Strategy for ICTs Development in the Islamic World

Adopted by
the fifth Islamic Conference of Culture Ministers

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Preface

Mankind is experiencing drastic changes taking on two intertwined shapes of progress: one is economic and the other concerns information and communication technologies (ICTs). While economists focus on the contribution of the services sector and its orientation towards information processing, experts in information and technology, in their turn, underline the role of technology in economic development.

Ever since the 70’s of the 20th century, economists and information specialists predicted a new wave of economic progress in ICTs and the latter’s capacity to play a key role in the formation of what will be subsequently known as the information society, a society where information will be used intensively as an integral part of the economic, social, cultural and political spheres.

Yet access to ICTs is still limited to the North countries. Current indicators seem to point to even wider inequalities between the North and South. Multinationals holding sway of ICTs have become acting as leading global news agencies pressurizing the South countries into liberalizing their economies. Nevertheless, there is still a feeling of apprehension that what appears like a genuine willingness to integrate the South into the global communication network, may turn out to be just a cover of a hidden agenda to encroach upon the South’s market and massively exploit its resources.

The Member States of ISESCO are no exception to this rule. For the political, economic and social implications of acquiring ICTs constitute a real challenge, which, though complex and difficult it looks, can be won. The substantial progress made by some developing countries such as India, South Korea and Malaysia, provide encouraging signs in this sense.

In the light of these considerations, the World Summit of the Information Society (Tunis, 2005) called upon the countries and the regional and international organizations to make further efforts and mobilize energies and potentials in order to develop the sector of ICTs and enhance its competitiveness with a view to achieving the Millennium Development Goals by 2015.
ISESCO has received with deep satisfaction the earnest initiatives taken by some Member States which proceeded with the measures necessary for providing an adequate ground for acquiring ICTs, through the provision of the necessary infrastructure and enacting of legislation related to ICTs.

Likewise, ISESCO has listed a set of relevant programmes and activities as part of its action plan to support the efforts led by the Member States to develop their own capacities in the field of ICTs, speed up the pace ICTs use in education, science and culture, and encourage the measures necessary for bridging the digital divide between the Islamic world and the advanced countries.

Based on its responsibility in ensuring coordination of the Islamic joint action within its competence, including the field of information and communication, and being convinced of the need to provide a reference document that defines the major orientations for the promotion of ICTs in the Islamic world, in accordance with a holistic vision and an approach that takes into account the specificities and needs of the Member States, ISESCO devised the draft strategy for the development of ICTs. To this end, ISESCO has relied on an accurate survey of the current situation of ICTs in the Member States, an inventory of the constraints that hinder full access to this technology in the vital sectors of development, defining the necessary means to enable the Member States to have access to the digital information society. The fifth Islamic Conference of Culture Ministers adopted this strategy.

The strategy comes at a time when the information and communication revolution has shaped a new world marked by free flow of information, unbalanced distribution of information among the countries, wide use of ICTs, and circulation of value and knowledge contents with great influence on the different segments of society, especially the children, the youth and women. In addition, mastery and use of knowledge and ICTs are taken now as good indicators for a country's progress in the achievement of sustainable development.

The Strategy seeks to achieve four major objectives: development of ICTs infrastructure in the Member States; promotion of the role of ICTs in national development; increasing the production of digitized knowledge content reflecting the diverse cultures of the Member States; and attending to the ethical aspects of ICTs in these countries.
To achieve these objectives, four areas of action have been defined. These include: the accommodation of the relevant infrastructure; promotion of the role of stakeholders and key players from governments and civil society institutions in the achievement of the strategy’s goals; preparation of training and awareness-raising programmes; and encouragement of the production of digital knowledge contents. ISESCO has also devoted a whole chapter to define the implementation means of this strategy in its financial, organizational and legal aspects, which may serve as a guide when it comes to devising the relevant national plans and adapting them to the specificities and needs of the Member States.

By publishing this strategy, ISESCO commends the outstanding scientific contribution made by the Moroccan expert, Dr Dalila Chiadmi, to this strategy, and wishes that the orientations, content and proposals contained in the strategy serve as a guide for the Member States in developing and implementing their national strategies on ICTs, and be of use to students, researchers and professionals in this vital field.

May Allah grant us success and lead us to the Right Path.

Dr. Abdulaziz Othman Altwaijri
The Director General
of the Islamic Educational, Scientific and Cultural Organization (ISESCO)
“The information society that the countries of the North are striving to create cannot become a reality in the absence of the countries of the South”

Dr Abdulaziz Othman Altwaijri
Director General of ISESCO

Introduction

Information and Communication Technologies (ICT) have become the center of great universal attention and are often presented as a vector of development for countries. As such, the UN Commission for Sciences and Technology for Development believes that ICTs “will acquire crucial importance in the sustainable development of emerging countries.”

The present project addresses ICTs as an engine of development in the fields of education, sciences and culture in the Islamic World. In fact, Muslim countries are facing many a challenge, one being the use of ICTs and how to integrate the information and knowledge society. The challenge facing these States is to integrate the knowledge economy and society in order to speed up their development process.

The perusal of several documents reveals that, though several inadequacies persist within most ISESCO Member States as to the utilization of ICTs and how to benefit from the opportunities they create, the governments of several Member States have expressed their desire and determination to move towards the edification of a knowledge society (cf. 2.4). It is thus noted that the internet is increasingly pervading the lives of citizens in Member States and that a positive dynamic of ICTs utilization is underway. However, a number of countries still stand out by their tendency to lag behind, but mostly by their espousal of different priorities. It becomes amply evident that ICTs, no matter how numerous the opportunities they give rise to, will have to forge a place for themselves within the plethora of needs expressed by these countries. Yet, ICTs can efficiently contribute towards furthering human development at many levels, including education, health, or employment.

ISESCO seeks to encourage countries of the Islamic world to improve their ICTs levels in order to spur their development in education, sciences and culture, and urges this world to engage in tangible actions likely to help 'vanquish' the digital divide. Member States are invited to ponder and to seek inspiration from the experiences that have made it possible to substantially abridge the digital
divide. The impressive success of South-eastern Asian countries, owed mainly to the massive investments injected over many decades in education and R&D, are an edifying example. Reference is made here to South Korea and Taiwan in particular, two countries that have witnessed a tremendous expansion of science and technology, coupled with economic growth.

Furthermore, ISESCO, which has actively participated in the World Summit on the Information Society -wsis- (Geneva 2003 and Tunis 2005), as well as in the various regional meetings of the PrepCom, has decided to proclaim the first decade of the 21st century as a 'decade for culture, information and communication in the Islamic world'. This interest has taken shape in its successive action plans (2001-2003, 2004-2005), and will continue to take up an important place in its action plan for 2007-2009. Accordingly, several activities targeting the development of ICTs have been carried out in Member States, based on the results of the three regional meetings of experts organized by ISESCO (Asia, Africa, the Arab World) for the purpose of assessing the situation of ICTs in Member States. This evaluation has also revealed the need for devising a global strategy for the development of ICTs in Member States.

The present strategy should allow Member States to face the challenges of the information and knowledge society and to achieve success in meeting the challenge of the new millennium, namely that of achieving sustainable development. It should provide orientation in the ICTs field in ways adaptable to each Member State. Countries that have not yet done so should formulate their own ICTs strategy in order to restructure their technical and human resources. By devising the strategy introduced in the present document, ISESCO wishes to provide counsel and support to those Member States that have intimated a desire to find an answer to the following question:

How can information and communication technologies be put to contribution in education, science and culture and in the building of the information society?
Chapter 1

Reasons
If the steam engine was the catalyst of the industrial revolution at the end of the XVIII century, internet and the information and communication technologies stand at the root of the digital revolution, and even of the emergence of the digital economy.

Similar to the industrial revolution, the digital one provides opportunities for those States that accept to espouse it. In fact, such technologies constitute a powerful impetus for intensifying exchanges of 'virtual' data, since they have made it possible, within a few years, to develop exchanges of information, ideas, knowledge, goods and services throughout the world, thus giving birth to the knowledge society. The prominent position held by ICTs within the economic, social and educational development of wealthy countries justifies the need to define a 'roadmap' for the assimilation of ICTs by the Islamic countries so as to help them benefit from the advantages inherent in these technologies, but most importantly, to incite them to act swiftly in order to reduce the divide before it is too late.

Thus, in order to draw benefits from ICTs, it is not enough to be physically equipped with communication means (telephony, internet), but to espouse as much as possible all the privileged ICTs sectors which the International Convention of the Organisation for Economic Co-operation and Development (OECD) defines as follows:

1. The sector of telecommunication services (communication transport, access to networks, etc)
2. ICT-production sector (manufacturing of equipment goods and electronic goods such as computers, IT hardware, television sets, radios, telephones, content production…)
3. Information services sector, covering at the same time consultancy and engineering services, software production, information services, internet-supported applications, data processing, databases, etc.
4. The sector in charge of ICTs distribution and which ensures trade in and maintenance of the aforementioned goods and services.

In fact, it is of the utmost importance for the progress of ICTs to go hand in hand with the development of an information industry in order to avoid that countries become mere consumers of the products generated by advanced countries. The positive direct and indirect influence of this industrial development is conducive to the economic growth of the targeted countries through the process of job creation and new income generation.
The act of building up ICTs infrastructure and human and material resources involves costs that are not always within the reach of countries with a medium or weak human development. The reference guide of the International Development Research Centre (IDRC), prepared by the UN Commission on Science and Technology for Development, concludes that 'to do nothing' would probably cost these States more as they would be running the risk of further impoverishment and of inheriting a digital divide that is even more profound and harder to overcome.

Consequently, any delay in gaining access to ICTs and in preparing the population for a correct ICTs use can only cause them loss of opportunity for emancipation and development. Although ICTs cannot alone generate the development of these States, it is undeniable that these technologies must be part and parcel of this process to avoid that they are relegated to the status of 'outcasts'.

Consequently, these States have to take into consideration the following constraints:

- Successful access to ICTs is not limited to financial investments in the purchase and setting up of an ICTs infrastructure. It also requires a minimal level of education of the population and the development of sciences, technology and scientific research as a prerequisite for the production of the vehicle (telecommunication devices and services or IT services) and the production of knowledge and content;

- The constant evolution of ICTs is the result of both sustained technical progress and the distribution of new goods and services. The countries behind this progress are in general more advanced in matters of research and development. To do nothing would be to confine the Islamic world within the role of a consumer;

- The exploitation of new ICTs services implies profound mutations in some of our activities, changes for which the population must be prepared. This is the case for distance learning which helps educational systems to train more people, for e-commerce which competes with conventional markets, for IP-supported voice which is increasingly replacing the traditional telephony, etc. That the use of these tools is commensurate with the development of countries comes as no surprise. Efforts should be exerted in order to prepare the targeted populations;

- Content or the 'knowledge society' is becoming material that is vital for the global functioning of States and their development. It is seen as the extension of the internet and the network-connected society which brings
within reach of everyone, anywhere in the world, the benefits of access to knowledge. In fact, the emancipation of the population is partially conditional upon this. Particular care should be taken in order to ensure success in producing content that is suitable for the Islamic world.

One may conclude from the above that the challenges of ICTs and the information society are not only economic, but also social and cultural. Jack Balkin, professor at the Yale Law School in the United States, eloquently expressed this when he stated that “access to knowledge is not only a matter of economic development, but also an instrument of social justice and democratic participation”.

1. Importance of the Knowledge Economy

The 21st century, often described as the century of the 'knowledge economy', is opening up to a new component in economic growth: the virtual element. After relying for a very long time on wealth in the form of raw materials, industries, and the volume of the material capital held by each nation, economy has started to rely on the ability to innovate, to create concepts, and to spawn ideas.

The development of states will increasingly become dependent upon the capital of skills, of knowledge and of know-how. Success will reward those states that will be able to acquire competency, to have the best potential for training and research and promote innovation to the largest possible extent. The creation of new services and novel applications depends on the ability to garner the necessary elements in terms of material infrastructures, software and the knowledge required to put ICTs at the service of development priorities. Following are a few elements which we believe to be essential in guaranteeing access to ICTs:

- political will (defining strategies, acquiring the means to translate this political will into reality, etc.),
- availability and physical access,
- suitability for local conditions and needs,
- reasonable costs,
- understanding of ICTs and their potential utilizations,
- relevance of the used content and languages,
- socio-cultural factors (educational levels, gender relations, etc.),
- legal and regulatory framework.
2. ICTs as a Development Vector

The access to and utilization of ICTs cannot be a finality in itself. The reason why a tremendous interest is taken in ICTs lies in the fact that they have proven to carry remarkable promise with regard to economic and social development. The WSIS has clearly emphasized this idea when it referred to “ICTs as a tool at the service of economic and social development”.

Although in-depth evaluations have yet to be carried out, it is becoming increasingly obvious that ICTs have tangible repercussions at the macroeconomic plane. There is a general consensus that, though ICTs cannot be considered as the sole condition for development, they can contribute largely to this development. The WSIS equally underlines that ICTs can serve as an engine of economic growth and propose innovative applications in administration, commerce, education, etc. The following few possible utilizations are an illustration of this point:

- Distance learning has become a real option in developed countries (In 2005, more than three out of five schools, colleges and universities in the United States completed their attendance-based classes with online classes). Taking into consideration the shortage of academic institutions and teachers in a large number of developing countries, distance learning may play an important role in the methodology of dispensing training or classes. Distance learning may, in fact, serve as a solution to remedy the lack of structures (in isolated regions for example), of teachers and instructors. It would thus contribute to improving the educational level of the population as sought by the Millennium Development Goals of guaranteeing primary education for all by 2015. The improvement of schooling would bring about a more productive population capable of generating its own activities and meeting its needs.

- Email, chat or videoconferences, as a support for communication and exchange of information, make it possible to share knowledge, expertise and best practices and to create opportunities for new synergies and knowledge expansion. They can also serve as a support for an open production of knowledge that often matches the expectations of young generations. An easier access becomes thus possible and allows exchanging advice, asking for prices, inquiring about the weather, etc. Used judiciously, this knowledge enables users to improve their conditions, promote creativity and inter-cultural dialogue, and favor the spreading of a culture of peace and tolerance.
- Freely accessible Platforms for publishing scientific documents (articles, research projects, etc) make it possible to disseminate scientific knowledge, and thus contribute to liberating researchers of the countries in the South from their isolation. These platforms could easily follow in the path of the boom witnessed with open source or free software. A highly interesting example is that of Linux, a computer management system based on the Unix system and adapted to PCs, initially devised by the Finnish Linus Thorvald and subsequently integrated in open source software.

- Decision-making support systems accelerate and optimize decision making by providing decision makers with up to date and real time information.

These examples of applications make up a positive contribution towards fulfilling internationally identified development objectives, namely the Millennium Development Goals or Education for All, through easier access to markets, education or culture. Thus, the generalization and utilization of ICTs have an important economic repercussion, in the sense that they modify work, communication and interaction methods.

Several associations, international organizations, conferences and forums are working towards this goal throughout the world. In fact, the existing myriad opportunities explain the enthusiasm for and strategic significance of ICT, reflected in a vast expansion at the world level. Between 2000 and 2005, expenditure in this sector progressed at a universal pace of 5.6% per year. This growth was very rapid in some countries: 22% for China, 23% for India against 4.2% for OCED Members States. Indonesia ranks among the nine countries in the world to have the highest expenditure growth rate in the 2000-2004 period, while Malaysia doubled up its ICTs expenditure between 1999 and 2005.

This enthusiasm for ICT, unfolding within a globalization context, can only lead us to wonder about the status of the Islamic world in this process. It is unfortunate that the development of ICTs in the Islamic world has inherited an alarming status of sciences and technologies. Professor Muhamed Abdus Salam, physics Nobel Prize winner, underlined in 1990 the lack of political will with regard to scientific and technological independence, the inadequacy of institutional and legal structures, as well as the lack of scientists actively embarking on scientific enterprise. It is nonetheless important to state the following:
- The access by the Islamic world to the information society involves revisiting one of the most glorious achievements of Arab-Islamic history. From the 8th to the 13th centuries, the Arab-Islamic civilization was at its apogee and managed, long before the emergence of ICT, to give body, in its own way, to a 'culture of information and knowledge in which the Arabic language was the medium of science. The production of knowledge was at that time rather prolific.

- The scientific gap suffered by the Muslim states is five centuries-long, while the 'digital divide is just a few years since ICTs emerged only towards the end of the XX century. Thus, the Islamic states would greatly benefit if they immediately started working towards the creation of propitious conditions for ushering their populations into the digital age.

Studies conducted over the past years to understand and analyze this situation concur in putting the blame on political will and on the level of investment in education and scientific research. Thus, the report on the 'Strategy for the Development of Science and Technology in the Islamic Countries, published by ISESCO in 1997, describes an alarming situation in terms of research in science and technology in Member States. The report also underlines their inability to meet the challenge created by the world's scientific and technological progress because of insufficient scientific and technological human resources, of a limited investment in education and R&D, of a human development index that is below the world average, etc. The report of COMSTECH, titled 'Status of Scientific Research in OIC Member States', sheds light on a very low level of investments in scientific research, actually less than 0.4% of the GDP is dedicated to research and development, compared to an average of 2.3% in 2003 for industrialized nations. This same report states that OIC Member States remain among the nations that published the least number of scientific articles, i.e. less than 3% of the research articles published in English in international journals between 1995 and 2005. An improvement of this situation would entail the identification of the problems and the adoption of the necessary measures to resolve them. Thus, and in order to build a better future and compete with the rest of the world, Member States have to modify their approach to science and technology. It is a challenge that our politicians can meet if they arm themselves with the necessary means (political will, budgetary commitment, freedom of expression, etc.).
Taking into account this situation, ISESCO wishes to provide counsel and support so that the Islamic world would not miss on this development opportunity and could take part in these dynamics to avoid the impoverishment of its populations by guaranteeing improved conditions of education, sciences, young people, women, etc. To guarantee this, it is the duty of each Member State to engage in a general upgrade in order to gain the capacity to master ICTs and benefit from the tremendous possibilities they carry. This upgrade can only contribute positively to the overall development of the Islamic world, enabling it in the process to take the place it deserves in a world transformed by the digital revolution.

Fortunately, more and more ISESCO Member States are becoming mobilized in the quest to create a digital culture and subsequently integrate the information society:

- Resolution 73 of the International Telecommunications Union to hold the World Summit on the Information Society in Tunisia was initiated by the Tunisian President Zine Abidine Ben Ali. The Tunis Commitment and the Tunis Agenda for the information society underline the potential of ICTs to “improve the social and economic development of all human beings”. They also draw attention to “the growing importance of ICT, not only as a means of communication, but also as an engine of development, and as an instrument towards fulfilling the development objectives set at the international level, namely those of the Millennium Development Goals”.

- The proposal of a world voluntary fund that would reinforce the existing financing mechanisms in order to bridge the digital divide was made by Mr Abdoulaye Wade, President of Senegal. In doing so, he managed to get the international community’s acceptance of “digital solidarity as a vision of the information society.”

- The Malaysian politicians who, seeking to join the ranks of developed countries by 2020, decided to develop the ICTs sector. As a result, the net turnover of communications and ICTs industries increased from 12 billion Malaysian Ringgits in 1999 to 24 billion Malaysian Ringgits in 2004. In July 2003, Cyberjaya, a new city, was inaugurated by former Prime Minister Dr Mahathir Mohamad, with the purpose of creating an ICT-dedicated intelligent city that would house high value-added multinational companies. In 2005, Malaysia was classified among the top 5 Asian countries in ICTs promotion with an expenditure reaching US$ 3.2 million.
The privatization of the telecommunications sectors initiated by the Moroccan government has guaranteed the expansion of the telecommunications market. In 2006, the penetration rate (ratio of fixed and mobile telephony subscribers per 100 inhabitants) stood at 57.78%, registering an appreciation of 12 points compared to 2005, while the internet penetration rate reached 1.34% against 0.88 in 2005. In 2005, the turnover of the ICTs sector amounted to 35 billion dirhams (the equivalent of US$ 3.5 billion), compared to 10 billion dirhams in 1998, thus bringing the sector's contribution to the GDP up to 6.7%. Furthermore, several actions in the field of training/communication were carried out as a way of supporting the various initiatives undertaken in this drive. These included, for example, the CyberBase project carried out by Acacia Net, and the Ajialcom project initiated by the government, both of which aim at sensitizing and training young people.

Egyptian president Hosni Mubarak initiated in 1999 the program dubbed “The Egyptian Information Society Initiative”. The initiative involves elements such as developing the regulations governing ICT, e-readiness, e-governance, e-business, distance education, e-culture and export-oriented ICTs industries.

Considering the importance of ICTs in development, ISESCO Member States would greatly benefit from integrating the knowledge society. In this pursuit, a first step would be to derive inspiration, in a creative way, from each Member State's experience in the elaboration of a customized ICTs strategy. The next step would be to invest in ICT-related fields in order to maximize on social and economic benefits at the lowest possible cost. Each country must prepare itself to draw optimal benefits from the new possibilities thus arising. The development of ICTs in the Islamic world can also contribute to better propagate the image of Islam in the West, by exporting the image of a peace-loving nation that preaches harmony, enlightened moderation and tolerance.

In order to help Member States, the present project seeks to provide a 'generalist' development strategy. As part of this exercise, a descriptive analysis of the current situation is presented in the following chapter.
Chapter 2

Statuts report
Although the universal aspect of the World Wide Web is incessantly reiterated in the media and at conferences and world summits, we cannot help noticing the inequalities of access to the information sources, contents and infrastructure.

Is the truly universal trait of the information society a reality?

UNESCO's report 'Towards Knowledge Societies' states that in 2005, only 11% of the world's population had access to internet, 90% of whom reside in industrialized countries, and that the number of African internet users is estimated at 1% of the population. In other words, non-industrialized countries barely represent 1.1% of the world's online population. Such statistics can only cast doubts as to the universal nature of the web and diminish the impact of the new technological revolution on non-industrialized countries. This is commonly known as the digital divide.

1. The Digital Divide

According to experts, in order to guarantee an effective use of ICTs, emerging or developing countries have first to be 'e-ready'. This electronic readiness refers to the availability of ICTs infrastructure, the access of the population to ICTs, and the related legal framework. The causes of this 'digital divide' are many and the most obvious among them are summarized in the following:

- Access to infrastructure: more than 2 billion human beings are not connected to an electric network - this being a basic condition for massive access to new technologies at this stage. Part of this population lives in the countries targeted by this study.

- Budgetary constraints: in comparative terms with industrialized countries, the cost of telecommunications and computers remains very high both in absolute terms and with regard to the purchasing power. The supply of internet services constitutes a costly investment in the cities and has a weak penetration rate in the countryside.

- The constraints of utilization: mastering the computer tool requires time that is inversely proportional to the level of education. Being cognizant of the low, if not non-existent, level of schooling of most citizens in these countries, the above-mentioned figures become understandable.
This digital divide brings about the exclusion of an important portion of the population which is, de facto, deprived of the ability to benefit from the opportunities provided by ICT. A more in-depth analysis makes it possible to identify the different profiles of the most disadvantaged population categories:

- Rural residents: This results from the lack of internet penetration. One promising solution would be the mobile technologies which hold the promise of liberating the countryside from its isolation.

- Women: Since almost two thirds of illiterate people in the world are women. In developing countries, an average of one woman out of two cannot read, hence the serious risk of seeing women in these countries accumulate disadvantages that compromise access to ICTs, both for themselves and for their children.

- The unemployed: Access to internet, when it is available, is often limited to workplaces and internet cafes, places that are not always within the financial reach of the unemployed. One solution would be to set up low-cost internet base stations that would be run by the civil society.

- Non-English speaking populations: although the technical problem of catering for non-Latin scripts (Arabic, Japanese...) has been resolved, the spread of English as the internet language par excellence leaves little room for other languages in the cyberspace.

Considering the strategic and political possibilities of ICTs, it is crucial for governments to take action in order to reduce the digital divide, as a prelude to the emergence of the knowledge society. Bridging the digital divide goes through initiatives that would steer the population towards mastering, acquiring and benefiting in an optimal manner from the possibilities provided by ICTs. These measures pertain mainly to infrastructures, access, content, training and the legal and regulatory framework. An analysis of these measures will be addressed in the following section of the present document.

Without these four facets of ICTs, access to the information society cannot be conceived. In fact, the majority of potential or actual internet users are alarmed by the lack of technical and financial means experienced in most of these countries. They fear that the economic delay will only be aggravated by such technical deficiencies as a connection with an insufficient bandwidth.
The analysis of the situation in Member States shows that these countries do not stand on the same level in terms of introduction and utilization of ICTs. Before analyzing infrastructure, access, content and training, the following part will examine inequalities among Member States in terms of ICTs.

2. ICTs-Related Inequalities in the Islamic World

Member States have unequal development capacities. The 58 countries are ranked according to their level of human development. Five States stand out with a high human development level, 28 States have a medium human development level, and 19 States post a weak human development level. Afghanistan, Iraq, Palestine, Somalia, Mozambique and Uganda do not seem to have a human development classification (cf. Appendix 2). Among the 49 least advanced countries of the planet, more than twenty belong in the Islamic world, i.e. almost half the States of the Islamic world.

Experts attribute these inequalities more to human factors than to material ones such as market structures, financing, strategies or technology transfers. The improvement of a country’s development level inexorably goes through building up the social capacities of its men and women through education, training, the improvement of living conditions (health, longevity...)

Since the present project focuses mainly on ICTs, it would be judicious to look at the indicators set by the International Telecommunications Union (ITU) in order to propose taxonomy of Member States as per their level of ICTs use. Among the many indicators that have been used, we can cite the Network Readiness Index (NRI), the Digital Access Index (DAI), and the latest one, the Digital Opportunity Index (DOI) (Appendix 1 and Appendix 2)

The absence of DOI calculations for most Member States makes it impossible to establish a classification according to this measure. In fact, the DOI, which takes into account factors such as ICTs opportunity, utilization and infrastructure, has been initially calculated for fifty countries only. Four of these countries belong to the Islamic world: Egypt, Indonesia, Malaysia and Turkey.

For the purpose of the present analysis, the DAI, which takes into account such variables as availability, means of access, educational level and quality of services, has been used. The taxonomy thus obtained reveals a strong correlation between the level of human development and the use of ICTs, translating in the emergence of three main groupings.
The first group presents a DAI that is higher than 0.50. It includes Malaysia and the five ISESCO Member States that post a high human development level, namely the United Arab Emirates, Bahrain, Brunei, Qatar and Kuwait (c.f. Table 1). It is interesting to note that all these countries are Asian ones.

Although Malaysia has a medium human development level, the fact that it features among the first group does not really come as a surprise knowing the involvement and efforts exerted by this country in the ICTs field and the knowledge society.

<table>
<thead>
<tr>
<th>State</th>
<th>Geographical location</th>
<th>Human Development Level</th>
<th>DAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Arab Emirates</td>
<td>Asia</td>
<td>High</td>
<td>0.64</td>
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<td>Asia</td>
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<td>Asia</td>
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<tr>
<td>Qatar</td>
<td>Asia</td>
<td>High</td>
<td>0.55</td>
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<tr>
<td>Kuwait</td>
<td>Asia</td>
<td>High</td>
<td>0.51</td>
</tr>
</tbody>
</table>

*Table 1. States with a DAI higher than 0.50 (DAI classification)*

The second group is made up of States with a DAI ranging from 0.50 to 0.48. Pakistan, with a DAI of 0.24, ranks in the one before last position despite its low human development level. A more in-depth analysis shows a leading group made up of 14 States with a DAI that is much closer to the maximum and presenting therefore almost similar levels of access to ICT. The remaining 13 countries have a DAI ranging between 0.39 (Albania) and 0.21 (Tajikistan).

The particularity of Palestine's case is interesting to examine. Palestine's DAI was worked out despite the fact that its human development level had not been determined. Palestine ranks halfway among Islamic States with a DAI of 0.38. This constitutes an exception for a State that has been prey to conflicts for many decades.
The third group is made up of 22 countries that post a DAI that is inferior to 0.20 (cf. Table 3). These are in most cases African countries (19). The DAI stands at 0.18 for Bangladesh, Yemen, and Togo, and drops to 0.04 for Niger. Cameroon and the Comoro Islands are the only states with a low DAI while their human development level is medium. Uganda and Mozambique have a DAI but their human development level has not even been determined. These two States are among the Least Developed Countries and have a DAI of 0.17 and 0.12.

<table>
<thead>
<tr>
<th>State</th>
<th>Geographical location</th>
<th>Human Development Level</th>
<th>2002 DAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lebanon</td>
<td>Asia</td>
<td>Medium</td>
<td>0.48</td>
</tr>
<tr>
<td>Turkey</td>
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</tr>
<tr>
<td>Bosnia-Herzegovina</td>
<td>Europe</td>
<td>Medium</td>
<td>0.46</td>
</tr>
<tr>
<td>Surinam</td>
<td>America</td>
<td>Medium</td>
<td>0.46</td>
</tr>
<tr>
<td>Jordan</td>
<td>Asia</td>
<td>Medium</td>
<td>0.45</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>Asia</td>
<td>Medium</td>
<td>0.44</td>
</tr>
<tr>
<td>Guyana</td>
<td>America</td>
<td>Medium</td>
<td>0.43</td>
</tr>
<tr>
<td>Iran</td>
<td>Asia</td>
<td>Medium</td>
<td>0.43</td>
</tr>
<tr>
<td>The Maldives</td>
<td>Asia</td>
<td>Medium</td>
<td>0.43</td>
</tr>
<tr>
<td>Oman</td>
<td>Asia</td>
<td>Medium</td>
<td>0.43</td>
</tr>
<tr>
<td>Libya</td>
<td>Africa</td>
<td>Medium</td>
<td>0.42</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>Europe-Asia</td>
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<td>Tunisia</td>
<td>Africa</td>
<td>Medium</td>
<td>0.41</td>
</tr>
<tr>
<td>Egypt</td>
<td>Africa</td>
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</tr>
<tr>
<td>Albania</td>
<td>Europe</td>
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</tr>
<tr>
<td>Palestine</td>
<td>Asia</td>
<td>Medium</td>
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</tr>
<tr>
<td>Algeria</td>
<td>Africa</td>
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</tr>
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<td>Turkmenistan</td>
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</tr>
<tr>
<td>Gabon</td>
<td>Africa</td>
<td>Medium</td>
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<td>Indonesia</td>
<td>Asia</td>
<td>Medium</td>
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<tr>
<td>Morocco</td>
<td>Africa</td>
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<td>0.33</td>
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<tr>
<td>Uzbekistan</td>
<td>Asia</td>
<td>Medium</td>
<td>0.31</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>Asia</td>
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</tr>
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<td>Syria</td>
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<tr>
<td>Azerbaijan</td>
<td>Europe</td>
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</tr>
<tr>
<td>Pakistan</td>
<td>Asia</td>
<td>Weak</td>
<td>0.24</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>Asia</td>
<td>Medium</td>
<td>0.21</td>
</tr>
</tbody>
</table>

Table 2. States with a DAI between 0.50 and 0.20
The resources available for the countries of this group seem to be too poor to remedy the structural deficiencies and bring about the minimal levels of education and infrastructure required to integrate the information society. Digital solidarity is therefore a must in order to help develop ICTs in these States.

<table>
<thead>
<tr>
<th>State</th>
<th>Geographical location</th>
<th>Human development Level</th>
<th>2002 DAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh*</td>
<td>Asia</td>
<td>Low</td>
<td>0.18</td>
</tr>
<tr>
<td>Togo*</td>
<td>Africa</td>
<td>Low</td>
<td>0.18</td>
</tr>
<tr>
<td>Yemen*</td>
<td>Asia</td>
<td>Low</td>
<td>0.18</td>
</tr>
<tr>
<td>Uganda*</td>
<td>Africa</td>
<td>-</td>
<td>0.17</td>
</tr>
<tr>
<td>Cameroon*</td>
<td>Africa</td>
<td>Medium</td>
<td>0.16</td>
</tr>
<tr>
<td>Djibouti*</td>
<td>Africa</td>
<td>Low</td>
<td>0.15</td>
</tr>
<tr>
<td>Nigeria*</td>
<td>Africa</td>
<td>Low</td>
<td>0.15</td>
</tr>
<tr>
<td>Mauritania*</td>
<td>Africa</td>
<td>Low</td>
<td>0.14</td>
</tr>
<tr>
<td>Senegal*</td>
<td>Africa</td>
<td>Low</td>
<td>0.14</td>
</tr>
<tr>
<td>Cote d’Ivoire*</td>
<td>Africa</td>
<td>Low</td>
<td>0.13</td>
</tr>
<tr>
<td>Gambia*</td>
<td>Africa</td>
<td>Low</td>
<td>0.13</td>
</tr>
<tr>
<td>Comoro Islands*</td>
<td>Indian Ocean</td>
<td>Medium</td>
<td>0.13</td>
</tr>
<tr>
<td>Sudan</td>
<td>Africa</td>
<td>Low</td>
<td>0.13</td>
</tr>
<tr>
<td>Benin*</td>
<td>Africa</td>
<td>Low</td>
<td>0.12</td>
</tr>
<tr>
<td>Mozambique*</td>
<td>Africa</td>
<td>-</td>
<td>0.12</td>
</tr>
<tr>
<td>Chad*</td>
<td>Africa</td>
<td>Low</td>
<td>0.10</td>
</tr>
<tr>
<td>Guinea*</td>
<td>Africa</td>
<td>Low</td>
<td>0.10</td>
</tr>
<tr>
<td>Guinea Bissau*</td>
<td>Africa</td>
<td>Low</td>
<td>0.10</td>
</tr>
<tr>
<td>Sierra Leone*</td>
<td>Africa</td>
<td>Low</td>
<td>0.10</td>
</tr>
<tr>
<td>Mali*</td>
<td>Africa</td>
<td>Low</td>
<td>0.09</td>
</tr>
<tr>
<td>Burkina Faso*</td>
<td>Africa</td>
<td>Low</td>
<td>0.08</td>
</tr>
<tr>
<td>Niger*</td>
<td>Africa</td>
<td>Low</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Table 3: States with a DAI lower than 0.20 (DAI classification)

States marked with a star are among the Least Advanced Countries of the planet.

Neither the DAI index nor the human development level have been calculated for Afghanistan, Iraq, and Somalia, countries that are experiencing harsh situations either as a result of wars or famine. Efforts must be exerted by the international community to restore peace in these countries, then, at a later stage, provide assistance to achieve the development that will help them subsequently integrate, in their turn, the information society.
3. ICTs Physical Infrastructure in Member States

The use of ICTs and access to the information society require as a first step the setting up of the physical infrastructure that serves as support for ICT. The term 'physical infrastructure' covers power system, telecommunication infrastructure and internet access (broadband, evaluation and reliability). The preceding paragraph addressed the difference in level among Member States, namely in terms of availability of infrastructure. Unfortunately, the documentation available does not make it possible to refine the analysis and describe the situation in every country or at least in every group of countries.

In a general terms, the ISESCO report on the “Impediments to the Overall Integration of Information and Communication Technologies in ISESCO Member States” describes the obsoleteness of ICTs infrastructures. The WSIS recommendation of one computer per household is far from being met and the clear majority of the population in some African countries has never placed a call, nor does it even benefit from a regular supply of electricity.

Fortunately, this 'gloomy' and alarming image does not apply to all Member States. We derive great satisfaction from the case of Malaysia, considered as a pioneer with a good infrastructure standard, which has managed to integrate the world of ICTs. The same applies to the cases of the United Arab Emirates, Egypt, Jordan and Syria which garnered great interest in information industries and drew up national plans for the upgrading of their countries in matters of infrastructure and training. They even created free zones such as Dubai's Internet City and Egypt's Smart Village.

These are examples to be pondered. Other countries such as Morocco, Senegal and Tunisia have greatly developed the telecommunications environment. These relatively modern infrastructures which guarantee a large coverage in each of these countries create a technical environment that favors access to the knowledge society.

The majority of Member States are conscious of the benefits of integrating ICTs. Even States that had no strategy have restructured their ITC sector according to the recommendations of the Geneva and Tunis summits (2003-2005). Several States are thus ready to deploy their efforts in order to ensure the availability of infrastructure that is adapted to ICTs use. However, the availability of an infrastructure, no matter how solid this infrastructure is, is not sufficient to secure access to the information and knowledge society.
4. Web Content and the Islamic World

The development of the information and knowledge society is a complex process. Far from being limited to the problems of telecommunications only, it also involves content-related issues. In fact, the digital content represents a key growth element in the ICTs sector.

Web content is used to refer to any information and knowledge (knowledge society) posted on the Net. To access this content, it is not sufficient to have the appropriate infrastructure. In fact, access to and appropriation of the information and knowledge society cannot become a reality for populations that confine themselves within the role of consumers. These populations have to play a role as knowledge producers. Two profiles of users can thus be identified:

- The consumer who should be in a position to find the required information (training), to sift through it, to trust it (regulation) and to understand it (cognitive skills and language). The needs in training and regulation will be addressed later in this report.

- The producer who should have the capacity to produce information and knowledge (capacity-building) and to publish them on the Net (training).

Yet, putting the net aside, Member States have very limited productivity in terms of literary works, publications... The largest share of the information and knowledge published on the net is produced by advanced countries and primarily destined for the populations of these countries. In most cases, this information is channeled in the English language. Under such circumstances, the marginalization of persons who do not master this language is certain, even for the category of information labeled as 'universal' (dictionaries, encyclopedias, legal texts, research articles, newspaper articles...) Furthermore, the absence of content that stems from diverse cultures may be dangerous since it could result in a standardization of knowledge. It is, therefore, crucial to take into consideration cultural diversity and give ample thought to the position that should be reserved for local knowledge and for the languages mastered by local populations.

In order to ensure the respect of cultural diversity and avoid cultural hegemony, Member States should undertake several actions such as:

- To encourage the population to master foreign languages in order to open up to the world and guarantee an inter-community transfer of knowledge.
Should this prove impossible, additional efforts should be made in translation from English into the mother tongue. Inversely, the translation of local knowledge from the mother tongue into English should ensure a better dissemination of local culture.

- To enrich the web content with the various cultures (knowledge societies). In fact, each society has its own shareholder's equity in terms of information and knowledge that it should endeavor to publish on the net. To promote diversity is to also promote the creativity of emerging knowledge societies. Such approach is primarily aimed at enhancing awareness within each society about the richness of the knowledge and potentialities it holds in order to capitalize on them and put them to contribution.

- To enrich the scientific and technical content generated by scientific research. Internet is an opportunity for countries where research is underdeveloped in that it enables researchers to access universally supplied information and contribute to it themselves by publishing their findings on the net. In this respect, internet becomes a tool that promotes the generalization and democratization of technical learning. The choice of free access is a WSIS recommendation.

The respect of cultural and linguistic diversity which allows each and every one to identify with the evolutions underway and to embrace them is dependent upon the success of this approach. Failure in this triggers feelings of frustration in internet users, a feeling that may quickly turn into the rejection or belittling of their own culture. A knowledge society should be able to exercise a pull on each of its members. None among them should feel excluded since knowledge is public property that should be available to everyone, as is aptly underlined in the “Islamic Declaration on Cultural Diversity” adopted in 2004 by the 4th Islamic Conference of Culture Ministers in Algiers.

5. Training

The access of Member States to the information society is also contingent upon building the population's capacity for ICTs use. Two profiles emerge in this respect:

- Qualified competencies that actively participate in the edification of the information society. These can be engineers, IT and telecommunications technicians for the vehicle, and archivists and researchers for the content.
- The users who draw benefit from information society-generated opportunities.
Although in short supply, qualified persons do exist in these countries. They have to be encouraged to remain in their countries of origin rather than immigrate or slide into passivity. Encouragement and incentives should be provided to these persons in order to enable them to play their role as a powerhouse and stimulate in the rest of the population curiosity in and the desire to become involved in ICTs and therefore acquire them. Measures should be taken in order to increase the number of these competencies.

As to ICTs users, to bring the population into the information society requires training it in handling the tools of communication. In some countries, the civil society is very active and contributes to the training of the population as a means of reinforcing and increasing the percentage of ICTs users. This training encounters obstacles and requires some preliminary measures that pave the way, such as the generalization of schooling at all levels and the eradication of illiteracy, both of which should be considered a top priority. This priority is equally part of the commitment to fulfill the Millennium Development Goals by 2015. As a matter of fact, literacy represents the first step towards mastering the new tools of communication.

6. Legal and Regulatory Framework

In the absence of a legal and regulatory framework, the information society will not be able to meet the development expectations of the populations using it. In fact, an institutional framework already exists in most Member States, albeit with coverage that is still insufficient. The participants in the three regional meetings expressed their satisfaction as to this existence but emphasized the need for Member States to act towards the elaboration of a legal and institutional framework aimed at reducing the tariffs of telephone and internet subscriptions and at reinforcing copyright-related legislation.

7. Financing

The use of ICTs to edify information infrastructures involves prohibitive costs, but the price of doing nothing in this regard would probably be even higher for Member States.

Such were the main conclusions of the new reference guide drawn up by the UN Commission for Sciences and Technology for Development.

External funds dedicated to the development of ICTs do exist (as in Europe, the United States and South Korea) and are accessible within the framework of partnerships with institutions from financing States. However, this source of funding is often badly put to use.
Today, and in order to finance ICT, States would have to resort to four sources of financing: local resources, international aid, foreign investment and self-financing through the development of economically-viable activities. However, participants at the WSIS proposed timid solutions such as public/private partnerships and the World Digital Society Fund.

In this context, there are several strong points to be consolidated and several weak ones to be remedied. Among these strong points, it is a pleasure to note that:

- Governments in Member States are, in most cases, aware of the fact that ICTs are crucially important for sustainable development, and have the will and determination to edify the information society. The process of liberalizing telecommunications is either already finalized or underway in most of these States. The increase in the number of operators makes it possible to diversify the offer and reduce access costs.

- Several Member States have drawn up their national ICTs strategy.

- Several Member States have a dynamic civil society that is highly involved in sensitization and training in ICT.

- International and regional organizations have collaborated and participated in the World Summit on the Information Society.

- UN and OIC affiliated international and regional organizations play a catalyst, advisory and supportive role. They also organize training in the use of ICTs for countries that are in need of such training.

- Participants in the WSIS defended the creation of a world fund for digital solidarity to help developing countries.

- Six ISESCO Member States are well advanced in the building of national information infrastructure. These countries can play the role of a driving force within this group.

On a less optimistic note, the current context suffers from the lack of conditions conducive to ICTs development. This development can only become successful if the following weaknesses are remedied:

- The inadequacy of basic infrastructures (the insignificant rate of equipment in telephone lines and computers owed mainly to a limited purchasing power).
- The lack of ICTs professionals (engineers, technicians, instructors…)
- The high rate of illiteracy and 'digital illiteracy', particularly in rural areas.
- The lack of sensitization about internet use in sectors as sensitive as education or firms.
- The insignificant content formulated in national languages (Arabic, Persian...) and the lack of communication in this regard.
- The insufficiency of funds and imbalance between needs and available funds.
- The divergence in social projects between the civil society, the private sector and governments.
- The low production of scientific and technical information in Member States (1%), resulting from poor financing of research in general, and of ICT-applied research in particular.

The consolidation of the afore-mentioned strong points and the overcoming of the weaknesses could only facilitate the ushering of the Islamic world into the digital age. However, it is important to point out that considering the unequal development of the information society from one country to another, the strategy to follow should be tailored to suit the specificities of each State.
Chapter 3

Objectives and Methodology
The analysis of the strengths and weaknesses of the situation of Member States in the ICTs field leads to the identification of four main objectives.

The **first objective** is the upgrading of infrastructure in order to make the generalized access to ICTs possible. This includes not only IT equipment and internet connection means, but also the generalization of electricity to all regions, an essential condition for the use of ICT.

The **second objective** is of an economic nature. Since the ICTs sector is experiencing substantial growth rate, it is necessary to ensure that the development of the ICTs sector efficiently contributes to national development, and that the benefits of this sector are enjoyed by the local populations.

Furthermore, the realization of the ethical dimension should go hand in hand with the development of the internet where the fear of a 'cultural tidal wave' gives rise to two new objectives. In fact, one can only wonder about the reactions of our societies to the hegemonic culture and ponder the social and cultural consequences of access to the information society by social groups that have so far been isolated. Several voices rise to underline the fear that the ethical consideration may be weakened by fascination for technology, and join the position of ISESCO in calling for the preservation of cultural diversity.

These concerns motivate the **third objective** which is developing the production of a pluri-cultural content that is representative of the cultures of Member States, considering that the aim sought is not limited to promoting the consumption of ICT.

The **fourth objective** pertains to an ethical reflection on the position of ICTs within our societies and the modalities of their implementation from a socio-cultural point of view. This reflection should be started from now on, for it is the guarantee of a good utilization of the technological lever.

**Approach Method**

The present project falls within the framework of the ISESCO Charter and uses several documents as its base. These include the reports prepared by ISESCO such as the “Cultural Strategy for the Islamic World”, the “Strategy for the Development of Education in Islamic Countries” and the “Strategy for the Development of Sciences and Technology in Islamic Countries”. They also include the documents produced during the two phases of the WSIS such as the “Preliminary Report on WSIS Stocktaking”, and the “Declaration of Principles ... Building the Information Society: a new global challenge in the new Millennium”.

...
This project also relies on various documents prepared by various organizations such as the OIC Permanent Committee for Scientific and Technological Cooperation, COMSTEC, the Organization for Economic Cooperation and Development OCED, the World Bank or UNESCO. Among these we find documents such as “The Status of Scientific Research in OIC Member States”, “Perspectives of Information Technologies in 2006: Main Conclusions”, “The Global Information Technology Report, 2003-2004”, “E-Ready for What? E-Readiness in Developing Countries: Current Status and Prospects toward the Millennium Development Goals”, and "Towards Knowledge Societies”.

The various documents perused reveal a highly disparate situation in Member States in terms of ICTs development in the fields of interest to ISESCO, namely education, sciences and culture. This disparity is seen in the levels of ICTs indicators, the forms of appropriation and the inequalities in the socio-economic capacity for reaction.

Thus, the proposal of a single strategy to be deployed by all Member States proved irrelevant. As a result, we have opted for a framework strategy that each Member State should adapt by deriving inspiration from it, in a creative way, while taking into account each state's own environment and specificities. Ideas for carrying out this process are presented in Chapter 5.

Furthermore, a linear vision of ICTs development and of the information and knowledge society has proven to be inadequate. The evolution of this sector cannot be organized according to chronologically ordered stages that are common to all Member States. It is, thus, structured according to four dimensions identified following the strategic analysis of the situation on the ground. These dimensions are infrastructure, stakeholders, training and sensitization, as well as content:

- **Infrastructure** is unavoidable as an essential condition for the implementation of ICT. This implies support elements such as telephones, fixed and mobile lines, internet connection (broadband, geographical reach...), internet-connected computers, etc.

- The process of building up the information and knowledge society cannot see light without the commitment of several categories of socio-professional stakeholders such as the professionals of education and culture or researchers in ICTs. It is, therefore, important to determine their roles and respective tasks.
- **Training and sensitization** contribute to creating a participation-based approach to get access to knowledge and learning. Considerable efforts will have to be deployed in this regard through the digital literacy of the population, the training and sensitization of the various actors to the use of ICTs, building ICT-related capacities, etc.

- The investments earmarked for infrastructure can only be justified if the production and posting of relevant **content** online for the local population’s use become a reality. It is, therefore, vital to add value to local knowledge and make the principle of cultural diversity a reality.

The following chapter takes up each dimension and addresses it in accordance with the strategic objectives.
Chapter 4

Components of the Strategy
The detailed description of the strategic objectives set out for each dimension will be addressed in this chapter. This is a general framework that each Member State should adapt by deriving inspiration from it in a creative manner and by keeping in mind its own specificities. The devising of an efficient national strategy must be preceded by a precise national mapping of ICTs. This mapping should be updated regularly in order to take into consideration the field's rapid progress, both at the national and international levels, and to allow the adjustment of the strategy.

Before we proceed with the in-depth description of each component, Table 4 gives a synoptic view of these strategic objectives:

<table>
<thead>
<tr>
<th>Infrastructure Dimension</th>
<th>Stakeholders Dimension</th>
<th>Training and Sensitization Dimension</th>
<th>Content Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To generalize infrastructure and access to internet to the various populations</td>
<td>1. To direct advocacy at the professionals of education and culture</td>
<td>1. To generalize literacy and digital literacy</td>
<td>1. To produce course content suited to the local reality.</td>
</tr>
<tr>
<td>2. To fit out educational institutions, scientific structures, and cultural spaces in order to ensure their access to ICTs</td>
<td>2. To develop research and promote scientific cooperation in the ICT field</td>
<td>2. To train teachers, students, and socio-cultural actors in the use of ICTs</td>
<td>2. To create and protect the local scientific content and encourage scientists to publish their findings through free access.</td>
</tr>
<tr>
<td>3. To encourage the use of free software and opt for interoperability</td>
<td>3. To motivate young people into promoting the national culture</td>
<td>3. To train ICT professionals and build capacities in content production</td>
<td>3. To produce and disseminate cultural heritage.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. To develop an ethical reflection and protect internet users</td>
<td>4. To create virtual libraries in Member States</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. To promote the development of free software.</td>
</tr>
</tbody>
</table>

*Table 4: Synopsis of the strategic objectives for each dimension*
1. The Infrastructure Dimension

The consolidation of infrastructure in terms of telecommunication networks, computer-related equipment and software is an essential objective that Member States should set for themselves. The building up of an ICTs infrastructure that meets development needs, both economic and social, is a task of utmost importance. While the economic aspect needs no further explanation, the social aspect deserves special focus and takes shape in actions such as the food watch (Cambodia), assistance to medical diagnosis, or ongoing training of teachers (Tanzania) in rural or mountainous areas.

Thus, if States have no telecommunications infrastructure or if such infrastructure is limited in capacity, unreliable or simply too prohibitive in cost, these States will be unable to draw benefits from the new possibilities provided by ICT.

The case of the Malaysian e-Bario development project is a good example. The project uses computers, telephones and VSAT to remotely link the Bario village to the internet. This remote inland village of about 1000 residents managed to shed its isolation and benefit from ICTs tools for the social, cultural and economic development of its inhabitants. Computers, thus, were installed in local schools along with a public hotspot accessible to all. E-Bario is a model of the contribution of ICTs to development and illustrates the importance of training and education in development. The United Nations recognizes the success of this project and intends to duplicate it in other places.

Needless to say, this infrastructure requires important investments, a commitment that seems difficult for countries with a poor national revenue.

Three strategic objectives have been identified in this 'infrastructure' dimension:
1. To generalize infrastructure and internet access to the various populations,
2. To equip educational institutions, scientific structures, and cultural spaces in order to ensure their access to ICT,
3. To encourage the use of free software and opt for interoperability.

Generalizing infrastructure and internet access to the various populations

Electric coverage is a prerequisite. The progress achieved in the field of renewable technologies (solar and wind energy...) encourages the option of solutions that are environment-friendly and adapted to the geographical and
economic conditions of the users. All state-run collective structures (schools, administrations, water supply utilities…) should be electrified. The recourse to renewable energies may be encouraged through the setting up of programs based on financial incentives (scholarships, tax rebates…) and on encouraging applied research, the creation of manufacturing units and the training of technicians.

Similarly, the diversity of technologies (fixed, mobile, satellite…) may be exploited in order to guarantee the coverage in telecommunications of all States. The liberalization of the sector is perceived as a means of building up the capacities of Member States in terms of investment and competencies and has played a highly positive role in several countries such as Morocco or Malaysia. The objective is to optimize the quality of service (availability, performance, security, and cost of access) and to reach a minimal threshold of coverage of cities and rural areas through a suitable broadband and by adopting the most appropriate technology. In fact, the existing plethora of technologies provides a large choice of relevant solutions in terms of needs and allocated budgets.

For example, WIMAX makes it possible to easily expand the internet network and reach the most remote areas in the rural world, thus providing a universal service at a reduced cost. UMTS, third generation mobile phone technology, opens the door to new applications and services such as the quick transfer of multimedia content, videoconferencing, video, and television. The IPv6 option makes it possible to meet the needs (mobility, end-to-end safety …) generated by the greatly expected growth of the world internet network and the expected spread of its services, while the use of broad bands contributes to the development of e-commerce, distance education and telecommuting.

Furthermore, in order to generalize internet access to all populations and move towards a policy of 'internet for all', it is necessary for households to be able to have a personal internet-connected computer. To achieve this, mechanisms for reducing the cost of the 'personal computer with internet connection' duo, must be negotiated, both with suppliers of hardware and service providers, eventually with the support of banks (micro credits, study-credits…). It is of equal importance that persons with PCs but who cannot have a home internet connection are able to use public facilities at a reasonable cost, if not freely (internet cafes, WiFi base stations or Wireless Internet Hotspots in libraries, museums, leisure facilities…). Assistance would thus be extended thanks to the policy of infomediairies. These places should be structured in the form of national public/private standardized networks (norms) in order to
guarantee quality control. The success of an approach such as this is contingent upon an effective partnership which, as such, becomes a must, between the parties concerned: governments, bilateral and multilateral development institutions, the private sector, and the civil society.

The ongoing reduction in computer hardware costs makes the implementation of this objective easier and may be supported by actions such as:

- the reduction of customs duties,
- the proposal of tax incentives (example: removing internet connection from the taxable mass);
- the creation of an international network for salvaging second-hand computers for recycling in local workshops. This action would be accompanied by a labeling effort to protect the consumer.

**Equipping educational institutions, scientific structures and cultural spaces for ICTs access**

As an instrument of work and high performance, the computer is an integral part in the equipment of private or public institutions.

Schools and universities in particular must be fitted out with computers. Furthermore, and even though it cannot replace conventional schooling, distance learning can help achieve a better performance. Thus, it becomes necessary to supply centers (schools, academies...) with servers that are powerful enough to support a distance learning platform chosen preferably from among free software.

To bring this about, national programs for the creation of multimedia rooms in public institutions must be launched. One example of these is the Malaysian school Access Centre which seeks to improve students’ access to works (books, articles, etc.) and intends to fit 500 schools with a broad band and access points to electronic libraries that serve as relay to the portals of local and foreign schools and universities. Malaysia hopes to reach a student/book ratio of 1/20. The GENIE project, initiated in Morocco in 2005, expects to install, over a period of three years, 104000 computer consoles in primary and secondary schools. In the medium term, a multimedia room equipped with at least one internet-connected PC should be available in half the educational or research institutions. In low income or sparsely populated regions, collective multimedia centers that provide support to visitors would serve as relays and can be set up close to gathering places (markets, oases, etc)
In scientific research facilities, basic fittings (email, teleinformatics, multimedia…) can be reinforced with a broadband-supported national university network for collaboration and cooperation among researchers, as well as by servers that are powerful enough to manage documentation (open archives) and scientific publishing tools. A policy of resource pooling should be encouraged through the support of projects that involve researcher networks or the setting up of grid computing for sharing computing power. This is the case in Malaysia (GERANIUM Project: Grid-Enabled Research Network and Info-structure of University of Malay), or in Morocco (the MAGrid project).

In the cultural field, it would be helpful to promote the increase of hotspots connected to the various facilities and institutions (NGOs, youth hostels, museums, libraries…) for an immediate access that addresses specific needs. Cultural institutions should have at their disposal servers that are powerful enough to manage tools likely to guarantee cultural info-structuring such as the content management system (CMS) and electronic library platforms.

**Encouraging free software and opting for interoperability**

Free softwares are programs that users are free to execute, copy, distribute study, modify and improve. In their clear majority, they are free of charge or sold at a reduced price and tend to respect the open standard formats, a tendency that favors interoperability. The latter makes the exchange and sharing of information possible, irrespective of the platform used, by relying on the recommendations of organizations of standardization and technological norms. Free software, and particularly their flagship product Linux, have reached a degree of maturity that allows them to be accepted within professional environments.

We can only recommend that ministerial departments opt for a free operating system and thus follow the model of China in acting as an engine of development. Sensitization activities would make it possible in the short term to increase by 5% the use of free software.
2. The Actor’s Dimension

The implementation of the strategy cannot be conceivable in the absence of the enthusiasm and dynamism of the actors. In the case of ICT, these include the different components of society, hence the identification of three strategic objectives:

1. To direct advocacy campaigns at the professionals of education and culture.
2. To develop research and promote scientific cooperation in the ICTs field.
3. To motivate young people into promoting local culture.

Directing advocacy campaigns at the professionals of education and culture

Advocacy campaign should be directed at the professionals of education and culture in order to convince them of the crucial importance of ICTs in developing and improving the quality of citizens’ lives. This campaign should target the two components, the administrative and the teaching staff, of the departments in charge of education.

Teachers who keenly advocate the use of ICTs in education should be invited to play the role of a powerhouse and convince their colleagues of the advantages of ICTs for learners. They need to prove that these advantages are not limited to providing access to information or didactic material, but can equally transform the teaching organization and provide the premises of a solution to the uniformization of schooling on the one hand, and the problem of education dispersion on the other. Major changes can be induced in the methods of planning, managing, controlling and evaluating courses. Having been tested in highly sensitive fields such as medical training, distance learning allows at the same time the reduction of costs, mass training and leading edge education. For example, the Cyber-île Project in Mauritius includes a fundamental component of e-training and e-education.

Similar to education, an advocacy campaign should be made to convince culture professionals of the importance of:

- Fostering awareness about the important value of the material and immaterial heritage.
- Choosing ICTs as a means of disseminating the said heritage.

Emphasis will be placed on sensitization about the respect and promotion of cultural heritage and of cultural and linguistic diversity. ICTs can become an instrument of cultural, social and political openness, disseminating the values of freedom and democracy and breaking down inter-community barriers.
In order to convince the professionals of culture and education, there is a need to present them with 'successful' experiments such as virtual museums, electronic libraries or discussion forums. This can be achieved through the organization of internet-dedicated days, by mail distribution of examples of experiences or 'successful' web sites, or by creating mobile 'internet caravans involving cultural actors or enthusiastic teachers. It is also important to encourage the production and distribution of familiarization cds that inventory quality pedagogical web sites.

**Developing research and promoting scientific cooperation in the field of ICTs**

Since the field of ICTs is in continuous progress, the research production capacity guarantees quality education as well as a technological monitoring. This capacity enables Member States to go beyond the role of simple ICTs consumers to that of actual producers. On the other hand, acquiring these capacities would favor the development of outsourcing and off shoring. This is exactly what happened in India which received 25% of the world's outsourcing operations in 2003, or in the United Arab Emirates which houses, within Dubai's Internet city; the leading information and telecom companies. This refers to the international outsourcing of information services or the services provided to ICTs companies. This activity must be encouraged considering its positive impact on the brain drain occurring to most industrialized countries.

In order to achieve this, scientific partnerships between Member States must be encouraged through the creation of cooperation structures. This partnership would make scientific exchanges, the optimization of ICTs research findings and the pooling of developed products possible.

**Motivating young people to promote local culture**

The fascination felt by the young towards ICTs would be better put to contribution in sensitizing them to the cultural issue. This aspect may complement basic education, or in some cases even provide an additional learning opportunity.

Young people's effortlessness in the use of ICTs is such that it becomes possible to involve them in societal activities and in the dissemination of information on issues that influence their daily lives and respond to their questionings. This may contribute towards supporting their efforts in favor of culture, peace, tolerance and the development of their countries.
The massive involvement of young people in ICTs most often happens on a personal level through channels such as personal web sites, forums, blogs and Podcasts. Among possible incentives, we can cite the positive role of events such as competitions for innovative cultural projects.

This creativity and this ICTs know-how provide the young with learning opportunities that pave the way for their access to careers where ICTs knowledge is a must.

3. The Training and Sensitization Dimension

According to the World Bank report, the economic growth of Southeast Asia is attributed to a set of factors including the high levels of investments in education. The social capacity develops through learning which occurs during the various schooling system's stages and through personal activities. On the other hand, the WSIS's 'statement of principles' acknowledges that education, knowledge, information and communication are the foundation of progress, of the spirit of entrepreneurship and of the wellbeing of the human being. The use of ICTs at all phases of schooling and training of human resources should therefore be encouraged.

Member States should equip themselves with the tools that facilitate the acquisition of the competencies and skills necessary for a harmonious integration of the ICTs world. Priority should be given to training in order to improve the capacity to produce and manage ICTs in an innovative manner. This training should target various categories of the population, taking into account the high rate of illiteracy, a sizeable obstacle for several countries.

Four strategic objectives have been identified in terms of training and sensitization:

1. To generalize literacy and digital literacy.
2. To train teachers, students, researchers and socio-cultural actors in the use of ICT.
3. To train ICTs professionals and build capacities in content production.
4. To develop an ethical reflection and protect internet users.
Generalizing literacy and digital literacy

This first objective shows that literacy remains a prerequisite for the use of ICTs and that it should be generalized through national literacy campaigns. Similar campaigns should be planned to attract a large portion of the population to the internet. Particular attention should be granted to girls, women, disabled persons and rural dwellers. As a matter of fact, politicians should develop a policy to reduce the digital divide per gender. With an appropriate policy, the digital illiteracy rate may be made to drop by 25% in the short term. The attribution of an email address with a good stocking capacity to each citizen, in the same way as postal addresses are attributed, is a good incentive and would facilitate communication among the citizens of a given State.

Training teachers, students, researchers and socio-cultural stakeholders in ICTs use

The objective here is to build capacities in order to utilize the pool of knowledge and communication potentialities that the Internet represents. But beyond technological proficiency, the ICTs lever should be exploited so as to contribute to the emergence of new generations that are more creative and more innovative. Familiar with the ICTs thanks to an appropriate and sufficiently regular use, these generations can access and produce information more naturally. Young generations of Member States give much and importance to this ambition as was displayed in Malaysia, for example.

Teachers have a vital role to play in this. Their training serves three purposes. The first one is that the teachers themselves acquire the necessary ICTs skills and pedagogy in order to impart this knowledge of ICTs tools to learners. They also need to learn the use of ICTs as a source in their own ongoing training, but also as a reservoir from which they can draw exercises and answers. The third purpose is the creation of networks of educationalists whose role is to support teachers in their endeavor to adjust training and educational practices to the socio-economic changes.

The training of students involves guaranteeing minimal digital literacy through the introduction of ICTs as a subject in school curricula, by imposing a minimal ICT-dedicated time slot for each student. This necessitates a proactive policy on the part of the State in order to set up not only the physical infrastructure and software required, but also to adjust curricula and encourage
the publication of educational material, in a way similar to Morocco's GENIE Program which accompanied the creation of the educational portal www.tarbiya.ma. Encouraging the creation of personal and collective web sites within the school curricula, making the available software free and encouraging its use are all actions that can serve as catalysts in this undertaking.

In the scientific field, it is necessary to train researchers in the use of office equipment and web technologies to ensure that they can optimize their use of ICTs (documentary research) in their activities. Once they are initiated to these tools, they will be able to also make use of the cyberspace to make known their activities through the use of publishing tools that vary from the creation of web pages to the editing of bulletins or magazines. Every researcher should post his scientific activities on the Web because the visibility of researchers increasingly requires their presence on the Net.

In the cultural field, the training of cultural actors focuses mainly on the use of the Web as a multi-cultural pool and on acquiring content publishing and archiving techniques. Interest should be taken in sensitization as to the valorization of heritage and the respect of intellectual property.

**Training ICTs professionals and building content generation skills**

ICTs professionals are the most sought after 'profiles' capable of 'instilling life' in infrastructure and infusing them with content. The limited number of these professionals in Member States necessitates that measures be taken to boost these numbers through the conventional training of engineers and technicians, and through promoting a policy of redeploying graduates. To a lesser extent, attention should be taken in closely related professions such as those of jurists (cyber law) and financiers (involved in the evaluation of business plans). One can mention for example the opportunity of introducing into legal studies a module such as “electronic communications law”.

The training of engineers should be aligned to the recognized curricula of major educational institutions and scientific and professional organizations while taking into consideration national specificities such as the curricula actually being taught or the linguistic aspect. The professional chambers (of industry, handicrafts...) may be involved as partners in training.
Moreover, it is equally important to develop and properly target training that benefits technicians or archivists for they are involved in knowledge management. In fact, national information falls at the service of development only if it is transformed into knowledge. Therefore, the training of technicians or archivists would involve two parts:

- mastering the techniques of digitalization, archiving, indexing, cultural heritage referencing and information sharing through the use of content management systems or electronic library platforms,
- building up the capacity to analyze and produce information from digitized information.

However, content production is not the sole purview of ICTs professionals. Each and every one can and should contribute towards enriching the web content in national languages after a short suitable period of training. This training would target a large public comprised of professionals who are not specialized in ICTs (doctors, lawyers, authors…), staff working in associations or students. The enthusiasm of the young for blogs and podcasts should be harnessed in developing other forms of content.

Furthermore, States that come to realize the incompatibility of the dispensed university education with the job market needs may initiate programs for the redeployment of scientific or literary graduates. Addressing a public with a good educational level, their specific content has the advantage of reducing time and cost. Nonetheless, this palliative alternative cannot replace a structural adjustment of training in the mid term.

Also, given the rapid progress of ICT, incentives should be given to encourage ongoing training, for only this training can prevent obsolescence and guarantee information updating. Online courses or those in cd form must be encouraged because they are widely accessible. In fact, all categories of training could use ICT, either systematically or partially, as an educational tool conducive to expanding the targeted public.

Furthermore, the phenomenon of the brain drain must be taken into consideration, whether in identifying the resources to be trained or with regard to salaries and working conditions. It is necessary to hold on to these elite and become competitive and attractive in comparison to the job offers made by western countries. Efforts should be made to encourage the return of experienced professionals or to secure their involvement in national projects.
Developing an Ethical Reflection and Protecting Internet Users

Both education professionals and parents raise their voices today in denunciation of the excesses and contentious content that can be found on the internet. As a first step, it is necessary to develop an ethical reflection on internet use and sensitize its users to the risks of 'cultural standardization' caused by the 'internet landslide'. One example of these actions would be the development of a charter for the ethical utilization of internet or the sensitization of internet users as to the harmful effects of SPAM on the bandwidth. These actions would take the form of seminars, television or radio programs... Mail servers should systematically propose filters and ensure their constant upgrading for an optimal performance.

In order to protect the population, particularly children, it is necessary to take strict measures to increase safety on the internet and protect users from being exposed to violent or inappropriate information (images, texts...) while surfing the web. Service providers should propose protective filters and sensitize their customers.

4. The Content Dimension

An infrastructure without content is similar to a highway without vehicles. The creation, distribution and utilization of digital information are essential activities and the raison d'être of infrastructure. The commendable efforts to provide a highly performing telecommunications infrastructure are insufficient if the content, i.e. the information, is not developed or does not meet users' needs. States must therefore encourage the development of 'public information', and the socio-economic actors must take over the cyberspace in order to make known their specific activity.

Several actions can be initiated in this regard. For example, a serious translation effort must be undertaken to transfer the web content into national languages and open up to universal knowledge, emulating the example of many civilizations which, thanks to translation, made use in the past of the accumulated knowledge of their predecessors. States can play the role of a powerhouse by demanding electronic productions in the assessment of projects financed by the States and by promoting the creation of institutional web sites through grants and competitions. Exception to intellectual property law for ISESCO Member States can be negotiated within the framework of international conventions.
Five strategic objectives are identified in terms of the content dimension:
- to produce course content that is compatible with the local reality,
- to create and protect the local scientific content and encourage scientists to publish their findings through free access,
- to produce and disseminate cultural heritage,
- to create virtual libraries in Member States,
- to promote the development of free software.

**Producing course contents adapted to local-realities**

Member States need initiatives to ensure that ICT-supported learning processes adequately serve the objectives of enhancing learning quality without impinging upon the respect of cultural values.

It is necessary to encourage the development of educational sites that would make up virtual platforms for dialogue and sharing knowledge and resources among the various actors, such as the following web sites:

- Interactive community educational portals that are generalist or specific to a field meant for teachers, students' parents, administrators, inspectors…

- Schooling-support sites intended for students and fed by education professionals. These sites would propose exercises, training and course supplements.

Distance learning platforms must be supplied with quality content that is adapted to the socio-cultural environment. In order to do so, it is necessary to bring into play local professionals to avoid falling in the trap of the mere imitation of ICT-based experiments occurring in industrialized countries. These educational products would greatly benefit from being pooled among regions. The creation of a regional virtual university may serve as a catalyst for initiatives taken in this field.

Creating and protecting local scientific content and encouraging free access publishing of scientific findings

It is no longer necessary to prove the role of science and scientific research in the development process. The competitiveness of a country's industrial sectors
has in fact proven to be dependent upon the quality of its science and technology research. A dynamic researcher naturally generates content (articles, research projects, theses...) which must subsequently be optimized through publishing. Yet, scientific research, when it does exist, remains to a large degree unknown and unrecognized because of the invisibility and the isolation of researchers in Member States. In this respect, the dissemination of research works proves to be a form of contribution to development.

ICTs applications provide new tools which do not stop at facilitating access to information and knowledge sharing. These tools also bring about a better visibility of researchers, providing them in the process with opportunities of collaboration and partnerships. In the mid-term, each researcher should publish research articles in his field of specialty at the national and international levels. Research institutions are called upon to encourage researchers through incentives to electronically publish their findings and mark a presence in the field of scientific e-magazine editing, a thriving field, particularly in the Anglo-Saxon world.

The choice of free access makes a larger dissemination of research works possible and is motivated by the often limited financial resources of researchers in Member States, considering the high costs of subscriptions to magazines and participation in conferences. This production must be protected by the international regulations governing the intellectual property of documents published on the net. It is in this context that researchers should be encouraged to publish their findings in open archives.

**Producing and disseminating cultural heritage**

"The Cultural Strategy for the Islamic World", "the Islamic Declaration on Cultural Diversity" and "the International Convention on the Protection of the Diversity of Cultural Contents and Artistic Expressions" have all affirmed the crucial role that cultures, in their diversity, are called upon to play as factors of development and coexistence at the planet's level. Thus, different peoples will draw benefit from making their cultures known for themselves (preservation of the peoples memory, cultural enriching...) as well as for others (better mutual understanding, inter-cultural dialogue...). The production of cultural content seeks to favor dialogue among cultures and civilizations as well as the sharing of knowledge and resources.
This content is essentially drawn from library collections and works preserved in museums. At a later stage, interest should be taken in the oral cultural heritage. For example, it is advisable to develop CAD software (Computer-Assisted Design), preferably in a fun and friendly form in order to shed light on arts such as calligraphy and the various handicraft-related ornaments. It is also recommended to design and mutually benefit from platforms for guided visits, either online or in CD form, of museums, architectural monuments, etc.

An effort should be made for the translation of local knowledge from the national languages into the most commonly used languages as vectors of international communication.

**Creating virtual libraries in Member States**

Libraries are one of the meccas of knowledge concentration and preservation. Because they require considerable budgets, they are often scarce and rarely affordable in Member States. The digitalization of libraries would make it possible to increase stocks of books virtually and ensure better accessibility.

The heritage found in libraries and archives could be completed with the information generated by the academic, scientific research and cultural sectors. Special attention could be given to the task of shedding light on the written Islamic civilizational heritage through the digitalization of historical documents and manuscripts as well as the preservation of the oral heritage and popular arts through multimedia documents.

A pioneering action in this respect would be the creation of a national digital library and its opening up to the Islamic world via a virtual library managed, for example, by ISESCO. In this respect, it may be worthwhile to enrich this Islamic library with the masterpieces of religious, human and applied sciences.

**Promoting the Development of Free Software**

Unlike 'material' products, the 'immaterial' nature of software translates into very low production costs. This feature has given rise to a reconsideration of the traditional copyright and the adoption of new utilization licenses such as 'public domain', the 'copyleft' or the 'common creative'. 
Furthermore, increasingly unhappy about their dependence on software editors, the users of software are demanding more and more freedom in the utilization of their products. What ensues is awareness about the growing use of free software. In fact, these guarantee transparency, security, lasting quality, solidity, adaptability, availability and cost. These types of software are, therefore, perfect for mutual benefiting. Unix, Linux, Mozilla, Fire Fox and Open Office are certainly the leading names in free software.

According to the Free Software Foundation, the phrase 'free software' refers to the freedom enjoyed by the users to execute copy, distribute, study, modify and improve the software. It refers to the following four freedoms enjoyed by the software user:

1. The freedom to run the program, for any purpose.
2. The freedom to study how the program works, and adapt it.
3. The freedom to redistribute copies.
4. The freedom to improve the program, and release the new version, so that the whole community could benefit from it.

Even if these two notions are often confused, free software is not necessarily free of charge. 'Free Software' does not mean 'non-commercial'.

For ICTs professionals in the Islamic world to take up the role of free software producers, it is essential to provide them with a propitious environment where the various aspects of production, marketing and distribution are mastered.
Chapter 5

Strategy Implementation

Means
As presented in this document, the Strategy for the Development of ICTs is a 'generalist' strategy destined for all States of the Islamic world. Its implementation by each State requires a project management approach that guarantees the adaptation and tailoring of the Strategy to suit the particular needs of each State, hence the necessity to guide the adaptation (preparation), the implementation and evaluation of the Strategy. The success of the Strategy entails the involvement of decision makers and all the socio-economic actors in the appropriation of the Strategy and the drawing up of an implementation schedule. Among the potential actors we can cite governments and state organizations, the private sector, regulatory bodies, telecommunications operators, the civil society, universities, research centers, international bodies, internet-linked international organizations and national internet domain management structures.

In addition to these actors, the creation of efficient bodies to guide the development of ICTs and provide sufficient financing is one of the elements of success of this approach:

1. The financing body, the national committee and the networks of competencies ensure the strategy's implementation.

2. The authority belongs to the legal structure and to the regulatory body which guarantee control, the respect of ethical rules and the protection of the citizen.

3. The national and regional observatories would play a role of technological monitoring and guidance with particular emphasis on collaboration among Member States.

1. Financing Body

One of the major obstacles to the implementation of the strategy components is the frustration resulting from the gap between the needs and the means available or implemented by States. Once the strategy and its action plan have been adopted, each Member State must endeavor to secure adequate financing. In addition to State budgets, investment in ICTs may be financed by other funds. At the national level, funds may be collected from telecom operators (IBM, HP, Microsoft...). At the regional and world levels, the contribution of financing institutions such as the Islamic Development Bank, the Digital Solidarity Fund adopted by the WSIS, UNDP or the World Bank will have to be considered.
2. National ICTs Committee

It would be desirable for each State's government to proceed with the appointment of a 'national ICTs committee'. This committee would play a key role and carry out different tasks geared at the development of ICT, in coordination with the various other actors. Its main missions are hereunder described:

- To carry out studies on the existing situation of ICTs (a process of mapping the availability of telecommunications/ICTs infrastructures, the utilization of these technologies...),

- to customize the strategy, subject of the present document, and draw up an action plan in the light of the findings and national development objectives,

- to launch a sensitization campaign aimed at ensuring adherence to the Strategy by all actors,

- to create a certification and labeling board that would guarantee the quality of the generated information and the services using this information,

- to follow up the carrying out of the action plan and the coordination between the various actors,

- to continue assessing the progress of the action plan.

3. Competence Networks

National competence networks should be created in order to federate ICTs professionals of the academic and corporate fields and boost research, innovation and economic development.

These networks have the ambition of creating synergy in order to become an efficient force of production and pool human and material resources, thus ensuring the creation of economies of scale. The aim is to implement projects that rely on partnerships between the private and the public sectors and as such favor local actors, the free flow of information, the creation of networks of experts, the supervision and training of scientific and professional competencies as well as the promotion of R&D research. By bringing together ICTs experts who know the local realities, these networks can become a consequential persuasion power. They can take several forms such as economic interest groups (EIG) or competence centers:
- Economic interest groups have the mission of supporting the development of ICT-specialized enterprises and encouraging companies to invest more in ICT. Support would thus be proposed to companies in terms of research and development, expertise, innovation and through the identification of the most suitable ICTs initiatives for them in accordance with their specificity and their environment.

- Competence centers have the mission of promoting national expertise, the expansion of ICTs and capitalization on training and research.

The federation of these national networks of Member States in one regional network is fundamental to the creation of a network of partners and specialists representatives of the different Member States.

This network, in which the most advanced States can take up the role of a powerhouse, would become the medium used in the transfer of knowledge and know-how among States. It may even operate at different levels such as by creating the means necessary to:

- allow efficient collaboration between experts from various countries,
- dispense further training in ICTs with educational institutions,
- increase the number of ICTs graduates,
- share information on best practices,
- create joint research projects involving institutions from different Member States, following the model of European research projects.

4. National Legal Framework

A favorable legal and regulatory framework should be created in order to ensure technological neutrality and promote innovation and the development of society through the dissemination of content that is adapted to entities and individuals (dissemination of cultural heritage, online classes, scientific studies, etc...). To achieve this, it is necessary for the users to be informed of the legislation in force. Situations that are most prejudicial to individuals involve the violation of privacy, damage to reputation, the unauthorized use of images, harassment, unsolicited mail (spam), the spreading of viruses, copyright violations, the disregard of reproduction rights, intellectual property rights, cyber crime, etc. The main function of this structure is to propose laws and guarantee their respect.
5. Regulatory Body

A regulatory authority that is independent of operators should be created. This body would act as the competent authority in the following:

- the application and respect of the legal, economic and technical provisions in force in the field,

- the protection of the users' interests as to financial affordability and quality of service,

- the management of the names of domains and sub-domains, making it possible to access a website or convey electronic mail through mailboxes. The national regulatory bodies should request the delegation of their national domain (example: 'dz' for Algeria and 'ir' for Iran) from the Internet Corporation for Assigned Names and Numbers in order to be managed by local regulatory authorities.

On this last item, and in order to represent the interests of naming authorities in the Islamic world, an organization similar to the Council of European National Top Level Domain Registries (CENTR, www.centr.org) must be created. The aim is to favor cooperation among national naming authorities and to involve them in actions of common interest to all.

6. National Observatory

Every State which does not have a national observatory should set up an ICTs observatory that would be made up of professionals of this field. As a monitoring and forecasting body, the observatory will serve to identify policies to be implemented for the development of ICTs. It should carry out analyses, inform and sensitize about all the subjects related to ICTs utilization and acquisition in particular and the development of the information society in general. Some of its objectives would include:

- to assess the various indicators recognized by international organizations, such as the DOI, in order to gauge, in qualitative and quantitative terms, ICTs achievements,

- to identify badly serviced areas,

- to promote the use and acquisition of ICT,
- to inventory initiatives and good practices in the ICTs field and encourage synergies,
- to contribute to the structuring of ICTs research by favoring interdisciplinary dialogue,
- to initiate studies on ICT-associated job market changes,
- to inform decision makers and citizens about the opportunities and stakes related to ICT,
- to favor regional and international cooperation in the ICTs fields.

7. Regional Observatory

National observatories may be federated into one regional observatory in order to draw the regional ICTs landscape, cooperate and exchange good practices. The main mission of such an observatory would be to encourage a strong synergy among national observatories. It would provide a space for the exchange of knowledge, know-how and best practices. In this regard, it is of utmost importance to encourage broad cooperation and coordination among Member States. The experience and solutions used by one State are often precious for another State. Therefore, it is important to increase the possibilities of exchange of practices and information among States.

Conclusion

By way of conclusion, let us introduce a hypothesis and a challenge: “using ICTs as a shortcut to meet the new millennium’s challenge; namely, that of sustainable development”.

If ICTs and the setting up of the information society constitute, as they did in India, Malaysia and South Korea, a lever for future prosperity, what are the guiding principles at play here?

By proposing these strategic orientations, ISESCO has sought to discharge its mission of counsel and support to Member States in order to meet, together, the challenge of reducing the digital divide and of access to the information and knowledge society. This challenge calls for ambitious policies built around principles that aspire to the mastery, acquisition and efficient exploitation of ICT:
- the generalization of infrastructure and the creation of a regulatory structure,
- the compulsory digital literacy in all educational institutions,
- the reinforcement of ICTs capacities,
- the enhancement of the value of cultural heritage through its digitalization and dissemination through the web,
- the production of contents that respect cultural and linguistic diversity and cater to the specific needs of Member States,
- the production of scientific and cultural content.

**How to Get There?**

ISESCO's objective in building the information and knowledge societies is not to propose a 'ready to use' model, simply because in matters of development only 'customized' approaches are likely to succeed. Thus, efforts should be made by each Member State to adapt, in a creative manner, these strategic guidelines to its own situation, and to establish a coherent and efficient strategy that responds to its development priorities. Such an approach involves a genuine evaluation of the situation that requires the calculation of ICTs reference indicators and the determination of national objectives indexes, while specifying the implementation deadlines.

**Are These Ambitions Achievable?**

The answer is positive if the political will exists and if it succeeds on the one hand to mobilize the various unavoidable actors (governments, civil society, private sector and international organizations), and on the other hand to create the means and bring into play national and inter-Islamic solidarity so that the large majority of countries could have a minimal ICTs infrastructure.
Appendix
Appendix 1: ITU Indexes

- NRI measures the tendency of countries to exploit the opportunities provided by ICT. This index is updated on an annual basis and seeks to determine the impact of ICTs on the competitiveness of nations.

- DAI takes into consideration aggregates such as availability of infrastructure, means of access, educational level, quality of ICTs services, and Internet utilization.

- DOI is a new index introduced by the ITU. It takes into consideration three variables (cf. Figure 1), opportunity, utilization and infrastructure (ICTs triangle).

![ICTs triangle](source: ITCU/KADO Digital Bridges Project)

*Figure 1: ICTs triangle (source: ITCU/KADO Digital Bridges Project)*

Opportunity measures basic access and the means of access to networks:

- Percentage of the population covered by mobile cellular telephony,
- Internet access tariffs expressed in percentage of per capita income,
- Mobile cellular tariffs expressed according to per capita income.
Infrastructure is dependent upon:

- The proportion of households with a fixed line telephone
- The proportion of households with a computer
- The proportion of households with Internet access at home
- The number of mobile cellular subscribers per 100 inhabitants
- The number of mobile telephone Internet subscribers

Utilization measure:

- Proportion of individuals who use the Internet,
- Ratio of Broadband Internet subscribers to Internet subscribers,
- Ratio of Broadband mobile subscribers to mobile Internet subscribers.
## Appendix 2: Indicators of Member States

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