Software Made in Bolivia, Myth or Reality?

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RESUMEN
This article focuses on Bolivian and international legislations around copyright, intellectual property (IP), the protection these might offer to legal software owners, and how they relate to software in general. It also addresses the necessary steps needed when developing software from scratch: the need of a successful idea, the opportunity window, the market, the business plan, the vision and engineering investment, the marketing investment, the customer support, product maintenance and the need to maintain a market edge, etc. It discusses the impact on having part of your software developed in other countries and how this fact impacts its “denomination of origin”.

Palabras Clave
Intellectual Property, Patents, Software made in Bolivia.

1. INTRODUCTION
When a produced good is labeled with the designation of origin “Made in Bolivia”, it means that the good itself was physically made in Bolivia with Bolivian workers and in a physical location well within the Bolivian borders; or at least that is what people would expect. In some cases, the “made in Bolivia” tag can be attributed without the slightest doubt because the raw materials, the process itself, and the workers are all Bolivian in nature. Clear examples of this are Bolivian chocolates, wooden doors, wine, etc. In many other cases however, either the raw materials, the technologies used, or even the ideas are foreign in nature and the designation of origin is questioned at different levels. For example, the world famous clothes brand Polo has some of their shirts made in Bolivia; however all the raw materials and technology are foreign in nature and the labor force is Bolivian; are they sold in the local market at lower rates (no import tax has been paid on those clothes)? do these shirts carry the “made in Bolivia” designation? Coca Cola products carry “Elaborado por EMBOL S.A., ©2010 The Coca-Cola Company, Botella Registrada, Proteja el medio ambiente, and the “Informacion Nutricional” clearly visible but there is no “made in Bolivia” denomination.

So when it comes to software, the question is even fuzzier. There are no tangible raw materials and the resulting product is also a non tangible good. The designation of origin should still apply but, the truth is that, a very small fraction of the software produced in Bolivia carries the “Made in Bolivia” denomination.

In Bolivia, very few companies develop software 100% in-house. For these selected businesses, the ambiguity of whether the software was “Made in Bolivia” or not is inexist. Some know examples of software that falls into this category are Xian Network Manager, Xian Wings, Silas, DaVinci, and several others. They also fall under this category several web sites and mobile applications developed explicitly for a particular business, for example banks. The rest of the software industry in Bolivia produces software for which the Intellectual Property (IP) is, in few exceptional cases, partially owned or, most often, not owned at all. In fact most software companies who outsource software most likely have ownership statements in place that claim the IP of the ordered software for their own.

2. WHO OWNS THIS SOFTWARE?
In the software industry, as well as in many others, there are different ways of declaring ownership and protecting such ownership. To understand ownership of a software product it is important to understand its intellectual property rights. Intellectual property rights are at the foundation of the software industry. The term refers to a range of intangible rights of ownership in an asset such as a software program. Each intellectual property “right” is itself an asset, a slice of the overall ownership pie [2]. The law provides different methods for protecting these rights of ownership based on their type. There are essentially four types of intellectual property rights relevant to software: copyrights, patents, trade secrets and trademarks1. Because such terms are very loosely defined withing Bolivian laws we will first understand how these are defined in the US2.

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1Trademarks, given the simplicity of its definition, will not be treated on a different section. The reader should find sufficient to understand that “a trademark is a recognizable sign, design or expression which identifies products or services of a particular source from those of others.”

2Although most developed countries have their own way of treating copyright, patents, and trade secrets, the ba-
2.1 What is copyright?
When a work is created in a fixed tangible form, the copyright becomes the property of the author who created the work. In the case of works made for hire, the employer (not the writer) is considered the author. Also, under the First Sale Doctrine, ownership of a physical copy of a copyright-protected work permits lending, reselling, disposing, etc., of the item. However, it does not permit reproducing the material, publicly displaying or performing it, or engaging in any of the acts reserved for the copyright holder [2].

In the particular case of software, owning a legally bought copy, should entitle the owner to “lend” or “resell” his/her purchased product. Note however that Microsoft, along with other companies, has tried to nurture such rights when attempting to prohibit the reselling of XBox software products early this year: Xbox 720 vs PS4, New Xbox 720, Will Xbox 720 stop you playing secondhand games?

The way in which copyright protection works is not always fully understood. Copyright is secured automatically when the work is created and fixed in a tangible form, such as the first time it is written or recorded. No other action is required to secure copyright protection — neither publication, registration nor other action in the Copyright Office [2] (although registration is often recommended).

2.2 International Copyright
There is not a world wide institution that protects copyright work throughout the world. To amend this however, there is a copyright treaty legislated by the Berne Convention, that states that once a work is protected in one of the Convention member countries, it is protected by copyright in all of them [1].

The Berne Convention further states that the scope and limitations of any copyright are based upon the laws of the country where the misuse of the copyright-protected work takes place (rather than the country where the work originated). For example, if you photocopy an article in the U.S., then U.S. copyright law applies to determine whether that copy was lawful. Similarly, if you digitize an image in the UK, the copyright laws of the UK apply to determine whether that digitized use is lawful. This is one of the reasons behind why software, film, and music piracy is so poorly protected in some countries whereas in others, the law can be applied to its full extend.

2.3 Shared Copyright is not possible
As seen in the former sections, and from a software point of view, copyright of a software product is automatically issued to the author (or employer) when the work is created and this copyright is internationally secured by the Berne Convention provided that the country of origin is part of such Convention.

In the case of two or more software companies involved in the production of a particular software, unless otherwise specified and in written form, the copyright goes to the “employer” company which is the one considered the author of the software. Therefore, in the common case of a US based company outsourcing parts of its own software to other offshore companies, the copyright is issued to the US company.

3. WHAT ARE PATENTS?
A patent is a twenty year exclusive monopoly on the right to make, use and sell a qualifying invention [3]. This legal monopoly is considered a reward for the time and effort expended in creating the invention. In return, the invention must be described in detail to the Patent Office, which publishes the information, thus increasing the amount of technological knowledge available to the public.

To obtain a U.S. patent, an inventor must apply to the Patent Office and demonstrate that the invention is new (as compared to prior technology), useful, and “nonobvious”. An invention is nonobvious if it is more than a trivial, obvious next step in the advance of the technology.

Software patents can be extremely powerful economic tools. They can protect features of a program that cannot be protected under copyright or trade secret law. For example, patents can be obtained for ideas, systems, methods, algorithms, and functions embodied in a software product: editing functions, user-interface features, compiling techniques, operating system techniques, program algorithms, menu arrangements, display presentations or arrangements, and program language translation methods [3]. Since patent rights are exclusive, anyone making, using or selling the patented invention without the patent owner’s authorization is guilty of infringement. Penalties are stiff and include triple damages. Once a patent for an invention is granted, subsequent “independent” (i.e., without access to the patented technology) development of the invention by another inventor is still considered infringement.

4. WHAT ARE TRADE SECRETS
A trade secret is any formula, pattern, compound, device, process, tool, or mechanism that is not generally known or discoverable by others, is maintained in secrecy by its owner, and gives its owner a competitive advantage because it is kept secret. The classic example of a trade secret is the formula of Coca-Cola. A trade secret can theoretically last forever – for as long as its owner uses reasonable efforts to keep it secret and someone else doesn’t independently create or “discover” it. Deciding to keep a trade secret vs. patenting the invention is a gamble: should you decide to keep the trade secret you leave the door open for someone else to discover it and freely use it. On the other hand, should you decide to patent it, you only obtain a 20 year monopoly of the invention after which it becomes free to use by the public. Note that this is a common practice in medicine: new products are extremely expensive, not because of the cost of producing them but because of patent rights. After the patent has expired, those products become very cheap.

Many features of software, such as code and the ideas and concepts reflected in it, can be protected as trade secrets. This protection lasts as long as the protected element retains its trade secret status. Unlike patents, trade secret

5. STATUS IN BOLIVIA

The Servicio Nacional de la Propiedad Intelectual (SENAPI), is the entity in charge of the administration of the Intellectual Property in Bolivia. As per advertised on its web site, this administration includes industrial property, author rights, and derechos conozos. It is also the competency of this entity the dealings with international treaties and regional agreements as well as monitoring the norms related to IP as per the Decreto Supremo 28152, Capítulo II, Artículo 3. [4].

SENAPI divides the Intellectual Property into two areas: 1) Propiedad Industrial and 2) Derechos de Autor y Derechos Conozos. Derechos Conozos is a legal term related to author rights and copyright for interprets, record producers, broadcasters, etc. These are not relevant to this article and, therefore, the second area, for our purposes, will deal with Author Rights only.

5.1 Propiedad Industrial

Propiedad Industrial is oriented towards businesses and includes a) signos distintivos and b) patentes. The first one, signos distintivos covers marks, logos, and denominacion de origen; they are all related to and treated as Trademarks (as described in a footnote of section 2) and will no longer be discussed.

5.1.1 Patents

As described in the SENAPI web site [4], a patent is the property right that the state (Bolivia) issues to the holder of an invention. This patent allows the holder to share the benefits of such invention while, at the same time, have the economic benefit that was produced by his/her mind. Patents are divided in three types; the description of each has been transcribed from the SENAPI web site. No attempt of translation was made to avoid introducing misinterpretations:

- **Modelos de Utilidad.** Utensilio ya existente que ha sido mejorado o implementado para que su uso sea más óptimo.
- **Esquema de Trazado de Circuitos Integrados.** Soporte electrónico en el cual existen varias interconexiones que lo hacen novedoso en la industria electrónica y se refiere a la disposición tridimensional de los elementos componentes de un circuito integrado.
- **Diseño Industrial.** Objeto creado por el hombre para ser utilizado como modelo de producción, es decir que tienen un patrón original ya sea para brindar confort o por simple estética.

I will refrain myself from making any comments on either one of the three patent types. In any case, the reader cannot fail to notice that software is something not very near and questionable to become a patentable item in Bolivia. It is likely that most bolivian software producers/authors quickly rule out the option of owning a software patent in Bolivia and, therefore, the first area, Propiedad Industrial, very seldom will apply to software.

5.2 Derechos de Autor

Author Rights, as defined by SENAPI, is a set of norms that regulate the rights that the bolivian law grants to the creators of an “artistic work” regardless on whether this work is musical, literary, cinematographical or computational, and grants to the natural or legal persons (who desire to register their work) all the protection and the rights of use so that such work is not copied nor utilized in an erroneous way by third parties protecting the author against piracy and guaranteeing that the author can receive a just retribution of his work. At least this is what is advertised in the SENAPI web site [4].

5.3 Registering Software in Bolivia

Based on the former sections, it seems that SENAPI cannot grant patents to software because software fails to qualify into neither one of the three patent types: modelos de utilidad, esquema de trazado de circuitos integrados, nor diseño industrial.

It therefore, follows that the only alternative for legally registering software in Bolivia is through the Intellectual Property by registering its “Author Rights”. The requirements are not too complex and the fees are not astronomical (approx $3000 B$s. for nationals and almost double that for foreigners). See details in Costos SENAPI and Requisitos [4].

Although fees might not be too high, somebody interested in registering his software in Bolivia must weight the pros and cons of doing so. Obviously the cons are the certain burocracy involved in the legal paperwork and the costs associated. Among the benefits of registering software in Bolivia we can find (as mentioned in section 5.2): protection, rights of use, copy/theft/piracy prevention, and guarantee that the author will receive fair contribution for his work. In fact this latest item may be the most important for any software author who may want to legally sell his/her software in Bolivia. It seems that if you wish to legally sell and issue an invoice (factura) for a software product, such software must be registered in SENAPI if the software is bolivian in origin.

It follows, therefore, that unless an author/company wants to sell their software in Bolivia, it is questionable on whether they will be willing to register the software in SENAPI. Selling software outside Bolivia falls into the “Exporting Software” category and SENAPI also requires software to be registered before export. Whether exporters register their
software in Bolivia or in other countries which may offer better protection laws, is entirely a different matter and out of the scope of this article.

6. WHAT MAKES A BOLIVIAN SOFTWARE BOLIVIAN?
In this section we will try to establish a set of rules that the author believes are requirements for a software to be considered as bolivian software or software Made in Bolivia.

Although the workforce is an important factor, the intellectual property of software, as opposed to other tangible goods, is what determines its “denomination of origin” and who will make money by selling such software. It seems fair to say then that:

1. you have an idea,
2. you hire somebody to implement this idea,
3. you commercialize this idea

then the net revenue generated by such software (or the loss) will go to the “owner of the idea”. By the same token, the engineers that programmed the software have been paid for their programming services but the “intellectual property” still belongs to the “owner of the idea”.

So what takes to transform an idea into a successful software product?

6.1 I have an Idea
It is very common for “non technical” people, when talking to us, engineers, to say that “they have an idea that if implemented it could make millions!” It is also common for junior engineers that have a certain degree of technical computer science background, to believe this to be true. In fact, there are several examples of people who have made significant investments in Bolivia that have gone wrong. There are several “non-technical” factors that need to be considered for an “idea” to be successful and in many cases these are often overlooked. Failure to consider such factors will almost certainly lead to a complete failure in the project. These factors, in no particular order are:

6.1.1 Solve a problem
A common mistake done at many different levels is trying to sell a product that does not solve a problem. Good ideas will not necessarily sell well. In many cases, it might be possible for marketing departments to try to create the problem before commercializing your product. The reality is that people need to be convinced that they are purchasing something that is worth the money they are willing to invest. There are exceptions to this rule but being able to produce such exceptions is very difficult. Entertainment is such an exception. Entertainment software however is very expensive to produce and very difficult to successfully sell. Therefore unless you have a specialized team and knowledge in the area, trying to enter such market will most likely lead to failure; a clear example of such is Darkwar [5], [6]. It is a differently story entirely if the game is distributed for free like, for example Coca Kolector [8].

Your best bet is to produce a program that will simplify the work / life of the end user to such extent that the end user will be willing to pay money for it. More elaborate forms of making money with software are, for example to give your software to the end user for free but charge for advertising or sell statistical data of your users. Examples of this are facebook, gmail, google, etc. where services are mainly advertising. In this case, you are providing a free service for some users and solving a problem for others (the ones who are willing to pay).

Additionally, you need to consider where your software will be best sold. For your software to sell well, you should try to have your market in North America, Europe or the most developed countries in Asia. The problem relies on the fact that you, as a bolivian, will need to solve a problem of another country, another culture, and another reality. To successfully do that is quite difficult: for you to solve a difficult problem means to deal with the problem so frequently that you can find an original solution that nobody has thought of before. But, how do you do that if you don’t even live in the country in question?

6.1.2 Understand your market
Suppose you have successfully found a problem and a software solution for it. Before you actually start the project you have to ask yourself whether your market will pay for such solution? For instance, the problem might be finding the shortest drive to work every day. You may have found a solution for such problem but will people be willing to buy it? will the solution make the end user save sufficient money (or significant time) so that he decides to purchase your program? Will the end user be willing to change his route to work every day? Is the solution sufficiently attractive for people to pay? Do people really want this problem solved? or would they rather spend the extra money just to be able to take the same route every day and not have to deal with alternate routes?

6.1.3 How long will it take?
Another important factor to consider is the time it will take you to convert your idea to working software. Most successful ideas will have a limited and small opportunity window and if you miss that window, your software may not sell at all. This might imply that you will need to hire additional engineers to speed up your process. However, adding more engineers will not always reduce the amount of time it will take you to produce your software. This relationship is not linear and has an optimum value: changing your team size from 1 to 2 may cut your development time in half. However, changing your team size from 1 to 4 will not necessarily cut your development time by 4. The extreme of such example is making your team so big that trying to have the team produce the software may be as efficient as just having only one developer. Does your idea have an expiration date? Is it possible for someone to do it faster than you? Do you have a very fine opportunity window? for example, if your software is for the soccer would cup, then there is no sense
to have it after the world cup; in this last case, the idea has very tight time constraints.

Once you have determined the opportunity window and the team size you will need, the question that immediately follows is whether you have the cash to pay the team. Most likely you will not, and you may end up with one of two choices or a combination of both.

- **Find angel investors or get a loan.** Both are somewhat similar: you are getting a loan from a bank and your are guaranteeing such loan with your property, your house for example. Alternatively, you also can get a loan and guarantee such loan with the very same idea that you are trying to sell. In this later case, instead of going to a bank, you go to an angel investor; this option involves less monetary risk but you need to convince the angels over many other people that are trying to do the same. This competition can be tough and, unless your idea is very good, your sofware will not qualify. If your sofware qualifies, keep in mind that you will no longer have full control on the roadmap of the sofware that used to be yours [7].

- **Trade some of your IP rights for engineering time.** Alternatively, you may end up trading/sharing your IP rights with other engineers by conforming a society where everyone pitches his time and dev skills. This seems to be also an interesting idea at first. However, unless you have absolute confidence in the team thay you are willing to partner with, it will also prove to be a very dificult operation. You want to partner with the best team you can but good engineers will not be easily willing to invest their time in ideas that might lead to failure.

### 6.1.4 Other Factors around your business

Even if you have solved all the items discussed above, there are still others that will make your life misserable: have you established a legal company that will be able to legally sell your sofware? Do you have all the accounting items figured out? i.e. taxes, exportation issues (if your sofware will be sold outside Bolivia), etc. How will people find out what similar: you are getting a loan from a bank and your are guaranteeing such loan with your property, your house for example. Alternatively, you also can get a loan and guarantee such loan with the very same idea that you are trying to sell. In this later case, instead of going to a bank, you go to an angel investor; this option involves less monetary risk but you need to convince the angels over many other people that are trying to do the same. This competition can be tough and, unless your idea is very good, your sofware will not qualify. If your sofware qualifies, keep in mind that you will no longer have full control on the roadmap of the sofware that used to be yours [7].

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### 6.1.5 What is your ROI?

Suppose you have finally dealt with the problems mentioned above. To do this you have probably calculated that you will need to spend quite some more cash besides the engineering costs. So after taking into account all these factors, how long do you have to wait to obtain an interesting ROI?

An interesting ROI could be calculated by the amount of money you would get should you decide to sell the whole package including IP rights. If the money can pay all your debts and still give you an interesting amount of cash, it might be worth the effort. Unfortunatelly these things can not be known in advance and significant risks are always involved.

### 6.1.6 So will your idea be worth the effort?

There is no definite answer here. Worth the effort for some people might mean just to have a lot of fun for some time while for others it can be a matter of loosing everything.

### 7. CONCLUSION

After considering the difficulty of finding a market niche that can be exploited without having to fight with similar efforts, the problems around the the protection of the intectual property, and the difficulty of the business itself it seems understandable for Bolivian Companies to go for the “low risk” option of outsourcing and let small initiatives to try to deal with Made in Bolivia software. Still readers should not be discouraged by such comments; on the contrary, several multi-million dollar initiatives have started just like that.

### 8. REFERENCES


[8] Coca Kollector