

Debian - fostering innovation on free software

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Abstract

Since it's early stage The Debian Project has been working under the premise of doing things in the right way. This have led to many different innovations which have affected the free software world and even the software industry itself.

Starting from the concept of a distribution, package management, bug tracking, policies and guidelines, to much of the infrastructure and base-line software available now; Debian has been key on leading such innovation.

This article intends to give an overview of the association of innovation and The Debian Project, stablishing common links and sceneries which might have made this to occur. Later, it reviews the current scenary on society and technology to point out trends that might be our world's future on which I consider we as a project can have a key role and foster innovation.

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1 On Innovation

When we talk about innovation, generally we oversee the surrounding facts that have been involved in such developments. People tends to see it as a new or

brilliant idea that have just been acquired the last minute and presented now, the eureka effect. Scott Berkun, a well known researcher on the subject states: “innovation is rather than a brilliant or new idea, but a solution for an specific problem” (Berkun, 2007).

After studying the innovation development and process he has found that for most innovations who have been successful they were not new nor brilliant ideas, in fact there were ideas and work already invented or presented in the past. The key for the success some of those then wasn't based on it's novelty, it was rather on its ability to think on the problem to solve in a way that considers all the surrounding events; thus thinking on the whole issue, starting from the specific problem, he concludes.

When studying the innovation process happening on the product-users side (von Hippel, 2005) Eric von Hippel have found a set of elements that can be described as the motivations for these new developments to happen: Being a lead user -as he describes those who are always looking for ways to make more use and adapt products to their own need, which might be also on common demand-; a need to have the product work in a way that fits only his or her needs, they joy that the innovation process produces, and the will to share them with others who might need it also. This phenomena have been seen to be increasing over the time; at the present we have more interaction on products and services development between users and firms producing them, resulting in a win win situation where the outcome is good for both users and firms.

2 History

2.1 The beginning

When Ian started the Debian Project¹he started with the motivation of being dissatisfied with the way the GNU/Linux system was being delivered to users. There already was a project to build an operating system called GNU[1], there were already a few Linux distributions[2], and there were some intents to make the different free software packages available from a single place. Although it might sound at the time that envisioning such project might be a duplicated effort, what he did in fact was foresee the whole problem and present solution for it. On his evaluation, as we can see by reading the manifesto, of the existing problem: there was really complicated to have a working Linux-based operating system installed, it was also difficult to find and have the software packages installed on users machines. Nor to say that the development process was mostly one man-computer task. He did actually foresee this and envisioned a solution to this problem, with a wider approach. He states: “ In mid-1993, I found my niche: I saw a need for a nicely packaged Linux "distribution," although from my initial post on August 16, 1993, it appears that this term wasn't in widespread use yet.”

¹The first email First email <http://groups.google.com/group/comp.os.linux.development/msg/a32d4e2ef3bcdcc6>

What Debian did since then is to develop a set of tools and technologies to solve this problems. Debian was the first one having a package management tool, a single repository for software packages, it was the first project exposing the idea of a mirror, it also was the first one having an installer and the most important: the definition of a set of policies and rules to sustain it's own development. On which I'll develop more later.

Since then, Debian has been key on the free software arena, by defining set of tools and developments that has been either adopted or imitated by most of the free software projects. The bug tracking system, the QA practices, the policies has been adopted and studied by academics and even by consulting firms for corporations trying to understand how this volunteer group of people have managed to get this far.

2.2 Building lead users

Debian, despite the fact that there were other distributions, at the time when started, such SLS, yggdrasil and RedHat; gained attraction and interest from its users and free software advocates, such the GNU project who did sponsor it on it's early years. But what made it different from those wasn't necessarily in it's technical merits, but it's open and transparent development model. It is they key on its suces and innovation fostering as we will see.

To date Debian is the only free software project who does have the most derivatives and forks, it also has the wider developer community, and research have determined it to be valuable of millions of dollars if monetized all the volunteer work people have devoted to the project (Barahona, 2005).

Previous and ongoing research have been trying to find how these group of people coming from diverse cultures and countries have got together and managed to produce something as complex as an operating system which is widely used in diverse areas as corporations such Google, government such Extremadura in Spain, individuals, movie makers and producers such Pixar, and academic research.

To be able to understand this phenomena we might take a look at history for a moment. In the beginning, just after Ian announced the project, in order to be able and get started to contribute one just had to send an email and got a response back with an account on the development servers (debconf4, history from elders). Over the time this process have become a bit more structured than that but it is still governed by the framework that the Debian Policy and Manifesto have set.

The organization and policies defined from its beginings have been key for this phenomena to happen. Ongoing research by Steve McIntyre will be able to produce more factual data on what defines and motivates a Debian contributor, but empirical information can show that enjoyment of the development process, willingness to work on something that is on own's interest and as a parallel effect can benefit others, adapting to particular use cases or market segments, and being able to make a small change which will benefit others is what can be seen on our community.

This characteristics have been described by von Hippel as a lead-user. So, the way that Debian has been envisioned was meant to foster lead-user, to encourage people to adapt it to their needs, to be able to make a change and benefit others, to base their work on other's, to promote new ways to approach problems, and to get people with diverse interests, cultures, political views, get together under a common goal: to build an operating system since 1993.

Lead users have been key for Debian to have succeed this far. By having lead users Debian is able to have many sub-projects targeted to areas such medical like Debian-Med started by Andreas Tille, a physicist who joined the project as developer, and later evolved to a wider framework to effectively make it more easier for people to custom the operating system; the Debian-Jr project started by Ben Armstrong when asked for his daughter "if Linux game is also available for Windows", and others who haven't been only started for personal use but for business, specialized or massive targets such the Knoppix distribution started by Klaus Knopper to be able to have the same software set installed on all of their student's machines; which also demonstrates this innovation process happening again. Corporate targetted lead users also appeared such Progeny, the company Ian itself started, targetted to high-availability and telco market which partnered with HP; the HP open source labs who also widely use and now officially give commercial support for Debian, Canonical Software started by Mark Shuttleworth who targetted Debian to a wider user-base and now is one of the most widely used derivatives and have boosted the market share for GNU/Linux on the desktop.

Ian retrospective:

<http://www.linuxplanet.com/linuxplanet/editorials/4959/1/>

3 The future

Technology and society constantly and rapidly evolve, to the present the needs and environments we know are quickly changing and others are currently on it's development initial development stage. Such changes and new sceneries will also have impact in the work Debian does and produces.

Consultants research, such Gartner, have foreseen how the world will be in the next 4 years and on, regarding society and technology. These findings indicate that our world will evolve in ways that are no necessarily based on what was in the past. Society is changing and moving into a more digital environment, where digital natives are currently playing an important role and are defining the way of doing things and socializing in this environment. There's also evidence that we will soon have an wider elder population who will transform the way services and products are both delivered and offered, for instance health services will have to adapt to this new panoram in order to being able to serve them appropriately.

In other aspect businesses and society are now all concerned about environmental issues, such global warming and "greening". IT industry is progresively moving to a more green-computing approach by the fact that energy resources

and power consumption have reached a critical status. There are cities such London where they have forbid datacenters to add even one more server. The PC-based or centered work environment is progresively being replaced by a more mobile approach where devices such laptops and mobile phones and Internet-devices are currently gaining more adoption. Gartner have estimated that by 2012 people who moves constantly will replace their laptops with a different kind of lighter mobile devices.

Businesses and organizations are moving to a Net-centered approach for serving and consuming services, industry-labeled as cloud computing. Virtual worlds and social networks are currently playing an important role in how businesses and consumers interact, develop products and services and produce value; and will be even more important in the following years once these technologies reach its maturity and gain wider adoption.

4 Where to go?

This new scenery will have impact on the needs and also on the motivations of Debian's lead users have to innovate and develop new solutions for these future and present problems. Here Debian can take advantage on what defines it and become more proactive on fostering innovation that comes from it's lead users.

As we see, what Debian have managed to create is a framework where people is enabled to become lead users in just a small amount of time and this process have become rather than conducted in a more natural one. This is quite different than other alike project have achieved. In this scenery the main elements that enable and foster innovation are already present for us to take advantage of it and lead innovation.

As Ian states on its Debian retrospective, The Debian Project have become the defacto vendor-neutral player on the free software ecosystem and one of its role should be making it more stronger.

The important aspect for the project to continue innovating is to keep its roots, to foster and allow new hurds of people to join it and bring their new ideas and knowledge, either developed in the academia or empirically, and making room for them to work on what they are interested and motivated to do. Thus as side effect Debian and the free software ecosystem will benefit and we will keep having new developments and new approaches for our current and future sceneries.

Projects such the Google Summer of Code are a great example of this approach to be succesful and give great valuable contributions for the project in return. Bringing fresh ideas and new ways of doing things is what can sustain our ecosystem. Opening the room, offering resources and promoting to shorten the timeframe since a new idea or prototype is presented to get to the point where is launched and actually of real use will be of more value for us, as it was in the past, than maintaining a "elephant organization" culture where changes are constrained and discouraged preserving an existing approach that is no longer applicable for the present, nor the future.

The Debian Project is also in the position to be able to “talk” with all, if not, participants of the free software ecosystem and the software industry, thus become the main forum where all can discuss where free software should go, which problems are we willing to solve and how to do so, which kind of resources we should allocate to make this happen, what values are not negotiable and are key to preserve in order to have this sustainable ecosystem, and so on.