

# Digital Development Strategy 2007 – 2012

Committee of Ministers for Digital Development

*Santiago, December 2007*

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## 1 Foreword



*"Our strategy must emphasize the generation of impact by means of a more intensive and sophisticated use of ICT".*

The Government has acknowledged the importance of information and communication technologies (ICT) for Chile's development and has consequently implemented a number of policies in various areas.

The permanent need to improve the quality of education, health, increase transparency, enhance productivity and competitiveness and, of course, improve governance through citizen participation, require continuing the efforts in the country's digital development.

In order to face this challenge, and given the evidence that the adoption of TIC contributes to economic growth through its effect on total factor productivity; its impact on the development of knowledge; its potential in the development of social capital by facilitating the creation of networks, promoting further participation and generating transparency; and the great possibility of promoting social inclusion, led President Bachelet's administration to create an institutional framework: the Committee of Ministers for Digital Development.

This committee, created in February 2007, is the body responsible for the design and implementation of public policies to promote a deeper and more intensive use of information and communication technologies for citizens, businesses and the State.

The Digital Development Strategy, presented in this document, represents the collaborative effort of representative of the business and government sectors, academicians and civil society, in a process led by the Executive Secretariat of the Committee of Ministers.

In order to invite contributions from citizens and stakeholders, a first draft of this document was also made available through a public consultation via internet.

I take this opportunity to thank all of those who contributed either by participating directly in the working group or through the public consultation, and encourage them to continue supporting this initiative until its objectives are met.

Chile's digital development will only succeed with the contribution of all: the public and private sectors, and civil society at large.

**Alejandro Ferreiro**

*Minister of Economy  
President - Committee of  
Ministers for Digital Development*

*November, 2007*

## 2 Vision

Today, information and communication technologies (ICT) are acknowledged worldwide as a catalyst for economic growth and social inclusion.

Our country has seen the opportunities that lie in the incorporation of ICT and their massive and intensive use, and has made systematic efforts in this direction in recent years.<sup>1</sup>

However, just as stated in the Bachelet Administration Program, it is necessary to build a digital country that brings further development and equality. ICT is envisioned as an enabling factor for reforms in sectors such as Health, Social Security and Education, all priorities in the Administration Program.

In responding to that challenge, the participation of civil society and the involvement of the private and public sectors will also be key factors to identify and develop concrete and feasible initiatives for Chile's digital development.

Initiatives in this field led by recent governments have been important. The current institutional framework has produced world-class e-Government products in areas such as Public Procurement, Tax Administration and Civil Registry and Identification.

Additionally, successful international experiences show that the private sector has led digital innovations for business and citizens. This is why private sector participation and leadership, with public sector support, will play a key role.

It is also necessary to create an institutional framework to provide

sustainability and continuity to the Digital Strategy, therefore a key activity in this period will be the installation of an institutional framework capable of developing public policy for digital development.

Access and connectivity infrastructure are among the critical factors and enablers for digital development. In this regard, it is necessary for Chile to improve connectivity ensuring equal and inclusive access to different actors of society.

Access and use of ICT by students, teachers and parents must be deepened, ensuring connectivity of schools.

Access to ICT and its adoption by citizens in general has to improve through wider and higher quality residential access, as well as through the info-centre network and public libraries.

Workers in the business place will benefit from greater ICT access and learning, through training tailored to their specific activities provided in different modalities as well as from the increased availability of high quality connectivity.

Public employees, in government services and municipalities, will have access to training platforms in fields such as: customer service, civic participation, probity and public ethics.

Inclusion is to be favored in order to counteract the negative effects generated by the digital divide, ensuring civic participation in all possible phases of project development, considering local and territorial dimensions, ensuring transparency in the actions of

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<sup>1</sup> See annex No. 2

participants and finally, that initiatives associated to businesses, significantly promote the increase of competitiveness and worker productivity.

*"Access to information in modern society is not the privilege of a few, but a basic resource for development, equality and democracy"*

***Towards a digital country in 2010***  
***Michelle Bachelet***

In the period 2007-2012, the development of aptitudes must take into consideration our society's various integration needs. Business and State employees should have the possibility of using ICT as a tool that enables them to enjoy greater employability and improved productivity.

Businesses, especially smaller ones, will have the possibility of incorporating the use of technology in their productive processes, in order to better compete locally, nationally and globally.

It will also be necessary to expand the local ICT industry in areas such as software development, and provision of off-shoring services.<sup>2</sup>

*"...ICT must play two roles in the Innovation Policy: first, is the transversal nature of ICT for the development of innovations in the country, and second, which is already observed in the outsourcing cluster, is the export of ICT services (Off-shoring) with potential".*

***Raúl Ciudad***  
***ACTI President***

Chile needs to continue decisively working towards a digital and integrated government for all citizens. Incorporation of new e-Government modalities, such as

mobile Government solutions, taking advantage of the pervasiveness of mobile networks, will be a must.

Public services must innovate in their breadth of action, using ICT in order to be connected and interact on line to facilitate access to information, reduce visits to government agencies, and to generate greater transparency and civic participation in the public sphere.

It is urgent that priority sectors such as Health, Social Security and the Judiciary system incorporate digital technologies to significantly improve the services they provide to citizens.

Adoption of ICT by local and regional governments must continue to be developed and enhanced, especially in the smaller and more isolated localities so they can all provide online services to the community, reducing costs and improving their services.

Our legal framework will have to be updated, tackling issues such as cyber crime, protection of personal data, consumer rights and intellectual property, among others.

It is therefore necessary to elaborate a technological policy that takes into consideration the impact of the incorporation of information and communication technologies at the State level and in society as a whole.

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<sup>2</sup> Remote support services



*Figure 1: Lines of Action of the Digital Strategy*

### 3 Objectives and Goals

In order to take Chile to the next stage of development, and with that, fulfill the challenges formulated by society as a whole, the objective of the digital strategy is to:

*Contribute to Chile's economic and social development by means of the potential offered by the use of information and communication technologies to improve the quality of education, increase transparency, productivity and competitiveness, and provide better governance through greater citizen participation and commitment.*

In order to fulfill this general objective, the following specific objectives are established:

#### 3.1 Specific Objectives

**1) Increase business competitiveness through a more intensive use of information and communication technologies.**

- Chilean businesses, especially smaller ones, will incorporate ICT and will use them in their processes in a more intensive way.
- Workers will incorporate ICT aptitudes among their abilities.
- The ICT industry will develop in order to generate a better service offer.
- Chile will become an attractive investment platform to provide off-shoring services.

**2) Create and promote a new ICT culture to increase transparency and civic participation.**

- Citizens will use ICT in a greater and better way as a tool to interact with public institutions.
- Public institutions will continue using ICT to increase the transparency of

the State and civic participation, contributing to raise levels of trust.

- Chile will have improved human and social capital.

"The aim of actions associated to civic participation is to generate relationships of collaboration and mutual respect between the State and citizens, favoring the strengthening of civil society, which will allow greater legitimacy of public policies"

*ICT Regional Boards*

**3) Promote the development of quality digital government.**

- Public Services will digitalize and interoperate their processes to improve customer service provided to citizens, other government agencies and private sector institutions.
- Government agencies will have employees trained according to the needs generated by digitalization and customer service for their users.
- The country will have a Technological Policy that accounts for its digital



needs, including: IT Security, Open Source Software<sup>3</sup> and standards.

- The country will have an adequate legal framework that takes into account local needs and advances in personal data protection, cyber crime and intellectual property rights, among others.

#### 4) Increase intensity and sophistication of ICT utilization by students and civil society.

- Access to ICT and connectivity will be available to people so that they can develop their multiple activities.
- People will have the necessary digital aptitudes for a full insertion into society.
- The educational process will be supported by high-quality digital infrastructure.
- Teachers and students will have the digital aptitudes needed to ensure quality learning.
- The educational system will incorporate ICT-based pedagogical contents and models for the classroom.
- The educational system will incorporate ICT as a management tool.
- A network of schools will operate as ICT usage laboratories in classrooms and in management.
- The country will have an on line offer of public and private services and contents available, pertinent and adequate for educational purposes.
- A consolidated network of public libraries, service centers and other community access points will be available to promote digital inclusion for low income groups.

### 3.2 Goals

To be able to reach the proposed objectives, it is important to establish some goals looking towards 2012, including:

- Double the number of broadband connections, covering the entire national territory.
- Double the current ICT investment rate in businesses and institutions.
- Strengthen the development of a digital institutional framework with the active participation of civic, private and public sectors.
- Improve the Government's ICT procurement expertise in order to improve the supply of services, promote the development of the ICT industry, and improve e-government.
- Update regulations on intellectual property rights, personal data protection, on-line consumer rights and cyber-crime, among others that permit the sustainable and balanced development of the country.
- Develop new online service areas, fundamental for the relation between businesses and citizens and the State.
- Promote the development and use of ICT in Chile's star industries, such as mining, fish farming, forestry and tourism.
- Position Chile as the main location for developing remote technological services in Latin America.
- Contribute to improving Chile's position in public and private sector transparency and e-government rankings.
- Improve women's inclusion in the labor market by using ICT as a tool.
- Increase availability of funds for research and development of ICT in universities and research centers.

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<sup>3</sup> For a better understanding, in this document "Open Source Software" and "FLOSS" are used as equivalents.

## 4 Lines of Action

The Digital Strategy shall promote initiatives that achieve economic and social impact based on an increase in the country's productivity and competitiveness, on the creation and promotion of a new ICT culture, on the promotion of an integrated and high quality e-government, and on an increase of the quality and intensity of ICT use by students and civil society at large.

Based on the proposed goals and in order to work in an orderly and systematic way, the 2007-2012 Digital Development Strategy is structured into four Lines of Action, which will be broached by joint public-private working groups which will

require the active participation of experts from think tanks, the industry, the State and civil society in order to guarantee its success.

Each line of action will be developed through plans and activities that will translate into concrete goals, deadlines and clear lines of responsibility. This plan will form the National Strategic Plan for Information and Communication Technology.

The lines of action are:

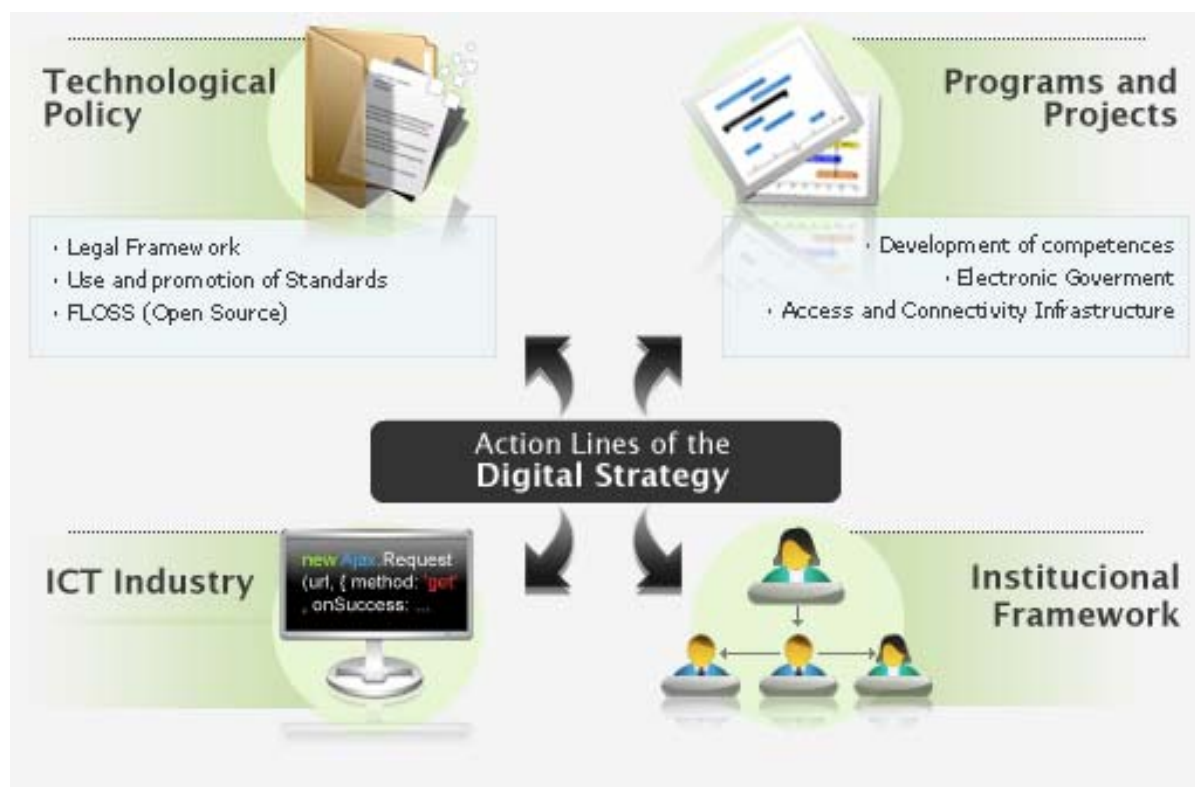


Figure 2: Lines of Action of the Digital Strategy

## ***4.1 Projects and Programs for Digital Development***

The design, implementation and follow-up of a new portfolio of projects and programs will be coordinated. This will be the operational expression of the desired impact associated to ICT policies.

### **4.1.1 Education and development of aptitudes**

Today it is widely acknowledged that people should have life long learning; ICT is in a privileged position to enable this process.

People and their digital capabilities are necessary for all areas included in the Strategy. Training represents a development opportunity for workers and the community in general, becoming a key factor for improving equality and bridging the digital divide.

Consequently, it is necessary to promote continuing and permanent training that is flexible and adaptable to end user requirements and abilities, supported by intensive ICT use, so that people can benefit from new forms of literacy and incorporate digital learning abilities.

The effort of providing "basic literacy" must continue, but must include new knowledge, more specialized and field-specific tailored to people's specific needs through more and better aptitudes, knowledge and fundamental skills in ICT.

It is also necessary to promote distance learning based on technology through multiple learning modalities, such as e-learning, self-instruction and learning communities. All of this requires the

production of digital educational resources and open online courses.

Community access networks will be incremented, and the aptitudes and capacities of their operators, managers and trainers will be improved.

The Enlaces Program of the Ministry of Education will promote initiatives that improve students' access to ICT, improve teachers' digital abilities and improve pedagogical contents.

The objective will be for digital development to be a significant driving force for the improvement of education and for that reason it will be intimately linked to the new Educational Reform and architecture of the educational system. Within this context, the following action areas have been prioritized:

#### **Pedagogical Contents and Use Models**

- Strengthen the educational initiative "EducarChile" Web Site as a Web 2.0 Portal of Portals.
- Develop teaching/learning objects to cover at least 80% of the most difficult subjects in the curriculum.
- Enrich printed school texts with a hypertext digital version.

#### **Educational Infrastructure**

- Implement 16,500 elementary education classrooms with computers, projectors, audio equipment and digital resources to support reading, writing and mathematics programs and inquiry-based science teaching.
- Laptop computers and projectors for all schools.
- Reduce the national rate from 30 to 10 students per computer.
- Create an "Educational Digital Network", to connect at least 70% of

schools, with direct subsidy and guaranteed bandwidth (4000 schools).

#### Digital Capabilities for Teachers and Students:

- Develop a standard for digital literacy for citizens.
- Develop a digital aptitude model for teachers to be used in the initial formation of teachers and in teacher training; incorporate this standard in the accreditation process for pedagogy schools.
- Develop and incorporate ICT learning progress maps in the curriculum.
- Implement an evaluation system of essential aptitudes of the 21<sup>st</sup> century.

That is why different national and local level governmental agencies recognize in Open Education an important development strategy of and with ICT.

**Werner Westermann**  
CEPAL

#### Educational Management

- Implement the digital class book.
- Incorporate ICT usage in plans of management improvement.
- Promote the development of school portals, as a means of effective integration and communication between the family and the school.

"The existence of clear pedagogical senses, an environment of learning habits and teachers that use computers with didactical and learning purposes are the elements that, as a whole could strengthen the impact of information and communication technologies in learning. Hardware without criteria and training are not enough"

***Human Development Report***  
***PNUD, 2006***

#### 4.1.2 Electronic Government

Chile is facing new challenges in e-Government that have to do with interoperability, shared services and multi-sector platforms, all in the search for providing services with more value added to citizens.

It will be necessary to keep advancing in the modernization of public administration, and innovate in new modalities of interaction with citizens, especially in priority services such as Health, Social Security, Justice and Local Governments (municipalities).

The health sector will center its efforts in information system implementation in areas that improve customer service as well as the management of the health center network.

The following developments are highlighted:

##### Service Schedules

- Implement a system that allows citizens to visualize health center schedules, in particular, vacancies. It will also show scheduling details for medical appointments, procedures, group activities and waiting lists.

### **Management of Medical Appointments and Procedures**

- Administer the granting of hours or time slots for health services, both for medical consultations and for procedures or diagnostic exams, as well as the transfer of clinical information among the different service levels.

### **Patient Management**

- Register and report the different movements of patients, allowing the management and administration of beds per wing, floor, nurse module and wards.

### **Information System for Urgencies**

- Have a register system that allows hospital staff to obtain relevant data of emergency services on line.

### **Drug Delivery Management**

- Register activities aimed at providing the clinical units or the patients with what they need, in order to guarantee security of delivery, preserve the quality of medicines and medical supplies, monitor the fulfillment of pharmacotherapy of chronically ill patients and provide the necessary information for the fulfillment of medical prescriptions.

At the local government level, more work will be done to reinforce the simplification of services and establish a single window for customer service.

- Implement a single window for all municipal services in every municipality.
- Develop digitalization models for different types of municipalities.
- Improve and provide high quality connectivity to isolated and small municipalities.

Initiatives that involve horizontal integration between services that result in more efficient, effective and transparent interaction with citizens will also be privileged.

- Install a public service Interoperability platform to facilitate information exchange, preserving citizens' privacy.
- Install efficient and user-friendly service and information search solutions.
- Introduce an ICT procurement instructive for administrators that allows for value added technology acquisition processes that produce positive externalities for the ICT industry.
- Install an ICT observatory to keep exhaustive track of the digital development of the country.

The Judicial system will take action to take advantage of the benefits of adopting ICT systems to provide remote services at lower transaction costs for the State and citizens. The following is foreseen:

- Redesign of the "Public Notaries and Registrars" model that allows for the modernization of the sector and evolve towards a model based on electronic transactions and documents.
- Update regulations that stimulate the use of electronic documents.
- Support the digital development of the Government Accounting and Auditing Office, as a catalyst for the electronic model of operation.

Chile has a very advanced mobile telephone and telecommunications network. Taking advantage of this opportunity to innovate in remote services and efficient communication with the public will be a central task.

- Develop mobile Government solutions that fulfill the goals of massive reach and citizen participation.

The vision of the country is to be a world reference in electronic government, which has already been achieved in some public functions like tax administration and public procurement.

"To choose to strengthen to the maximum the use of Information and communication technologies in the Economy and Society could generate a superior impact and in less time than any other reform."

**Tomás Campero**  
*ChileCompra Director*

#### 4.1.3 Adoption of ICT in Businesses

We will work together with the private sector in the massive and systematic incorporation of ICT into the productive processes of businesses, especially smaller ones.

At the same time, mechanisms to encourage the incorporation and adoption of ICT by their suppliers will be studied, including the improved access to connectivity and equipment.

The search for incentive mechanisms for ICT will be done in collaboration with relevant players in the area of business promotion, in the interest of developing incentives for ICT adoption that are specific and focused. CORFO (Government's National Productive Development Agency) is a key partner in this area, given its vast offer of promotion instruments.

"Although we have progressed in the penetration of ICT in businesses, these still show very basic use, given that only 3% of businesses use technology in productive processes. Our challenge is to promote more sophisticated uses of ICT; to advance in this direction we must establish strong public-private alliances."

**Alejandro Barros**  
*Digital Strategy Executive Secretary*

#### 4.1.4 Connectivity and access infrastructure

There is still a digital divide in terms of access and connectivity that prevents groups of people and businesses from completing their digital development, in part due to issues such as decentralization and participation. Therefore, the substantive increase of the growth rate of people connected to internet continues to be imperative.

Therefore, mechanisms have to be studied to provide high quality Internet access at affordable prices. Extending coverage to areas that still do not have access is also an issue.

Also in relation to access, the policy associated to info-center development will be deepened and reoriented, specializing them as service centers for the communities they belong to. Initiatives like Chilecompra's Business Centers could well serve as a model to be replicated. The main challenge for info-centers is to become service centers with more value added for users.



"Just like drinking water or electricity became basic social services, the current challenge is for everyone to have access to modern telecommunication services. Internet access means equality of opportunities, for our children to be educated in the modern world, for our Micro, Small and Medium Sized Businesses to find new markets and trade possibilities, to overcome our geographic isolation."

**Pablo Bello**  
*Undersecretary of Communications*

## **4.2 Technological Policy for Digital Development**

The objective of this Policy is to face social and economic issues originating as a consequence of the introduction and use of ICT.

The introduction of ICT confronts us with challenges in multiple areas, like the speed of technological changes, changes in market and industry and priorities of national public policies. The "Information Society" requires public policies in accordance with this new paradigm, including: computer security, use of standards, updating of the legal framework the use of open source software, among others.

Formulation of a technological policy requires paying attention to issues observed in our country, but also to international experience in the development, use and application of information and communications technology needs to be taken into account.

*There is probably no other technological area where passing from an innovative idea to its implementation is so simple, cheap and almost with no barriers*

**José Miguel Piquer**  
*UCH Computer Sciences Department*

### **4.2.1 Innovation and ICT Development**

It is fundamental to have adequate development and innovation policies in the ICT sector for the implementation of the strategy.

The link between university and business is an area to be greatly strengthened. Although there are successful business-university collaborative experiences, their occurrence is very scarce compared to desired standards. In contrast, leading countries in ICT industry development have strongly developed collaboration, coordination and joint university-business initiatives.

On the other hand, it is also necessary to stimulate the development of more experts, technicians and professionals in the area, with capabilities for entrepreneurship and innovation.

### **4.2.2 Legal Framework**

*"...issues that are key for the development of a digital strategy cannot be properly solved by paying attention only to union and corporate interests, it is necessary to encourage and promote the participation of intermediate groups of civil society."*

**Claudio Ruiz Gallardo**  
*Digital Rights NGO Director*

Establishing an appropriate legal framework that accounts for technological changes in areas such as: network neutrality, intellectual property, personal data protection, cybercrime and Internet consumer rights is essential in order to provide secure electronic experiences to government and businesses.

This requires a joint effort with the other branches of government to develop new normative frameworks, be they new bills of law or regulations, that protect citizens' rights, while at the same not preventing market evolution.

#### 4.2.3 Standards

One of the main challenges of digital development is the incorporation and mass use of standards that allow better inter-operability and access to ICTs.

The State has played a significant role in the elaboration and use of standards, such as in the case of electronic document regulations, public agency web sites and electronic communications within the public sector, among others.

The challenge is to promote the widespread use of standards in other areas of society.

#### 4.2.4 Open Source Software

In recent years, Open Source Software has seen significant development and, therefore, the State must define a policy regarding its use, promotion and development of the associated industry.

A public-private working group will be created and commissioned to elaborate specific policy proposals directed at the public and private sectors in this area.

"The Free and of Open Code (FLOSS) Software presents very relevant opportunities for the Government and national industry. The most notable are the decrease in technological dependence and "lock-in", increase of competition in the market, perennial data and use of open standards, pre-competitive collaboration models and re-use that increase the efficiency, decrease piracy and costs per license, as well as transparency in computer security matters."

*Jens Hardings*  
**PUC Computer Sciences Department**

#### 4.2.5 Networks and Security

Advances in technology and network infrastructure, as well as the exchange of information and electronic transactions, present challenges to data security.

Although Chile has made some progress in this area, our network infrastructure must be reinforced in particular in relation to our Internet backbone.

Some priorities in this area are: promotion of electronic signature usage, creation of an early warning group, progressive migration to new internet protocols and adoption of a legal framework adapted to current network requirements.

### 4.3 Development Strategy for the ICT Industry

A group of initiatives to promote and develop the local ICT industry will be developed. These initiatives are aimed at improving the local ICT industry and promoting Chile as a service supplier in this area.



Actions will be carried out to promote the installation of companies that provide technological services from Chile. This work will be directly linked to that done in the context of the off-shoring cluster in the context of the National Policy for Innovation.

Initiatives for the ICT industry should:

- Provide funding mechanisms to support entrepreneur activity.
- Increase competitiveness and productivity of the national ICT sector.
- Increase the comparative advantages of Chile to be a platform for *offshoring* technological business (for example: *Knowledge Process Outsourcing* (KPO), *Business Process Outsourcing* (BPO)).
- Make the most of the comparative advantages of Chile in leading productive sectors worldwide: astronomy, mining, wine production, salmon farming, tourism, amongst others.

A very significant element in ICT development is to promote Chile as an attractive location for foreign companies of this sector to start operations in Chile. A number of companies have started operations in the country thanks to previous promotional efforts done in this area<sup>4</sup>.

"...we suggest considering an associative strategy both between companies that provide products and services and those that form the demand of these in Chile. In this way it is possible to face the challenge of generating an attractive supply abroad"

***Mundo OS. Business Association  
related to Open Source***

This action line will be worked in coordination with the Innovation Strategy that under the charge of the Committee of Ministers for Innovation<sup>5</sup>. It will also require the active participation of domestic and foreign business associations related to the ICT<sup>6</sup> sector.

#### 4.4 Institutional Framework

The institutional framework necessary to ensure the development of digital policies that will have more sustainability over time will be studied.

The strategies that the country has followed for digital development have been led by diverse actors from public sector institutions which, according to the assessment of achievements, revision of successful experiences in the world and in particular, countries whose digital development strategies have been studied more exhaustively, has contributed to the installation of a more developed digital culture.

If the goal is to implant long-term policies, it is important to analyze the need to have an institutional approach to carry out studies, revision of successful experiences, detection of necessities, results assessment, learning systematization and policy creation in a continuous manner, in order to permanently generate initiatives that allow the country to reach the digital development levels necessary to maintain the economic and social development of the country.

The institutional approach for digital development is a relevant factor when analyzing best practices world wide.

<sup>4</sup> Like: Oracle, Tata, Cisco and Delta Airlines, among others.

<sup>5</sup> Formed by Ministers of Economy, Treasury.

<sup>6</sup> ACTI ([www.acti.cl](http://www.acti.cl)), AIE ([www.aie.cl](http://www.aie.cl)), GECHS ([www.gechs.cl](http://www.gechs.cl)), among others.

*"In the mid to long term, we believe that the creation of an institutional approach specialized in technology issues is fundamental, one that concentrates the definition of policies, generates national consensus, manages the resources and instances and in short, an institutionality that transcends a particular political context"*

**Álvaro Portugal**  
**Chairman Software y Servicios Chile**  
**A.G**

## 5 Structure and Organization

Initiatives and projects carried out in recent years are closely related to the position that the country occupies in the international context and achievements in terms of connectivity, access, digital literacy and electronic government, among others. While among Latin American countries Chile is the most advanced, when compared to best practice countries such as New Zealand or Finland, Chile is still lagging behind.

A digital development strategy needs to more actively incorporate the private sector and civil society, since the public sector's effort alone is not enough.

To comply with the aforementioned, the President created the Committee of Ministers for Digital Development and entrusted it with the following tasks:

- 1) The Committee must take the experience accumulated from previous governments' "Digital Agendas" to a new level. For this, they must coordinate the design, implementation and monitoring of the 2007-2010 Digital Strategy as the operational expression of the impact expected by Information and Communication Technology policies.
- 2) The Committee must also coordinate the design and validate Chile's first

Information and Communication Technologies Policy [PTIC in Spanish]. The PTIC's objective is to address social and economic issues arising from advances of information and communication technologies that have not been adequately considered in Chile and/or have proven to be important obstacles for technological development in developed countries.

- 3) The Committee must design and agree upon a National Strategic Information and Communication Technologies Plan [PENTIC, in Spanish].
- 4) The Committee must create an International Advisory Council to advise them. This will consist of global leaders from the private and academic sectors, recognized for their enterprising spirit, innovations and ICT development.

### 5.1 Organization

The institutional approach defined for the implementation of the Digital Development Strategy is shown in the following chart:

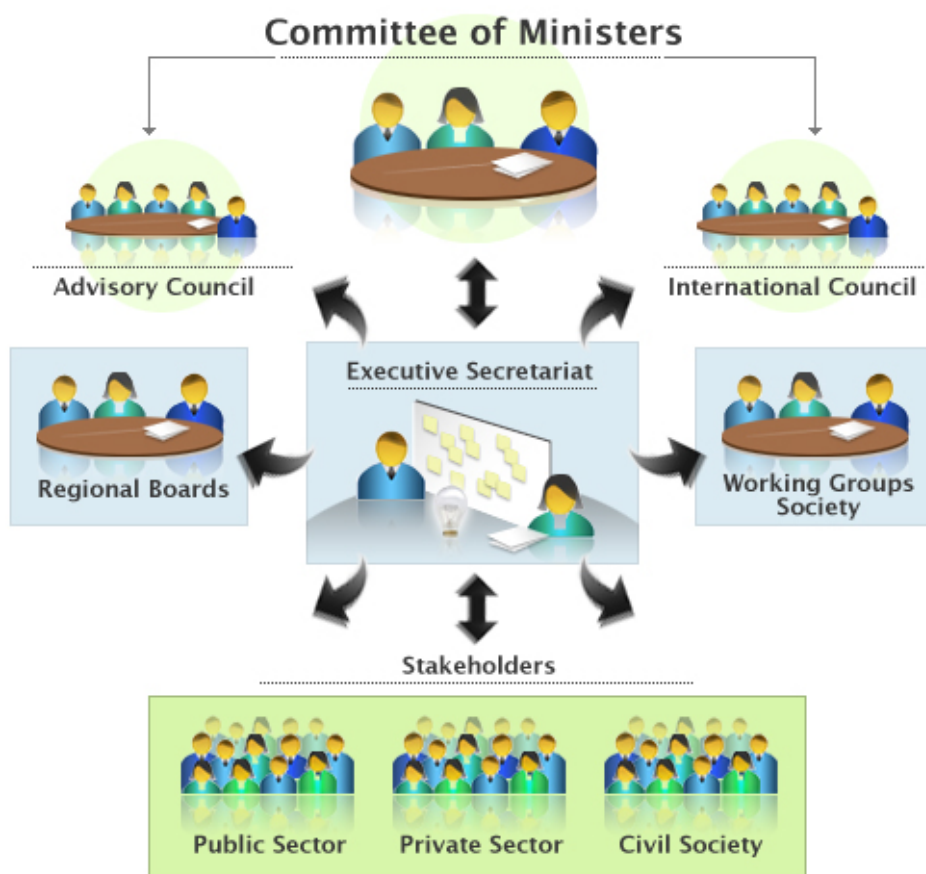


Figure 3: Institutional Approach for the Digital Strategy

### 5.1.1 Committee of Ministers

A group composed by the Ministers of Treasury, Education, General Secretariat of the Presidency, Transport and Telecommunications and Economy, who presides it. The Committee's mandate is the design and follow-up of the Digital Development Strategy, which will be aligned to Chile's political, economic and social priorities.

### 5.1.2 Advisory Council

An instance of generation, discussion and validation of initiatives included in the Digital Strategy; main local players of

digital development will be invited. Members of the first council will be those who can contribute to the design of public policies<sup>7</sup>.

### 5.1.3 International Council

This is the discussion group composed by international ICT experts, which will advise the Committee of Ministers in designing the Strategy, as well as in its development. Relying on the experience of members of this committee, it is expected that best practices and projects in other parts of the world will be considered.

<sup>7</sup> See Annex 3

This council will meet in Chile once a year. On such occasions, workshops will be carried out, where the various Digital Strategy stakeholders will participate. Permanent contact will be held with the Council electronically. The first task of this council will be to review the Digital Strategy Document.

#### 5.1.4 Executive Secretariat

This is the Ministry of Economy's permanent team, charged with the coordination and execution of the initiatives contained in the Digital Strategy and the design of public policies in this area as well as the coordination of the respective working groups.

This secretariat will have an organic structure organized along the lines of action and areas defined by the Digital Development Strategy. It should support and sponsor projects developed in different public and private institutions, as well as to contribute to their design.

It will be formed by delegates associated to the ministries that are part of the committee and a group of project managers whose functions will focus on the design, coordination, implementation and subsequent monitoring of initiatives in each area. This group will be in charge of proposing initiatives to the Committee of Ministers.

## 5.2 Relevant Players

The Executive Secretariat must establish a collaborative work method on the basis on public-private sector working groups which will call upon different relevant experts according to discussion areas to be defined.

#### 5.2.1 Private Sector

This is a key player for digital

development and must take an active role in designing and implementing policies to improve digitalization levels in our country. A coordinated public private effort must be established to advance towards the desired impact. The main partners in this effort will be industry associations and universities.

#### 5.2.2 Civil Society

The strategy for digital development must consider the active participation of civil society, which will play an important role in the generation, discussion and development of initiatives, in order to ensure that these benefit and improve people's quality of life in all of their diversity and richness.

#### 5.2.3 Regional ICT Boards

These were created in 2002 under the guidance of the National Coordination of Info-centers in the Undersecretary of Telecommunications and have been the promotion and participation channels for those involved in ICT development in Chilean territories, and will continue to be the key regional players in the new institutional approach and working structure.

These boards follow a public-private model and are expected to become references for local and regional digital development, defining lines of action related to their local and/or regional development strategies.

#### 5.2.4 Public Sector

The public sector must be present in the different working groups when applicable, in collaboration with the private sector, civil society and/or territories. Also, it must promote and ensure participation in the design, development and implementation of ICT policies and initiatives that it undertakes, in benefit of its defined public and the

role they play in the value chain of public services.

### 5.3 Work Methodology

The work methodology is proposed as a systematic and permanent process in the coordination, design, monitoring and closure of initiatives that make up the Strategy.

The model to be implemented is one in

which the initiatives enter, are developed and come out of the Plan (PENTIC, [National Information and Communications Technology Strategic Plan]) as a function of their evolution, market conditions, technological factors and government priorities.

The following diagram outlines the working methodology that the Executive Secretary will apply:

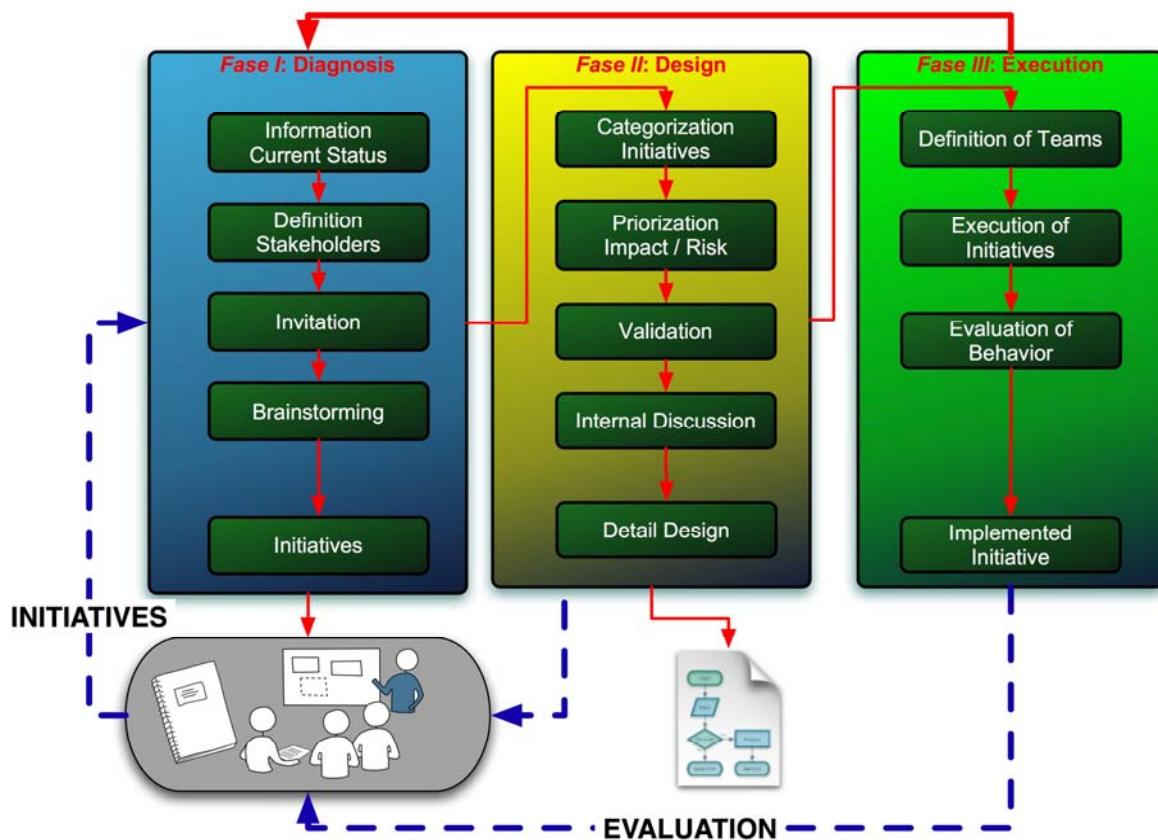


Figure 4: Methodology for the Digital Strategy

The proposed method considers three stages:

#### 1) Phase I: Data Diagnosis

In this phase, the current situation of a determined initiative is assessed, for which working groups are called upon and the

information regarding that subject is analyzed (national and international assessments, best practices, bibliography, technical and economic feasibility).

**Result: Description of the current situation and portfolio of initiatives**



## 2) Phase II: Design

In this phase, an analysis and prioritization of diagnosed initiatives is carried out by the working group. A prioritization model is proposed on the basis of impact and urgency.

Then, a detailed design is carried out. In many cases, this design will be done by the institution called on to operationalize the initiative, in conjunction with other relevant participants. Finally, they propose a project plan with all the elements necessary for execution (design, costs, technical resources, deadlines, roles and responsibilities).

**Result: Prioritized and designed initiatives**

## 3) Phase III: Execution

The corresponding public and private institutions will proceed to implement the initiatives. The role of the Executive Secretary is to monitor the development and fulfillment of the goals and results planned in the design.

If necessary, the Executive Secretary will support their development provided there is availability of the necessary resources and competences.

This process is cyclical in the sense that the outcome of evaluating a particular initiative could mean it will be redesigned, complemented or eliminated.

**Result: Deployed Initiative**

## 4) Phase IV: Evaluation

At this stage every initiative will be evaluated in its different development

phases, its implementation and operation.

Additionally, all the relevant information associated to the development of initiatives will be recorded and organized, thus assuring continuous learning.

**Result: Evaluated and systemized Initiative**

### 5.3.1 Implementation of the Strategy

As previously mentioned, the definition of the 2007-2012 Development Strategy requires the implementation of a plan that implies the operationalization of initiatives that allow the country to fulfill with proposed aims.

A group of projects will be chosen that achieve their goals and show, by the end of 2012, a state of development substantially higher than at present.

A complementary element to the implementation is the working methodology and the necessary organization to undertake it. This will be the responsibility of the Executive Secretariat team.

### 5.3.2 Progress control

The challenges posed need to be faced by all the relevant participants related to each of them. It is necessary to translate these challenges into a group of initiatives, projects and programs that are implemented to reach the proposed goals.

It will be necessary to rely on monitoring tools that measure the progress of activities as well as the achievement of the desired impact.

The concrete expression of the Strategy will be the Strategic Plan (PENTIC), which for each objective to achieve, will comprehend projects, people responsible, deadlines, progress and results indicators and necessary resources.

Every six months the Executive Secretary will submit progress reports to the Committee of Ministers; and, in order to report the development of the strategy to the country, they will present an annual public account.

In order to complete the aforementioned, the Executive Secretariat will implement a Project Management Office that will monitor each initiative. This PMO will rely on internationally validated methodologies.



**Annex 1: Presidential Mandate (transcription)**

[stamp]

**PRESS OF. No.** 001**INF.:** None.**SUBJ.:** Presidential mandate that creates the  
Committee of Ministers for Digital  
Development**SANTIAGO,** 02 FEB. 2007**FROM : PRESIDENT OF THE REPUBLIC**  
**TO : ACCORDING TO DISTRIBUTION**

- I. Chile has had a sustained growth during the last decades as a result of macroeconomic reforms of the eighties and early nineties. However, we have reached a state in which the future growth will increasingly depend on the quality of our microeconomic policies, efficiency and coordination in the public sector, and the capacity to agree on ambitious goals, specific action plans with the private sector, and determined commitment to progress.

There is evidence that shows that the adoption and use of information and communication technologies is responsible to a large extent for economic growth, due to its effect on total factor productivity. Initiatives like the Digital Agenda already implemented have allowed extending the adoption of information and communication technologies, and guarantee their productive impact in Chile. Today, new challenges have to be assumed and take this effort to a higher level.

The trajectory and the results obtained by the leading countries in this matter suggest so. At the beginning of the sixties, Chile had a privileged scenario in comparison to countries like Malaysia, Singapore, South Korea and Japan. Our GDP per capita, in relation to that of the United States, was higher in at least 34% than that of referred countries. Forty years later, the situation is different. While the productivity of our labor, measured by the aforementioned indicator, grew 21.8% between 1960 and 2000, Malaysia's, Japan's, Singapore's and South Korea's grew 174%, 202%, 336%, and 436%, respectively. Countries like Finland, Australia, Israel, New Zealand and Ireland can tell a similar story and are reaping that effort.

The growth of these and other countries, which currently are leaders in competitiveness, has been the result of the combination between long-term impact plans, development of scientific, technological and innovation policies coherent with these plans, and investment in highly-qualified human capital.

Unlike past decades, where we were pioneers in many macroeconomic reforms, we are not alone now. Many developing countries have taken the lead in undertaking technology and innovation as development tools. If we want to maintain and improve our competitiveness, we have to renew our technological policies. Not progressing on this field at the pace of the fastest countries will finally make us go backwards.

Chile will be developed country depends on how we face and build today the future we want to have. This requires short and long term initiatives, and a responsible effort of the country, looking

beyond presidential terms. This requires coordination between public, private, academic participants and citizens. It also requires all the aid we can have from those who have succeeded in different corners of the world, and from those who are building the technological future of our time through innovation.

- II. In virtue of the aforementioned, I have resolved to create the Committee of Ministers for Digital Development, whose objectives, formation, functions and organization are as follows:
1. The main task of this Committee will be to define common lines of action to be assumed by ministries and public services regarding information technology policies.

The tasks of the Committee will be aimed at maximizing economic and social impact of public and private investments in information and communication technologies, taking into account the following directives: (i) private sector's increase of productivity and competitiveness based on the adoption and intensive and sophisticated use of information technology, (ii) creation and encouragement of a new common sense and national culture in information technology, (iii) promotion of a new digital, high quality and integrated government, and (iv) increase of intensity and sophistication in the use of information technology by students and civil society in general.

2. Specifically, the Committee will have the following initial objectives:
  - a. The committee must take the experience accumulated from the Digital Agendas of previous governments to a new level. For this, they will have to coordinate the design, implementation and monitoring of the Digital Agenda 2007-2010 (Digital Agenda 2.0) as the operative expression of the impact searched by Information and Communication Technology Policies.
  - b. The Committee will also have to coordinate the design and sanction the first Information and Communication Technology Policy [PTIC in Spanish]. PTIC's objective is to address social and economic problems arising from the progress of the information and communication technologies that (i) have not been adequately considered in Chile and/or (ii) have proven to be significant obstacles for technological development in developed countries. Some examples are problems arising from ambiguities regarding privacy and security of personal digital data, and digital payment means, among others.
  - c. Design and agree on a National Information and Communication Technology Strategic Plan [PENTIC, in Spanish];
  - d. Create, operate and serve as a counterpart for an International Advisory Council, consisting of world leaders of private and academia, known for their enterprising spirit, innovations and development of information and communication technologies. The Committee will have to propose a functioning structure for this Council by the end of March 2007.
3. The Committee is integrated by:
  - The Minister of Economy, who will chair it.
  - The Minister of Finance.
  - The Minister of Transportation and Telecommunications.
  - The Minister of Education.
  - The General Secretariat Minister of the Presidency

In case a minister is absent, she/he will be subrogated by the corresponding under-secretary.

4. The Committee will have an Executive Secretary, who will be appointed by the Minister of Economy.

The Executive Secretary will have a Technical Secretariat, who will be in charge of the ICT Division at the Ministry of Economy. This division will act as technical and operational support, and will be in charge of coordinating the design, implementation and monitoring of initiatives of the Committee.

5. The Minister Committee will session when invited by its President or at the request of another member.
6. The Committee of Ministers will create special thematic groups that will interact with representatives of private and academic sectors, and the civil society for each action area (Digital Agenda 2.0, Information Technology Policies, etc.).
7. The Committee will report its actions, progress and challenges to the President of the Republic during the first week of April and the first week of October of every year.
8. The Committee will finish its functions once the President of the Republic considers that an institution that guarantees long-term PENTIC sustainability has been reached.
9. Authorities and directors of organizations of State will collaborate with the Committee within the scope of their functions.

Yours sincerely,

[stamp/signed]

**MICHELLE BACHELET**  
President of the Republic

DISTRIBUTION:

1. Minister of Finance.
2. General Secretariat Minister of the Presidency
3. Minister of Economy, Development and Reconstruction
4. Minister of Education
5. Minister of Transportation and Telecommunications.
6. Subsecretariat of Economy
7. (LD) MINSEGPRES [Ministry General Secretariat of the Presidency]
8. MINSEGPRES' Registry office

## Annex 2: Chile and the ICT Context

A way to examine the status of Chile's digital development is to look at the results obtained by international studies on this matter. They are periodically carried out to rank levels of digital development and evaluate different countries. From results of several studies, lessons can be obtained for the design of the strategy and action areas that need work today.

An important reference on information and communication technologies (ICT) is the ranking carried out by the World Economic Forum (WEF)<sup>8</sup> in the *Network Readiness Index* (NRI)<sup>9</sup>, which determines the level of preparation of a country to participate and profit from the incorporation of ICT in different fields of society.

The NRI is calculated on the basis of three sub-indicators that measure the environment to implement ICT in a country, the preparation of a community to use ICT (individuals, business and government) and the level of use of ICT by these participants. In turn, these sub-indicators are divided in others of lesser hierarchy.

Table No. 1 shows the last WEF report (2006-2007) on ICT. Considering 122 countries, Chile was ranked 31, being the top ranked country in Latin America.

Networked Readiness Index 2006-2007	Rank
<b>Chile</b>	<b>31</b>
<b>A. Environment</b>	<b>34</b>
1. Market	30
2. Regulations	33
3. Infrastructure	49
<b>B. Capacities and Competence</b>	<b>33</b>
1. Individuals	60
2. Business	32
3. Government	18
<b>C. Use</b>	<b>33</b>
1. Individuals	46
2. Business	29
3. Government	11

Source: WEF

The analysis of results allows visualizing the Government as the most prepared participant (18<sup>th</sup> place) and the one who uses the ICT the most (11<sup>th</sup> place) in the country. Regarding the environment, the necessary infrastructure for ICT development and use, Chile is still lagging behind.

When looking at the aforementioned sub-indexes in detail, availability of online state services (9<sup>th</sup> place) and ICT efficiency use (4<sup>th</sup> place) are shown as the most advanced

<sup>8</sup> WEF, World Economic Forum

<sup>9</sup> <http://www.weforum.org/en/initiatives/gcp/Global%20Information%20Technology%20Report/index.htm>

areas. Whereas, quality of public education (102<sup>nd</sup> place) and math teaching and science (100<sup>th</sup> place) are the less developed areas.

Another reference on this matter is the ranking prepared by The Economist's Intelligence Unit (*e-readiness ranking*<sup>10</sup>). This ranking measures readiness and preparedness of people, businesses and the State of a country to effectively take advantage of ICT.

The ranking considers around 100 quantitative and qualitative variables organized in six categories: technological connectivity and infrastructure; business environment; social and cultural environment; legal framework; public policy and ICT use on the part of consumers and companies.

For 2007, over a total of 69 countries (developed and developing countries), Chile was ranked 30<sup>th</sup>, with a global index of 6.47 (index value between 1-10). In Latin America, Chile is still the best ranked country, followed by Mexico (38<sup>th</sup> place; index 5.86), Brazil (43<sup>rd</sup> place; index 5.45), and Argentina (44<sup>th</sup> place; index 5.40). On the other hand, we are beneath countries like Finland and New Zealand, countries of similar sizes and characteristics a few years ago.

Table No. 2 shows the evaluation obtained by our country, the best evaluated countries and the Latin American countries that follow.

**Table No.2: E-Readiness Ranking**

country	Connectivity and Infrastructure	Business Environment	Social and Cultural Environment	Legal Environment	Public Policies	Use consumers and companies	Global Index
Denmark	8.4	8.7	8.6	8.5	9.9	9.2	8.9
Sweden	8.6	8.4	8.2	8.5	9.7	9.4	8.9
U.S.A.	8.1	8.6	8.8	9.0	9.0	9.5	8.9
UK	8.3	8.7	7.8	8.5	8.7	9.3	8.6
Finland	7.8	8.7	7.8	8.3	9.0	8.9	8.4
Norway	7.3	8.0	8.2	8.3	9.4	8.9	8.4
N. Zealand	7.3	8.2	8.2	8.9	8.4	8.5	8.2
Japan	7.5	7.2	8.0	8.0	9.1	8.3	8.0
Germany	7.1	8.3	8.2	8.3	7.9	8.5	8.0
Ireland	6.8	8.6	7.8	8.5	7.5	8.3	7.9
Spain	6.7	7.8	7.0	8.0	7.3	7.4	7.3
Chile	4.6	8.0	6.2	8.0	6.8	6.4	6.5
Mexico	3.6	7.1	5.2	7.4	6.8	6.2	5.9
Brazil	3.1	6.9	5.6	7.4	6.1	5.2	5.5
Argentina	4.0	6.2	5.6	7.2	5.4	5.2	5.4

Source: The Economist "E-readiness ranking"

Although Chile is the best ranked country in Latin America, there are variables that still are further below than those of more developed countries. Specially in connectivity and infrastructure.

These international evaluations reveal the need to advance digital development to reach a closer position to referential countries, such as Finland and New Zealand, in their processes of economic and social development, and allow to compare, at least from an external point of view, which areas need more work.

<sup>10</sup> <http://www.eiu.com/index.asp>

Additionally, there is a background of previous projects and initiatives where to look for lessons around digital development of the country.

### **Achievements and Lessons**

The digital development of the country is also evaluated by means of results obtained in the execution of initiatives developed in previous years. Among this is the evaluation of the digital agenda 1.0<sup>11</sup>.

Some concrete results and achievements, which are the base on which the new strategy will be built, are:

#### **1. *Connectivity and access***

- 1,095,000 Internet connections in the country
- 976 thousand people digitally trained between 2003 and 2006
- 68% of the business with connectivity
- Internet Access in households: 89% ABC1, 62% C2, 35% C3 y 16% D<sup>12</sup>
- Network of 776 info-centers along the country

#### **2. *Education***

- 4,845 schools connected to broadband during 2006
- Broadband for 670 rural schools along the country
- 9,696 schools with access to ICT, which represent 96% of students
- 29 students per Computer.
- 109,163 teachers trained in the use of ICT

#### **3. *Electronic Government*<sup>13</sup>**

- 420 on-line transaction types.
- 71 business proceedings online

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<sup>11</sup> State-of-the-art Digital Agenda, Ministry of Economy, March 2006, National Capacities for ICT use in the Educational Field, Ministries of Education and Economy, 2006, and ICT in Chilean Companies, Ministry of Economy, December 2006.

<sup>12</sup> Annual Digital Generation Index, Adimark, VTR and EducarChile, 2006 (A, B, C1, C2, C3, D and E are socioeconomic characterization strata, being 'A' highest income)

<sup>13</sup> Electronic Government in Chile: State of the Art: [www.modernizacion.cl/1350/articles-100163\\_Libro\\_EGob\\_2005.pdf](http://www.modernizacion.cl/1350/articles-100163_Libro_EGob_2005.pdf)

- All public services and municipalities procure on-line; 35% of the market provided by smaller companies and a total of USD3.466 million transacted in 2006.
- 98% of annual income tax statements is submitted online, and 96% of taxpayers issue electronic invoices for professional services.

#### ***4. Development of the ICT Industry***

- 50 companies hold an ISO and CMM Certification or are in the process of being certified.
- Overseas missions to promote Chile as location for off-shoring services.

## **Annex 3: Members of the Advisory Council**

The current members are:

- Director of Computer Sciences Department, School of Engineering, Universidad de Chile
- Dean of Engineering, Universidad Adolfo Ibañez
- Director of Computer Engineering, School of Engineering, Universidad de Santiago de Chile
- Director of Computer Engineering, School of Engineering, Universidad Católica
- Director of Institute of Educational ICT of Universidad de la Frontera
- Director of Engineering School, Universidad Técnica Federico Santa María
- Director of Engineering School, Universidad de Concepción
- Association of Engineers of Chile
- Chairman of Internet Provider Association [API, in Spanish]
- Chairman of Fundación Chile (a quasi public promotion institution)
- Chairman of ACTI [Chilean Association of ICT Companies]
- Chairman of GECHS A.G. [Software and. Service Association of Chile]
- Chairman of SOFOFA [Federation of Chilean Industry]
- CPC [Confederation for Production and Commerce]
- CONUPIA [National Confederation for the Medium, Small, and Microindustry, Services and Handcrafts]
- Department of Computer Engineering of Regional Universities
- Chairman of Fundación País Digital
- General Manager of Chamber of Commerce of Santiago
- Chairman of Science and Technology Commission - Chamber of Deputies
- Chairman of Science and Technology Commission - Senate
- Judicial Branch (Administrative Corporation of the Judicial Branch)
- General Auditing Office of the Republic
- Chairman of the Chilean Association of Municipalities
- Members of the Chilean Society of Computer Sciences
- NGO of Civil Society