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REGULATING THE INTERNATIONAL INFORMATION INFRASTRUCTURE

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Synopsis:

New initiatives around the world talk of building an "information superhighway". Certainly both the telecommunication sector and the broader information industry have strong interests in the success of this venture. But what is the appropriate policy response, and how can we ensure that this new infrastructure is truly international?

Biography

Dr. Pekka Johannes Tarjanne took office as Secretary- General of the International Telecommunication Union (ITU) on 1 November 1989. From 1977 until his election in 1989, he was Director-General of Finnish Posts and Telecommunications and before that, professor of theoretical physics at the University of Helsinki (1967- 1977), Member of Parliament (1970-1977) and Minister of Transport and Communications (1972-1975). Dr Tarjanne has extensive experience in strategic technology planning and co-operative international activities.

REGULATING THE INTERNATIONAL INFORMATION INFRASTRUCTURE

It has long been recognised that infrastructure provides, if not the engine, then certainly the wheels of economic growth. The construction of canals, railways and roads have provided the impetus for successive cycles of economic expansion and growing prosperity. As we now find the global economy struggling through a period of sluggish growth and high unemployment, it is only natural that politicians are looking for a new round of infrastructural investment that will regenerate economic growth and create new commercial opportunities.

In the United States, the talk is of an "information superhighway" or a "National Information Infrastructure".

In Europe, there is a desire to create a "European Nervous System" or to promote a "Euro-ISDN". In Japan, infrastructural investment is seen as a way of reflating the economy and improving national competitiveness. New network initiatives invariably develop first at the local level, then expand to national and international levels. The local telephone systems that grew up in the late 19th Century are now interconnected in the international public telephone network. It is built around standards that ensure that any user can contact and exchange information with virtually everyone of the 600 million other users. But there is a danger that if these new policy initiatives focus exclusively on narrow national commercial priorities, the new infrastructures being constructed will follow a different evolutionary model to that of the public telephone network and may not provide international access or promote universal service. The theme of this presentation is to consider how policy-makers should respond to these new initiatives and how we can work together to build a truly International Information Infrastructure.

What is an International Information Infrastructure?

As with any concept for a product or service which does not yet exist, there are several competing definitions for what the International Information Infrastructure (the triple I) should be: * At one level it is seen as a *high performance computer network* which will facilitate high speed data access and retrieval. In this model, the Internet is sometimes seen as the precursor for the International Information Infrastructure. If the Internet can be successfully extended from the academic and scientific research communities it currently serves to a broader commercial marketplace, and if this process could be achieved without losing the openness and innovation that have been a critical part of the Internet's success, then perhaps the Internet could form the basis for a new model of network development.

* An alternative definition is a *multimedia network* for which the primary use will be for conveying video datastreams in conjunction with data, text and voice. According to this vision, many of the potential applications will be in the entertainment, education and health care as well as the business market.

* A third definition is as a medium for *interactive television*, in which it is the intelligent television set rather than the home computer or the videophone which is the main communication channel. The battle for the television set-top is likely to be every bit as dynamic as the battle for the desktop over the coming years as different technological solutions are proposed to help consumers cope with a rich diet of new television channels, video-on-demand, home shopping and other services. Teenagers playing video games could be using the network alongside multinatio nal corporations holding video-conferences

It is not surprising that these three visions of what the International Information Infrastructure should become come from different parts of the information industry as it currently exists: the computer industry, the telecommunications industry and the broadcasting industry. But the beauty of modern technology is that a single network of networks can, in theory, accommodate each of these different applications. There are certain common elements to each definition:

* The network will be *digital*. The process of digitisation began in the computer industry, it is already well-advanced in the telecommunication industry and it is now spreading to the broadcasting sector. As the three sectors converge, it will become increasingly difficult, and unnecessary, to distinguish between the different parts of the bit business. Information should, in theory, be able to flow from any source to any destination providing the network is digital.

* The obstacle of *scarcity*, which has shaped the network architectures and history of the information industry to date, will be largely overcome, at least in the industrialised nations. Data compression technologies, the development of high capacity fibre-based networks, and the use of digital transmission is eroding capacity constraints. Until now, scarcity has dictated the number of TV channels that can be transmitted, the capacity of the spectrum to accommodate mobile communication users and the rate at which new telecommunication users can be added to the network. As these constraints disappear, attention will shift to demand stimulation rather than demand management. This will require fresh approaches to the way these services are tariffed.

* The new services offered will be *personal*. This implies that the basic user will be the individual rather than the residential unit or the work unit. This process happened in the computer sector with the arrival of Personal Computers; it is happening in the telecommunications sector with the development of personal mobile communications and portable numbering; it will happen in the broadcasting sector as individual viewing -- on video, through video-on-demand, through specialised channels -- increasingly supersedes programme schedules.

These three characteristics portend a very different public network from that which currently exists and one in which few, if any, services will be provided on a monopoly basis. The target which the different actors are aiming at is to gain an increasing share of the work and leisure time and the disposable income of individual consumers. Currently, the average telephone is in use for less than four minutes per day. The problem which the public telecommunication operators (PTOs) face is that those four minutes are generating less and less revenue as prices are cut in response to competition and regulation. Fortunately for the PTOs, consumers are making more long distance and international calls and the costs of providing the service are falling, so that the PTOs are currently cash rich. But the PTOs can no longer rely upon network expansion to provide future revenue streams; there are not enough new subscribers to add to the network in the industrialised countries. Instead they must deepen the market by trying to persuade consumers to spend more time using telecommunication-based applications. In addition to increasing the four minutes per day consumers spend on the telephone, PTOs are seeking a share of the three hours or more per day consumers spend watching television or shopping.

Regulatory principles

The driving forces behind network evolution are technological change and innovative corporate strategies. But regulatory policy will also be important in shaping the future direction of the International Information Infrastructure. Policy-makers do not have the capability to *create* the International Information Infrastructure --that is the role of the private sector -- but they do have the capacity to give it *shape*. In this sense the position of the regulator is somewhat ambiguous. The regulator needs to create the right environment to encourage investment and to achieve certain public interest goals, but at the same time the regulator needs to avoid pre-judging those decisions which should rightly be taken by the marketplace and should avoid overburdening entrepreneurial firms with obligations or red-tape.

Some would argue that the State should play the leading role in investing in the future network. Certainly, in most countries, the State has been instrumental in paying for existing infrastructures such as the railways and the highways. But the telecommunications industry is different. It is currently one of the most profitable industries in the world, in contrast to other parts of the infrastructure industry such as the airlines, the railways, or the automobile manufacturing sector. Furthermore, there is no shortage of potential venture capital. For the State to invest in new telecommunications networks would divert money away from other, arguably more needy, causes such as healthcare or education. While the State has sometimes been successful in its interventions, such as here in France where the Government underwrote investment in *Minitel*, nevertheless the record of the State as an innovator in network development is generally poor. The State should create the right conditions for investment but should not, itself, lead the investment.

Even if the State does not pay for the network, it still has an important role to play. The following principles should guide its action:

* The principle of *internationalism*. It is commonplace to acknowledge that the world is shrinking and that the inter-dependence of nations is growing. The flow of information is the driving force behind this process of globalisation. Any new network that is not built, from the outset, with the intention of interconnection with similar networks in other countries will quickly become a constraint to growth. For this reason, policy-makers should strive to ensure that national initiatives are harmonised and co-ordinated at the regional and international level. The ITU has traditionally played the role of technical standardisation and defining principles for interconnection and revenue sharing. The rise of conflicting industrial policy interests in North America, Europe and Japan has made this role more difficult, but no less important.

* The principle of *universalism*. The development of the telephone network has been guided by the desire to achieve universal service. This implies uniform geographical coverage, service quality and pricing, and service provision offered on a non-discriminatory basis. It also implies a cross-subsidy between different classes of users, between urban and rural areas, and between business and residential subscribers. In its recent policy statement, the United States administration has stressed the need to avoid creating a society of information haves and have-

nots and has urged carriers to ensure network access to schools and hospitals. It will probably be necessary to develop mechanisms whereby the cost of providing network access to non-commercial or uneconomic users is shared between the different firms competing in the market. At a global level, it should not be forgotten that some two-thirds of households worldwide still have no access to basic telephony. Investment in advanced networks in the industrialised nations needs to be reconciled with investment in basic networks in the developing countries.

* The principle of *regulatory symmetry*. Historically there have been at least three regulatory traditions in the information industry: publishing, common carriage and broadcasting. In some countries, regulations have been designed to create boundaries between industries by placing constraints on cross-ownership and cross- sectoral service provision. There may justification for retaining certain restrictions, for instance where one firm or a group of firms have a dominant market position which is restricting the development of competition. But for the most part these regulatory barriers are now largely artificial and can be dismantled. Thus the barriers which prevent cable TV companies and telephone operators from entering each others markets should be reviewed, as has been proposed in the United States. Similarly, regulators should take every step to ensure that mobile communications companies are able to compete with, as well as interconnect with, fixed-link operators.

* The principle of *regulatory independence*. In countries where the regulator is under-resourced or inadequately funded, it is all too easy for the regulator to be captured by narrow sectoral or commercial interests. This can happen as easily in the industrialised countries as in the developing world and it can be done by legitimate means -- by lobbying, by sponsoring favourable studies, by constant recourse to the courts to slow down progress -- as well as by non-legitimate means. Regulatory capture invariably produces results which are against the public interest, which are economically sub-optimal, and which can be narrowly protectionist. In order to avoid regulatory capture, it is important the regulator be properly funded. Ironically this probably means that the industry itself, rather than the State, should pay for the regulatory process,. But this should be done in an open, transparent and shared way, not by hidden transactions.

* The principle of *open access*. One of the main reasons why information technology is perceived to be a t*echnology of freedom*, to borrow the phrase of Sola Pool, is because of the tradition of open and non- discriminatory access to public networks. In a democratic and pluralistic society, these values should be cherished. In the coming era of high capacity networks, it will be possible for multiple service providers to share the same network in much the same way that multiple television channels are provided over the same cable. In traditional telephone networks, the network and the service have been virtually indivisible. But technological change is permitting the *unbundling* of the network from the services it supports. While the virtually infinite capacity of today's fibre-based networks might make dual network provision uneconomic, it will make multiple service provision by multiple service providers highly attractive.

These five principles -- i*nternationalism, universalism, regulatory symmetry, regulatory independence* and *open access* -- are becoming the cornerstone of international regulation. At the ITU, we are fortunate that our founders had the foresight to create a single body with interests in both telecommunication and broadcasting. Consequently, all the current discussion of convergence is yesterday's news at the ITU. But the founders of the Union could never have foreseen the capacities of the modern communication network. Nor could they have anticipated the emergence of global players and global services which is raising new challenges for regulators. The role of the regulator is to make sure that the door is open to innovation and market-making while making sure that it is not closed to international co-operation and universality.

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