

Brazil and South Africa Collaboration for Public Software

Building the South Africa Public Software Ecosystem

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ABSTRACT

Public Software is an innovative experience originated in Brazil about government and society collaboration concerning free software ecosystems. More than just a shared software development environment, Brazilian Public Software Portal has the unique asset of gathering users, developers and service providers under the same shared platform. This paper describes the experience between Brazil and South Africa concerning the implementation of Public Software ecosystem in South Africa, starting with software Cacic knowledge sharing and South Africa Public Software Portal development. It also presents a project to guide this implementation, containing scope, objectives and time line for the execution.

Categories and Subject Descriptors

D.2.9 [Software]: Management; K.4.1 [Computers and Society]: Public Policy Issues

General Terms

IT Ecosystems and e-Government

Keywords

Public Software, Collaboration, FLOSS, Brazil, South Africa, Cacic

1. INTRODUCTION

The Brazilian Public Software Portal is an initiative to build a complex ecosystem around software collaboration, involving users, developers and service providers under the same scrutiny. This initiative began in 2006 with software

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Cacic [16], when Brazilian Ministry of Planning was investigating software solutions to execute the hardware and software inventory for all government agencies, in order to fulfill regulations [3] and improve public sector administration.

When President Lula started his government in 2003 “a new chapter was open in relations between Brazil and Africa, combining a new vision about international order and internal society transformation. In his first speech, he elected South Africa as one of the big development countries (China, India and Russia) and said that African continent would be one of the most important vectors for external policies” [20].

As a result of this policy all government agencies and even Brazilian companies began to think about South Africa as an strategic partner, seeking collaboration opportunities on strategic fields. That's how, in 2009, the South Africa government got to know software Cacic and Brazilian Public Software portal, and decided to bring that experience to their country. This article presents a history review about this collaboration project, present the implementation strategy and show future perspectives.

2. PUBLIC SOFTWARE AND COLLABORATION SUCCESS

More than just a collaboration project between government and society, public software in Brazilian experience involves building a complex ecosystem, as described in [1]:

The term ecosystem is derived from the concept of digital ecosystems, originated in Europe in the late 90's and which defines a conceptual framework to describe the complex interactions between business, technology and knowledge, which is inspired by biological ecosystems.

As pointed by the authors, the biggest difference between regular digital ecosystems and public software is that achieving business is part of the objectives, together with a neutral administration network. The government works as a hub, concentrating community resources and hosting the collaboration system, while companies provide software evolution and development services.

Because the many specific and distributed roles in the ecosystem, it would be very difficult to find a number or focal point to measure community or software success. Some

software can be way too big and inaccessible to general public, resulting in a small number of downloads, such as GSAN. However, the economy about using a complete ERP software without the license prices big companies charge in similar products can increase the impact in only a few implementations. One contract concerning the software can be about R\$ 638.000,00 [11].

In the other hand, more simple pieces of software, such as Cacic, do not require much computing knowledge or big data centers to host the service. On this case it's possible to have more users making smaller contracts, providing software evolution and sustaining the community. The service provider list for software Cacic [6] shows today **235** service providers in **27 Brazilian states**.

This difference is best explained on [9], talking about *Technical Knowledge Producing Networks* and introducing the information technology capital concept:

The information technology capital is the set of dispositions – tangible and intangible – that an individual need to be inserted in knowledge society. It comes from the machines management and control growing need that live (together) with most individuals on modern societies. (...) This knowledge supposes specific social, cultural and educational formation from the individuals. (...) The more capital the individuals gather during their life, more chances they will have to be recognized. It's based on three basic elements: specific knowledge, necessary tools to use this knowledge and social conditions to acquire the needed tools to deal with information technology.

If the software is capable of providing knowledge distribution, it's bringing some kind of wealthy to society, encapsulated in information technology capital. When the software community is geographically distributed around the country, it's also helping to distribute the wealthy and bringing more equality to the country's population.

If software Cacic is brought to the market as a simple inventory system it's not easy to understand it as a possible choice to start a collaboration project. This kind of software is usually applied on big companies, that have so many computers that they need to create an inventory. Ever since its release in 2007 the Cacic community in Brazilian public software portal is still the biggest one (**39723** members [5]). When the question come to countries about which software they would want to be translated to their language, it's always the first choice also [2].

Even though there's no formal or academic explanation for this phenomena, an essay can be found on [13]:

A report from Computerworld magazine talking about Cacic inventory system, shows how this software based on public software model was capable of generating revenue for 21% of the registered service providers.

(...)

- None of the clients from the service providers network installed Cacic to replace a similar software.

(...)

The results show that the software available at Brazilian public software portal are being used to meet repressed demand in the market.

The research shows that Cacic was installed where there was no software, and give us a hint about how a new market can be created using public software, providing a better wealthy distribution and stimulating small companies collaboration.

Because the distributed character of this ecosystem, the public software implementation should start considering two important facts: the need of a central collaboration environment and the usage of a software able to drive growth to the ecosystem. Even though there's no easy way to measure success on the initiative, the Brazilian experience indicates a path to follow.

3. JUSTIFICATION

For many historical reasons, Brazil, India and South Africa did not have a common agenda or a strong commercial relationship, despite some clear similarities: they are all big democracies with a history of repressed social demands. However, the crisis they all faced on the 90's suggest some important common assets, as pointed by Lima [7]:

In Brazil, just like in others (India and South Africa), the chronic income inequality problem, population illiteracy and poverty became worst on the 90's, mostly because the development model crisis and the structure adjusts in economy. It's a very difficult equation to have both self sustained grown in economy and to meet social demands, which the actual government tries to solve. The South-South collaboration is conceived as an instrument to help solve this challenge.

For Brazil, the IBSA¹ initiative is not just about cooperation between countries in peace and security fields in one hand, and commerce and development in the other, but it's meant to build strong economic and political links between the three countries.

Most important than just finding specific fields of common interest, Brazil and South Africa are interested in finding areas of innovation to follow together, and Public Software fits just inside this scope. As pointed by Freitas [8]:

The successful experience of the Brazilian Public Software Portal suggests that a new technological reference is being generated. With this initiative, Brazil offers an original model for the country's development. Instead of acting as a developing economy (...) Brazil offers, in this case, an original model that produces "authentic competitiveness" in the world market based on new political and technological features.

In order for this collaboration model to work there are three requirements to be fulfilled that will guarantee no country or organization will claim ownership about Public Software Model: Open Standards, Free Software and Royalty Free labels.

¹IBSA is a short term for India, Brazil and South Africa created after a meeting in Brasília, Brazil, in June 6 2003 [12].

For the software to be considered Free according to Free Software Foundation, the four freedoms have to be respected: freedom to run the program, at any purpose; freedom to study how the program works, and change it so it does your computing wish; freedom to redistribute copies so you can help your neighbor; and freedom to distribute copies of your modified versions to others. This way you guarantee the source code is available at all times with no extra costs.

According to Open Source Initiative, there are five requirements for software to be developed as an Open Standard [14]: no intentional secrets; standard availability; free from patents; no need to sign any license agreement to use it; and no dependencies incompatible to this standard. On that way you can guarantee that not only the source code is available, but the software development is reproducible.

Finally, the Royalty Free model for labels is achieved by Brazilian Label Public License [4]. The license is based on the commons model [18], where the ownership about some good can't be claimed by any individual or organization. On this way, you guarantee that all aspects relevant for software environment are equally available to every actors.

On this context, Brazil works as the central hub for software communities, but any other country who wants to share this model can build their own portals and communities. Because these important aspects UNDP built a project to help Latin America and Caribbean countries to build their ecosystems [2].

The International Public Software project, funded by UNDP and executed between 2009 and 2011, was built to help spread the idea in the region. Thanks to this initiative, the Public Software is present in Peru, Ecuador, Venezuela, Paraguay, Chile and Argentina in different levels. In the year of 2009 there was a meeting at World Bank, where the Project was presented to other BRIC² countries [17], opening the path to South Africa.

4. HISTORY

After a lot of trips from President Lula to Africa, in 2009 a big committee of representatives from South Africa was in Brazil for a meeting at Itamaraty Palace. The Foreign Relations Ministry (MRE) made a call to all Brazilian government public agencies and institutions related to technology, in order to build a technical committee called CCCT. The meeting was scheduled, and on that day all areas should present a document containing everything they could share with South Africa, in order to build a common agenda. At the time Brazilian Public Software was already part of 2020 FLOSS Roadmap [8], and inside the generated document a clear proposal was presented: to share public software experience with South Africa.

After that meeting South Africa government showed big interest in software Cacic, and a Brazilian pool of companies, presented by SOFTEX³, traveled to South Africa to present the software and to discover partnership opportunities. With Brazilian Ministry of Planning acting as a technical adviser, software Cacic and Brazilian Public Software

²BRIC is a term created by the Goldman Sachs analyst Jim O'Neill [15] and it's a short term for Brazil, Russia, India and China.

³SOFTEX is an association of Brazilian Companies to "support, develop and promote the IT Services industry in Brazil". More info can be found at organization's website: <http://www.softex.br/a-softex/>

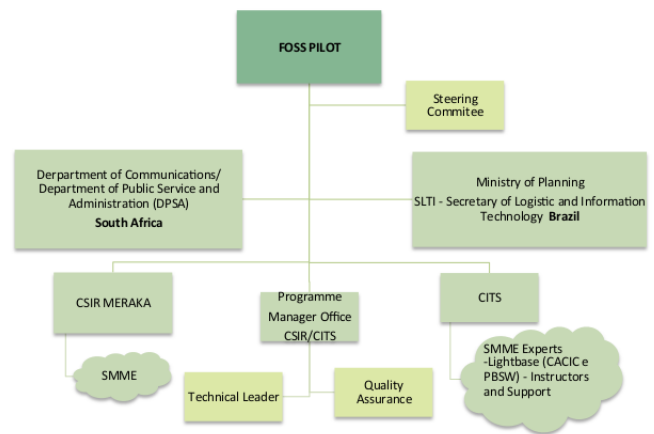


Figure 1: Brazil - South Africa project organization

Portal were presented and a project for knowledge sharing was drafted by Meraka Institute (CSIR)⁴ and presented to South Africa Ministry of Communications and Brazilian Ministry of Planning for analysis.

In 2010 Brazilian Ministry of Planning was invited to present the Public Software Portal at Govtech in South Africa [19], together with members from SOFTEX. After the presentation it still took three years of discussions to get to project final organization, this time with CITS⁵ from Brazil, and CSIR and Ministry of Communications from South Africa, with Brazilian Ministry of Planning acting as technical adviser, as shown in Figure 1.

The final organization was approved and in August 2013 Brazilian Ministry of Planning signed the cooperation agreement, forwarding the document to South Africa and starting the project officially.

5. THE PROJECT

This section presents the project organization for implementing Public Software in South Africa.

5.1 Scope

The project scope can be split in two big areas: South Africa Public Software Portal and Cacic software, which are technologically linked by the software community.

South Africa Public Software Portal: to create a portal similar to Brazil's offering a community to every software to be released.

- Detailed development and planning for the portal;
- Promote meetings about portal development;
- Realize requirements investigation;
- Software development;
- Software testing;

⁴CSIR is an organization to support innovation in South Africa. More information can be found at their website: http://www.csir.co.za/about_us.html

⁵CITS is a research and development institution. More info can be found at their website: <http://www.cits.br/institucional.do>

- Face meeting for portal delivery and closure.

Software Cacic: configuration management tool to create hardware and software inventory in organizations. The project will be focused on knowledge sharing, support and training.

- Workshop detailed planning;
- Promote meetings about workshop organization;
- Develop training material in English for the workshops;
- Customize software interface to English;
- Promote five workshops in different provinces in South Africa, with a total of 100 students;
- Evaluate software learning in students;
- Write Cacic software deployment guide for South Africa;
- Offer second level technical support before and after the workshops according to project time line;
- Face meeting for closure and project analysis.

5.2 Objectives

For the portal, the objectives are:

- Design and implement a software portfolio area to show population all the available softwares in the portal;
- Develop collaboration tools to create software communities and promote ecosystem members communication (users, developers and service providers);
- Implement a Learning Management System connected to software communities to help people participating in workshops to keep collaborating inside the community.

With software Cacic the focus is knowledge sharing, consisting in the following objectives:

- Promote software usage between local stakeholders;
- Provide knowledge transfer to local companies and government institutions, in order to implement Cacic community in the country.

5.3 Roles and Responsibilities

The Table 1 presents a summary of project roles and responsibilities. On the proposed organization CITS is responsible to intermediate project execution between Meraka and Brazilian company, while Lightbase, as the main Cacic developer, is responsible to execute the project, control human resources and manage all development work. Brazilian Ministry of Planning works as technical adviser, to make sure the project execution obeys public software principles and to help create an international community with software Cacic.

5.4 Project time line

The Figure 2 presents project execution time line proposal. When one workshop is concluded, the portal should be operational and the attendees can use the virtual environment to help spread the knowledge in the country.

Table 1: Roles and responsibilities

Role	Organization	Description
Sponsor	Meraka	Feasibility of the financial and technical aspects of the project.
Executive Coordinator	CITS	Coordinate project execution and manage financial resources.
Steering Committee	Meraka/CITS	Overseeing management of the project - functioning as a technical committee.
Project Manager	CITS	Make sure the project is executed within proposed time line with all available resources.
Technical Coordinator	Lightbase	Coordinate South Africa Public Software Portal development, provide training material and coordinate workshops.
Technical Adviser	Ministry of Planning	Make sure the project follows Public Software philosophy.

Months	1	2	3	4	5	6	7
Software Cacic							
Preparation activities							
Workshops in South Africa							
Workshop 1							
Workshop 2							
Workshop 3							
Workshop 4							
Workshop 5							
Remote technical support							
Portal development							
Pre-game period							
Game period							
Sprint 1							
Sprint 2							
Sprint 3							
Post-game period							

Tabela 2: Project Timeline

Legend	
Main Task	
Executing	

Figure 2: Project time line

6. CONCLUSION

As pointed by Alvim [2], the biggest challenge in international collaboration projects is to define success or failure in such initiatives. Even though it doesn't manage to reach every country and people the project is designed to, there's always some knowledge being generated, and a lot of the generated resources are intangible.

Considering the knowledge transfer and wealthy distribution in developing countries, the project plays an important role allowing Brazilian companies and institutions to work as service providers for software in South Africa. It's not only about one of the contracts software companies usually have with other countries involving software development and implementation. It's a knowledge transfer proposal based on training local technicians with the goal to create a small cluster with South Africa companies, considering the achieving business aspect in public software model.

If Brazil's experience with software Cacic [16] can be taken into account, starting with inventory can be an interesting choice. Closed solutions are far too expensive and there aren't many free software on this field. It's also supported by UNDP in International Public Software Project, making the translation easier and promoting collaboration on English language.

However, the most important aspect of Public Software ecosystem is the portal. Other countries had initiatives releasing software in Free Software licenses [10], but only Brazil had one portal to build the ecosystem around software communities, containing users, software developers and service providers. Any innovation project based on the same model has to respect these same requirements. Success or failure for the project, if not measured by the portal usage itself, can at least show a big picture about software communities in the country.

7. REFERENCES

- [1] A. Alves, M. Pessoa, and C. Salviano. Towards a systemic maturity model for public software ecosystems. In R. O'Connor, T. Rout, F. McCaffery, and A. Dorling, editors, *Software Process Improvement and Capability Determination*, volume 155 of *Communications in Computer and Information Science*, pages 145–156. Springer Berlin Heidelberg, 2011.
- [2] F. d. A. Alvim. International Public Software - SPI: an ethnography experience with a technology innovation project. Master's thesis, UnB, 2011.
- [3] BRASIL. Resolução no. 14, de 6 de dezembro de 2002 – inventic, 2002. Available at: <http://www.governoeletronico.gov.br/o-gov.br/biblioteca/arquivos/resolucao-no-14-de-6-de-dezembro-de-2002> Access in August 8th 2013.
- [4] BRASIL. Public label license, 2011. Available at <http://www.softwarepublico.gov.br/lpm> Access in August 13th 2013.
- [5] Cacic. Cacic community in brazil, 2013. Available at http://www.softwarepublico.gov.br/ver-comunidade?community_id=3585 Access in September 19th 2013.
- [6] Cacic. Software providers for software cacic, 2013. Available at <http://www.mercadopublico.gov.br/organizations/list?community=3585> Access in September 19th 2013.
- [7] M. R. S. De Lima. A política externa brasileira e os desafios da cooperação sul-sul. *Revista Brasileira de Política Internacional*, 48:24–29, 2005.
- [8] C. Freitas and C. Meffe. Floss in an Open World: Innovations and best practices from Brasil. *2020 FLOSS Road Map*, Dezembro 2008. Available at: <http://www.2020flossroadmap.org/wp-content/uploads/2009/04/2020-floss-roadmap-presentation-owf-2008.pdf> Access in August 19th 2013.
- [9] C. Freitas and C. Meffe. Redes de produção de conhecimento tecnológico. In *Estudos de Sociologia*, volume 15 of *Sociologia e Políticas Públicas*, pages 529–554. FCL-UNESP, 2010.
- [10] R. A. Ghosh, R. Glott, K. Gerloff, P.-E. Schmitz, K. Aisola, and A. Boujraf. Study on the effect on the development of the information society of european public bodies making their own software available as open source. *European Commission*, April 2007.
- [11] GSN. Edital gsan – r\$ 638.000,00, 2012. Available at http://www.softwarepublico.gov.br/dotlrn/clubs/gsan/lars-blogger/one-entry?entry_id=53477275 Access in September 19th 2013.
- [12] IBSA. About IBSA, 2007. Archived from the original at http://web.archive.org/web/20070913163515/http://www.ibsa-trilateral.org/about_us.html Archive retrieved in August 20th 2013.
- [13] C. Meffe. Software público e as contribuições para a informatização, 2012. Available at http://www.softwarepublico.gov.br/spb/download/file/Software_p%3CBAblico_e_as_contribui%3CA7%3CB5es_para_a_informatiza%3CA7%3CA3o Access in September 19th 2013.
- [14] OSI. Open standards requirements for software, 2013. Available at <http://opensource.org/osr> Access in August 20th 2013.
- [15] J. O'Neill. Building better global economic bricks. 2001. Available at <http://www.goldmansachs.com/our-thinking/archive/archive-pdfs/build-better-bricks.pdf> Access in August 19th 2013.
- [16] A. Peterle, C. A. J. Castro, C. Meffe, N. Bretas, and R. Santanna. Materialização do conceito de software público: Iniciativa Cacic. *Informática Pública*, February 2006. Available at <http://www.softwarepublico.gov.br/spb/ArtigoMatConceitoSPB> Access in August 19th 2013.
- [17] E. Santos. Global dialogue on exploring the results of governmental open source software policies: Brazil experience, 2009. Available at <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/EXTDEVELOPMENT/0,,contentMDK:22407934~pagePK:210058~piPK:210062~theSitePK:559460,00.html> Access in September 19th 2013.
- [18] I. Simon and M. S. Vieira. Propriedade intelectual diante da emergência da produção social. March 2007.
- [19] SPB. África do sul busca parceria com brasil pelo software público, 2010. Available at <http://www.mercadopublico.gov.br/organizations/list?community=3585> Access in September 19th 2013.

[//www.softwarepublico.gov.br/news-item145](http://www.softwarepublico.gov.br/news-item145)
Access in August 13th 2013.

- [20] P. G. F. Visentini and A. D. Pereira. A política africana do governo Lula.