

Chapter 32

CONCLUSION

Designing a Workable Telecom Regulatory Structure for 21st Century Information Societies.¹

William H. Melody

1.0 Introduction

Telecom reform will establish the electronic communication infrastructure for future information societies. National governments, international organisations, industry groups, corporations and other organisations are publishing visionary reports and policy statements on the future ‘information society’ at a rapid rate. Yet telecom reform policies are seldom linked to government pronouncements on information society plans. Such declarations are illustrated by documents from national governments – such as the US’s *The Global Information Structure: Agenda for Cooperation*, Denmark’s *Info-Society 2000*; from international bodies such as the European Union’s *Bangemann Report*, and the G-7 Summit ‘*Information Society Conference*’ Report; and the major PTOs – Stentor Canada’s *Beacon Initiative* and the BT/MCI *Global Communications Report 1996/97*. This infatuation at the highest levels of national and international policymaking has all but turned into a competition to see who can make the most ‘visionary’ (and thereby unrealistic and unsupportable) claims of potential social benefits. But as the preceding chapters in the book have demonstrated, unless telecom reform establishes strong and effective regulation, few visions will be turned into reality.

It is widely claimed that future information societies will be characterised by increased diversity and greatly expanded individual opportunities. Ironically, in order to achieve this enhanced state of individual freedom and diversity, the mainstream information society literature identifies little or no room for diversity among countries, or even among individuals, 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 and telecom regulators in 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. For example, as several chapters in this book have documented, a global telecom network designed for the most sophisticated future needs of the largest TNCs, but financed on the back of local residential telephone subscribers, would increase disparities in access to and use of all services, and make network extension to unserved people more difficult and costly. Soundly based public policy direction and effective telecom regulation 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 steps towards an information society are taken.

However, there will be as many ‘information societies’ as there are societies. All countries should not try to charge down a single path emulating the perceived leaders in technological development at any moment in time. Rather each society will want to use the new technology and service opportunities to meet its particular priority needs and values, and thus to help shape its future. The addition of the term ‘information’ to ‘society’ should imply an expansion of the opportunities for individual societies, as well as individuals within societies, to enhance their distinctiveness in designing their own futures. Where does telecom regulation fit in this larger picture of the development of information societies? If telecom reform is to provide a catalyst for the transformations necessary to achieve information society benefits, what should be its role in the transformation process?

2.0 Toward a Framework for Examining Information Infrastructure Policy Issues

2.1 The Information Infrastructure

The foundation of the information infrastructure is the telecom system. In a sense, referring to an enhanced telecom 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 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 and relationships 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 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.

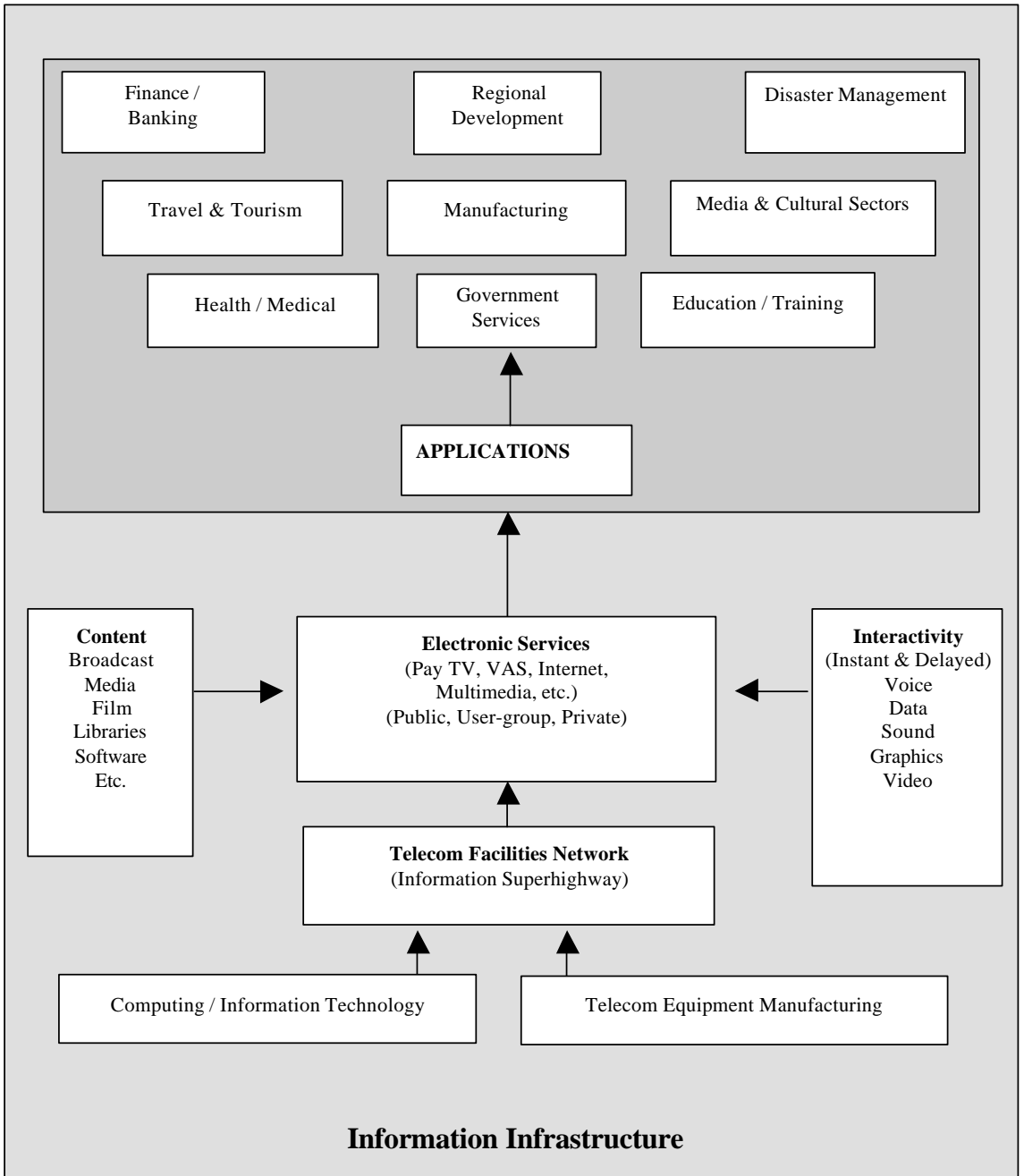


Figure 1 – Creating the networks for an information society

Most of the discussion to date has been preoccupied with the enhancement of the “Telecom Facilities Network” (identified in the bottom portion of Figure 1), and the standards of a broadband information *superhighway*. The information technology and telecom equipment manufacturing sectors are providing the hardware (e.g. transmission, switching, terminal equipment), and increasingly the software to the telecom network operators (PTTs, PTOs, 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 telecom equipment manufacturing industries in a country is extremely important because of 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, Australia) have established industrial policies directed to encourage the growth of these manufacturing industries in their home markets. In some countries, the purchasing policies of the national telecom operator are being used to promote equipment manufacturing and software development capability in the domestic market simultaneously with expansion of the telecom infrastructure.

Increasingly electronic communication and information services supplied on the telecom facilities network are being generated by service suppliers outside the traditional telecom sector, and even outside the information technology sector. This has been made possible by the new telecom 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 telecom 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 wide-spread. The services can be public, for 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.

The first level of technological convergence that has been taking place for some time is the integration of computing and telecom. The introduction of the digital standards of computing into the telecom system is reflected in the design of modern telecom equipment and the software that is developed to operate the telecom network. The telecom facilities system is gradually being transformed into a giant computer as it acquires more and more of the functional capability of computing.

The second stage of technological convergence is reflected in the digitalisation of the content being transmitted over the network, e.g. films, television programs, print, databases, library materials, etc. As the content is converted to digital form, it can be transmitted on the digital telecom network. Moreover, as the upgrading of the telecom network to digital capacity becomes more advanced, the ability of users to engage in a variety of new interactive communication functions on the network increases. As the network provides opportunities for increased interactivity, control and inquiry by the user, then a variety of interactive multimedia services becomes increasingly possible. Figure 1 illustrates the necessary integration of both content and interactivity capability into the development of new information infrastructure services.

It should be noted that even in the most developed and sophisticated telecom systems, including the North-American system, the process of digitalisation of the network and all forms of information content is still a long way from completion. Moreover, the developments of instant interactivity, control and inquiry by the user are still at fairly early stages of development. Nevertheless, these are the clear trends that characterise information infrastructure development. They will provide the platform of capability that is fundamental to the development of future information society services.

2.2 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 and 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 provides a good illustration of the kinds of changes that will have to take place in nearly every major field, if significant benefits are to be achieved. The increasing requirements for 'life-long learning' in the 21st century will mean that such practices as 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 their education and training system on to the electronic information infrastructure, so that

electronic services play a major role in a new learning structure that rebalances the roles of physical interaction, electronic interaction and individual study. Yet to date there has been little coordination, let alone convergence, of policy development and planning between telecom and the education/training sectors in any country.

In an information society, governments in the most developed countries will not be expected to invest primarily in physical facilities or stand-alone educational institutions. Investment will focus on the most efficient and effective use of a variety of new communication and information services, new forms of content and facility arrangements that permit different communities of people to learn most effectively. This will encourage more diversified opportunities for access to learning by people of all ages and circumstances. It should also permit more effective use of existing educational resources. The role of teachers in this new environment is expected to shift from being suppliers of essential 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 for the 21st century. Clearly this is a tall order for fundamental institutional change. It 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, as it is not yet clear to what degree electronically modified or mediated learning can substitute for, or enhance, existing learning methods. Nevertheless the potential benefits of information societies must arise from this form of radical institutional restructuring throughout most major sectors. This is where there might be sufficient benefits to justify the enormous information infrastructure investments now being planned, not in new home entertainment, nor in 'killer' applications that are not associated with fundamental institutional change.

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.

3.0 Ingredients for Successful Development and Application

A summary of the key ingredients for successful development and application of the information infrastructure is shown in Figure 2. On the supply side, technology is important in providing the technical capacity to supply the range of services desired. The telecom infrastructure will need to have the capability to communicate digital signals, as many of the non-voice services require them. However, the vast majority of these services can be provided over the narrowband facilities that characterise most existing telecom systems today. At the present time, the desire to establish broadband capacity connections to schools and households is to enable provision of advanced interactive video communication capability. If future services will require the delivery of multiple

video channels and/or a video dial-tone, then – at least at the current stage of technological development – broadband capacity linking the sending and receiving terminals will be needed.

The demand for this additional video capacity over and above that being provided to households by television broadcast and cable television companies is expected to remain quite small for the near future. The vast majority of information highway services currently offered or planned in the near future can be supplied over the narrowband information highway, the capabilities of which are being continuously enhanced over time.

Figure 2 reinforces the fundamentally important fact that the supply of information infrastructure services requires the development of innovative special services and communication networks, as well as terminals adapted to user needs and capabilities.

SUPPLY	DEMAND	
(Technical Capacity)	Applications in Organizations (Niche Markets)	Household End-Users
<ul style="list-style-type: none"> • Equipment Supply • Telecom Infrastructure Digital - Narrowband - Broadband • Special Services / Networks • Terminals • Skills • Content 	<ul style="list-style-type: none"> • Designer Services / Network Development • Skill Development • Organizational Reform • Sectoral Reform • Reallocation of Resources 	<ul style="list-style-type: none"> • Demand / Need • Skill • Income • Benefits • Habit Change • Reallocation of Resources

Figure 2 – The information infrastructure: ingredients for success

Valuable information content must be generated on a continuing basis, and there must be sufficient and appropriate skills not only to generate the supply of information infrastructure services, but also for the user population to be able to participate effectively. In the long-term, these elements of the information infrastructure will be far more important economically, socially and culturally than the information superhighway. It will eventually become a commodity – i.e., the plumbing of the information infrastructure – in the same manner as hardware has become in computing.

With respect to the demand for information services, Figure 2 distinguishes between the two basic categories of (1) individual end-users in households, and (2) applications in organisations. These two categories are not entirely independent, as the successful application of information services in organisations may depend significantly

on both the ability of those organisations to deliver their services to households, and the ability of individuals in households to use the information infrastructure services effectively.

Thus the skill level and benefit to end-users in households is likely to be instrumental in determining the pace and direction of new services development. For a great many applications, including entertainment, education, work and a variety of other services, the extent of market penetration will be determined by the diffusion of relevant terminals and the development of user skills in the household. In the long run there must be sufficient benefits to stimulate a change in habits of end users and a reallocation of household resources – both time and money – by end users. These will be essential characteristics of the transformation process at the end user level, and users are likely to respond to new opportunities in different ways, depending upon their particular economic, social, cultural and personal circumstances.

At the level of applications within organisations, there must be the development of designer services and networks which respond to the needs of particular industries and organisations. They must provide a combination of cost savings, service improvements and new service opportunities to justify the organisational changes that accompany new applications. Successful applications will involve organisational restructuring and eventually reform of the industry sector applying the new services. Once again a key factor will be skill development, not only with respect to applications of the new information services, but also with respect to the changing requirements of jobs throughout the restructured organisation. Here also the benefits of the applications must be sufficient to warrant a significant reallocation of the organisation's resources toward communication and information services and away from other activities, bringing net benefits to the organisation.

4.0 Steps to Identifying Priority Sectors

Each country will need to assess which sectors of industry and government activity should receive priority attention for information and communication service development and application. This will depend in part on domestic priorities for economic and social development, as well as requirements for maintaining and extending benefits from international trade. It will also be necessary to identify those sectors where applications of information and communication services can help overcome significant bottlenecks to economic and social development. In each case, the purpose is to identify where the greatest benefits can be achieved at the least cost. By assessing its particular circumstances and priorities within the framework for information infrastructure analysis presented here, each country can establish an operational plan for information infrastructure development that will provide continuing benefits throughout the evolution to its particular information society.

For example, at the present stage of development of its information infrastructure, the US finds itself in a position where it has achieved a telecom system providing near universal basic telephone service. Voice telecom has permeated virtually all aspects of economic, social, cultural and political life. The US began its telecom reform process 25 years ago and has implemented major structural changes. This has led to improvements in efficiency and in responsiveness to the needs of the most sophisticated users in transnational corporations, scientific research institutes and other organisations. The

largest US telecom companies have had major programs of international expansion underway for the past decade.

In addition, the US has rapidly growing computer and communication hardware and software industries, as well as a range of media content industries, including film, television production, libraries and databases. It has a relatively high level of skill development, as well as a relatively high penetration of PCs compared to most other countries. For the US, an acceleration of the rate of upgrading the capabilities and capacity of its telecom system is seen as a high priority that will support the other components of the information infrastructure and provide a stimulus to economic development both across the entire information and communication sector and throughout the economy generally.

It is doubtful that very many other countries will want to adopt the same priorities as the US for the next stage of their particular information infrastructure development, given the very different circumstances that prevail among countries. For some countries, adoption of these policy priorities would create an ever increasing and unmanageable trade deficit to create a capability for services they do not need and are not capable of using effectively. The primary benefits would go to the US and those other countries selling the equipment, software, content, services and consultancies. If the world accepts the global information infrastructure 'hype', the sellers will definitely benefit. Some buyers might benefit, if they learn how to apply what is on offer efficiently and effectively.

The situation in Denmark, for example, is very different. Denmark is not a major producer of most equipment and services. It will not benefit significantly from sales of fibre cable or 'entertainment' content. Its *Info-Society 2000* report focuses almost entirely on potential service applications throughout society, particularly in education, health, research and the full range of government services. In Denmark successful applications must be demand driven. Equipment and services must be designed to meet Denmark's very specific application needs, which are still in the process of precise formulation. Denmark's information society, and its priorities for getting there, are very different from those of the US.

Most developing countries are in a very different situation from either the US or Denmark. Whereas the US wants everyone to commit to buying equipment, services and advice, and Denmark sees potential advantage in applications that can satisfy its specific future needs, developing countries have an enormous pent-up demand for basic telecom services that cannot be satisfied on their existing inadequate telecom systems. They have urgent needs that require a basic narrowband telecom system. It is, of course, wise policy to plan new developing country telecom systems so they can be expanded efficiently as demand grows, but unless the priority need for a core basic telecom network is met, the more sophisticated steps will be either impossible or a pointless waste. Developing country priorities are not likely to be for new technologies and services they cannot benefit from, or in many cases, even be able to use at all.

5.0 Roles of Telecom Regulation in the Information Society Transformation Process

There is a wide range of views about the role that telecom regulation could or should play in the process of transformation to information societies. They can be classified as follows:

A) *Pure Deregulation* – This model assigns a very limited and narrowly focused role for regulation to facilitate the liberalisation of the telecom industry and then go out of business. The goal is to eliminate regulation as fast as competition can be established so that market forces can be the driving force behind telecom industry development and the information society transformation process. This is the model envisioned in New Zealand and initially, but apparently not now, in the UK.

B) *Long-term Market Regulation* – This model recognises that competition in liberalised telecom markets can provide significant benefits, but is in reality a very imperfect instrument for achieving telecom sector economic and social objectives. Ongoing regulation will be necessary to place a check on the potential abuses of the monopoly power of dominant operators, to ensure that barriers to entry are minimised, to protect consumers of basic telephone service, and to ensure the social objective of universal service is achieved and maintained. This model envisions a stronger, more independent form of regulation, but with a remit narrowly focused on the telecom services sector. It is a reform of traditional telecom regulation only with respect to the structure of the market being regulated, i.e., a change from monopoly to competitive markets. The fundamental goals of telecom regulation remain as they always have been. The US provides the best illustration. The *Telecommunications Act of 1996* may open all US telecom markets to competition, but the future role of regulation under the Act is strengthened, not weakened. It envisions more detailed oversight, supervision and enforcement of the conditions enabling competition, while maintaining the universal service objective. Several chapters in this book have documented how regulation is being drawn into new issues of electronic content and commerce.

A weakness of traditional telecom and other public utility regulation is that its role has been essentially reactive. It monitors PTO performance, prevents it from raising prices as high as it would like, entering unrelated markets it finds interesting, and requires it to extend service to unprofitable subscribers. From the PTO point of view, this is almost all restraining and negative. The regulator plays the role of policeman. Under the new model of telecom competition, the regulator's role shifts to become partly policeman and partly referee of disputes involving competitors. These roles make sense if one views the telecom industry as an essentially independent sector of the economy. Many chapters in this book have documented the many difficult tasks and responsibilities regulators must assume under this model. Indeed there is a need for strong, independent and informed telecom regulation if the fundamental objectives of regulation are to be achieved under this model.

But many of the chapters also document the convergence and integration of telecom with other sectors of economy, with government policy development in other sectors, and indeed with the process of transformation to information societies. Clearly the purpose of reform in telecom goes much beyond the telecom sector. The achievement of economic and social policy goals in many sectors of the economy, including education

and health, rest on successful applications of new information and communication services that will be supplied over the telecom system. Should the regulators of the industry sector that provides the very foundation for this transformation of the economy, and of society, play no role other than industry policeman and referee for intra-industry disputes?

C) *Proactive Regulation* - If one examines the leading industry sectors that have made successful applications of new information and communication services to transform their industries, e.g. banking, transport, tourism etc., in no case have they simply purchased available telecom services. In every case there has been a period of experimentation and learning about the industry's special needs, the range of present and possible future service options, and ultimately the development of new networks, e.g. the SWIFT network in banking. The new networks were designed in association with organisational changes, skill development and new specialised service offerings by the telecom operators, all within a framework of increasing market pressure for change in the applications industries.

At the present time, most potential applications industries, and particularly those in the public sector, explain that the telcos do not offer services they need or can afford to apply in a major reform of their respective sectors. In response, the telecom operators observe that these applications sectors do not know what they need or want. In most cases both sides are right. Can an informed, independent, telecom regulator be a catalyst for facilitating the development of the new networks that will be necessary if beneficial applications of the information infrastructure are to be made in the foreseeable future? Should this be a responsibility of telecom regulators during the transformation to information societies? If so, telecom regulators would view telecom issues in the broader context of information society development policies and issues. Telecom development indicators and targets would not be limited to telecom sectors objectives, e.g. USO penetration rates, but extended to applications development in education, health and other areas, e.g. electronic education and health service penetration and participation rates. Regulation would take on an important proactive role to complement its traditional restraining role.

Whether one views a proactive role for telecom regulators as a positive development will depend upon one's view about the limits of imperfectly competitive markets in telecom, the ability of institutions – especially public institutions – to reform themselves, and the availability of the knowledge and skills necessary for driving the applications process forward. In the US telecom sector competition is much more advanced than other countries, but highly imperfect. Despite widespread availability of knowledge and skills, public sector institutions in particular are generally resisting change as they do not see benefits outweighing costs, and the proposed applications are viewed almost entirely in terms of supply side technology and capacity, e.g. fibre to the school with no funding for teacher or student skill development. Are the state telecom regulators and the FCC in position to facilitate realistic implementation of US information infrastructure development policies? If they were charged with responsibilities to facilitate the process, would they be reformed, and then be in a position to make distinctive contributions?

In other countries, the extent of competition is less, the role of the public sector is greater, and the knowledge and skill base is lower. One can expect less from the market;

the public sector to be transformed through new information service applications is larger; and fewer knowledge and skill resources must be spread thinner. In developing countries, this is even much more the case. In particular, maximum effectiveness must be obtained from extremely limited knowledge and skill resources. In developing countries, informed independent telecom regulators will have to play the broader role of proactive participation in achieving information society objectives. Proactive telecom regulation at the national level can play an instrumental role in helping to achieve potential information society benefits and should be seriously considered by all countries.

6.0 Conclusion

The international public discussion to date on national and global information infrastructures has been influenced unduly by a focus on the particular circumstances in the US, and its preoccupation with constructing a broadband information superhighway including fibre cable connections to households. This has created the erroneous impression that these issues should be priorities everywhere and that investments in such broadband capacity will provide enormous benefits everywhere, implying that any country that does not follow this path could be left out of the information society of the 21st century.

A more comprehensive analysis has shown that the information superhighway is a future step in the technological enhancement of the most modern telecom systems in the most developed countries. To the extent that there is demand for services that require it, the broadband capacity already exists in most countries. To date this demand has been small because the vast majority of new information and communication services do not require the broadband enhancement, even in the US. *Internet* services, for example, do not require either an information superhighway or a fibre cable connection to the users' PC. They run on digital telephone lines. As a result, there is at present no major investment program to build fibre cable connections to households even in the US.

Making rushed and unconsidered commitments to promote the construction of information superhighways at the most rapid pace possible can only help the dominant supplier industries and countries in the short run. If supply far exceeds demand in any country, the premature inefficient allocation of resources will have negative long-term economic and social effects. *The ultimate test for every country will be the economic and social efficiency of the investments undertaken. If they are to be efficient, they must be demand led, not supply forced; and responsive to local needs and circumstances.* Moreover, if demand determines the rate, direction and structure of investments, there is a much better chance for balanced growth toward broadly based information societies. If government policymakers and telecom regulators succumb to the siren song of the suppliers, it will inevitably lead to inefficient investments, unbalanced growth and the cultivation of an elite information class in societies characterised by increasing divisions between the information, (as well as economic) rich and poor.

It is apparent that all countries are on a developmental path in which electronic information and communication services are becoming more central to economic, social, cultural and political life. But each country is on its own path of development, and different countries are at different points along their respective developmental paths. A wide diversity of approaches to information society development should be both expected and accommodated. Countries can only hope to obtain some of the benefits claimed in the

information society 'visions' if the technologies and services are directed to meet the specific needs and priorities of the societies, the institutions and the individuals applying them. Informed, independent telecom regulation will play an important role in shaping the information societies of the 21st century.

This book has demonstrated that neither the objectives of telecom reform nor the visions of information society development can be fully achieved without informed policy development and independent, proactive telecom regulation. There can be significant benefits from privatisation, liberalisation and competition, if they are adapted to the particular circumstances in the countries where they are applied. But if governments are serious about extending benefits across all sectors of their societies, or even to the great majority of the population, strong and effective regulation will be required. For many countries, especially small and developing ones, regional and international associations of regulators also will be needed to strengthen their capabilities for regulating in an industry increasingly dominated by transnational operators. The review and analyses of the issues provided in this book have documented the reasons why strong, independent regulation is essential to achieving the goals of telecom reform. Hopefully it will contribute to more informed discussion and debate on current and future regulatory issues, and thereby help strengthen telecom regulation as an effective institution of economic and social reform.

Endnotes

¹ This chapter relies in part on Melody, W.H. (1996). "Toward a Framework for Designing Information Society Policies", *Telecommunications Policy*, May.

