UNESCO

AND

AN INFORMATION SOCIETY FOR ALL

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UNESCO and an Information Society for All

The United Nations Educational, Scientific and Cultural Organization (UNESCO) is mandated by its 185 Member States inter alia *to promote the free flow of ideas by word and image and to foster international co-operation in the fields of communication, information and informatics in order to narrow the existing gap between the developed and the developing countries in these areas. UNESCO's medium-term strategy for 1996-2001 foresees a special focus on the application of communication and information technologies for development, democracy and peace. The present document gives an overview of the opportunities and challenges related to these technologies and outlines a framework for UNESCO action.*

I. OPPORTUNITIES AND CHALLENGES

The dramatic acceleration in the development and use of information and communication technologies during the last few years has set in motion a worldwide process of transition from the "Industrial" to the "Information Society". The depth and non-linearity of this process seem to have much greater social, economic and cultural implications for humanity than the industrial revolution of the past. Business, education, training, research, entertainment - indeed, all aspects of life - are increasingly affected by electronic networks and

multimedia technologies, which are opening up new opportunities and challenges for all. As we move towards the third millennium, it is of the utmost importance to understand and to influence the fundamental changes brought about by the "communication and information revolution". The complexity and interrelation of today's world problems defy traditional explanations and solutions and require a completely new approach which must be both comprehensive and interdisciplinary. Moreover, individuals, groups and communities will need to develop not only new tools of analysis but also very different mentalities and attitudes in order to adapt to the emerging "new" civilization based on information and knowledge.

At the heart of this transformation are technological advances which include the digitalization of various types of information - text, numbers, sound and images - and their integration into a single commodity, so-called "multimedia"; artificial intelligence and the incorporation of user-tailored, interactive interfaces into information products and services; digital compression and switching techniques which facilitate the communication of ever greater volumes of information; an exponential increase in computing power coupled with dramatic reductions in cost; communication satellites with vastly increased power and accessibility, inexpensive optic fibre cable and new wireless technologies; and, perhaps most impressively, the explosive growth of computer networks and, in particular, of the largest among them, the Internet, which links millions of individual computers and users all over the world.

This combination and interaction of technologies is resulting in new products and services based on video, advanced image and voice processing,

powerful techniques for automating information retrieval and routine transactions of all sorts, which are increasingly becoming accessible worldwide through interoperable networks. These "new" technologies - or, to be more exact, the new uses of technologies - are stimulating the convergence of industries. In industrialized countries, the last few years have seen strategic moves towards partnerships and alliances among cable companies, telecommunication operators, broadcasting networks and computer, publishing and entertainment enterprises. Markets for new information and interactive services are being aggressively explored and developed, as information providers and carriers seek to expand their activities beyond their traditional borders.

Most important of all, there is now a political will in many countries to support and encourage these processes. New legal frameworks and standards are being set up to promote the development and interconnection of national information infrastructures. Well-conceived information highways would further stimulate the already burgeoning national and international markets for information services and products.

Today the industrialized countries have an overwhelming lead in all these advances, while for a great number of developing nations even "old" technologies, like television, telephone or even electricity, are still only a dream. However, a closer look reveals that the new information and communication technologies offer immense opportunities to all societies and individuals for alternative, truly universal and often cheaper ways of accessing and disseminating information.

Examples already abound of developing countries' using information technology in education or health to help break the vicious circle of poverty and isolation, or leapfrogging heavy industrialization by the creation of new sectors of sustainable economic development like software production or data processing. The importance of the information revolution has been recognized at the highest political levels in many developing countries. One recent example is the resolution of the Conference of African Ministers responsible for Economic and Social Development and Planning (Addis Ababa, May 1995) to set up a High-Level Working Group of African experts to develop a regional plan of action on information technologies - called Africa's Information Society Initiative - and to mobilize the necessary financial resources for its implementation.

The concerns of developing countries regarding their participation in the Information Society thus bear less on whether it should be accorded high priority, than on how to effectively apply information technologies to development so as to reduce, rather than widen and deepen the gap between "haves" and "have-nots" and worsen inequality across the technological divide. The major problems are posed not by the technologies as such, which can in general be acquired and adapted if appropriate resources are mobilized, but rather by political, social, organizational and ethical issues involved.

Whether humanity as a whole is to benefit from these opportunities will depend not only on the transfer of technology, but first and foremost on enhancing human capability to make the best possible use of information technology. Only on that condition can the Information Society hope to attain its

ultimate goal - empowerment of all its citizens through access to and use of knowledge.

New opportunities for development

The economic and commercial opportunities of information highways are certainly significant, but the impact of information technologies on sectors of public concern is perhaps of even greater significance. Of particular interest and relevance to UNESCO is the impact of information highways and multimedia technologies on "intellectual" areas which are at the core of the development process.

In the field of education, information technologies are viewed as a means of complementing traditional educational techniques to enable education systems to adapt to the different learning and training needs of societies. Computer simulation, telematics, and teleconferencing, alongside educational TV or radio, have great potential to reach larger audiences than the traditional classroom process, and to make learning more effective, attractive and stimulating. The increasing variety of interactive media (e.g. compact disks and interactive TV) enlarges the scope and possibilities of self-directed learning. These tools provide an unparalleled opportunity for "reaching the unreached", particularly the 900 million illiterates in the world and the 130 million children unable to attend primary school, and for making lifelong education for all feasible, particularly for learners for whom access is limited by time and space, age, socio-cultural environment, work schedules and physical or mental handicaps. Modern distance

education systems, of which UNESCO's "Learning without Frontiers" initiative is a forerunner, can not only give learners access to knowledge available in different parts of the world, but also ensure dialogue - the main factor in effective learning - both among learners and between learners and sources of learning.

Scientific research, where computer networks and many telematics applications originally developed, remains one of their most active consumers. For scientists, the major advantage of information highways is the possibility to access, disseminate scientific information and share research facilities more quickly, on a larger scale and in a more interactive way. Research groups in the natural and social sciences will increasingly become "virtual" - composed of interconnected specialists working on the same problem in different parts of the world. Electronic publishing will provide faster and cheaper access to the scientific literature, and facilitate the maintenance of an international archive of scientific accomplishments. These trends will be particularly beneficial to scientists in developing nations who would otherwise not have easy access to laboratories, documentation and databases; they will provide new opportunities to collaborate with colleagues elsewhere in the world, and mitigate, if not solve, the problem of South-to-North brain-drain.

In the field of environment, information technology will help to expand humanity's capacities to understand and manage physical and ecological processes, and to forecast and respond to disasters and catastrophes. The Global Observing Systems for environmental monitoring, being set up through a UN system-wide initiative in which UNESCO has a major role, are possible only beacause of advances in data sensing, processing, communication and

presentation. Information technologies will also enable the establishment of better disaster warning systems and systems to help plan and coordinate response and relief efforts; the function of these systems to limit mortality, injury and loss of property will be facilitated by seamless links with the communication media available in the home and workplace.

In the field of culture, multimedia technologies already offer tremendous possibilities for the promotion and sharing of physical and non-physical cultural heritage. The availability of multimedia cultural products and services on information highways will provide limitless possibilities for everyone to enjoy the world's culture in all its diversity. At any time, one will be able to listen to a concert or visit a museum in a virtual mode without the necessity of travelling or queuing. Moreover, three-dimensional imaging and interactive interfaces open up vast new horizons for experimental art. On the whole, these technologies have an immense potential for enhancing cultural identities, promoting intercultural dialogue and stimulating artistic creativity.

The mass media have already adopted major technological innovations such as electronic editing and generation of images in TV programme production, as well as computerized and communication-assisted publishing of the printed press. Interactive television and multimedia open up yet unexplored perspectives not only for entertainment, but also for educational and cultural programmes and for the popularization of science, and are likely to enhance the role of public service broadcasting. News agencies are obvious beneficiaries of computer-based technologies which allow more efficient news production and distribution. If the rapidly developing media technologies are made available over a truly universal broadband network, the media's capacity to provide information and entertainment will increase almost beyond imagination.

Libraries - whether school, university, public or specialized - are certainly destined to play an ever greater role in the dissemination of knowledge and experience. Computerized and interconnected, they will be able to pool their resources and provide to their clients access to immense stores of information. Moreover, they are ideally placed to serve as public gateways to information highways, providing as they do both access and guidance and training to users. *Archives* will adapt their storage and preservation function to the impermanence of digital information which in many cases will replace paper documents. They will also become increasingly involved in electronic information provision as their clientele in government, research and the general public develops ever more sophisticated needs.

Professional and institutional distinctions in the dissemination of information and education will blur as new services develop and gain ground, driven by a market of aware and active citizens. While the focus for these services in industrialized countries will be the home and the workplace, in many developing countries, especially in rural areas, community-level access will be particularly important. Community tele-centres offering library, information and media access, social services like education and telemedicine and fora for participatory democracy, as well as personal communication facilities, will become possible, based on the cooperative organization of services and on enabling "last-mile" communication technologies.

New challenges to society

At the centre of the challenge posed by the emerging Information Society is the concept of universal service and how a "right to communicate" will evolve in a digital world where the basic services required by all citizens are becoming more extensive and complex. Access in this context involves not only physical availability and cost, but also ensuring that the user can benefit from the services concerned, through a minimum level of "digital literacy" and through appropriately adapted interfaces. In the increasingly competitive and commercial world of information and communication, the risks of exclusion of disadvantaged populations are substantial - both within and among societies. These risks are of particular concern to the developing countries which need clear and resourceful policies if they are to benefit from the emerging communication revolution.

An important facet of the "right to communicate" concerns access to telematics facilities at affordable cost by the "intellectual" sectors - education, science, culture, media, libraries and archives - which have a crucial role to play in the development of national information infrastructures. A study jointly carried out by the International Telecommunication Union (ITU) and UNESCO[1], offered a promising three-fold strategy to be pursued collaboratively in this context: (i) cooperation among the users in order to consolidate their demand for telematics services, (ii) partnership between telecommunication operators and users to

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[1] *"The Right to Communicate - At What Price? Economic Constraints to the Effective Use of Telecommunications in Education, Science, Culture and in the Circulation of Information"*. ITU and UNESCO, Paris, May 1995 (UNESCO/CII-95/WS/2).

develop and expand services based on market principles, and (iii) enlightened public policies to promote the building and use of telematics infrastructure in development-related sectors.

Another important issue is the maintenance of linguistic and cultural diversity in the Information Society. Technology-induced globalization is seen by many as a threat to local customs, values and beliefs, as exemplified by that fact that, today, 90% of the databases on the Internet are in English. Technology also offers possibilities for the development of specialized services to cater for diverse cultural needs and there is every reason to suppose that these will flourish where legitimate cultural, educational or scientific demands exist. These advantages are, however, counterbalanced by a danger that these groups of media users may prefer cultural specificity to diversity and dialogue, and thus run the risk of shutting themselves into a cultural ghetto. At the same time, it must be kept in mind that many small or even medium-sized countries do not have the critical mass, in either economic or demographic terms, to guarantee adequate national content and may thus largely depend on imported programmes and services. The rapid development of broadcasting technology and its convergence with computing and telecommunication give this issue a new complexity.

Increased access to interconnected networks and databases raises major ethical and legal issues. These include: privacy of information and the right of individuals to check data pertaining to themselves, which is widely recognized as a fundamental human right; regulation of content of information circulating through information highways (e.g. information of an intolerant, racist, violent

or pornographic nature, and particularly its access by children); computer piracy and other informatics crimes; and copyright where efforts are required to extend legitimate intellectual property protection to the rapidly changing multimedia digital environment while maintaining access to information needed to promote societal and economic development. In all of these cases, the risks and advantages of coercive measures should be carefully weighed, and other solutions, for example involving consumer action or voluntary codes of conduct of information professionals, may well prove to be more attractive. This issue is not fundamentally altered by the fact that information technologies themselves are providing partial solutions to these problems.

The effects of computer technology on individuals and their social behaviour are also controversial. Already today, one can do almost anything on a computer: study, work, shop, watch a film or chat with a friend, visit a library or a museum, read a newspaper or play games. This provides immense opportunities for access, but it can also unduly privilege the "man-machine" relationship to the detriment of reflection, self-reliance and personal capacity-building. At a wider level, the emerging information highways constitute an important factor in major social transformations, such as the internationalization of trade and the development of a world economic market, the globalization of news and personal communication, and changes in the labour force due to the increased use of telematics. The risks associated with many of these phenomena are poorly understood, and deeper scientific analysis will be needed before they can be adequately considered by policy-makers.

II. THE ROLE OF UNESCO

Under its Constitution, UNESCO is required to contribute to *"advancing the mutual knowledge and understanding of peoples, through all means of mass communication"*, *"to promote the free flow of ideas by word and image"*, to *"maintain, increase and diffuse knowledge"*, and to *"give fresh impulse to popular education and to the spread of culture"*.

With the advent of the information age, these tasks have not only retained their relevance but, indeed, have taken on a new urgency, and concrete ways to fulfill them will need to be adapted to the new technological environment. In an era where the distinction between different forms of information is blurring, the principle of the "free flow of information" - which until recently had been considered only in terms of mass media - must inevitably be applied to all types of information needed for the advancement of education, science, culture, peace and democracy.

Once accessible to all - irrespective of race, nationality, gender, location, occupation or social status - information and communication technologies can be instrumental for achieving a truly human-centred development.

It is true that economic and commercial interests now seem to be the main driving force for the building of information highways. But it is also obvious that culture, education and science, as distinct and integral parts of our civilization, cannot be left totally at the mercy of market forces. Information highways must not simply provide new and more powerful channels for electronic consumption.

They must have large spaces for knowledge and value sharing, artistic creation and public debate. Just as the existing media do, new electronic networks must transmit the widest possible variety of opinions together with information which may not be commercially profitable or may interest only minority groups. In this regard, it is of the utmost importance to reaffirm the mission of public service media to meet the very basic educational, scientific and cultural needs of people in the new technological environment.

The above conceptual framework is reflected in UNESCO's current Medium-Term Strategy (1996-2001) and biennial programme (1996-1997) which foresee that the Organization, in collaboration with the United Nations system and the international community at large, will:

as part of its international intellectual co-operation function,

- encourage and facilitate the analysis of the societal impacts of communication and information technologies;

- contribute to the conception and promotion of international policies for the development of information highways, destined to embrace the developing countries in the Information Society and to avoid new types of exclusion within nations due to economic or other barriers;

- facilitate international debate on the human rights issues of the coming information age, including the rights to information access and to information privacy;

- promote international reflection on major ethical and cultural issues concerning information highways, including those related to content, in particular its cognitive dimension and the social acceptability of information of intolerant, racist, violent or pornographic nature;

- participate in the process of reviewing copyright and intellectual property conventions to ensure that they remain relevant and effective in the emerging information society;

- catalyze reflection on the issue of artistic integrity and moral rights which are endangered by new technological possibilities for distortion and for distribution of distorted works;

- encourage the development and dissemination of methods for handling and accessing information in the fields of education, science, culture and communication;

- reaffirm the mission of the public service media to meet the very basic educational, scientific and cultural needs of people in the new technological environment;

and, ***as part of its technical assistance function,***

- assist Member States in elaborating national policies and regional strategies for optimum use of and access to information through modern technology, and in creating conditions conducive to the development of electronic cultural industries;

- promote, for example through pilot projects and training, the use of information networks and innovative multimedia technologies to foster development in the Organization's fields of competence, in particular as regards:

  - free flow of information in the fields of education, science, culture and communication, and the new role of libraries, especially public libraries, as gateways to electronic information;

  - distance education and innovative approaches to non-formal and lifelong education and learning;

  - virtual scientific laboratories, in which researchers from developing and developed countries can collaborate through telecommunications and telematics on common projects;

  - production and dissemination of diverse cultural products as a contribution to intercultural understanding and dialogue.

This strategy is designed to enable UNESCO to play its moral and intellectual role *vis-à-vis* the emerging Information Society, taking account of the educational, scientific and cultural needs of all nations and individuals and promoting a genuine symbiosis of cultures based on mutual respect and enrichment.