

D.5.2 – Status of ICT Policy Development – Country Report Brazil

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1 INTRODUCTION

In the following report the overall scenario for ICT priorities in Brazil is presented in order to set up a country overview and a common understanding on ICT policies in view to possible future EU-LA cooperation.

It is also a review of initiatives of the PRO-IDEAL policy dialogue strategy to strengthen ICT agenda setting with selected stakeholders from the EU and Brazil, in order to support Latin America national strategies geared towards international S&T co-operation in the ICT field. Moreover, specific guidelines were implemented in the realm of the University of São Paulo, the largest and best ranked (globally) university in the country, with outstanding results in the promotion of certified training under the PRO-IDEAL project angels framework.

The Brazilian PRO-IDEAL strategy has been to target major stakeholders and institutions with a national impact such as the National Social and Economic Development Bank (BNDES), the National SMEs Support Service (SEBRAE), the National Association of Tech Parks and Incubators (ANPROTEC), the Ministry of Culture as well as to support project ideas as formulated in coaching courses with project angels that were taken to the most important public calls at the Ministry of Science and Technology, the Ministry of Culture and the National Research Council (CNPq). Some of these ideas were formatted so as to fit submission procedures at FP7 calls and will very likely yield future results and exchanges.

The methodology used for this report is centered on the analysis of ICT national policies, qualified opinions of stakeholders that support the project and ICT R&D cooperation between LA and EU, with whom we are collaborating, and the PRO-IDEAL survey that includes results by country while offering a unique perspective which results from dialogues and project submission at the national level (a complete list of strategic stakeholders is available at http://www.pro-ideal.eu/who_is_who_brazil.

Brazilian researchers have for over 10 years successfully participated in the EU's Research Framework Programmes (FP) raising more than €7 million. In FP7 (2007-2013), 35 Brazilian organisations have already become partners in projects funded under the EU's ICT R&D and e-Infrastructures programmes. This represents more than a quarter of all Latin American participants in the EU's research programmes. The coordinated call for proposals EU-Brazil was presented at the ICT 2010 "Digitally Driven" event in Brussels. The call is also an important step forward with respect to the expansion of EU-Brazil broadband connectivity for scientific and technological cooperation, building on the Science & Technology Cooperation Agreement and on the Strategic Partnership signed respectively in 2006 and 2007. The call builds on the results of the workshop "EU-Brazil collaboration in the ICT field", which took place in São Paulo on 8-9 September 2009 with an audience of over 200 participants. The formal agreement to launch the call was reached at the third meeting of the Steering Committee of Science & Technology Agreement between the EU and Brazil held in November 2009 in Brasilia. Another high profile meeting is expected in 2011.

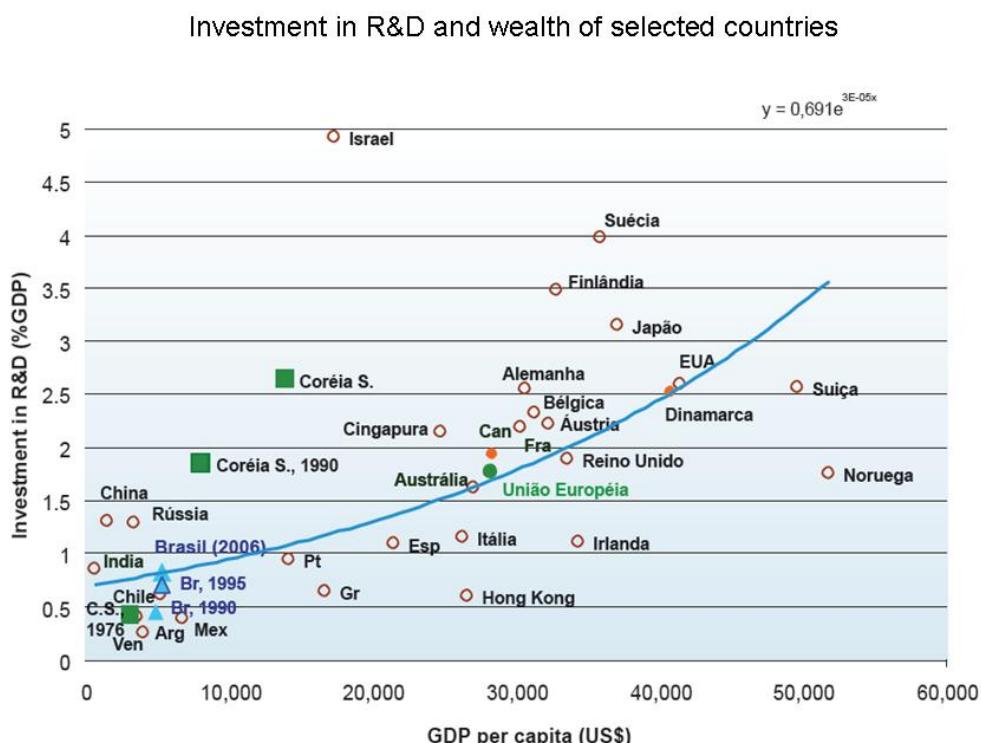
Last, but not least, the new Brazilian President, Dilma Rousseff, has announced goals and investments so as to prepare the country for the Soccer (2014) and Olympic (2016) games with a distinctive role for ICT-related projects with open platforms and local contribution with international quality standards, an emerging horizon for ICT cooperation and multistakeholder engagement in long term investments, with a special emphasis on broadband infrastructures, educational as well as entrepreneurial.

In short, this report stresses not only the results of the PRO-IDEAL initiatives but also highlight the emerging scenario for a new stage of ICT for social and economic development in Brazil

2 NATIONAL POLICIES AND STRATEGIES FOR ICT INDUSTRY DEVELOPMENT

The Action Plan for Science, Technology and Innovation (PACTI 2007-2010) that was launched in November, 2007 forms part of the set of plans developed for the second term of the government of President Luiz Inácio Lula da Silva (Programa de Aceleração do Crescimento - PAC). This aimed to implement a large number of projects and at the same time generate and encourage investment in the infrastructure of transport, energy, housing and health in order to give Brazil the opportunity to broaden and sustain rates of economic growth.

ICT industry development and digital inclusion strategies were part of this planning effort which was to be updated in a Blue Book published after a series of regional and sectoral meetings in 2010, as a result of the 4th National Conference on Science, Technology and Innovation (CNCTI) put to public consultation on the Internet in late October. The process of public consultation is part of the process of open discussion of the 4th CNCTI. The book says national science policy should be guided by two key areas: innovation and sustainable development. Another goal is investment in work on under-researched areas central to the country's development, such as marine sciences and the Amazon. Much of Brazil's 8,000-kilometre coastline is understudied, while the book says that Brazilians no longer view the forest as a source of wood but of new medicines. The book also explores the relationship between universities and the private sector, proposing the creation of institutions that can facilitate public-private dialogue.



Source: Science, Technology and Innovation for National Development, Ministry of Science and Technology, Summary Document,

The Conference has directed discussions along the lines of PACTI 2007-2010, namely: a) The national system of science, technology and innovation, b) Innovation in Business and Society; c) Research, Development and Innovation in Strategic Areas and d) Science, Technology and Innovation for Social Development.

The Blue Book is the most accomplished trend setter and overview of the Brazilian science, technology and innovation framework and is a pre-requisite for the understanding of ICT priorities in the country. It requires the adoption of a long-term agenda that includes: the consolidation of a National System of Science, Technology and Innovation, strengthening coordination among various sectors involved and reviewing legal frameworks that still hamper the research and development technology, businesses and educational institutions and research, the encouragement of technology; stimulating innovation in enterprises, the support of science and technology for social inclusion, encouraging innovation in this area, the sustainable use of national biomes, including the sea and the ocean, the promotion of development projects in the Amazon region, which enhances biodiversity and prevents the destruction of forests; improving the quality of education at all levels and the substantial increase in the formation of qualified labor markets via high school and higher education, increasing the number of researchers in companies, institutes and universities and last, but not least, the intensification of programs designed to reduce the country's regional imbalance in science and technology activities.

The Blue Book is also keen on recommendations for ICT policies and strategies. ICT policies are regarded as a challenge that requires continuous efforts that need to move simultaneously in different directions and in different regions of the country. These developments represent opportunities, which can be exploited or "threatened with obsolescence and destructive competition, and therefore the country needs to be agile to absorb them and adapt them to national needs".

The effective exploitation of the potential offered by ICT also depends "on the universalization of skills and digital literacy among workers and citizens, as well as the access to an efficient communications infrastructure by individuals, businesses, schools and public institutions". To move forward simultaneously on all these fronts is a necessary condition for the country to actually benefit from these technologies, identified as the basis of an emerging knowledge economy or society.

The latest announcement in the public policy realm has been published by the Ministry of Science and Technology in March, 2011, focusing on ICT opportunities connected to the global sports events that will take place in Brazil in 2014 and 2016. FINEP (the Projects and Studies Funding Agency at the Ministry of Science and Technology) will spend a R\$ 100 million budget (about US\$ 62 million) for information technology projects related to 2014 World Cup and the Olympic Games in Rio in 2016. The funds will be invested in ICT projects and will focus on proposals likely to generate innovative national technology which is competitive in global markets. The initiative is embedded in a larger government proposal aimed at the two mega events that will take place in Brazil. Demands for allocation of these resources will be linked to the expansion of university-enterprise integration, the use of software technologies on open platforms and the participation of various private companies in different regions of the country.

It is also relevant to note a resuming interest among federal government officials of the new administration in issues related to the digital divide (which includes a new attempt to launch a "digital cities initiative" after the failure of the first call in 2010, led by a strengthened Secretary for Digital Inclusion at the Ministry of Communications) and to digital content (which has been a new subject among officials linked to the Office of the President, with a specific emphasis towards Latin American connections in this area). These renewed efforts are connected to important political moves such as the appointment of politicians from the Workers Party as heads of both the Ministry of Communications (Paulo Bernardo, formerly Ministry of Planning under Lula) and the Ministry of Science and Technology (Aloizio Mercadante, Senator who did not make it in the election to the government of the

State of São Paulo). There has been a relevant outcry among private sector incumbents in the telecom sector and a growing perception that regulatory agencies are loosing ground to the determinations of the Executive, the overall scenario is one of expanding investments in infrastructure, popularization of broadband services and leveraging of the megaevents as an opportunity for ICT-related development projects and services.

2.1 Public policies/strategies for ICT development

Brazil is the largest ICT market in Latin America, representing more than 45 per cent of the total investments for the sector in the region. According to Business Monitor International (BMI), it is projected to grow at a compound annual growth rate of 12 per cent over the 2008-2013 period, making Brazil one of the best-performing global ICT markets. The total value of spending on ICT products and services is expected to bounce back in 2010 and should pass US\$30 billion in 2011 and US\$37 billion by 2013. In 2010, double-digit PC shipment growth is forecast compared with the previous year, with a recovery in business spending.

The country has a mature market, with expenditures well distributed within the segments (hardware, software and services). Brazil's IT market has a singular regional structure, with most spending accounted by the south east region (60 per cent). The northeast region accounts for only 8.3 per cent of investments. In contrast the south is one of the fastest-growing regions.

The free port of Manaus is the dominant city in the northern region. Small and medium enterprises represent 42 per cent of the private investment in the sector and the current non-attended demand for hardware and services solutions is stimulating the development of the market. The domestic consumption of PCs, printers, digital cameras and mobile phones represents more than 20 per cent of the Latin American market and has grown at spectacular rates due to an appreciating exchange rate, declining interest rates and expanding credit supply for low income strata. It is also important to mention that IT infrastructure investments following the award of the 2016 Olympic Games to Rio de Janeiro is expected to drive new spending on ICT systems and solutions. Government spending should increase to US\$23 billion by 2013 as IT is one of the Federal Government's strategic sectors in the Growth Acceleration Plan.

Government ICT spending reached US\$1 billion between January and July 2009, (ICT consulting accounted for about half of the expenditures). An expansion of e-government and government functions has led to an increased data flow, driving demand for renewal of outdated networks, systems and servers. According to government targets, the domestic software and services industry should generate 100,000 jobs and an additional US\$1 billion in revenues by 2010, and an agreement to train 10,000 IT programmers in 2009 was signed to help achieve these goals.

The government also continued to roll out its *one-computer-per-student program* (or UCA – *Um Computador por Aluno*), which received a funding of US\$50 million and has led to a specific call for projects by the National Research Council in 2011. Public schools are increasingly purchasing low-cost portable computers. However, a lack of content and even training materials for teachers and school labs was felt from the start. In January, 2011, the National Research Council (CNPq) published a call for projects to explore content production and educational methodologies for the UCA platform, budgeting R\$ 5 million for the 2011-2012 period (about US\$ 3 million).

The National Social and Economic Development Bank (BNDES) also offers since 2010 a funding scheme (R\$ 650 million or US\$ 385 million with a 3 years duration, mostly for public administration entities) for the adoption of the UCA platform via acquisition of computers. So far, 32 municipalities have submitted requests to the Bank, which corresponds to 210,000 computers. In a previous, pilot stage, BNDES acquired 150,000 computers for distribution in 300 public schools (a R\$ 82 million or US\$ 42 million investment). In the second stage, prefectures can buy the computeres with total tax exemption. The computer model is the Classmate PC (Intel). BNDES will subsidy 50% of acquisitions for small municipalities, 30% for medium sized municipalities and 20% for larger citites. Moreover, Brazil's mobile telephony has become the focus of attention as growth remains strong in comparison to its regional peers. Mobile phone operators should continue to expand their 3G coverage and invest in new services; concentrating their efforts in major cities. Telefónica announced in March, 2011, a framework for an investment of US\$ 15 billion in the next five years. The National Social and Economic Development Bank (BNDES) has played a pivotal role in transforming this market as seen in the major funding of a merger operation which led to the consolidation of a Brazilian player in the market, Oi. Other incumbents such as TIM are growingly aware of the challenges and the national telecom regulatory agency, ANATEL, is coping with an increasingly fierce environment as the Federal Government launches a public broadband initiative that puts increased pressure on private telecom operators. Competition looks set to increase as additional 3G spectrum is released and the possibility of MVNOs entering the market increases after new regulation was published.

The Soccer Games (2014) and the Olympic Games (2016) have been recurrently indicated as important opportunities for ICT investments as well as SMEs involvement in reaping the benefits of the touristic boom. Government initiatives and spending guidelines have favored opensource software, however in 2011 the discontinuation of a Creative Commons proviso at the Ministry of Culture website, as well as a new perspective on intellectual property rights have led to fierce debate among opinion makers and activists in the realm of digital culture. The trend towards an overall adoption by government agencies of software like Linux is prevalent and may lead to stronger regulation in the public sphere. Brazil has around 50 million Internet users, which represents over 25 per cent of the population. The number of Internet users continues to grow steadily, aided by government projects aimed at increasing points of access across the country. The percentage of broadband subscribers, however, represents only five per cent of the total population. The World Economic Forum ranked Brazil 53rd in the world in its most recent survey of 'degree of preparation to participate in and benefit from information and communications technology'.

2.2 Active public policies for ICT industry development as a cross technology in other value chains

When it comes to an evaluation of ICT policies in Brazil as a cross-technology in other value chains, key areas stand out such as e-gov, health (or telemedicine), telecommunications and social/cultural inclusion.

An overall view of ICT penetration across value chains results from the survey applied in 2009 by CETIC.br among SMEs. It has been noted that among the 3,700 enterprises surveyed, 97% use computers and 93% use the Internet. Hence, mechanisms and conditions must be created to include the remaining 7%. Perhaps, policies between the government and small entrepreneurs will be more effective and economic in resolving this situation, in order to meet the needs of small

enterprises – a segment in which the penetration of Internet use is the lowest, (91%), with no losses to investors.

The number of enterprises that offer their employees remote access to their information systems increased significantly, from 15% in 2007 to 25% in 2009. This means that there has been an increase in remote work in the country, possibly as an alternative to reducing operational costs (water, light, rent etc.).

About 61% of small enterprises use corporate mobile phones, and 22% of these provide access to the Internet through mobile phones. A public policy to reduce call fees and Internet access could promote this practice in small enterprises, seeing as almost all large enterprises provide corporate mobile phones (90%) and half of them provide access to the Internet (53%). Moreover, only 45% of small enterprises have websites. It is important to promote the advantages of offering products online to small entrepreneurs.

One of the most important Government initiatives so as to foster ICT penetration across value chains with strong presence of SMEs has been the creation of Information and Business Telecenters – TINs. These provide courses and training, in person and at a distance, information, services and business opportunities, in order to create better competition conditions for micro and small businesses, and promote new undertakings.

They function as an instrument to bring together businessmen, public and private institutions, non-governmental organizations (NGOs) and the society in general. Equipped with several computers interconnected in local networks and connected to the Internet, there are trained instructors to attend to the needs of its users.

The authorization for their implementation is given through an electronic form and their concession is available to the following entities (I) NGOs, registered as a non-profit organization of public utility; (II) private law organizations that involve public interest (OSCIPs); recognized by the Ministry of Justice as being non-profit, and (III) public institutions of the *federal, state or municipal government, which act in areas of social development*. The main benefits made possible by the Information and Business Telecenters – TINs, include:

- Training businessmen and their employees to use ICT resources and the Internet;
- Offering courses to enhance their products and services;
- Providing support to the community for inclusion in the Information Society;
- Providing IT services to businessmen;
- Resources for self-sufficiency and new information and business investments;
- Creating a new source of resources for the entity;
- Promoting more interaction with the local community;
- Providing training to businessmen and their employees;
- Increasing the advertisement of their products through electronic media;
- Promoting the digital inclusion of the enterprise;
- Increasing the competitive advantage of the enterprises;
- Enhancing products and services.

There is a section of the Portal of Information and Business Telecenters aimed at offering informative content about a variety of business issues such as entrepreneurship, business management, services, market research, innovation, financial control, the General Law of Micro Enterprises. Subjects are focused on the support to training and development for these businesses.

Nevertheless, according to statistics published by the National Observatory of Digital Inclusion (ONID), an organization that gathers, systematizes and makes information available for the monitoring and assessment of digital inclusion initiatives in Brazil, there are only 86 Information and Business Telecenters in the country. This corresponds to 1.68% of the overall number of centers working for different segments of society, which means that from the 5,364 Telecenters installed in 2,257 municipalities, only 86 are destined to SMEs!

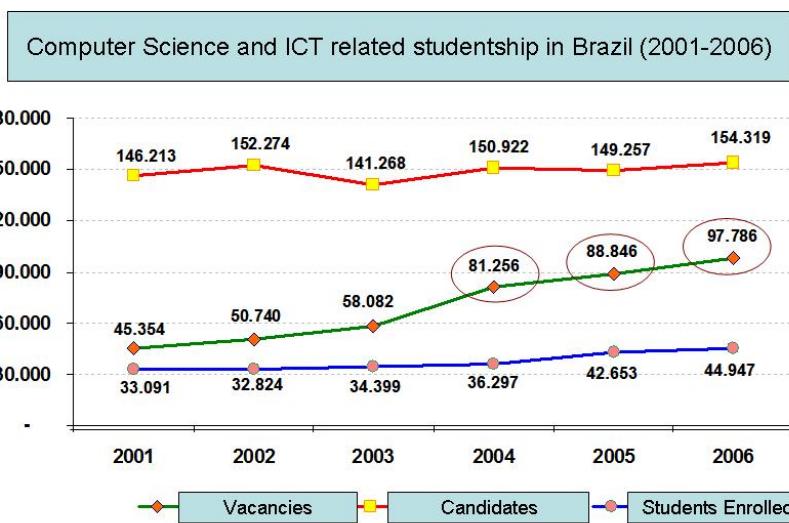
In order to promote the creation of more Telecenters in Brazil, Decree n. 6,991, from 27/10/2009 was published, which institutes the National Program from the Federal Government to Support Digital Inclusion; following this initiative, an additional document was published in the Official Federal Gazette, in 24/02/2010, Section 3, pages 130 to 135, the publication of Telecentros.br, which outlines new procedures for the approval of applicants to the Program and for the request of funds available to telecenters. Through this publication, the government expects to create three thousand new Telecenters and better conditions to reequip the existing 5.6 thousand.

2.3 Strategies at corporate or business associations level for ICT industry development

At the corporate level, associations in Brasil have stressed two strategic issues: specialized labor scarcity and foreign competition, especially from India and China. A common action within Mercosur and Latin America is also another of the industry's challenges. These concerns were raised by BRASSCOM (Brazilian Association of ICT Companies). The Association estimated the flow of students in ICT related university courses between 2001 and 2006 (see Figure below). It is clear that despite a rising supply of vacancies at universities, both demand and enrolment have increased at a much lower pace.

The latest information on qualified labor scarcity in the information and communication technology sector points to the largest deficit of professionals in its history. According to Brasscom, in 2011 there will be 92,000 vacancies which are not to be fulfilled. This represents a growth rate of about 30% compared to 2010 data. The deficit is also higher than observed indicators in the industry and construction sectors, which require at least 60,000 engineers. Part of the explanation for the deficit in ICT comes from the high dropout rate at college courses. Of the more than 580,000 students enrolled in technology courses, only 85,000 are graduated every year. The shortage affects all professional levels. HP Brazil, for example, has announced nearly 550 vacancies for eight regions of Brazil, in areas of enterprise computing, technology services and outsourcing (60 of these vacancies are in research and development positions). Some of the most difficult to be filled include technology consultants, software architects and engineers. The scarcity of qualified workforce is inflating wages. Programmers with experience earn on average US\$ 4,500 in Sao Paulo and Rio de Janeiro.

Tax structure, import duties, exchange rate appreciation and poor infrastructure for energy and transportation, as well as high prices for telecom services have also been stressed as obstacles to business activity in general as well as ICT related business in Brazil. There is also a lack of R&D and innovation culture among companies that precludes a better performance for exports and a lagging relationship with university and other research institutions in the country. While public funding for R&D in general and for ICT related R&D in particular have been on the rise, there are no clear indications of a Brazilian expansion into the internet of the future as a promising business opportunity.



Source: Brazilian Association of ICT Companies (BRASSCOM)

Another relevant business association is the Brazilian Association for the Software Industry – ABES, created in 1986. This association stresses tax and other regulations as the main obstacles to the development of the software industry in Brazil, especially taxes at the State-level such as the ICMS (tax on distribution of goods and services). The issue is known in Brazil as the “fiscal war” among States, opposing Southern to North and Northeast public administrations. The Brazilian market ranks as the 12th (US\$ 15,3 billion in 2009, 2.4% above the 2008 level). The market is US\$ 5,4 billion for software and US\$ 9,9 billion for services or the equivalent to 1.70% and 1.78% of the world market. According to ABES, 8,500 companies are operating in Brazil, 76.5% are engaged in the development, distribution and marketing of software, while almost 50% of demand comes from the financial and industrial markets, followed by agribusiness, government and commerce.

The game industry is also gaining momentum in Brazil as a new business association has been created in order to lobby for tax cuts in imports of videogames and other forms of electronic entertainment (ACIGAMES – Commercial, Industrial and Cultural Association for Games, was created in 2010 and is but a very small association of game distributors).

A more established business association is ABRAGAMES, the Brazilian Association of Games Developers and Industry, supported by local developers that naturally are not as worried with import taxes on foreign videogames. ABRAGAMES, along with the Brazilian Computer Science Society, will in 2010 organize the tenth edition of SBGames, a major academic and industry exhibition and trade show. Government initiatives in this segment, however, have been rare and modestly funded.

Other important business associations have developed over the years in connection to software exports, such as SOFTEX. In the 1990's, Brazil implemented trade liberalization policies aiming at a better integration with the global economy. The IT industry was up to that moment under the ‘market reserve’ policy, discontinued in 1992. The change led to incentives for multinational to manufacture in Brazil and also yielded programs aiming at domestic companies’ development. The Information Technology Law no 8248/91 was one of the main instruments, aiming

to establish alternative mechanisms to preserve the domestic production and R&D in the Information Technology industry. Thus, hardware companies would be exempt of several types of charges and taxes since they committed themselves to keep certain domestic production levels and develop domestic contents and R&D. Another instrument used by the Government was the Information Technology Strategic Development Project (DESI).

In 1992, the National Research Council (CNPq) and the United Nations Program for Development in Brazil (UNDP) created [Project DESI](#) that included SOFTEX 2000 – the National Software Program for Export as one of its three programs to stimulate the creation of a Brazilian Software Industry for exports. In 1994, the Ministry of Science and Technology considered through the governmental regulation [MCT nº 200](#), SOFTEX 2000 as an [Information Technology Priority Program](#) having the application of Law nº 8.248/91 incentives as its main objective.

On December 4th, 2006, the Ministry of Science and Technology published the governmental regulation nº 142/96 appointing the Brazilian Association for Promoting the Software Export – SOFTEX to be as from January 2, 1997 the manager of the Brazilian Program for Software Export – a priority program of the Ministry of Science and Technology related to Law no 8248 incentives of October 23, 1991 coordinated by CNPq.

In 2002, a program for "Promotion of the Brazilian Software Excellence" was established through regulation [386](#), as an IT Priority Program in order to apply Law 10.176/01 incentives. As from 2003, the governmental regulation MCT051/2003, Art 1 regulated the participation of beneficiary companies of the tax incentives due to Law 8248, Art 4 dated Oct. 23, 1991 through specific partnerships where we find programs considered as priority by CATI – Information Technology Area Committee.

2.4 Legal framework and other public documents relevant to national ICT policies

The Blue Book, already mentioned, is to this date the most relevant summary view of the policy framework for science, technology and innovation in Brazil, but there is not an outstanding emphasis on ICT. A more detailed understanding of national policies in this area results from the reading of reports published by individual institutions such as the "Renato Archer Information Technology Center", one of the leading research agencies funded by the Ministry of Science and Technology.¹ The annual report for 2010 showcases 68 projects in areas such as microelectronics, software, applications and participation in research networks. They compose a wide range of expertise in areas such as design of electronic circuits, new materials for electronic packaging, environmental regulations for electronics, IT for government, education, social inclusion, medicine, robotics, photovoltaic energy, software qualification, security information and management. Most of them are conducted in partnership with business, government and relies on funding from development agencies such as CNPq, FAPESP and FINEP, other organs such as the Health Ministry and the Superior Electoral Tribunal, as well as private companies.

The legal framework for ICT development in Brazil has evolved slowly and is still prey to a fragmentary scenario with conflicting regulatory agencies, old legislation and a growing intervention of State companies which has proved to be one of the

¹ Available at

http://www.cti.gov.br/images/stories/cti/noticias_eventos/pdf/2011/relatorio_anual_2010_Online.pdf

main concerns in different business sectors, especially in the telecom arena after the creation of a broadband supply company on the remnants of a dormant public concession in the final year of the Lula government.

Software and digital content piracy are also important sources of concern for private companies. In 2009 there were 662 police operations in Brazil that resulted in the seizure of 1,1 million counterfeit CDs. According to the Business Software Alliance (BSA), in 2010 there were 5,700 complaints relating to companies that had non-certified software, leading to 10,900 notifications (251% higher than in 2008).

As a matter of fact, the major legal issue in Brazil with direct impact on ICT for development relates to copyright, patents and other areas of intellectual property. Brazilian copyright law is defined by the Penal Code of 1940—recently altered in its copyright-related matter by Lei 10.695/03—by the main copyright statute (Lei 9.610/98), and by Brazil's "Software Law" (Lei 9.609/98).

Together, these laws form the current body of Brazilian copyright legislation. All provide for some copyright limitations, even the Penal Code of 1940. Until recently, file sharing received little attention in Brazil from the domestic or international content industries. Although RIAA and MPAA's legal actions against file sharing in other countries do get coverage in Brazilian media, Brazilian nationals involved in file sharing faced no opposition. In 2006, however, the International Federation of the Phonographic Industry (IFPI) revealed that it would work with the Brazilian Association of Record Producers—Associação Brasileira dos Produtores de Discos (ABPD)—to extend RIAA's litigation campaign into Brazil (Araújo 2006). According to IFPI's press release, Brazil is now among "17 countries" where "a total of more than 13,000 legal actions" have taken place.

Moreover, in January, 2011, the Brazilian Public Software Normative Instruction 01 was published by the Ministry of Planning, Budget and Management². This is expected to induce the adoption of open source software by the federal administration. A portal for the dissemination of open public software has also been implemented (<http://www.softwarepublico.gov.br/>) and is publicized by the government as the first of its kind in the world, soon to be adopted by Paraguay.

This project was announced at the International Free Software Forum in 2007 and has the support of the United Nations Development Program (PNUD) in association to the Latin American Management for Development Center (CLAD)³. The Ministry of Planning has also been the birthplace of the new, State-led broadband policy and its former Minister, Paulo Bernardo, was appointed in 2011 as the Minister of Communications, so as to enforce the implementation of a public broadband policy as well as to review public policies in the area of broadcasting, a key area that up to the Lula government has never been controlled by the Worker's Party. It is also worth mentioning that this open source public software initiative has received very little attention in the Brazilian media, which is broadly against the increased State intervention in telecommunications, broadband and broadcasting policies by the Dilma Rousseff team.

Another major source of emerging ICT policies for development in Brazil is the preparation of the country for the 2014 Soccer Cup and the 2016 Olympic Games. The National SMEs Agency (SEBRAE) published an "Opportunity Map" on this issue in March, 2011, pointing to 448 business opportunities in ICT markets which are directly related to these international events.

² Available at: <http://www.mct.gov.br/index.php/content/view/328390.html>

³ See <http://www.softwarepublico.gov.br/spb/download/file/clad.pdf>

Construction, information technology, tourism and tourism-related production (food, handicrafts, among others) are the four economic sectors that offer most of the business opportunities for small enterprises (448 in the 12 host cities for World Cup 2014), according to this "Map", commissioned to the Getulio Vargas Foundation (FGV). There will be opportunities for small business ventures before, during and after the sporting event. Business repair and maintenance of communication equipment, Internet companies and IT infrastructure stand out among the promising sectors. These opportunities include government purchases (with the guarantees provided in the General Law of Micro and Small Enterprises) as well as businesses directly captured in the market. The "SEBRAE in the Cup" program is to channel R\$ 79.3 million into these areas (105 of the 448 opportunities are deemed to be technological, especially in the ICT setors).

3 PUBLIC AND PRIVATE INSTITUTIONAL STRUCTURE ICT DEVELOPMENT

3.1 Public and Research Institutions

ICT are a crosscutting issue in constant evolution, and sometimes it has been difficult to categorize which portfolio it falls under and how it should be coordinated with other sectors as well as agencies and ministries. In some countries, like Argentina and Brazil, ICT R&D policies are under the Ministries of Science and Technology. In other countries the leadership has fallen under specific Commissions or Agencies created specifically for leading a digital or e-government strategy.

ICT is a priority at the National Projects and Studies Financing Agency (FINEP), at state level agencies (such as the State of São Paulo Research Funding Agency – FAPESP) and have been targeted as a priority in industrial and technological policies over the last 10 years. As stressed in a previous PRO-IDEAL deliverable (D.1.2), the Brazilian scenario is multitiered and with an overwhelming presence of State funding for research and development. There is a so far timid but emerging framework for private long term funding (project finance), mostly for infrastructure in the oil, energy and telecom sectors. The Ministry of Science and Technology acts as a sponsor of public-private partnerships via FINEP – The Research and Projects Agency as well as fostering academic research via the National Council for Scientific and Technological Development or National Research Council (CNPq). However, the BNDES –National Economic and Social Development Bank is by far the most important funding agency as well as policy designer for innovation, linked to the Ministry of Development, Industry and Foreign Trade (MDIC).

Other important stakeholders in the institutional structure for the development of ICT in Brazil are as follows:

- **Ministry of Culture:** the Ministry has become a major source of funding for ICT-related projects, events and research in areas such as digital TV, digital divide, cultural heritage and open source software.
- **Internet Steering Committee in Brazil:** the coordination and integration of the activities of Internet services in the country are made by means of the Brazilian Internet Steering Committee - CGI.br, a multistakeholder organization composed by members of the government, the enterprise sector, the NGOs sector and the academic community, as well as 9 Federal Government representatives (Ministry of Science and Technology, Ministry of Communications, Presidential Cabinet, Ministry of Defense, Ministry of Development, Industry and Foreign Trade, Ministry of Planning, Budget and Management, National Telecommunications Agency, National Council of Scientific and Technological Development, National Forum of Science and Technology State Secretaries), 4 representatives of the corporate sector (Internet services providers, Telecommunications infrastructure providers, Hardware and software industries, General business sector users), 4 representatives of the NGOs sector, 3 representatives of the scientific and technological community, one Internet expert.
- **Government of the State of São Paulo:** the Technological Research Institute (Instituto de Pesquisas Tecnológicas) is the leading institution in the State of São Paulo for public and private applications in engineering and applied sciences, while the State of São Paulo Research Foundation (FAPESP) is one of the main funding agencies for scientific and technological research in the country. It is linked to the State of São Paulo's Secretariat for Higher Education.

3.2 Universities

The ICT institutional framework for research, development and innovation in Brazil cannot be fully grasped without due acknowledgment of universities, especially as weaved by the RNP backbone, the National Education and Research Network.

The first network for Access to the Internet in Brazil, RNP is made up of close to 600 educational and research institutions in the country, benefitting more than one million users. RNP was created in 1989 by the Ministry of Science and Technology Ministry with the objective of building a national Internet network for the academic community. Work on building the network began in 1991. In 1994, it had already reached all regions of the country. Between 2000 and 2001, the network was completely updated to offer advanced support and applications. Since then, the RNP backbone, as it is known, has had points of presence in all Brazilian states. In 2005, the backbone technology was updated again with optic links operating at rates of multiple gigabits per second.

In 2005, the Ministry of Science and Technology launched the **New RNP**. The objective was to improve network infrastructure at the national, metropolitan and local levels (campus networks); using applications and innovative services, serve the needs of specific communities (telemedicine, biodiversity, astronomy, etc.); and promote the qualification of human resources in information and communication technologies.

Since the 90's, RNP has also been offering training for technicians at universities, research institutions and at the RNP network points of presence, preparing qualified people to manage and operate digital networks on a national scale. Starting in 2005, units of the Escola Superior de Redes RNP (**RNP Network College**) have been opened across the country, providing access to practical courses to a growing number of professionals in the information and communication technology area.
Internet for institutions of higher education and research organizations

RNP offers free internet access to federal institutions of higher education connected with the Education Ministry (MEC), federal research organizations connected with the MCT, agencies of both ministries and other public and private educational and research institutions. In addition to integrating all parts of Brazil, the RNP network offers international connections to the United States. A universe estimated at more than one million users of the Brazilian academic community is benefitting from this infrastructure that stimulates the progress of science and higher education in the country.

Since 2000, RNP has dedicated itself to promoting the use of advanced applications on computer networks. Telephone service over the internet, digital TV transmitted over the network, distance learning and IP videoconferencing are some of the applications which are being implemented in the form of new services for users.

In short, as seen above, in Brazil, most of the ICT R&D policies and strategies are formulated by the Ministry of Science and Technology that is the institution responsible for sectoral funds such as IT and Audiovisual. Other ICT policy-makers are the Ministry of Communications that set up the Fund for Telecommunications Development, and the National education and Research Network – RNP, the Brazilian infrastructure of advanced network for collaboration and communication in the fields of teaching and research.

The S&T Agreement EC-Brazil was signed in 2004 and entered into force in 2007. Cooperation under this Agreement initially cover all the areas of mutual interest in which both Parties are implementing or supporting RTD activities, with emphasis on the following topics⁴:

- Biotechnology
- Information and communication technologies
- Bioinformatics
- Space
- Micro- and nanotechnologies
- Materials research
- Clean technologies
- Management and sustainable use of environmental resources
- Biosafety
- Health and medicine
- Aeronautics
- Metrology, standardisation and conformity assessment
- Human sciences

The first meeting of the Brazilian Committee for Scientific Cooperation Europe Brazil that took place in Brasilia on September 2007 identified the following ICT priority areas:

- Maintenance and expansion of Red CLARA
- Participation on GEANT
- Human resources for informatics
- Semiconductors
- Multilinguism
- e-inclusion
- Telemedicine
- Distance learning
- Wireless communication
- Internet
- Optical communications.

More recently, during the Second Brazil-European Union Summit held in Rio de Janeiro on 22 December 2008, Brazil and the EU are committed to the building of the people-centred, non-discriminatory and development-oriented Information Society envisaged by the World Summit on the Information Society (WSIS) outcomes⁵. Also the EU and Brazil share the understanding that ICT have a fundamental role in promoting digital inclusion and improving social cohesion, increasing the quality of life and reducing poverty. In this context, Brazil and the EU agreed to expand the bilateral dialogue and cooperation on ICT matters, encompassing policy, regulatory and research issues and to develop cooperation in relevant scientific and technological ICT areas of common interest in the context of the implementation of the Brazil-EU S&T Agreement, in particular by enhancing collaboration within FP7.

⁴ COM (2003) 381 final, Proposal for a Council Decision on the signing of the Agreement for scientific and technological co-operation between the European Community and Federative Republic of Brazil, 27.06.2003.

⁵ See the minutes of the meeting at

http://www.mre.gov.br/portugues/imprensa/nota_detalhe3.asp?ID_RELEASE=6156

http://www.mre.gov.br/portugues/imprensa/nota_detalhe3.asp?ID_RELEASE=6158

3.3 Main private and corporate ICT stakeholders

It must be stressed that the Brazilian telecom, IT and broadcasting systems are still going through a restructuring stage after major changes in capital property structures, market share and strategic alliances of major European stakeholders (such as Telefónica and Portugal Telecom in the VIVO and Oi operations), stronger than ever public investments, regulatory conflict and industrial concerns (as the ever appreciating exchange rate puts the national economic and technological structure to a tough test of competitiveness, innovation and resilience).

There is still a high level of ad-hoc policies and uncertain implementations, digital inclusion initiatives sponsored by public agencies co-exist and more often than not loose speed and effectiveness as private entrepreneurialism gains momentum – for instance, despite several years of public policies focused on “telecenters” and “culture points”, there is still a very precarious broadband supply by the public sector (this became the major policy issue for the recently inaugurated Dilma Rousseff cabinet) while “lan houses” prosper and the base of the pyramid consumption of electro-electronics, from appliances such as TV and mobile phones to computers and ICT services (especially via triple-play packages), continue to rise. Skilled labor scarcity is probably the most pressing issue for the private sector.

The institutional sector associated to the private sector is thriving through a growing number of sectorial associations in the software, hardware and digital content areas, from chambers sponsored by the federal government such as SOFTEX to emerging clusters in the videogame and internet providers segments.

According to the World Economic Forum 2010 Report, Brazil ranks at 52 among 138 economies in “business readiness” (while at position 56 for the general indicator of e-readiness), not very far from China (56) and India (58) and yet better off than Spain (88), Russia (89), Mexico (83) and Uruguay (86). The e-readiness thus gives a clear perception of private sector ICT institutions and stakeholders facing a promising but still not mature business habitat. According to the WEF Report, “despite a slight betterment, both the conduciveness of the market environment and the quality of the regulatory framework for ICT deployment, innovation and private sector development in general remain low. This is also the case in terms of the degree of readiness of Brazil’s population for ICT adoption”. This is a key element for scenario building and strategic plan as the global internet economy, according to the World Economic Forum Report, will in the next decade see a transformation of the global landscape “from an arena dominated by the advanced-market economies and their businesses and citizens to one where emerging-market economies are predominant”. On the other hand, improvements in the speed and quality of broadband as well as Web 2.0 technologies and applications in areas such as the internet of things, semantics and transmedia interoperable interfaces will generate more economic and social benefits.

In Brazil, the acceleration in the deployment of a truly national and pervasive broadband supply became the key issue of the Dilma Rousseff cabinet and certainly one of the most critical negotiation agendas with private sector stakeholders. Having restored to operational level a former State company in the area of electricity, the federal government is pressing for more regulation, intervention, public funding and accessible tariffs as a priority. Stakeholders in different markets are exposed to this uncertain and pressing negotiating process, insofar as triple play and cable TV opportunities and regulation are on the table in exchange for a larger supply of cheap and popular broadband infrastructures, growingly mobile.

These macroeconomic and sectorial uncertainties are very likely to evolve fast as the country prepares for the global soccer and Olympic Games in 2014-2016.

4 NATIONAL POLICIES AND STRATEGIES FOR ICT R&D

ICT is among the priority areas for cooperation on science, technology and innovation and in that context Brazil and the EU agree to promote strategies for increasing participation by Brazilian researchers, universities, institutions and industries in FP7 RTD projects. The most important programmes related to R&D in the field of ICT are presented in the Table below. These programmes include the following ICT priorities:

- Open Source Software (OSS)
- Grid computing
- Digital cinema
- Digital TV
- Digital content distribution platforms
- Software development
- ICT applications and testbeds
- Videogame industry
- Health and medical applications
- Environmental and climate change

Also a number of universities are leading ICT research through various programmes and projects (University of São Paulo, University of Campinas, Universidade Federal do Rio de Janeiro, Universidade Federal de Pernambuco and Catholic University of Rio de Janeiro). Current research in ICT field is focused on:

- IPTV
- Advanced integrated electronic systems
- Software,
- Applications for health
- Computer Science
- Start-up incubator
- Digital TV
- Distance education
- Mobile telecommunications
- Environmental and climate change

In addition, in Brazil there is a large network of technological incubators associated to the National Association of Technological Parks (ANPROTEC), with hundreds of entities actively engaged in the promotion of ICT innovations. Software and ICT have been defined as national priorities in numerous funding calls in regional and local funding schemes that aim at these incubators and small companies.

Digital content production has been closely associated to technological innovation (for instance, content and services for digital TV, mobile transactions and contents as well as large repositories of digital assets and libraries, as seen for instance in the participation of Brazil in the World Library project. The RNP currently supports a working group on museums and digital libraries.

The São Paulo Public Radio and Television Broadcast (Fundação Padre Anchieta) is leading inroads into new media and is implementing a large scale digitalization program, while federal laws and sectoral funds perform a key role in subsidizing and supporting innovation in cinema, TV, distance education and online publishing via specific programs funded by the ministries of Culture, Education, Development and Industry. Moreover, the same priorities show up in State financing agencies, such as the National Social and Economic Development Bank (BNDES), which has during the last 5 years acted more prominently in the areas of innovation, with a special emphasis on audiovisual production, informatics and other ICT-related innovations and applications.

Brazil national policies and strategies related to R&D in the field of ICT:

Institution responsible	Programme Name	Programme Acronym	Programme description	Funding Scheme	R&D priorities	ICT priorities (Sub-themes)
Ministry of Science and Technology	Fundo Setorial para Tecnologia da Informação	CT-INFO	Promoting private investments in information technology.	Public subsidies up to 0,5% of companies net revenues	Informatics and automation	Open Source Software (OSS), grid computing
Ministry of Science and Technology	Fundo Setorial para o Audiovisual	CT-FSA	Cinema and audiovisual Technologies and Products	Public funds collected from the movie and TV industries	Property rights, new products, new formats	Digital cinema and TV
Ministry of Communications	Fundo para o Desenvolvimento das Telecomunicações	FUNTTEL	Promoting technological innovation, human resources and investments in SMEs	Public funds collected from 0,5% of telecom companies' net revenues and 1% of telecom participatory events	Digital TV	Digital TV, digital content distribution platforms
Ministry of Science and Technology	Programa de Subvenção Econômica	Subvenção Econômica	Promoting innovation in Brazilian companies	Public funds	Software and other ICT	Software and other ICT
Ministry of Science and Technology	National Research Council	CNPq	Various	Sectoral funds	Direct transferences to university and excellence research labs	Software development
National Education and Research Network – RNP	Inter-Ministries Program MEC/MCT	Inter-Ministries Program MEC/MCT	Investments and support for advanced internet backbone	Public funds from ministries of Education and Science and Technology	Advanced academic research backbone	Various applications and testbeds

Brazil - Universities leading ICT research

University Name	ICT R&D Areas	Project Name/Programme	Description
University of São Paulo	IPTV	Electronic Computing Center (CCE)	Development of academic IPTV
University of São Paulo	Advanced integrated electronic systems	Laboratory for Integrated Systems (LSI)	Digital TV research center, health systems, 3D rendering
University of Campinas	Software, health, other applications	Various programs and projects	Distance education, health care, bio-engineering, open source software
Universidade Federal do Rio de Janeiro	Computer Science	Various programs and projects	Distance education, open source software, Telecom
Universidade Federal de Pernambuco	Start-up incubator	CESAR	Various areas and start-ups
Catholic University of Rio de Janeiro	Digital TV, distance education	Various programs and projects	Digital TV, distance education and other areas

5 ICT PRIORITY AREAS FOR R&D

5.1 *Priorities at National Level*

Efficiency of tax collection interfaces, consolidation of e-voting infrastructures, implementation of a nation-wide backbone for educational and research projects, selection of key, strategic markets and infrastructures for State support such as oil, aviation, agribusiness and transportation, emerging policies for elementary schools and promotion of broadband access, strong public funding and regulation as well as a gradual but yet not dominant preference for open source software in the federal administration are some of the key elements and priorities at the national level when it comes to ICT related areas for R&D.

The overall scenario with respect to the use of ICT in the public administration is positive. The Brazilian Center of Information and Communication Technology (Centro de Estudos sobre as Tecnologias da Informação e da Comunicação) – CETIC.br – has been annually carrying out, since 2005, a specialized survey regarding the use of Information and Communication Technologies (ICT), for the assessment of their ownership and use in various socially relevant areas. These surveys have been developed to investigate whether there is a lack of alignment between offers from the government and the demand for electronic government service among the population.

The significant increase in the number of Brazilians who use the Internet in their everyday life and the growth of Internet access penetration in households and enterprises has contributed to the development of a new economic and social situation in Brazil, allowing governments, enterprises and citizens to interact, more and more, in virtual environments created by web applications. This reality is also expressed by the development and implementation of electronic government programs in Brazil, showing that the government has been adopting, in the past few years, new information and communication technologies (ICT) at all levels of the public administration, making them a priority in order to promote the modernization of public administration and to improve the efficiency and quality in the provision of public services. According to the results from the ICT Electronic Government 2010 Survey, most access to public services is physical, with a preference for face-to-face services by 60% of the individuals. Nevertheless, when citizens use the technology as a mediator to access public services, 35% mentioned the Internet as the main form of attaining some public service, surpassing the telephone, with 8% of the interviewees.

The increase in the use of the Internet by the Brazilian population, from 30.5 million users in 2005 to 58.5 million in 2009, in urban areas, stresses the trend for citizens to increasingly use virtual environments, according to the ICT Household 2009 Survey by CGI.br. Besides those factors, the forces originated from the movement of reform and modernization of the public administration determined the advancement of the adoption of ICT by governments and, in particular, the implementation of electronic government programs. Nevertheless, many barriers for such adoption and its effective use still exist and need to be understood by the government, and, likewise, it is necessary to observe whether the services offered by e-Gov programs effectively cater to the demands of society.

5.2 Priorities for International Cooperation with Europe

It is noteworthy that Brazil and the European Commission have launched in 2010 a coordinated call for proposals. While results are yet to be announced, the initiative is likely to step up cooperation on research and development in ICT. The €10 million coordinated call for proposals will allow researchers and industries in the EU and Brazil to exchange their R&D strengths in key technological areas such as Future Internet experimental facilities and security, microelectronics and micro-systems, networked monitoring and control and e-Infrastructures. The EU and Brazil are each contributing €5 million, which will be used to fund five pairs of interlinked projects. The closing date for submission of proposals was January, 18, 2011.

Based on national information about ICT policies and priority areas and discussions with ICT stakeholders, such as NCP for ICT in Argentina and Chile, and leading researchers in Brazil and Uruguay, the local partners have identified a number of priorities for research cooperation with the EU. These priorities seem to be in line with the EC FP7-ICT programme, although there are a number of focus areas. Brazil has a great potential for ICT research cooperation practically across the eight ICT Work Programme Challenges⁶. Overall, there are five ICT priority areas for potential cooperation on which the four PRO-IDEAL countries have been focused:

- Internet of Services, Software and Virtualisation
- Nanoelectronics Technology
- Technology-Enhanced Learning
- ICT for Patient Safety
- ICT for Governance and Policy Modelling

It is also remarkable that Brazil and Europe continue to invest in better policy cooperation in higher education and culture, a general background which will very likely affect positively the ICT agenda. In April, 2011, Androulla Vassiliou, the European Commissioner for Education, Culture, Multilingualism and Youth, will make her first official visit to the country. The main objective is to launch EU-Brazil policy dialogues on higher education and culture. The discussions will also feed into the next EU-Brazil summit, due to take place in Brussels in October.

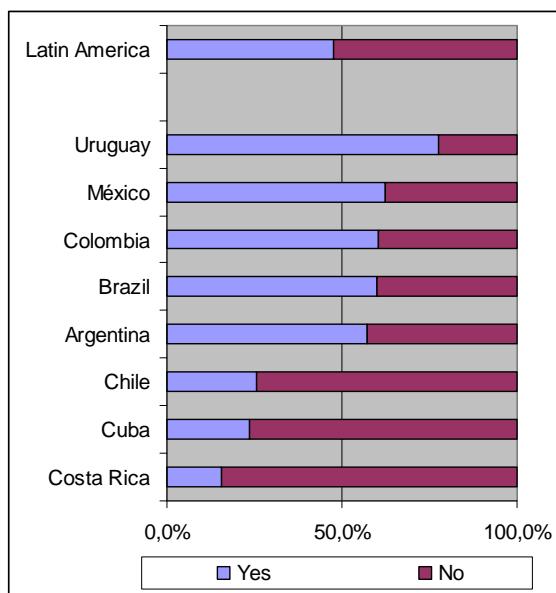
Since 2004, more than 1,700 Brazilian students and scholars have had the opportunity to study and work in Europe through the Commission's [Erasmus Mundus](#) programme, which supports joint Master and Doctorate programmes. More than 40 Brazilian research institutions and 32 individual researchers have also received financial backing totalling € 1.6 million through the Commission's [Marie Curie Actions](#), which support international exchanges for researchers. The National Cinema Agency (ANCINE) is also targeted as a potential partner within the MEDIA Mundus programme which aims to encourage international cooperation in the cinema industry.

The PRO-IDEAL Plus Survey on ICT Research Priorities in Latin America has made some of these prospect agendas more visible, while also revealing challenges yet to be faced. Overall opinion about the experience in participating in EU projects is quite positive, although respondents also perceived some potential barriers to participate in ICT R&D cooperation projects, namely:

⁶ EC, ICT Work Programme 2011-12 Agreed by ICT Programme Committee <http://cordis.europa.eu/fp7/ict/>

- Difficult access to relevant information about the ICT programme
- Lack of experience in EU/international cooperation projects
- Lack of understanding of the rules for participating
- Difficulties to take part in partnerships
- Complexity of the administrative procedures
- Lack of knowledge about specific research areas for international cooperation
- Lack of knowledge about the success factors to prepare project proposals

Another important finding of the Survey with respect to Brazil is the importance of public funding, as shown in the graphic below.



Public Funding received for supporting R&D activities

Source: PRO-IDEAL Survey, 2010

Among Latin American countries, Brazil has the highest percentage of Europe's international finance (64%), followed by Colombia (51%), Chile (50%) and Mexico (46%); while countries like Cuba, Mexico and Argentina seem to benefit more from bilateral programs. Similarly, Uruguay and Costa Rica receive a great amount of international funding from IDB.

	Argentina	Brazil	Colombia	Costa Rica	Cuba	Chile	México	Uruguay
FP6	7,1%	21,4%	10,3%	13,6%	0,0%	0,0%	9,3%	0,0%
FP7	14,3%	28,6%	20,5%	13,6%	0,0%	16,7%	18,6%	11,1%
UE (Other)	7,1%	14,3%	20,5%	9,1%	0,0%	33,3%	18,6%	11,1%
IDB	28,6%	14,3%	23,1%	40,9%	0,0%	33,3%	7,0%	50,0%
Bilateral Programs	42,9%	21,4%	25,6%	22,7%	100,0%	16,7%	46,5%	27,8%
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Source: PRO-IDEAL Survey, 2010

It is also worth reporting, with respect to ICT policy development and PRO-IDEAL actions in Brazil, the integration of the "Project Angels" training and coaching framework into the academic grid of the University of São Paulo as a City of Knowledge initiative. The offering was implemented as an open, extension activity supported by the Pro-Rectorate for Culture and Extension, starting in 2009-2010 with one scholarship and renewed in 2011 with two scholarships for undergraduate students. The activity was integrated with the "Audiovisual Media Management for Local Development" course, which is geared towards entrepreneurship (see figure below, available at

<http://sistemas3.usp.br/apolo/cursoObter?codund=27&codcurceu=270400193>.

The screenshot shows a web interface for USP's 'Cursos' (Courses) section. On the left, there's a sidebar with links for 'Acesso Público' (Public Access) like 'Gerenciar Cursos', 'Disciplinas', 'Grades', etc., and 'Acesso Restrito' (Restricted Access) like 'Gerenciar Pessoa', 'Inscrição/Matrícula', etc. The main content area displays course details:

- Unidade:** 27 - Escola de Comunicações e Artes
- Colegiado:** Escola de Comunicações e Artes
- Código:** 27.04.00193
- Departamento:** Cinema, Rádio e Televisão
- Área Temática:** Comunicação
- Linha de Extensão:** Empreendedorismo
- Título:** Gestão de Mídias Audiovisuais para o Desenvolvimento Local
- Natureza:** Difusão
- Área de Conhecimento:** Economia de Tecnologia
- Forma:** Presencial
- Público Alvo:** Jovens empreendedores, lideranças comunitárias, professores do ensino médio, técnicos e empreendedores que atuam no mercado do audiovisual digital em suas várias mídias (móveis, internet, IPTV, VoIP, mídias locativas, web semântica e mídias das coisas).
- Objetivo:** Promover a organização da cidadania e do empreendedorismo em mídias digitais, para as tecnologias de informação e comunicação da era da economia da informação. A inclusão na inteligência coletiva e na nova economia do audiovisual é buscada com o objetivo de tornar cada vez mais frutífera a reafirmação da cidadania nos mundos virtuais, a geração de renda e a promoção de oportunidades para o desenvolvimento de projetos. Articulação ao "Framework Program 7" da Comissão Europeia, por meio da realização de oficinas com patrocínio do consórcio PRO-IDEAL (Promotion of an ICT Dialogue between Europe and América Latina).
- Justificativa:** Fundada em 2001 no Instituto de Estudos Avançados (IEA) da USP com a missão de criar e desenvolver projetos de conhecimento e tecnologia de comunicação voltados para o digital, a Cidade do Conhecimento 2.0 retoma atividades de difusão cultural oferecendo um ciclo de cursos presenciais voltados a gestores de programas de inclusão digital em governos (federal, estaduais e municipais), empresas voltadas para os mercados intensivos em audiovisual digital, instituições de ensino e pesquisa, organizações da sociedade civil (ONGs e OSCIPs) e demais interessados.

A blue arrow points from the 'Justificativa' section to a callout box containing additional text about the project's history and international cooperation.

Em 2005, o grupo de pesquisa foi credenciado pela Pró-Reitoria de Pesquisa da USP na Plataforma de Grupos de Pesquisa Lattes, no Conselho Nacional de Pesquisa e transferiu seu laboratório para o Departamento de Cinema, Rádio e TV da Escola de Comunicações e Artes da USP. As atividades a partir de 2008 contaram com a parceria de uma rede de pesquisadores (PRO-UE) e Engenharia de Produção-USP) num processo aberto a novas adesões tendo em vista o crescimento sustentável de uma rede de pesquisa e inovação no uso das mídias audiovisuais para a criação e desenvolvimento de projetos intensivos em mídias digitais.

Em 2009, o grupo de pesquisa Cidade do Conhecimento é responsável pela coordenação no Brasil do consórcio PRO-IDEAL ("Promoting ICT Dialogue between Europe and America Latina"), da Comissão Europeia, que prevê ações de formação de multiplicadores para criação, desenvolvimento e encaminhamento de projetos relacionados a tecnologias de informação e comunicação.

The first group of selected project ideas led to the presentation of 27 ideas which were further evaluated and selected into a group of 21 project angels in three areas: non-profit or citizenship, for profit innovative entrepreneurship and new audiovisual formats (such as interactive documentaries). This group was screened and selected for coaching during 2011. The screening sessions took place during the 2011 PRO-IDEAL event at USP, sponsored by the National Social and Economic Development Bank (BNDES), Mozilla and the Ministry of Culture.

The implementation of the Project Angels framework as a permanent initiative within the university's academic grid contributes to the local as well as to the national debate on new forms of entrepreneurship while taking the PRO-IDEAL agenda to the core of important policy makers such as BNDES and the Ministry of Culture. From this perspective, the initiative stands out not only as a differentiated service offered by the PRO-IDEAL framework to society and to the entrepreneurial environment in Brazil but also a leading and innovative approach to fostering dialogue on policy making in the ICT arena with public officials and institutions. The policy dialogue is also enhanced by a growing interest in this approach among other public and private universities which already partnered in this effort since 2009, such as the University of Taubaté, the University of Campinas, the Catholic University of São Paulo and the Getúlio Vargas Foundation.

6 CONCLUSIONS

The Brazilian scenario for ICT-related policies and strategies can be summarized as follows:

- Active public policies for ICT industry development as a cross technology in different value chains are on the rise, but still at an early stage
- PC penetration rate of less than 25 per cent and federal plans to equip all elementary schools with computers (PROUCA) indicates an educational priority, but expansion is slow and subject to lagging content development,
- There is a scarcity of educated professionals in IT areas
- Ambitious government plans to spend US\$23 billion on science and technology programs as part of its Growth Acceleration Plan (PAC) may face budget restraints as the economic scenario deteriorated (higher inflation)
- There is a growing "base of the pyramid" consumer sector driven by credit and expansion of retail channels in densely populated areas
- Mobile market benefits from lower income consumers, but mostly pre-paid,
- Major multinational ICT manufacturers have key bases in Brazil
- Telecom regulator is looking at ways of accessing Brazil's more remote areas, but there is a growing tension between incumbents, regulators and the Executive as State intervention mounts
- Main fixed and cable TV operators now rolling out triple-play services and looking ahead to quad-play, high-definition digital TV is to become a key market as consumers renew their durables for the soccer championship in 2014, while the federal government is willing to trade telecom incumbents participation in digital TV for a better offer of broadband services at large,
- IPTV launches have been rolled out but remain small part of the market,
- Strong State-led initiatives such as the Broadband Plan launched in 2010 and in 2011 (fostering ICT related investments for the big sports events),
- Pressure on regulatory agency (ANATEL) mounts
- Strong presence of State banks (BNDES) and companies in ICT projects.

ICT research collaboration between Brazilian stakeholders and European universities, research centers and private companies can make relevant progress in this context. On the one hand, there is an established culture in Brazil, especially among the largest universities, to raise funding for technological research with a market-led bias, as illustrated by the expanding role of government funding for incubators and technological parks.

On the other hand, in education and culture there is a clear ICT bias in emerging programs with a social perspective, such as the PROUCA (one computer per student). Despite the macroeconomic constraints in a moment of vigorous consumer demand growth and inflationary pressures, there has also been a process of consistent expansion of project finance and private credit in areas such as logistics, infrastructure, transportation and durable goods. Electronic appliances became more accessible and there is a long term perspective of rising digital inclusion and further expansion of e-government services.

This report clearly reflects this reality while at the same time it is clear that the private sector, especially the telecom sector incumbents, are entering into a new competitive stage which mirrors uncertainties in the realm of broadcasting and government control of strategic programs such as broadband access, digital TV expansion and megaevents in sports which already mobilize new sources of public funding for ICT-related entrepreneurship and innovation.

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