

Identifying Priorities for Building Distinct Information Societies

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Abstract: The information society discussion to date has been dominated by vision statements from national governments and promotional campaigns by the major suppliers of information/communication hardware and software. They have promoted a homogeneous conception of “the” information society, toward which all countries should be developing as fast as possible. Independent research has shown that supply-push development is unlikely to meet the needs of most countries. Effective information society development must reflect the unique priorities of individual countries, thereby leading to many distinct information societies. Are the priorities identified in *Information Society Ireland: Strategy for Action*, the best for Ireland, or were important issues and sectors of Irish society neglected? This is an important issue for debate that will help shape the future Irish information society.

I INTRODUCTION

It has now become fashionable for national governments, international organisations, industry groups, corporations and other organisations to publish visionary policy statements or reports on the future “Information Society”. These are illustrated by documents from national governments — such as the USA’s *The Global Information Infrastructure: Agenda for Co-operation*, Denmark’s *Info-Society 2000* and *Information Society Ireland: Strategy for Action* — and from international bodies such as the European

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Commission's *Bangemann Report* and the *Conclusions of G-7 Summit "Information Society Conference"*.

As a result, the already vast and rapidly growing literature about information superhighways, national and global information infrastructures, and future information societies provides a very unclear and confused picture as to precisely what these visionary conceptions entail, how they will be implemented, and what the real effects might be. Estimates of specific costs and benefits are rarely found; and substantive policy directions that are backed up by operational plans, actual resource allocations and budgets are almost non-existent. Much of the literature is either unsupported "blue sky" speculation about future technological and service possibilities, or promotional "hype" by the industries trying to sell the new technologies and potential future services.

It is widely claimed that the future information society will be characterised by increased diversity and greatly expanded individual opportunities. As never before, individuals will be able to control and shape their lives. Ironically, in order to achieve this enhanced state of individual freedom and diversity, the mainstream information society literature provides little or no room for diversity among countries in the direction and speed of adoption of the new information technologies and services. It is suggested that implementation of the vision should be as rapid as possible in the direction of a single abstract model of a future information society composed of individuals spending a major portion of their lives in front of a terminal (PC, television, advanced telephone, etc.) engaged in some form of electronic communication. Apparently the only difference among countries — large or small, developed or developing, wealthy or poor, technologically advanced or not, literate or not — is that some have much farther to go than others along the path to the information society wonderland. National policymakers of all countries are being invited to submit themselves to the grand technological determinist vision.

As with all new technology systems, information and communication technologies portend both significant potential benefits and serious potential problems. Some investments may bring enormously high economic and social returns; others may result in enormous waste or even catastrophic loss. Wherever there are "winners", there are also likely to be "losers" unless quite specific steps are taken to prevent such developments. Soundly based public policy direction can increase the possibilities for benefit, reduce the risks of loss and harm, and ensure that the implications for all sectors of society are considered as the steps to an information society are taken.

Clearly there will be as many "information societies" as there are societies. All countries should not try to charge down a single path emulating the per-

ceived leaders in technological development at any moment in time. Rather each society will want to use the new technology and service opportunities to serve its particular priority needs and values, and so help it shape its future. The addition of the term "information" to "society" should imply an expansion of the opportunities for individual societies to enhance their own distinctiveness in designing their futures. This paper suggests a systemic analytical framework that can help both in assessing the claims of vision statements, and in designing information society policies that reflect the particular circumstances, needs and priorities of different countries.

II COMPONENTS OF THE INFORMATION INFRASTRUCTURE

The information infrastructure of any country has a number of fundamental components. The *telecommunication facility system*, which is currently being upgraded and/or extended in all countries is a key part of the infrastructure. A maximally enhanced "broadband" telecommunication system with advanced interactive capabilities has been labelled the "information superhighway". It is part of the information infrastructure which includes other components as well. An *information content* sector and new *value-added communication services* are equally important in the development and application of new services. The *equipment* sector (hardware and software) is the primary driving force behind most of the new technological developments that are opening new opportunities for both industry and individual end users.

In addition, special *skills* are needed throughout all sectors both to produce and to apply and use the new services. Finally, comprehensively co-ordinated national and international *policies* by government and industry are essential to guide the evolution toward information societies that will reflect the circumstances, priorities and values of particular societies within a framework of international co-operation and compatibility.

The foundation of the information infrastructure is the telecommunication system. In a sense, referring to an enhanced telecommunication system as an information superhighway is a most inappropriate metaphor. This particular enhancement is not really about moving great quantities of information from one point to another. It is about a new form of electronic communication that opens up opportunities for *interactive* communication that previously have not been possible. For those in a position to use this new form of interactive communication effectively, new information can be obtained.

However, effective access, use and benefit will require much more than an expansion of the physical transmission capacity. It will require a change in communication behaviour. Issues of need, preparedness, affordability, skill

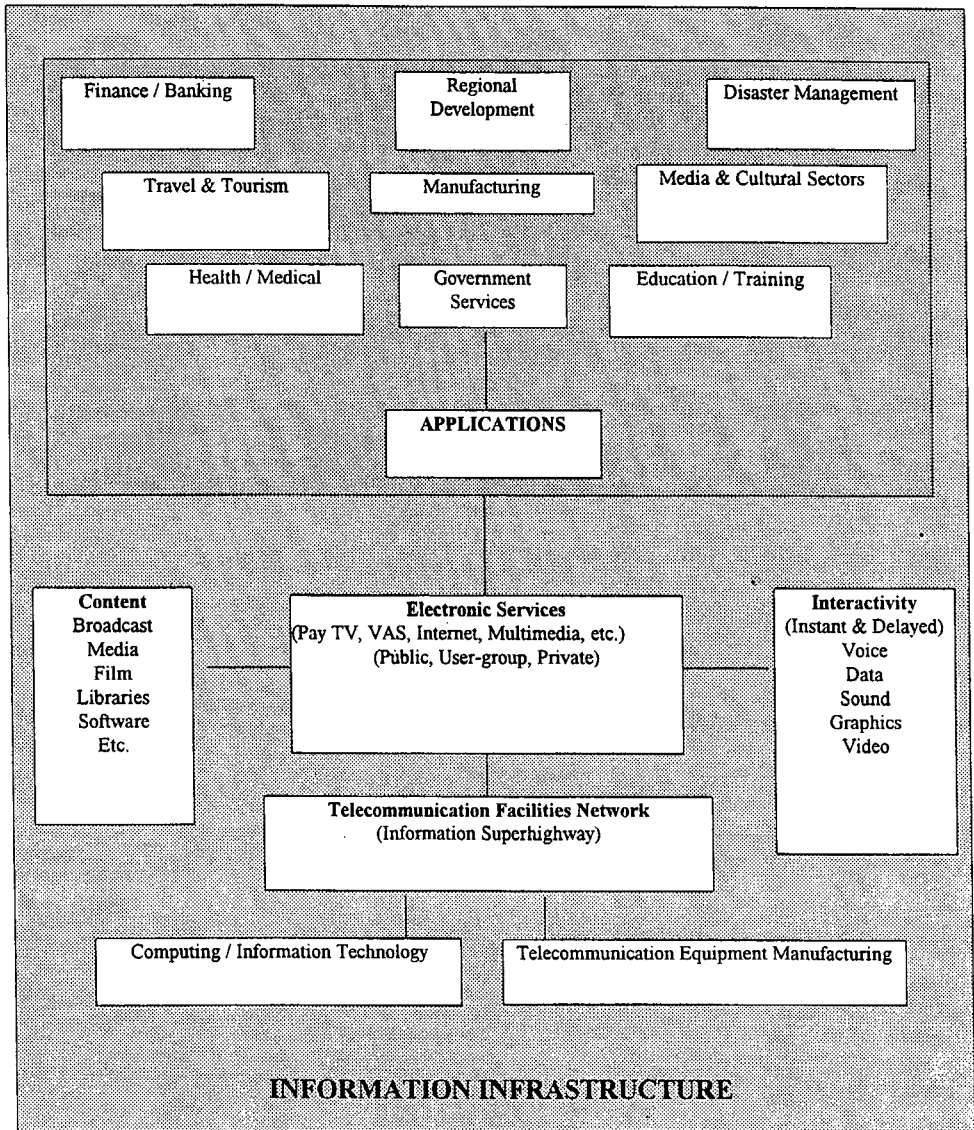


Figure 1: *Creating the Networks for an Information Society*

and priorities are fundamental to policy analysis and resource allocation decisions affecting all aspects of the information infrastructure. Figure 1 provides an illustration of the major components of information infrastructure development and application, and their interrelationships.

Most of the discussion to date has been preoccupied with the enhancement of the "Telecommunication Facilities Network" (identified in the bottom

portion of Figure 1), to the standards of a broadband information *super-highway*. The information technology and telecommunication equipment manufacturing sectors are providing the hardware (e.g., transmission, switching, terminal equipment), and increasingly the software to the telecommunication network operators (PTTs, PTOs, Telecoms, Telcos) as well as corporate, government and individual users. These large, rapidly growing sectors of the global economy are illustrated at the bottom of Figure 1.

The existence of viable, internationally competitive information technology and telecommunication equipment manufacturing industries in a country is extremely important because of its economic implications for information infrastructure growth. Expansion can either provide a stimulus to growth in these supplier industries, or create a major trade deficit for countries where the technology must be imported. For this reason, many countries (e.g., Japan, Singapore, Ireland, Australia) have established industrial policies directed to encouraging the growth of these industries in their home markets. In some countries, the purchasing policies of the national telecoms operator are being used to promote equipment manufacturing and software development capability in the domestic market simultaneously with expansion of the telecommunication infrastructure.

Increasingly electronic communication and information services supplied on the telecommunication facilities network are being generated by service suppliers outside the traditional telecommunication sector, and even outside the information technology sector. This has been made possible by telecommunication reform policies which have permitted new firms access to the network to sell value-added services (VAS) directly to customers. Figure 1 illustrates this growing separation between the telecommunications facilities network, which provides the physical capacity to communicate, and the "Electronic Services" which reflect the design of special communication services that use the facilities network. As shown in Figure 1, this includes such services as Pay TV; VAS; the Internet; Multimedia Services; and others. Electronic news services and database services are now widespread. The services can be public, closed user groups (e.g., the banking industry), or private (e.g., a government agency).

The growth of electronic services as a distinct component of the information infrastructure has provided an avenue for the design of new services that are more responsive to the specific needs and demands of particular users. It reflects a shift away from the almost total supply-side orientation of service development that has characterised the traditional approach of telecom operators toward a more demand-side orientation that pays more attention to specific customer needs. These service providers typically acquire more detailed knowledge of specific customer needs, which then represents

the basis of the "value-added" they provide. They have also stimulated the telecom operators to offer their own value-added services and improve their responsiveness to customer needs.

III SERVICE APPLICATIONS

It is doubtful that this very expensive and comprehensive upgrading of the entire electronic information infrastructure could be justified in any country simply in terms of the supply of a range of new services to businesses and household users. Although entertainment services in the form of expanded options for viewing television and playing interactive games at home are expected to provide significant markets by the 21st century, the major benefits of the upgraded information infrastructure are expected to arise as a result of applications of new services throughout the economy and society. These applications are expected to transform the traditional ways of operating for large and small businesses, government agencies, education and health organisations, and other institutions. It is anticipated that applications of the new electronic services will permit a major restructuring of all organisations so they can provide more efficient and responsive services. The anticipated benefits will arise from the integration of the new information/communication services into the operations of each major sector of the economy, and of society. This is illustrated at the top of Figure 1.

The beginnings of such changes have been seen in the global restructuring of banking and finance, in major changes in travel and tourism, in the early applications of electronic funds transfer, just-in-time management systems, and electronic document interchange in a variety of different industries and types of organisations. It has facilitated the transformation of the music and media industries to global dimensions.

Clearly a successful transformation of any major sector of society will have to take place over a considerable period of time. The field of education and training is a good example. The increasing requirements for "learning" in the 21st century will mean that distance education and computer assisted learning must be moved from the fringes of national learning systems, where they are now, to the centre. Societies will have to move the education and training system on to the electronic information infrastructure. But to date, there has been little co-ordination, let alone convergence of policy development and planning in telecommunication and in the education/training sectors in any country.

For the future, governments in the most developed countries will not invest primarily in physical facilities or stand-alone educational institutions. Rather, investment will focus on the most efficient and effective use of a

variety of new communication and information services, and new forms of content. This will permit more and more diversified opportunities for access to learning by people of all ages and circumstances. This will permit more effective use of existing educational resources. The role of teachers in this new environment will shift from being suppliers of information (filling empty vessels) to more highly valued facilitators of access to information and learning (guiding and collaborating). The application of the full range of new electronic information and communication services is expected to permit the redesign and transformation of the education/training/learning system in developed countries for the 21st century. Clearly this is a tall order and will require major reallocations of resources both within the education/training sector, and between this and other sectors before it can be achieved. The transformation will not be an easy one.

Figure 1 illustrates just some of the major areas of application of information infrastructure services. The transformation process will proceed at a different pace in each sector depending upon the circumstances in that sector both nationally and internationally. It will proceed at a different pace in the same sector in different countries. Each country will need to establish its own priorities based on its own circumstances. In certain areas, some countries will find benefit in leading the transformation process. In other areas, they will wish to follow and benefit from the experience of others. Establishing national priorities with respect to applications of the information infrastructure will be extremely important for every country.

IV PRIORITIES FOR IRELAND

Ireland is considered an IT success story in recent years. Its industrial policy promoting hardware and software manufacture and development for export has been so successful Ireland has been dubbed the "celtic tiger" of Europe. The Information Society Ireland report reflects this success and places clear priority on strategies for continuing and extending this successful industrial policy.

However, a successful transition to an information society in Ireland cannot be built on the export of IT hardware and software for service development and applications in other countries. For this Ireland must pay at least as much attention to service development and applications in Ireland — in the private, public and community sectors. These important demand-side information and communication issues (as opposed to supply-side technology issues) remain to be developed by the Information Society Steering Committee. Given Ireland's highly literate and skilled population, and its enormous contributions to the world's artistic and cultural communities, the

opportunities for Ireland to be a demand-side (as well as a supply-side) "celtic tiger" in the transition to a distinctive Irish information society seem bountiful. This is the challenge to Ireland for the future.

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