

# **E-Government in Brazil: The Current Situation, Analysis, Evaluations and Challenge**

***Abstract:** This paper elaborates on the e-Government situation in Brazil, through the investigation of official documents, governmental projects and websites related to the theme. It exposes the e-Government's main actors and variables such as the network preparedness, interface services and applications and network integration and optimization. A global overview of its status is also presented. Furthermore, it discusses about the technological and socio-economic challenges that restrict its implementation, and, finally elaborates on the effect of the BRIC thesis's study on the future Brazilian e-Government situation.*

## **1. Introduction**

The term e-Government was first introduced in 1993, by the *U.S National Performance Review*, and was spread quickly. E-Government is not a tool limited to the richer countries. Indeed, according to the World Bank [1], some of the most innovative uses of the Internet in government are appearing in the developing world, as Information and Communication Technologies (ICT) are being used to streamline government and connect it more closely with the people it is supposed to serve. Brazilian pioneering and successful practices, such as the e-voting system and the electronic tax declaration system, have shown the commitment of the government, to implement e-Government to benefit its citizens. The impact and potential of the Brazilian e-Government practices are higher when considering the country as a part of the so-called BRIC economies, much likely to become dominant economies by the year 2050.

This paper is segmented as follows: section 2 presents information on the Brazilian profile, in order to picture better the scope and limitations of the Brazilian e-Government implementation. Section 3 exposes the main transformations realized on the Government Executive branch, along the timeline, to better suit e-Government. The following section performs an e-Government analysis considering variables as the network preparedness, services and applications, network integration and optimization, human resources development and other relevant projects. Section 5 provides an worldwide overview of the e-Government situation in Brazil according to evaluations made by specialized research groups. Section 6 presents a discussion related to the main challenges that faced by the Brazilian Government in order to do such implementation, and breathily elaborates on the effect of the BRIC thesis's study on the future *de facto* e-Government implementation. At last, the final considerations are presented.

## **2. Brazil's Profile**

Brazil is administratively divided into 26 states and 1 federal district, in which its capital, Brasília, is located; and is governed as a federative republic. The Brazilian Institute of Geography and Statistics (IBGE) census in 2000 pointed out that the

population reached 169.799.170 habitants at this time. Further on in December 22<sup>nd</sup> 2005, the same institute estimated the total Brazilian population as 185.227.660 habitants<sup>1</sup>. Considering the census estimations for 2006, the age structure is as follows: (i) 0-14 years: 25.8%; (ii) 15-64 years: 68.1%; (iii) 65 years and over: 6.1%. The population growth rate is 1.04%; and the life expectancy at birth related to the whole population is set at 71.97 years (68.02 years for males and 76.12 years for females).

### **3. E-Government Timeline**

The e-Government appeared in the Brazilian Federal Government's agenda in 2000, and soon was implemented as a program coordinated by an interministerial committee. This committee was conceived by the Civil House of the Republic Presidency, in April 3<sup>rd</sup> 2000, and was denominated the Work Group in Information Technology (GTTI). It was responsible for investigating and proposing policies, directives and patterns regarding new electronic forms of interaction.

The actions of the GTTI were combined with the ideas proposed by the Information Society program (*Sociedade da Informação*), as described in the Green Book (*Livro Verde*) [2]. This program, created in 1999, has been coordinated by the Ministry of Science and Technology. The Green Book exposes actions towards the strengthening of the economy through the usage of ICT and the expansion of its access to the population. Those actions strive for connecting the government with the business sector and the scientific and technological society.

In October 18<sup>th</sup> 2000, the e-Government's Executive Committee (CEGE) was established, and presided over by the Chief Minister of the Civil House. Its responsibilities are to formulate policies, establish directives, coordinate and articulate actions for implementing the e-Government; in such a way to provide services and information to the citizens. This committee created four Thematic Groups in charge of researching and proposing ideas for the development the e-Government program.

The current policy of effective e-Government in Brazil was formalized by the document *The Electronic Government's Policy in Brazil* [3], emitted by the Secretary of Logistics and Information Technology of the Planning, Budget and Administration Ministry (SLTI), in August 2001. The SLTI started assuring technical-administrative support and to supervise CEGE, interacting with its coordinators.

In September 2002, a preliminary study [4] exposing the directives, actions, institutional modifications and projects that integrate the e-Government program, displaying the goals and results reached was presented. The final version [5] was presented in December 2002, exposing its improvements and its limitations.

The 4 Work Groups were substituted, in October 29<sup>th</sup> 2003, by 8 Technical Committees. One of its goals was to better organize the inventory over the use of ICT inside the government<sup>2</sup>. In May 4<sup>th</sup> 2004, the Technical Committees' coordinators were

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<sup>1</sup> Source: IBGE, <http://www.ibge.gov.br/> (Last access: December 22<sup>nd</sup>, 2005).

<sup>2</sup> Source: Ministry of Planning, Budget and Management, [http://www.planejamento.gov.br/tecnologia\\_informacao/conteudo/noticias/comite\\_exec\\_egov\\_cria\\_camaras.htm](http://www.planejamento.gov.br/tecnologia_informacao/conteudo/noticias/comite_exec_egov_cria_camaras.htm) (Published: May, 15 2003; Last access: December 30<sup>th</sup>, 2005).

finally designated. And, in July 8<sup>th</sup> 2004, the SLTI also established an Electronic Government Department (DGE)<sup>3</sup>.

## **4. E-Government Analysis**

### **4.1. Network Preparedness**

According to the president of National Agency for Telecommunications (ANATEL), in December 15<sup>th</sup> 2004, Brazil surpassed 100.5 million mobile and fixed phones. There were 61.18 million mobile accesses, and 39.36 million fixed, counted in October of the same year. ANATEL's latest report exposed that Brazil ended its 3<sup>rd</sup> semester 2006 with 89,408 million mobile phones, in which 72 million are prepaid, 80.5% of the total<sup>4</sup>.

Research carried out by the Ipsos-Opinion Institute applied to 8.540 households, during the period of August and September 2005, found that the Brazilian Internet Management Committee (CGI)<sup>5</sup>, shows that 16.91% of all domiciles have at least one computer, and 9.39% of population can access Internet in their house. Among them, 39.49 % has access via modem dial-up connection, 8.12% via Digital Subscriber Line (DSL), and 3.56% via Integrated Services Digital Network (ISDN).

### **4.2. Required Applications and Services**

Regarding on-line applications, the Brazilian government has a main page for Services and Information (<http://www.e.gov.br>), an initiative of the federal government, carried out by the Ministry of Planning, Organization and Management<sup>6</sup>. It provides access to the Brazilian government by a subject or by department, offering 800 on-line services.

A best practice regarding interact and transact services is the Federal Tax Authority portal ReceitaNet ([receita.fazenda.gov.br](http://receita.fazenda.gov.br)). It enables on-line submission of different tax returns as well as tax payments, as it provides access to databases with taxpayer information.

The electronic tender system (e-Tender) is available at the ComprasNet portal ([www.comprasnet.gov.br](http://www.comprasnet.gov.br)). It is a sophisticated service that reflects the intentions of private and corporate citizens for on-line procurement used by more than one thousand federal government procurement units. The available electronic taxation (e-Tax) procedures are listed in the Brazilian Government Portal for Information and Services<sup>7</sup>.

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<sup>3</sup> Source: Electronic Government portal, <http://www.governoeletronico.gov.br/governoeletronico/publicacao/noticia.wsp?tmp.noticia=565> (Last access: June 5<sup>th</sup>, 2006)

<sup>4</sup> Source: *Estadão*, <http://www.estadao.com.br/tecnologia/telecom/noticias/2006/abr/18/198.htm> (Published: April, 16<sup>th</sup> 2006; Last access: June 6<sup>th</sup>, 2006).

<sup>5</sup> Source: Brazilian Internet Steering Committee, <http://www.nic.br/indicadores/usuarios/index-ipsos.htm> (Last access: June 06<sup>th</sup>, 2006).

<sup>6</sup> Source: Services and Information Portal Brazilian Federal Government, <http://www.redegoverno.gov.br/> (Last access: December 22<sup>nd</sup>, 2005).

<sup>7</sup> Source: Services and Information Portal of Brazilian Federal Government, <http://www.e.gov.br/ServInfo/ServInfo.asp?GdGrupo=16&IdGrupo=16&NoGrupo=Fisco> (Last access: June 6<sup>th</sup>, 2006).

Electronic voting (e-Voting) was introduced, in Brazil, in 1996 and was the first country in the world to have fully electronic elections. The election for the current Brazilian President was held completely by electronic means, having 115 million voters in 406,000 electronic voting points<sup>8</sup>. The voting mechanism employs Direct Recording Electronic (DRE) machines, providing facilities to handicapped people. There still remain some questions about the security of the electronic voting system, but no case of fraud has yet been uncovered.

### **4.3. Network Integration and Management Optimization**

An important initiative, towards the system's interoperability, is the e-Government Interoperability Patterns (e-PING)<sup>9</sup> project, in its 1.5 version. The architecture sets data patterns for sharing digital data, defining policies and technical specifications so that different systems can generate and share information in real time. Also, it establishes interaction conditions of the Federal Government with the powers and government spheres and with the society in general.

The most important resource, being carried out by SLTI, regarding system optimization and network system's integration in the Federal Government sphere is the Integration and Intelligence System in Government Information (i3-Gov)<sup>10</sup>. It will allow the interconnection of data, information and processes from 8 structured systems of the government. Among them are information related to governmental acquisitions, civil servants data and budgeting. According to the Activities Report of the Ministry of Planning, Budget and Management, the i3-Gov prototypes were finalized in 2005, and the infrastructure should be in operation in 2006. The information, in the i3-Gov scope, will be interconnected using the e-PING specifications.

### **4.4. Human Resources Development**

In terms of human resources development, the Federal Government has established the Integrated System for Administration of General Services (SIASG) Virtual School ([escolasiag.comprasnet.gov.br](http://escolasiag.comprasnet.gov.br)), to capacitate managers to operate the SIASG according to specific areas related to the e-Government issue. This system, whose central normative organ is the SLTI, consists of a set of tools for managing the systemic functioning of the activities regarding the General Services System (SISG), such as materials management, administrative communications and procurements and contracts. It is disseminated among all ministries, autarchies and foundations.

Another initiative was the creation of the "Introduction to IT Management" course by Uniprev ([www.uniprev.gov.br](http://www.uniprev.gov.br)), the Corporative University of the Social Providence, in order to approach the e-Government thematic and qualify civil servants.

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<sup>8</sup> Source: Supreme Electoral Court, <http://www.tse.gov.br/> (Last access: June 3<sup>rd</sup>, 2006).

<sup>9</sup> Source: e-PING, <http://www.eping.e.gov.br/> (Last access: June 6<sup>th</sup>, 2006).

<sup>10</sup> Source: Electronic Government portal <http://www.governoeletronico.gov.br/> (Published: October, 20<sup>th</sup> 2005; Last access: June 6<sup>th</sup>, 2006).

#### **4.5. Other Relevant Projects**

The electronic signature and digital certification platform, ICP-Brasil<sup>11</sup>, created by the Information Technology Institute (ITI), is an important strategy towards the promotion of e-Government. It provides a set of techniques, practices and procedures, to be implemented by the organizations, in order to establish a digital certification system based on public keys.

Another important resource is the National Program of Support to the Administrative and Fiscal Administration of the Brazilian Municipal districts (PNAFM)<sup>12</sup> that focuses in the Brazilian municipalities' administrative adaptation in order to implement new technologies toward a fiscal transparency.

#### **5. E-Government World-wide Overview**

The Global Information Technology Report has been measuring national ICT strengths and weaknesses, and to evaluate progress. This study uses the Networked Readiness Index (NRI), covering a total of 102 economies in 2003-2004, to measure the degree of preparation of a nation or community to participate in and benefit from ICT developments [7]. Brazil is ranked at the 39<sup>th</sup> position, and points out that Brazil is among the top ranked in Latin American countries together with Chile (32<sup>nd</sup>) and Mexico (44<sup>th</sup>).

In 2005, the United Nations Department of Economic and Social Affairs, the Division for Public Administration and Development Management, undertook a research that presents an assessment of 191 UN Member States according to their state of e-government readiness and the extent of e-participation worldwide [8]. In the overall readiness index, Brazil assumes the 33<sup>rd</sup> world position; and 3<sup>rd</sup> when considering only Latin America, as Chile maintained its position as the regional leader followed by Mexico. The improvement of its position, comparing with 2004 (35<sup>th</sup>), is tied to the fact that the country is reinforcing its infrastructure, services; considering the Brazilian government's main page for Services and Information is one of the most effective in Latin America.

The Accenture's survey on e-Government Leadership analyzed 22 countries in respect the realization of their vision towards the on-line government. In each of the selected 22 countries, what was investigated was the quality and maturity of services compared along the last years, as well as the level at which business can be conducted electronically with their assigned government. This study, performed in 2004, shows Brazil at the 21<sup>st</sup> overall position, falling 2 positions down from the last 2002's annual survey, as the country almost had no improvement on its overall maturity [9]. It can be attributed for the most part to the lack of new investments and low prioritization of information technology during the first year of the new government, whose main priorities have been social programs.

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<sup>11</sup> Source: ICP-Brasil, <http://www.icpbrasil.gov.br/> (Last access: June 5<sup>th</sup>, 2006).

<sup>12</sup> Source: PNAFM, <http://www.fazenda.gov.br/ucp/pnafm> (Last access: June 4<sup>th</sup>, 2006).

## **6. Discussion**

Two main challenges can be outlined when considering the implementation of the e-Government in Brazil. The first one embodies ‘technological challenges’, which is limited by the technology, regarding the state-of-art of architectures, network topologies and software and databases’ design. In this respect, the interoperability of the Brazilian Federacy is a current issue, as the government is decentralized by nature. The constitutional autonomy of the three levels of government should be respected.

The second, and main, problem is associated to ‘socio-economic challenges’, which are more delicate in nature, requiring a radical transformation of the society’s structure. The initiatives toward the digital inclusion, currently, are spread into different segments: (i) Internet access terminals provided in kiosks, as GESAC<sup>13</sup> and Telecentros<sup>14</sup>; (ii) decreasing the price of connection, as the Fee Projeto 0i00<sup>15</sup>; (iii) public training, as the Proinfo<sup>16</sup> program for elementary schools; (iv) recycling of computers, as the Computers for Inclusion<sup>17</sup>; (v) and promoting free software, involving the business sectors and the government, as can be evidenced by the 7<sup>th</sup> Free Software International Forum<sup>18</sup>.

According to Goldman Sachs [10], over the next 50 years, Brazil, Russia, India and China could become a much larger force in the world’s economy. Those investigations were made by mapping out the gross domestic product growth, income per capita and currency movements. When performing a relationship with this study and the effectiveness of the Brazilian e-Government, taking into account the socio-economic challenges, by then, is necessary to pay attention to fact that the relation and causality between growth and income inequality are not clear. Therefore, one hypothesis is that even if the BRIC study proves to be correct, there is a significant chance that the e-Government implementation might be compromised, as the unequal income distribution may prevail, concentrating the income on a less representative percentage of the population. In such a scenario, limiting the access to the poor may cause democratic segmentation, in which only some segments of society will be able to digitally interact with the government and make use of e-Government facilities.

## **7. Final Considerations**

This paper presented the situation of the e-Government implementation in Brazil, since the first appearing in the government’s agenda in 2000. The investigations embraced

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<sup>13</sup> Source: Electronic Government Citizens’ Support Service, <http://www.idbrasil.gov.br/> (Last access: June 5<sup>th</sup>, 2006).

<sup>14</sup> Source: Telecentros, <http://www.telecentros.sp.gov.br/> (Last access: June 5<sup>th</sup>, 2006).

<sup>15</sup> Source: ANATEL and National Information Infrastructure Committee, [http://www.anatel.gov.br/comites\\_comissoes/comites/infra\\_estrutura/projeto\\_0i00.pdf](http://www.anatel.gov.br/comites_comissoes/comites/infra_estrutura/projeto_0i00.pdf) (Last access: June 5<sup>th</sup>, 2006)

<sup>16</sup> Source: National Program of Informatics in Education, <http://www.proinfo.mec.gov.br/> (Last access: June 5<sup>th</sup>, 2006).

<sup>17</sup> Source: SERPRO, [http://www.serpro.gov.br/noticiasSERPRO/20040526\\_18](http://www.serpro.gov.br/noticiasSERPRO/20040526_18) (Last access: June 5<sup>th</sup>, 2006).

<sup>18</sup> Source: Free Software International Forum, <http://fisl.softwarelivre.org/> and Free Software program, <http://www.softwarelivre.gov.br/> (Last access: June 5<sup>th</sup>, 2006).

official documents, governmental projects and websites related to the theme. The best practices aiming at the e-Government implementation in Brazil have shown that it is possible to perform a considerable advance in specific areas. However, its *de facto* implementation has been hardly restricted by two main problems that is referenced here as technical and socio-economic challenges. Special attention should be paid to the later, as it will require a radical change in society so that all segments could make an effective use of the ICT towards democracy. Therefore, the government should project and implement e-Government in such a manner to enter into conformity with the socio-economic situation, so that the e-Government could be meaningful, embracing citizens from the different social classes.

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