

The Open Source Software Use Consequences in the Colombian Public Sector

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Abstract

The strong regulation of the use of software license in Colombia for the public entities constitutes one of the main costs that unbalance the international scale of services, favoring international monopolies of software. In this article, the impact of the free software use is analyzed as alternative, and the analysis of factors that should strengthen for the increase of its use.

Keywords: Colombia, Free software, Open source, Public Sector.

INTRODUCTION

Colombia in the 2014 expense 223.101.684,0 thousand million pesos in the purchase of software licenses [1], distributed in licenses of: operating systems Microsoft, antivirus, upgrade of licenses, acquisition of countable software or PSecific use, and office licenses like Office.

One of the PSecific cases that are found, is the contract for the Colombian Agency for the reinstatement of people and armed groups, for the sum of \$ 2,631,362,515 pesos with the purpose of "having a Tool that diminishes the impact of the constants virus attacks, PSam, PSyware and malware on the technological platform of the city" "to obtain the Microsoft License renovation. Since the information system SIR is developed in a platform Microsoft" [2], the above-mentioned shows three important aPsects that are primordial in an analysis of scenarios for the optimization of resources in any country.

- Necessity of Informatics Security: Where the population's information should be protected from external attacks, and of virus that can corrupt it.
- Investment necessity in Renovation of licenses: Where the renovation of licenses is considered as an assets, and hence an investment due to its great cost and paying-off necessity.
- Technological Dependence: Where the entities are forced to refresh licenses, of a X software to make use of the Y software that is the one really related with the core of the service. It is the case of the contract where the dependence of the information system SIR, forces to the district to continue paying for licenses of Windows.

On the other hand it is Brazil that given their current politicians of free software use, that is provided without necessity of an additional payment; a bigger security since is a completely tranPSarent code without black boxes in the processes, and

additionally without necessity of antivirus use for the protection in the data security, together with the not investment necessity in purchase or renovation of licenses.

These policies include projects for the independence of technologies that have achieved the employment generation, strengthening the sector of TICs (Technologies of the Information and the Communication), and generating an investment in the human own resource. All this even diminishing the expenses considerably in comparison to their later years to public policies implementation. This article wants to give knowledge of the current problem of Colombia and to grant some bases, for the regulation in the purchase of software licenses, taking to Brazil like a benchmark.

PROBLEMATIC ANALYSIS

Different lacks exists in the graduated software that should be taken into account to the moment to carry out an analysis of scenarios in an objective manner.

Macroeconomic Reasons

Annually a commercial deficit is generated, with advantage for the software monopolists companies that year after year charges the 'Lease' of the software, generating a dependence to the country. This becomes an advantage for countries that use Free Software since they find in it an important option for growth, investing the cost of licenses in a human resource characteristic of the sector of TICS.

Reasons of security

The government should guarantee the security in the public information systems and the privacy of the inhabitants. However the operating system with more demand at the present time, doesn't lend the enough access for a full audit in its code, what means a process of black box without control possibility some in the processes with which the information is managed and additionally this licensing doesn't go accompanied by programs for the virus protection.

Reasons of autonomy and technological capacity of the country

The graduated software has constant changes and it stops to lend service hence to people that don't use the last versions of

its service, the public sector it is forced to grant a bigger budget every day, to guarantee the correct operation. FScaring the vision of people that use the software and limiting the possibility to create an enhancement or adaptation to the system. For the opposite the countries where free software is used, the personnel generate an additional incentive for the generation of technological new solutions. The formation of the public officials increases with the help of a collective knowledge of the community, and additionally it achieves a technological independence for the information systems, diminishing the necessity of upgrade to systems that are already fulfilling its objectives [2]

ANALYSIS OF SUCCESS CASES: BRAZIL AS FRAMEWORK

Brazil has been 12 years old in the process of adoption of free software where its success relapses with its gradual adoption and planning from the 2003 where technical committees of the electronic Government's executive commission settled down. From that moment guidelines have settled down for the concession of licenses in the 2005, and processes of technology recruiting have been developed in the 2008, lastly in the 2013 stand-alone organisms settled down and the discharge of the bid of the contracts is made that could commit the national security PSecifically in Brazil there were adopted the following phases:

Collaboration: Where the current state of the information systems settles down and it is believed a strategy and a design for the tools.

1. Formation: Where it is granted to people the enough tools for the good handling of the new solutions that will be implemented.
2. Adoption of new technologies: Where it is carried out the purchase of the infrastructure and operation phases begin.
3. Societies and tranPSarency: Where the impact of the transition is measured.
4. Innovation and Development: New adaptations, or automated new tools are generated for the necessities of the public sector.
5. Synergy with the government's actions, for the reinforcement of the free software policies.

One of the main reasons of success for Brazil is the formation where different qualification types were adopted differed by User's type where is distinguished:

- End User
- Technical User

For the technical user it consisted on 8 stages summarized in 8 stages (See Figure 1.):

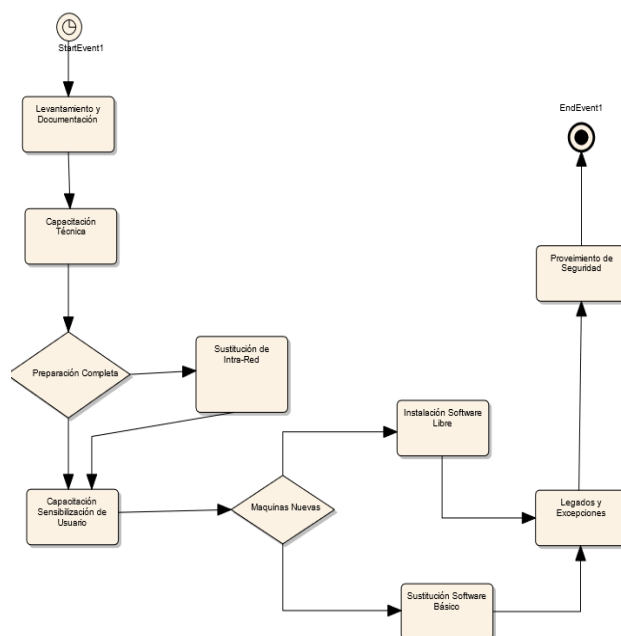


Figure 1. Schematic Diagram of migration. Source: [2]

Different projects have been undertaken for the personal formation from their childhood, with complementary plans of use of free software from the educational facility, additionally they have registered surveys of an additional incentive where the one 49.2% of the developers considered as main reason for its partition the "Development of new abilities", that is to say people generate a personal interest since they are able to see that those abilities are necessary to be competitive, in the labor environment.[3]

INTEGRATED ANALYSIS OF SOLUTION IN THE LEGISLATIVE COLOMBIAN FRAME

In a general way an adoption of new technologies according to the frame ITIL, should be followed the following phases:

1. Strategy
2. Design
3. Transition
4. Operation
5. Continuous improvement of the Service

Each one of these phases should be accompanied by government PSecific policies that different countries like France, Germany, Brazil, Ecuador, Venezuela etc. have adopted in different ways, but until the moment it is take as cases of success.

Where a policy that regulate each one of the phases and gives some clear rules for the administrative public entities, it achieve a bigger impact in the adoption of the FS.

For this reason it is described certain rules that should be continued in each one of the phases basing us on cases of successes, next and strengthening in the strategy phase the weaknesses that have had the countries that served as reference frame.

Strategy and Design

Creation of technical committees, for the end of to coordinate and to promote the planning and run of projects and divided actions in the following way:

1. Implementation of Free software
2. Digital Inclusion
3. Integration of Systems
4. Inherited systems and software licenses
5. Network Infrastructure
6. Abilities and management of Strategic information technology

The committees should be integrated for representing of the organisms and entities of the public qualified administration with previous knowledge of the necessities and lacks of the information systems.

Where Brazil, is one of the countries with more clarity in its policies, on the topic. But as much Germany as Italy have a great advance in the projects that can serve as base for the committees.

Transition

For which settles down one period, for the run of a test pilot, and it is settles down the period of qualification for the administrative users. These should have a support of e-learning, and their duration must follow the qualification guidelines granted in the stage 1.

Where Germany and Brazil, are one of the countries with more clarity in their policies, and qualification political for the end users and technicians.

Operation

For which finalization is given to the contracts with the bound companies to the support and purchase of licenses.

Where Brazil, is one of the countries with more clarity in its policies, on the topic.

Continuous improvement of the Service

For which are renewed contracts for the support of the tools of Free software. And they are carried out annual reports on the state of the implemented tools, and projects for the upgrade of these.

None of the countries has had political PSecific for the upgrade, and the continuous improvement, but it is clearly since a necessity we are in a constant development and improvement in the politicians you anti-process.

DIFFICULTIES

The software owner, presents an advantage in front of the free software in our society since the critical mass is strongly bowed

to the usage of PS, thanks to different marketing strategies enunciated next:

- License OEM: They are licenses granted to the assembler companies where it is characterized by two things: First the installation of PS is in charge of the assemblers, any re installation or upgrade they are not included as options for the user, and second these licenses are bound to a team, that is to say they cannot be transferred, to be sold neither to be given. The purpose is to give a test without time limit to the end user, where the user acquires an ability to manage this PS and a comfort that force him to buy the license type Retail in the event of damages or upgrades.
- License student: Where offers packages of PS gratuitouFSy, so much to students as educational to delete the expenses of qualification of the software and to increase the belonging users later on to a critical mass in the labor market, where the user already has a bigger purchasing power.

These two marketing strategies influence positively in the balance of the critical mass, generating a network effect where the users perceive a bigger benefit or utility when acquiring products of PS, given the quantity of individuals that currently PS uses.

This effect bears to a competitive advantage for the entities of PS that have known how to take advantage until the moment, but this utility is not really tangible, and it is of difficult mensuration. But this difficulty can really be overcome balancing the market, achieving this way a quantifiable bigger benefit as much for the public sector as for the society.

The market of PS and FS can represent as a duopoly, modeling with a Cournot competition that had according to [4] the following statements:

$$(i) \text{ When } c > c_1, \quad q_p^* > q_0^*$$

$$(ii) \text{ When } c > c_i, \quad q_p^* < q_0^*$$

$$(iii) \text{ When } c = c_i, \quad q_p^* = q_0^*$$

Where c is the learning cost (maintenance and development) when FS tools are used.

In few words the above-mentioned describes that the optimal quantity of PS, is bigger when c is the sufficiently high, that currently is perceived when the maintenance costs FS are bigger to the purchase of PS and its maintenance.

But this effect is not an infinite cycle and it can modify the network effect, being able to arrive to the minimum when $d > 2\beta$ or $d < 1 - \alpha - \beta$ d is the sustainability grade between PS and FS [5-6].

β : is the grade of the contribution from each user to the reservation price, when FS is used. And α is the intensity of the externality of the network.

The development of abilities for the FS and the externality of the network affects the optimal price, directly and inversely. For this reason it is necessary to modify this ability and to motivate the use of FS from the government to grant a balance of the market.

In Colombia 5000 Engineers of Systems are graduated, and the deficit of professionals for the software industry grows 5% annually, what generates a challenge for Colombia the incentive for these careers.

CONCLUSIONS

Multiple advantages exist in the adoption of the free software, but this adoption should be continually accompanied for some public policies described previously, to balance the market of the software in Colombia, in such way that the users can obtain a price in the software without an elevated reservation value, achieving this way a decrease in the commercial deficit, piracy decrease, and investment in the human resource of TICS in Colombia.

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