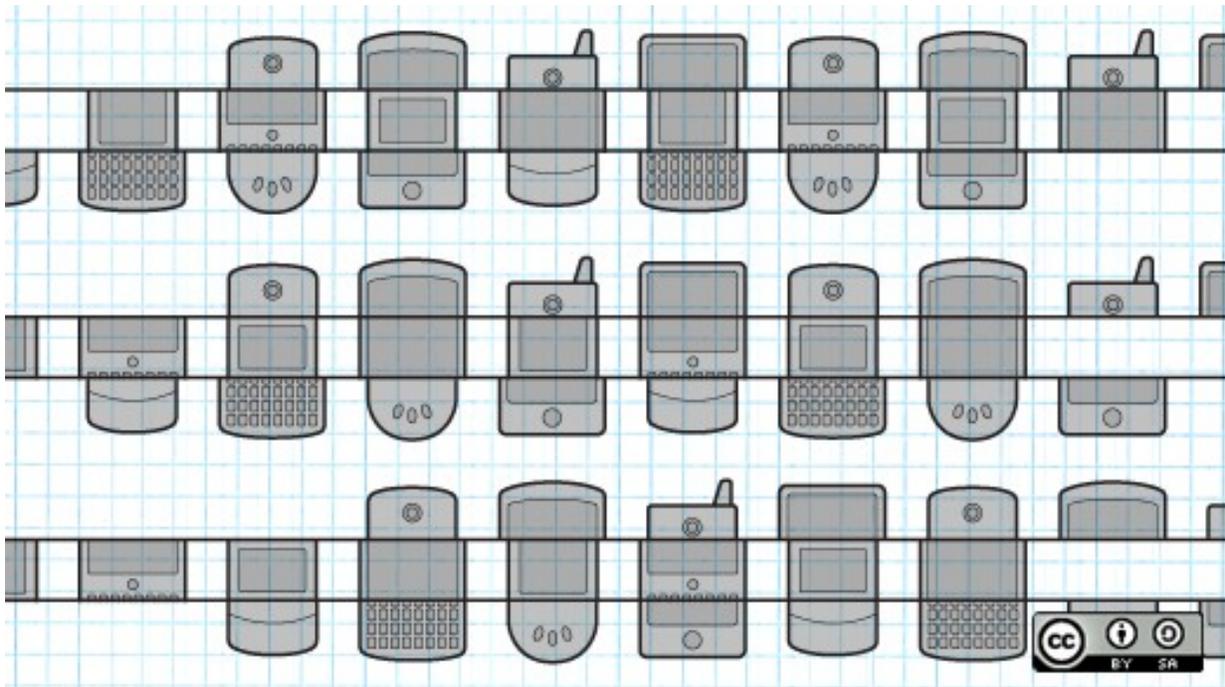


# Openforum Academy

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**Open source in mobile operating systems, a game changing model?**

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# Report

## Open source in mobile operating systems, a game changing model?

5 September 2013, Silken Berlaymont, Brussels

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## **Foreword**

Alongside Android other actors have now embraced the Open Source Software (OSS) model and new initiatives such as Mozilla's Firefox Operating System (OS) and Canonical's Ubuntu Touch show real promise. Is the use of Open Source hiding a hidden opportunity in the mobile market? It is claimed it is supporting a new wave of innovation in mobile with customized versions developed by device manufacturers (Samsung TouchWiz, HTC Sense) or community-created alternatives (CyanogenMod, Replicant). Different sectors seem to be benefiting from the OSS model, some of Android's code finding its way into ebook readers, smart TVs, video game consoles and cars.

But this apparent success is not going unchallenged, and concerns exist that the distribution of OSS free of charge is harmful to competition. So are the benefits only available to the suppliers or is there benefit to the wider market in Europe and to the user?

Through this Round Table discussion representatives of leading organisations will initially explore the reasons for their attraction to this model, and how it brings value across the value-chain. Via a moderated discussion with invited guests from across the spectrum of views we will then challenge their thinking and test whether there really is a proven case in support of innovation and competition in the market, or whether its disruptive effect merely displaces existing suppliers.

## **Speakers**

**Chris DiBona**      Director, Open Source, Google

**Tristan Nitot**     Principal Mozilla Evangelist

**Moderator:** Graham Taylor, CEO of OpenForum Europe

**Rapporteur:** Dr. Alea Fairchild, Director, The Constantia Institute and Docent, HUB

**Graham Taylor** opened the event by introducing OpenForum Europe, the topic and speakers. He also explained about the OpenForum Academy and its purpose in creating a debate forum environment. This is a moderated discussion, with an inclusive debate on the topic. We started with two informal presentations by two speakers, then opened the floor to discussion and debate with the other attendees. The topic is on the use of mobile source operating systems, and in this event we stayed out of the antitrust discussion.

The new entrants into the market leads to a discussion of market development and the intercept between the telecom world and the IT world.

The two speakers invited to frame this discussion were:

**Chris DiBona**      Director, Open Source, Google

**Tristan Nitot**      Principal Mozilla Evangelist

Graham then stated that Chatham House Rules will apply, in that the speakers could be quoted, but no other participant in the debates would be quoted in their contributions. He also confirmed that he was aware that with a competition case under way against Google. Whilst there was some connection with the focus of this Round Table in terms of the experiences with Android, it would not be appropriate to allow 'company behaviour' discussions in this debate.

We opened the discussion with the comments of Tristan.

Tristan wanted to remind us of four reasons on why Mozilla supports open source:

- 1.Mozilla is a nonprofit organization, which is the underpinnings of certain things that they do, in comparison to a profit-driven organization.
- 2.Mozilla is a community of people with a mission. The Internet developed in a way that benefits everyone. Product and service and standards all exist for this reason. Firefox is an example, used by half a billion people, of a tool that benefits everyone.
- 3.Open source works in the open. Community of people around the world who work together use open source so contributions can be shared. Open source is deeply ingrained into their organizational DNA, and contributors come from many areas and partnerships.
- 4.Mobile is the new computing revolution, and this is why Mozilla needs to be there. Computing has been through a PC, and then to the Internet, was computer based. But seven billion people now, and two billion more in the near future, will be using Internet with a mobile device.

So Mozilla needs to be there to let people experience computing and the Internet via mobile technology.

For example, for inexpensive phones, the mobile OS provides many abilities for those using this tool to introduce people to the Internet and all the values and opportunity to be a part of the Web. This allows people to create web applications with minimum cost and permissions, allowing innovation and contribution.

Chris started his discussion with Android and its genesis. He was in 2004 on a small team that was looking at how Google was successful on the Internet and how they could keep that going. All the fundamental services of the Internet, such as the servers, were in a heated race to satisfy the users. Same went for email servers for developers and deployment. So when developers could not get satisfaction from a vendor, then they went to open source. So open source solutions have been growing across the infrastructure. But the desktop and browser markets were not incentivized for user satisfaction, just for market share.

So the browser markets had some competition and they also saw mobile starting to heat up. He mentions the growth of Symbian and Blackberry. Users initially had a difficult time seeing content on mobile devices due to several reasons, including networks. So how could this market grow properly?

He then told the story of the growth of Android, and what it meant to be open source. He discussed the use of the Linux kernel, how it was the right kernel for the job and that it had the right resources to develop onwards. Then he mentioned the Apache license and why it was special for this situation as it allows patent grants that read upon that software. It allows the defense patent situation, and allows use of the patent in their defense. Android needs to be seen as having the promise to not be rent seeking against firms later.

Graham then started the discussion with questions for both speakers. His initial comments were querying both speakers on the business value of open source on mobile. Tristan agrees it is a huge investment, but they were able to leverage the work of Google and the Linux kernel but all the rest is different. There are three layers in Firefox OS: the Linux kernel, the layout engine called Gecko (optimized for running on a small configuration) and then applications written as webpages. All the user sees on the mobile are webpages running on open source. Why? Because mobile is the next revolution in Internet computing. There are two big players: Apple and Google. They have an OS, and handset manufacturers, and they also have marketplaces. If you do not own the platform, you have to play by the rules of the owner. So they work on the premise that the platform should belong to everyone without permissions to be asked for distribution so all can benefit from mobile computing in the future. And Mozilla does it to be relevant in the future marketplace.

Chris adds that Firefox and Android make a good combination. But when Android started, not all options were available and Google wants to preserve the channel

between the user and Google. Google was not willing to tolerate individual gatekeepers keeping people from content online via mobile.

Tristan adds that their approaches are similar, but took place at different times in the development of the marketplace. Even if Google was to start a new mobile OS now, he would be ready to bet that it would be similar to Firefox OS. At the time, things were different and they have developed Android.

Chris disagreed as when WebOS came out, he wished that Palm had developed it better, and now it's up to Mozilla. Application development is easier on Firefox and he discussed development environments and their differences with Ubuntu. Having a web only approach with Mozilla is significantly faster process than having application developers pay attention.

An audience member from the telecommunication industry comments that there is more to the story than being said. The story in his experience in telecom open innovation projects has partners contributing code, standards development, etc. and he sees that mobile is not the next revolution, but the revolution has happened and the Web is now a mobile platform. In many large commercial sites, a main thrust of user traffic is now coming from mobile devices. It is not so much about the open source kernel, but the web as a mobile development platform itself. He also mentioned Tizen (Samsung based OS) which has a very strong web component.

A question challenged whether Google were really adopting an Open source model, claiming Google prevents Android OEMs from taking advantage of the claimed open source nature of Android by making it difficult for them from creating a version of Android based on the Android Open Source Project, and competing on an equal level. Through what was seen as predatory distribution of Android, Google makes sure, through its agreements with its Android OEM licensees, that Google's apps and related services are included with Android and restricts the ability of network operators and device manufacturers to include competing apps or services with Android. The moderator reminded the participants that as declared at the start any discussion on the current Competition case would be disallowed, and this question was refused in its current form. He did suggest, however, that it did raise an important aspect of open source in respect of building the community.

With the discussion turning to ensuring a level playing field for competitors, Graham then mentioned the cost of hardware device and disparity. One audience contributor mentioned OEM development and targeting lower income markets with less functionality requirements. Tristan mentioned implementation of lower cost mobile devices in Latin America and other regions.

Another contributor mentioned when buying a phone, he has to scrape off apps and functions he does not want. So the added value services added by the network operator can cause the need to scrape. What is the interest from the telecom

operators to produce open source device solutions? What value are the telecom operators taking from this?

A participant from the industry replied that the investment in time, energy and code is to create more viable mobile OS options for both operators and consumers. More choice is better for consumers and for operators to have more choices. Less thought is required of the consumer in terms of knowledge of apps and OS operations.

Chris added that when they ship Android to manufacturers, it allows them some customization for the devices. Google wants the market to take care of this, so that market demands drive customization. They have seen more manufacturers come back and not do crazy stuff such as Facebook home screens, which was not well received with only Facebook Home built in, versus the user making the choices. Google has made their bed, and some folks may have to sleep in it, but so does Google.

Another contributor had two questions, one for each presenter. The question for Tristan was on the potential of the Firefox OS and what part of the market they are aiming at. The question for Chris was on choice and adding skins, etc. but when you get an Android phone, there are several Google services on there and some of which you cannot remove. Do what extent does Google want to provide choice, given their other business elements? Graham restated this as the value equation of: Why the firms must be there and fill a place in the open source market?

Tristan replied by saying it was not easy to say. They write software, and for a small organization it is a small part of the phone in your pocket. A device may be from China, the chip set from Qualcomm, and it is sold via operators with a service provided. Software is important, but it is a piece of the overall solution. Mozilla shops do exist in cities where you can buy a phone. But local operators know the consumers and their needs, and Mozilla does not want to own that. Telecom operators know they have a feature phone user segment that wants to move to smart phones but cannot afford higher end offerings. Mozilla is able to contribute to this space with the partnership with operators. This is the current state of direction for Mozilla, and it does not make sense to compete directly with Apple today.

Graham asked why Mozilla had not just picked up Android as well as the Linux kernel. Tristan replied that they wanted the Web to be the platform and from an economic perspective, having a third platform competing did not make sense. The opportunity there, given the market share, would be limited as developers only write for only one or two platforms, due to resource constraints. A third place player does not attract developers as the opportunity is limited. Linux now running on the desktop commercially does not make sense. They want the Web to be the Meta platform, and it will then run on any modern browser and mobile OS.

Graham then asked to explain the differentiation between open source vs. open standards. Tristan replied that they had to develop Web APIs to develop standards

and to reuse the Linux kernel. A member of the audience also mentioned then the other partners from the telecom industry can also contribute to this project with engineering and other resources.

Chris then went to answer the question on the business case on top of, and in additional to, Android. He discussed how different parties in the mobile device chain want to work in collaboration, but certain handset and chip makers do not always want to work directly with each other, so Google is able to intermediate and navigate this value chain.

When looking at the lower cost Firefox device, Chris noticed mail, maps and other key apps have been supplied when the phone is purchased as users demand to have certain applications when they get their phones. These apps should be able to be swapped out for another default app, and this is what feasible when you have choice.

Another audience participant asked: Who is building apps for an Android phone? Tristan thought this was a good question, and developers should be building for the Web, not for an OS. There are likely 8-10 million people who can write a webpage and then can likely write an app in this regard.

Graham found this difference on what an OS currently is and what an OS is becoming to be very interesting.

Another audience member asked: Is Firefox OS a catalyst to the market? There is a developer and consumer mindset around having an application. Do either of these speakers see a move back to the webpage based model?

What is success for Mozilla and its partners in this regard? Mozilla considers 20-25% market share in the browser market a success, as it has created market pressures for Microsoft and for Google, and this creates a better set of choices for users. If they have enough market share to make the Web the reference platform for mobile applications, then this influence would be a success.

Another question came up on layering applications on top of the OS - is this a subset of software development? Yes, Tristan said, either done locally or done on a more centralized basis. An example was given of 3D development for games, and another example of a friend doing raw format compilation from C++ into JavaScript. Another person mentioned that Web RTC video conference setup working with latest build of Firefox OS. It is about upgrading the web platform so anything can be done on the platform.

A further question came from the audience on Ubuntu development on pushing free hardware. Chris replied that for some of their other phones they released specifications. But code for subCPU dedicated to radio has own kernel and own resources, so there are other issues than board or chip specs.

The discussion then turned to relationship development for providing a service: What kind of relationship between all the providers has to happen (OS, device, network, etc.)? Chris commented that once you get popular enough, then firms want to assert themselves. If you do not upgrade fast enough, people move onwards. OpenOffice was an example, in terms of its development. If you do not execute fast enough or well enough, then it gets forked away. Tristan added that a good example is Amazon and Kindle. Both discussed the pressures to fork exist in open source, and this helps development.

For application development, most apps are proprietary, so if people will develop in HTML 5, code is visible. Open source is a way to extend and accelerate development - is there competition between the apps in open source as they share from each other? Chris mentioned some studies, but nothing specific to quote. He mentioned the open app store in Android, but that it is small in terms in application numbers.

Graham concluded with asking: What is a successful open source project? What defines success?

Tristan replied with a challenge to Chris that Android is part open source, part closed source on certain application aspects, and the open source part is not open in collaboration.

Chris replied mobile development is bootstrapped, and what it came down to was user numbers, app diversity, more people buying apps, more developers developing apps, etc. Non-open source development has problems getting information needed for development, so some developers are not incentivized to write for the platform. Chris understands why Tristan feels that the open source part is not open, but he again discussed the intermediation and the Google Systems people and their work in the frameworks. People who want to take part are taking part, but these people who are not involved do not get the same level of introspection, not as often as the active contributors. Is source code coming, is it released? This is the important aspect of open sources to Chris. Code that is shipped needs to be ready for release.

Final question from Graham: What about the prospects of the newer entrants?

Tristan see the new entrants as family, and does not want them to fail. They want them to succeed, but the trump card is the Web. Millions of web developers are ready to adopt as a platform (HTML 5) and this provides a solution, not a problem. He then mentioned of the crowdsourcing action of Ubuntu that did not work.

Chris stated that for new entrants, it is grim, and the tallest mountain to go over is for Ubuntu.

Another audience member mentioned Tizen, and discussed having a native app environment, Web environment, good application of web standards, and discussed the end game for other entrants as well.

Final question on Windows mobile: Chris discussed purchase of Motorola, in comparison to purchase of Nokia. Tristan was not so interested.