

An International Perspective on I&C Policies: Recent Developments and Future Prospects

HANSPETER GASSMANN

ABSTRACT *The last few years have seen unprecedented growth in information and communication technologies (I&C) and products, which has led to a robust growth in the whole world, and especially in the United States. Euphoria was such that the term 'New Economy' was coined about 4 years ago, and was taken to mean almost the same as 'New Technologies', mostly information and communication technologies. These technologies are truly global. They are important instruments for further globalisation, and for reducing the international digital divide; they offer important opportunities for further world economic growth. There is increasing competition in their operation, which brings great benefits to customers in the form of reduced prices and new applications. International co-ordination of standards, trade and regulatory frameworks is increasingly necessary. PTOs and other operators need to keep constantly abreast of developments in various international fora, especially the ITU, the WTO and the OECD.*

Keywords: digital divide, globalisation, information and communications technologies, mobile telephony, New Economy.

Euphoria in the New Economy

The last few years have seen unprecedented growth in information and communication technologies (I&C) and products, which has led to a robust growth in the whole world, especially in the United States. Euphoria was such that the term 'New Economy' was coined about 4 years ago, and was taken to mean almost the same as 'New Technologies', mostly information and communication technologies. This was reflected in an equally unprecedented surge in share prices worldwide, and a spate of new creations of 'dot.com' companies, with initial public offerings (IPOs) in the thousands. Rather exotic terms used by financial experts such as 'burn rates' (the period of time new capital collected in an IPO would last to keep the new company going) became quite popular to a larger public. Return on investment was considered by these new companies as

totally secondary, the main aim being to establish market presence, visibility and, if possible, gain market share. Often rather crazy business ideas were transformed into phantasy business plans, helped by the fact that very young entrepreneurs claimed to create new markets based on the new technologies, which many of the ordinary investors could not understand. They were not familiar with these new I&C technologies and therefore could not judge the merits of these new promises.

These developments were rightly characterised as 'Irrational Exuberance' by Alan Greenspan, the Chairman of the US Federal Reserve Board, who repeatedly warned that totally excessive share valuations could not last. There was much international discussion about whether there would be a *soft* or a *hard* landing of the US economy. Well, it turns out that we have witnessed a rather hard landing, with effects in all countries.

From Boom to Gloom

March 2000 was the peak of these exuberant developments. Since the I&C technology share tumbled, the NASDAQ, the American Stock Exchange, has suffered the worst contraction in its recent history. This also prompted similar contractions elsewhere in the world, in Europe as in Asia, a sign of the globalised nature of today's markets. Many dot.com companies came under stress, and many of them went bust. A spate of profit warnings from the largest players resulted in further downward pressure on the markets, and exuberance turned into gloom. This has put a serious damper on future developments in the I&C technology area. The overriding question now is: is this just an overdue correction, or will this spell the end or at least a serious slowdown for many IT dreams?

In my opinion, we are now witnessing a phase of a more realistic assessment of the *balance* between the opportunities offered by I&C technologies and what users of these technologies find really useful for their needs, be they companies or private individuals. Not every E-commerce idea, be it B2B, B2C, C2C or whatever, is good business. This does not mean that innovation in I&C technologies will seriously slow down, but rather that it will need to adjust to what the market will bear. An example are the developments in third generation mobile telephony, discussed later.

An important aspect of this re-balancing between innovation and market potential is its effect on the so-called *international digital divide*, that is the gap existing between individuals or countries in the use of I&C technologies, and in access to the Internet. The slowdown of market pull in developed countries may offer an opportunity for less developed countries to narrow this digital divide, in the sense that the market pull in these latter countries may for some time be relatively stronger than that in developed countries, which could result in some catching up in the use of I&C technologies of less developed countries. It should not be forgotten that the hype concerning the *Millennium Bug* in developed countries during 1998–2000 prompted many enterprises to expand their investments in information technologies beyond what they would have effectuated in normal times, out of fear of encountering serious malfunctions in their IT systems, both in hardware and especially in software. This has added to the market pull in developed countries in these years. It is only normal that once the perceived or real threats of the *Millennium Bug* had receded, the demand for new IT systems would slow for some time, a period in which we are now.

Table 1. UMTS licenses in European countries in 2000–2001

Country	Cost (billion Euros)	Number of licenses	Type of attribution
Germany	50	6	auction
United Kingdom	38.5	5	auction
France	16	2 so far; + 2 in 2002	beauty contest
Italy	12	5	auction
Spain	12	4	beauty contest
Netherlands	2.7	5	beauty contest
Australia	0.83	6	auction
Belgium	0.45	3	beauty contest
Switzerland	0.135	4	auction
Norway	0.12 + 0.025/y	4	beauty contest
Finland	0	4	beauty contest
Sweden	0	4	beauty contest
Total	132.73		

Source: *Le Monde*, 1 June 2001.

The 3-G Mirage in Mobile Telephony

Another aspect of the above mentioned irrational exuberance is to be found in the race, during 2000, to obtain new licenses for third generation (3-G) UMTS mobile telephony operations in Europe. Expectations for this new third generation Universal Mobile Telecommunications System were very high, no doubt based on the assumption that the exceptional growth rates enjoyed during the late 1990s in mobile telephony based on the GSM standard could be projected also into the future. This prompted mobile telephony operators to enter a very costly race to obtain licenses, and also governments to sell them very dearly in many European countries. Table 1 illustrates this.

This sum of 132.73 billion Euros (US \$112.82 billion) is a colossal front-end investment by the mobile phone operators in Europe, for a technology which will start to be operational not before 2003. To this has to be added the cost of the new UMTS infrastructure, which will cost at least the same amount.

It is safe to say that seen from the situation of today, European governments would never have been able to obtain such windfall sums in 2001 for UMTS licenses. For instance, in France, where the UMTS licenses were allocated on 31 May 2001, only two licenses were taken by France Telecom (Orange) and Vivendi (SFR); there are two more waiting for candidates, since two other operators withdrew their candidature. These remaining two other licenses will be allocated in 2002, after the elections.

In Germany, which has the most competitive mobile telephony market in Europe, the Regulatory Authority RegTP has just allowed operators to share part of their infrastructure, such as towers and antennae (but not their backbone networks linking them), in order to reduce investments. This is good news for the UMTS operators, who hope to save up to 40% of the cost of building their networks. It is also good news for the environment, since the number of antennae needed for 3-G operation can be considerably reduced.

Finally, it should be noted that in Finland and Sweden, countries which already have the highest mobile phone rate per inhabitant, operators did not need to pay for the UMTS licenses up-front, which is a very sensible approach from an industrial policy point of view.

In the other European countries, the risk is great that these very high, if not excessive, costs for UMTS licenses might seriously slow down the dynamism of the mobile telephony market. It is clear that mobile phone operators will need to recoup these high license costs, which some observers compare to a new tax, from the users, which will make 3-G telephony rather expensive, in addition to the higher costs of the infrastructure and terminals as compared to the present GSM technology. On top of this, no obvious *killer application* of UMTS is so far in view. In the case of present mobile telephony, the main application was clear: people wanted to phone and be reached anytime, anywhere, cheaply. But a main application is not yet obvious for UMTS systems. No wonder that on top of the general technology shares slump, the main European telecommunications operators' shares have taken a more than proportional dive, as financial markets judge these developments severely. The fall in value of their capitalisation puts the mobile communication operators in a financial straitjacket: on the one hand they desperately need to raise fresh capital to finance the UMTS licenses and the roll-out of new infrastructures; on the other, the financial market conditions make it at present very difficult to raise such fresh capital. So the only way for them to proceed is to take up more debt, which may result in difficult times especially for the smaller operators.

As for future UMTS new applications, Japan's NTT-DoCoMo *i-mode* success is watched closely in Europe. It is not yet a 3-G operation; the roll-out of real 3-G has been delayed due to technical difficulties and is supposed to start in autumn 2001. The question is: will the success of *i-mode* in Japan be a model for Europe? Certainly conditions are quite different. It has been argued that there are two reasons why *i-mode* is having such a success, especially with young Japanese users:

- it is still relatively expensive in Japan to get a new fixed telephone line subscription, and to use it;
- Internet penetration in Japanese households is still lagging that of many other developed countries, due to relatively high costs of PCs and notebooks.

So *i-mode* seems to be a convenient compromise for many young Japanese mobile phone users to overcome these difficulties. Whether this will catch on in Europe is an open question, but it is clear that the relatively wide access to Internet sites at a moderate cost *via* mobile phones is quite attractive, also for developing countries.

In my opinion, the really popular UMTS applications may well evolve in a direction which is not yet foreseen by its creators, as was often the case with truly new systems. UMTS applications will first serve the professional users, and then diffuse, as their cost comes down, to mass applications: this has been the typical diffusion pattern of many technologies. The main question is: how long will the mobile UMTS operators have to wait until they get good revenues from the new applications? Let us hope that the past irrational exuberance will not result in a too high price for them.

The ITU and IP Telephony

The International Telecommunication Union is the oldest international governmental organisation, having been created in 1865. It became a specialised agency of the United Nations in 1947. Given that telecommunications are one of the main infrastructures driving globalisation, the role of the ITU has been increasing over the past few years. Given the diversity of its more than 170 member governments, its role is mainly in technical co-ordination, for example, in radio spectrum allocation and telecommunication standardisation; harmonisation of member government policies is, however, opposed by many of its members, who do not want to loose sovereignty. Given that many telecom players are large private firms, for some years these have been able to participate in meetings as 'Sector Members'.

The ITU convened in March 2001 the third World Telecommunications Policy Forum (WTPF) on the theme of Internet Protocol (IP) Telephony in Geneva. These ITU Fora provide a unique occasion to better understand the directions in which telecommunications are moving on a world scale.

A case in point is the rapid developments in the area of IP telephony. What is IP telephony? The WTPF Report of the ITU Secretary General proposes as a working definition: 'IP Telephony is a generic term for the conveyance of voice, fax and related services, partially or wholly over packet-switched IP-based networks'.¹

The following points were highlighted during the discussions of this Forum on IP Telephony:

- IP-based networks are a new significant world-wide opportunity, and are fast becoming an important part of the new market environment, in terms of volume of traffic carried, and of investments;
- they hold the promise of providing multimedia telecommunications services, and also new applications merging voice and data;
- the use of IP-networks promises to reduce prices to users, and the costs of market entry to telecom operators, especially for long-distance and international calls;
- the development of IP networks is forcing a re-assessment of existing telecommunications regulation, which may need review;
- IP telephony poses a dilemma for developing countries: on the one hand it offers cheaper prices and lower costs, but on the other, it may also undermine the pricing structure of the public telecommunications operator (PTO). It also poses significant human resources development challenges.²

Several major PTOs have announced that they will migrate all their international traffic onto IP platforms. One reason for this transition is the apparently lower cost of moving traffic over IP-based networks. There are estimates that this could provide up to 75% savings as compared to traditional, circuit-switched networks. Liberalisation of markets is another driving force for this migration. As of late 2000, more than 75% of all international traffic originated in countries in which the provision of IP telephony is liberalised. The majority of IP telephony is carried over 'managed' IP networks, as opposed to the normal Internet. The growth of IP telephony will be quite rapid over the coming years; it is estimated that it already accounts for more than 3% of international voice traffic.

In competitive markets, established PTOs are evolving their networks towards IP not only to provide cheaper services, but to offer a much wider range of multimedia services, especially important for future e-commerce markets.

However, there are also drawbacks. IP telephony offers, at least up to now, an inferior quality of service, mostly in the form of time delays, which could be compared to that of satellite communications.

IP telephony does not mean the end of the classic Public Service Telecommunications Networks (PSTN); it is expected that the PSTN will remain important for the foreseeable future. Therefore, from a policy point of view, an important issue will be the co-existence of circuit—and packet-switched network technologies, and combinations of the two.

The regulatory approach to IP telephony varies significantly among ITU member states. In some countries, governments have defined IP telephony in such a way as to permit delivery of this service to the public; in others this service is prohibited, while in still others it is licensed and promoted. In some countries, IP is treated as just another technology that can be adopted by PTOs, or is not regulated at all.

The dilemma for developing countries with respect to IP telephony is the following:

- on the one hand, it is feared that IP telephony may undermine not only the current revenue of incumbent PTOs, but also the extension of networks and universal services in unserved areas;
- on the other hand, IP telephony could be the vehicle to offer new and cheaper services, and therefore serve to reduce the price of telephone calls. It could be an important means to reduce the *international digital divide*, bringing developing countries in the mainstream of global communications, important for their future development and trade.

The WTO and Telecommunications Services

Today, the World Trade Organisation (WTO) has 141 governments as members. It is not a UN organisation. While the ITU is a world of telecommunications and computer specialists, plus some economists, the WTO is a world of lawyers and diplomats. It is a world of negotiations and legally binding agreements. Its main aim is to promote liberalisation of world trade, and it proceeds by *gradualism*, especially concerning developing countries.

In December 1999, the WTO held its Third Ministerial Conference in Seattle, which was supposed to launch a new round of trade negotiations. This conference did not achieve this purpose, as it met with opposition from many member countries, and with the protest of many NGOs, which styled themselves to represent the 'civil society'; this was widely publicised. Despite this failure, just 3 months later, in February 2000, new negotiations on services were started. It would seem that services are much less controversial than other areas, such as agriculture.

In the framework of the WTO General Agreement on Trade in Services (GATS), which is the first set of multilateral rules and commitments covering government measures which affect trade in services, 65 countries entered into commitments on Market Access and National Treatment in the Negotiations on Basic Communications which came into force in February 1998. These concern the subsector of voice telephone services, and to a lesser extent, other subsectors such as mobile telephony, packet switched data transmission services, etc.³ In the meantime, this number of countries with commitments has increased to 83, but is still less than half that of the member countries of ITU, and even compared to the

Table 2. Government ownership of major incumbent PTOs in OECD countries

Country	Name of PTO	State ownership (in%)
Australia	Telestra	50.1
Finland	Solera	53.1
France	France Telecom	61
Germany	Deutsche Telekom AG	43 State; 20 government-owned development bank
Japan	NTT Group	65
Korea	Korea Telekom	58.9
Sweden	Telia	70.6
Switzerland	Swisscom	65.5

Source. OECD Communications Outlook, Paris 2001.

total number of WTO member governments is not even 60% of the total members.

It is interesting to note that in the negotiations on services, the telecommunications sector comes third in the number of countries having made such commitments, after tourism and financial services, which is a good sign of interest. In the words of WTO Director General Mike Moore: 'Another priority (in these negotiations) should be to use the GATS to bind liberalisation in important service sectors such as telecoms and financial services. This is a must if countries are to attract invaluable foreign direct investment. Every country needs an efficient services backbone, whether it exports tomatoes or textiles'.⁴

One of the disputed issues among countries is government ownership of PTOs, which is an important element of liberalisation, and market access. In this respect, it is interesting to note that also in many developed countries, governments still own a good share of their ex-monopoly incumbent PTO, as evidenced in Table 2.

Why has there been such a seeming reluctance to enter into commitments on basic telecommunications services at the WTO, especially from developing countries? There probably are a variety of reasons. Among them may be:

- reluctance to open the monopoly of the national PTO;
- strategic-military reasons;
- universal service considerations;
- family silver considerations, looking at PTOs as valuable national assets;
- absence of effective regulatory institutions.

The new Guidelines and Procedures of the GATS, agreed on in March 2001, clearly 'aim to increase the participation of developing countries in trade in services'. Also 'there shall be appropriate flexibility for individual developing country Members for opening fewer sectors, liberalizing fewer types of transactions, progressively extending market access in line with their development situation'.⁵ This should help making progress also in telecommunications services, especially as the push of new communications technologies make the old regulatory and ownership approaches increasingly obsolete, by blurring the borders among the various telecommunications subsectors.

The OECD and Information and Telecommunications Policies

The Organisation for Economic Co-operation and Development (OECD) in Paris has 30 member countries. It has often been dubbed the Club of the rich countries, although it also has some members which are rather in transition. Its Information, Computer and Communications Policy Committee (ICCCP) has played, since its creation some 20 years ago, a *radar function* for its member governments in the field of information and communications policies, by exploring new policy issues in this rapidly evolving field, and providing excellent coverage of I&C indicators to map the way ahead in the light of data on recent developments. It is mainly a world of economists, which, however, need to thoroughly understand the rapid development of I&C technologies. The ICCPC has essentially four roles:

- promoting the digital economy and information society by organising meetings and conferences, such as the 1998 Ministerial Conference on E-Commerce in Ottawa;
- collecting and analysing indicators on Information Technology and Communications in the form of Outlooks;
- producing analytical reports on various economic aspects of I&C technologies, such as the role of information technologies in economic growth, or E-commerce and sustainable development;
- agreeing on guidelines and recommendations as a sort of 'soft law', which are indicative, permitting some amount of policy co-ordination, but leaving great scope in interpretation to member countries (on privacy protection, security, cryptography, consumer protection, etc.).

Over recent years, there have been two procedural trends worth mentioning:

- the opening of discussions at OECD meetings of government officials to representatives of the private sector and non-governmental organisations; and
- more recently, the opening of discussions and joint meetings to non-member countries, in order to make them participate more fully to the thinking going on in the OECD environment of developed countries.

Conclusion

From this short overview, several conclusions emerge:

- I&C technologies are truly global;
- they are important instruments for further globalisation, and for reducing the international digital divide;
- they offer important opportunities for further world economic growth;
- there is increasing competition in their operation, which brings great benefits to customers in the form of reduced prices and new applications;
- international co-ordination of standards, trade and regulatory frameworks is increasingly necessary; and
- PTOs and other operators need to keep constantly abreast of developments in various international fora, especially the ITU, the WTO and the OECD.

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