

Fostering the Commons: Brazilian Public Software Portal and the Public Brand Agreement

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***Abstract.** This article provides an explanation, based on Transaction Costs Economics applied to Information Technology, of why Brazilian Government is promoting a particular commons, which is free software, named Brazilian Public Software, through an Internet portal named Brazilian Public Software portal and through the construction of the Public Brand Agreement.*

1. Introduction

Eric Raymond, in his book "The Cathedral and the Bazaar" which dates from 2001 already showed that the collaborative development of software was the way to produce this information good [Shapiro and Varian 1999, pp. 15] with certain level of quality and productivity, combining collaboration among developers with competition between them. The software that was based on Raymond to write the essay was GNU / Linux, routinely known only as Linux, which was originally idealized by Richard Stallman in the USA and designed by Linus Torvalds in Finland [Moody 2001], [Williams 2002].

What Raymond might not have expected (and neither Stallman nor Linus) was the revolution that happened having this software as a flagship: the creation of virtual communities, working groups at a global level and the emergence of a new kind of property: the Commons. Commons is the focus of the study by Professor Elinor Ostrom of Indiana University, USA, Nobel Prize in Economics in 2009. She received the award together with Professor Oliver Williamson, University of California at Berkeley, all from the U.S.A.¹ Both are researchers on the Transaction Costs Economics, being Professor Williamson is one of its founders.

Actually, the concept of Commons is not new. It dates from the times of Roman Empire when there were several kinds of non-exclusive property being *Res Communes* the most similar, in the case of free software, to what is currently called Commons. [Rose 2003, pp. 93-96]

What's new is that now it is not being applied to tangible goods, such as air or water, but even to intangible goods, such as software that, at each new version, is valued more. That is, the more people use these "objects", the more their value increases. In the

¹ Source: http://nobelprize.org/nobel_prizes/economics/laureates/2009/

words of Professor Steven Weber, FLOSS² like GNU/Linux are anti-rival goods [Weber 2004, pp. 154]. This is a paradox for Neoclassic Economics and needs regulation by Law.

Brazil has already begun to do his "homework", using the New Institutional Economics as one of its foundations. The proposal of this article is to present a solution found by the Brazilian Government to assist the genesis and management of FLOSS as a Commons: the Brazilian Public Software Portal³ and the diffuse creation of the Brazilian Public Brand⁴.

2. What is GNU/Linux, after all?

Technically speaking, GNU / Linux, also known only by Linux, is a software like any other. What makes it so important in relation to other software is the functionality of it, that is, what it does when is running. Linux is an operating system. The operating system is a computer program that basically performs two functions: it controls the execution of applications (programs) and serves as a friendly interface between the user and the resources of hardware [Stallings 1998, pp. 45]. This means that, without an operating system a computer simply does not work.

But organizationally (or socially) speaking, numerous reasons can be related that make Linux operating system. Two important reasons are discussed in this article: (1) the way it is developed, and (2) the way it is licensed, that is, the way people can legally use it and develop it.

Explaining better, the name GNU/ Linux comes from two subsets in which the system splits: GNU⁵ tools and Linux kernel⁶. The GNU tools were thought of Richard Stallman, who wanted to develop a totally free operating system name GNU / Hurd⁷. He created the GNU tools, but the core system, named Hurd, was taking a long time to get ready. Meanwhile, a student of Computer Science from the University of Helsinki named Linus Torvalds, wanted to use an operating system similar to Unix⁸, that should be cheap and should run in his personal microcomputer. Since it didn't exist, he built the core system, which he called Linux, using GNU tools along with other collaborators/developers; and since the tools were licensed under the GNU GPL - General Public License – Linux became licensed by the GPL either. That's when everything began⁹.

2. GNU/Linux Development and the GPL – General Public License

² The acronym "FLOSS" stands for Free/Libre/Open Source Software.

³ URL: <http://www.softwarpublicobrasileiro.gov.br>

⁴ URL: <http://www.softwarepublico.gov.br/news-item92>

⁵ The acronym "GNU" stands for GNU is Not Unix. More information about the GNU Project e its related tools can be found in <http://www.gnu.org/>.

⁶ More information about the Linux kernel Project can be found in <http://www.linux.org/>.

⁷ More information about Hurd can be found in <http://www.gnu.org/software/hurd/hurd.html>.

⁸ Unix is an operating system from which many others were originated, including Linux. More information can be found in http://www.unix.org/what_is_unix.html and in <http://www.levenez.com/unix/> among other places in the Internet.

A software license is a kind of contract made between the owner of the software and the user of the software to guarantee exclusive rights to the owner of the software. In general, software licenses are designed to restrict and monitor the use of the computer program for their owners¹⁰.

The importance of the GPL lies in the fact that it designed to do just the opposite, i. e., to promote the sharing of the program and to increase the installed base of users / developers. This is described in the four freedoms that describes the license and were becoming classics over time¹¹:

0. Freedom to run the program for any purpose (Freedom No 0);
1. Freedom to study how the program works and adapt it to your needs (Freedom No 1). Access to the source code is a precondition for this;
2. Freedom to redistribute copies so you can help your neighbor (Freedom No 2);
3. Freedom to improve the program, and release your improvements so that the whole community would benefit them (Freedom No 3). Access to the source code is a precondition for this.

The use of the GPL as a standard resulted in a degree of freedom not previously experienced by Information Technology professionals. Many of these professionals worked in the private sector, which ended up causing GNU/Linux to be of great importance not only as an operating system but as a new way of thinking and implementing computer programs, namely (1) open, very collaborative and competitive rather than (2) closed, predominantly competitive and little collaboratively. These two forms were called by Raymond, respectively, Cathedral and Bazaar [Raymond 2001, pp. 21-22].

This “new” way of developing software, that is, collaboratively, competitive, open and distributed, similar to how scientists use to develop their projects [Himanen¹² 2001, pp. 70], did not limit to GNU/Linux, but overflowed to other projects that have not direct relation to research, being some of the most important Apache Web Server software and the suite of Windows-Linux interoperability software named SAMBA. In addition, several companies have been born based on FLOSS in general, being Google probably the most significant example.

This working process was much favored in the words of Raymond, the existence of the Internet. Initially restricted to Academia, Internet gradually proved to be an

⁹ The story told here is greatly simplified. More deep information can be found in [Moody 2001], [Diamond and Torvalds 2001] and [Williams 2002] among other authors.

¹⁰ For a sample of this, just look at software licensing company Microsoft, which are on Microsoft's website: <http://www.microsoft.com/About/Legal/EN/US/IntellectualProperty/UseTerms/Default.aspx>. Looking, for example, at the history of Windows Server 2000, 2003 and 2008 software licenses, one realizes that the details of licenses increased.

¹¹ The first version of the GPL license dates from 1989, i.e., has more than 20 years of life. A copy of the GPL v2, which is used by Linux can be found in <http://www.linux.org/info/gnu.html>.

¹² The word new is written this way, because this way of developing software is not so new, but was not so extensively and expressively adopted before.

efficient means of communication and interaction among other users at low costs. [Raymond 2001, pp. 54].

Combining these advantages of the Internet with tools licensed by the GPL or even more permissive licenses such as the BSD¹³, groups of people with common interests began to join and create virtual meeting points. Since the focus of the participants is the work of building software, and most of the participants are volunteers competing for merit¹⁴, what ends up happening is a self-allocation of people in projects to which they are interested and according to talents and skills self-assessed. This reduces / reallocates project costs, as the cost of managing people. This allocation method and work is called Commons-Based Peer Production [Benkler, 2003, pp. 02].

Thereafter, virtual social networks flourished, a phenomenon that was only possible due to non-restricted use of computational tools provided by the above-mentioned licenses and the like.

3. FLOSS as Commons

Commons is a third category of property, being neither private nor public. The oceans, glaciers and solar energy, for example, are Commons.[Tomales Bay Institute 2006]

The licensing of FLOSS and its related tools under the GPL and suchlike software licenses has a central role in the existence of FLOSS. The emergence of many of these tools was made possible by this process followed the same philosophy of Linux development, which is the Bazaar under the GPL licensing. And since the focus of the project participants is on collaboration and competition (ie meritocracy) and on software production and use, not on gains based in exploiting property by licensing the software because these gains do not exist. GPL and similar software licenses enable Commons-Based Peer Production.

FLOSS is also built both by private entities (Society) and public entities (Nation-States) that produce code for software projects, since the actors who develop the software, may be private or public agents [Soares 2005]. Moreover, users are also developers since they provide the feedback necessary to features that enhance the software and receive the new versions without licensing costs.

Following what is mentioned above and observing what Professor Elinor Ostrom describes in relation to self-administration of Common-Pool Resources [Ostrom 1990], *mutatis mutandis*, one can conclude that FLOSS is a Commons.

5. Brazilian Public Software Portal , BPA and Transaction Costs Economics

Noticing that free software as a Commons is a way for promoting the country's technological development and creating jobs, Brazilian Government decided to foster it. There were two challenges to be met to accomplish this initiative: (1) internalize the

¹³More information on BSD license can be found in <http://www.freebsd.org/copyright/freebsd-license.html>.

¹⁴Since most people are not paid to take part in the projects, the incentive they have is to have his/her skills recognized by the members of the community, that is, the more they give good code or alike away, the more chances to be recognized. This is called gift economy, in contrast to traditional economics. [Raymond 2001, pp. 81]

GPL license, which is a USA-based agreement, according to Brazilian Law; and (2) release software as efficiently as possible.

The way found to internalize the GPL, which is a USA Law-based agreement, was to write a norm that would have the same legal result under Brazilian Law. This norm is called Public Brand Agreement, whose goal is that any person, group or organization can use the brand of the software (that will already be free) without needing any authorization of the owner. Regarding to this, the technical coordinator of the Brazilian Public Software Portal, Eduardo Santos, said that the PBA is designed to ensure that¹⁵

"Any company using the brand of software without authorization directly dependent on the owner of the brand.

(...)

"The PBA will help boost the market for public software in the country, as the entire chain of production will not have any restriction for marketing software services."

(...)

"Will be a big change in the market, because any company can use the software and trademark license."¹⁶

It is important to say that PBA is still being written with the collaboration of Society, i. e., this cost is being shared by the Brazilian Government and private users/developers. It is a relatively slow process that involves professionals of different areas - information technology professionals, lawyers, economists, government managers, private organizations and so on.

The way found to release software as efficiently as possible was creating an Internet portal that would facilitate the gathering of users/developers, public or private, in which FLOSS programs could be stored at no cost to them. All FLOSS programs that would be hosted in this area should be called public software and this area would be called Brazilian Public Software portal. The name Public Software has been adopted to rescue the root of the word public, which means, everyone's property, as it was conceived, instead of state's property as it has become naturally used over time¹⁷.

Since Brazilian Public Software is to be downloaded for free and since "downloading linux is a transaction" [Demil and Lecocq 2003, pp. 1456], Transaction Costs Economics [Williamson 2005] helps giving an explanation of why Brazilian Government has chosen a Web portal to foster this software. Yet, it is necessary to present formal definitions of transaction and transaction costs before continuing the explanation.

¹⁵ Fonte: <http://www.softwarepublico.gov.br/news-item74>

¹⁶ Free translation to english of: "que qualquer empresa use a marca de um software sem depender diretamente de autorização do dono da marca. (...) "a LPM vai ajudar a impulsionar o mercado do software público no país, pois toda cadeia de produção não terá nenhum tipo de restrição para comercialização de serviços de software." (...) "será uma grande transformação no mercado, pois qualquer empresa poderá usar o software e a marca sem restrições."

¹⁷ Source: Corinto Meffe, Manager of Technological Innovation on the Brazilian Ministry of Planning.

Williamson enunciates that “a transaction occurs when a good or a service is transferred across a technologically separable interface. One stage of activity terminates and another begins.” [Williamson 2005, pp. 01].

In relation to transaction costs, Coase states that “in order to carry out a market transaction it is necessary to discover who it is that one wishes to deal with, to inform people that one wishes to deal and on what terms, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on. These operations are often extremely costly, sufficiently costly at any rate to prevent many transactions that would be carried out in a world in which the pricing system worked without cost.” [Coase 1960, pp. 07]

An example of a day-by-day transaction and its costs will be used to clarify the concepts.

Say a consumer decides to accomplish the transaction of buying a car. The core of this transaction is the transfer of the car from the seller to the purchaser (and, obviously, the payment). All of the other costs in which the consumer incurs to buy the car are transaction costs, which are in number of four. They are briefly explained in the following paragraphs.

The first step after the consumer decides to buy a car is to search for which car to buy. This step follows an interaction between consumer tastes and their budget constraint, among other factors. This interaction has a cost, which is the cost of time spent for the decision on which car to buy is made, plus the cost of the media used to find the car (newspapers, magazines, telephones, Internet, etc.) among others. This first cost is called **cost of search**.

Found the car, say, in a car dealer, then comes a phase of negotiation with the seller of the conditions under which the purchase will be made. Are there discounts if the customer pays cash? If not, is there funding for that transaction? What are the terms for funding: how much money and what is the term? It all has to be negotiated until buyer and seller reach an agreement. This second cost is called the cost of negotiating and drafting the contract, or simply, **cost of negotiation**.

In a perfect world, written the contract, car will be immediately available for the consumer. In the real world, rarely the seller will have the car in stock to prompt delivery. The buyer has to wait until the car arrives at the dealership in order to take it. As the analysis is being done in a real situation, let's suppose that car had to be ordered and the seller gave a deadline of 15 days for it to arrive at the dealership.

During these 15 days the buyer waits patiently for the arrival. Again, in a perfect world, in the 15th day, the buyer would go to the dealer to pick up his car and take it home. In the real world, the buyer phones to the dealer to know if the car has arrived. The reason is simple: either the buyer spends his time going to the dealer and runs the risk of the car had not yet arrived yet, meaning that time spent to go there plus the cost of transportation plus the time spent to return home was literally thrown out, or the buyer uses other means of communication (usually by phone) and gets the answer to this question, spending in the worst case, the cost of using the media plus the time of using it. The buyers may opt for whatever is cheaper. This process repeats until the buyer receives positive response from the seller, which means that the car has arrived.

In this case, what the buyer did was to monitor the accomplishment of the contract, which is the delivery of the car within 15 days. The name of this cost is cost of monitoring the accomplishment performance of the contract, or just the **cost of monitoring**.

Finally, if the car was not delivered on time, the buyer will have to complain to the dealer and there will certainly be another accomplishment deadline, already within an administrative claim. But if this second term is not fulfilled and the buyer does not receive the car, it may be necessary appeal to the Courts (a) have the paid money back with an indemnification or (2) have the car delivered. Note that it is not without costs because, whichever the option, there is always a cost of time and emotional distress, which can only be resolved through administrative or judicial ways. That's the name of this cost is cost of administrative / judicial actuation, or just **cost of actuation**.

The first two costs – cost of search and cost of negotiation - are called previous or *ex-ante* costs, because they occur prior to engagement of the transaction. The other two costs – cost of monitoring and cost of actuation – are called subsequent costs or *ex post* costs. [Furubotn and Richter 2007, pp. 44-45]

Now that transactions and transactions costs have been exposed, the explanation for the existence of Brazilian Public Software Portal follows.

The **cost of search** has been reduced through the Brazilian Public Software Portal, because it gathers together downloadable software, information its correspondent communities, service providers and so on. There is no more need to spend time using, for example, Internet search engines like Google to find it. By the way, if someone needs software and begins to search using Google, Brazilian Public Software Portal will appear as result of the search either.

The **cost of negotiating / writing the contract** will be (almost) zero because of the Public Brand Agreement (PBA). It will not be not exactly zero, because the participant has to read and agree with, which takes some time. While the PBA is being negotiated and written, the Portal is already working and all the software deposited there still goes through an entire legal process in order to be hosted there and can be called public¹⁸.

The **cost of monitor the fulfilling of the contract** is shared among all participants in the development and use of software.

Finally, the **cost of administrative / judicial disputes** is zeroed because of the tacit acceptance of the "AS IS" (no warranty) agreement clause and the absence of the value of compensation for damage clause. The first clause is in all software license agreements and the second clause is in all proprietary software licenses and guarantees an amount of compensation for damage caused in case of defects in the software.

¹⁸ More details about this process can be obtained from the Board of the Department of Integrated Information Systems of the Secretariat of Logistics and Information Technology of the Ministry of Planning (<http://www.planejamento.gov.br/secretaria.asp?cat=95&sec=7>)

Conclusion

In this article an explanation is provided to the fact that the Brazilian Government is promoting a Commons in particular, which is free software, called Brazilian Public Software through a web portal called Brazilian Public Software Portal and through the construction of the Brazilian Public Brand.

We relate a brief history of the rise of GNU/Linux free software, which is the one that best represents this new methodology of software development, as well as the legal framework for this methodology to be able to sustain itself; introduce the Commons as a new category of property and then present free software as a Commons; introduce transaction costs and explain the four basic categories of transaction costs; and justify the existence of the Brazilian Public Software Portal and the Public Brand Agreement based on the reduction of transaction costs for the actors involved in the use/improvement of this kind of software.

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