

Annex 1

The Evolution of Initiatives towards an Information Society in the World

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1.1 Brief History

During the 90s decade, actions began taking shape on various fronts to sustain and bolster a so-called information society.

Clearly, the United States initiated the process, with the launching of the HPCC Program (Detail A1.1) of the American NII, and, later, with the GII. This role of leadership is due to a combination of factors of recent American history (especially their undeniable leadership in the Internet, the redirectioning of the post-Berlin high technology industry, etc.) that sooner or later led the USA to introduce a new agenda of actions for the world.

Detail A1.1

HPCC/NII and the Beginning of Everything

The HPCC (*High Performance Computing and Communications*) Program, which gained fame around the world beginning in 1991/92, can be considered the beginning of the process that governments and companies today label as the information society. Initially aimed at the advancement of network and computer technology in the USA, and of a mainly academic nature, it began to expand beginning in 1993/94 to include the *National Information Infrastructure* (NII) initiative, promoted by the Clinton/Gore administration, with the intent of addressing concrete challenges to the American economy and society. The NII was the initial endeavor upon which the USA launched, in 1994, the idea of a *Global Information Infrastructure* (GII) as a worldwide challenge to be faced by all governments.

The HPCC Program, beginning in 1994, was structured around five components, which were:

- . High Performance Processing Systems;
- . Advanced Software Technology;
- . Education and Research Network;
- . National Information Infrastructure;
- . Basic Research and Human Resources.

The HPCC Program's model of execution - supported and carried out by the federal agencies involved (NSF, NASA, DOE, EPA and others) - is exemplary and has served as an inspiration for various subsequent initiatives, including Brazil's Information Society Program.

Sources: <http://www.hpcc.gov> e <http://nii.nist.gov>

The European Union responded to the challenge with some delay, but in a very well articulated manner. It used the debate to push for the computerization of nations on a domestic level (especially in government administration), and to bring back an atavistic tendency by proposing excessively heavy industrial standards, while also encouraging the privatization of state-owned telecommunication companies within the European Union.

Some countries, like Canada and Australia, have successfully blazed their own trails, augmented by international cooperation efforts in the ambit of the G7, OCDE, etc. On the other hand, there is one bloc of nations – the Scandinavian countries – that has had little to do with the global initiatives of the GII and/or GIS. The reason is simple: they are years ahead of other countries, including the USA, in the widespread use of computers and, especially, telecommunications.

Throughout this process, different terms were coined. The most widely used are "Information Infrastructure" and "Information Society".

The difference stems from an emphasis on the *origin* of the terms. The term "*Information Infrastructure*" was introduced by the USA, underlying the fact that they were the *strongest*, that is, disposed of a computer/communications platform and a series of generic support services for applications without parallel in the world. And, in keeping with the American spirit, the implicit idea was that the *applications* should be uncontrolled and without restrictions; used as users saw fit.

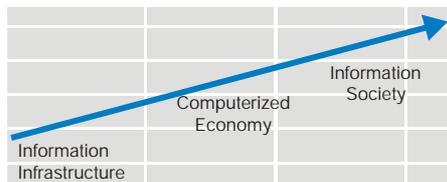
The term "*Information Society*", on the other hand, comes from the European Union's response to the challenge launched by the USA with the NII and, soon after, with the GII. The emphasis on "*Information*" translated in Europe into a tendency towards applications involving multicultural and multilinguistic aspects, the employment of technology for social purposes, etc. On the other hand, the emphasis on "*Information*", instead of "*Infrastructure*", also reflects the fact (looking back) that the European Union decided, in the area of infrastructure, to accelerate the privatization of state-

owned telecommunication companies, not aimed entirely at privatizing services, but at pursuing the greater injection of private capital.

A more recent approach links the two terms and reinterprets them, viewing the NII/GII as the first stage in the direction of an information society, as Figure A1.1 shows.

Figura A1.1

Prácticas Rumbo a la Sociedad de la Información



Fuente: SocInfo

In short, the motivation behind national initiatives aimed at what we now call an "information society" was explicitly economic, or industrial with a strong economic tendency. In U.S. government documents, we find emphasis given to expressions such as "*American technological leadership*" and "*open, global trade*". EU documents give greater emphasis to expressions such as "*job creation*".

1.2 – Paradigms in the Structuring of National Initiatives

National initiatives involving *information infrastructure* or *information society* have been coordinated, in many nations, by a ministry, or a similar agency, linked to industry and/or trade. We can cite, as an example, the U.S. Department of Commerce, the Ministry of Industry of Canada, the Ministry of Finance and Industry of France and the MITI of Japan. In other countries, coordination was left up to the ministry responsible for the area of Science and Technology, as is the case of Portugal and Spain. In Brazil's case, the option for the Ministry of Science and Technology (MST) is due to both institutional as well as historical reasons. The MST administered, financed and conducted the phase of establishing the Internet

in Brazil during the period of 1988 to 1996, because of its role as coordinator of S&T activities in the country with a strong emphasis on computer science. From an institutional point of view, the MST is responsible for coordinating the country's Computerization and Automatization Policy, through the SEPIN agency.

On a world level, a line of evolution characteristic of the more advanced national initiatives can be observed, in terms of sequence of events. This sequence includes 5 steps:

i. Proposal

A government institution was put in charge or took the initiative of coordinating the process for the elaboration of an initial proposal, at a *very political* level, with few technical considerations. Usually, a Commission was formed to carry out the task, with a timetable of months, and suffering great political pressure both internally and externally.

ii. Management

The Commission initiated a process of consulting with specialists and business executives, and also produced a brief and well-articulated proposal to be presented to the *top level* of the Executive Branch: president, prime minister, cabinet ministers, etc. The Legislative Branch was involved in order to render its support to the initiative, ensure a budget, address legal aspects and social ramifications, etc. This process involved, in many countries, *hundreds* of interlocutors of the public sector, academia and the private sector.

iii. Public Consultation

With the exception of countries where planning is more centralized, the process of divulging the initiative and of *gathering suggestions from the public in general* was fully undertaken. The USA used various ways to obtain public opinions: questionnaires, discussion lists, public hearings, etc., in a very well planned and highly beneficial effort in order to obtain the public's general consensus and support.

iv. Focus on Implementation

A great undertaking for implementation then followed, involving planned activities in the area of Infrastructure, so-called R&D, and Application projects, as well as activities to disseminate the results.

v. Focus on Legislation and others

Once the initial wave of implementation was over and parallel with a second wave, there was an increasingly greater focus on *legal aspects* and related matters, such as: standards and self-regulation, classification of content and crimes in the electronic world.

vi. Focus on Electronic Commerce and Contents

Lastly, there has been a growing emphasis on Electronic Commerce and on Contents, as the two great fronts (of Internet Applications) that can have almost immediate impact on the general public, now in the stage of concrete applications, and no longer of infrastructure projects for the future.

1.3 – Emphases of National Initiatives

In terms of infrastructure, a split occurred between the position of nations with a more advanced infrastructure (USA and Canada, in particular) and the rest.

In the case of the first group, a clear effort was made to consolidate the integration of systems: in the area of telecommunications, networks, etc., following the order of:

R&D → Industry → Services

while, in the second group (the vast majority), there was a clear movement towards *opening up telecommunication services* as a way to curtail the period of "accommodation" to the new era. In this group, the sequence was as follows:

Services → Industry → R&D

It's interesting to note that this "accommodation" didn't exactly result in *full-fledged and total privatization* of the telecommunications sectors, as many tend to believe occurred in Europe, especially.

In terms of applications, distinct emphases can be observed in the two groups of nations.

In U.S.'s case, the focus of the actions during the phase the NII was taking off (say, from 1994 to 1996) was clearly on *infrastructure*, even when the model of *National Challenges* (that is, concrete applications) *versus Grand Challenges* (that is, great research topics) was implemented. Appropriately (for the American reality), the prototyping of applications was left up to the free initiative of researchers and entrepreneurs. More recently, the tendency has become even clearer. The Pitac report explicitly states that applications should be encouraged, as long as the focus doesn't lose sight of *research* (and *basic research*).

In the case of the European Union, the bloc itself placed priority on applications, as is reflected in the DGXIII *Work Program* for 1994/98 and especially in the Pilot Projects of the G7/ G8 (as Detail A1.2 indicates), without greater concern for quality of research.

The greatest goal seems to have been to rapidly place an operation into motion for an "information society", in order to allow applications (and related topics, such as legislation, dissemination, etc.) to be treated on the EU bloc level, while each country pursued its own strategy at the infrastructure level (that is, telecommunications).

It's interesting to verify, on the other hand, that the DGXIII program for 1999/2002 - denominated *Information Society Technologies* (IST) - continues emphasizing applications, but underscores R&D themes right below the surface. It's quite likely that the quality of R&D in the themes selected now follow stricter criteria than in the 1994/98 4-year period, when the European initiative took off.

What's important to note is that we should pursue and analyze the *general logic* underlying the path taken for these great initiatives, in order to outline the planning of our own initiatives, such as the Information Society Program.

Detail A1.2

Global Information Society/G8:
Final Report of Pilot Projects



In July of 1994, the heads of state/government of the G7 launched - during a Summit in Naples (followed up a Ministerial Meeting in Brussels, in 1995) - eleven projects aimed at catalyzing actions to bolster an information society in areas such as government administration, commerce, culture, education, environment and health care. Such an initiative was taken in the wake of the worldwide impact caused by the GII challenge presented by the American government.

While they were ongoing (up to 1998), these pilot projects managed to get several countries outside of the G7/G8 involved and to establish the premises for equitable cooperation, free of bureaucratic strangleholds, between nations, as well as give greater significance to the development of a Global Information Society.

Some of the pilot projects carried out included:

- . Electronic Libraries;
- . Multimedia Access to World Culture Heritage;
- . Management of the Environment and Natural Resources;
- . Global Applications in Health Care;
- . On-line Government;
- . Global Market for Small and Medium Companies.

When the projects were concluded, the general assessment was that they were quite positive.

Source: <http://www.ispo.cec.be/g7/projidx.htm>

1.4 – Governmental Action in Critical Aspects

The main problems jeopardizing initiatives aimed at bolstering an "information society" are not essentially technical in nature. There are several other obstacles that inhibit initiatives, or even render them unviable.

For example, a great challenge to be overcome is to adapt the official legislation in each country to the new reality that is being shaped by ICT.

Basically, the general posture in terms of legislation in the more advanced nations has been:

- i. clearly define what the government will regulate, and carry out what is the government's responsibility in a quick and concise manner;
- ii. actively promote *self-regulation* whenever possible.

The emergence of the Ican has put emphasis on a model for Network Administration, with emphasis on the aspect of self-regulation.

Topics such as Electronic Commerce and Contents don't yet have clearly consolidated guidelines. Countries that lead the process on a global scale are further along in the evolution of such issues. Besides adapting legislation to a new reality, initiatives of this nature also depend considerably on integrated actions between countries so that they may develop more rapidly.

Another aspect to be considered in national initiatives is how R&D is viewed. The issue of R&D in *information technologies* has been highlighted as an aspect central to these regional and/or national initiatives. The more developed the nation/bloc is in the area of ICT, the greater a role R&D plays. But the models vary according to circumstances.

In the case of the USA, the original HPCC Program was almost exclusively concerned with research. The area of networks, NREN, was focused *exclusively on education and research*. Only later, with the inclusion of the fifth component, the IITA (from which came the NII and the *National Challenges*), did the concept of using infrastructure and applications for purposes other than scientific begin to flourish. To summarize it in a phrase, in the U.S.'s case, the effort was structured, from the onset, as a *megaprogram of research* into which a *component for the integration and dissemination of applications* was injected to benefit the private/government sector.

In the case of the European Union, however, the initiative was structured, from the onset, as a *megaprogram of political actions* (of a varied nature, including everything from encouraging applications to promoting the privatization of telecommunications), within which there is a *component for R&D* and one for the *infrastructure of educational and research networks*.

The list of critical aspects is obviously much greater, and the two or three points raised here simply provide an idea of the problem as a whole. The Information Society Program must not overlook, but should closely observe, similar initiatives abroad, in order to define its goals with clarity and to learn from the achievements and mistakes made around the world in terms of the focus of activities.