Promoting ICT in Europe

The importance of ICT for economic and societal progress is well-recognised in European policies. The European approach is built on 3 pillars:

- First, the *new EU regulatory framework* enhances competition and provides a predictable legal environment.

- Second, *research and development.* More than 4 billion between 2002 and 2006 will be used for ICT related research.

- Third, we are taking action *to promote the use of new services and technology* in areas such as eGovernment, eLearning and eHealth.

The eEurope 2005 Action Plan was based on an interplay between promoting a secure broadband infrastructure and promoting more attractive content, services and applications in eGovernment, eHealth, eLearning as well as eBusiness. This can lead to a virtuous cycle and overcome the chicken-and-egg dilemma, that is, the situation where better content is waiting for faster Internet and vice-versa.

Broadband is one of the most important parts of eEurope. Beyond its impact on the growth of the sector, it ensures the appropriate infrastructure for the delivery of those interactive services necessary for the re-organisation of working and production processes.

The rapid growth of broadband connections over the last two years is encouraging, and ADSL is the fastest growing way of accessing broadband. There are clearly over 30 million connections in the European Union and the growth continues.

Several European countries are now ahead of the US, although well behind Asian tigers such as Korea. To sustain growth, Member States have been putting national broadband strategies in place. These strategies consider action on both sides of the market.

On the *supply side*, two main issues stand out.

- First, competition in the broadband market is still weak. The EU's new regulatory framework is the tool to address this issue.The challenge is to deliver a predictable legal environ-

ment that addresses only market imperfections. Those who have succeeded have created certainty to investors, and generated greater competition. Competition is key to stimulate innovation while yielding lower prices and greater choice for consumers. When markets that have been regulated become competitive, regulation will be lifted.

- Second, the limited coverage of remote and rural areas. The rapid growth of broadband is mainly taking place in urban areas. Without public intervention, the digital divide may aggravate. By its own nature, broadband offers opportunities that would otherwise be unattainable in scarcely populated areas. This is a challenge that should be addressed through the national strategies and with the support of the EU's structural funds. On the demand side, investment in e-health, e-government and e-learning applications can play an important role in driving consumers demand for broadband.

But, of course, the main objective is to increase the productivity in the public sector. It means we need more value for money, more quality and quantity for the money spent. This is necessary for many reasons. We are in front of major demographic challenges in Europe. This will increase public expenditure and reduce the share of active population. Higher productivity in the public sector is necessary.

Good governance is vital for boosting economic growth. eGovernment creates here major opportunities by enabling broader transparency and by cutting red-tape. ICT enables also a well-functioning internal market.

But contrary to the private sector, the government needs to push for equity and efficiency at the same time. This makes the work more challenging. But opportunities are also great. Development of e-government services can transform the way the public administration works. eGovernment services enhance the participation of citizens in public life, change the nature of the services offered, and can provide major efficiencies to the public administration. Policies should also encourage *government usage* of broadband applications. *Telemedicine and distance learning* are good examples. Promotion of broadband-enhanced applications has therefore a twofold implication: it encourages the efficient delivery of government services, and it provides

incentives for procurement of broadband access, which will help to stimulate supply.

Operators looking for revenues through the provision of new interactive services will have to find partnerships from outside the telecommunications sector to create and deliver these innovations. But many challenges need to be overcome. Here I mention just two; security and spam.

Always-on connections make us more vulnerable to cyber-attacks. A new European Network and Information Security Agency, ENISA, is been set up in Greece. And the European Union is seriously addressing the fight against spam. Legislation is in place. It gives legal certainty which is the necessary precondition to combat spam. But legislation alone is not enough. The competent authorities in the EU member states need the necessary resources to effectively trace spammers and prosecute them. Industry needs to change marketing practices and continue implementing technical solutions such as filtering and secure servers.

i2010

My successor, Viviane Reding, is about to launch a new initiative i2010. The aim is to make sure that Europe gets the full benefits in terms of prosperity, jobs and growth. This will be done by:

- Promoting a borderless European information space with the aim of establishing an internal market for electronic communications and digital services

- Stimulating innovation through investment in research, the development and deployment in ICT and by encouraging the industrial application of ICT

- Making the European Information Society as inclusive and accessible as possible.

I am very happy to note that the Information Society remains highly on the agenda and that the new Commission is committed. Ms. Reding recently explained the main priorities.

The first 'i' is for information space

The aim is the creation of open and stable markets for electronic communications services and the emerging digital services economy. The next five years will see continuing rollout of broadband. And convergence between the currently separate domains of internet, telephone and television will come to market-place. Broadband coverage in the EU15 is already at 80% of population. But so far we have 8 subscriptions per 100 citizens. It means that perhaps every fourth household is connected.

The recent Commission report shows clearly that those countries in Europe that have the most competition are also the areas that lead in broadband take-up. There are new opportunities from the rollout of third generation mobile phones, which is now finally taking off, other wireless technologies such as RLAN (radio-based local area networks) and satellite.

The use of the Internet to provide voice telephony (VOIP) and television will revolutionise the way in which we communicate, do business and are entertained and there is much to be gained from accelerating this transition.

The Commissioner also has as a target to create an internal market in information goods and services, such as content, games, interactive software and value added services. It is essential to create the conditions to facilitate the production and distribution of online European content, preserving and sharing Europe's different cultural identities, strengthening the single market and the economic strength of this important sector.

The second 'i' is for innovation and investment in ICT

Digital convergence will transform the electronics industry, e-communications and digital content and services over the coming years. The Commissioner has emphasized here three issues: First, the need of private-public partnerships to keep Europe in the vanguard of developments. The aim is to create more certain investment environments and a faster, more efficient rollout of world-leading services for citizens. Second, there is the need to strengthen the position of Europe in research. Europe has *research leadership* in some areas, but it

is vulnerable to increased international competition. To take advantage of the next technological wave, Europe has to invest much more than it does today. Of course, more research alone is not enough. Its efficiency and effectiveness must be improved. Third, there is the need to promote *effective adoption* of ICT in firms of all sizes. To achieve the critical mass requires that the Commission works intensively with industrial stakeholders.

The third 'i' is for inclusion and a better quality of life

Commissioner Reding has said that her vision of a European Information Society in 2010 consists of an open, transparent and accessible knowledge society. The information society should be accessible everywhere and to everyone in Europe. I could not agree more.

Europe needs growth to maintain and improve the European social model in the face of demographic ageing and increased international competition. Information Society policies contribute on both sides of this equation. The use of ICT to deliver better and more efficient public services will reduce the costs of delivery and thus make our social systems more sustainable.

To conclude: in the long term, productivity is almost everything, said Paul Krugman, Only through productivity growth can we improve the standard of living. And today we know that here the adoption of ICT, the reorganisation of enterprises and administrations and investment in skills are key factors behind the productivity growth.

Chapter 17

ICT as a Part of the Chilean Strategy for Development: Present and Challenges

Carlos Alvarez

ICT Revolution and its Global Effects

During the second half of the last decade the world witnessed the emergence of a new reality—the Internet—and the great expectations on the effects that this new technology would bring about in many sectors of society. Each month, new publications appeared forecasting the changes that were underway. According to them countless traditional corporations would close down under the attack of new virtual competitors; the processes of vertical and horizontal integration would be reversed and a new batch of entrepreneurs would emerge, generating almost immediate wealth. In the educational field, the availability of computers and Internet in schools would drastically improve student performance while e-learning would quickly spread, guaranteeing education for life. New technologies in democratic processes would permit instant voting on a variety of subjects, ensuring truly popular representation. Governments would benefit from new technologies not only by streamlining their services but also by directing their actions more precisely and by obtaining quick feedback from citizens.

The escalation of expectations, with its correlative financial speculation, came to an end when the bubble burst at the end of 2000. We then entered a phase—in which we are now—where, at the time of being aware of the potential of change that lies within technology we realize that those foreseen changes would come about only as a result of significant efforts in the medium to long term.

The frenzy that took place at the end of the last decade left us with a promising scenario for the future ICT applications. Indeed, important investments in international broadband and wireless telephony

infrastructure—whose implementation eventually caused substantial investment losses—provided a solid material base from which to develop multiple applications. Moreover, the maturation of new financial mechanisms such as venture capital completed the scenario to make innovations possible. Markets are now starting to distinguish which business models are generating revenue, providing a key learning experience for entrepreneurs, governments and investors. There are successful businesses—Amazon, e-Bay or Google to mention a few—currently in the consolidation phase, but on a parallel and probably less publicized front, a number of e-government services have emerged around the world, bringing benefits to citizens: transaction times reductions, consolidation of transactions and transparency enhancement in the relationship of government to citizens.

The innovation potential has also expanded. The growing capabilities for information processing, the surge of Internet-based global collaboration networks, plus the development of electronic and biologic sciences have resulted in a wealth of high potential innovations that are starting to bear fruit (interactive television, wireless broadband connectivity and genomics are good examples).

We therefore seem to be facing an auspicious scenario. However, recent examples and the analysis of previous technological revolutions, show that expectations are not always realized. Innovations encounter pre existing cultures, practices and power structures (in business, political and bureaucratic spheres) which sometimes become threatened by the introduction of new technological paradigms. This resistance phenomenon could help explaining high failure rates in the deployment of new administrative information systems in organizations, even when they are expected to increase productivity. Resistance is also evident in the protectionist threats against off-shoring practices, a debated issue in the recent presidential elections in the USA. A similar phenomenon could explain why ICT is still not making a strong difference in students' learning even in places where the incorporation of technology to the classroom has been extensive.

However, there are also cases where results of the incorporation of technologies exceed expectations. This happens when technological revolutions trigger an accumulation of innovations, which attracts talent which in turn produces more innovations through a virtuous circle.

On these grounds, it is key to ask ourselves which are the challenges that governments are currently facing. In the first place, governments should contribute to eliminate, or at least diminish, the obstacles the introduction of the ICT paradigm is facing. However, governments can do more than that to help the change. Governments can become 'early adopters' of technology, showing their commitment to the introduction of technology and innovation. This is specially beneficial to encourage private investment. Government may also act as a facilitator helping to solve conflicts, or compensating those sectors that could be negatively affected by the changes.

In parallel, government has a big role of creating conditions to allow change to happen. Raising awareness and providing education for people are necessary conditions. It is also useful that entrepreneurs are encouraged to grasp new technologies to be able to modify them and produce new ones. Government also has to help creating the necessary flexibility in the public sector to allow change and innovation. An especially critical aspect in the regulation agenda is the telecommunications market.

From a government perspective, the coming years should be faced in a mood of serene optimism. A combination of alertness to be able to generate quick responses to opportunities together with a hard work disposition to be able to take the necessary actions to fully realize projects while overcoming the many obstacles that may appear.

ICT Revolution and its Impact on Chile's Strategic Agenda

Strategic Objectives: Growth, Equality and Democratization

In 1990, Chile recovered its democracy after 17 years of General Pinochet's dictatorship. A new center-left government called *Concertación de Partidos por la Democracia* came into office with a program having economic growth, social equality and the strengthening of democracy, as main priorities.

After three successive democratic governments, there is hardly any doubt regarding the success obtained for the goals set out. The Chilean economy has sustained a 5.5% average growth between 1990 and 2004, more than duplicating its per capita income. The percent-

age of population living below the poverty line dropped from 40% to 17% during the same period, without observing, however, substantial changes in income distribution (before transference). In the area of democratic consolidation, three presidential and four parliamentary elections have taken place since 1989 under completely normal conditions; several laws have corrected the authoritarian bias in the Constitution and the different powers of state operate without any major obstacles.

Current Situation

After the success of this period, the original strategic goals continue to dominate government's agenda. Nevertheless, and precisely as a result of the achievements and the changing world scenario, these challenges must be approached in a different way.

In the area of economic growth, if Chile wants to increase its current per capita income of close to US$10,000 (in PPP terms), to the levels of south European countries, it should sustain the 7% annual average growth rate witnessed during the 1990's (which decreased to a yearly average of 3,8% in the 2000-2004 period). Although Chile enjoys a high growth potential as reflected by the WEF Report on Global Competitiveness, which positions Chile in 22nd place among 102 countries, there is a growing national consensus that it is imperative to step up efforts in two deficit areas: education and technological innovation.

ICTs and their Impact on the Strategic Agenda

The inception of the Internet and the constellation of innovations that accompanies it have been perceived by the Chilean government as a great opportunity to advance in its strategic agenda. The potential of ICT to contribute to future tasks in Chile is very high. This does not mean that ICTs are granted an almost magical capability to produce development, but rather to be able to both allow technology to find its way in different sectors of society as well as to contribute to public policies that deal with the strategic agenda of the country.

Unlike those voices that emerge from both the ICT industry and non-governmental organizations that tend to either overestimate the technological potential or underestimate the obstacles to transform

the benefits of ICT in reality for citizens, the Government of Chile has sought to effectively integrate the contribution of ICT into the different public initiatives of its agenda. Hence we are skeptical of approaches where for example, the development of community info-centers in low income areas is viewed as the way to deal with poverty, or about those that argue that the sole availability of computers in classrooms will produce a leap in education quality. If the argument that explains the persistence of important areas of poverty emphasizes the need to overcome the disconnection of the poor from the economic circuits and public assistance networks, and accordingly a program of individual attention to those families is proposed to reestablish the link,[1] then ICTs are viewed as an element of co-assistance for that effort, in the shape of info-literacy programs or counting as information tools to support professionals working directly with such families. By the same token, it is perceived that the problems of quality of the Chilean education are explained by a combination of aspects, such as lack of infrastructure, curricular inadequacies, and deficiencies in teacher training. In this case Internet would have to be used to improve teacher training and lesson preparation,[2] and also included as part of the training program for students.

The future challenge, then, consists of determining how ICTs introduce threats, but especially how they open up opportunities, to create more growth, greater equality and growing democratization; in other words, how ICTs contribute to carrying out the strategic focal points of the agenda:

- An efficient State oriented to address citizens' needs

At this point, there is no doubt that the services sector is the one that has benefited the most from the advent of the Internet. And the main supplier of services in a country is Government. This has been thoroughly understood by the Chilean government, which has introduced Internet-based applications, especially those that strengthen the link with citizens, in an ample effort to modernize the public sector.

This has come to fruition. Recently, a United Nations report placed Chile as number 22 among 191 countries in the quality of its e-govern-

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[1] Chilesolidario Program

[2] See educational website www.educarchile.cl

ment, surpassing many countries with a higher per capita income. This is the result of high-impact initiatives, such as on-line tax payments (today, more than 80% of tax returns are done through the Internet), issuance of Civil Registry certificates, and the launching of an online public procurement system called ChileCompra, among others.

Results obtained to date show high economic returns on these initiatives, a substantial improvement of relations between government agencies and the public and important stimulus to the extensive use of the Internet, especially among small and mid-size entrepreneurs. All of this leads to the conclusion that the agenda needs to be reinforced by updating those segments that have fallen behind—such as the health sector—advancing in the integration of front-office systems to back-office, and towards the inter-operability of systems among services.

- An economy integrated into the world

Chile opted, more than 25 years ago, to open up to world trade as a key element of its economic strategy. As a small country, its growth is crucially dependant on maintaining a high exporting dynamic. Although it is true there are no indications of exhausting export potential of the main sectors—mining, forestry, fresh fruit, salmon and wine—there is an emerging perception of more complex scenarios, stemming in part from the increasing international competition in these areas or from the emergence of innovations that reduce the relevance of the country's competitive advantages. From this perspective, it is essential to increase the national effort on Research and Development particularly with regards to the use of ICTs to boost competitiveness of the main national export sectors. ICTs can contribute to optimize the exports logistic chain, promote the integration between export companies and their suppliers, establishing efficient tracking systems and consolidating the prestige of the food exported by Chile in the phyto-sanitary area.

Simultaneously, it is necessary to persevere in the incorporation of Internet in small and mid-size companies, since the country's competitiveness not only depends on the efficiency of direct exports, but also on the whole production systems. Efforts to improve public services to companies (Customs, Internal Revenue Service, etc.) are also going in this same direction.

Finally, the fostering of new undertakings with perspectives of global escalation must not be overlooked. On this level, a potential opportunity lies on using the know-how developed by the export sectors.

- A highly dynamic service sector

It is worth mentioning the development of the export services sector, taking into account the huge transformation being experienced by this sector worldwide. Indeed, if estimations can be trusted regarding the fact that in the off-shoring field, no more than 5% of jobs that are potentially feasible, have been outsourced, the next few years will witness a massive demand for international services, which will overwhelm the capacity offered today by countries such as Ireland, India and the Philippines. In this scenario, Chile constitutes an interesting alternative for companies that are seeking to outsource services, owing to a combination of economic stability, a fluid and transparent business environment, a strong ICT infrastructure and access to qualified human resources. Based on this, several studies have positioned Chile in first place as an attractive country for off-shoring among Spanish-speaking countries. This opens up strong opportunities for the country and requires a precise strategy to focus efforts in terms of assuring substantial and sustainable benefits over time.

- An equitable nation

It is common knowledge that ICTs have brought a promise of prosperity to the world, but it also threatens to deepen inequalities, what some have dubbed as the "digital divide." A country such as Chile, which has quite a regressive income distribution—where 20% of higher incomes have access to 52% of the National Income[3]—is particularly exposed to this risk. Hence, all measures designed to confront the digital divide are essential. Fortunately, this was understood from very early on by the democratic governments after 1990 in their design of educational policies, when the Enlaces Program was incorporated as an essential part of the Improvement of Education Quality Program (MECE) destined to foster the formation of ICTs for all students attending public and subsidized schools in the country.

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[3] Income distribution measured on Total Incomes, which includes social services and Government transfers.

But the digital divide has not yet been completely closed. It is necessary to continue with the efforts at school level and to extend them to other sectors of the population, an essential task for the upcoming years.

- A nation prepared for the future

Perhaps one of the most distinguishing elements of technological revolutions is the unpredictability of its course once it is triggered. Today, we can hardly predict all the innovations that will take place in the next 20 years in the ICTs field, and much less their social and economic applications and impacts. Facing this scenario, the country must be prepared, generating the conditions to allow to quickly adapt to new conditions. This implies, in a first place, the strengthening of technical competencies—not only in the engineering fields—required to comprehend the phenomena that will come and transform them into answers pertinent to national needs. In second place, it will be necessary to generate a capacity to adapt to the existing legal framework that makes viable the array of new technologies. Finally, it is essential that the government is capable of keeping abreast of new phenomena in addition to fostering regulatory frameworks that promote and not inhibit the innovative responses that the period requires.

The Digital Agenda

This section will outline the steps taken by the Chilean government to establish an agenda that gathered the various agencies involved in different aspects of consolidating an ICT strategy for government.

Pioneering Initiatives

There are three pioneering initiatives that constitute the decisive steps towards the introduction of ICTs in Chile and are milestones on which part of the Digital Agenda was based. These are: the regulation of the telecommunications sector; the ENLACES project in education and the introduction of the REUNA Network access to the Internet. A brief description of each one follows.

Deregulation of Telecommunications

At the end of the 1970's the telecommunications sector in Chile was formed by two state-owned companies: a fixed telephony provider on the national market (CTC) and one international long distance telephone operator (Entel), with both sharing the national long distance market. The State was the owner of two other regional fixed telephony companies (CNT and Telcoy) as well as the Post and Telegraph Company. The deregulation process started at the beginning of the 1980's, when fixed telephony licenses were granted to two new fixed telephony companies (CMET and Manquehue) in areas that were already serviced by the dominating operator. At the same time a mobile telephony license was granted to a company to operate in the capital city (Santiago).

During the 1980's Chile witnessed a wave of privatization of companies, including those in the telecommunications sector. The changes that occurred in this sector began with the passing of the General Law of Telecommunications in 1982. It established objective and non discriminatory technical criteria for granting licenses and assigning the number of operators in each market segment. This law defined standards of continuity and quality of service and the time periods for granting the services to the final users. Free price fixing was instated except for those public services of local and long distance fixed telephony where the antitrust agency determined conditions of insufficient competition.

Since its privatization, the telecommunication sector has experienced rapid growth; the telecommunication companies have increased their coverage of services, as well as their internal efficiency. Between 1987 and 2001, for example, the total number of fixed telephone lines in service multiplied six-fold, increasing the telephone density from 4,7 to 23,1 lines per 100 inhabitants.

Those services where regulatory changes introduced competition experienced a strong drop in their tariffs. Hence, after deregulating services in 1994, prices of long distance calls decreased close to 80%. The introduction of PCS mobile telephony in 1998, which increased the number of operators from two to four, together with the introduction of the "calling party pays" modality, reduced rates for the mobile service by approximately 50%. Fixed telephony rates—a serv-

ice that faced very little competition until recently—remained relatively stable during the 1990's, except during the last price fixing when rates were lowered substantially, especially in the access charges, which fell abruptly.

Similarly, and as a result of a decree that fixed rates of the incumbent fixed telephony provider, dial up connections to the Internet grew by more than 300% during 1999, and the connection cost was reduced by close to 50%. In terms of Internet connections, as of June 2004 Chile had close to 461,000 of dial up and 424,000 broadband connections to the Internet, showing an increase of more than 50% with respect to the previous year.

Chile has upheld a telecommunication policy that stimulates foreign investment, maintaining technological neutrality and favoring an early introduction of new services that diversify access options to telecommunication services. As a result of these factors, Chile exhibits outstanding access indicators to telecommunications services within Latin America and although the numbers are distant from those in the developed world, they are high in comparison with the country's GDP per capita.

Enlaces Network of Educational Informatics

The pilot program of Educational Informatics of the Improvement of Educational Quality Program (MECE) consisted in establishing an inter-school communications network through computers among students and teachers at elementary schools as well as professionals of other institutions related to education. One university became the central node and tutor of the appropriation process of the new technology (use of hardware and software in the educational context), and of the electronic communication culture in schools (use of electronic mail and forums to develop collaborative intra and inter-school work).

The Enlaces Network started up in 1992 with the goal, considered bold at the time, to have one hundred schools connected by 1997, with computer tools that were user-friendly, easy to use, multimedially and pedagogically stimulating, based on the technological conditions of telephone communication at the time in the country. The quick success of the program and the speed of technological transformations, changed the pilot nature of the program in 1994 when the gov-

ernment decided to extend the equipment, based on the population attending each school and new targets of network coverage. At present, the program covers over 90% of computer laboratories and has 75% Internet access in schools.

Thanks to this project, a network of schools was created which has had vast implications on the quality and equality of education across the country. It has placed at the disposal of the schools and high schools, a network and information technologies that open a window to knowledge and information of the world, drastically redefining the limits of what is possible to do and achieve at each school and making it possible to have access to the same resources of information and cultural interchange, regardless of social or geographical location.

The later incorporation of Internet access in schools, a process which is being completed today with broadband and connectivity for rural schools, has meant giving the educational institutions a central role in improving the digital literacy of the population through the current National Digital Literacy Campaign.

National University Network

In 1986, the national meeting of Academic Computer Centers of Chile, was discussing the architecture to be employed in the implementation of an academic network of electronic mail. This interest was echoed by a donation by IBM that allowed the installation of a transmission network of information that became Chile's first electronic mail network in 1987. This network connected five cities from north to south across the country. As time passed, demand grew for this service, which encouraged the installation of additional national and international connections that extended the scope and robustness of the network.

REUNA, the Spanish acronym for National University Network, was created as a consortium of 19 public and semi-public universities together with the National Science and Technological Council (CONICYT) with the purpose of operating this university network, which for some time was the only IP network with public access with national coverage and connected to Internet.

The increasing traffic needs and the limited access to a budget from the government to finance this growing initiative, quickly encouraged

REUNA to become a commercial operator offering Internet and other services. In retrospect, it can be said that the importance of this project was to be a solution that escalated over time and contributed to creating a demand for a new service such as Internet which today is considered a necessity.

Institutional development: from the Presidential Commission on ICT to the Committee of ICT Ministers

At the end of the 1990's, various actors of the Chilean society decided to tackle the challenges our country faced to make our entrance into the society of information. With this aim, by mid-1998, a commission representing all the relevant sectors of the country: government, parliament, civilians, the academic world and the Armed Forces, was formed to advise the President of the Republic. This commission convoked more than 100 experts to debate for more than seven months after which it generated a report of proposals, presented to and approved by the President of the Republic, Eduardo Frei in January 1999.

Fundamentally, the report defined a general view, diagnosing the readiness of the country to face the challenges, specifying the objectives and proposing a set of relevant initiatives. These initiatives included: to strengthen the Enlaces Program, consolidate REUNA, start up infocenters (community access), legislate on the electronic signature, regulate in order to reduce access costs, start up public procurement, and strengthen the state Intranet, etc.

The year 2000 was the year the digital policy was consolidated and the institutional development began. That year, the newly sworn-in President Ricardo Lagos, gave a huge impulse to digital issues. During his Address to the Nation on May 21, 2000, the President outlined his priorities for his six-year tenure of government and one of the highlights of his program was technological reform. In his speech, the President assumed, among others, the following commitments:

    i)   Start up a national network with access for the community (infocenters);

    ii) Extend the Enlaces Network to 100% of schools in Chile;

iii)   Promulgate a law permitting the accreditation and certification of the electronic signature and to provide a safe framework for electronic commerce to expand expeditiously;

iv)   Initiate offers of public procurement on the network;

v)   Place on-line most of the services and procedures the public sector provides;

vi)   Generate an active risk capital industry.

Towards the end of the year, the President headed a public-private mission to Silicon Valley where to meet important leaders of the ICT world, and some cooperation agreements were signed.

In order to conduct the ICT issues, because it is a transversal nature, the President ordered the creation of the Committee of Information and Communication Technologies Ministers, which was instated in June, 2000.

The Committee of Information and Communication Technologies Ministers was constituted with the goal to facilitate government coordination for the elaboration and carrying out of the follow-up of ICT policies. This Committee was entrusted with proposing policies and stimulating initiatives for the development of information development, the stimulation of e-commerce, the promotion of the industry of contents, the expansion of Internet access, to accelerate the social learning process associated with the use of the networks, as well as for the digital diffusion of culture and education. The Committee of Ministers organized its activity in five areas: Expansion of Access; Formation of Human Resources; E-Government; Companies; and Legal Framework, and defined the coordinating leaders for each one of them. The Committee set out to achieve the following proposals: constitute the National Network of Infocenters; design and stimulate the digital literacy campaign; complete the informational phase and start up the transactional phase of e-government; develop a suitable Legal Framework, especially the electronic signature law.

Digital Agenda: Objectives and Components

In order to give new stimulus to the digital issues, at the end of March 2003 the President appointed the under-secretary of Economy as Government Coordinator of Information and Communication

Technologies (ICTs) with the goal of designing a Digital Agenda, together with the private sector and academia, to be presented to the President for approval.

In April, the Digital Action Group (GAD), the name chosen by this private-public committee, was constituted. Its members represent the business world; foundation directors associated with the issue; members of parliament; academics and experts and public authorities from the ministries of Education, of Transport and Telecommunications, of Finance and of the General Secretary of the Presidency.

From May to June 2003, the GAD identified the areas to be contained in the digital agenda. The six areas to be worked on were defined as: Access and Quality; E-Government; Formation of Human Resources; Companies, ICT Industry; and the Legal Regulations framework.

Subsequently, between the months of July to October, the GAD focused on the elaboration of its proposals. To this end, several work teams were created, both public and private. More than 80 people participated in the private groups while the public groups mobilized more than 85 directors and professionals. At the beginning of November, the private and public groups joined their efforts to prioritize and propose a definite series of activities that constituted the Digital Agenda. This activity culminated successfully at the beginning of January 2004 with a proposal for the agenda that was approved by all the members of the Digital Action Group.

As a result a Digital Agenda was elaborated incorporating the following challenges (quoted from the original text of the Agenda):

Widely Available Access

There is no doubt that the country now faces the difficult phase of expanding connectivity. If current economic trends continue, Internet penetration will continue its expansion rate through 2006. However, considering that income distribution will not likely change in the short term, 70% of this growth will take place among the highest income quintile, and only this quintile will reach the level of developed countries. Among the five lowest income deciles, connectivity at home has not yet surpassed 10%.

Broadband growth has been significant, but without a major reduction in access costs—whose average in 2003 was US$55—the growth rate may drastically slow beginning in 2006, especially in homes and microenterprises.

Given this situation, the challenge is to maintain the rate of progress made in providing widely available and increasingly better access by designing a strategy that overcomes obstacles like unequal income distribution, restrictions facing micro and small businesses, and connectivity problems in rural areas and remote regions like Aysén and Magallanes.

The situation is favorable. Three factors will facilitate Internet expansion over the coming years. First, economic growth will be greater than during the 2000–2003 period, and this will provoke an increase in demand. Second, equipment and access costs will undergo a sustained reduction. Third, community broadband access at schools, Infocenters, and cybercafes will expand. This will be particularly important for the poorer half of Chile's population, who do not yet receive the income needed to have a computer at home, let alone an Internet connection.

But it is possible and necessary to do much more. The private sector should develop commercial packages of computers with Internet connections for lower income homes and microenterprises. The Government will mainly subsidize remote and rural areas, low-income communities, and microenterprises. Finally, the Government should expand and consolidate its broadband digital networks, giving special priority to access to public services in regions and towns, including educational and health care establishments.

Education and Training

Enlaces Program and other technical training networks should implement broadband Internet access. The challenges, however, go deeper than just connectivity. The biggest challenge is to expand and intensify full integration of digital technologies as a learning resource for the curriculum and their use in the classroom. This is where investment in digital content, advanced teacher training, and the spread of better practices all constitute fundamental focal points for development.

Even though Chile's educational system has made significant progress and has developed a reform program that the Organization for Economic Cooperation and Development (OECD) described as one of the most ambitious in Latin America, it is not yet in conditions to guarantee the development and equity that this country needs. Its potential is inhibited by the lack of schools that are effectively able to compensate for the inequalities among its students, which are based on social and family background.

There are also deficits in the quality of training systems—particularly for workers with the highest qualifications. In the area of higher learning, there are very few high-quality graduate and diploma programs

In the end, all of these factors limit the country's competitiveness both in the long term and over the next decade. In fact, 75% of the workforce in 2014 will be made up of people who are working or looking for work today. In a decade of accelerated technical change, investment in education and training of current generations of workers is an extraordinarily important imperative.

Online Government (Deficiencies)

Unequal development of electronic government. The gap between the substantial progress of some Central Government services and the delays observed in Local Government is evident. In fact, 320 municipalities out of a total of 341 are connected to Internet and, of these, only a little more than 40% have dedicated access. There have also been serious problems in implementing advances in digital technology use in the health-related public sector. Furthermore, achievements obtained by Government Administration contrast with those of the Legislative and Judicial powers.

Scant capacity and coverage of the Government digital network. Although it has been possible to develop a Government Intranet that connects a little more than 27,000 work stations in the 27 public agencies, this network unquestionably has neither the capacity nor the coverage to comprehend the growing needs of the public sector as a whole.

Insufficient development in digital technology use for an integrated back office. A good part of the government's digital technology efforts has been concentrated on front office developments to assist users and

citizens. Except for some important public entities, most public services are only recently introducing back office changes, that is, in management and organization. This weak point becomes clear when it comes to inter-service coordination. Herein lies the main challenge for public administration and the intelligent application of ICT.

Digital security of the public sector. The public sector rests on a complex network of information infrastructure that, as a result of growing interconnectivity, is vulnerable to threats in growing numbers and varieties. The effective protection of this essential infrastructure in the public sector requires determining a digital infrastructure security strategy, with the purpose of lessening vulnerability, mitigating damages, speeding up recovery times in the event of glitches or malicious activities, and being able to identify the causes and/or sources of these activities for analysis and/or research.

Digital Development for Businesses

In 2003, nearly 100% of large and medium-sized firms, as well as 40% of small businesses, were connected to Internet, with the presence of broadband connectivity on the rise. Nevertheless, significant shortcomings continue with regard to more advanced ICT use. Companies use Internet to stay informed about what the public sector is doing and to check the status of their bank accounts and deposits, but they carry out few transactions aside from some basic services that are widely available on the Internet. Only 15% of businesses communicate with their suppliers and clients over the Internet, and only 25% of that number own a website. These figures are not good if we compare them with developed countries, which conduct three to four times more buying and selling transactions online.

The main hurdles perceived by entrepreneurs and managers against adopting digital technologies are unfamiliarity, unawareness of their relevance, insecurity and distrust, communications problems with the people in charge of information systems, complexity, and cost. Ultimately, many entrepreneurs still see no return on investment in advanced ICT uses. However, those who have implemented these solutions have a favorable view: 66% consider that it increased efficiency, 57% find that it increased productivity, and 49% declare to have obtained cost reductions.

The spread of information and communications technologies in businesses has thus far had two big advocates: the public sector and banking. It is likely that they will continue to be the main vectors of massive expansion in the 2004–2006 period. However, the debut of the private and public marketplace (for example, ChileCompra) should spur the growing use of e-trade in production chains. The widespread company use of electronic invoices will also contribute to this.

Take-off of the ICT Industry

In Chile, the information and communications technologies industry is in its infancy—without the exception of telecommunications—and it is mostly made up of small and medium-sized businesses that are not very consolidated. The digital content business is recently emerging; hardware is small; and software is grappling with major challenges. Furthermore, one of the key factors for the ICT industry's take-off—namely, the virtuous circuit among companies, universities, and research centers—has not been present in the Chilean case.

Equally, there are standards and quality certification for products and services worldwide, geared at guaranteeing homogeneity and satisfaction among global clients. Only a few local ITC firms, however, have incorporated these practices to date.

Legal Framework

The building of the legal-regulatory framework for the information society took its first step with the approval of the Electronic Document and Electronic Signature Law. Unlike other Latin American countries, Chile was able to develop an application with a quick and massive impact: the electronic invoice, and now electronic public purchasing. Moreover, in the 1990s, Chile approved the Computer Crimes Law and the Privacy Protection Law, which are important pieces of legal development that the country requires.

The initiatives that should be promoted in the area will be geared toward removing limitations in the legal system in order to provide the appropriate institutional framework for backing and fostering the development of electronic trade, electronic government, and the use of information and communications technologies. Furthermore, people should be given enough security so as to enhance their trust in the operation of electronic platforms.

These challenges were incorporated into an agenda of 34 initiatives shown in the following table.

Table 17.1 Digital Agenda: 34 Initiatives (2004–2006)

Access

1. Consolidation of the means that will facilitate individual and community broadband access for all Chileans.18) Widespread use of electronic invoices.

2. Promotion of the development of Infocenters as service centers.19) Consolidation and expansion of the use of ChileCompra.

3. 900,000 homes and 150,000 businesses connected to Internet by 2006.20) Simplification and online installation of business transactions.

Education and Training

4. Digital literacy for half a million Chileans.

5. Launching of the certification of ICT skills.

6. Promotion of connected and equipped schools.

7. Integration of ICT into curricula.

8. Fostering of technical/professional ICT training.

9. Promotion of world-class content.

10. Command of basic and instrumental English for all schools.

On-Line Government

11. Integrated Platform of electronic services.

12. Broadband digital network for the public sector (Route 5D).

13. Electronic platform for Chile Solidario and social policies.

14. Development of digital technologies in the health sector.

15) Digital development of regional governments and municipalities.

16. Increment in the metrics and efficiency of government information technology spending.

17. Improvement of the security of essential information structures for the public sector.

Digital Development for Businesses

18. Widespread use of electronic invoices.

19. Consolidation and expansion of the use of ChileCompra.

20. Simplification and online installation of business transaction.

21. Electronic billing for fees and online initiation of activities.

22. Development of means of payment for e-trade and consolidation of Payments Portal of the Government.

23. One Stop Shop and foreign trade marketplace.

24. Increased adaptation of Development Instruments.

Take-Off of the ICT Industry

25. Identification of opportunities and focusing of efforts for the development of the ICT industry.

26. Quality assurance through company certification.

27. Intensification of the High-Tech Foreign Investment Attraction program.

28. Heightened promotion of ICT research and development (R&D).

29. Expediting of the ICT industry export process.

30. Financing for creation and start-up.

Legal Framework

31. Elimination of obstacles and promotion of electronic document and electronic signature use.

32. Right of execution of electronic invoicing.

33. E-trade consumer rights.

34. Updating of legislation for protecting intellectual property.

The Agenda was publicly launched by the President in March 2004. The Digital Action Group was mandated to oversee the development and completion of each initiative.

Current Situation: Main Achievements

By the end of 2004, the balance of the digital policy is relatively positive, as is shown by the following aspects:

- There is a Digital Agenda agreed upon between the private and public sector, which is fostered and monitored by the Digital Action Group. This group includes sectors, both public and private, that are coordinated at the operative level. All of this allows institutional recognition and validation to foster and monitor the Digital Agenda.

- There is an Action Plan 2004-2006 with 34 initiatives and 67 activities, the majority of them funded and having defined leadership. This constitutes a guideline for action, an instrument that gives direction, setting goals and establishing evaluation criteria.

- Main results are the following:

a) **Access.** There is National Network of infocenters in place with more than 800 access points across the country which are being transformed from purely access points into service centers, where people can do useful things that simplify their life, such as transactions with government.

b) **E-Government.** An informational phase of E-Government is nearly finished (300 web sites) and a second, more transactional phase has been initiated. Currently, there are more than 200 transactions on-line, many of them having on-line payment. This year, on-line transactions at the municipal level will be initiated.

c) **Human Resources formation.** Government has focused on a digital literacy campaign to comply with a target of certifying 500,000 adults by end of 2005. To date, over 400,000 have received formation in 18-hour courses.

d) **Companies.** A great effort has been made to simplify over 50 out of 80 transactions, identified by businesspeople, and to move them on-line to facilitate their relation with government. With regard to ICT companies, a certification program has been started, whose first results will be observed during 2005.

e) **Legal and Regulatory Framework.** A law and regulation for electronic signature have been passed, three certification companies have been accredited. Moreover, rules and standards on electronic document and interoperability have been published.

Summary and Future Challenges

Major challenges will be involved in the fulfillment of Chile's Digital Agenda in future years. At present there are a number of public and private organizations contributing their effort and enthusiasm to complete the 34 initiatives contained in that Agenda, a task that of

course demands important public funds in a country characterized by its fiscal austerity.

However, as this undertaking unfolds, new challenges arise, derived from the innovative dynamics of the ICT sector as such, but also from the clash between innovation opportunities and the "traditional ways of doing things."

Despite important advances, the most important challenge probably still lies in the Human Capital field. Although Chile has made an important effort to provide Internet access to schools, future tasks should also concentrate on improving education quality, in order for it to really make a difference in students' learning. The global nature of this challenge should be also recognized, at a time when not many substantial international collaboration efforts can be encountered. These are needed for best practice transference but also to increase the availability of research resources. In this same direction, the current production of educational content to be put in the Web is not sufficient, especially in Spanish language. As a contribution in this field, efforts associated to the expansion of the EducarChile network to other Latin American countries could be made.

The internationalization of services, unleashed by the arrival of the Internet, calls for a major change in the training of professionals and technicians, as their job opportunities increasingly involve serving geographically distant customers. Substantive curriculum adaptations are needed for careers typically conceived to deal mainly with local markets. Efforts aimed at increasing the flexibility of education modalities and the dynamism of educational institutions themselves are also needed. So far, traditional educational institutions have been rather slow in embracing these trends.

Enterprises in the field of services in general and ICT companies in particular are also being challenged by internationalization. Although Chile embraced open international trade very early on, enterprises in the field of services were initially not greatly affected by it, since they could still rely on some proximity advantages. At present however, they are feeling the first signs of that economic openness, which will compel them to adopt drastic modifications in their competition strategies. Quality assurance, compliance with widely adopted certification standards and international partnership building, among oth-

ers, will become key factors for that new survival strategy. On the public side, policies should take bold steps to accompany and strengthen this competition process.

There is still a huge potential for public value generation associated to e-Government in Chile. To date, efforts have concentrated on the front-office field, which has produced important improvements in the relationship of citizens and government. However, there is still a long way to walk in the application of ICT to back-office processes, which despite meaning potentially high productivity gains, face major implementation obstacles. In part, these obstacles arise from the complexity of process re-engineering that is required, but they also stem from rigidities in labor regulations associated to the public sector. Measures also have to be taken so that public organizations can benefit from the opportunities that lie in the use of outsourcing mechanisms.

Another emergent challenge has to do with the governance of the e-Government Agenda. This entails finding an adequate equilibrium among stimulating innovation on public executives that are concerned with maximizing public value for their agencies, together with the search of economies based on demand consolidation, systems integration and standardization. Present practice has favored stimulating innovation at the agency level, a factor that has been key to various success stories within government. However, some important opportunities for consolidation and standardization are still waiting to be exploited. The establishment of the Digital Agenda, the assignment of a Governmental Coordinator for ICT and the constitution of a coordinating instance for e-Government initiatives are measures aimed at a better articulation of public efforts. However, this organization still bears a temporary character that should be consolidated into a more permanent form.

From this discussion it is very clear that the challenges ahead are not of a minor nature. In parallel, it is hoped that the technological revolution maintains its pace, producing more opportunities for citizens' benefit, which in turn faces us with the need of structuring a balanced set of initiatives, under constant revision, that at the same time rates the contribution of ICT in a fair measure. To make this happen, it is essential to bear in mind that ICT is a set of instruments to materialize a national strategy, which for Chile means: growth, equality and the deepening of democracy.

Chapter 18

The European Way To A Knowledge-Intensive Economy— The Lisbon Strategy

Maria João Rodrigues

Europe for what? The traditional discourses focusing on the need to ensure peace within borders are no longer working, namely for the younger generations who take this for granted. We need a more forward-looking approach to European citizens' aspirations by focusing on:

- sustaining their living conditions in a global economy;

- making Europe a stronger player in improving global governance;

- creating a more democratic and effective political system.

If these are the priorities, then we need to combine:

- an agenda of structural reforms with the coordination of the macroeconomic policies in the Euro-zone;

- trade policy with innovation policy and with employment policies to redeploy to new areas of growth and jobs creation;

- focused international initiatives with clear and strong views about multilateralism;

- sound enlargement with sound democratic deepening.

Overview of the Lisbon strategy after its mid-term review

The Lisbon strategy launched by the European Council of March 2000 was precisely the elaboration of a European comprehensive strategy for the economic and social development in face of the new challenges: globalisation, aging, faster technological change. Its cen-

tral idea is to recognize that, in order to sustain the European social model, we need to renew it as well as to renew its economic basis by focusing on knowledge and innovation. This should be the main purpose of an agenda for structural reforms (Rodrigues, 2002).

Over the last five years, this strategy was translated into an agenda of common objectives and concrete measures, using not only the traditional instruments, such as directives and the community programmes but also a new open of coordination, which had already been tested in the employment policy and which then extended to many other ones: the policies for the information society, research, enterprise, innovation, education, social protection and social inclusion (Rodrigues, 2003).

The general outcome in 2004 was clearly very unequal across policy areas and countries. Progress seems quite evident in the connections to Internet, the networks for excellence in research, the one-stop shops for small business, the integration of financial markets, the modernisation of the employment services or in some social inclusion plans. But some important bottlenecks are evident in fostering innovation, adopting a Community patent, opening the services market, developing lifelong learning or reforming social protection. Besides that, some northern countries display better performances then some southern ones, whereas some smaller countries seem to perform better then most of the big ones. This is, of course, a very rough assessment.

In the meantime, the implementation gap was worsened by a communication gap, due to the absence of a communication policy able to connect some existent progress on the ground with this European agenda. In face of these shortcomings, the mid-term review in 2004-05, under the Luxembourg Presidency, came up with some answers to the main problems which had been identified (Kok, 2004, Sapir 2004):

- blurred strategic objectives;

- inflation of priorities and measures;

- lack of implementation, coordination and participation mechanisms;

- lack of financial incentives.

Clarifying the strategic objectives

The first problem to address was about the very relevance of the strategy. Taking into account the new challenges, is the Lisbon strategy still relevant?

The world landscape is changing. The emergence of new competitive players coupled with more evident ageing trends should fully be taken into account by the Lisbon strategy, but its approach remains valid and becomes even more urgent—this was the position adopted by the Spring European Council under the Luxembourg Presidency. "Europe must renew the basis of its competitiveness, increase its growth potential and its productivity and strengthen social cohesion, placing the main emphasis on knowledge, innovation and the optimisation of the human capital" (Council 7619/05, § 5). Stepping up the transition to a knowledge-intensive society remains the central direction. The need to improve the synergies between the three dimensions of the strategy—economic, social an environmental—is also underlined in the more general context of the sustainable development principles (Council 7619/05).

Still, it was considered that the strategy should be re-focused on growth and employment, with some implications for the definition of the political priorities, as we will see below.

Defining the political priorities

The major political priorities of the Lisbon strategy for growth and jobs, after the mid-term review concluded in July are three:

- Knowledge and innovation—engines of sustainable growth;

- Making Europe a more attractive place to invest and to work;

- More and better jobs.

These three political priorities were specified into a short list of 24 guidelines using the Treaty-based instruments called "broad economic policy guidelines" and the "employment guidelines." Moreover, an additional strand was included dealing with the macro-economic policies, under the label "Macroeconomic policies for growth and jobs" (see next Table and Council 10667/05 and 10205/05).

Table 18.1   Lisbon Strategy

Lisbon Strategy
The Integrated Guidelines for Growth and Jobs

Macroeconomic policies for growth and jobs
1. To secure economic stability for sustainable growth;
2. To safeguard economic and fiscal sustainability as a basis for increased employment;
3. To promote a growth-and employment-orientated and efficient allocation of resources;
4. To ensure that wage developments contribute to macroeconomic stability and growth;
5. To promote greater coherence between macroeconomic, structural and employment policies;
6. To contribute to a dynamic and well-functioning EMU.

Knowledge and innovation—engines of sustainable growth
7. To increase and improve investment in R&D, in particular by private business;
8. To facilitate all forms of innovation;
9. To facilitate the spread and effective use of ICT and build a fully inclusive information society;
10. To strengthen the competitive advantages of its industrial base;
11. To encourage the sustainable use of resources and strengthen the synergies between environmental protection and growth.

Making Europe a more attractive place to invest and work
12. To extend and deepen the Internal Market;
13. To ensure open and competitive markets inside and outside Europe and to reap the benefits of globalisation;
14. To create a more competitive business environment and encourage private initiative through better regulation;
15. To promote a more entrepreneurial culture and create a supportive environment for SMEs;
16. To expand and improve European infrastructure and complete priority cross-border projects;

More and better jobs
17. To implement employment policies aimed at achieving full employment, improving quality and productivity at work, and strengthening social and territorial cohesion;
18. To promote a lifecycle approach to work;
19. To ensure inclusive labour markets, enhance work attractiveness and make work pay for job-seekers, including disadvantaged people, and the inactive;
20. To improve matching of labour market needs;
21. To promote flexibility combined with employment security and reduce labour market segmentation, having due regard to the role of the social partners;
22. To ensure employment-friendly labour cost developments and wage-setting mechanisms
23. To expand and improve investment in human capital;
24. To adapt education and training systems in response to new competence requirements.

Source: Council of the European Union, 10667/05 and 10205/05

Hence, for the first time, the EU is equipped with an integrated package of guidelines for its economic and social policies, using Treaty-based instruments. Behind this major political development a quite long maturing process had taken place and the need to enhance implementation was the final argument to be used.

Fostering the implementation

The aim of defining coordinated guidelines for economic and social policies in the EU comes from the nineties, with the preparation of the Economic and Monetary Union. During the Lisbon European Council in 2000, the political conditions were still not ripe to achieve the adoption of an economic and social strategy using more compulsory instruments such as Treaty-based guidelines. Hence, a new method was defined, called "open method of coordination," based on (Council SN 100/00 and Presidency 9088/00):

- identifying common objectives or guidelines;

- translating them into the national policies, adapting to national specificities;

- organising a monitoring process based on common indicators, identifying best practices and peer review.

The development of this method in eleven policy fields since 2000, in spite of some shortcomings (such as bureaucratisation, simplistic benchmarking, etc.), had been quite instrumental in building the necessary consensus about the strategic challenges and the key reforms to be implemented. In 2005, the arguments regarding the implementation and the coordination gap were already enough to ensure a transformation of some of the most important of these "soft" guidelines into "harder" ones, by building on them in order to formulate Treaty-based guidelines (Council, 10667/05 and 10205/05).

Hence, the open method of coordination did play a role in building a European dimension, organising a learning process and promoting some convergence with respect by the national differences. Does this mean that this method is now over? This is not at all the case (see Council 7619/05 § 39 d/ and Commission, SEC 28.04.2005). It can pursue its role, when this is needed which means that the policy

making process can work at two levels, one more formal and precise then the other, ensuring the necessary political re-focusing in the implementation.

A second important development regarding the instruments for implementation concerns the national reform programmes for the next three years, to be prepared by all the Member States in the autumn 2005 (Commission, SEC 28.04.2005). These programmes should be forward-looking political documents setting out a comprehensive strategy to implement the integrated guidelines and adapting them to the national situation. Besides presenting the political priorities and measures, these programmes are also expected to point out the roles of the different stakeholders as well as the budgetary resources to be mobilized, including the structural funds with a link to the stability and convergence programmes. The preparation, implementation and monitoring of the national programmes should involve the main political institutions as well as the civil society and, when appropriate, a national coordinator should be appointed. An annual follow-up report is also supposed to be provided by all Member States, leading to a general report to be presented by the European Commission to each Spring European Council.

A last important piece to foster the implementation is the recently adopted Community Lisbon Programme, putting together, for the first time, all the regulatory actions, financing actions and policy developments to be launched at European level regarding the Lisbon strategy for growth and jobs, and organising them by the three main priorities already mentioned (Commission, COM (2005) 330). Some of its key actions are underlined:

- the support of knowledge and innovation in Europe;

- the reform of the State aid policy;

- the better regulation for business operation;

- the completion of the internal market for services;

- the completion of an ambitious agreement in the Doha Round;

- the removal of obstacles to physical, labour and academic mobility;

- the development of a common approach to economic migration;

- the support to manage the social consequences of economic restructuring.

As well as the national programmes for growth and jobs will require a stronger coordination within the governments, this Community Lisbon Programme will require the same from the European Commission and also from the Council of Ministers in its relevant formations: Ecofin, Employment and Social Affairs, Competitiveness, Education and Environment. Regarding the European Parliament, an internal coordination procedure is already under way between different EP commissions and the same should be considered by the national parliaments, as some of their commissions can be concerned.

Developing financial incentives

Different reforms of financial instruments are underway in order to put them more in line with the political priorities of the Lisbon strategy for growth and jobs:

- the Community framework for the State aids is being reviewed in order to turn them into a more horizontal approach, focusing R&D, innovation and human capital;

- the European Investment Bank and the European Investment Fund are also deploying new instruments in support of the strategy for growth and jobs, and were asked to put a special focus on the needs of the innovative SMEs in Europe;

- the Community Programmes can also play an important role, notably if they are also able to become a catalysts of the national programmes for growth and jobs. Three very relevant cases are the 7th Framework Programme for Research and Technological Development, the Community Programme for Competitiveness and Innovation and the Community Programme for Lifelong Learning;

- the Community Strategic Guidelines for the Cohesion policy, which were recently proposed by the European Commission are now strongly in line with the integrated guidelines for the

> Lisbon strategy, covering their three main strands: making Europe and its regions more attractive places to invest and to work; knowledge and innovation for growth; and more and better jobs (Commission, SEC (2005) 0299).

The scope of these two last instruments depends, of course, on the size of the financial resources to be given in the next Financial Perspectives (2007-2013) to two central objectives: investing in the Lisbon priorities and keeping regional cohesion.

Beyond all this, a reform was introduced in the Stability and Growth Pact which can have very relevant implications for the Lisbon strategy (Council 7619/05). According to this reform, macroeconomic stability remains a central concern, the limits for the public deficit and the public debt remain 3% and 60% as ratio of the GDP and pro-cyclical fiscal policies should be avoided. Nevertheless, a new emphasis is put on fostering economic growth and on the sustainability of the public debt in order to cope with the demographic trends. Against this background, the Lisbon goals, such as reforming social protection systems and redirecting public expenditure to key investments for growth potential (in R&D, innovation, human capital) are among the relevant factors to be taken into account when assessing the public deficits (either below or above 3%) or when defining the adjustment trajectories, in case of the excessive deficit procedure.

Against the new background provided by the mid-term review of the Lisbon Strategy, let us now focus on one of the most complex issues of the general debate over Europe.

For a sustainable European social model

The reform of the European social model is one of the most complex issues to be focused on the general debate over Europe. This model is the outcome of a long and complex historical process trying to combine social justice with high economic performance. This means that the social dimension should be shaped with the purpose of social justice, but also with the purpose of contributing to growth and competitiveness. Conversely, growth and competitiveness are crucial to support the social dimension and should also be shaped to support it. This also means that there are different choices in both economic and social policies which evolve over time and must be permanently

under discussion, political debate and social dialogue. This is the European tradition, highly valued inside and outside Europe as an important achievement to ensure prosperity and quality of life.

This tradition was translated into quite different national models and the most renowned typologies distinguish the Scandinavian, the Anglo-Saxon, the Continental and the South-European types (Esping-Andersen in Rodrigues, 2002 and Sakellaropoulos and Berghman, 2004). Nevertheless, in spite of these differences, some key components were put together in order to build this European social model:

- increasing general access to education and training;

- regulated labour contracts;

- general access to social protection and health care;

- active policies for social inclusion;

- social dialogue procedures;

- predominance of public funding via taxes or social contributions, with a redistribution effect.

These components have been shaped in each historic period, depending on the existent institutional frameworks and actors and on their replies to the strategic challenges of their time.

Reforming the European social model to face new challenges

Nowadays, it is clear that the European social model is facing new strategic challenges, which seem to be:

- globalisation and the new competitive pressures;

- the transition to a knowledge-intensive economy;

- the ageing trends;

- the new family models;

- the very process of the European integration, in its new stage.

The sustainability of the European social model depends on renewing its economic basis as well as on reforming its main components, in order to cope with these key strategic challenges. Against this background, we will identify some of the main priorities for these structural reforms.

Education and Training

Access to new skills will become crucial to get new and better jobs. The education and training systems should be reformed in order to better cope with the challenges of:

- globalisation and the transition to a knowledge economy, by a more dynamic identification of the skills needs and by the generalisation of the lifelong learning opportunities in schools, training centres, companies, public administrations and households, which should be underpinned by an universal pre-schooling education and the reduction early-school leavers. New and more flexible ways to validate competences (such as the Europass) can also play an important role;

- aging trends, by spreading new methods to assess, enhance and use the elderly workers competences;

- new family models, by providing equal opportunities to career choices and more flexible access to lifelong learning over the life-course;

- European integration, by adopting a common framework for key-competences and facilitating the recognition of qualifications and the labour mobility.

Social Protection

Social protection systems seem to need structural reforms to cope with:

- the transition to a knowledge economy, by a more personalised approach in the active labour market policies, by creating learning accounts with drawing rights and by providing more flexibility of personal choices in using the range of social benefits;

- globalisation and new competitive pressures, by giving stronger priority to more effective active labour market policies; by a careful monitoring of the benefits in order to make work pay and to attract more people into the labour market, reducing unemployment and strengthening the financial basis of the social protection systems. A careful monitoring should also be made about the non-wage labour costs as well as the search of complementary (public and private) financial resources;

- aging trends, by promoting active aging, reducing early retirement, providing incentives to remain active, introducing more flexibility in the retirement age. Balancing the financial effort to be provided by different generations may also require a careful reconsideration of the balance between the three pillars of the social protection system;

- new family models, by spreading family care services and facilitating working time flexibility as important ways to reconcile work and family life;

- European integration, with a common legal framework required by the single market concerning minimum standards and portability, to be complemented with the open coordination of the reforms of the social protection systems.

Social inclusion

Social inclusion policies should also be updated in order to cope with the challenges of:

- the transition to a knowledge economy, by putting more focus on developing new social and professional capabilities, beyond the simple income guarantee;

- globalisation, by better targeting the social inclusion programmes and by strengthening the management of the industrial restructuring;

- aging, by promoting active aging and by designing target measures for elderly poor people;

- new family models, by developing family care services and by designing target measures for single parents;

European integration, by an open coordination of the social inclusion policies complemented with European programmes for social inclusion.

Labour regulations

Labour regulations and human resources management should also evolve to meet the challenges of:

- the knowledge economy, by developing learning organisations in the work place, promoting learning careers and "learning first contracts" for young people, organising learning accounts and improving the working time flexibility for training;

- globalisation, by creating more internal labour flexibility (concerning work organisation, working time and wage setting), by combining new forms of external flexibility with security and by strengthening the management of industrial restructuring. The active promotion of better labour standards at international level can also play a crucial role;

- ageing, by encouraging new forms of work organisation, working time management and better working conditions;

- new family models, by facilitating working time flexibility, parental leave and career breaks;

- European integration, by the regular update of the European directives, by removing the obstacles to the mobility of workers at European level and by defining a European frame for economic migration.

Social dialogue

Finally, social dialogue should itself evolve to cope with the same challenges of:

- the transition to a knowledge economy by negotiating learning agreements at company, sector and national level;

- globalisation, by negotiating innovation agreements and the social management of the industrial restructurings at company, sector and national levels;

- ageing, by negotiating about the conditions for active ageing in the collective agreements;

- new family models, by systematically introducing equal opportunities in the collective agreements;

- the European integration, by upgrading the social dialogue concerning the European strategy for growth and jobs.

The changes mentioned above are the outcome of an intensive experimentation, debate and negotiation which is already underway in Europe. Most of these changes are already pointed out by the integrated guidelines of the Lisbon strategy for growth and jobs after a very rich discussion which took place at European level, involving all the European institutions and committing Prime Ministers and ministers of very different areas. These changes will be subject to a larger discussion in all Member States during the preparation of their national reform programmes for growth and jobs.

A re-interpretation of basic values

This larger discussion in the Member States should take into account this more general background of the European social model and the new strategic challenges it is facing nowadays. Moreover, its underlying basic values seem also to be under re-interpretation, notably when:

- it is said that security should be for change, and not against change;

- providing security, the focus is put not only in income guarantee but also in enabling and building capabilities;

- the concern with social justice is putting more emphasis in equal opportunities, even they should be combined with basic solidarity with the weakest members of society;

- the individual responsibility is also highlighted by this concept of equal opportunities, also leading to more freedom of choice over the life course;

- the principles of sustainable development are taken into consideration in the re-conceptualisation of social justice; hence

the contributions and benefits regarding social protection should be balanced across generations.

Let us now focus two concrete areas of reform with many implications for the renewal of the European social model: lifelong learning and innovation.

Sharing responsibilities to develop lifelong learning

The commitment to prepare national strategies for lifelong learning is already made in the framework of the national programmes for growth and jobs. The recent overview at European level led to the identification of some possible common objectives which are summed up in the guideline 23 of the integrated guidelines for growth and jobs. More specifically, this strategy should aim at:

- defining the goals for lifelong learning in terms of not only educational levels but also new jobs profiles and competences;

- developing a new infrastructure for lifelong learning;

- creating a diversified supply of learning opportunities able to provide more customised solutions:

  - to develop the new instruments of e-learning and to explore the potential of the digital TV

  - to turn schools and training centres into open learning centres

  - to encourage companies to adopt learning organisations

  - to shape the appropriate learning modes for each target group

  - to spread new learning solutions for the low skilled workers

- fostering the various demands for learning and to create a demand-led system:

  - to improve the framework conditions for lifelong learning

  - to develop a dynamic guidance system over the life course

- to renew the validation and recognition system

- to create compensations for the investment in learning

- spreading new financial arrangements in order to share the costs of lifelong learning between the various stakeholders and encourage the initiative of companies and individuals;

- improving governance for lifelong learning.

This kind of objectives seems to be consensual, but the implementation gap shows that the real problem lies with sharing responsibilities between the relevant actors. Hence, when it comes:

- the identification of goals for lifelong learning: the public authorities should enhance the forecasting procedures, the companies should improve their human resources management, the social partners negotiate learning agreements and all these actors develop partnerships for growth, jobs creation and competence building;

- the development of a new infrastructure for lifelong learning: the public authorities should create knowledge resource centres and regulate the telecommunications and TV industries for this purpose; companies and households should equip themselves with the necessary hardware and software; the same should happen with the education institutions, which should also become content providers;

- a more diversified supply of learning opportunities: education institutions should be turned into open learning centres and provide more tailor-made solutions for each target-group, companies should develop learning organisations and social partners negotiate a wide range of solutions;

- to improve the framework conditions for lifelong learning: public authorities should foster the provision of child care services and social partners should negotiate the appropriate flexibility in working time management, including time accounts and training leaves;

- to develop a guidance system: the public authorities and education institutions should provide better guidance services and

individuals should be encouraged to define their personal development plan;

- to renew the validation and recognition system: the public authorities should create centres of competence validation, companies should present intellectual capital reports and individuals define their personal portfolio;

- to spread new financial arrangements for sharing the costs: the public authorities should cover the costs of basic education for all, improving the education of young people and support targeted adult people with tax reliefs or direct incentives; companies should fund job-related training; social partners should negotiate the sharing of training costs in the labour contracts or the collective agreements; the education institutions should mobilise resources for new investment plans and the individuals could be encouraged to manage their learning accounts or special entitlements (drawing rights) for training.

Sharing responsibilities to foster innovation

For more effective implementation of the national programmes, this kind of sharing of responsibilities should be specified for the other policy fields. Another critical example for the success of the Lisbon strategy, the sustainability of the European social model and the renewal of the European competitiveness is the innovation policy. Here again, it seems there is a quite high level of consensus concerning some possible common objectives which are summarised in the guideline 8 of the integrated guidelines for growth and jobs. Innovation policy should aim at developing:

- The provision of R&D: creating conditions to foster the private investment in R&D, notably tax incentives and researchers mobility; reducing the cost of patenting and improving the management of intellectual property rights; fostering the interfaces between companies and universities;

- Competence building: spreading skills for innovation at all levels of education; training for innovation management; enhancing the skills base in each sector or cluster;

- Financial innovation: improving access to venture capital for innovative SMEs; reorientation of public investment to R&D and innovation; tax incentives with the same purpose; new priorities for structural funds;

- Provision of consultancy services: developing the support services for innovation, transfer and diffusion;

- Improving quality and paving the way to new products and services: competition policy; dissemination of quality standards; improving the criteria of public procurement; targeting sophisticated markets;

- Changing organizations: national programmes for organizational development in companies; reforming universities management; modernizing public services;

- Incubating activities: developing incubators; supporting high-tech start-ups;

- Networking: promoting clusters and partnerships for innovation; extending access to broadband; developing e-business.

Nevertheless, a clearer identification of responsibilities is needed when it comes:

- the provision of R&D, which depends on the research institutions and on companies, but also on the framework conditions to be created by the public authorities concerning the tax incentives, the research careers and the intellectual property rights;

- the competence building, which depends on the education and training institutions, but also on the companies and their collaboration with these institutions;

- the financial innovation, which depends on the financial institutions but also on the companies initiatives and the regulatory conditions of the financial markets to be created by the public authorities;

- the quality of products and services, depends mainly on companies behaviour but also on the competition policy, the dis-

semination of quality standards and the criteria for public procurement to be developed by the public authorities;

- changing organisations, regarding companies but also education and research institutions as well as public services;

- networking, which depends on all actors which interact in the national or regional systems of innovation.

Furthermore, the reforms of the European social model already mentioned above are also designed to support this renewal of the European competitiveness focusing on innovation.

In conclusion, the sustainability of the European social model depends on the success of the overall strategy for growth and jobs, which are now the two key words; and this success depends on a new approach to renew the European competitiveness, a full use of the potential of the single and external market as well as on more scope for growth in the macroeconomic management. Finally, this success also depends on well designed reforms of the European social model itself.

The concrete solutions to achieve this particular combination in each Member State can only be found by itself. That is why, the preparation and implementation of the national reform programmes for growth and jobs opens an opportunity which should not be missed.

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Afterword: The Network Society and the Knowledge Economy: Portugal in the Global Perspective

Jorge Sampaio

Throughout my almost ten years in office as President of the Republic, I have gradually become more and more aware of the consequences that the growing interconnection between economies and social relations on an international scale—made possible and, to a large extent, induced, by the expansion of the new information and communications technologies—have on the structuring of societies in general, and the Portuguese society, in particular.

Within the general context of economic/entrepreneurial activities, the onset of the Information Society has immediately brought about significant changes, albeit changes which vary in speed from region to region and from sector to sector. Changes which are apparent in terms of work organization possibilities, from the strategic decision-making level to the scope of merely technical operations.

Furthermore, it is indisputable that the trend towards globalization in the financial markets, which is enabled and permanently supported by the digital revolution, has today a direct effect on the security of employment of a great part of the salaried workers in the world and on the population mobility patterns and geography of hunger and disease.

Moreover, it can easily be demonstrated, that the new international economic order, with its subversion of the traditional criteria for the location of industrial activities, tertiarization and the emergence of trans-national financial and commercial strategies, has led to a profound reconfiguration of our cities and urbanization processes and of the relationship they establish with the national territory as a whole.

With the growth of the Internet and real-time communication resources, it is evident, moreover, that for the younger generations, a

certain redefining of routines, group solidarity, cultural activities and aspirations has been taking place. And everything indicates that the Information Society is already having real effects on the value systems, beliefs and representations we use to guide our actions and with which we learn to perceive ourselves and others.

For a more impressive image of the social transformation we are currently experiencing and its future implications, one only has to recognize that both the domains of artistic creation and the most sophisticated scientific debate can no longer do without the storage capacity and transmission speed made possible by the new technologies.

Finally, is it not true that even the mobilization of people around great political causes of global importance, on which the possibility of the alternative regulation of globalization itself depends, seems to be developing in direct relation to the access to the global information networks?

While endeavouring to accompany, with the lucidity and rigour possible, the transformations I have quoted above—which, evidently, requires particular attention to everything, big and small, that politicians come across "in the field,"— I am becoming more and more convinced that, despite the amplitude and originality of the changes currently in progress, there are analytical principles and ideological guidelines I have adhered to early in my now considerably long political life, which, in essence, have lost none of their pertinence.

As far as analytical principles are concerned, I would underline the fact that the national territory still constitutes, in the era of global networks, a fundamental reference and observation dimension, both for understanding the economic, cultural, social and even identity-affecting transformations in progress and for defining balanced and effective policies.

Even more so than in other contexts, in societies such as the Portuguese society, which are classified by some as semi-peripheral and by others as being of intermediate development, it is imperative to see the technical and economic modernization movement in the context of the socio-historic decisions of a predominantly national scope in which it emerges. In many cases, such determinations are, in reality, a source of inertia, paradoxical configurations or truly unprecedented

forms that must not be diluted in the overall general trends emerging and which are being defined more clearly in other social formations.

On the other hand, at the level of the ideological orientations of political action which I consider to have remained pertinent in the current social relations context, I would highlight all the central importance, which, in my view, should continue to be given in the new globalization context to the active reconciliation of the goals of development with the perfection of the rule of law and the combat against social inequality—three goals that united successive generations of Portuguese citizens during the dictatorship. I believe that, in the current circumstances, it not only makes total sense not to take a step backward on this course at the national level, but also that it is necessary at the international level to both contribute to and to implement, through all means in our control, the range of intentions included in that ideological triangle.

It was in the context of these ideological coordinates that, some years ago, I decided to promote a cycle of conferences and debates involving a large number of Portuguese and foreign specialists, on the effect of the revolution in information and communications technologies on the quality of democratic systems and, through them, on the regulation of globalization.

At the time, the decision was made to deal with the new and old media together, using the issues of electronic democracy, the use of the Internet and the generalization of access to NICTs to once again consider the problems of the relationship between the fields of politics and the media that democracies always have to face.

In a country which, having achieved political democracy and liberalization of the media at a late stage, is still far from establishing consistent levels of auto-regulation in the institutional spaces in question, it would make no sense to attempt to put into perspective the possibilities of consolidating democracy through electronic/digital means without dealing with and questioning the area of the conventional media.

The same concern with the socio-historic peculiarities of this country has led me to take interest in matters of technological development and entrepreneurial innovation in Portugal, simultaneously paying attention to the specificity of our industrial fabric—particularly the

importance the so-called traditional industries, the small and medium-sized enterprises, the informal economy and the pre-Taylorist technical and organizational models have within it—and to the considerable deficits in terms of literacy, experimental culture and innovation rooted in Portuguese society.

In relation to this last point, I should add the following. Although it is true that this contextualized approach to development and innovation has protected me from excessively naive visions as to the possibilities of changing the economy and society using the technological impulses in a very short period of time, it is also true that it has never ceased to provide me with surprising sources of optimism.

By way of example, I can refer the knowledge that, in Portugal, a country frequently considered to be unreceptive to innovation, there have been, in traditional industry sectors with strong exposure to international competition and in territorial areas without an entrepreneurial association tradition, remarkably successful experiences in the organized diffusion of the new technologies, on-going training, the generalized expansion of innovation and the sustained increase of competitiveness levels. The fact that I have been able to draw some public attention to such experiences in the scope of the initiatives I have dedicated to technological modernization and business innovation in Portugal is, indeed, a source for great satisfaction for me.

It is understandable that someone like myself, who has spent more than forty years fighting for the full exercise of fundamental civic liberties and questioning themselves as to the concrete possibilities of democracy democratizing itself, should want, as President of the Portuguese Republic, to debate with a certain degree of depth, at the conference cycle I referred to, the opportunities for perfecting democratic life and improving participation of the citizens provided by the new technologies.

I have, however, not done so with the sole purpose of concentrating on the national concerns in this area. As I have said, I sincerely believe that, with the advent of closely interconnected economies and societies, the triangle of convictions constituted around the objectives of development, democracy and social justice should be transferred, without any concessions in terms of quality, to the plan for the combat for recognition of the dignity of human life on the global scale.

After completing his monumental reference work entitled "The Information Age: Economy, Society and Culture," Professor Castells, together with Professor Pekka Himanen, who likewise has honoured us with his contribution to this volume, conducted a study of the Finnish model for transition to the information society and the network society.

In addition to the rigor that characterizes this project, it also had the merit of revealing, in very expressive terms, that, similar to what happened before with the development of the industrial society, progress towards the information society and towards successful integration into the global economy can be made through different histories and cultures, following distinct institutional combinations and achieving equally varied forms of social organization.

In clear contrast to the paradigmatic information society models associated with Silicon Valley and Singapore, the Finnish case presents, amongst other peculiarities, models that result from the presence of a strong Welfare State in social life and the affirmation, no less pronounced, of an own culture, language and identity. Benefiting from high levels of social cohesion, a fully negotiated labour relations regulation system, strong incentives for training and research in the information technologies field and sustained State intervention in creating the infrastructural conditions for the diversification and expansion of its economy, Finland is a good example of how a country with limited resources can, in the short period of only two decades, overcome difficult economic crises and join the ranks of the most competitive information societies.

In the reflection to be made on the opportunities within Portugal's reach in this field, there are certain traits of Portuguese society that simply cannot be ignored.

The most worrying of all has, in my opinion, to do with the low levels of schooling and literacy of the Portuguese population. In thirty years of democracy, we have made important progress towards establishing basic education for all and the number of young people achieving access to higher education is in no way comparable with what the Portuguese could expect during the dictatorship. However, the failure rates in school and drop-out figures continue at high levels, placing Portugal in a particularly unfavourable position in international com-

parisons on literacy, access to secondary education and qualification of the working population.

As far as another aspect of the education system is concerned—that of lifelong learning—the diagnosis is just as pessimistic: indeed, given the literal or functional illiteracy of such a large section of our adult population, the demand for vocational training continues to be low. Furthermore, the institutional apparatus that promotes the training offer, in which the country's enterprises should have an active and prominent place, is disconnected and not sufficiently consolidated.

Given this scenario, the questions I honestly feel obliged to ask are the following: with such serious deficits in terms of education and basic schooling capital, does it make sense, and indeed is it effective, to concentrate resources in learning and training programs specifically catering to the needs of the Information Society? Is it possible and politically acceptable to skip phases, with the argument, perhaps, that the younger generations are relatively well equipped for integration in the information networks? Or does, in terms of human resource qualification, investment in excellence necessarily lead today, in a society in transition such as the Portuguese society, to unacceptable situations of exclusion?

Considering that it is true that transition to a network society imposes that the use of the new technologies be seen not as an end, but as a means an instrument of transversal utilization, it is necessary to maintain universal access to quality basic and secondary education as the central objective of public policies. Improvement in said quality today must include renewal of the teaching/learning contents and methodologies in harmony with the digital revolution.

Hence, one must promote and divulge exemplary e-learning and e-teaching experiences, but, obviously, without abandoning the educational heritage built up over the years by the education system.

On the other hand, one must recognize that, as vocational training and life-long education are decisive elements in bringing the populations closer to the competence thresholds demanded by the knowledge economy, in countries such as Portugal a great effort has still to be made in raising, in a general and sustained way, the literacy levels of working adults with little school education. To achieve this, we will have to reject, once and for all, all hesitations and postponements in

implementing integrated education programmes, particularly if, as has been the case in Portugal, they have been negotiated and agreed upon by the social partners for a long time.

A second problem that concerns me related with the question at hand has to do with the low levels of cohesion (well below the European averages) that characterize the structure of Portuguese society.

Contrary to that argued by certain critics, in his works, Professor Castells has never neglected the excluding tensions related with economic globalization and the transition to the information economy and society. He dealt with this issue in a particularly expressive way in the analyses he proposed on the distinction between generic labour/self-programmable labour, illustrating to what extent the processes in question contain the seeds of long-term unemployment or irreversible segmentations and polarizations in the labour markets. The exemplariness of the Finnish case is in part due to the particular effectiveness of the Welfare State in containing excluding tensions, at least those I referred to above.

In the Portuguese society, which presents considerably unbalanced income distribution patterns, the institutional social protection structure, essentially built up after the reinstatement of the democratic system, continues to be faulty and lacks the degree of consistency required for the systematic control of the risks of precarization and marginalization that come with technological modernization. Knowing that, in addition to this, the budgetary discipline imposed by the Stability and Growth Pact will not, at least in the short term, allow us any financial slack capable of bringing about significant improvements in our welfare model, are we not faced with problems that will be very difficult to overcome?

Part of the solution will no doubt come through improvement in the efficiency of the public administration in managing its resources and in better addressing the needs and legitimate aspirations of the citizens.

In this perspective, the idea that the model of governance has to adapt to the need to provide responses to social problems, which, being very multifaceted, interdependent and transversal, involve at the same time citizens that are more and more informed, was raised several times throughout this book. It is no wonder, then, that one also

recommended, in the name of reinforcing democratic transparency and participation, that forms of interactive online access to legally unprotected administration information be promoted. The adequate use, on the part of the public administrations, of flexible information networks makes it possible to give public services levels of transparency and reliability so that they can guarantee the best exercise of citizenship, more effective and specific combat against exclusion, greater accountability on the part of the administration and the creation of an environment of mutual trust between the people and the institutions which will undoubtedly strengthen the daily exercise of democracy and the social welfare system. Improving the management, gaining time and increasing the quality of the services provided should be, in sectors as crucial as health, justice and the social security, objectives around which all professionals and organizations can rally.

The statistics on access to the new information and communications technologies and opening to the global networks tell us that the Portuguese situation reveals, as in many other fields, considerable deficits and a slowness to develop, although the incidence is less in the younger generations and we do have examples of good practice both in the entrepreneurial fabric and in the civil services. Expansion of the access to digital networks, which is indispensable for not generating new forms of exclusion, can, indeed, include—and this was one of the topics put forward by some contributors—the consideration of opportunities related with open source software. The monitoring of developments such as those going on in Brazil today could be of great interest, particularly, as far as Portugal is concerned, in a perspective of promoting our language in the world. To this end, keeping abreast of community directives on the regulation of access to software is an absolute necessity.

On the basis of all that I have said above on the characteristics of Portugal, I am convinced that our difficulties in the transition to the networked society and the knowledge economy cannot be resolved with a voluntarist approach centred on the restricted aspects directly represented by the conventional figures and indicators. But I also do not share the belief that, as long as all other structural obstacles to development are not eliminated, we are condemned to being able to do nothing in terms of joining the networked society and the knowledge economy.

Throughout this book, it was confirmed that it is not the technological innovations that, by themselves, condition the emerging social—perhaps civilizational—changes. On the contrary, it will always be the organizational changes and the institutional models that will lead to the exploitation of the potentials that the new technologies bring with them.

In this context, the clear formulation of strategic guidelines and, above all, making decisions at the right time and on the basis of knowledge of the current economic and social trends are absolutely crucial for stimulating and monitoring the necessary changes. In other words: full exploitation of the information technologies with a view to modernizing companies, the public administration and the State itself can only be achieved if, before this, in each one of the principal fields of economic and social life, the main barriers associated with the conventional organizational models and modes of operation are examined.

Without organizational innovation, technological innovation will never constitute a development factor and effective source of competitiveness. I recognize that, in a country characterized by high degrees of dualism and asymmetry, the role of the State in creating the infrastructural and support conditions for industrial activity, paying particular attention to the universe of the small and medium-sized enterprises, becomes perhaps even more indispensable than in other contexts.

However, state intervention, though necessary, is far from enough. The role of the business community is indispensable in preparing any national economy for successful entry into the age of the information society and globalization. In the final analysis, it is the enterprises that, depending on a given institutional framework and the stock of skills available in the employment system, will actively contribute to adding vale to the wealth accumulated by an economy.

In this closing comment on the published work drawn from the colloquium *"The Network Society and the Knowledge Economy: Portugal in a Global Perspective"* I have given some thought to the difficulties that a society in transition, such as the Portuguese society, has to face in a phase of change that is as dramatic and influential as that we are dealing with today.

The responsible politicians, the economic agents and the Portuguese citizens will, together, have to be the fundamental protagonists of that change. In my capacity as President of the Republic, however, I understand that the terms of the problems to be faced will be clearer and more consolidated if we all have secure knowledge and information on the alternatives we have. The extremely high quality of the contributions presented and published herein are, for me, an absolute guarantee that the organization of the colloquium, that led to this book, was a very positive step in this direction.

In this sense, I will finish off by greeting the illustrious book contributors and thanking them for having accepted my invitation and, above all, for what we can learn from them.

Edited by

Manuel Castells
 Wallis Annenberg Chair, Professor of
 Communication, Technology and Society,
 University of Southern California, Los Angeles
and Research Professor; Open University of
 Catalonia, Barcelona

 Gustavo Cardoso
 Professor of Information and Communication
 Sciences, Department of Information
 Sciences and Technology,
 ISCTE, Lisboa,
 Portugal