



Government of Andorra

WHITE PAPER

The challenge of the information society

Action Plan to ease Andorra's transition to the
information age

I. Introduction

1. Presentation

The process of economic, social and political change that the world —and especially Europe— is experiencing at present is profound and implies new challenges for our society as well as opportunities and dangers. Information plays a crucial role in this process. The new technologies and the new information and communication systems are forging a new information society, which will have a significant impact on relationships between individuals, groups and countries.

The fields in which this change is most noticeable are those of communications and computerisation. In the course of the last twenty years, the capacity to store data has multiplied by twenty thousand times; the use of fibre optics in data transmission has increased working speeds by two hundred thousand times in the same two decades. Digitization of signals and new information and communications technology have made it possible for television, the telephone and computers to share the same input line and —thanks to the new techniques of signal compression— that line can carry a vastly increased volume of data.

We are just beginning to see the possibilities deriving from this transformation, with applications in such fields as education and culture, work and the working environment, relations between government and the citizen etc.

In order to try to measure the range of these changes, some countries, communities and international organisations have engaged in some reflections on the impact of the new technologies on the society of the future. Following the same line, the Government, with the participation of the Communes and representatives from the public and private sectors, has

prompted a process of reflection on the opportunities and threats for Andorra in the light of these new circumstances. To study and focus this future is a task that requires an open reflection on the part of the experts and leaders in public life, but, above all, this is something that the citizen himself in his own particular sphere must also do.

With this objective a working group was formed, with representatives from the institutions and the public and private sectors, and it was this group that worked on the conclusions set out in this White Paper. This publication is designed to serve as support tool for all those persons, entities and institutions who in the near future must take decisions relating to the use of the new technologies.

Those in positions of political power must work towards a position where access to the new technologies and the new information and communications services is made available on the basis of equal opportunity for all, so that the advent of the information society can be a progressive factor for the whole of our society. This development has to be effected in conformity with the principles of independence, human rights, and pluralism contained in Article 10 of the European Convention on Human Rights, with special emphasis in respect of cultural diversity.

The Government of Andorra wishes to give emphatic support to the proposals contained in this White Paper because, in collaboration with initiatives taken by other institutions and the private sector, they can form the basis for easing Andorra's transition to the new information age.

2. Organization and development of the project

Objective

The White Paper must serve to sensitise our society to the fact that we are at the beginning of a huge transformation, in which technology and digital information will converge to configure a completely new economy affecting practically every aspect of our daily lives.

The publication contains a strategic overview of the impact of new technologies on different aspects of our society, with

especial regard for the ways in which these will affect the way we work, learn and use leisure time. It includes concrete proposals for developing the objectives identified, which imply a concerted effort on the part of the public and private sectors.

Structure

The White Paper has been structured around five principal concerns, which are

- **Education:** To promote training in Andorra which will provide all the skills necessary for our development in the information age and to use the new technology as an education tool.
- **Commerce, services and teleworking:** To ensure that society benefits from the advantages of the information age at a work level and to promote our country's presence on the information highway.
- **Infrastructures:** To develop the infrastructures necessary for the implantation of the information highway, at the same time as guaranteeing universal, easy, affordable and rapid access to it.
- **Supply of public services:** To make sure that the interface with the Government is easier, by using these new technologies in the supply of public services. To study the new ways in which citizens can better participate in public affairs.
- **Legislation and follow-up of the White Paper:** To identify the necessary legislation implied and to define the measures necessary from the Administration to bring into effect those projects and to achieve a high degree of coordination.

Organization

The White Paper project: The challenge of the information society: Action plan for assisting Andorran society's transition to the information age, was structured using various organs with different responsibilities:

Presidency

The project was presided over by the Head of the Government and by the Minister in the Office of the Head of Government.

Co-ordination

The coordinator of the project was Mr. Daniel Bastida. His principal function was to manage the development of the project and achieve its objectives, directing the support team up to the finalization of the White Paper.

Technical Supervision

The consultant to the project, especially in terms of strategy and the implications concerning the European Union, was Mr. Joan Majó, who has great experience in this field. Also working as an external consultant on the project was Mr. Antoni Bravo, who has extensive experience in this field of consultancy.

Working Group

The Working Group was made up of people with experience in the different themes of the White Paper. The composition of the group was relatively open, to allow the incorporation of additional members as a function of the subjects discussed.

The Working Group was made up from representatives of the Government, the Council/General, the Communes and professionals from the public and private sectors.

The participation of the members of the Working Group can be described as highly active, exposing their ideas and opinions on the agenda for discussion and comparing them with those of the other members. From these exchanges, conclusions were hammered out in each session and have formed the basis of this White Paper.

In addition, professionals from outside Andorra participated in the Working Group sessions and brought their particular experience to bear on various aspects of the project.

Development

In its development, the project was structured in the following work modules:

Compilation of information

Compilation of information, internally from Andorra and from other countries, of the themes studied.

Working Sessions

There were seven half-day working sessions each attended by the members of the Working Group. There was an initial session, which was taken up with the presentation of the outline project, of its objectives, and how the project was to function; five sessions during which the main themes of the project were dealt with and a final meeting which served to synthesize the whole project.

Complementary Studies

The project management team coordinated comparisons and specific complementary studies. There were also specialized meetings held with public and private organizations and entities to explain the project and so that they could add their ideas.

Prior Presentations

There were a series of meetings held with different interested parties prior to publication in order to present the conclusions of the White Paper and to assess their views.

Final Report

The last stage was the drafting of the conclusions and final recommendations on the basis of the work undertaken. It has been published in the form of a booklet, a CD-ROM and over the Internet.

Follow-up

This publication is the result of some initial reflections that, given the nature of the subject, have a dynamic content that must be brought up to date continually in the future.

3. Persons who have collaborated in the preparation of the White Paper

The persons who have collaborated in the preparation of the White Paper, participating in some of the meetings as members of the Working Group, as speakers or as assistants, were the following:

M.I. Sr. Marc Forné
M.I. Sr. Estanislau Sangrà
M.I. Sr. Enric Casadevall
M.I. Sr. Josep Garrallà
M.I. Sra. Carme Sala
M.I. Sr. Vicenç Alay
M.I. Sr. Francesc Bonet
M.I. Sr. Vicenç Mateu
M.I. Sr. Enric Tarrado
Hble. Sr. Pere Joan Tomàs
Sr. Alfref Alcón
Sr. Antoni Aleix
Sr. Josep Arasanz
Sr. Daniel Bastida
Sra. Roser Bastida
Sr. Alexander Beening
Sr. Frederic Borràs
Sr. Jaume Bousquets
Sr. Antoni Bravo
Sra. Estela Canturri
Sr. Salvador Capdevila
Sr. Antoni Carmona
Sr. Enric Castellet
Sr. Ramon Cereza
Sr. Jordi Clua
Sr. Santi Codolà
Sr. Raimundo Cornet
Sr. Màxim del Valle
Sr. Josep Delgado
Sr. Marc Dubuffet
Sra. Pilar Escaler

Sr. Lluís Furnells
Sr. Joan Gonfaus
Sra. Françoise Gri
Sra. Montse Guerrero
Sr. Carles Guilemany
Sr. Santiago Guillén Fernández
Sr. Santiago Guillén Sánchez
Sr. Xavier Iriarte
Sr. Peter Jennings
Sr. Xavier Jiménez
Sr. Josep Jover
Sr. Jean-Hugues Lauret
Sr. Jordi Llovera
Sr. Joan Majó
Sra. Elisenda Malaret
Sr. Agustí Marfany
Sr. Jordi Marquet
Sr. Orlando Murias
Sra. Elisa Muxella
Sr. Enric Naudi
Sr. Lluís Olivella
Sr. Fred Olte
Sr. Xavier Palacios
Sr. David Palmitjavila
Sr. Jordi Pascal
Sr. Joan Manel Pérez
Sr. Ramon Pla
Sr. Manuel Pujadas
Sr. Joan Pujal
Sr. Ramon Reguant
Sr. Gil Riba
Sr. Òscar Ribas
Sr. Bonaventura Riberaygua
Sr. Xavier Ritort
Sr. Ricard Rodrigo
Sr. Joan Ros
Sr. Marta Rotés
Sr. Frederic Sabrià
Sr. Claudi Sala

Sra. Meritxell Samarra
Sr. Esteve Santallucia
Sr. Josep Segura
Sra. Anna Serra
Sr. Jesús Soler
Sr. Marc Subies
Sra. M. Àngels Tarrés
Sr. Joan Torres
Sr. Lluís Triquell
Sr. Ramon Tudel
Sr. Henry Vincent
Sr. Ferran Virgós

II. Justification and Strategic Vision

1. The global crisis and perspectives for the future of Andorra

In the last, dwindling months of the 20th century, Andorra, like other developed societies, is at an important crossroads. The working group sessions for the preparation of the White Paper confirmed and highlighted this feeling within our society. The economic fundamentals that have supported Andorran prosperity in the last few decades now need complementing with new spheres of activity in order to sustain and guarantee our future prosperity. Furthermore, we should recognise that the political and economic changes happening in surrounding countries, oblige us to pose ourselves some questions.

All this introspection is happening just as the winds of change, of crisis even, are much more pronounced and affect not only Europe but also the whole world. It has often been said that there are two fundamental elements that explain this: globalisation and technological change. In other words we are going from a fragmented industrial society to a global information society.

For Andorra, the key is to know how to profit from the opportunities that the arrival of the information age brings. To allow these opportunities to pass unheeded and not to profit from them would be a grave error and could mean the country being exposed only to the negative elements of change, which is precisely what it is hoped to avoid. On the contrary, what is necessary is to build the future with the tools that technological change affords us.

2. From the industrial society to the information society

Why do we talk about the information society, which some — only scratching the surface— call the digital society and which would probably better be called the knowledge society? Is it sure that we are witnessing the start of a radical process of transformation that supposes a complete change for society?

The reply to these questions is positive. This can be seen from a cursory examination of current fact and an analysis of the consequences that affect every aspect of our daily lives.

The huge leaps in technological progress in the field of microelectronics, in fibre optics and satellite systems —to mention but a few— have an appreciable economic effect in the practical disappearance of unit costs in all the elements necessary in the processing, storing and distribution of information. Today we have the capability, at minimal cost, to process incredible quantities of information, to store it in a tiny space and to send it instantly to any point on the globe or even into space. The barriers of volume, time and distance to the availability of information have gone.

The possibility of using digital code to transmit whatsoever type of information, whether one is talking of numbers, sound, text or pictures makes for a completely new environment. Since we know how to digitise —that is to say convert into numbers— any information, be it written, spoken or visual, we have already arrived at the point where separate dedicated distribution systems for each are unnecessary. Soon, there won't be telephones or televisions or computers but an apparatus that does a bit of everything... and telephone conversations will not arrive by a different cable to that used for televised images.

This unification of coding supposes a convergence in all the different existing technologies – printing, photography and electronics – and implies the disappearance of the barriers which have separated —and at present still do— such apparently diverse industries as publishing, film production, telecommunications, television broadcasting and computing. This will cause a startling —and possibly dangerous— concentration of businesses and the appearance of new products and services.

This double phenomenon of cost reduction and concentration coincides with a political era of liberalization that supposes the disappearance of public monopolies and the liberty for the private sector to compete. Furthermore, in the case of Europe, this coincides with the disappearance of frontiers and the possibility that business can extend its area of operations to the whole of the Union at least.

The intertwining of all these phenomena makes for a situation where it is easy to understand the revolutionary consequences for the information market. Many of the positioning moves and the turf battles that we are seeing currently are just a foretaste of the total reorganisation of the sector.

We are entering a world in which information will be overabundant and cheap (our principal problem will not be the lack of information but an excess of information – a new way of being uninformed). We are entering a world in which information, or knowledge, will substitute other current elements in our lives. Instead of moving people we will move information; instead of consuming materials or energy, businesses will more and more replace work with technology—which is no more than a type of knowledge—which we will learn without the necessity of someone being there to teach us.

This capacity for knowledge to allow us to save energy, or materials, or labor, will prove extraordinarily positive in dealing with the difficulties that we have at present in maintaining balance in the environment, but at the same time it can cause serious problems—as it is now—by reducing the amount of work necessary for the correct functioning of the economy. The latter complication is certain if we do not recognize that the modern economy demands less work and more technology, that is to say less work of one kind and more work of another kind, since technology needs people, but trained differently.

It will be a world where people could become useless or marginalised, not because they are less valid, but because they do not have the necessary skills and training that the new environment demands.

It will be a world where, for some, the capacity to access the information highway, as much as to receive information from it as to influence the content which circulates around it, will become central to their quality of life and for others will

become a source of power. A world, which will create a new group of marginalised people: those who are geographically challenged, who have less economic resources or who do not have the cultural capacity to access information and to transform it into useful skills. Such marginalisation will not only affect certain individuals or groups of people, but whole peoples; those who fail to keep up and those who are not sufficiently prepared to enjoy and utilize all this new non-material wealth.

In the face of this challenge, people and government must prepare. Together they must ensure that the citizen of the future has the adequate technical and cultural skills (a problem of education); that the business environment shall encourage initiatives directed at engaging in the new disciplines (the problem of the business sector); that one has all the necessary technological means that allow access (the problem of infrastructures); and lastly that the public authorities make sure that they create an administrative (public services) and judicial (legislation) environment which assists not hinders the transition.

3. A White Paper for the challenge ahead.

In the face of these perspectives, the Andorran Government has taken the initiative in promoting the publication of this White Paper.

But, this is not the Government's book. Neither is it a book produced by a group of experts. There have indeed been a number of people from inside and outside the country who, by virtue of their specific professional knowledge and in responding to the request of the Government, have made the publication possible. But they are not the real authors of the White Paper. This White Paper is, above all, the result of the profound reflections of a great number of ordinary citizens, representing all walks of Andorran society, who during six months have been concerned to debate the future orientation of their country.

It is a book that comes from society, addressed to society in general. The White Paper makes recommendations directed at the Government, but also proposes actions that are not within the province of government to put into effect and which

are more the responsibility of other institutions and entities in the country, both in the public and private sectors. This White Paper addresses them also.

But most of all, the White Paper is directed at Andorran society in general in order to make them aware of the task ahead, of the possible perils and of the possibilities that the new age offers. Without such awareness, without an adequate response from society, the efforts of this or that institution serve no purpose.

The White Paper, we have already said, is the fruit of an analysis of a current problem. An analysis that is open and frank and does not shy away from some delicate subjects. The White Paper includes the principal themes discussed in the working sessions.

The analysis has led to a vision of the future of Andorra in the context of the new technologies. The White Paper proposes a series of actions. These proposals form the fundamental nucleus of this book – the operative template. For the sake of clarity and to make it easier to follow it has been classified into various different Programmes, each with their suggested Actions.

4. Strategic orientations

Before entering into the detail of the programmes and the actions, some of the grand strategic premises —that is to say, the fundamentals of this vision of the future— that support them must be explained in a very general way.

The information age makes frontiers disappear and brings communities together. Andorra has to combine the particularities and advantages of a small and different country with a rapprochement towards the international community.

Andorra must obtain the maximum profit possible from its extraordinary natural patrimony. It must protect it and offer it to people from other countries for non-destructive use.

Andorra has to combine its natural environment with strongly creative economic activities, which can be appreciated for their quality rather than merely for their price.

Being a citizen of Andorra has to be synonymous with being well trained, open to the world and having a solid intellectual preparation for the needs of modern technology.

Living in Andorra has to allow for compatibility between the peace and tranquillity of the environment and the feeling of being perfectly connected with the power centres and economic activity of the whole of Europe.

A visit to Andorra has to offer the possibility of enjoying activities associated with the natural environment at the same time as finding that business and, above all, services can offer the very highest quality.

The challenge of preparing ourselves for the new society lies in education and it is here that we have to make the greatest efforts. These efforts must also continue on throughout adulthood, not only so as to assist those people who did not have the opportunities when they were younger but also to make sure that they are always up to date throughout their lives.

Only in an environment that encourages innovative personal initiative can private investment develop and achieve the new model that this book defines and thus it is the responsibility of the public sector to ensure that we have the legal and cultural environment that permits this.

The pace at which real demand grows must not be allowed to condition the quality and quantity of infrastructures and collective policy should be directed so that the supply of communications infrastructures leads the way in creating demand, thereby encouraging its consolidation.

Public administration has to adopt the role of pioneer in the use of the new media and the provision of new services, thus improving services for the citizen and for commerce, and has to encourage the introduction of all these novelties as much in the commercial sector as in our personal lives.

Finally, it is vital that there is urgent action in the legislative field concerning the communications sector and that the Government has to put in practice a programme of promotion and all-round on-going support for all the actions proposed.

5. Dangers

The White Paper proposes a series of actions. The public institutions must decide which of these to put into effect. Private institutions must do the same.

It is worth now drawing attention to certain dangers, in order to avoid that this White Paper remains just that, a White Paper. A lot of goodwill, effort and enthusiasm, already shown by the group, is still necessary so that instead of this book gathering dust on a library shelf it becomes an operative template.

This could still happen if the Book fails to stimulate important sectors in the Andorran community into making these proposals a common goal; this requires a great effort to publicise the goals and to convince them of their worth.

This could also happen if the public sector initiatives were not to have the necessary single-mindedness and continuity. The Government must adopt measures that show, in terms of political will and resources, a long-term perspective and it is important that all public administrations act jointly and in a concerted manner.

The worst danger would be that we focus such actions with excessive technological optimism, as if technology of itself could solve all the problems without the necessary changes in mentality and capacity for personal or collective initiative. Technology is there to be used, to be researched, but one must never forget that it is just a tool. Technology holds the answers to many problems, but we must be absolutely sure that we know what the problems are, that we need to resolve.

III. Programs and Actions

The chapter on Programs and Actions in the White Paper contains the proposals for Actions and each sub-section (e.g. A. Education) is structured on two levels: Programs and Actions.

Programs

These are the big themes of the White Paper. Each program can include one or more recommended Actions (e.g. A.2. Computers in school)

Actions

These are the individual projects within each Program. These are much more specific and can be followed individually. (E.g. A.2.1. Initiate the Internet project for schools).

A. Education

Many of today's concepts in education will become obsolete with the creative incorporation of the new information technologies.

Dynamic content

In recent centuries the book has been the basic support for teachers and students, but we are experiencing a transition to the digitization of content, where information exists in electronic form on a huge range of subjects and which can be brought up to date dynamically. Anyone can become a publisher and publish the result of his research very cheaply, making the details available globally or within a defined community. The information available is much greater and fresher and it can be viewed from a more or less global perspective in any part of the world. The use of multimedia facilities can also allow information to be accessed from new perspectives. It will be possible to personalize at an individual level any information for study purposes, optimizing the process of information research and facilitating the assimilation of knowledge by means of audio-visual equipment.

Role of the student and the teacher

The roles of student and teacher will become ever more interchangeable. The fact that students and teachers can be connected interactively with each other will make it possible for students to learn from teachers and in a reciprocal manner teachers can be enriched by the input from their pupils and of other teachers with a global perspective. In fact the traditional role of the omnipresent teacher will be transformed into that of tutor or guide.

Training during the whole of one's life

Training will no longer be something that one undergoes at a specific time in one's life, but will extend throughout one's life and access to this training will be much easier and attractive than with traditional methods.

We will be able to interchange the roles of student and teacher in the specific subjects that interest us personally or professionally. We can each bring our own experiences and investigations to those who want to learn about them and at the same time enjoy other specialist training in those subjects which interest us further.

Global community

Schools will not need to be limited to local and physical space. The student/teacher relationship will be global. Thus it will be possible to follow specialist courses in schools and universities at a distance, but at the same time one will be able to enjoy all the advantages, thanks to the new technologies, of the traditional educational methodology. The student will have the option of choosing the best teachers and content in the particular subject that he wishes to study and, at the same time, the teacher will be able to enjoy having a student community that is not restricted to his local environment – indeed, his pupils could be based world-wide. The classroom, the school and the campus will become virtual concepts and completely flexible. People will choose the moment and the place (at home, at work) in which they wish to educate themselves. In spite of this, it will still be imperative that some supervisory component exists in the form of meetings, round table discussions, conferences etc.

All these elements are bound to bring a great deal of enrichment, both from the possibilities afforded and from the quality of the teaching. Training will become a permanent part of our lives and the incorporation—in a creative and innovative form—of the new media, will make certain that the education sector retains its fundamental role in the society of the future.

1. Sensitizing and training the teacher

The most important individual element for success in the use of the new technologies in schools is that of the sensitizing and training of teachers.

The very nature of these technologies (computing, telecommunication) makes for a highly dynamic environment and requires – apart from the initial investment – a considerable effort in getting up to date, which is difficult. One should also add that in many cases the students are more familiarized in the use of these tools than are the teachers. It is for these reasons that it is of the utmost importance that teachers be made aware of the effect that these technological resources have on teaching methods and of their incidence in almost every aspect of daily life.

Today, the new technologies make available much more information than in the past. We will live – in fact are now living – with an oversupply of information. We must therefore place a continuing and growing emphasis on orientating the traditional figure of the teacher to acting more as a tutor or guide in facilitating research via the new technologies.

To support this strategy, a series of actions is proposed to provide the elements of incentive, motivation, training and access skills to all teachers.

1. Improve the training of teachers

To complement the current program of training for teachers in the use of computer tools, the scope must be increased to provide courses on specific software familiarization, on Internet publishing, on local networks and basic telecommunications subjects.

It will be necessary to issue course certificates for each training program. These certificates must be recognized by schools and should have an influence on promotions. There must also be a study made of the minimum acceptable number of hours of training in the new technologies.

Within the present curriculum of Andorran studies (Catalan, History, Geography, Institutional studies) which is coordinated by the Ministry of Education, Youth and Sports, elements concerning new technologies and

multimedia should be introduced. This will have the effect of actively promoting the use of these technologies in courses, which are part of the general education for all.

Training in these skills must also be promoted in the Summer School program as a complement to specific courses that are in the general curriculum and used during the school year.

The Ministry through its education services section has a key role to play in promoting this training.

2. Offer microcomputers at low cost to teachers

The best way of promoting the use of computing tools in teaching is by making access easier out of school. Therefore, a plan for offering special terms for the purchase or renewal of computer equipment to teachers must be put in place. Local businesses in the sector must be encouraged to make their offers extremely attractive.

A study could be made of whether it is possible to offer a subsidy on certain components as a function of the amount of educational material supplied in digital form by the teacher and the level of utilization of the new technologies in his teaching.

At the same time, access to school resources out of hours must be made easier for all students including remote access via the network.

3. Develop a pilot teleworking project

Information technology converts the world into a global village; Thanks to its application, it is possible to develop concepts such as teleworking, which can provide a new and different way of working for teaching professionals, allowing them to do part of their work with total liberty of movement and better optimization of resources.

The best way forward is forward. To this end, we propose the setting up, in experimental form, a pilot teleworking project for teachers, in order that they may understand another's (specially selected) courses and how some other teachers work.

This project could act as a showcase for the advantages of teleworking in an educational environment and at the

same time serve as a test to assess associated problems.

4. Organize seminars on the new educational technologies

As a continuation of the Government initiative of 1984, we propose organizing seminars on the new educational technologies. These could be annual, directed at teachers from within the country and also from outside.

The object of the exercise will be to promote, in a general sense, the use of the new technologies in the world of education. The participation of teachers who can communicate their own experiences in the field can serve to stimulate development of projects within Andorra.

2. Computers in schools

The year 1985 saw the introduction of the Schools Computer Project, with the fundamental objective of promoting the use of computers as work tools for students. Today, we can say that on balance the result of the project is satisfactory, since it has allowed practically the whole of the school population to familiarize themselves with computers.

It is now time to give a fresh impulse to the Schools Computer Project. It is absolutely certain that tomorrow's world will be a digital one, with a strong presence of computers and telecommunications at all levels of daily life. The television and the computer will be one single unit, present in every home, in every business and, obviously, in schools. They will be as easy to use as televisions are today and will be connected to a worldwide network (an extension of what is now the Internet).

In the same way as throughout this last century it has been necessary to familiarize citizens of the developed world with how to deal with the motor vehicle, it is now even more important to make sure that our students are capable of using these new digital tools.

1. Initiate Project Internet at school

It behoves the Ministry of Education, Youth and Sports, to set up a new Internet project in schools, to complement the existing Computers in Schools project. The principal goal will be to encourage the use of the Internet by students. Thus, all schools must be connected to the Internet during 1998.

To achieve generalized access for all schools the cost barrier to connection must be eliminated and a special tariff must be set up, along with a study made on how to finance the use. There must be no tolls on the information highway.

There must be encouragement for the realization of shared projects between different schools (inside and outside Andorra), using the advantages of the Internet to eliminate barriers of physical distance.

Systematically, each teacher must be given an electronic address as must each class (and, from a certain age, each student). There must be an incentive for use of electronic mail in schools.

The Ministry must create a dedicated educational Internet server in Andorra. This server must be able to be accessed by everyone in the country, but especially by teachers and students, and must offer certain collective advantages (for example the publication of certain general examination results). In the same way, there must be an incentive for schools progressively to install dedicated servers on the premises to allow for similar functions limited to internal use.

With the arrival of the Internet, the concept of publishing has been radically revolutionized, since it is now within the reach of everyone to publish whatever information he likes, very easily and at very reduced cost. Thus, the project must promote the creation and publication of Internet pages by teachers and students, thus allowing for further familiarization with the new technology. To promote this idea, the annual competition organized jointly by the Andorran Science Society (SAC) and the Ministry of Education, Youth and Sports could be re-orientated to include prizes for the best publications on the Internet.

Given the rapid development of material in the field, the provision of funds for schools has to have a certain year-on-year stability and there has to be recognition of the need to upgrade facilities. This part of the budget should be more viewed as general and continuing expenditure rather than being treated as one-off expenditure.

2. Equipping the schools with networks

Up to now, the provision of computer equipment in schools has been focused on the supply of Personal Computers and peripherals on an individual basis, not connected with one another. The new dynamics of the situation require that the Schools Computer Project focuses on connecting up the individual workstations so that information can be communicated and interchanged in simple and rapid form. For this a program of time deployment must be worked out and it will be necessary to reorientate the school computer investment policy of the Ministry of Education, Youth and Sports.

Using such a new infrastructure, internal networks (Intranet) could be set up for messages, marks, noticeboards, newsletters and the like. The technology and the skills required to publish these Intranet items are the same as are required for publishing on the Internet, so skills training serves both purposes.

There must be a study made of the possible use of low-cost workstations (such as NC) —complementary to the use of PC's— which can be connected into the networks. There must also be a study of how to use these infrastructures out of school hours.

In parallel, once the installation of computer equipment is more generalized within schools, one can foresee a system whereby all schools within Andorra can communicate with each other. The infrastructure for the system already exists – all it needs is promotion. It would be possible to promote the publication of a virtual newspaper, similar to L'Estudiant, using a digital format.

3. Providing multimedia equipment in schools

It must not be forgotten that the object of teaching is not teaching, but learning and there are now tools which make learning much easier, less costly, more adequate to each individual's needs and less subject to the rigidities of time and space available. But for this to be

possible tools are necessary; but as important is changing teaching methods.

It is important that equipment in schools is not just limited to the provision of computers and that multimedia products are introduced as widely as possible. Teachers and students have to be able to access these tools, which are in general use in businesses and support the new digital input. One example is that of computer-linked projectors (and video players). Another example is that of video-conferencing, which has now become much less costly.

In parallel with the investment effort of the Government, suppliers of these materials must be contacted and encouraged to make special deals.

4. Offer low-cost computers to students

One way of promoting computer use and skills amongst students is to allow out-of-hours access. Thus it is convenient to facilitate the acquisition of equipment that they do not have presently.

In collaboration with computer suppliers, we must be in a position to offer students low-cost acquisition of PC's, peripherals and software. A system could be set up whereby certain items could be offered very competitively secondhand.

5. Connecting libraries to the Internet

Books are just as important to accessing knowledge these days as are Internet access and the other digital supports. Thus we propose that all libraries have terminals connected to the network, with free access available for all visitors. In addition to the Internet, these terminals must be equipped with the other digital supports such as CD-ROM (and libraries must make an effort to provide themselves with discs in addition to their acquisitions of books).

The Ministry of Culture and the Communes must study and support initiatives for the deployment of these terminals.

There should be a project developed whereby any person in Andorra can enquire on-line as to the

availability of any book in any library. Libraries must be in a position to allow such network enquiries.

6. Organize an Internet Day in schools (netd@y)

In 1996 in the United States there was a campaign started to promote the use of the Internet in schools. This campaign took the form of a specially designated day (netd@y) which concentrated on how Internet was used in schools. The same initiative was successfully replicated in many EU countries in 1997. We propose that a netd@y should be organized in Andorra during 1998, in collaboration with those who have experience with the EU project of 1997. From this it could be judged how to continue, using the experience to explain and sensitize society as to how telematic resources are used in schools. The Government and public authorities must give their support to this initiative.

3. School curriculum content

It is not sufficient just to make material resources available to students and to encourage teacher training. The use of the new technologies must be incorporated into all course curricula in Andorra.

1. Introduce Multimedia Studies as a separate course in its own right

In the same way that students must learn to work with dictionaries and encyclopaedias, students must now be trained to use the new technologies to easily access the necessary information from around the world. Internet, CD-ROM, e-mail, special interest electronic forums must be elements with which Andorran students are familiar and they must be able to use these in the same way as reference books.

It is proposed that the Ministry of Education, Youth and Sports should introduce Multimedia Studies as an obligatory study subject in the Andorran system (and offers it as a study subject in other education areas). This subject would have a highly practical content, giving information about multimedia tools, new technologies,

the information society in general and in the use of end-user tools especially as concern researching information.

2. Improve training in the English language

One of the fundamental skills needed in comfortably navigating the information highway is a good command of the English language. Whereas one can find information on the Internet and other digital supports in any language, the predominance of English is a fact. This makes command of English vital in profiting from the fund of knowledge stored in it.

In Andorra it is a great asset that students, in addition to Catalan, have a command of French and Spanish. But a great effort must be made within schools to achieve a high level of training in English.

3. Incorporate digital support in course subjects.

The best way to perpetuate information is to digitize it. Information in digital form easily allows use of multimedia resources in presentation; it is much easier to update; and it allows for the dynamic content to be adjusted to conform with a rapidly changing world. Within schools – and from Government as well – there must be recognition that course subjects must have more and more built-in digital support and teachers must be given incentives to use the new supports offered by today's technology: CD-ROM, Web pages etc.

4. Virtual Training

The Virtual Studies Center has been offering university courses to the population in Andorra since 1997. The creation of this center was a result of the desire to improve the availability of training to sectors otherwise unable to access it and to have a platform from which other training accessories—which Andorra considers strategic— could be offered. Given the small size of the population in Andorra, in order to achieve the critical mass of students necessary to allow for the further development of courses, it is vital that we collaborate, at international agreement level, with similar schemes from around the world and more especially from our close neighbors.

1. Introduce on-going virtual training modules

As a complement to existing university training, it is proposed that the Virtual Studies Center add a series of on-going training modules to its range, directed at professionals in the country. This training has to be set up with complete co-ordination between university and business so that the courses proposed are in line with the strategic objectives desirable for the development of the country and answer real professional needs.

These actions are very important, since they allow for the strategic development of new sectors vital to the economy of Andorra.

2. Combine virtual training with traditional classroom training

More and more, training will become modular, composed of different elements that could come from various sources. In this sense the experience and resources of the Virtual Studies Center could be used to offer training modules which complement traditional classroom training.

In the first phase one could see the establishment of some collaboration between the Virtual Studies Center and the University Colleges of Nursing and Computer Studies in Andorra, so that they could offer some of their courses in virtual format.

3. Promote post-graduate training in Andorra

With the combination of traditional classroom teaching and virtual education, training programs could be developed, promoted by the University of Andorra, which give access to post-graduates without the need for them to leave Andorra to attend courses. These training programs must be set up in collaboration with other universities abroad and can include courses for Masters degrees – strategically important for Andorra – and courses for doctorates.

4. Promote virtual training outside Andorra

With the progressive development of the courses at university level and the on-going post-graduate training available through the Virtual Studies Center, the availability of these programs should be promoted among students outside Andorra. The greater number of

students resulting from such efforts would allow the Center to achieve the necessary critical mass of students that would in turn permit a much greater variety in educational projects.

5. Andorra as an education center

Already in the proposals put forward in the “Strategic Plan for Andorra” there was talk of the possibilities for Andorra as a country that could host educational centers orientated to attracting students from outside the country. The quality of life of our society (countryside, facilities etc), tranquillity, geographical position and—in the case of the business investor—the fiscal differential, make Andorra ripe for development in this sector.

1. Start extended education programs in Andorra

The juxtaposition of education and leisure in conjunction with our geographical situation makes Andorra potentially attractive for certain specialized education programs. Such experiences as we have had up to now have been very successful and thus new projects should be promoted. Probably, in most cases, Andorra would be offering the facilities and specialized, recognized businesses from outside the country would organize the actual educational content.

A study must be made of the possibility of organizing specialist educational seminars in Andorra that would be institutionalized on an annual basis and recognized formally both internally and externally.

2. Promote the creation of education centers in Andorra

On the one hand it is possible that a foreign recognized entity could be interested in developing advanced-level educational activities (university and post-graduate level) from Andorra, capitalizing on the advantages that our country offers. Their market would be students from both inside and outside the country.

The Government should get in touch with some multinational firms that could be interested in setting up an educational establishment in Europe for their employees or clients and propose to them that they consider Andorra – and offer them incentives.

B. Commerce, services and teleworking

Nowadays, electronic commerce is having a significant impact on the economies of developed countries. In all cases, these experiences are very recent and have to be consolidated. In order for electronic commerce to be exceptionally interesting, it is necessary that the number of people connected to the Internet should be growing exponentially. In fact this is already happening, but the biggest increase in numbers will only happen when Internet access is available via the television. Such apparatus is just beginning to come onto the market and use will become wider and wider with Internet access becoming ever easier.

The Internet has the potential to become one of the most active sales media of the next decade, creating numerous highly qualified jobs. Further more, sales via the Internet could revolutionize commerce, allowing clients to shop from home for a wide variety of merchandise and services from around the world. An example of this potential is that of the initiative taken by the United States in encouraging the setting up of a legal framework for electronic commerce, which would serve both to promote it and to protect users.

1. PIRS project

The Chamber of Commerce Industry and Services took the initiative in proposing a telematic information system —called the PIRS project— which would group all the information on Andorra concerning culture, tourism and commerce.

As a showcase for Andorra, the PIRS project has to be a national project within the Internet environment, tied in to virtual commerce and which would serve as an electronic catalogue of all the products and services offered in Andorra. In this catalogue one would be able to consult the

characteristics, the availability and even the prices of those products and services.

There is a good consensus surrounding the PIRS project in the sense that it offers huge potential for the country. It is a very important project for Andorra, but there must be certain precautions taken. It must be a collective undertaking.

1. Develop the PIRS project

The PIRS project is a telematic information system on Andorra. The information within the system includes information of use to the local community (cultural activities, weather and traffic reports etc), tourist information (hotels, excursions, skiing etc) and commercial type information (businesses, wholesalers, services etc).

Access to this information would be by Internet links from any geographic location.

In the first phase, the system would only have information on the various services and products and, eventually, there would be direct connections to business servers offering product commercialization. That is to say, it would not be possible to effect transactions through the main system: These would take place by making a connection to the various private commercial servers, making the transaction direct with the supplier and under the direct responsibility of the business in question.

The organism for overall responsibility for the system would be the Chamber of Commerce, Industry and Services. As the project has been defined, the cost of the operation is estimated to be relatively small.

Possible additional sources of finance for the system could be:

- To supply information free to all businesses, but require payment from those who wish to have a direct connection to their own servers, that would provide additional information and the possible commercialization of services and products.
- In the case where attention is given by telephone, the enquirer would pay directly the cost of the call.

There would have to be a system whereby the information providers were made (legally?) responsible for providing truthful and up-to-date information to feed into the system.

The first phase would only allow for telematic connection (Internet or Intranet) Thereafter it would have to be studied whether direct telephone enquiries could be handled.

In the future, the project could be extended to allow transactions directly on the main system.

2. Virtual shopping malls

Currently around the world there are some experiments with shopping malls at individual business level, or through groups, to find out their real potential in practice.

In the United States, the country which has the biggest incidence of electronic commerce, the most important sectors during 1997 were (figures in millions of \$):

- Computer hardware and software (863)
- Travel (654)
- Entertainment (298)
- Books and music (156)
- Gifts and flowers (149)
- Clothing and shoes (92)
- Food and drink (90)
- Jewelry (38)
- Sports goods (20)
- Consumer electronics (19)
- Other (Toys, Home, etc) (65)

It is predicted that the increase in volume for electronic sales between 1998 and 2000 will be in the order of 380%.

1. Put into operation a pilot Shopping Mall scheme

Given the predictions of the effect of the information society in the near future, it is considered vital to evaluate the potential of electronic sales of products and services in Andorra. Therefore, it is proposed that a pilot scheme for a shopping mall be set up to include all that Andorra offers.

The objective of this shopping mall is for it to serve to familiarize traders that sign up to the scheme with electronic commerce and above all to evaluate, by means of a working platform, the potential for the different products —and for the country as a whole— in this new type of commerce.

The promoter of the Virtual Shopping Mall has to be the Chamber of Commerce, Industry and Services in conjunction with a technologically qualified partner (which would have to be a high-level company in the telematic sector) with some additional institutional support.

In a first phase (lasting about six months) those businesses interested could be offered space at nominal cost. Once the evaluation phase has been consolidated and if it is considered viable, the project could continue with contributions from those businesses that make sales by means of the Shopping Mall.

The principal market would be outside the country, but it is possible to consider the potential of the shopping mall for visitors and for residents who could have products delivered to their door. There could be terminals connected to the shopping mall at different points in Andorra such as hotels.

At the external level, outside Andorra, the Virtual Shopping Mall would publicize the country and would give information on the products and services that would include technical characteristics, availability and prices.

3. Multiple service terminals

It is also necessary to consider the terminals already existing in Andorra (for example the bank cashpoint terminals), upgrading them to allow diversified value-added transactions for clients.

1. Promote the installation of multiple service terminals

Some of the uses of these terminals have already been highlighted in neighboring countries where, for example,

cashpoint terminals have been adapted to allow for the purchase of tickets for the cinema, theatre, concerts, cultural activities, travel tickets etc and even to allow people searching for work to register their curriculum vitae as well as for other applications.

The geographic dispersion of these terminals makes for easy and powerful access for the user and for interaction with information and transaction systems of many companies and entities.

There could also be consideration made of an extension to the system whereby citizens could accomplish administrative transactions, such as consultation on, and processing of, paperwork, submission of CASS claim forms, payment of taxes and rates, certification applications etc.

The banks would have to be responsible for this project.

4. Supply of high value-added services and teleworking

There must be encouragement for businesses and professionals to set up in Andorra and, without the limitations of frontiers, offer their services around the world.

The suppliers of these services could enjoy the benefits of residing here (ecology, environment, quality and high level of services, geographical location, juridical protection etc).

Society in Andorra must be trained and informed of the possibilities of the new technologies. The creation of this type of enterprise must be promoted, with start-up incentives, since the local circumstances allow for competitive advantage.

This promotion must not only be addressed to Andorran entrepreneurs but to foreign businesses and professionals who could be attracted by the chance of operating out of Andorra.

One of the future possibilities, for example, will be the necessity for intermediaries to filter large quantities of information and pass it on to clients in usable form. These types of activity could easily be exercised from Andorra, with significant advantages for the professionals who develop them. There are many other examples, such as international call handling, logistics centers, international product and services distribution centers, translation and documentation, educational centers etc.

1. Prepare the environment that will favour the installation of high value-added businesses.

To achieve these objectives, a framework must be prepared which will be adequate in technological, operational, economic and legal terms.

The new businesses in these market sectors must be able to count on having competitive operating costs.

Andorra could be a good place to develop pilot projects, as long as co-operation between government, business and some international sponsor (of the promotional or commercial type) can be assured, as has been done in other zones and regions of Europe. One example is that of the Picardy region in France, where many businesses have set up, in order to benefit from low cost communications with Paris and many other technical and financial advantages.

The legal framework has to be revised completely. The "Type C" company project is one way of achieving this.

2. Prepare the environment in Andorra which favours teleworking

The promotion of teleworking, or off-site working from Andorra, where geographical situation is not important, is one of the great potentials existing that can make Andorra a society orientated to providing high value-added services.

3. Develop a communications strategy with neighboring economic centers.

From the technological point of view of we must have adequate, wide-ranging channels of communication at competitive cost so that, for example, telecommunications from Andorra can be effected at the

same price, or almost the same price, as if they were effected from Barcelona or Toulouse. The application of local telecommunications tariffs in respect of these two cities, so closely connected to Andorra, is a viable alternative from the technical and political point of view.

4. Organize training and information sessions about the new technologies

The authorities must organize sessions, directed at society in general, which explain the new technologies and show practical applications for different social and economic sectors. The objective of these periodic sessions is to sensitize Andorra society to the technological changes taking place and how to use them.

5. Project to encourage new entrepreneurs

Within the information society environment new business initiatives must be developed which give support to the new challenges facing us.

The enterprise spirit must be developed in our society. Being a young entrepreneur these days is very difficult. In the first place there are difficulties in acquiring the necessary skills to create and manage a new business; creating business plans and learning about management accounts and budgets requires specific training. Secondly, there are the material difficulties in getting any new business started: finance, physical location etc. Lastly, there are the difficulties of methodology, which are only acquired with experience: staff relations, for example. Because of all this, we need to find mechanisms that assist, especially amongst the young, the creation of new businesses and that encourage the development of the enterprise spirit.

We should develop a project for entrepreneur training, in which young professionals from different disciplines (for example economists with computer specialists and designers) and the government will supply the methodology and the resources (premises etc) to encourage entrepreneurial activity. The length of the training will be limited and the activity real; that is to say the business-training scheme would produce real products for real clients. Participation in these schemes would cost nothing, but neither would anyone receive pay.

The objective is that at the end of the training period, the participants would be in a position to start a business venture and that a good percentage of them would succeed. As a complement, there already exist some initiatives in Andorra designed to support these new entrepreneurs (for example from some banks, who offer financing).

The themes (products) which would be handled in these training groups would be in line with the strategic objectives of the White Paper.

C. Infrastructures

Strategic objectives

There are some accepted principles, which are: universal, and minimal cost, access for all, so that economic barriers are removed. Some strategic elements are that:

- There is a willingness to see the Andorran citizen being well informed and well connected, that is to say adjusted to the real world and not isolated.
- The activity generated in this sector can help with the overall improvement and general development of the country (infrastructures and telecommunications services).
- If economic support is a strategic element, investment must come before demand.
- The telecommunications sector has three dimensions: it has a socio-political element, an economic development element and a service element.

Technological model

The technological model should not be the result of a political decision, but an interrelation between technological progress and market forces. Of course, in order to guide and encourage the market, some general medium-term goals must be established. The citizen must be made aware of public and private initiatives in the sector.

Economic model

The present economic model in the local environment is for liberalization of the telecommunications sector. This model offers two alternatives:

- Liberalization of services and opening up of the sector to competition, maintaining a single infrastructure which could have a public or private operator, but always with the philosophy of a public service.
- Total liberalization of services and the infrastructure.

There is an ample consensus in favour of the former, but it is accepted that a much more detailed study of the subject must be made.

Juridical model

Andorra has to regulate the sector by developing a law controlling telecommunications

1. Technological and economic models for infrastructures

Referring to the economic model, there is currently a certain coincidence in the view that for a country like Andorra, with its particular characteristics, in the medium to long term cable is the answer. Cable is the only option that allows for high-velocity connectivity in both directions and it is the most ecologically acceptable solution, although it is expensive to install.

Andorra is small enough to be capable of avoiding intermediate capital expenditure that later proves useless. If an adequate overall plan existed, it would help to make private investment more adequate and less risky.

It would seem convenient, therefore, to engage in some technological planning for the future. This would require a dedicated study on the technological model for infrastructures.

The study must be made in conjunction with a more detailed analysis of the economic model.

1. Define the technological and economic models for the telematic infrastructures

A study must be made which analyses the technological and economic models of the infrastructure in Andorra, that allows the government to give strategic guidance to the sector.

2. Interconnected community

Given the complexity of all the elements that have a bearing on the technological deployment of the information society, it is very useful to have the possibility of experimenting with small groups in order to see the advantages or disadvantages of the different possible solutions.

This type of experiment is taking place in numerous locations around the world and, more especially, neighboring countries have experience of research in this field. In France, in the Picardy region, and in Spain, in the city of Villena, they are currently studying – from different angles – experiences of the impact of the information society.

1. Promote an experimental project on the interconnected community.

The project consists of identifying a population center or group in Andorra that could be interested in experimenting, at an intensive level, with the possibilities offered by the information society. This group would have some very advanced equipment and be able to make use of some highly developed infrastructures and services.

The objective is, apart from the obvious benefits of training and motivation for this particular group, to use the experience for evaluation purposes and to be able to draw conclusions that would be applicable to the whole country.

The project management must come from Andorra, with the support of technological partners.

D. Supply of public services

Public administration basically relates to citizens and businesses. This relationship can have three aspects: information (which implies communication from government to the citizen and business), participation (which implies communication in the opposite direction from the citizen and business to government) and paperwork (which implies communication in both directions).

Communications media are and must be diverse. Some are of non-interactive character (only in one direction), such as the press, radio, television and publications etc. Others can be of interactive character (in two directions) such as the telephone, offices open to the public, information kiosks etc.

The new technologies can have a part to play in improving the quality of relations between the public administration and the citizen and public services. At the same time, the Administration must pioneer with activity in this field, so as to demonstrate and stimulate the use of the new technologies within society as a whole.

The Administration has to act as pioneer both in the application of new forms of action and in the use of the new technological possibilities.

Improve the management of the Administration

The acts by which the Administration is a provider of services to the administrated (whether physical or juridical persons) must be simplified and optimized. In this type of transaction it is important not to have to queue up at a window; go to one place to get a document and then have to go to another place to deliver it; not to be obliged to duplicate paperwork for different authorities etc.

Improve financial management

It would be a good idea to simplify and unify systems of dealing with outside suppliers (mainly companies). Budgets, invoices, payments etc could be effected more efficiently if they were processed digitally.

Information services

The Administration has to make information available to the public on the steps necessary to effect whatever paperwork or request required; what is the current status of that paperwork; the availability of any public service; or about anything of public interest. On occasions it also has to supply information which is not strictly within its province, but which is of interest to the general public.

Improve certain specific public services

The new technologies can also affect the operation of certain public services, or the way in which those services are provided. Some examples are the services related to mobility, health, civil defense etc.

Political participation

Networks could be a vehicle for participation by citizens in giving their views in specific situations, ranging from opinion polls to the complete electoral process.

1. Administrative paperwork

One of the objectives that would appear to be of general interest is that of simplifying the citizen's dealings with the government.

In the first place this consists of simplifying administration, undertaking a complete re-think of the paperwork process in order to simplify it and standardize it. This would need a simplification and updating of all the forms used.

The general philosophy must be one of treating the citizen as a client, avoiding the situation where he must make useless or repetitive enquiries or visits, informing him of the status of any particular document or demand that he has initiated.

One possibility for the Administration would be for it to offer different options in presenting documentation. That could go from giving the users either a printed form, a diskette with a pre-set form (similar to the one used by the Trademark Office) or to allowing them to present documentation at a distance, using telematic tools.

The Administration, like any other business, has to promote and simplify training of its staff and officials so that they also understand how to use the new technologies.

1. Develop the Paperwork project

The Paperwork project, which was initiated by the Government whilst this White Paper was being prepared, implies a simplification of procedures and will offer the citizen the opportunity of presenting all paperwork at the same counter. This project should be completed during 1998.

2. Ease access to the Administration by the citizen

One desirable medium-term objective would be for the citizen to be able to present paperwork, without the necessity of a physical visit, by means of a computer, telephone, ordinary mail etc – whichever option suits the citizen. These systems should allow for a reduction in administrative costs. If the citizen requires it, however, he should be able to obtain face-to-face attention.

At the present time, the Government is making a guide to the standardization of forms. This standardization must be extended, bearing in mind the needs of the user and the use of new technology when it comes to designing standard form templates.

3. Widen the scope of the Paperwork project

This project should be widened to include all the citizen's dealings with the various Administrations or authorities throughout Andorra (Government, Communes, Parapublic entities). That is, the concept of the single window. In some cases, there are duplications and a lack of co-ordination between the different administrations. They should also be able to accept documentation presented off-site.

2. Electronic interchange of information

This type of consideration should be extended throughout the whole range of relations between business and Administration, in terms of the paperwork required, not only in the payment of taxes but also in the presentation of requests and the payment of invoices for goods and services.

At present the Government processes around 30.000 invoices per annum, the majority from small companies. It should be possible to make declarations at CASS electronically, for example.

There should also be some thought given to a system of interchange of standardized information, with telematic access, to facilitate the transactions necessary in the management and follow-up of whatever administrative transaction.

This type of access should not be obligatory but optional, although the Administration must promote it.

Some administrations in neighboring countries, such as the Balearic Islands autonomous government, have started some experiments in this field.

1. Develop the project on Electronic Interchange with the Administration

Relations between businesses and businesses with the Administration are starting to be handled preferentially by electronic means. Electronic access for processing official paperwork (demands, payments, invoicing and consultations), whether this is by use of telematic networks or by use of diskettes, eases and speeds up relations at the same time as implying a reduction in costs.

The electronic interchange of information is accomplished using certain standardized parameters. The parameters and standards to be used in Andorra must be defined.

The use of these systems by the Administration would also serve to promote their use in their contact with businesses.

3. Technological projects

The Administration also has to promote and encourage the realization of certain technological projects, which are, or could be, of general interest both inside and outside the country. Some of these projects have already been started, such as the mobility Agency.

In the area of public services there must be striving for quality promoting, for example, the application of the ISO9000 standards. One can also envisage in the re-assignment of responsibilities with the object of improving services.

1. Develop the Mobility Agency project.

The Mobility Agency project is an initiative that must be supported. In the short term there is a series proposed measures that could much improve traffic flow (roundabouts, one-way systems, traffic lights etc.).

In the longer term a much bigger investment could be desirable. Information technology can assist mobility considerably. The information on the traffic situation or

the number of parking spaces available at any particular moment can be improved. Public transport should be promoted. In Andorra there could be a special project on the use of low-polluting (electric) vehicles, which could possibly qualify for support from the EU.

Other measures could be studied, such as a possible formula for working hours flexibility, the promotion of teleworking in relation to mobility etc.

2. Develop the project on Electronic Health Information.

A project should be developed where health information could be networked round the country. The support for such a system would be a network linking professionals in the sector (doctors, pharmacists, Health Centers, Social Security etc). A server should be set up at the Ministry of Health which would be able to search for, publish and distribute information to those interested, whether professionals or the population in general. Another function is to be able to compile all the different information into statistics which would be of great benefit at a professional level.

3. Promote the development of computer tools in Catalan

The fact that Catalan is a minority language in the world, brings some specific problems with changes that the information age brings. On this point we must be very clear as to what the priorities to face are and concentrate on the resources available.

It is fundamental to remove any barrier that makes the use of Catalan an impediment to accessing the technology. For example, it is vital to have available advanced voice recognition programs in Catalan. If not, it will be impossible for us to use our language to introduce data with new technology that is about to become much more widespread (which means that to use Catalan would represent a handicap for users, forcing a change of language to increase productivity).

There are some elements that are less important in this field; those that can be solved by resorting to a second language. For example, it is not fundamentally necessary that a program or its manual should be in Catalan. Any Catalan speaker speaks at least one other leading world

language, so there is no reason why he could not use a program (and in this case, Catalan does not represent any insurmountable disadvantage).

The projects that have been identified as being of high priority that must be developed in Catalan are.

- Voice recognition programs
- Spelling, grammar programs and those for optical checking of characters
- Translation programs from and to Catalan
- Maintain the present level of correction programs and improve them to allow extra analysis and grammar correction.

To be able to handle these projects, support must be sought from Administrations with similar problems and from specialized information technology businesses who are interested in the Catalan market.

4. Electronic democracy

The use of information technology can be the key to developing some innovative experiments in Andorra in relation to citizen participation – what we might call Electronic Democracy.

The dimensions of Andorra make Andorra ideal as testing ground for experimenting with how to use information technology to allow citizens to participate in government.

From the strictly technical point of view one could envisage the following elements of an electronic democracy of the future:

1. Create a suggestion box for the Administration

A suggestion box could be created, which at the same time as giving traditional physical access could be set up for use with electronic mail. This facility would allow the citizen to give his view directly to the Administration on any matter of public or civic interest.

2. Create a computer link for dialogue with the Administration

We propose that a system should be set up which would allow a series of questions and proposals on-line, similar to the chat-lines used currently. It should be recognized, though, that this type of facility is not particularly agile and there are not many who currently use sites.

3. Organize electronic consultations

There are other possible steps that can be taken to establish more direct future participation with use of the networks (among them the Internet), such as organizing opinion polls.

E. Legislation and follow-up of the White Paper

The rapid development of information technology has obliged the countries within our sphere to adapt their legislation to meet the new situation, not only in terms of the infrastructures concerned but also content. Andorra's case is no different. There has to be a revision of the legislative environment in the field of telecommunications and adaptation to the desired economic and infrastructure models of the future. In parallel, there must be revision of the laws that at present refer to the sectors affected by the new technologies.

1. Law of Control over Telecommunications

It is urgent for us to have a new set of regulations for the telecommunications sector – a new legal framework that can respond to the new situation in which we find ourselves. Modification of the environment has happened at least in the following areas: a single-service system has become a multi-service facility in an unlimited geographical context; a single system has developed into many systems, each with a multiplicity of uses; and most importantly, a monopoly sector has to adapt to a more liberal business and competitive environment.

The law to be made must not be simply a law regulating the telephone service, but rather a law that regulates the whole of the telecommunications market.

In doing this, the Andorran legislator has a series of options, but he cannot avoid consideration of the political environment within the EU. Although it is true that European directives do not have any legal force in Andorra, it must not be forgotten that they do have a very important influence. Furthermore, Andorra is legally obliged by the by the agreements of the World Trade Organization, which lead in the same direction.

Without this legislation, neither the internal activities developed in the absence of the necessary legal framework, nor those aimed at the foreign market, would have the required credibility for attracting high value information.

1. Develop the law relating to the telecommunications sector

The Government must propose, submit and have a law approved on the reorganization of the telecommunications sector.

The law must include, amongst other things, aspects such as:

- Control of entities allowed to offer services
- Definition of the services of general interest and the form in which they are to be offered
- Regulation of the interconnection systems between operators
- Establishment of the administrative system concerning the radio spectrum and other resources
- Regulation of the interconnection systems between operators
- Define the nature and function of the regulating organism for telecommunications.

2. Law on the functioning of public radio and television

There currently exists some legislation on the functioning of the Andorran Radio and Television Authority, which has become outdated due to the rapid development of the sector. It is urgent that we start a consultative process in order to adapt the content of the law to the present situation.

1. Develop the law on the functioning of public radio and television

The Government must urgently propose, submit and have a law approved on the functioning of public radio and television.

This law must cover, among other matters, the following aspects:

- The nature of the public service
- Organs of supervision and control
- The management system
- Financing methods

3. Legislation on content

From the moment that the different networks can offer and broadcast the same services, the regulation of content must be in general form and independent of the different distribution system used. In that manner, one can avoid inconsistencies which could make content legal on one particular system and illegal on another.

There therefore must be some general legislation covering content that the Government must prepare as a matter of urgency. The mechanisms of control and supervision must also be established.

1. Develop legislation on content

The Government must propose, submit and have approved within a reasonable time, legislation on the content of telematic systems.

This law must cover with respect to these considerations the following aspects:

- Truth of the information
- Security of the data and information
- Juridical guarantees on content and transactions
- Protection of minors with respect to content
- Responsibility concerning anonymity

2. Create an authority to watch over content

The legislation on these questions is relatively recent everywhere and furthermore it changes very rapidly. That is why most countries prefer to have laws that do not fall into the trap of an excessively detailed straitjacket and rely on an independent body to watch over the matter, receive complaints from the public, issue resolutions and thereby create the applicable body of law.

This body could be in the form of a council, a committee of wise men, or in the form of a person of recognized prestige.

In the case of Andorra, it is important not to create an organism that is unwieldy, in disproportion to the size of the country. One would have to find a person or persons that have the necessary prestige and at the same time the necessary independence with respect to the public authorities.

The system of nomination and, above all, of dismissal must ensure this independence and consensus.

4. The Law on Data Protection

In 1976, the Council-general approved a law regulating databases in the public sector, in order to guarantee that the

use of stored information was limited solely to the uses for which it had been supplied. This law only applies to the public sector and given its age and the rapidly changing nature of new technology and, above all, the necessity to protect fundamental rights, today's situation makes a change imperative.

1. Develop the law on Data Protection.

This law must regulate a matter of overweening importance which is the protection, electronic treatment and supply of personal information; that is to say, the use of computerized information and databases in relation to basic human rights.

The object of this regulation will be to establish the criteria that will serve to protect dignity, honor, intimacy and the image of the citizen and the legitimate exercise of his rights as mandated and established in Article 14 of the Constitution.

This new regulation would acknowledge the various resolutions and recommendations from the very highest international institutions and organizations, especially those from the International Federation for Information Processing (IFIP) and from the General Assembly, the Commission on Human Rights and the Economic and Social Council of the UNO.

There are three basic principles which this law must address: Every person has the right to know what information about him is stored, that the information is exclusive to the holder and that professional secrecy is enforced.

5. The Law on "C" type companies

In order to support the many recommendations of this White Paper, it is vital for us to have a legislative framework which contemplates the installation in Andorra of companies that can export products, services and intellectual property.

1. Develop the law on “C” type companies

The object of the Law on “C” type companies is to create a legal framework within which physical or juridical persons, nationals or foreigners, can form companies in Andorra which can provide, from Andorra, services and products for consumption abroad. Certain aspects of these companies must be harmonized with a series of international criteria that are necessary for formal and pragmatic reasons.

There is currently an advanced proposal for a law on this matter. Its approval must be sought at the earliest opportunity.

6. Follow up of the White Paper on the part of the Administration

If one doesn't know the port one is heading for, no wind is favorable. This reflection on the part of Seneca is just as valid today and especially given the rapidly changing environment. Strategy must be clearly defined, but the principles formulated must be constantly revised and there must be some constant effort to drive forward the programs proposed.

First and foremost this is the responsibility of the Government of Andorra, taking a leading role in projects concerning the information age. It must drive projects forward, acting as a catalyser with overall vision and co-ordination. The actions of the Government in this field have to be a mixture of strategic orientation (planning) and promotion of concrete proposals (action). The object is not promote technology for itself, but for its benefits: social (improvement of the quality of life of the citizen) and economic (competitiveness and business opportunities).

1. Create an organization

To give support to the development of the information age in Andorra, an organism must be set up that will have overall responsibility in the field, and would be run by the Office of the Head of Government. The structure of this organism should be flexible and dynamic so that

projects could benefit from the internal and external resources of the Administration.

The principle responsibilities of this organism must be:

- The promotion of the information society
- The revision and updating of the strategy outlined in the White Paper. The Government, with the support of the whole of society, has to define the strategic directives for the information age, making the necessary recommendations.
- Provide the necessary impulse for the realization of the programs and actions formulated and ensure follow-up.
- Co-ordinate the different initiatives with an overall vision within the environment of the projects defined.

2. Maintain continuity of the Working Group for the White Paper

In order to revise the strategic content of the White Paper and to be able to follow-up on the actions proposed, the Working Group which has compiled it will organize some further working sessions (annually). The continuity of this group will assure the positive evolution of the project and its real impact on society.

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