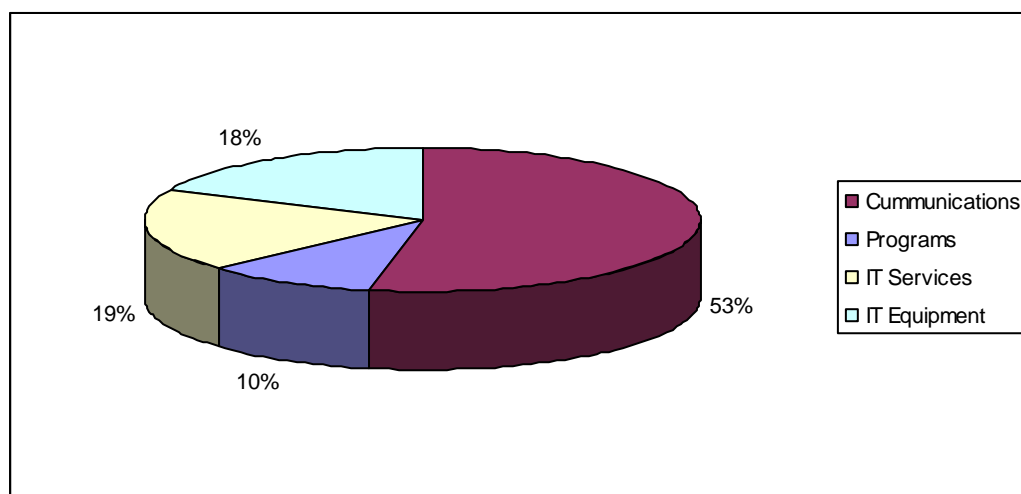
**FIGURE 2: THE LEVEL OF EXPENDITURE ON ICT BY SOME COUNTRIES FOR THE YEAR 2004**



Source: IDC, WITSA

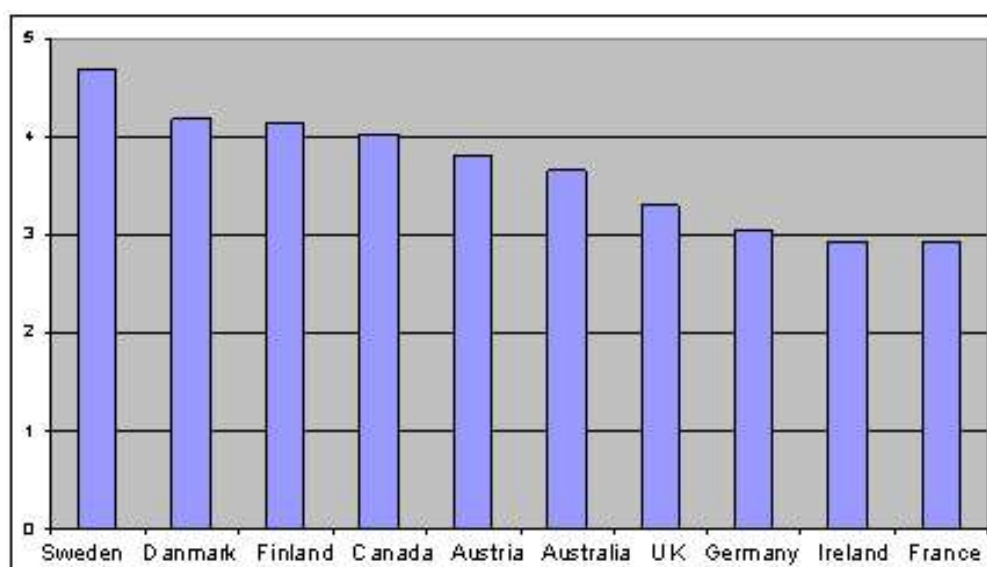
As expected, countries that accorded high attention to ICT industry and production of its technologies boosted their national incomes. For example, ICT industry in Australia contributed around 7.6% to its national income in 2001. For the same year, this percentage reached 12% in Korea and 16% in Ireland. The ICT industry not only boosted the national income but also helped in lowering the rates of unemployment. For example, the rate of unemployment in Ireland dropped from 17% in 1988 to 4% in 2001. India also succeeded in software industry and with expected exports of about 80 Billion dollars by 2008.

**FIGURE 3: THE PERCENTAGE OF THE CONTRIBUTION OF THE INTERNATIONAL ICT SECTOR COMPONENTS FOR THE YEAR 2003**



It may initially appear that saving time, reducing the need for commuting and raising efficiency (which is what ICT does) reduces demand for the workforce, and hence reflects negatively on societies. However, reality shows otherwise. As was the case with industrial revolution, which reduced the need for workforce in agricultural areas, but created new opportunities in the field of industry, likewise ICT is reducing the need for certain jobs, but is clearly creating new work opportunities in other areas. Evidently ICT is now a prominent part of most fields as an enabling technology and is available in the form of general public services and creating new work opportunities in its own and other mentioned fields due to the need for specialized personnel. An indication of this is the rate of employment in ICT sector during 2003 that reached more than 4% of the total manpower in some countries like Sweden, Finland and Canada (figure 4).

**FIGURE 4: THE PERCENTAGE OF EMPLOYMENT IN THE ICT SECTOR IN SOME COUNTRIES FOR THE YEAR 2003**



Source: OECD and ILO, 2002

As for the effect of ICT on productivity and the Gross Domestic Product, it is quite apparent and substantial. As an example, the annual rate of growth for US economy was 1.5% during the period 1974-1995, but increased to 2.5% during the period 1995-2000. This increase has been largely attributed to the increase in productivity in various sectors.

Studies have revealed that the contribution of ICT to this increased productivity is estimated to be between 50% - 74%. In Australia, ICT helped to increase productivity in all economic sectors by 25%, which led to an increase of 0.41% in the growth rate of the Gross Domestic Product during 2002. Increasing productivity has a positive effect on governmental, business, industrial, educational and medical activities, which reflect positively on growth and sustainable development.

In view of the above, it is clear that ICT provides important means to boost economy and income on one hand and improve conditions of individual and society on the other. As for economy and income, efficient utilization of ICT leads to increased productivity in various sectors, both quantitatively and qualitatively in productive and service sectors. A solid, competitive information industry will also increase the capacity to employ, and hence reduce unemployment by providing additional source of income for individual and society.

As for conditions of individual and society, ICT services greatly help in making life more prosperous by saving time and efforts and reducing expenditure in medium and long terms. ICT services also help to disseminate languages, cultures and establish an effective civilizational status for society at domestic and international levels. In addition, the employment of ICT and its products opens a new dimension of employment opportunities for all members of the society, which will hopefully reduce the rate of immigration to cities, popularize teleworking and provide new job opportunities for women.

## **1.2 The Kingdom Policies Relating to ICT**

The Kingdom's government has paid special attention to information technology, and this is emphasized in many of the five-year development plans as well as the long term national comprehensive development plan. In what follows, the bases and goals of the Kingdom ICT policies will be described in terms of the plans that have been made concerning it, the degree of progress that has been achieved in fields related to it, and the effect of information and its technologies in realizing future aspirations.

### **1.2.1 ICT in the Development Plans**

The Kingdom started making five-year development plans since 1970. The main goal of these five-year plans is to determine and indicate the directions of development for a period of five years. Despite the differences in the courses taken between these plans (due to differences in time periods and other parameters), and despite the structural changes in the national economy and its implications, these plans remained tied together by a unified strategic vision. This unified strategic vision is based on three central elements: respecting religious values, maintaining national security, achieving economic development and social stability.

The basic infrastructure for public services was the fundamental theme of the first five-year plans. As a result, education, health, water, electricity, transportation, communication and similar services witnessed considerable development during that period.

Before the five year plans concept, the first communication network between Dhahran and Ras-Tannoora was established in 1934. During the subsequent 20 years, Telegram and Telephone services were established in Mecca, Riyadh, Jeddah, Taif, Medina and other cities. The Ministry of Communication was established in 1953 to take responsibility of communications and post services. The period 1970-1975 witnessed the establishment of satellite earth stations, cable and microwave networks. The Ministry of Post, Telegram and Telephones was established in the year 1975, and was able to execute big projects to expand Kingdom's communication network during the

subsequent years. Sequences of projects were executed during the period 1975-1993 to raise the capacity of the network to 1.7 Million lines.

The first five-year plans also accorded attention to the establishment of the scientific and technical development institutions. In this respect, Saudi Arabian Standards Organization was established in 1972, The Royal Commission for Jubail and Yanbu was established in 1975, Ministry of Industry in 1976, Saudi Arabian Basic Industrial Company(SABIC) in 1976, King Abdulaziz City for Science and Technology (KACST) in 1977 and General Organization for Technical Education and Vocational Training in 1980. The governmental universities were also established starting with King Saud University in 1956. These institutions formed a strong basis for technical and scientific development that helped in achieving main goals of comprehensive development.

The third five-year plan, issued in 1980, concentrated on improving organizational efficiency and competence. The fourth five-year plan brought up the issue of supporting the private sector. The fifth plan also emphasized this and called for a long-term comprehensive national plan for science and technology. The sixth plan emphasized this call, added the issue of information technology and paid attention to the development of national workforce.

In 1994, huge project was initiated to add 1.5 million fixed telephone lines and develop (tasees) cellular mobile network and upgrade network from analogue to digital. In 1998 privatization of telecommunication sector was initiated, resulting in establishing of Saudi telecom and (tasees) Internet network in the kingdom.

Following in the footsteps of the previous plan the seventh national five-year plan was issued in 2000 (2000-2004) to indicate the directions of development until the year 2005. These directions included three major tracks: support for public services, improvement of government organizational efficiency, and cooperation in national development issues. Within this framework, the plan accorded importance to science and technology, emphasized the role of information technology and suggested the preparation of a National Communications and IT Plan (NCITP).

As for support services, the plan concentrated on defense and security, education, social and health services, scientific and technical services, including information services. As for governmental efficiency, the plan concentrated on improvement of performance of government services, rationalization, reduction of expenditure, improvement of equipment operational efficiency, maintenance and utilization and other similar issues. In cooperation track, the plan emphasized the importance of cooperation on issues relating to consolidation of the role of private sector in development, the move towards Saudization of jobs and re-habilitation of the workforce to improve its efficiency.

The use of ICT in the above areas (public services, government work and cooperation between national entities) helps greatly in promoting and consolidating development efforts in these tracks. The production of this technology will also guarantee a local source for this technology, or at least parts of it. The use and production of ICT will also help in generating new jobs for citizens.

As for supporting the role of science and technology, the seventh five-year plan suggested three main topics: science and technology in national issues, the future perspective for science and technology, and the practical procedures that should be followed to promote science and technology. The national issues part in the plan of science and technology included water services, education, non-oil income, government organizational structures and informatics. The future perspective part of the plan indicated the importance of narrowing the gap between the Kingdom and developed countries by 2020. The practical procedures part concentrated on consolidating awareness, education, innovation and cooperation. In view of previous international experiences, the use of ICT is bound to boost work in the above three areas (national issues, future perspective, practical procedures).

The seventh five-year plan stated three objectives for making Saudi National CIT Plan, within human resources track. The first objective stresses that ICT should be employed to support economic development as well as science and technology. The second objective attracts attention to the preparation of the basic foundations for ICT; communication network and information content. The third objective relates to dissemination of ICT services and making them available for all, so as to spread their benefit.

One of the distinguishing features of eighth five-year development plan (2005-2009) is that it concentrated on Kingdom's strategic areas, dedicating a full chapter to ICT. The ICT chapter included an analysis of current status of ICT in the Kingdom, stressed importance of transformation into an information society, and discussed the main issues and challenges facing ICT sector in the Kingdom. These issues included low level of Arabic digital content, digital divide and importance of providing electronic services. The eighth development plan also presented the general features of the future vision for ICT in the Kingdom and development strategies that will help to realize this vision. The eighth plan relied on NCITP for the Kingdom (this document) and recommendations of International Information Society Summit. It may be worth mentioning that the Kingdom Communications and IT Plan integrates with the 8<sup>th</sup> development plan to realize the development objectives for the period 2005-2009.

### **1.2.2 Information Technology in the National Plan for Science and Technology:**

The responsibility of formulating a complete long term national plan for science and technology was delegated to KACST and Ministry of Economy and Planning. The long term national policy for the period 2001-2020 have been formally approved by Council of Ministers on 27/4/1423 H. In what follows, we will discuss the significance of this policy, its basic goals and then discuss what has been stated about ICT in its strategic foundations and the policies related to these foundations.

Within the framework of its basic goals, the national policy for science and technology indicated that scientific and technological development should be directed towards the maintenance of national security, serving comprehensive development, raising the standards of living as well as securing the future of the citizen and participating in building a human civilization enlightened by Islamic values. The national policy for science and technology adopted ten general objectives, ten

strategic foundations (basic elements) and ninety directives or policies related to them. The tenth strategic foundation dealt with information and its technologies and stressed the importance of providing scientific and technological information and conducting whatever possible to make it accessible under regulations and laws that conform to objectives and conditions of the Kingdom. To achieve this, the document suggested eight policies which included the move to prepare a national ICT plan that conforms to directives and objectives of national policy for science and technology and support comprehensive development in the Kingdom. Table 1 below shows the strategic element concerning ICT and the related eight policies:

**TABLE 1: THE STRATEGIC FOUNDATION REGARDING ICT AND THE POLICIES RELATED TO IT IN THE NATIONAL POLICY FOR SCIENCE AND TECHNOLOGY DOCUMENT**

Policies of the Strategic Foundation Regarding ICT	
1	Support and develop national databases for science and technology, assure that they are easily accessible and continuously update them.
2	Adoption of national systems and programs that encourage the production, transfer, dissemination and exchange of information and simplify their use.
3	Support and development of science and technology information systems and facilitation of their acquisition in a manner that enables the Kingdom to keep abreast with the information age.
4	Interconnect the scientific organizations and research centers using a high speed national information network, so as to facilitate the exchange of expertise inside and outside the country and boost scientific research and technological development.
5	Provide the necessary machineries that guarantee the security and protection of information.
6	Consolidate and support the position of the Arabic language in the area of ICT.
7	Concentration on the indigenization and development of information technologies that have an effective impact on the competence and efficiency of information and its services in the Kingdom.
8	Preparation of an ICT national plan that conforms to the objectives and directives of the national policy for science and technology and supports comprehensive development in the Kingdom.

Table (2) below describes the other nine strategic foundations in the national policy for science and technology and policies related to each of them, in particular those related to ICT. The table also gives, in context of each strategic element, suggestions for ICT-related courses of action that support the corresponding policies. And to complement these recommendations, the policies of strategic foundations related to ICT are given in Table 1.

**TABLE 2: THE STRATEGIC FOUNDATIONS THAT ARE NOT DIRECTLY RELATED TO ICT**

	Topics of Strategic Foundations	Policies relating to ICT	Suggested Contributions for ICT
1	Development of a system for science and technology based on a comprehensive vision which is capable of interacting with economic, social and cultural activities.	Support the basic infrastructure for the intended system and raise its efficiency.	Support the basic information infrastructure for the whole Kingdom.
2	Activation of the role of education and training and raising their efficiency and response for new developments and needs	Expanding technical education and vocational training	<ul style="list-style-type: none"> <li>• Application of the suggested policy for ICT education and training</li> <li>• Employment of ICT to support education and training</li> </ul>
3	Improvement of national research and development capabilities to satisfy societal needs and development requirements	<ul style="list-style-type: none"> <li>• Creation of new research and development agencies</li> <li>• Increase the workforce</li> <li>• Support domestic and international cooperation.</li> </ul>	<ul style="list-style-type: none"> <li>• Application of the suggested policies for ICT</li> <li>• Support the recommendations relating to research, innovation and development in ICT</li> </ul>
4	Adoption of scientific and technological courses of action that satisfy the needs of security and development	<ul style="list-style-type: none"> <li>• Pay attention to the areas of water, defense, oil, petrochemicals and Hajj</li> <li>• Pay attention to the areas of electronics, communications and information</li> <li>• Track promising opportunities.</li> </ul>	<ul style="list-style-type: none"> <li>• Support the employment of ICT in consolidating the mentioned areas</li> <li>• Adoption of ICT</li> <li>• Support the utilization of ICT in tracking promising opportunities</li> </ul>
5	Support, development and diversification of financial resources for the suggested scientific and technological system	Utilization of international cooperation, grants and large development projects contracts.	Invest part of the international contract values in the development of domestic ICT industries.

6	Transfer, adaptation, indigenization of suitable technologies that raise the productivity and competitiveness of product and service sectors	Support and encourage the transfer of technologies suitable for sustainable development	Attach importance to information technologies that are suitable for improving productivity and competitiveness of product and service sectors and support the recommendations for development of ICT industries
7	Support and foster national manpower's innovative and inventive capabilities	<ul style="list-style-type: none"> <li>• Support scientific societies.</li> <li>• Setting up projects for innovators</li> <li>• Activation of the role of family and society</li> <li>• Exposition and publication of achievements in the media</li> </ul>	Application of the suggested policies to innovators in the area of ICT
8	Development of the regulations governing the operation of science and technology base and raising the efficiency of its administration	Development of the organizational structure, administration methods for science and technology organizations and regularly evaluating them	Employment of ICT in supporting science and technology base
9	Support scientific and technological cooperation at the Gulf, Arab, Islamic and world levels	Encourage cooperation between scientists and science institutions	<ul style="list-style-type: none"> <li>• Encourage cooperation in the ICT areas</li> <li>• Employment of ICT in consolidating the required cooperation</li> </ul>

### 1.3 The Current Status of ICT in the Kingdom

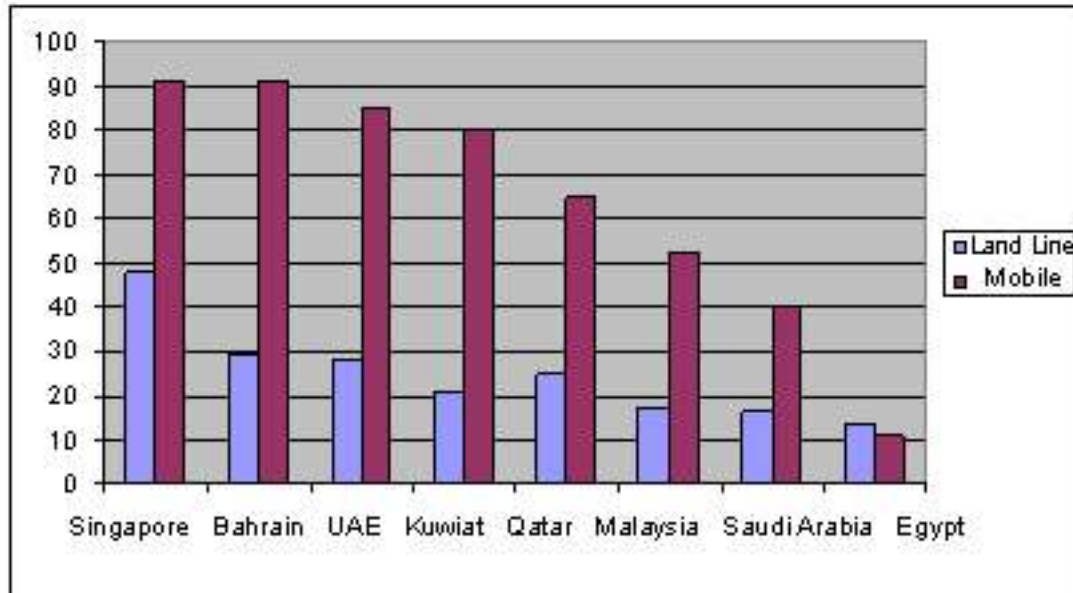
This section provides a brief account of the current status of ICT in the Kingdom compared to the world wide situation. The main motivation is to lay the grounds for introducing the intended plan and its future directives in the second chapter of this document.

#### 1.3.1 Basic Indicators for the Information Society

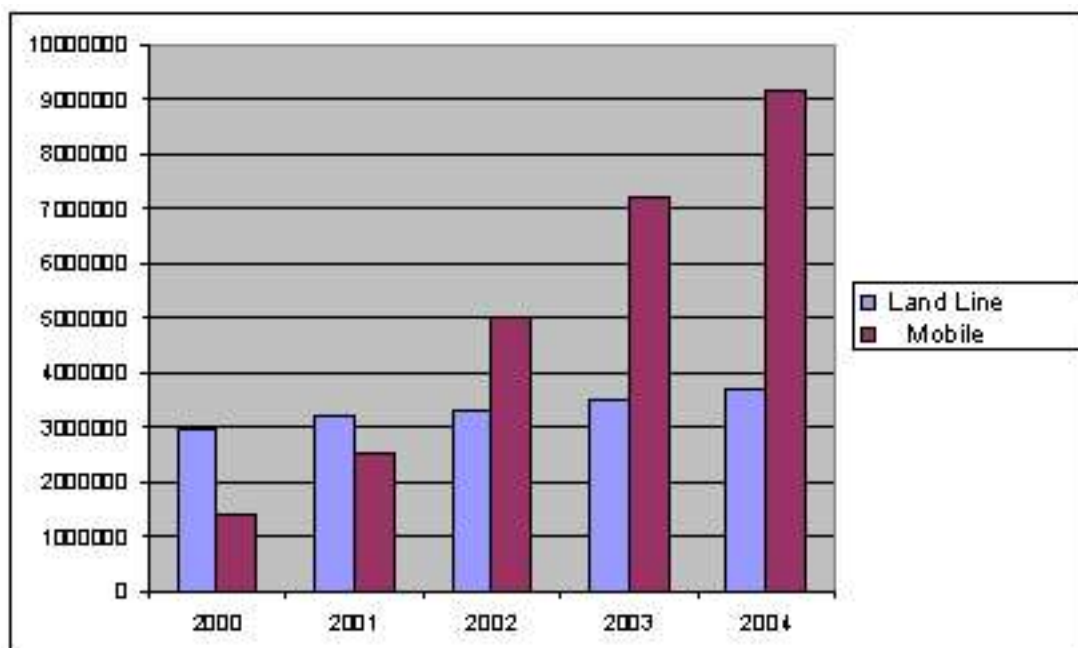
A number of indicators are usually used to prove the prevalence of the basic elements of the information society. Some of these indicators are the number of fixed phone lines, the number of mobile phone lines, the number of personal computers and the number of Internet users per 100 inhabitants. These numbers reached the following

for the Kingdom in the year 2004: 16.2% for fixed phone lines, 40.3% for mobile phone lines – with a total of 56.5% for both. This percentage is low compared to developed countries, like Singapore, in which the percentage reached 135% for both, or developing countries like Malaysia in which the percentage reached 70%, or even some Arab countries like Bahrain where this percentage reached 120% and the UAE in which this percentage reached 113%, and Kuwait where the percentage reached 101% and Qatar, where the percentage reached 90%. Figure (5) shows dissemination of fixed and mobile phones for some countries in 2004.

**FIGURE 5: THE PERCENTAGE OF FIXED AND MOBILE PHONES DISSEMINATION FOR THE YEAR 2004**

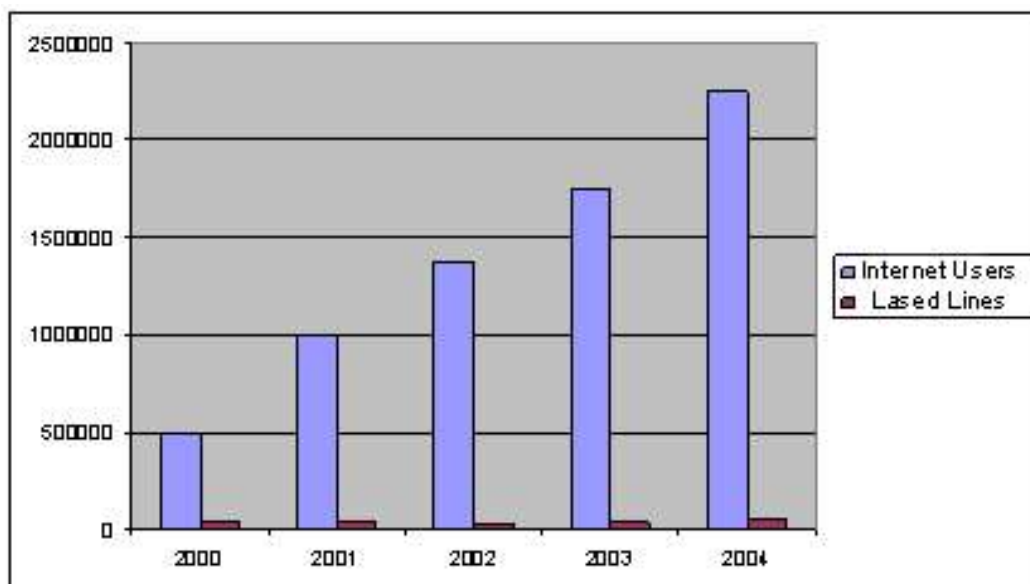


**FIGURE 6: THE PERCENTAGE OF FIXED AND MOBILE PHONE IN THE KINGDOM FOR THE PERIOD 2000-2004**



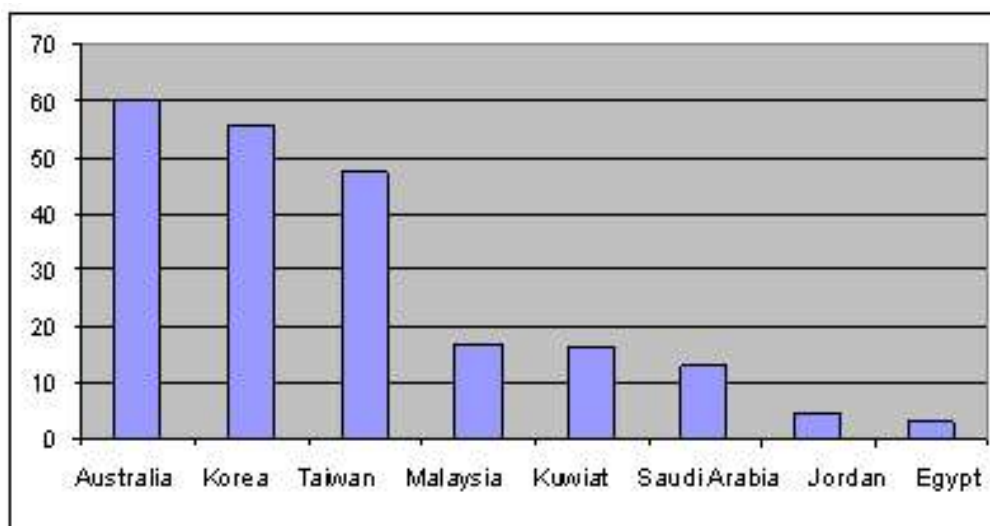
The country has witnessed a great increase in mobile phones and the usage of internet between the years 2000-2004, while leased lines did not show any increase during the same period, as shown in figure 6 & 7. And this trend is in line with most of other countries during this same period. ICT companies are currently undertaking expansion projects and it is expected that number of leased line will increase substantially by 2006.

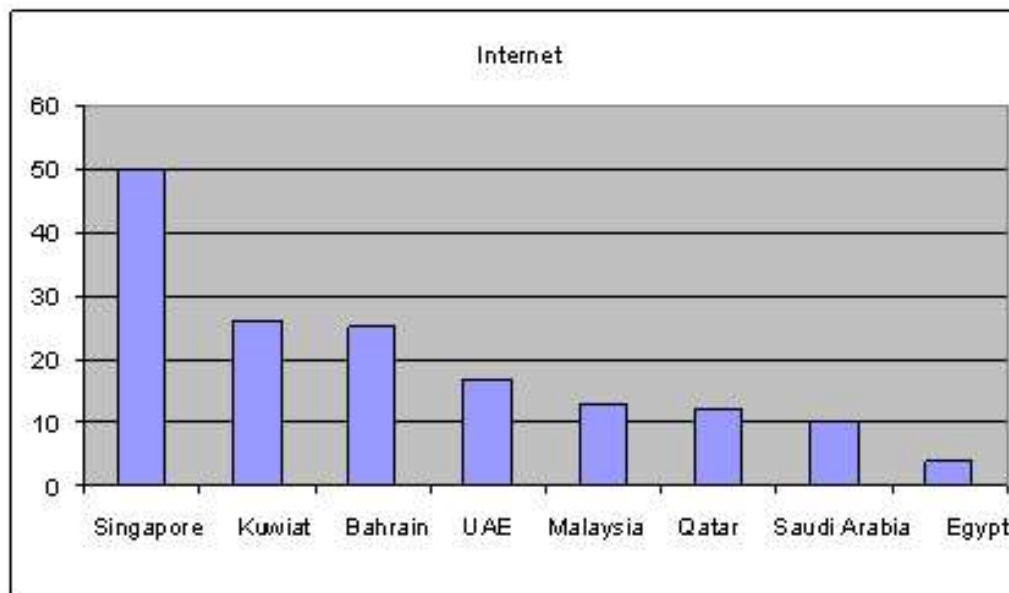
**FIGURE 7: GROWTH OF THE NUMBER OF INTERNET USERS AND THE NUMBER OF LEASED LINES IN THE KINGDOM DURING THE PERIOD 2000-2004**



As for personal computers and Internet usage, these indicators were as follows for the Kingdom in 2003: 13% for personal computers and 10.3% (2004) for Internet users. Comparing these with developed countries, we find that the above indications are approximately 60% for personal computers in Australia and 50% for Internet user per 100 inhabitants in Singapore as shown in figure 8 and 9.

**FIGURE 8: THE PERCENTAGE OF PC DISSEMINATION IN THE KINGDOM FOR THE YEAR 2003**



**FIGURE 9: THE PERCENTAGE OF INTERNET USERS FOR THE YEAR 2003**

### 1.3.2 Organizational Environment:

The Kingdom, like most other countries, realized the importance of the ICT sector and decided to liberate it and open it for competition. Accordingly, the High Council of Ministers issued resolution (74), dated 5/3/1422, approving the Telecommunications Statute and the Ordinance of the Communications Commission. This has been followed by the Royal Decree (M/12), dated 12/3/1422 which incorporates the establishment of the Communications Commission to be in charge of the communications sector and open it for competition. Later on, and in the context of the re-organization of the government sector, the Royal Decree (A/2), dated 28/2/1424 has been issued, adding information technology to the responsibilities of the “Ministry of Telephones, Post & Telegram” and the “Communications Commission” and changing the names of these to “Ministry of Communications and Information Technology” and “Communications & Information Technology Commission” respectively.

In 1424H, the Kingdom offered 20% of STC shares to public, in addition to allocating 10% of its shares, half and half to the Public Pension Agency and the General Organization for Social Insurance.

In 1425H, the Communication and Information Technology Commission (CITC) issued four licenses for VSAT services, one license for a second mobile phone provider, one license for third generation mobile services, and several licenses for data services providers.

Recognizing the importance of public support for ICT, and the effect of this on all aspects of development, the Council of Ministers issued resolution (155), dated 10/05/1425, reducing the recurring fees paid by STC to the government, and specifying an upper limit for these recurring fees collected from the second mobile service provider. It has also been indicated that CITC will issue a second fixed phone license and a third mobile phone service license in the year 2006.

The organizational environment for ICT involves major tracks, the most important of which are:

- Open the door for healthy competition in a manner that aids in the privatization of the sector and satisfies the requirements of the World Trade Organization. Issue licenses for ICT services and operate the underlying networks.
- Protect user and customer rights.
- Plan and manage ICT network numbers.
- Lay down the foundations and policies for universal access and universal services.
- Type approval and technical specifications for ICT equipment.
- Establish basic organizational interconnectivity between various networks of ISP.
- Frequency planning and management.
- Quality of service planning and management.
- Conditions and regulations for providing services.

Within the framework of information environment regulations and information security, the Ministry of Culture and Information issued the intellectual property law, which also protects computer systems and software. The Supreme Ulema Council issued fatwa regarding computer software copying. The Juristic Complex in the Muslim World League also issued resolutions regarding the protection of intellectual property. A permanent committee for intellectual property under the auspices of the Ministry of Industry & Commerce and members from various related sectors, is responsible for making the general policies and broad guidelines for intellectual property.

The Saudi Monetary Agency issued the necessary regulations for performing bank transactions on the Internet. The Ministry of Municipality and Rural areas issued the general terms and conditions for Internet service providers. Currently, the Ministry of Communication and Information Technology is formulating a law regarding electronic transactions. KACST has been formulating the necessary regulations regarding the Public Key Infrastructure (PKI), which includes digital signatures and electronic certification issues. This task has been recently delegated to the Ministry of Communication and Information Technology. The Ministry of Communication and Information Technology prepared the electronic transactions law draft, which emphasizes the importance of combating electronic crime.

### **1.3.3 The Use of Information Technology in Society:**

As for ICT exploitation to provide various services, the Kingdom has witnessed a move towards “teleworking” in the sectors of journalism and publishing, intellectual practices and Internet sites design. It is worth mentioning that the seventh five-year development plan brought about the issue of teleworking as a type of work that suits Muslim woman and helps to utilize the capacities of people with special needs. World-wide indicators for teleworking implementation revealed that 43% of Australian companies apply this type of work. In Ireland, teleworking is implemented in 12% of the working environments and 8% in Malaysia. As for Canada, 11% of the 10 million workforces perform their work entirely from home. The percentage of those who perform their work partially from home reaches 40%.

As for e-commerce, the general observation is that its use in the Kingdom is still very limited. This may be mainly due to the incompleteness of the underlying infrastructure and related regulations. However, on the bright side, an e-commerce committee, headed by the Ministry of Commerce and Industry, was formed on 27/10/1419H. This committee pointed out a number of tasks that should be taken into consideration in order to develop and promote e-commerce. The duties of this committee have been recently delegated to the Ministry of Communication and Information Technology and its name has been changed to “the Permanent Committee for Electronic Transactions”. It may be appropriate in this regard to draw attention to the advanced banking services provided by Saudi banks for their customers, plus the efforts of large companies such as SABIC and ARAMCO.

Regarding information services in the public sector, the Kingdom took the initiative of introducing ICT in its various sectors a long time ago. However, this early attention did not raise information services to the desired level due to a number of obstacles. The current status studies indicate that ICT in the public sector suffers from a number of shortcomings, chief among which is the weak managerial representation of ICT in the various public sector organizational structures, the weakness of strategic planning for ICT in these organizations and the lack of allocated budgets for ICT, something that weakened ICT training and employment. In addition, most ICT centers do not have the proper administrations that organize their work or the operational procedures that guide the implementation of their functionality. It has also been observed that there is no coordination entity that supervises the cooperation between these centers and ensures conformance to unified standards and specifications, something that leads to repetition and duplication of efforts in large and small projects, despite the similarities between these projects and systems. This in turn leads to big wastages of resources in governmental institutions. Employment procedures and financial incentives for ICT in the public sector should also be updated to keep abreast with development in this area.

As for e-government, some government institutions and agencies started providing some of their autonomous or joint services electronically. Examples of these are the ministries of Interior, Foreign Affairs, Hajj, Labor, Finance and General Investments Commission. Examples of services that are provided electronically are information exchange, issuing visas and payment of fees and the provision of official electronic forms. The Saudi Arabian Monetary Agency operates and controls the payments systems in a secure way electronically and the system is named as SADAD. And Ministry of Finance “General Investment Fund” to establish a Saudi project for exchange of information electronically called “Saudi EDI” that concentrates initially on global trading sector such as import and export services. Ministry of Interior initiated the smart card project that stores information, making it possible to store personal information electronically, in addition to possibility of electronic certification storage. Ministry of Communications and IT started the e-government program in conjunction with Ministry of Finance and CITC and started officially in 1425/1426H (2005) as a joint program. Its role is to motivate and enable government agencies to implement in addition to developing a governmental portal for services and to work on the presence of the government infrastructure, implementation plans and policies and specs for joint e-government projects. The program is called “Yesser”.

As for information services in the health sector, many hospitals like Ministry of Health hospitals, military hospitals, National Guard hospitals, King Faisal Specialist hospital, university hospitals and a number of private hospitals and medical centers automated various operations. However, the systems used by these hospitals lack standardization and inter-operability. It should be pointed out here that King Faisal Specialist hospital surpassed other Saudi health institutions through its early adoption and employment of telemedicine systems (since 1993).

### **1.3.4 ICT Industries**

Regarding ICT industries in the Kingdom, a number of PC assembly projects appeared lately as well as the accumulation of some expertise from the projects of the Economic Offset Program and its specialized companies (in the areas of electronics, software and internet). It has been observed that the number of local ICT companies reached 2000 at the end of the year 2004. However, most of these companies are just marketing, selling or operating non-local products. The General Investment Authority and the Saudi Authority for Industrial Cities and Technological Regions are currently involved in the development of the ICT industries investment environment, which will, God willing, consolidate the future projects of ICT industries in the Kingdom. Comparing with other countries, it is observed that Ireland and India, for example, succeeded in building a software industry that is internationally competitive.

### **1.3.5 Developing Human Resources**

In the area of human resource development, education and adaptation, the effort of the Ministry of Education in promoting curricula, preparing teachers, developing student skills and capabilities in dealing with ICT is also substantial. In addition, the Ministry of Education is supporting computer clubs in schools to promote ICT hobbies and their constructive objectives.

Regarding the preparation of ICT manpower and training, several educational and training bodies are taking care of the job, quantitatively and qualitatively, in order to prepare the necessary manpower that satisfy the market demand, these include the Ministry of High Education, universities, colleges, the General Organization for Technical Education and Vocational Training, the general institutes under its control, the Institute of Public Administration plus the Chambers of Commerce and Industry. This helps in developing education and training in ICT fields, for preparing the manpower suitable for it qualitatively and quantitatively. In this respect all levels of education are involved, including university education, diploma level education, certification programs offered by international ICT companies, plus special training courses. The statistics reveals that there more than 12000 university students in ICT specializations and more than 13000 students in specialized ICT diplomas (one year at least). Graduation statistics for the same year showed that around 1000 university ICT students and around 2500 diploma ICT students have graduated. Despite these increasing efforts, it has been observed that there are still big deficiencies in high and specialized diplomas in sub-specializations such as information security, computer Arabization and others. It has also been observed that there are no joint programs between ICT and other specializations, despite the importance of merger with fields such as Islamic jurisdiction, security, education, medical....etc.

Regarding the employment of ICT manpower, a study conducted by the ICT plan project in 2002 revealed that the percentage of Saudi nationals working in the area of ICT in the government sector (excluding military and education personnel) is about 1% of the total workforce (about 2500 employees) and a similar 1% in the private sector (about 39000 employees). The percentage of non-Saudis in the area of ICT is 3% in the governmental sector and 83% in the private sector. Accordingly, the percentage of Saudization in these jobs is 22%, an indication that demands for ICT Saudi manpower exceeds supply. This confirms that ICT is capable of providing new high salary employment opportunities for Saudis.

## **CHAPTER 2**

# **The Long-Term Vision for Communications and IT in the Kingdom**

## CHAPTER 2

# The Long-Term Vision for Communications and IT in the Kingdom

The main objective of this chapter is to present the long-term vision of the NCITP in the Kingdom. After that, it proceeds to describe the main components of this vision, which includes the targeted future vision, the general objectives and the implementation policies. In the process, it is shown how these components are interrelated and how they complement each other to achieve the targeted future vision.

### 2.1 The Components of the Long-Term Vision

The future vision provides a long-term perception for the various ICT fields in the Kingdom. This is an important prerequisite for making detailed plans. To formulate middle-term plans (such as the five-year plans); a strategic long-term vision that governs these plans and ties them together is of great importance. In the absence of a long-term flexible vision, some short-term objectives that do not provide the best outcome on the long-term (even though they may appear logical from a short term perspective) may manifest themselves.

The long-term vision of the NCITP consists of the following components:

- Future vision.
- General objectives.

The **future vision** represents the ultimate goal or the “ICT position” that should be attained in the Kingdom. Realization of this vision requires the formulation of a number of **general objectives**. The general objectives have been identified, with reliance on the study, evaluation and analysis of the current ICT status, international experiences, future perspectives, gap analysis, information planning and development, with the added constraint that these objectives should integrate with the five-year development plans.

### 2.2 The Future Vision

The previous chapter helped in the crystallization and formulation of the strategic track for the development of the ICT sector in the Kingdom. That objective has been achieved through exposition of the importance of ICT to the life of the individual and society, the economy in general and the increasing reliance of human beings on the products of this sector. The previous chapter also helped in forming a social, cultural, environmental and economic framework through which strategic planning for ICT may be performed. The analysis of the current ICT status, the studies of weak points and strength factors, risks and opportunities, international experiences and the future outlook, all revealed that it is very important and imperative to have a “future vision” for ICT. However, this “future vision” can only be attained through a strong “national will” that drives efforts to realize it, guides its growth and development in addition to collective contributions from all sectors to activate it.

The long-term vision for ICT adopts the idea of building the “information society”, a society capable of coping with and accommodating the huge flow of information and advanced knowledge and making the best out of it, a society in which accurate information is the basis of all decisions at all levels, governmental or private. In addition, the use of information in such a society is expected to increase productivity and improve the quality of its outputs, whether they are products or services. Such a society is bound to be very competitive in all areas. The long-term vision also stresses the importance of building a digital economy based on ICT, communications and their services.

It is clear that the 21st century is witnessing a new approach in dealing with the information revolution and its future prospects: digital technology, access to it, the degree of reliance on it and its deep penetration into our daily life. Keeping abreast of the information age is no longer an option, but an obligation dictated by the current trends. In other words, what we are doing now represents the factors that decide the features of the future and shape it. Accordingly, the official stand and directives of the Saudi Government clearly indicated the importance of transformation to the information age through the bases and foundations of the National Policy for Science and Technology, the five-year plans and the long-term economic vision. Not only this, but this objective is considered to be an important national ambition that all sectors of the state should cooperate to achieve.

The objective of the long-term vision of Communications and IT in the Kingdom of Saudi Arabia is:

The transformation into an information society and digital economy so as to increase productivity and provide Communications and IT services for all sections of the society in all parts of the country and build a solid information industry that becomes a major source of income.

The “information society” is a society that relies on the power of information and knowledge more than relying on material conventional resources such as capital, land, size of population, physical resources... etc, for it is clear that ICT represents a major civilizational transformation for mankind, and the world is gradually shifting from the "industrial society" to the "information society". The characteristics of this new type of society manifest themselves in terms of the concept of "information power", a new form of power that can be transformed and transmitted across computer networks and capable of accommodating most human activities in areas such as arts, science, management, education, production, services, commerce, economics etc. The new information society depends on two major aspects:

- Intellectual output or content.
- Fast electronic (digital) processing and communication techniques to transmit and exchange information".

The Digital economy represents a new form of economy also known as "electronic economy", "modern economy". The features of this economy started to shape out with the appearance of the Internet, the growth of globalization, the liberalization of the

long distance communication sector, plus new developments in ICT and communication industries. A common feature between the above set of developments is prevalence of technical standards in underlying ICT and communication infrastructure, something that rendered it available for all and not just under the monopoly of its producers. This led to the creation of a new work environment that crosses traditional geographic boundaries and break away from the traditional patterns of work and commerce.

Building the information society helps greatly in increasing productivity, raising the efficiency of work, guaranteeing the availability of all ICT services for all sections of the society in all parts of the country and will enable people to deal with ICT easily and efficiently. It will also help in building a solid information industry that will strengthen the digital economy -in its wider sense- and help to attain it. The digital economy will in turn help to increase the average individual income, provide new employment opportunities, increase rates of exports, and subsequently become a major source of income. In view of the above, it is clear that the transformation of the Kingdom to an information society and the attainment of a digital economy is a national responsibility that requires collective efforts from all types of organizations: administrative, research oriented, scientific, product or service providers. The NCITP takes the long-term vision into practical implementation by seeking the realization of targeted future vision through a number of general (strategic) objectives.

### **2.3 The General Objectives:**

The connotations of the future vision for ICT in the Kingdom aim to transform the Kingdom to an information society; build a solid information industry and attain the foundations of the digital economy. The "future vision" is based on a set of primary drives supported by a number of subsidiary ones. The primary drives consist of:

- The optimum utilization or employment of ICT in all fields.
- Building an ICT industry

The subsidiary supporting drives are:

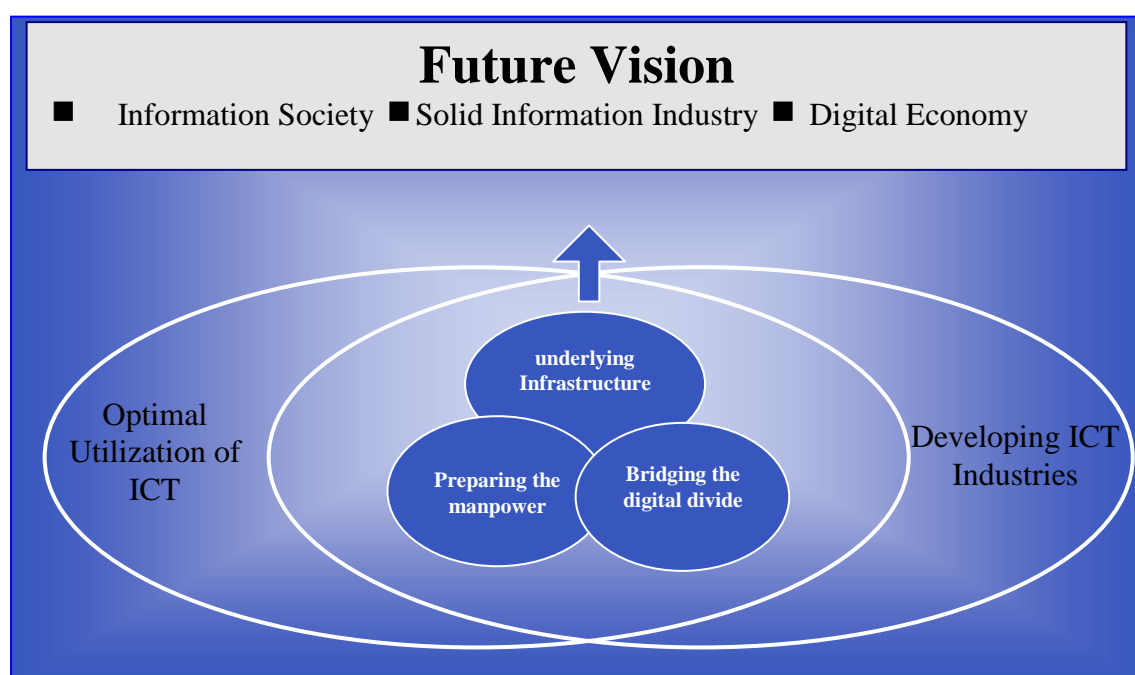
- Regulation of the ICT sector.
- Preparing the infrastructure.
- Preparing the qualified manpower.
- Bridging the digital divide between individuals of the society on one hand, and between the local society and other advanced societies on the other.

The integration of these efforts is a vital necessity for realizing the future vision. Every drive should be given the utmost importance, so as not to become an obstacle in the way of other drives or cause any delay. Figure (10) shows the relation between these drives and the future vision.

To realize the future vision, seven general objectives for NCITP have been formulated. The realization of these objectives, will lead -GOD willing- to the fulfillment of the future vision. These seven objectives are described in table (3). The general objectives, as a whole, seek the optimal utilization of ICT in all sectors, governmental or private, to raise productivity, achieve prosperity, diversify income sources and reduce expenditure. They concentrate particularly on reliance on

scientific research, development, creativity and innovation in ICT industries, Gulf, Arabic, Islamic and international cooperation and the effect of this on economic, social and intellectual development. The general objectives also seek to raise the efficacy and caliber of education and the preparation of qualified and trained national manpower through the utilization of modern education and training models that rely on ICT, interactive content and distance learning. The plans also aim to catalyze the development of digital Arabic content for the sake of dissemination of Arabic and Islamic culture, the realization of cultural diversity and the facilitation of access to information for all sections of the society.

**FIGURE 10: THE FUTURE VISION AND ITS MAJOR COMPONENTS**



**TABLE 3: THE GENERAL OBJECTIVES OF THE NCITP**

	Objectives	Domain
1	Raising the productivity of all sectors, dissemination of electronic governmental services in business, social and health, and encouragement of teleworking through the optimum utilization of ICT.	Services and productivity
2	Regulating the ICT sector in a form that guarantees impartiality, stimulation and attracts investment.	Sector regulation
3	Building a solid information industry that is locally and internationally competitive, through reliance on scientific research, innovation, development in strategic areas, regional and international cooperation, so that it becomes a major source of income.	Information industries, innovation and development
4	The optimum utilization of ICT at all levels of education and training.	Education and training.
5	Enable all sections of the society in all parts of the country to deal with ICT easily and efficiently so as to bridge the digital divide.	The digital divide
6	The optimum utilization of ICT in serving the Arabic language and consolidating the civilizational mission of Islam, patriotism and Arabic language.	Islam, (Al WATAN), Arabic language
7	Provision of qualified, trained human capabilities, from both sexes, in the various specializations of ICT through the preparation of national manpower and the attraction of foreign expertise.	Development of human resources and the preparation of manpower.

## **CHAPTER 3**

# **The First Five-Year Communications and IT Plan in the Kingdom**

## **CHAPTER 3**

# **The First Five-Year Communications and IT Plan in the Kingdom**

This chapter introduces the first five-year plan of the NCITP, describes its content, and then gives a detailed account of its components. The components include the specific objectives, execution policies, projects and mechanisms.

The long term vision of the NCITP provides a clear vision that should be realized. On the other hand, the first five-year plan represents the first projection of the long-term vision for the first five years of the NCITP and may be considered the nucleus for this long-term vision in the Kingdom.

The five-year plan is composed of twenty-six specific objectives, sixty-two executive policies and ninety-eight projects that will -God willing- lead to the realization of the specific objectives of the five-year plan and hence, the realization of the general objectives of the long term vision. Because the five-year plan represents the first nucleus for NCITP in the Kingdom, it has been developed with due consideration to the studies of the current ICT status in the Kingdom, objectives and guidelines of the Kingdom's policies regarding ICT, experiences of other countries, plus knowledge about modern technology and the future trends in the area of ICT. To develop the five-year plan, a well-defined methodology based on the fundamentals of strategic planning and the local environment requirements have been adopted.

The future vision for ICT in the Kingdom, its general objectives, plus the methodology for preparing the five-year plan, represent the framework within which ICT can be managed, planned for, and utilized. In this chapter, the five-year plan will be briefly discussed through the description of its specific objectives, implementation policies, projects and mechanisms. The description is organized according to long-term vision general objectives. The details of projects and mechanism are given in appendix (1), together with the implementation priority. Every project is given a sequence number where the first part represents the general goal number, second part represents the specific goal and the third part represents the project sequence number. It should be noted that the five-year plan has been reached through a gradual development process that involved intensive consultations which drew participations from all related agencies, including government sectors representatives, private sector representatives plus a collection of independent experts and specialists.

### **3.1 The First General Objective**

The first general objective of the long-term vision of the NCITP aims at raising the productivity of all sectors, dissemination of governmental, commercial, social and health services electronically for all people, encouraging teleworking through best possible utilization of ICT. The five-year plan starts realizing this objective gradually through five specific objectives, fifteen implementation policies and thirty-one projects as follows:

<b>Specific Objective (1): Securing the financial and human resource support for ICT projects in the governmental sector.</b>		
	<b>Implementation Policies</b>	<b>Projects</b>
1	Allocate enough budgets for ICT projects in all government agencies.	Provide support for ICT projects budgets in government agencies: (P-1-1-1).
2	Raise the administrative level of ICT in the governmental sector.	Creation of high level ICT posts in government agencies. (P-1-1-2).
3	Augment the organizational structures of government agencies with ICT centers.	Creation of ICT directorates in agencies that do not have them. (P-1-1-3).
4	Reliance on the private sector in funding and implementation of ICT projects.	Involve the private sector in funding and implementation of ICT projects in government agencies (P-1-1-4). Increase the role of the private sector in managing and operating ICT Centers: (P-1-1-5)
5	Attract qualified ICT manpower to work in government agencies.	Provide special incentives for ICT employees in government agencies (P-1-1-6)
6	Encourage ICT professional competence in the government sector.	Recognition of ICT professional competence certificates in selection for employment and in promotion. (P-1-1-7)

<b>Specific Objective (2): Apply e-Government in the Government Sector</b>		
	<b>Implementation Policies</b>	<b>Projects</b>
7	Dissemination of e-Government concepts and principles in the government sector	Prepare an e-Government plan and implement it (P-1-2-8).
		Prepare regulations for the application of e-Government (P-1-2-9).
		Develop the National Portal for e-Government services (P-1-2-10).
		Establish the e-Government network (P-1-2-11)
		Establish the National Center for Digital Certification (P-1-2-12).
		Build and distribute the national databases (P-1-2-13).
		Formulation of a mechanism to approve ICT projects (P-1-2-14).
		Setting up a unified framework for the specification of ICT projects (P-1-2-15).
		Unification of Typical Government ICT Applications (P-1-2-16)
		Establishing Frame Agreements for the Procurement of ICT Systems (P-1-2-17)
		Encourage the application of best practices in ICT centers (P-1-2-18)
		Provide adequate ICT training for government employees. (P-1-2-19)
		Application of e-Government purchases (P-1-2-20)
8	Adopt strategic planning for ICT	Prepare ICT plans in all government agencies (P-1-2-21)

**Specific Objective (3): Application of quality concepts and techniques and the development of capabilities to realize the best possible benefits from ICT.**

	<b>Implementation Policies</b>	<b>Projects</b>
9	Adoption of quality concepts and techniques.	Application of quality assurance techniques in ICT centers (P-1-3-22)
10	Ranking of ICT companies.	Develop a classification system for ICT companies (P-1-3-23).

<b>Specific Object (4): Dissemination of e-Business applications.</b>		
	<b>Implementation Policies</b>	<b>Projects</b>
11	Establish the appropriate infrastructure for e-Business.	Approve the electronic transactions Act (P-1-4-24)
12	Employ ICT to publicize domestic products.	Build an Internet website for domestic products (P-1-4-25).
13	Raise the level of ICT usage in the Business sector	Establish a center for the dissemination of ICT usage in the private sector (P-1-4-26)

<b>Specific Objectives (5): Employing ICT to Build new patterns of health services and work.</b>		
	<b>Implementation Policies</b>	<b>Projects</b>
14	Consolidate the use of ICT in the health sector.	Dissemination of hospital and health center management systems (P-1-5-27).
		Design and implementation of the unified electronic medical file (P-1-5-28).
		Dissemination of telemedicine applications (P-1-5-29).
15	Establishment of suitable environments and regulation frameworks for teleworking.	Update work practices and Laws to accommodate teleworking (P-1-5-30).
		Setting up teleworking centers (P-1-5-31).

### 3.2: The Second General Objective:

The second general objective of the NCITP long-term vision seeks to regulate the ICT sector in a form that guarantees impartiality, stimulation and attracts investments. This will enable the sector to provide high quality ICT services for reasonable competitive prices. The five-year plan will start realizing this objective gradually through eight specific objectives, fourteen implementation policies and twenty two projects as follows:

<b>Specific Objective (6): issuing licenses for providing ICT services</b>		
	<b>Implementation Policies</b>	<b>Projects</b>
1	Opening competition for providing fixed phone services	Issuing a second license for a fixed phone network during the year 2006-2007 (P-2-6-32)
2	Full liberation of mobile phone services	Issuing additional licenses for mobile phone services after the year 2006 (P-2-6-33)
3	Full liberation of other ICT services	Issuing class licenses (P-2-6-34)

**Specific objective(7): Applying appropriate regulatory controls to guarantee efficient , fair competition in providing ICT services**

	<b>Implementation Policies</b>	<b>Projects</b>
4	Provide transparent, fair and non-discriminatory Interconnection services for all ICT providers	Set up fair, transparent, non-discriminatory Interconnection policies (P-2-7-35).
5	Ensure accounting separation for ICT services to curb non-competitive activities	Setting up and implementation of a mechanism accounting separation for dominant service providers (P-2-7-36).
6	Provide affordable ICT services	Setting up and approval of a price-ceiling document for dominant service providers and making sure that it is applied (P-2-7-37)

**Specific Objective (8): Raising the Security Level of ICT Networks and Protecting Privacy**

	<b>Implementation Policies</b>	<b>Projects</b>
7	Maintaining the security and protecting the privacy of ICT networks for organizations and individuals	Formulating a regulation for ICT crimes (P-2-8-38)
		Formulating a regulation for protecting privacy (P-2-8-39)
		Setting up a Special Unit for Monitoring and Investigating Information Security Violations (P-2-8-40)
		Setting up a National Advisory Center for ICT Networks Security (P-2-8-41)

**Specific Objective (9): Optimal Use of Numbering resources**

	<b>Implementation Policies</b>	<b>Projects</b>
8	Provide number and domain names for ICT services	Update the national numbering plan regularly (P-2-9-42)
		Developing a system for number and domain name management (P-2-9-43)
9	Enable number portability	Setting up, approval and follow-up of number portability guidelines for fixed and mobile services (P-2-9-44)

<b>Specific Objective (10): Optimal Use of the Frequency Spectrum</b>		
	<b>Implementation Policies</b>	<b>Projects</b>
10	Provide the frequency bands required by ICT services and introduce them in the Kingdom	Formulating the national plan for spectrum management (P-2-10-45)
		Setting up the procedures and mechanisms for frequency spectrum allocation (P-2-10-46)
		Building a modern system for frequency spectrum management (P-2-10-47)

<b>Specific Objective (11): Provide ICT Services in all Regions of the Kingdom</b>		
	<b>Implementation Policies</b>	<b>Projects</b>
11	Dissemination of ICT services universally in the Kingdom	Setting up policies for universal service/universal access (P-2-11-48)
		Setting up a mechanism for financing and implementation of universal access/universal services (P-2-11-49)
12	Facilitate access to the Internet and improve its performance	Complete the task of restructuring the Internet (P-2-11-50)

<b>Specific Objective (12): Conformity of ICT equipment to standard specifications</b>		
	<b>Implementation Policies</b>	<b>Projects</b>
13	Protecting users of ICT equipment and network from damages and protecting the frequency spectrum from harmful interference.	Setting up and Implementation of procedures for ICT equipment type approval and registration (P-2-12-51)
		Set up and implement procedures for registration, licensing and approval of ICT equipment types (P-2-12-52)

<b>Specific Objective (13): Provide high quality information services</b>		
	<b>Implementation Policies</b>	<b>Projects</b>
14	Guarantee high quality ICT services	Setting up and approval of indicators and standards for evaluating the quality of services for dominant service providers (P-2-13-53)

### 3.3 The Third General Objective:

The third general objective of the long-term vision of the NCITP aims to build a solid ICT industry that is capable of competing locally and internationally and become a

major source of income. This can be achieved through scientific research, innovation and development in strategic areas plus regional and international cooperation. The five-year plan starts realizing this objective gradually through specific objectives, six implementation policies and eleven projects as follows:

<b>Specific objective (14): Development of ICT industries with emphasis on certain strategic domains.</b>		
	<b>Implementation Policies</b>	<b>Projects</b>
1	Provide conducive environments that encourage domestic companies to build local ICT industries.	Setting up a Free Zone for technological industries (P-3-14-54)
		Encourage investment in the ICT field (P-3-14-55).
		Setting up technology parks and incubators for ICT (P-3-14-56)
2	Direct the projects and programs of the public sector and semi-public companies towards the encouragement of domestic ICT industries.	Give priority to locally made products in the implementation of all ICT projects (P-3-14-57)
		Investing part of the outlay of international contracts in building domestic ICT industries or in buying locally built ICT products. (P-3-14-58).
3	Support efforts for the indigenization of information technology.	Setting up centers for transferring technology from universities to communities (P-3-14-59).
		Support open source software ventures (P-3-14-60).
		Treat research, development and innovation activates in government sectors as projects for which separate budgets should be allocated (P-3-14-61).
4	Encourage innovation and development projects in the ICT.	Setting up a fund to support ICT industries (P-3-14-62).
5	Sponsor gifted youth and encourage them.	Encourage youth innovation activities to develop ICT products (P-3-14-63).
6	Support studies relating to the ICT.	Establishment of an ICT research center (P-3-14-64).

### 3.4 Fourth General Objective:

The fourth general objective of the NCITP long-term vision seeks to secure the best possible utilization of ICT in education and training at all levels. The five-year plan starts realizing this objective gradually through three specific objectives, seven implementation policies and eight projects as follows:

**Specific Objective (15): Employment of ICT in supporting education and training and adoption of e-learning**

	<b>Implementation Policies</b>	<b>Projects</b>
1	Establishment of a reference agency for e-learning.	Setting up a national center for e-learning (P-4-15-65).
2	Development of educational curricula so as to include e-learning and increase the interactive digital content.	Employment of ICT and the Internet in supporting general education (P-4-15-66).

**Specific Objective (16): Preparation of all people involved in the education process (teachers, administrators, students) for the use of ICT in education.**

	<b>Implementation Policies</b>	<b>Projects</b>
3	Prepare students and education-related staff for the use of ICT.	Introduction of ICT subjects in school curricula (P-4-16-67).
		Train education-related staff on the use of ICT (P-4-16-68).
4	Consider knowledge of ICT basics a factor in screening for admission or promotion in educational institutes.	Issuing regulations for appointment, admission and promotion requirements for teachers (P-4-16-69).

**Specific Objective (17): Development of the infrastructure in educational institutes.**

	<b>Implementation Policies</b>	<b>Projects</b>
5	Raise the level of electronic readiness in all educational institutions.	Dissemination of ICT systems in all educational institutions (P-4-17-70).
6	Facilitate access to information and libraries.	Providing digital libraries. (P-4-17-71).
7	Secure the necessary funding to support ICT projects in education and training.	Provide the necessary budgetary allocations for ICT projects in education and training (P-4-17-72).

**3.5 The Fifth General Objective:**

The fifth general objective of the NCITP long-term vision seeks to enable all sectors of the society, in all areas of the country to deal with ICT easily and efficiently in order to bridge the digital divide. The five-year plan starts realizing this objective, gradually through two specific objectives, four implementation policies and seven projects as follows:

**Specific Objective (18): Dissemination of Arabic digital content on the Internet to ease access to information and knowledge.**

	<b>Implementation Policies</b>	<b>Projects</b>
1	Increase national digital content.	The National Digital Content Initiative (P-5-18-73)
		Encourage private organizations to build Arabic Internet websites and update them regularly (P-5-18-74).
		Requiring all local publishers to provide digital summaries for all books and reports published or printed locally (P-5-18-75).
2	Provide support for electronic translation and Arabization efforts.	Provide budget allocations for translation and Arabization. (P-5-18-76).

**Specific Objective (19): Raising awareness of the importance of ICT for all individuals and organizations, small and Medium enterprises**

	<b>Implementation Policies</b>	<b>Projects</b>
3	Provision of free training on ICT for individuals, small and medium organizations in all areas, with priority for poor groups.	A fund for free training on ICT and communications. (P-5-19-77).
		The Home Computer Initiative (P-5-19-78)
4	Attain ICT computer literacy in rural and poor areas.	ICT computer literacy caravans (P-5-19-79).

### 3.6 The Sixth General Objective:

The sixth general objective of the NCITP long-term vision seeks the best utilization of ICT in serving the Arabic language and consolidating the civilizational mission of Islam. The five-year plan starts realizing this objective gradually through three specific objectives, six implementation policies and six projects as follows:

**Specific Objective (20): Coordination and motivation of government and charity efforts to employ ICT in the service of Arabic and Islamic culture.**

	<b>Implementation Policies</b>	<b>Projects</b>
1	Establishment of a referential agency for the coordination of efforts to employ ICT in the service of the mission of Islam and the Arabic language	Putting the Supreme Council of Islamic Affairs in charge of planning and support for the utilization of ICT in the service of Islamic culture (R-6-20-80).
2	Raise the ICT capabilities of people working in Da'wa organizations.	Establishing special centers to conduct training courses for workers in the official and voluntary Da'wa sectors (P-6-20-81).
3	Provision of financial resources to support efforts of employing ICT in the service of Islamic culture	Funding ICT projects serving Islamic culture from public endowments (P-6-20-82).

**Specific Objective (21): Employment of ICT in the service of Islamic studies, religious practices and Da'wa.**

	<b>Implementation Policies</b>	<b>Projects</b>
4	Employ the Internet for remote Da'wa and teachings in the area of Islamic studies.	Establishment of a center for Da'wa through the Internet and the use of the Internet in teaching Islamic Rituals (P-6-21-83).

**Specific Objective (22): Employment of ICT in the dissemination of Islamic culture and consolidation of the Islamic and Arabic identity.**

	<b>Implementation Policies</b>	<b>Projects</b>
5	Provision of digital versions and construction of databases for the output of Arabic and Islamic civilization and translating these to other languages	Establishing a center for digital Islamic and Arabic heritage (P-6-22-84).
6	Support the use of ICT in entertainment and education for consolidating Islamic and National culture.	Encourage the establishment of companies that employ ICT in the production of educational and entertainment applications and electronic games to consolidate Islamic and national culture. (P-6-22-85).

### 3.7 The Seventh General Objective:

The seventh general objective of the NCITP long-term vision seeks to provide qualified and trained, male and female human resources in the various ICT specializations through the preparation of national manpower as well as attracting international expertise. The five-year plan starts realizing this objective through four specific objectives, ten implementation policies and thirteen projects as follows:

#### Specific Objective (23): Estimating the size of national manpower and international experts needed to transform to the information society and facilitate their recruitment

	Implementation Policies	Projects
1	Adoption of a standard specification and classification for ICT professions and updating it regularly.	Establishing a directorate responsible for the description and classification of ICT professions in the public and private sectors (P-7-23-86).
2	Provision of statistics about available ICT manpower and open job opportunities	Building a database for ICT specialists and jobs (P-7-23-87).
3	Identification of ICT areas that require the attraction of distinguished international expertise.	Simplify the procedures of recruiting distinguished international experts in some ICT domains and provision of incentives for them (P-7-23-88).

#### Specific Objective (24): Establishment of Specialized programs to prepare high level ICT manpower.

	Implementation Policies	Projects
4	Provision of qualified manpower in areas that have a national dimension.	Creation of new specialized high diplomas in the areas of ICT (P-7-24-89).
		Establishing a distinguished university level institute for ICT (R-7-24-90).
		Establishment of joint master programs combining ICT with other specializations (P-7-24-91).
		Encouraging full-time studies at MS level for government employees through internal scholarships (P-7-24-92).
5	Provision of national university teaching staff in ICT specializations	Instituting teaching assistant jobs annually, distributed among universities (P-7-24-93).

**Specific Objective (25): Provide support for the qualification of ICT manpower to render them capable of getting high paying jobs.**

	<b>Implementation Policies</b>	<b>Projects</b>
6	Encourage the private sector to create rehabilitation programs for the least-employed university graduates to work in the area of ICT.	Offering loans for university graduates seeking rehabilitation in ICT programs (P-7-25-94).
7	Encourage the private sector to qualify a percentage of secondary school graduates in certain ICT jobs.	Offering loans for secondary school graduates who were not able to pursue higher education and could not find work, to qualify in ICT (P-7-25-95).

**Specific Objective (26): Increase the efficiency and quality of the educational and training programs in the area of ICT.**

	<b>Implementation Policies</b>	<b>Projects</b>
8	Revision of ICT curricula through an independent entity, in cooperation with employment authorities and linking them to standard profession and job descriptions.	Requiring all educational and training institutions to revise their course plans regularly, secure the necessary accreditation for them and make sure that they conform to job descriptions (P-7-26-96).
9	Enforcement of the international quality standards on education and training institutions specializing in ICT.	Encourage manpower preparation and training programs to apply international quality standards and seek international accreditation (P-7-26-97).
10	Adoption of standard professional competence tests	Appropriate standard professional competence tests and approval of training institutes certificates (P-7-26-98).

## **CHAPTER 4**

# **NCITP Follow-Up Mechanisms and Implementation Requirements**

## CHAPTER 4

### NCITP Follow-Up Mechanisms and Implementation Requirements

The availability of follow-up mechanisms that monitor the implementation of NCITP and progress of the projects is a crucial prerequisite for the success of this plan. On one hand, the obstacles and difficulties that hamper or obstruct the progress of the plan should be identified early and eliminated, on the other, the practical feasibility of the plan's objectives should be monitored and evaluated to see if there is any need to correct or modify the path of their implementation. Follow-up mechanisms for NCITP will be provided at two main levels: the first on level of projects, second on the level of whole plan. This chapter presents the follow-up mechanisms suggested for implementation of the whole plan.

In addition, there are some necessary prerequisites that should prevail if the future vision of the NCITP is to be realized. These requirements relate to the continued support by the top leadership, organizational structures of agencies, government regulations and procedures, local and foreign investment environments, services environments, the educational process, society values and concepts. These requirements are very important to achieve the objectives of the plan. Success in the implementation of the projects for the first five years of the NCITP greatly depends upon the prevalence of these requirements.

#### 4.1 Implementation Follow-up Mechanisms

The formulation of the NCITP is the first step in realizing the future vision for ICT in the Kingdom. This step should be followed by the implementation of the proposed projects. However, this process should be associated with a follow-up mechanism for the following purposes:

- Follow-up and evaluate the progress towards the future vision.
- Identify the obstacles and difficulties that face the implementation, provide solutions and decide appropriate alternatives.
- Determine the international ICT position of the Kingdom.
- Make the preparations and arrangements for future plans.

It is suggested that a number of indicators should be used to measure the level of realization of the plan's objectives. These indicators may be divided into two main parts:

- Indicators at the national level, which will help in tracking and monitoring the progress towards the future vision and determine the international ICT position of the Kingdom.
- Indicators at the sector level, which will help in identifying the obstacles and difficulties which hamper the progress of the implementation and formulating the future plans for the various sectors.

These indicators embrace a number of fields and reflect the following:

- The degree to which ICT applications and its services have been spread and diffused.
- The strength of the domestic ICT industry.
- The degree of reliance and dependence of education and training systems on ICT.
- The appropriateness and conformity of the domestic ICT infrastructure.
- Activities towards bridging the digital divide in the Kingdom.
- The degree of employing ICT to serve the Arabic language and Islamic culture.
- The degree of availability of the national qualified human resources and international expertise.

Table (4) below lists these indicators together with some corresponding target estimates that should hopefully be reached by the end of the first ICT five-year plan. These target estimates have been determined based on the future ICT vision, the plan's objectives, the current values for these indicators, the required increases for these indicators, the available capabilities, plus the analysis of gaps. Experiences of other countries and their present positions have also been used as a guideline.

In view of the above, the following follow-up mechanisms are proposed:

- Adoption of the proposed set of ICT indicators under the collective name “Transformation to the Information Society Indicators”. This set should be updated annually if the need arises.
- Establishment of a directorate within the Ministry of Communications and Information Technology for the follow-up of the national transformation to information society, monitoring the international developments in this field and indicating future directions.
- All government agencies should submit the respective values for the above indicators plus a summary of achievements and difficulties to the Ministry of Communications and Information Technology at the end of each fiscal year.
- The Ministry of Communications and Information Technology should conduct periodic surveys to evaluate the status of ICT in both private and public sectors and in the society at large.
- The Ministry of Communications and Information Technology should prepare an annual report to be called “Report on Transformation to the Information Society”. This report should show the progress made towards the ICT future vision and should contain the current values of the indicators at national, sector and region levels, plus a comparison of the domestic situation with the international situation. The report should also include recommendations for projects, , and mechanisms to cope with domestic and international developments.
- The annual report should be submitted to His Royal Highness on the first day of the third month of the fiscal year.

**TABLE 4: TRANSFORMATION TO THE INFORMATION SOCIETY INDICATORS**

<b>Services and Productivity</b>	
Indicator	Target value at the end of the first five-year plan
e-Government National Portal	1
Number of developed databases.	10
Level of e-government services in all sectors.	<ul style="list-style-type: none"> <li>• 100% available.</li> <li>• 40% in the interaction stage.</li> <li>• 25% in the operation stage.</li> <li>• 10% in the transition stage.</li> </ul>
Percentage of automated government operations in all sectors.	50%
Penetration of hospital management systems.	20% of the Ministry of Health hospitals.
Penetration of primary care health center systems.	25% of Health centers belonging to Ministry of Health.
Percentage of health organizations having electronic medical records	10% of the Ministry of Health hospitals

<b>Information Industries, Innovation and Development</b>	
Indicator	Target value at the end of the first five-year plan
The sale of locally developed products.	SR 5 billion
Number of ICT incubators.	6
Number of technology parks	2
Number of Free Technology Zones	1
Size of investment in ICT.	<ul style="list-style-type: none"> <li>• Communications SR 30 billion</li> <li>• ICT SR 2 billion</li> </ul>
Number of new technology transfer centers.	6
Number of new ICT research centers.	1
Size of annual budget allocated for research, development and innovation.	0.3% of the Gross Domestic Product
Number of patents in ICT	400
Number of new ICT industrial companies and organizations that depend on innovation.	<ul style="list-style-type: none"> <li>• 6 large companies.</li> <li>• 50 small or medium companies</li> </ul>

<b>Education and Training</b>	
Indicator	Target value at the end of the first five-year plan
The percentage of interactive digital content in educational curricula	30%
Number of educational portals.	A portal for all levels of education.
Reliance on the Internet in educational process.	<ul style="list-style-type: none"> <li>• A website for each school or educational institute containing web pages for each subject.</li> <li>• E-mail for all students.</li> </ul>
Computer and Internet subjects.	<ul style="list-style-type: none"> <li>• All levels of public education.</li> <li>• All university students.</li> </ul>
Number of education-related employees capable of using ICT	200 thousands
Penetration of ICT systems and Internet connectivity in all schools and colleges.	All schools

<b>The Infrastructure</b>	
Indicator	Target value at the end of the first five-year plan
Penetration of fixed phone lines.	25 lines per 100 inhabitants.
Penetration of mobile phone lines.	80 lines per 100 inhabitants.
Penetration of high speed data transfer lines.	500 thousands (2 per 100 inhabitants)
Number of data transfer companies.	10
Number of mobile phone companies.	3
Penetration of PC's	<ul style="list-style-type: none"> <li>• 30 PC's per 100 inhabitants.</li> <li>• One PC per 15 students.</li> <li>• One Internet-connected PC per 30 students for intermediate and upper levels.</li> <li>• One PC per 4 medical doctors.</li> </ul>
Penetration of Internet usage.	30 Internet users per 100 inhabitants.
Number of Saudi websites	30 thousands
Number of secure web servers per million inhabitants	10
Number of new ICT standards (specifications).	1000 new standards (specification)

<b>The Digital Divide</b>	
Indicator	Target value at the end of the first five-year plan
The number of citizens trained on the use of ICT	200 thousand citizens, free of charge
Number of ICT caravans	200 caravans

<b>Arabic and Islamic Culture</b>	
Indicator	Target value at the end of the first five-year plan
The size of digital Arabic/Islamic heritage.	Two million pages
The number of electronic entertainment products.	<ul style="list-style-type: none"> <li>• 3 high quality products</li> <li>• 40 quick products</li> </ul>

<b>Development of Human Resources and the Preparation of Manpower</b>	
Indicator	Target value at the end of the first five-year plan
The percentage of employment in ICT	3%
The number of BSc students in ICT specializations.	5% of total university and college students, i.e. 25000 students approximately.
The number of university graduates specializing in ICT.	20000 graduates, i.e. at a rate of 4000 students annually.
New teaching assistant jobs	400
The number of rehabilitated secondary school and university graduates	<ul style="list-style-type: none"> <li>• 10 thousands secondary school graduates.</li> <li>• 6 thousands university graduates</li> </ul>
The number of government employees trained on ICT	200 thousands employees

## 4.2 Implementation Requirements

A number of implementation requirements should prevail in the local environment, if the implementation of the NCITP is to succeed. These include support by the top leadership at all levels, adequate structuring of government organizations, availability of government regulations and procedures suitable for the nature of the information society, availability of a suitable environment which attracts local and foreign investments. Also there should be a good service environment i.e. mail services and logistics. The transformation to the information society also requires the development of teaching and learning methods, promotion of educational curricula, dissemination constructive values and ICT awareness in the society. The following sections summarize these prerequisites.

- **Continuous Support of Top Leadership at all levels for the Plan**

The Kingdom's leadership provides political, moral and financial support for all that contributes to the benefit and welfare of citizens and the homeland. Since the implementation of the NCITP may imply many changes in different aspects, at different levels, some difficulties and resistance to change may arise. This may delay or prevent the realization of the future vision. Accordingly, the continuous support of the leadership for the plan is a major prerequisite for attaining the future vision.

- **Restructuring of Organizations, Simplification of Procedures and Supporting the Decision-Making Process**

Information and communications technology makes it possible to perform organizational procedures in a very efficient and speedy manner, provided that certain prerequisites are secured. Recent international experiences indicate that organizational restructuring is an important prerequisite for harnessing and exploiting the recent enormous advances in communications technology and ICT applications. One of the major implications of this restructuring is that organizational structures should be horizontal rather than vertical. This change will certainly affect work procedures and their documentation. Accordingly, all work procedures should be revised, simplified and re-documented. Simplification of the procedures should take into consideration the new form of organizational structures and the possibility of linkage and interconnection with organizations through ICT. This will eventually raise the efficiency, speed and effectiveness of decision making at all levels, and accordingly improve the decision making process, which is a major prerequisite for the information society and the realization of the future vision.

- **Development of government financial and administrative Regulations**

The information society is characterized by deep interdependence between its components, high speed in decision making, execution and response. The administrative and financial regulations in the public sector have an important and crucial role in the performance of government organizations since the efficiency of these organizations greatly depends on them. However, the present government financial and administrative regulations were enacted a long time ago, and accordingly should be revised and updated to raise their efficiency and effectiveness in a manner that copes with new requirements of information society and realization of the future vision.

- **Improvement of the Investment Environment**

The ICT future vision implies the establishment of a domestic information industry with international partnerships, regional and international cooperation with the hope that it becomes a major source of income. The realization of this objective depends greatly on the success in attracting foreign investments to transfer and localize technology, and provide large job opportunities. Recent studies of the current status revealed that there are many obstacles that hinder and obstruct the attraction of investments, where the General Investment Authority has listed more than 100 such obstacles. These obstacles belong to different domains which include regulations and policies, organizational and administrative procedures, the labor force, services and facilities infrastructure, the judicial environment, availability of statistical information and incentives. It is of utmost importance that radical and quick solutions for these obstacles should be sought.

- **Availability of a Suitable Services Environment**

One main feature of information societies is location-independence, where many activities like e-commerce operations and e-government operations can be performed from any location through communication networks. Add to this the activities that relate to teleworking, e-learning, telemedicine and others. This clearly requires the availability of a good, reliable services environment that spans the whole Kingdom which provides basic services such as mail, highly effective and reliable transportation, power supply, logistics all reasonably priced.

- **Development of Curricula and Educational Methods**

Modern educational processes are centered on the student and concentrate more on self-learning rather than teaching, where students are expected to rely on themselves more than before. Accordingly, it is very important for students to be very proficient in English, mathematics, problem solving and analytic methods, work ethics skills, innovation, team-working, and communication skills. To equip students with these skills and qualities, some major changes to the educational process are required. These include:

- 1- Restructuring the educational process and revising its philosophy.
- 2- Development of curricula with more reliance on modern technology.
- 3- Appropriate preparation and rehabilitation of teachers.

- **Society Culture**

There is a strong reciprocal relationship between the concepts prevailing in a particular society and the nature of that society. On the one hand, the nature of the society may lead to the generation of certain concepts in that society, while on the other hand the dissemination of certain concepts in the society may affect the nature of that society. In order to realize the future vision and achieve its goals, a number of concepts and values should prevail in the society. These concepts relate to the family culture, school culture, work environment culture and consist mainly of the following:

**1- Innovation and creativity:**

Innovation and creativity are the main drivers for development and progress. It is important to disseminate and spread concepts that encourage and promote innovation and creativity in the society, in family, school and work environment.

**2- Initiative:**

The spirit of initiative proved to have a profound effect on the industrial and commercial progress of developed countries. This has been clearly reflected in the experiences of US and Malaysia. Accordingly, the spirit of initiative should be encouraged and spread in the society, and ways of utilizing this spirit to establish companies and organizations should be sought.

**3- Acceptance of Failure:**

Acceptance of failure from an individual or the entity that made the attempt in a positive manner, and from the society at large, is a supporting concept for innovation, creativity and initiation and should be spread and encouraged at the family, school and work environment.

**4- Productivity and Professionalism:**

Productivity and competitiveness are two of the main factors that decide the strength of countries economies and their competitive positions. The individual's productivity and proficiency represent the major units in measuring the productivity and competitiveness of countries. These concepts should be widely disseminated and deepened in the culture of the society.

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# **Appendix 1**

## **The Proposed Projects**

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## Introduction

This appendix presents brief specifications for proposed projects relating to first five year ICT plan. The specifications incorporate main ideas and objectives for each project and are given here for purpose of approval of the plan. Each project is given a unique identification that consists of three components: the first component represents the main general objective, the second component represents the specific objective and the third component represents project sequential number.

### **Important Notice:**

- **The specifications of the proposed projects, and mechanisms have been outlined here for the purpose of approval at this stage and not yet for implementation. It is therefore imperative that detailed specifications should be completed at implementation stage, and this should be done within the framework of development plans.**
- **Some of these projects have already been implemented or under implementation in accordance with the Royal Decrees, Orders and issued regulations. They are included here to show the consistency of the plan in realizing the future vision.**

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## **Objective 1 Projects**

### **Project P-1-1-1: Increasing ICT Projects Budgets in Public Sector Organizations**

The current situation indicates that the level of dependence on ICT in the public sector is very low, which in turn lowers the level of utilization of the underlying infrastructure and systems, and accordingly leads to low levels of returns on investments. Accordingly, some measures are needed to raise the dependency on ICT in the public sector and make it the major vehicle for performing work, so as to increase efficiency and productivity and reduce expenditure. It is suggested that the mechanisms and approaches for determining the characteristics, sizes and positions of government projects should be reviewed and developed. The foci of expenditure on these projects should be redistributed, a new ICT expenditure item should be added to the state budget, the appropriations for ICT in the budget should be increased and some of these appropriations should be dedicated for research and development in government organizations.

### **Project P-1-1-2: The Creation of High Level ICT Posts**

Every government establishment is considered responsible for implementing ICT utilization plans with the establishment, and in all sectors under this jurisdiction. These efforts require the existence of a top senior administrative post to ensure that they secure the moral and legal support within and outside the establishment. Accordingly, this project requires that all large and medium government departments and establishments should create high level ICT posts directly linked to the top administrations of these organizations. It is also required that all ICT centers within the organization should be managerially and technically linked to these new high level posts, and should be merged as much as possible. The relationship between the high level posts and ICT centers should be determined according to the nature of the respective organizations.

### **Project P-1-1-3: The Creation of ICT Directorates in Departments that do not have them**

The continuing expansion of the use of ICT solutions and dependence on them in government departments make it imperative to have an administrative unit which is appropriately equipped with the technologies and human resources to provide, implement and facilitate the application of ICT solutions appropriate for the particular work environment. The main purpose of this project is to direct all government departments which do not have dedicated ICT units to form specialized units for this purpose and incorporate them in their organizational structure.

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#### **Project P-1-1-4: Putting Into Effect the Funding and Implementation of ICT Projects Through the Private Sector:**

Private funding for government projects has been approved in principle by the Council of Ministers (decision 110, date 5/4/1425), but it has not yet been put into effect with regards to ICT projects. The project should set up the necessary rules and guidelines that benefit both parties and circumvent monopoly of the field.

#### **Project P-1-1-5: Increase the Role of the Private Sector in Managing and Operating ICT Centers:**

There is an increasing role for the private sector in management and operation of ICT centers in many countries. This is mainly due to the dynamic evolutionary nature of the field and the fast rate of developments, something that requires flexibility and quick response. The main objective of this project is to increase the dependence on the private sector in managing and operating ICT centers in accordance with the appropriate standards and conditions and taking into consideration the sensitive nature of some applications and departments.

#### **Project P-1-1-6: Providing Special Competitive Incentives for ICT Posts in Government Agencies**

Due to the migration of large numbers of distinguished ICT and telecommunications specialists to the private sector, because of the higher salaries and incentives offered by the private sector, this project aims to revise the bonuses for ICT employees and increasing them depending on the specific specialization and its importance, in addition to tying this increase to productivity according to international practices.

#### **Project P-1-1-7: Recognition of ICT Professional Competence Certificates in Selection for Employment and in Promotion.**

Requirements of appointment and promotion depend at present to a large extent on academic certificates, or on the attendance of training courses connected to the employee's job, without any regard to professional certificates obtained from specialized companies. This project aims at achieving recognition for professional training certificates on par with academic certificates in appointment and training, with the aim of meeting the needs of government departments for qualified nationals in ICT.

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### **Project P-1-2-8: Prepare an Action Plan for e-Government and Implement it**

With reference to the Royal Decree (No. 7/B/33181 date 10/7/1424H), which includes a directive for the Ministry of Communications and Information Technology to prepare a plan for providing government transactions electronically, the main objective of this project is to set up an action plan for applying e-government. The suggested action plan should reduce centralization as much as possible while maintaining a minimal level of coordination between government entities. The plan should include identifying the priorities, set of e-government project, policies, frameworks and related specifications.

### **Project P-1-2-9: Establishing Regulations for Applying e-Government:**

Application of e-government requires a set of regulations that clearly sets up the policies relating to the roles and responsibilities of government agencies regarding the provision of services. For example who is responsible for providing the underlying data and information? Which agencies are authorized to access information? What is the process for obtaining a particular service etc. The regulations should also cover issues relating to technical aspects of e-Government such as the e-Government portal and the websites of government agencies. This project aims to set up the regulations and rules relating to these issues and secure their approval from higher authorities.

### **Project P-1-2-10: Develop the National Portal for Government Services:**

The national portal for government services represents one of the main components of e-government and to facilitate easy access to services and how to benefit from them and follow-up of requests relating to it. The portal will be implemented in phases. During the first phase the portal provides information about the unique services provided by government, its description and the requirements for each service, in addition to relevant information.

### **Project P-1-2-11: Establish the e-Government Network:**

Successful application of e-Government requires interconnectivity between all government agencies electronically, and facilitates access to the required databases by those agencies and to provide essential data. Accordingly, this project aims to build a reliable, high speed e-Government network based on Internet or using proprietary network infrastructures. This will ease the process of applying e-Government, reduce the total incurred costs and speed up services.

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### **Project P-1-2-12: Establishing the National Center for Digital Certification:**

The National Center for Digital Certification is expected to provide a full system for PKI management, which will greatly increase the reliability and authenticity of electronic transactions through the use of digital signatures on documents and contracts, and by providing digital certificates for user authentication. This project aims to establish the National Center for Digital Certification and operate it so as to facilitate the implementation of e-commerce and e-government projects.

### **Project P-1-2-13: Building National Databases for Various Statistics**

With the spread of ICT applications in the society, public and private sector institutions are increasingly reliant on databases in their work. Due to duplication of efforts in this field by multiple agencies, delayed updating, lack of integration between them, the multiplicity of sources of data, and inherent discrepancies between them, this project aims to build ten national databases, where the targeted databases will be first specified and grouped in major axes, the responsible agencies, the beneficiaries and type of usage will be clearly identified, and finally the planned databases to be built and implemented.

### **Project P-1-2-14: Establish a Mechanism for the Approval of Government ICT Projects:**

There is a need for improving and developing the current mechanism adopted by the state for approving ICT projects, so as to support the implementation of the NCITP, realize national e-Government priorities, support e-Government action plan, avoid duplication and repetition in huge or joint ICT projects, and also support the efforts exerted to apply e-Government concept in government agencies and encourage them. This project aims at improving and developing the current mechanism for approving ICT projects to realize the above mentioned objectives.

### **Project P-1-2-15: Setting up a Unified Framework for ICT Projects Specifications.**

There is a need for the integration and communication between ICT systems in a manner that facilitates and guarantees the exchange of information and interoperability of these systems. This project aims at the establishment of a mandatory and unified framework for the standards and specifications of government ICT systems, in order to facilitate communication and data exchange, simplify the implementation and application of e-Government, optimize the utilization of financial resources and economizing resources and efforts.

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### **Project P-1-2-16: Unifying the Specifications of Typical Government ICT Applications**

Due to the fact that each government agency tends to develop ICT systems similar or identical to systems in other government agencies, they follow the same system. This project aims at reducing waste of resources and effort duplication by developing unified specifications for typical government applications through private sector. The conformance of government applications to unified specifications should be checked and approved by a central agency. In addition, the cost of these applications should be computed according to the number of licenses, and should decrease as the number of licenses increases.

### **Project P-1-2-17: Establishing Frame Agreements for the Procurement of ICT Systems:**

Due to the fact ICT systems are not consumable and their cost decreases with increasing number of licenses, it is more beneficial for government agencies to sign frame agreements for these services, rather than purchasing or leasing them independently for high costs. The main purpose of this project is to prepare and implement frame agreements for ICT services at the top governmental level for the benefit of all government agencies.

### **Project P-1-2-18: Support the Application of Best Practices in ICT Centers:**

An examination of the current ICT status indicates a wide variation in quality and performance levels in ICT centers and computer directorates in government sectors. It also indicates lack of attention to quality control concepts and their applications. Accordingly, this project aims at spreading best practices in government ICT centers through adoption of well proven international standards, methodologies and frameworks.

### **Project P-1-2-19: Providing ICT Training for Government Employees**

The Kingdom has a number of universities and private and government colleges from which many ICT specialists graduate every year. The total number of ICT students in the Kingdom is 16,000, while there are about a hundred private ICT training institutes. Some of the government institutes offer post-graduate studies, while a number of institutes offer special training courses in cooperation with manufacturers and developers of ICT products.

Due to the need of government employees (civilians with the exception of teachers and university staff) to be trained in ICT with utmost benefits, this project specifically aims to achieve the following:

- The training of 50000 employees on the basic usage and application every year.

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- Training of 200 top management employees on programs that suit their jobs, and on the utilization of ICT.
  - The training of 500 IT specialist staff in specialized ICT and administrative fields.
  - The training of 100 ICT specialist staff in administrative and managerial fields.

### **Project P-1-2-20: Application of Electronic Government Purchases**

One of the important applications of e-Government is the conduct of government purchases electronically. This project calls for a change in the traditional approach of procuring government purchases and perform these purchases electronically, to reduce cost, support coordination and raise the quality and provide wider choices. It is suggested that this projects starts by requiring that Request for Proposals should be prepared and published electronically as a first step in this project.

### **Project P-1-2-21: Formulating ICT Plans in Government Institutions**

In spite of the importance of ICT planning at the level of establishments, very few public sector establishments have formulated plans in this area. The NCITP cannot be considered a substitute for individual department plans, despite its comprehensiveness and the amount of projects it proposes. Accordingly, this project aims at preparing strategic ICT plans and general frameworks that may be used by government agencies to prepare individual strategic ICT plans.

### **Project P-1-3-22: Applying Quality Control Techniques in ICT Centers:**

The current status indicates that there are big differences between government agencies in the levels of quality and performance in ICT centers. This project aims at establishing the concepts of total quality control with accordance of their most modern theories and applications, through establishing a unit for quality assurance in every ICT center. These quality units may be independent or linked to the strategic planning functionality in ICT centers.

### **Project P-1-3-23: Classification of ICT Companies and Corporations:**

The current status indicates that the classification of contractors exist in variety of businesses such as construction and property development and operation and maintenance, but not in ICT industry. The main purpose of this project is to set up a system for the classification of ICT companies and establishments, which should be based on clear and open mechanisms and criteria to determine which firms qualify for entry into government tenders. Account should be taken of the technical and financial capabilities of the firms, and their record of achievements or any violations recorded against them. This classification could then be the basis of selection of companies to undertake ICT projects throughout the public sector.

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### **Project P-1-4-24: Approval of the Electronic Transactions Law**

Due to the need to set-up governmental and business sector e-transactions and to regulate its use and protect the rights of users, special legislations and regulations and its approval is needed; hence this project is to finalize and approve the e-transactions regulations so as to encourage and to ease the application of e-commerce and e-government and attract foreign investments.

### **Project P-1-4-25: Building Website for Domestic Products**

Recognizing the importance of the proper utilization of e-commerce technologies, and the weaknesses associated with domestic products marketing, there is a need to use web presence to support domestic products such that they compete with international products. This project aims to provide strong support for introducing domestic products inside and outside the Kingdom by developing an outstanding website for domestic products, where 80% of national products would be displayed.

### **Project P-1-4-26: Establish a Center for the Dissemination of ICT Usage in the Private Sector:**

This project aims to establish a center for the dissemination of ICT usage in the private sector, especially in medium and small organizations. The main objective is to raise the level of ICT usage in these organizations swiftly. This in turn is expected to raise their competitiveness, quick access to information, raise the degree of accuracy, support the decision making process, reduce the cost, increase productivity and increase chances of success and adoption of best practices in the area of ICT.

### **Project P-1-5-27: Dissemination of Hospital and Health Care Center Management Systems**

Most of the MOH hospitals and health centers (about 200 government hospitals and 1,800 health centers) suffer from lack of proper ICT infrastructure. This project aims to introduce hospital administration systems in Ministry of Health hospitals and clinics. Such systems will be introduced in 40 hospitals and 350 health centers by the end of the first five-year plan. This project is expected to achieve a number of benefits such as improving medical services, increasing the productivity and performance, reducing the outcome due to medicine shortages and reducing the burden on the state budget by cutting the cost of treatment and to facilitate the transmission and verification of medical data between different medical institutions.

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## **Project P-1-5-28: Design and Implement the Unified Electronic Medical File**

Millions of patients are treated annually in hospitals and health centers across the Kingdom but none of these patients possesses a unified medical file which could be transferred between different health institutions.

This project aims to create a unified electronic medical file for every citizen and resident in the Kingdom, to be introduced in 20 hospitals and 120 health centers by the end of the first five-year plan. The project is expected to achieve multiple benefits, which include: saving lives through making the health background of accident victims known to medical staff, reducing problems stemming from treating more than one patient on one card, providing the right information necessary for decision making.

## **Project P-1-5-29: Dissemination of Telemedicine Applications**

Due to the benefits of telemedicine in enhancing medical treatment, which include undertaking remote medical examinations and laboratory tests, transmitting laboratory test results electronically, exchanging expertise and receiving alternative medical views and perform operations in addition to other medical applications. This project aims to introduce telemedicine applications into the Kingdom by letting three hospitals offering their services through this technology, and twenty health centers benefiting from these services by the end of the first five-year plan.

## **Project P-1-5-30: Updating Work Practices and Laws to Accommodate Teleworking**

The labor and workers system defines the worker as: “any person who works for the benefit of the business owner, under his administration or supervision, in return for compensation, even if he is not in direct contact with him”. Due to advances in ICT it is possible to work remotely (teleworking) and it is important to recognize teleworking as an acceptable form of performing work in government and private sector and hence prepare regulations and rules that accommodate this new approach and safeguard rights of the employer and employee.

This project aims to adopt teleworking and creating the appropriate regulatory framework for it, which will encourage and promote teleworking and its benefits, create suitable job opportunities for women, reduce unemployment and increase job opportunities for all sectors of society, reduce road congestion and reduce migration to cities.

## **Project P-1-5-31: Setting up Teleworking Centers**

The idea of the project is based on creating a suitable environment for women workers to perform their tasks easily and efficiently. Teleworking centers could also contribute to the training, employment and supporting female personnel seeking to work remotely. This project aims at establishing three teleworking centers for women as a first step in proving the success of this experiment and generalizing it. It is hoped that the percentage of teleworkers reaches 1% by the end of the first five year plan.

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## Objective 2 Projects

### **Project P-2-6-32: Issuing a Second License for a Fixed-Line Phone Service during the year 2006-2007**

The main purpose of this project is to issue a second license for a fixed-line phone service, taking into consideration the results of market studies for landline services, current international trends, economic factors and the availability of favorable investment conditions in the Kingdom.

### **Project P-2-6-33: Issuing Additional Licenses for Mobile Phone Services in 2006**

The main purpose of this project is to issue additional licenses for mobile phone services, taking into consideration the market studies for mobile phone services, current international trends, economic factors and the availability of favorable investment conditions; in addition the project should take into consideration the study regarding the economic feasibility of opening the market for virtual service providers (MVNO's).

### **Project P-2-6-34: Issuing Class Licenses**

To achieve the full liberation of ICT services, such as Internet Services, Mobile Group Messages, Global Mobile Personal Satellite Communications (GMPCS), GPS services and other relevant services, this project aims to provide the required licenses for each class, based on the nature of the service and demand.

### **Project P-2-7-35: Setting up Transparent and Fair Interconnection Policies:**

A prerequisite for opening the ICT market for competition is to set up transparent interconnection policies that make sure all service providers are treated fairly without bias regarding the provision of interconnection services. The policies should also encourage the provision of efficient high quality interconnection services that facilitate the delivery of good services for end customers. This project also aims to encourage the participation in infrastructure and site services as well as identification of appropriate procedures to deal with disputes relating to interconnection services.

### **Project P-2-7-36: Setting up an Accounting Separation Mechanism for Communication Services**

The main purpose of this project is to find a transparent scientific accounting separation mechanism for the services provided by dominant service providers to make sure that there is no cross-subsidy between providers and guarantee the effectiveness of the cost-based pricing competition process.

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**Project P-2-7-37: Preparation and Approving of Price Ceiling Policies for Dominant Service Providers – updating and conformation of its implementation**

The main purpose of this project is to prepare and approve a document that clearly sets up the price ceilings for dominant services providers, regularly update it and make sure that it is applied to all dominant service providers through a standard mathematical formula representing the financial indicators in a manner that guarantees fair competition between providers.

**Project P-2-8-38: Setting up Regulations for Information, Computers and Internet Crimes**

The main purpose of this project is to set up a legislative mechanism that combats Information, Computer and Internet crimes and violations. The project will start by identifying all types of ICT crimes and violations and setting the penalties corresponding to each type. The project should then put in place a mechanism for dealing with information crimes, specifying the role of all concerned parties in dealing with these crimes. This is expected to protect the rights of owners as well as improving the security of ICT systems and hence lead to a healthy environment and boost rates of computer and network usage and access.

**Project P-2-8-39: Protecting Privacy**

This project aims to put in place the principles and safeguards relating to mechanisms for processing personal information, or information relating to private or public establishments, or those stored in government and private systems. This regulation is expected to increase public confidence in dealing with electronic systems due to the protection of the privacy of corporations, companies, establishments and individuals dealing with electronic systems.

**Project P-2-8-40: Setting up a Special Unit for Monitoring and Investigating ICT Networks**

This project aims to establish a special unit to monitor and pinpoint all crimes relating to communications and information technology, and hence reduce the number of ICT related crimes, catch ICT related security violations, provide technical and technological evidence to prove the crime, determine the extent of violation and bringing the perpetrators to justice, cooperate and coordinate with international security authorities, limit the harm which could be caused by ICT crimes, increase overall security and ICT networks in particular.

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### **Project P-2-8-41: Setting up a National Advisory Center for ICT Networks Security**

The main objective of this project is to establish a national advisory center for ICT networks security which could be consulted on information security issues, and which could provide trusted knowledge and advice and raise awareness of security problems among users in the Kingdom and informs them about ways of countering threats. The center should also gather information and practical experiences about security holes, vulnerabilities and threats and prepare the necessary advice regarding these issues. The center is also expected to monitor network and ICT intrusions, prepare plans to avoid these intrusions, protect information and provide an emergency team that helps sensitive ICT centers in case of crisis.

### **Project P-2-9-42: Updating the National Numbering Plan Regularly**

The national numbering plan included the rules and guidelines for numbering all types of communication services in the Kingdom, which include public network switches, public mobile phone networks (such as GSM, bleep services, satellite mobile phone services), packet switching networks, telex services. The rules and guidelines are applied to all licensed customers and to all users of the NNP. The main purpose of this project is to update the NNP regularly to cope with future expansions and growth and to make sure that it is flexible enough to accommodate all types of new services and comply with the recommendations of Communications Standards department in ITU.

### **Project P-2-9-43: A System for Managing Number and Domain Name Resources**

The main purpose of this project is to develop an automatic system to perform the routine tasks relating to number and domain name resources management according to the guidelines given in the national numbering plan. The tasks include assigning numbers, domain names, IP addresses to licensed service providers in a manner that realizes the short and long term objectives of the plan and simplify the provision of ICT services.

### **Project P-2-9-44: Preparation and Approval of the Guidelines for Fixed and Mobile Phone Number Portability:**

The main purpose of this project is the preparation, implementation and follow-up of the rules and guidelines that regulate the portability of numbers between fixed and mobile services. The portability rules should be prepared according to the guidelines given in the associated document which include the possible technical solutions, cost factors, economic principles for cost recovery, cost distribution approach, planning principles, obligations to service providers, and the practical procedures relating to the time frame and dispute resolution.

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### **Project P-2-10-45: Preparation of the National Plan for Spectrum Management**

There is a need for preparing a national plan for spectrum management in the Kingdom in view of the local and international legislations that regulate the use of frequency bands. The plan should include a classification of potential users of the frequency spectrum and should specify a frequency domain for each class of users.

### **Project P-2-10-46: Setting up the Procedures and Mechanisms for Frequency Allocation**

The main purpose of this project is to set up the mechanisms and procedures relating to the frequency spectrum activities, including allocation and licensing of frequency bands, local and international coordination of frequency band usage, monitoring the usage of frequency bands, identification of harmful interferences, identification of illegal frequency usages, calibration and maintenance of monitoring equipment, procedures and mechanisms relating to the development of frequency database and related software applications.

### **Project P-2-10-47: Develop a Modern System for Frequency Spectrum Management**

The main purpose of this project is to build a modern system for spectrum management which involves the acquirement of modern fixed and mobile frequency monitoring stations that cover all frequency domains Kingdom wide. The project also involves the development of a spectrum management database and securing all the equipment and software needed to operate and maintain the system.

### **Project P-2-11-48: Set up Policies for Universal Service/Universal Access**

Dissemination of ICT services in all regions so that all sections of the society can benefit from them, irrespective of the economic status of the region and population. This has been a major goal in most countries around the world. The main purpose of this project is to set up policies needed to provide universal services and guarantee universal access in the Kingdom including the principles, conditions and rules relating to implementation of these services.

### **Project P-2-11-49: Set up a Mechanism for Financing and Implementation of Universal Services/ Universal Access**

The main purpose of this project is to set up implementation and financing mechanisms for universal service/universal access including principles and conditions required for the execution of these mechanisms.

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### **Project P-2-11-50: Completing the Restructuring of the Internet in the Kingdom**

There is a need to complete the restructuring of Internet in the Kingdom to offset some of technical and organizational shortcomings and increase dissemination of Internet and raise quality of service. The main purpose of this project is to transfer tasks relating to Internet security and domain name registration from KACST to CITC so as to provide a high quality Internet service.

### **Project P-2-12-51: Set up Specifications for ICT Equipment**

The main purpose of this project is to set up national standards for the technical specifications of ICT equipment based on international standards set up by ITU and European Communications Institute. The specifications should include electromagnetic compatibility standards, electric safety precautions, network compatibility standards, wireless compatibility standards. This project also aims to protect consumers and networks from damages and protect the frequency spectrum from harmful interferences.

### **Project P-2-12-52: Set up and Implementation Procedures for Registration, Licensing and Approval of ICT Equipment Types**

The main purpose of this project is to set up procedures for licensing, registration and approval of equipment types of ICT imported to the Kingdom to make sure that they conform to the standard specifications. The procedures include the licensing process for importing ICT equipment and the minimal requirements needed to obtain a license for importing such equipment.

### **Project P-2-13-53: Setting up and Approval of Quality indicators and Standards for Dominant Service Providers and updating them**

The main purpose of this project is to set up indicators and standards for measuring the quality of services provided by dominant service providers. The project will start by identifying the services to be evaluated and then derive indicators and standards needed to evaluate each service, taking into consideration major steps required to provide the service from the moment the application is submitted until the service is delivered. The project should also set up the rules and conditions that should be observed in providing the services and set up a regular reporting mechanism through which service providers inform CITC about their performance.

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## **Objective 3 projects:**

### **Project P-3-14-54: Setting up a Free Zone for ICT Industries**

This project aims to establish a free zone for ICT industries in a manner similar to what other countries have done, based on classical free industrial zones. The main purpose of this project is to attract domestic and foreign capital investments nationally, utilize international experiences in developing the local industries, boost foreign trade and exports and hence improve the trade balance, transfer and indigenize modern technologies, attract international technological and industrial establishments through a tax-free and custom-free zone.

### **Project P-3-14-55: Encouraging Foreign Investments in the ICT Field in the Kingdom**

This project aims to put in place new laws for the encouragement of foreign investments in the field of ICT in the Kingdom, prepare feasibility studies relating to investment opportunities in the area of ICT in the Kingdom, communicate with foreign investors through special workshops, provide financing and taxation incentives, and suggest ideas relating to the legislations that encourage foreign investment.

### **Project P-3-14-56: Setting up Technology parks and Incubators for ICT Projects**

The project aims to set up technology parks and incubators, where at least two parks and six incubators should be established by the end of the first five-year plan. The main purpose is to encourage national innovation and invention, transfer and indigenize modern technologies, provide work opportunities for nationals, develop small and medium size firms in the area of ICT in the Kingdom.

### **Project P-3-14-57: Giving Priority to all ICT Projects for Locally Developed and Manufactured Products**

This project aims to give priority for products that are made locally using national personnel when implementing ICT projects, on condition that they meet quality requirements according to the predetermined standards and specifications. This project seeks to support the national economy, provide job opportunities for nationals, develop and promote local ICT industries.

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### **Project P-3-14-58: Investing Part of the Outlay for International Contracts in Building Local ICT Industries, or for Buying Locally Built ICT Products**

Due to the weakness of the local ICT industry we find that most large ICT projects are being carried out by foreign companies without any significant trickledown effect to the local industry, or benefit to local companies and personnel. The main aim of this project is summed up in requiring international companies to invest part of their income from their contracts in the Kingdom into building the local ICT industries or buying locally made ICT products. The main purpose is to support the local ICT industries, build local expertise in the area of ICT and develop and train the human resources working in local ICT industries.

### **Project P-3-14-59: Setting up Centers for Technology Transfer from Universities to the Community**

This project aims to establish bridges that link universities and national research centers to the business market. The main motivation is to enable universities and research centers to transform inventions and innovations into industrial products. The project implies that universities and national research centers should establish technology transfer centers within their premises, near to researchers and students. These technology transfer centers will be points of communication between universities and technology parks or incubators, and hence ensure that technology parks and incubators provide healthy environments for developing inventions.

### **Project P-3-14-60: Supporting Open Source Software Ventures**

This project aims to encourage and support the development of an open source software industry that relies on free software to satisfy the local needs, and hence build an advanced labor market that generates profits by services, technical support, and save money by reducing the dependence on commercial software. The main objective of this project is to adopt open source applications and support research and development efforts in this area.

### **Project P-3-14-61: Treating Activities of Research, Innovation and Development in Government Sectors as Projects with Separate Budgets**

Scientific research and technological development are among the most important requirements for the creation of an internationally competitive ICT industry. One of the resources for supporting research and development comes from government ICT projects, especially if research and development activities in government are treated as independent projects with separate budgets to support research and development in universities and research centers. The main aim of this project is to treat the activities of research and development in government as independent projects with separate budgets.

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### **Project P-3-14-62: Setting up a Fund to Support ICT Industries**

There is a need to establish a special fund that supports ICT industries and generate small and medium companies that rely on innovation and inventions. The fund should at least create fifty medium and small companies depending on innovation and invention in their main activities by the end of the first five-year plan. The fund should provide multiple services to the supported projects, which may include: financial support, helping entrepreneurs to transform their ideas into practical implementation plans that may be easily realized, provide continuous guidance and assist in marketing the resulting products locally and abroad.

### **Project P-3-14-63: Encouraging Innovation among the Youth to Create ICT Products**

The Saudi population is characterized with a large percentage of youth who are quite ambitious, innovative and unique in the way they think and develop ideas. Accordingly, encouraging these youth to innovate in the area of ICT, helping them transform their innovations and inventions into commercial products, and assisting them to establish commercial firms will have a profound effect in establishing sustainable ICT industries.

This project calls for the establishment of a supervisory national center to support innovation among the youth in the field of ICT and encourage the youth to innovate and develop. The project aims to support 200 projects by the end of the first five-year plan.

### **Project P-3-14-64: Establishing a Research Center for ICT**

This project aims to set up a research center for ICT, where every year a number of studies should be conducted in strategic areas, and thus contribute to determining the future orientation of ICT in the country. The project is expected to achieve the following: assist the private sector and government agencies intending to use these technologies by conducting the necessary research to find out the best ways to apply these technologies; support the dissemination of ICT in the public and private sector; support the national industry and the indigenization of technology.

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## **Objective 4 Projects:**

### **Project P-4-15-65: Setting up a National Center for E-Learning**

Modern education relies on the use of information and communications technology in various ways (vertical and horizontal). The term e-education (electronic education) is currently used to indicate this type of education.

This project aims at the establishment of a national center for e-Learning to offer the service and its encouragement by preparing the regulations and policies governing the e-learning process, formulate a unified model for e-learning using standard specifications, develop quality assurance standards for e-learning, issue quality assurance certificates for e-learning systems, measure the efficiency of various in technologies as aids for the e-learning process.

### **Project P-4-15-66: The Employment of ICT in Supporting General Education**

The level of utilization of ICT and the Internet in the service of education and learning in the Kingdom is still very inadequate. The main objectives of this project include the following:

- Dependence on electronic content in the learning process to reach 30% by the end of the first five year plan.
- Build learning networks and portals for every educational level.
- Make Internet one of the major means of communications between students, teachers, administration and parents by building a website for every education establishment and a web page for every course.
- Prepare course content in electronic format and make them available on CD's and on the web.

### **Project P-4-16-67: Introducing Computers and Internet as a Subject in School Curricula**

Learning how to use the computer and the Internet is one of the fundamental prerequisites for transforming into a computer society. This project aims to introduce ICT and computer curricula in all types and levels of education. This project consists of many projects, a project for every education sector or level and aims to achieve the following:

- Determine the appropriate course content, prepare book writing plans and identify the learning tools and means.
- Introduce computers and Internet at all levels of general education.
- Introduce a compulsory introductory course on computer and Internet basics in a manner similar to Islamic and Arabic courses in all universities.
- Prepare and train teachers to teach introductory ICT courses.

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### **Project P-4-16-68: Training Employees in the Education Sector on the Use of ICT**

This project is a basic requirement for all projects seeking to generalize the use of ICT in the educational sector. Accordingly, this project seeks to raise ICT competence of teachers and aims to:

- Train 200,000 teachers on the basics of ICT through one of the standard certification programs on the basics of computers and the Internet.
- Train teachers on methodologies of employing ICT as an aid in teaching and learning.
- Train education authorities and school masters on ICT and how to prepare plans for employing ICT in education.
- Build a portal to provide training on the Internet.

### **Project P-4-16-69: Issuing Regulations for Appointments, Admission and Promotion**

ICT is widely used as a basic element in education in information societies. The teacher, as various research findings and studies have demonstrated, is the cornerstone of the educational process. The main aim of this project is the inclusion of knowledge of ICT basics and the ICDL as conditions of appointing and promoting teachers who are not computer specialists. These requirements should be included in:

- The conditions of choosing between applicants for teaching jobs.
- Considerations for teacher promotion, where the following is suggested:
  - Add one more year (level) to the teacher years of experience in educational areas, where automatic promotion is adopted, such as the Ministry of Education.
  - Give additional marks for applicants for promotion in educational institutions which use teacher achievements as a criterion for promotion, such as universities.

### **Project P-4-17-70: Dissemination of ICT in Educational Institutions**

The availability of proper infrastructures is vital for the dissemination of ICT systems. This project aims to achieve the following:

- Connect all educational institutions to the Internet.
- Dissemination of management and financial information systems in educational institutions.
- Provide e-mail services for all students and employees in all educational institutes.
- Dissemination of well-equipped electronic classes in all schools and universities.
- Equip classes with multimedia and video facilities.

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### **Project P-4-17-71: Building a Digital Library**

Knowledge and information are among the most important requirements of learning, research and creativity. This project aims to set a national digital library offering its services to all institutions and individuals, according to the following:

- Prepare unified specifications for storage, processing and transport.
- Build necessary repositories and databases for digital information.
- Build an Internet website through which digital library can provide its services.

### **Project P-4-17-72: Increase Budgetary Allocations for ICT Projects in Education and Training**

The process of transformation towards an information society requires concentration on the development of infrastructure and superstructure of information technology and its various applications. This requires the allocation of additional budgetary resources for educational institutions. This project aims at:

- Introducing a special item for ICT in the state budget.
- Increasing ICT budgetary allocations for educational institutes.

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## Objective 5 Projects

### **Project P-5-18-73: The Local Digital Content Initiative**

There is a need to increase the local digital content in Arabic or any other language by encouraging the private sector to produce digital content and providing the necessary copy right protection for this sort of content. This initiative aims to increase digital content by concentrating on different fields and putting this content in a variety of formats. This requires efforts on different fronts such as restructuring traditional content resources, encouraging local hosting services that offer competitive hosting environments in terms of quality and price, give incentives for electronic publishing projects and supporting local content and service providers.

### **Project P-5-18-74: Requiring all Government Institutions and Encouraging Private Institutions to Develop Arabic Websites and Regularly Update Them**

Due to the weakness of Arabic content on the Internet, some effort is needed to increase Arabic content on the Internet such as encouraging all organizations and companies to build websites in Arabic and regularly update them. This projects aims to bridge the digital divide in the society through encouragement and support for building thousands of local websites at the end of the first five year plan.

### **Project P-5-18-75: Requiring all Local Publishers to Provide Digital Summaries for all Locally Published or Printed Books or Reports**

To increase the Arabic digital content on the internet requires a concerted effort at all levels from Arab countries through taking measures and passing legislation to overcome this weakness and to provide accurate statistical data on the size of the local publications and to increase the Arabic content on the internet which will contribute to the transformation into information society and bridge the digital divide.

The main purpose of this project is to make it obligatory on local publishers to provide digital summaries of all locally published books and post these on their websites, while providing copies of these to King Fahad National Library to post them on their website.

### **Project P-5-18-76: Provide the Necessary Budget Allocations for Translation and Arabization**

Analysis of the current situation reveals a clear weakness in the area of translation, whether into Arabic or from it. This project aims to provide the necessary budgetary allocations for translation and Arabization, so that 200,000 pages a year would be translated. This will increase Arabic content on the Internet and facilitate access to knowledge and National, Arabic, Islamic and international information.

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### **Project P-5-19-77: A Fund for Free ICT and Communications Training**

Many countries adopt the idea of free training to enable certain sections of the society to acquire the basic ICT skills and knowledge. Despite the abundance of ICT training centers in the Kingdom, there is a large sector of society who either cannot pay the training fees or has little incentives to take the training. Providing free ICT training will solve the problem of such people. It is also well known that some countries provide free training to guarantee the success of their electronic programs such as e-Government. This project aims to establish a fund for free ICT training through the support of government and other organizations in the coming years.

### **Project P-5-19-78: The Personal Computer Initiative**

Many countries took important steps to encourage the use of computers at homes. The main purpose of this initiative is to enable at least one million Saudi families purchase personal computers through eased subsidized deals during the next five years. The initiatives also aims to encourage local computer manufacturing and assembly industries, raise the productivity of the ICT sector, increase the number of qualified human resources in the area of ICT, increase the number of Internet users, expand the base for e-government applications and provide a suitable environment for teleworking specially for women.

### **Project P-5-19-79: Launching Computer Literacy Caravans**

NCITP studies have revealed the existence of widespread ICT illiteracy in rural and poor areas in particular. This calls for more attention to be paid to these areas and groups so that the objectives of the NCITP for all sectors of the society could be realized, and the transformation towards an information society achieved, making the implementation of e-Government possible. This project aims to organize ICT literacy caravans at a rate of 50 caravans a year to train citizens. Each caravan will be in the form of portable computer laboratory consisting of computers, printers and internet communications equipment

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## **Objective 6 Projects:**

### **Project P-6-20-80: Putting the Supreme Council for Islamic Affairs in Charge of Planning and Support for the Utilization of ICT in the Service of Islamic Culture**

A close look at the current status of ICT and the level of its utilization in the service of Arabic language and Islam's mission reveals the importance of the establishment of a high level authority to monitor, implement and support the launch of large projects. This project aims to assign the responsibility for planning and support for the utilization of ICT in the service of Islamic culture to the Supreme Council for Islamic Affairs.

### **Project P-6-20-81: Setting up Special Institutes to Conduct ICT Training Courses for the Official and Voluntary Da'wa Sector**

The role which religious students and Du'at (men of Da'wa) play in people's lives and the need of people everywhere to contact them around the clock is well known and quite obvious. This project aims to establish a special institute for training Du'at (men of Da'wa) in private and government sector in short and long courses in ICT utilization in the service of Da'wa.

### **Project P-6-20-82: Funding ICT Projects Serving Islamic Culture from Public Endowments**

Islam values the dissemination of learning, encourages people to seek it, and urges people to spend on this important commendable endeavor, which could be considered –God willing- as a continuous charity and fruitful knowledge. The main purpose of this project is to:

- Gain permission for expenditure from public endowments on projects of the utilization of ICT in the service of Islam and bridge digital divide.
- Establish an endowment fund to support the use of ICT in the service of Islam and bridging the digital divide.

### **Project P-6-21-83: Setting up a Center for Da'wa through the Internet and Using the Internet to Teach Islamic Rituals**

It is well known that ICT could find many applications in the service of religious institutions. This project aims to set up an electronic Da'wa center to concentrate the efforts of Internet use in the service of Islamic Da'wa. This will also help to disseminate ICT applications in the society, bridge the digital divide and enrich Arabic and Islamic content on the Internet.

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### **Project P-6-22-84: Setting up a Digital Center for Arabic and Islamic Heritage**

ICT creates an opportunity to introduce scientific, intellectual, Arabic and Islamic heritage by converting them into a digital format which can be easily translated automatically into other languages, and could also be easily stored, searched and transmitted across the Internet.

This project aims to establish a center concerned with the digitization of the Arab Islamic heritage and publishing it, after translation, in all international languages. It should also be charged with supporting efforts of Arabization on the Internet. The objective is to digitize two million pages by the end of the first five-year plan.

### **Project P-6-22-85: Encouraging the Establishment of Companies Seeking to Employ ICT in the Production of Educational and Entertainment Applications and Electronic Games to promote Islamic and national culture.**

The international entertainment industry is valued at hundreds of billions of dollars in annual turnover. The entertainment industry has far reaching effects that transcends economic aspects to cultural, religious and ideological aspects, and hence the importance of this project.

The aim of this project is to encourage the establishment of profit companies dedicated to the employment and development of the information technology needed to produce educational and entertainment software, especially those aiming to impart knowledge of Arabic language, Islamic religion, and national identity with special emphasis on entertainment programs and games directed towards children.

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## Objective 7 Projects

### **Project P-7-23-86: Description and Classification of ICT Professions in the Public and Private Sectors**

Due to the relatively recent provenance of communications and information technology professions, no accurate classification exists for these professions. This project aims to:

- Set down a detailed and accurate job description and classification for all ICT and communications professions.
- Approve the classification and description of ICT professions,
- Update the classification and description of ICT professions every two years.

### **Project P-7-23-87: Setting up Databases on ICT Specialists and ICT Jobs**

Many areas encounter difficulties in finding ICT specialists and statistics regarding the human resources working in the field of ICT. Accordingly, this project aims at:

- Identifying the numbers and specializations of current and future graduates in the field of ICT,
- Estimating the future needs of the job market from these graduates.
- Build web databases accessible through internet for the above with an employment record for every person showing his current status and employment history, if applicable.
- Updating the above databases regularly to reflect the current status.
- Monitoring vacant positions in the private and public sector.
- Identifying ICT areas that require the employment of distinguished foreign experts.

### **Project P-7-23-88: Simplifying Procedures to Recruit Outstanding ICT Experts in Specific Areas and Allocating Appropriate Incentives for them**

There is a fierce competition between advanced countries on attracting distinguished ICT specialists due to the expanding demands for their services and their relative scarcity, especially in some specializations. The Kingdom needs to attract a number of non-Saudi specialists in view of the big expansion in ICT projects. This project aims to attract experts in areas where need cannot be filled by recruiting nationals, provided that it is regularly updated in the light of projected needs.

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### **Project P-7-24-89: The Creation of High Diploma Courses in ICT**

The institutions of higher education lack programs for specialist higher diplomas (post BS) in the applied sciences, which the country needs to fill vacancies needing specialized scientific skills. This project seeks to set up specialized higher diploma programs running for periods of one to two years. This program should gradually absorb between 1 and 5% of BS holders, to be distributed on the basis of the needs of the job market, since these programs are directed specifically to the job market. And although these diplomas may be academically equivalent to MS, they differ from the MS in being oriented towards practical matters, and dedicated to one narrow specialization in ICT needed by the job market. The suggested diplomas should concentrate on fields that have a national dimension, such as Arabization, information security, open source systems, and Internet technologies.

### **Project P-7-24-90: Establishing a Distinguished University Level Institute for Information Technology**

There is a need for highly qualified and distinguished manpower in the ICT field. This project aims to:

- Set up a prestigious university-level institute which grants university degrees and high diplomas in specific specializations needed by the job market, and admits a select elite of gifted and outstanding students, or those with skills, and produces high quality research and reflects academic excellence.
- The suggested institute should also sponsor scientific research and adopt innovations and inventions in the field ICT.

It is proposed that a hundred high school science graduates with special competence in ICT should be admitted to the institute to acquire a university degree, while thirty outstanding university graduates should be admitted to obtain a high diploma (MS) in a specific specialization.

### **Project P-7-24-91: Establishing Joint MS Programs Combining ICT Specializations and other Specializations**

It is incontrovertible that ICT in its various manifestations has entered into all walks of life, so that no individual or advanced industrialized society can dispense with it. This project aims to create joint MS programs between ICT and various branches of knowledge to better serve these sciences, where concentration should be on fields that have a national dimension. These programs should be introduced gradually, starting with unique programs which serve the country's fundamental issues. It is thus proposed that a start should be made with two programs each taking up 10-20 students.

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**Project P-7-24-92: Encouraging Full Time ICT Study at MS Level for Government Employees through Internal Scholarships (or Paid Study Leaves)**

With the proliferation and diversity of MS programs in ICT departments in Saudi universities, it became necessary to make full use of these programs through encouraging prospective students and permitting those wishing to join to benefit from scholarships or paid leaves. This project aims to encourage full time study of MS courses or higher diplomas by government employees through the effective use of the system of internal scholarships, which treats employees the same as students on foreign scholarships.

**Project P-7-24-93: Instituting Teaching Assistant Posts in ICT to be Allocated to Universities Annually**

In view of the current numbers of students, the expected growth in these numbers, and the current numbers of ICT faculty members, it appears that there is a big need for specialized ICT teaching staff in universities and higher education institutes. This project aims to increase the number of teaching assistants in ICT specializations by creating 400 teaching assistant jobs in the next five years distributed across universities.

**Project P-7-25-94: Offering Loans for Graduates Seeking Rehabilitation in ICT Specializations**

Work in the ICT field is an ideal choice for the Saudi youth while being at the same time an essential requirement for launching of comprehensive renaissance in the field of ICT on the scale envisioned by the NCITP. The numbers of qualified personnel among the Saudi youth fall well below the opportunities available at present or the demands of the plan when implementation starts. This project aims to create qualified ICT personnel through a program of rehabilitation for university graduates in ICT specializations, to achieve a high income in line with their aspirations. The project hopes to re-qualify 6,000 graduates by the end of the first five-year plan, based on predetermined regulatory measures, which include the sub-specialization national needs, the number of university graduates in each field. The regulatory measures should be frequently updated, and the duration of the rehabilitation programs should be two years.

**Project P-7-25-95: Offering Loans for Secondary School Graduates who did not proceed to University to Qualify in ICT Jobs**

This project aims to provide trained ICT personnel by training willing secondary schools graduates, thus qualifying them in specific ICT professions and guaranteeing them a reasonable income that meets their aspirations. The regulation aspires to train 10,000 secondary schools graduates by the end of the first five-year plan, based on predetermined regulatory measures which include the sub-specialization needs and the number of school leavers admitted for each field. The regulatory measures should be updated regularly.

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**Project P-7-26-96: Requiring all Educational and Training Institutions to Revise Educational Plans Regularly and Ensure that these Conform to Profession Classifications**

There is an urgent need for the compatibility of the educational programs output with the ICT job market. Accordingly, this project aims to:

- Raise the quality of ICT educational and training programs, encourage those in charge of these programs to review and update them regularly and linking them to the realities of the job market and the classification and description of professions.
- Require all educational and training institutions to revise and update their programs every five years to keep abreast with developments in the field and the requirements of the job market. This should be done in cooperation with employers.

**Project P-7-26-97: Encouraging Manpower Preparation and Training Programs to Conform to International Quality Standards**

The application of quality control and international ratification in educational programs has become very common in many countries. This project aims to raise the effectiveness and quality of ICT educational and training programs through the application of recognized international standards such as ABET, ACM, IEEE.

**Project P-7-26-98: Instituting Appropriate Standard Professional Competence Tests to Ascertain Competence and Endorse Training Institutes' Certificates**

This project aims to raise the standard of ICT personnel and improve the mechanism for measuring the skills they possess, regardless of how they obtained those skills. It also aims to create a uniform formula on the national level to measure competence. The main objective of the project is to institute professional competency tests for programs and diplomas that will be applied at different phases, based on the existing programs and current description and classification of jobs, while taking advantage of the known international certification systems, and without requiring any qualifications to take these tests.

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## **Appendix 2**

### **Terminology Used**

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## Appendix (2): Terminology Used

Comment: This appendix provides definitions or descriptions of the most important terms used in the NCITP document. Some of these terms have been taken from local, international or regional organizations, some have been taken from scattered references and some others have been especially coined for the purpose of this document.

**Account Separation for Communication Services: Setting up separate accounts for different communication services offered by the same company, where the cost and revenue for each service can be determined separately.**

**Analysis of strength factors, points of weakness, opportunities and threats (SWOT):** A strategic planning technique used to examine and analyze the sensitive parameters of the current status components with the intention of discovering the points of weakness, strength factors and identifying the opportunities and threats in the external ICT environment.

**Digital content:** Electronic content.

**Digital divide:** The gap that exists between those who have and those who do not have access to technology (telephones, computers, Internet access) and related services.

**Digital Economy:** The term digital economy refers to an economy based on the digitization of information and the respective information and communication infrastructure. The rapid growth of electronic commerce, along with changes in information, computing, and communications, has led to the emergence of digital economies around the world. (An economy that relies on information technology).

**Digital library:** A virtual library on the Internet that contains digital material such as digital books, journals, reports ...etc., and can be accessed easily.

**Digitization:** Conversion of hard printed material (books, journals, reports ...) into digital format that can be processed by computers.

**Distinguished Institute:** An educational establishment that offers a high level, distinguished type of education and accepts only excellent students in certain fields. Such an institute may also offer Master and PhD programs.

**Educational agencies:** include the Ministry of High Education, universities, the General Organization for Technical Education and Vocational Training and The Ministry of Education.

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**e-Government:** Efficient, integrated usage of ICT and communications technology to facilitate easy electronic interaction between government sectors (G2G), between government sectors and citizens (G2C), or between government sectors and business sectors (G2B).

**e-Learning:** A type of learning that relies on the use of ICT and communications in a variety of ways (vertical and horizontal).

**Electronic content:** Content that has been converted to a digital form (digitized), which can be stored, transmitted and processed by computers.

**Electronic medical file:** A medical file that contains detailed patient information in digital form and accordingly can be stored, processed and updated through ICT systems.

**Electronic purchases:** purchases that are performed through ICT and communications technologies.

**Electronic services:** Services provided electronically using ICT and communication technologies.

**Electronic signature:** a conceptual digital signature used in performing electronic transactions and possesses all the characteristics of a normal paper signatures. Electronic signatures are based on encryption techniques and the PKI infrastructure.

**Five-year plan:** A medium-term plan for a period of five years that consists of objectives, implementation policies, projects, and mechanisms to realize the specific objectives of the plan.

**Frame Agreement:** a contract signed by two parties showing the nature and ways of interaction between them.

**Free Technology Zone:** An area that hosts a variety of technical industries including the ICT industry. The main characteristic of such an area is the prevalence of the appropriate infrastructure plus the fact that income tax and customs are waived.

**Future vision:** A conceptual view of the anticipated future of an establishment or a state.

**Gap Analysis:** A method used to compare the current status with the anticipated or aspired status according to a particular plan. If there is a gap, then the type and parameters of the gap are determined and the necessary measures to close the gap are taken.

**General Objectives:** represent targeted development requirements that should be realized through a selected set of implementation policies within a predetermined period of time.

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**High speed digital lines (Digital Subscriber Lines (xDSL)):** A technology used to solve the last mile problem (the 56k bottleneck) by relaxing and bypassing the traditional 4k filter used in local loops and utilizing the full range of the copper frequency spectrum. This provides a much higher bandwidth that may be used for the simultaneous transmission of data and voice.

**ICT (Information & Communications Technology):** an interactive suit that includes computer and communications equipment, systems, applications and related services.

**ICT Caravan:** A big bus equipped with a variety of IT and communications equipment used as a mobile ICT lab.

**Implementation policies:** Suggested approaches to realize certain objectives. The suggested approaches may take an abstract general form if the targeted objectives are general and relate to the society as a whole, or may be sector-oriented or specific to a particular domain, if the targeted objectives relate to a particular sector or domain.

**Incubator:** An establishment to nurture innovative ideas and develop them so that they become products with a market value. This is done through the provision of technical, logistic, financial and administrative services to the originators of these ideas. In most cases, the incubation period is between two to three years. Incubators represent an effective way for generating small and medium companies.

**Indicator:** a parameter used to measure the progress of implementation during a particular period of time.

**Information society:** a society mainly characterized by the production, dissemination, processing and reliance on information as a major contributing factor to the economy and culture.

**Information Technology (IT):** A term used to indicate computer systems, all types of software and related services such as education, training, consultancy and digital content.

**Interactive electronic content:** electronic content that can be accessed interactively by users.

**Long-term vision:** Consists of a future vision for a number of future years (for example the next twenty years), general objectives and implementation policies, and is meant to provide a long-term view of ICT in the Kingdom.

**National databases:** Comprehensive, accurate statistics and data about the various components of the society and the activities that take place within it. Examples of these are the database of the workforce and the database of exports and imports.

**National Frequency Spectrum Plan:** A plan to be prepared by CITC (Communication and Information Technology Commission) and approved the Council of Ministers to distribute the frequency spectrum among customer organizations.

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**National Numbering Plan:** A plan prepared by CITC to determine the domains of numbers used in communication services in all areas of the Kingdom.

**Open Source Software:** Software programs that can be freely accessed and modified and are not owned by a particular entity.

**Open systems:** A computer system that uses open, well-known specifications and standards and accordingly can easily interoperate with other systems.

**Organizations (establishments):** central or subsidiary administration units.

**Plan:** A collection of integrated, consistent operational procedures that are carefully designed to achieve a particular set of general objectives through the realization of a set of specific objectives, within a predetermined period of time, under the constraint of available financial, material and human resources.

**Portal:** A special type of website on the Internet that acts as a starting communication point which connects the site visitors to a wide variety of other websites and services. The name "portal" has been derived from the nature of such a website, because it behaves like a door that opens on the wide world of the Internet. The main characteristic that distinguishes portals is that they are highly organized.

**Privacy:** private information relating to individuals or society establishments. This includes personal information, commercial information, industrial information ...etc,

**Process reengineering:** Simplification of processes by redesigning them while taking into account ICT and communication technology.

**Project:** A well-defined, independent activity through which certain implementation and production tasks are achieved within a predetermined period of time.

**Public Key Infrastructure (PKI):** a collection of policies, regulations, hardware devices, software programs and services that enable the secure exchange of information, the secure execution of distributed transactions, verification of identity, digital signatures plus other security operations. The PKI is generally based on the ideas and concepts of public key cryptography, where each user is given a pair of encryption keys: a public key and a private key.

**Secure server:** A computer system with special security specifications used to host e-commerce server applications. This type of computer employs secure protocols for data transmission.

**Specific Objectives:** Objectives derived from the general broad objectives, which are characterized by a narrow specific domain in the domestic environment. The main purpose of these objectives is to realize the general broad objectives.

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**Standard Tests:** Tests that prove the professional competence of an applicant in particular professions, on the basis of which a certificate is awarded. This certificate complements the academic certificate obtained by the applicant after undertaking a standard educational, training or rehabilitation program. Academic certificates are not a precondition for standard tests. An applicant can take a standard test, even if he has not obtained an academic certificate.

**Technology parks (scientific or technical):** a special region created to provide a suitable environment for technical or scientific development. A technology park usually contains technical incubators, universities, colleges and companies.

**Technology transfer center:** A university-based center that tracks and discovers technical inventions and innovations in the respective university, helps in obtaining patents for them, provide the necessary financial support to complete the projects and link the inventor to the industrial market with the intent of finding sponsors for the invention.

**Telemedicine:** Medication through modern electronic communications systems, including clinical examinations, investigations, lab tests, automatic transmission of tests and investigations, exchange of expertise, performance of operations and other types of medical applications.

**Telework center:** A place or area especially equipped and prepared for teleworking, which is easily accessible by telecommuters. The equipment includes especially prepared workstations, communication facilities and office equipment.

**Teleworking:** Telework (also called telecommuting and remote work) describes a situation where an employee is working anywhere away from the traditional office, while communicating and interacting with the main work environment through a modern communication medium. A typical scenario involves employees working at home either full or part time, but they could also be working on travel assignments or at remote work centers or on the road day by day.

**The last mile:** The link between a subscriber and the nearest high speed communication switch. This link represents one of the major obstacles in providing high capacity communication services for customers due to the difficulty in replacing local loop copper wire by high speed links(not economic).

**Universal Access/Universal Service:** Provide the minimal level of access and utilization of communications services, with a reasonable level of quality and reasonable prices, within a certain geographic area.