

Tadao Takahashi
Coordinator

Information Society in Brazil
Green Book

Brasilia
Ministry of Science and Technology

September 13, 2000

© 2000 Programa Sociedade da Informação (SocInfo)

All rights reserved by the SocInfo Program. No part of this publication may be reproduced, stored or transmitted in any manner or by any means, be it electronic, mechanical, by photocopy, by recording, or others, without prior written authorization from the SocInfo Program.

Implementation Group of the Information Society Program

(*Programa Sociedade da Informação - SocInfo*)

Coordinator: Tadao Takahashi

Information Society in Brazil: Green Book / organized by Tadao Takahashi. –

Brasília :

Ministry of Science and Technology, 2000.

xxv, 195p. : il. ; 26cm.

Includes bibliography

ISBN

1. Information society. 2. Information and communication technologies. 3. Internet: contents, services and universalization. 4. Information infrastructure. 5. Education for citizenship. 6. Electronic commerce. 7. Research and development. 8. New economy. 9. National policies.

I. Takahashi, Tadao. II. Title: Green Book.

CDU 316.42(81)

Address:

Information Society Program (SocInfo)

Ministry of Science and Technology (MST)

SAS, Quadra 5, Lote 6, Bloco H, 8º andar

CEP 70070-914, Brasília – DF, Brasil

<http://www.socinfo.org.br>

info@socinfo.org.br

2000

Printed in Brazil



*“...never [...] fully mature, neither in ideas nor in style,
but always green, incomplete, experimental.”*

Gilberto Freire,
Tempo Morto e Outros Tempos, 1926

Presentation

Knowledge has become, more so now than in the past, one of the main factors for the overcoming of inequalities, for the accumulation of wealth, for the creation of qualified employment and for the spreading of well-being. The new reality has had an impact on the economic and political systems. The sovereignty and autonomy of nations are being viewed in a new light the world over, and their preservation – which is essential – clearly depends on knowledge, education and scientific and technological development.

The Information Society is being directed and overseen in several countries. In Brazil, Government and society must work together in order to assure the prospect that the positive aspects of such a society effectively benefit all Brazilians. The advent of the Information Society is the base from which arise new forms of organization and production on a worldwide scale, redefining how nations position themselves in the world and in the global economic system. As a result, new demands are being made on the Government regarding its efficiency in public administration.

In the Internet era, the Government must advance the universalization of access and the ever-increasing use of electronic means of information to generate an efficient and transparent administration on all levels. The setting up and upkeep of fair and universal customer services are among the priorities in the government area. At the same time, it's up to the political system to promote policies of social inclusion, so that the technological leap forward may have quantitative and qualitative parallel results in terms of human, ethical and economic development. So-called "digital literacy" is a key element in this state of affairs.

In order to bolster the development of the New Economy in our country, we must encourage the utilization of these technologies in Brazilian businesses, which is the goal of the Information Society Program - one of the most ambitious programs of the "Advance Brazil" development plan and the result of efforts initially undertaken in 1996 by the National Science and Technology Council. Its main purpose is to establish the foundations of a nationwide strategic project to integrate and coordinate the development and employment of advanced computer, communication and information technologies and their applications in society. This endeavor will allow the government to further research and education, as well as assure that the Brazilian economy is capable of competing on the world market.

The Ministry of Science and Technology (MST) is presenting society with the Green Book, containing the goals for the implementation of the Information Society Program in Brazil and providing a compact summary of the possible applications of Information Technology. The Green Book is based on a study carried out by the Program's Implementation Group, formed by representatives of the MST, private enterprise and the academic world, under the coordination of Dr. Tadao Takahashi; all to whom I am deeply grateful.

This book analyzes a series of actions to advance and foster the Information Society in Brazil in all of its aspects: expansion of access, means of connectivity, training of human resources, incentives for research and development, electronic commerce, development of new applications. This goal is a challenge to be met by the Government and Brazilian society.

The Green Book of the Information Society in Brazil is being published to be amply distributed in order to fuel a debate among other government Ministries, the business sector and the scientific community. In upcoming months, the ideas here presented should also be discussed with the segments of Brazilian society more directly involved. With the incorporation of the suggestions received through this public scrutiny, it will be possible to trail a path in the direction of establishing clear political lines of actions to be followed and strategic activities to be developed.

Ambassador Ronaldo Mota Sardenberg
Minister of State of Science and Technology

Implementation Group of the Information Society Program

Tadao Takahashi (ISOC/Brazil), General Coordinator

Aldo de Albuquerque Barreto (Ancib)

Carlos Eduardo Corrêa da Fonseca (ABNAmro Bank)

Carlos José Pereira de Lucena (PUC-RJ)

Erno Ivan Paulinyi (Fucapi/MI)

Eugenius Kaszkurewicz (Coppe/UFRJ)

Flávio Rech Wagner (SBC)

Hans Kurt Edmund Liesenberg (Unicamp)

Ivan de Moura Campos (Internet Management Committee in Brazil)

José Alexandre Bicalho (ANATEL)

José Luiz Ribeiro Filho (RNP/MCT)

Lélio Fellows Filho (CNPq)

Léo Pini Magalhães (Unicamp)

Leonardo Humberto Bucher (Assespro)

Lúcia Carvalho Pinto de Melo (FJN)

Marcos Formiga (MI)

Mário Dias Ripper (*F&R Engenheiros Associados*)

Paulo Roberto Tosta da Silva (Finep)

Romildo Monte (CTI/MCT)

Rosa Maria Vicari (UFRGS)

Sílvio Romero Lemos Meira (UFPE)

Vanda Regina Teijeira Scartezini (Sepin/MCT)

Virgílio Augusto Fernandes Almeida (UFMG)

Thematic Groups (TG)

TG on Public Administration

Solon Lemos Pinto (SLTI/MP), Coordinator

TG on Entrepreneurial Efforts

José Carlos De Luca (Assespro), Coordinator

TG on Contents and Cultural Identity

Antônio Lisboa Carvalho de Miranda (UnB), Coordinator

TG on International Cooperation

Carlos José Pereira de Lucena (PUC-RJ), Coordinator

TG on Disclosure to Society

Silvio Romero Lemos Meira (UFPE), Coordinator

TG on Education

Nelson de Lucca Pretto (Faced/UFBA), Coordinator

TG on Infrastructure of Networks and Backbones

Liane Margarida Rockenbach Tarouco (UFRGS), Coordinator

TG on Integration and Regionalization

Abraham Benzaquen Sicsu (FJN), Coordinator

TG on Research and Development

Flavio Rech Wagner (SBC), Coordinator

TG on Planning

Mário Dias Ripper (F&R Consultoria), Coordinator

TG on High Performance Processing

Simplício Freitas (Baker-Hughes), Coordinator

TG on Employment

Maria de Nazaré Freitas Pereira (DEP/IBICT), Coordinator

Conception and Elaboration

Mário Dias Ripper (F&R Engenheiros Associados), Coordinator
Antônio Edison Urban (UFPR)
Dalci Maria dos Santos (IBICT and SocInfo)
Eugênio José Ferreira Neiva (Consultant)
Fernando Queiroz dos Santos Kneese (SocInfo)
Gorgônio Barreto Araújo (Nexos)
Hans Kurt Edmund Liesenberg (Unicamp)
Hélia de Sousa Chaves Ramos (IBICT and SocInfo)
Liz-Rejane Issberner Legey (DEP/IBICT)
Maria Elenita Menezes Nascimento (UnB)
Nicolau Carlos Terebesi Meisel (Consultant)
Patrícia Corrêa Henning (SocInfo)
Paulo Borges Lemos (Consultant)
Paulo Roberto Tosta da Silva (Finep)
Raul César Baptista Martins (4P Consultoria)
Sarita Albagli (DEP/IBICT)
Vera Cristina Rodrigues Feitosa (Consultant)

Technical-Administrative Support

Fernando Queiroz dos Santos Kneese (SocInfo), Coordinator
Maria Elenita Menezes Nascimento (UnB), Academic Liaison Coordinator
Adhara Cruz Soares Pinto (IBICT and SocInfo)
Alice Araújo Cunha (SocInfo)
Anderson Lopes de Moraes (SocInfo)
Ariane Cristina Rosa (*Projeto Agência Cidadão*)
Carlos Eduardo de Oliveira Júnior (SocInfo)
Cátia Silene de Paula Carvalho (IBICT)
Daniel Caetano (SocInfo)
Daniela Zwicker Guzzi (*Projeto Agência Cidadão*)
Denise de Alencar Chaves de Oliveira (IBICT)
Denise dos Santos Pacheco (SocInfo)
Eustáquio Mendes Guimarães (IBICT)
Francisca Vale Bentes (IBICT)
Jeanine Vianna de Freitas (SocInfo)
José Maria Seixas Fonteles (SocInfo)
Leila Mendonça Raulino (SocInfo)
Luciana Vieira de Araújo (SocInfo)
Mara Regina Montanini (*Projeto Agência Cidadão*)
Marco Antonio Andrade Dias (IBICT)
Maria Dias Bicalho (IBICT)
Maria Izabel da Costa Fonseca (SocInfo)
Martha Faria de Menezes (SocInfo)
Moema Tavares da Costa (SocInfo)
Nanci da Costa Telheiro do Nascimento (IBICT and SocInfo)
Paula Menna Barreto (SocInfo)
Regina Coeli Silva Fernandes (IBICT)
Robert Antônio Santana Pereira (SocInfo)
Rosa Eliane Rodrigues Silva (SocInfo)
Wânia Maria de Souza Rodrigues (IBICT)

Contributions

At our invitation, nearly 150 specialists from around the country divided up into Thematic Groups and have regularly attended the scheduled meetings. Several of these individuals were involved in more than one Group, helping the Program integrate the various studies being undertaken on parallel discussion fronts.

Throughout the 13 months of this endeavor, the Program also benefited from technical comments, critical suggestions, technical-administrative support and, even, simple encouragement from countless numbers of people in Brazil and overseas, either through official and unofficial meetings, informal conversations, or via the Internet.

In an attempt to give the credit where credit is due and to express our gratitude to as many people as possible, we chose to list the names we recall in the roster below, without distinction of the role they played or the position they occupy:

Abel Laerte Packer (Bireme)	Benny Sterenthal (Microsoft)
Abelardo Teixeira Fraga (Sucesu)	Boris Groth (GMD)
Abigail de Oliveira Carvalho (UFMG)	Bruno Ricardo Costa Ayres (<i>Rede de Voluntariado</i>)
Abraham Benzaquen Sicsu (FJN)	Carlos Alberto Afonso (RITS)
Adailton José dos Santos Silva (RNP)	Carlos Alberto Schneider (Certi)
Adhara Cruz Soares Pinto (IBICT and SocInfo)	Carlos Américo Pacheco (MCT)
Adriano Batista Dias (FJN)	Carlos André Guimarães Ferraz (Sectma/UFPE)
Alan Dubner (ByNet)	Carlos Antônio Brandão (Unicamp)
Aldo de Albuquerque Barreto (Ancib)	Carlos Duarte de Oliveira Júnior (SocInfo)
Alejandro Pisanty (Unam, Mexico)	Carlos Eduardo Corrêa da Fonseca (ABN Amro Bank)
Alice Araújo Cunha (SocInfo)	Carlos Henrique Cabral Duarte (BNDES)
Alice Rangel de Paiva Abreu (CNPq)	Carlos Henrique Cardim (CEE)
Almiro Blumenschein (CNPq)	Carlos José Pereira de Lucena (PUC-RJ)
Aluysio Asti (BNDES)	Carlos Roberto de Faria e Souza (CNPq)
Álvaro Luiz Gayoso de Azeredo Coutinho (Coppe/UFRJ)	Cássio Jordão Motta Vecchiati (Abranet)
Álvaro Marques (Metrored)	Cátia Silene de Paula Carvalho (IBICT)
Álvaro Veiga (PUC-RJ)	Cecília Leite Oliveira (IBICT)
Anaíza Caminha Gaspar (IBICT)	Célia Zaher (National Library)
Anders Wijkman (European Parliament)	Celso Deusdeti Costa (CNPq)
Anderson Lopes de Moraes (SocInfo)	Celso Melo (CNPq)
André Amaral (Finep)	Ceres Alves Prates (MP)
André Urani (Rio de Janeiro City Government)	César Ricardo Siqueira Bolano (UFS)
Andrei Kolesnikov (Russia-on-Line, Russia)	Christophe dos Santos (<i>Université Claude-Bernard</i>)
Andrew McLaughlin (Icann)	Claudete Camarano (BID)
Antônio Cruz Vasques (Secitece/Government of Ceará)	Claudia Canongia (IBICT)
Antônio Edison Urban (UFPR)	Claudine G. Oliveira (Netune)
Antônio Fábio Ribeiro (CNI)	Cláudio José Marinho (Sectma-PE)
Antônio Harris (Cabase, Argentina)	Cláudio Menezes (Unesco)
Antônio Lisboa Carvalho de Miranda (UnB)	Daniel Caetano (SocInfo)
Antônio Mendes dos Santos (Ministry of Finance, Portugal)	Daniela Zwicker Guzzi (<i>Projeto Agência Cidadão</i>)
Ariane Cristina Rosa (<i>Projeto Agência Cidadão</i>)	Dalci Maria dos Santos (IBICT and SocInfo)
Armando Roberto Cerchi Nascimento (Interlegis/Prodasen)	Daniel Pimienta (Funredes, Dominican Republic)
Arnaldo Machado de Sousa (Datasus)	Daniel Sigulem (Unifesp)
Beatriz Azeredo (BNDES)	Dea Mara Carvalho de Arruda (MS)
Beatriz de Faria Leão (SBIS)	Denise de Alencar Chaves de Oliveira (IBICT)
	Denise dos Santos Pacheco (SocInfo)

- Denise Grune Ewald (Cesup/UFRGS)
Dilmor Malheiros Meira (Telemar)
Djalma Petit (Softex/Tecsoft)
Doris Faria (UnB)
Dulcicio Elias Oliveira Pedrosa (MS)
Edith Ackermann (MIT)
Edmundo Albuquerque de Souza e Silva (UFRJ)
Edmundo Carlos Guizolphe Castro (Cenapad-SP/
Unicamp)
Edmundo M. O. Ribeiro (*FGV Consulting*)
Edna Rodrigues Rosa (ProMater)
Eduardo Garcia (BB)
Eliana Cardoso Emediato de Azambuja (MST)
Elizabeth Rondelli (UFRJ)
Elza Maria Ferraz Barbosa (IBICT)
Emilio Barros de Lucena (UFPE)
Ephrain Guilherme Neitzke (Softex)
Eratostenes Edson Ramalho de Araujo (Softex)
Erick Edgar Aliaga Sanz (Anpi)
Erno Ivan Paulinyi (Fucapi/MI)
Evando Mirra de Paula e Silva (CNPq)
Evandro Prestes Guerreiro (Senac/Nitedi - SP)
Evaristo Eduardo de Miranda (Embrapa)
Eugenio Jose Ferreira Neiva (Consultant)
Eugenius Kaszkurewicz (Coppe/UFRJ)
Eustáquio Mendes Guimarães (IBICT)
Fábio Gандour (IBM)
Fábio Marinho (IBPI)
Fernando Aldana (UPM/Spain)
Fernando Flávio Pacheco (PUC-PR)
Fernando Nery (Módulo)
Fernando Queiroz dos Santos Kneese (SocInfo)
Flávio Barbosa Toledo (LNCC)
Flávio Grynszpan (Fiesp)
Flávio Rech Wagner (SBC)
Florencio Utreras (Reuna/Chile)
Francisca Vale Bentes (IBICT)
Frederico Novaes (SENAC-RJ)
Geraldo Biasoto Junior (MS)
Geraldo José Correa (Sebrae)
Geraldo Moreira Prado (DEP/IBICT)
Gilda Olinto (DEP/IBICT)
Gillian Marcelle (Consultant, Trinidad & Tobago)
Gilson Schwartz (USP and *Folha de São Paulo* newspaper)
Glaci Zancan (SBPC)
Gley Fabiano Cardoso Xavier (Senac-SP)
Gonzalo Enrique Vasquez Enríquez (Anprotec)
Gorgônio Barreto Araújo (Nexos)
Guilherme Euclides Brandão (MCT)
Hans Kurt Edmund Liesenberg (Unicamp)
Helena Maria Martins Lastres (CNPq)
Helena Montanini (ProMater)
Hélia de Sousa Chaves Ramos (IBICT and SocInfo)
- Hélio Kuramoto (IBICT)
Hiroshi Uchida (IAS/UNU)
Hulda Oliveira Giesbrecht (ABIPTI)
Humberto Luiz Ribeiro (CNI)
Ibtisam Abdel Jaber (RSS/UNU)
Ijalmar M. Nogueira (MST)
Ilara Hämmeli Sozzi de Moraes (Fiocruz)
Iran Siqueira Lima (Fipecafi/USP)
Isa Assef dos Santos (Fucapi)
Isidro Fernández Aballí (Unesco)
Ismar Kaufman (*In Forma*)
Ivan Araripe de Paula Freitas (CNPq)
Ivan de Moura Campos (Internet Management
Committee in Brazil)
Jacob Palis Junior (Impa)
Jacobus Willibrordus Swart (SBMicro)
Jacques Levin (Datasus/MS)
Jacques Salomon Crispim Soares Pinto (MST)
Jairo Panetta (Finep)
James Mason (JTC1/ISO)
Jean-Marie Farines (UFSC)
Jeanine Vianna de Freitas (SocInfo)
Jesus Cardeñosa (UPM/Spain)
João Marcos Romano (SBTel)
Jorge de Paula Ávila (Finep)
Jorge Mantovani (*Secretaria C&T/Government of Argentina*)
Jorge Werthein (Unesco)
José Alexandre Bicalho (Anatel)
José Armando Valente (Unicamp)
José Augusto Suruagy Monteiro (Unifacs)
José Carlos de Luca (Assespro)
José Carlos Maldonado (USP-São Carlos)
José Carlos Paim Vieira (*Agência de Desenvolvimento
Econômico do Grande ABC*)
José Cassiolato (UFRJ)
José de Menezes da Gama Malcher (*Comunidade Solidária*)
José Dias Coelho (MCT, Portugal)
José Dion de Melo Teles (Innova)
José Eduardo Fiates (Anprotec)
José Fernando Halfeld dos Guarany (Fórum Informática)
José Henrique Vilhena de Paiva (UFRJ)
José Israel Vargas (MRE)
José Luiz Ribeiro Filho (RNP/MST)
José Macedo da Silva (MST)
Jose María Figueres Olsen (*Fundacion Des. Sostenible*, Costa Rica)
José Maria Gomes Martins (MST)
José Maria Seixas Fonteles (SocInfo)
José Marques de Melo (USP)
José Ricardo Bergmann (SBMO)
José Roberto Boisson de Marca (PUC-RJ)
José Teixeira Coelho Netto (USP)
Julian Dunayevich (*RedEscuelas/Argentina*)
Julio Guzman Rodriguez (OCT, Government of Spain)

- Julio Semeghini (Chamber of Deputies)
Jurandir Fernandes (Denatran/MJ)
Kátia Gilaberte (MST)
Kazuhiko Nishi (Sega, Japan)
Kival Chaves Weber (Softex)
Klaus Ulmann (DFN, Germany)
Lauro Mohry (UnB)
Lea da Cruz Fagundes (UFRGS)
Leila Mendonça Raulino (SocInfo)
Lélio Fellows Filho (CNPq)
Léo Pini Magalhães (Unicamp)
Leonardo Guimarães Neto (Ceplan)
Leonardo Humberto Bucher (Assespro)
Leonardo Lazarte (UnB)
Liane Margarida Rockenbach Tarouco (UFRGS)
Lígia Café (IBICT)
Lillian Maria Araújo de Rezende Alvares (IBICT)
Lindolpho de Carvalho Dias (MST)
Liz-Rejane Issberner Legey (DEP/IBICT)
Liscio José Monnerat Caparelli (Nortel)
Lúcia Carvalho Pinto de Melo (FJN and MST)
Luciana Vieira de Araújo (SocInfo)
Luis Carlos Bresser Pereira (FGV)
Luís Del Fiorentino (CPqD)
Luiz Afonso Bermudez (Anprotec)
Luiz Blank (INT)
Luiz Cláudio de Pinho Almeida (CNC)
Luiz Fernando Gomes Soares (PUC-RJ)
Lynaldo Cavalcanti de Albuquerque (ABIPTI)
Malde M. Vilas Boas Bernardes (Datasus/MS)
Manoel Adalberto Carlos Montenegro Lopes da Cruz (MST)
Manoel Lemos (PageMe)
Manoel Lousada Soares (MDIC)
Manoel Messias Nascimento Melo (Fenadados)
Mara Regina Montanini (*Projeto Agência Cidadão*)
Marcelo Barbieri (Chamber of Deputies)
Marcelo Ferreira Guimarães (*Fundação Certi*)
Márcia Fantuzzi Dias (SocInfo)
Márcia Maria de Matos (Sebrae)
Márcio Bunte de Carvalho (UFMG)
Marcio Pochmann (Unicamp)
Marco Antônio Andrade Dias (IBICT)
Marco Antônio Candelot (IBM)
Marcos Formiga (MI)
Marcos Wettreich (iBest)
Margareth Izumi Watanabe (Inep)
Margarida Maria Pion da Rocha Paranhos (Sepin/MST)
Maria Angela Barreto Campelo (PUC-RJ)
Maria Carmen Romcy de Carvalho (IBICT)
Maria de Fátima de Lima Pinel (UERJ)
Maria de Nazaré Freitas Pereira (DEP/IBICT)
Maria Dias Bicalho (IBICT)
Maria Elenita Menezes Nascimento (UnB)
- Maria Elisa Tótoli (CEE)
Maria Helena Guimarães de Castro (Inep)
Maria Inês Bastos (Unesco)
Maria Izabel da Costa Fonseca (SocInfo)
Maria Laura da Rocha (MCT)
Maria Ligaya Fujita (PNUD)
Mario Albornoz (*Universidade Quilmes*, Argentina)
Mario Campolargo (European Commission)
Mário Dias Ripper (*F&R Engenheiros Associados*)
Mario Muratorio Not (Microsoft)
Marisa Bräschler (IBICT)
Markku Talvio (EIM, Finland)
Marta Prochnik (BNDES)
Martha Faria de Menezes (SocInfo)
Mattias Klose (Omkron, Germany)
Maurício Laval Pina de Sousa Mugnaini (Fenainfo)
Maurício Piccinini (BNDES)
Maurizio Mauro (Bozz - Allen & Hamilton)
Mauro Cavalcante Pequeno (UFC)
Mauro Marcondes (Finep)
Meiying Zhu (IAS/UNU)
Michael Krieger (UCLA)
Michel F. Bosco (European Commission)
Miguel Darcy de Oliveira (IDAC)
Miguel Noronha (Bozz - Allen & Hamilton)
Mitsuo Shibata (Telefonica)
Moema Tavares da Costa (SocInfo)
Najat Rochdi (Internet Society, Morocco)
Nanci da Costa Telheiro do Nascimento (IBICT and SocInfo)
Nathalie Frezouls (AcknoSoft, France)
Nelson de Castro Senra (IBGE)
Nelson de Lucca Pretto (Faced/UFBA)
Nelson Teixeira de Faria (Sepin/MST)
Ney Gilberto Leal (MP)
Nicolau Carlos Terebesi Meisel (Consultant)
Nii Quaynor (National Computer Systems, Ghana)
Orlin Kouzov (National Research Network, Bulgaria)
Oscar Alejandro Robles Garay (ITESM, Mexico)
Oscar Lorenzo Fernandes (MDIC)
Oscar Messano (Cabase, Argentina)
Osires Silva (Fiesp)
Osvaldo Barbosa de Oliveira (Microsoft)
Osvaldo Castilho (PNUD)
Osvaldo Novaes Oliveira Jr. (USP - SCarlos)
Otaviano Fiori (MINC)
Othon Jambeiro (UFBA)
Othon Santos Antunes Neto (Finep)
Paolo Morawski (RAI, Italy)
Pascal Baba Couloubaly (Ministry of Culture, Mali)
Patrícia Corrêa Henning (SocInfo)
Paula Menna Barreto (SocInfo)
Paulo Borges Lemos (Consultant)

- | | |
|--|---|
| Paulo Carneiro da Cunha Filho (UFPE) | Sérgio Barcellos (SLTI/MP) |
| Paulo de Queiroz Rocha Pinto (MCT) | Sérgio Francisco Alves (Finep) |
| Paulo Manuel Protásio (<i>Marketing Internacional Consultores</i>) | Sérgio Góes de Paula (RITS) |
| Paulo Mauricio Castelo Branco (BNDES) | Sérgio Saab (MC) |
| Paulo Roberto Tosta da Silva (Finep) | Simplicio Freitas (Baker-Hughes) |
| Paulo Sérgio Bruno Novaes (Finep) | Silvio Romero Lemos Meira (UFPE) |
| Pedro Anísio Figueiredo (IBICT) | Solon Lemos Pinto (SLTI/MP) |
| Pedro Calmon Pepeu Garcia Vieira Santana (Sudam) | Srinivasan Ramani (Silverline Technologies, India) |
| Pedro Duncan (BNDES) | Stefan Jahnichen (GMD) |
| Pedro Paulo Poppovic (SEED/MEC) | Sushil Baguant (National Computer Board, Mauritius) |
| Pedro Urra (<i>Ministerio de la Salud, Cuba</i>) | Taholo Kami (Small Island Developing States Network, Tonga) |
| Pedro Veiga (MCT, Portugal) | Tarcisio Della Senta (IAS/UNU) |
| Priscila Koeller Rodrigues Vieira (MP) | Teresinha Fróes Burnham (UFBA) |
| Ramiro Jordán (Istec) | Tereza Maria Barros Campos do Amaral (UFPE) |
| Raphael Mandarino Júnior (Anui) | Thereza Lobo (<i>Comunidade Solidária</i>) |
| Raul Antonio Del Fiol (<i>Promon Eletrônica</i>) | Toomas-Hendrik Ilves (Ministry of Foreign Affairs, Estonia) |
| Raul César Baptista Martins (<i>4P Consultoria</i>) | Valéria Lúcia Pero (<i>Instituto de Economia/UFRJ</i>) |
| Regina Célia Peres Borges (Prodasen) | Vanda Regina Teijeira Scartezini (Sepin/MST) |
| Ricardo de Oliveira Anido (Unicamp) | Vanderlei Rainelli Ferreira (Microsoft) |
| Ricardo Miranda Barcia (UFSC) | Vani Moreira Kenski (USP) |
| Ricardo Oliveira Maciel (DGI Netc) | Vera Cristina Rodrigues Feitosa (Consultant) |
| Ricardo Tanscheit (PUC-RJ) | Vera Valente (MS) |
| Richard Reilly (Univ. College Dublin, Ireland) | Vicente Landim (Sepin/MST) |
| Robert Antônio Santana Pereira (SocInfo) | Virgílio Augusto Fernandes Almeida (UFMG) |
| Robert Wilson III (CVC) | Virgínia Olga Koeche Müzell Jardim (<i>Secretaria de C&T-Rio Grande do Sul</i>) |
| Roberto Castelo (OMPI) | Wagner Meira Jr. (UFMG) |
| Roberto Craveiro Rodrigues (Fenadados) | Walda Antunes (UnB) |
| Roberto Hexsel (UFPR) | Walter Franco (PNUD) |
| Roberto Isnard (Abinee) | Wang Quiming (Ministry of Science and Technology, China) |
| Roberto J. Rodrigues (Opas) | Wânia Maria de Souza Rodrigues (IBICT) |
| Roberto Pinto Martins (Sepin/MST) | Washington Braga Filho (Rede Rio/SCT-Rio de Janeiro) |
| Roberto Souto Maior de Barros (UFPE) | William Sheppard (Intel, USA) |
| Rodolfo Miguel Baccarelli (PMC) | Xavier Baquero Dirani (Equis, Ecuador) |
| Rodrigo Baggio Barreto (CDI) | Yone Sepúlveda Chastinet (Prossiga/CNPq) |
| Rogério Bellini dos Santos (Sebrae) | Yushi Komachi (National/Panasonic, Japan) |
| Rogério dos Santos Bittencourt (SocInfo) | |
| Rogério Viana (MDIC) | |
| Romildo Monte (CTI/MST) | |
| Rômulo Ângelo Zanco Filho (CPqD) | |
| Ronaldo Mota Sardenberg (MST) | |
| Rony de Oliveira (<i>FGV Consulting</i>) | |
| Rosa Delgado (SITA/ITU) | |
| Rosa Eliane Rodrigues Silva (SocInfo) | |
| Rosa Maria Vicari (UFRGS) | |
| Rubem Cesar Fernandes (Viva Rio) | |
| Rubem Fernandes Monteiro Filho (Sudene) | |
| Rubens Queiróz de Almeida (Unicamp) | |
| Rui Henrique P. Albuquerque (Unicamp) | |
| Ruth Cardoso (<i>Comunidade Solidária</i>) | |
| Ruy Barroso Jr. (Febraban) | |
| Ruy de Araújo Caldas (Embrapa and UCB) | |
| Safer Abdel-Rahim (RSS/UNU) | |
| Sarita Albagli (DEP/IBICT) | |

Preface

In May of last year, at the invitation of the Ministry of Science and Technology (MST), a discussion group began to meet in Brasilia to consider the possible outlines and guidelines for a plan of action aimed at strengthening an Information Society in Brazil. Such a program would translate into concrete projects for the initiative approved by the National Science and Technology Council, in December of 1998, and that influenced many of the actions proposed by the MST and included in the federal government's 4-year development plan – the 2000-2003 Governmental Plan (*Plano Plurianual*).

From the onset, the magnitude of the challenge that such a program would pose became evident to everyone involved in the discussions, not only in terms of content *per se*, but also (and mainly) because the need to get all of Brazilian society involved in the creative process to outline a program.

The group proposed to the MST that a new program be conceived, by taking advantage and integrating the actions already underway within the ministry and actions proposed in the Governmental Plan, but employing a model of planning and implementation that would include three stages: *preliminary studies*, leading to the formal presentation of the Program; *detailed proposal*, to be synthesized in the *Green Book*; and *widespread consultation with the general public*, culminating in a detailed plan of execution for the Program, to be described in a White Book.

Accepting the suggestion, the MST formed the Implementation Group of the so-called *Information Society Program in Brazil*, which initiated activities in August of 1999 with unparalleled enthusiasm. On December 15th, the Program was officially launched by the President of Brazil. Beginning in January of this year, the group began to work on the preliminary detailed proposal of the Program, through the creation of Thematic Groups for discussion, the contracting of studies, the analysis of experiences abroad, etc.

This Green Book is the result of this effort, which counted on the participation of more than 300 individuals in Brazil and overseas in various ways and in varying degrees. Of these, around 150 split up into 12 Thematic Groups and, throughout endless meetings, contributed with their opinions and suggestions in their areas of expertise. The acknowledgment of these individuals with the listing of their names, on pages x to xiii, is only a simplistic editorial solution that doesn't do justice to the dedication and enthusiasm of these collaborators.

The Green Book, now being presented to the MST, is, without a doubt, a source of great pride for the Implementation Group, because it resulted from the input of so many people and from such laborious effort to conceive and outline the proposal. It should be noted that the document has at least two unusual characteristics, if compared to similar endeavors of other nations: 1st) the Group's proposal attempts to cover, in an integrated and comprehensive manner, all of the aspects considered relevant to the Information Society in Brazil, from R&D to applications, from the government to the private sector, from advanced technologies to social impact; 2nd) the Group's proposal seeks to reach the level of *concrete actions*, aimed at fostering and enriching subsequent discussions for the consolidation of a final plan in the White Book.

Brasilia, September of 2000
Implementation Group
Information Society Program
Ministry of Science and Technology

Index

Presentation
The Implementation Group of the Information Society Program
Thematic Groups
Conception and Elaboration
Technical-Administrative Support
Contributions
Preface
Summary
Text Details
Figures
Graphs
Charts
Tables

Chapter1 – The Information Society

1.1 - Introduction
 The Convergence of Technological Base
 The Social-economic Impact
 Brazil
1.2 – The Information Society Program in Brazil
 Opportunities and Risks
 The Program
 Society on-line: a Partnership Project
 Organizational Structure

Annex I – The Evolution of Initiatives Towards an Information Society in the World

1.1 – Brief history
1.2 - Paradigms in the Structuring of National Initiatives
1.3 – Emphases of National Initiatives
1.4 – Governmental Action in Critical Aspects

Annex II – Monitoring Indicators

2.1 – Introduction
2.2 – The INEXSK (*Infrastructure, Experience, Skills, Knowledge*) Approach
 “Push” and “pull” effects
 Organizational Capacity
 The Detailed Model
 The *IT Footprint*
2.3 – Indicators of the eEurope 2002 Initiatives
 Indicative List of Indicators of eEurope 2002 (April 2000)

Annex III – Computer Technology and Telecommunications in Brazil

3.1 – Introduction
3.2 – Telecommunications
 Privatization Results
3.3 – Computer Technology
 RNP
 SOFTEX 2000
 PROTEM-CC
 SINAPAD

3.4 – Current Status and Prospects

- The Computer Sector
- Local Technology
- Trade Balance of Information and Communication Technologies
- Local Manufacture and Exportation
- Generation and Transferal of Technologies
- Tendencies in the MST

Annex IV - The Internet

4.1 – Introduction

- The Academic Sector and the Internet
- The Evolution of the Internet in Brazil

4.2 – Architecture and Operation of the Internet

- Backbone and Access
- Speed and Service
- Traffic between Different Backbones
- Network Engineering and Security
- IP Addresses and Domain Names
- Operation of the Brazilian Internet

4.3 – Governance of the Internet

4.4 – The Internet in Brazil

- Number of Domains in Brazil 9

4.5 – Challenges for the Future

- Backboning*
- Access
- Internet 2 and the New Generation Internet

Text Details

- A1.1 HPCC/NII and the Beginning of it All
- A1.2 *Global Information Society/G8: Final Report on Pilot-Projects*
- A3.1 ANATEL and the National Information Infrastructure
- A3.2 ASSESPRO
- A3.3 SEPIN/MST

Figures

- 1.1 The Convergence of Contents, Computation and Communications
- 1.2 International Connectivity and the Internet (from 1991 to 1997)
- 1.3 Organizational Structure
- 1.4 Reference Model for Discussion
- 1.5 The INEXSK Approach for Technical Indicators
- A1.1 Stages towards an Information Society
- A2.1 “Ideal” Indicator
- A2.2 *Pull/Push Process in the INEXSK Model*
- A2.3 *The IT Footprint*
- A3.1 Evolution of Telephone Density of Commuted Hard-line Phone Service
- A3.2 Evolution of Telephone Density of Commuted Wireless Service
- A4.1 A *Backbone* with 6 Points in the Country
- A4.2 Another *Backbone* with 3 Points of its own
- A4.3 Point of Traffic Exchange between Two *Backbones*

- A4.4 Structure of Domains
- A4.5 Fiber Optics Infrastructure under Implementation in the Country
- A4.6 Cycles of Evolution of the Internet in the U.S.

Graphs

- A4.1 Distribution of *Hosts* in the World
- A4.2 Evolution of the Number of Providers in the Country
- A4.3 Regional Distribution of Providers in the Country (1999)
- A4.4 Internet Service in Brazil – Number of Domains (2000)

Charts

- 1.1 Thematic Groups of the Implementation Phase
- A2.1 Indicators Employed
- A4.1 American Initiatives for the Evolution of the Internet

Tables

- A2.1 Indexes for Industrialized Nations
- A3.1 Global Information Economy in Brazil
- A3.2 Digital Commutation Equipment – Domestic Markets
- A3.3 Brazil: Trade Balance – Computer Technology and Telecommunications 96/99 (in US\$ millions)

