

Firefox Operating System :A literature Review

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Abstract—

This paper attempts to study the present conditions of mobile technology and unveils the predicted future market possibilities for android. All the flimflams and excitement about the costlier iPhones phones are vanishing after the arrival of new open source operating system for smartphones i.e. Firefox os developed Mozilla which is previously well own for their web browsers. Firefox os is totally based on wen technologies which used open standard techniques HTML, JavaScript. It is a Gaia based user interface. As, Mozilla had try to overcome almost all the problems that user are having with android. Despite the growth and popularity for iPhones, it is predicted that Firefox OS will make history in sales due its low cost and long battery backup. The paper gives an overview on the Firefox operating system.

Keywords— Firefox os, iPhones, Mobile technology, Android.

I. INTRODUCTION

Firefox is an open source operating system based on Linux kernel for smartphones and tablet computers, and can be used on smart TVs. It is being developed by Mozilla, the best organization known for the Firefox web browser. Firefox was publically demonstrated on android compatible smartphones in February 2012; ZTE confirmed they would be shipping a smartphone with Firefox OS in January 2013 at CES. Telefonic launched the first commercial Firefox OS based phone on July 2, 2013.

Firefox OS is designed to provide a complete community-based alternative system for mobile devices, using open standards and approaches such as HTML5 applications(canvas, WebGL, Web component), JavaScript, open web API, to communicate directly with cellphone hardware, and application marketplace. As such, it competes with commercially developed operating systems such as Apple phones, Android, Windows phones and sailfish os as well as other community-based open source systems such as Ubuntu.

The most important part of the Firefox OS is that the entire user interface is a web app. Any modifications you make to the user interface and any applications you create to run on Firefox OS will involve standard web technologies. The user interface of Firefox OS is called GAIA and it includes system functions and default applications.

II. DEVELOPMENT HISTORY

In July 2012, boot to gecko was given new name which is now well known as 'Firefox OS'.

In September 2012, analysts Strategy Analysts forecast that Firefox OS would account for 1% of the global smartphone market in 2013 – its first year of commercial availability.

In February 2013, Mozilla announced plans for global commercial roll-out of Firefox OS. Mozilla announced at a press conference before the start of MWC(Mobile world congress) in Barcelona that the first wave of Firefox OS devices will be available to consumers in Brazil, Colombia, Hungary, Mexico, Montenegro, Poland, Serbia, Spain and Venezuela.

Mozilla has also announced that LG Electronics, ZTE, Huawei and TCL have committed to making Firefox OS devices. In December 2013, new features were added with the 1.2 release, including conference calling, silent SMS authentication for mobile billing, improved pushes notifications.

III. CORE TECHNOLOGIES OF FIREFOX OS

The development work involves four major software layers or Technologies [1] shown in (Fig 1):-

A. Gonk :-

Platform is the combination of the Linux kernel and the Hardware abstraction layer from android.

B. Gecko:-

The WBE (Web browser engines) and application runtime services.

C. XUL layer :-

The runtime system for anything written in XUL.

D. Gaia :-

An HTML 5 layer and user interface system.

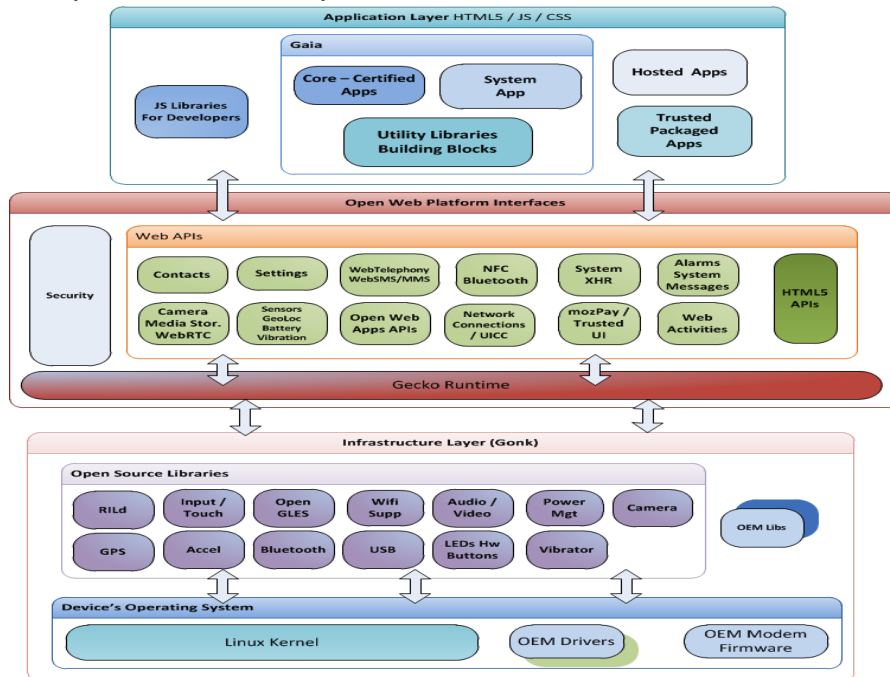


Fig. 1 Core technologies of Firefox OS

A. Gonk

Gonk is combination of Linux kernel and user-space hardware abstraction layer (HAL). The user-space layers and kernel are common open source projects: Linux, BlueZ etc. Some of the parts of HaL are shared with android project: GPS, camera and so on. Gonk is simple Linux distribution, and is simply porting target of GECKO, there are different porting target; there is a port of Gecko to Gonk, just like there is a port of Gecko to OS X, and a port of Gecko to Android.

However, the development team have full control over Gonk, the developers can fully make visible all the features and interface required for complete mobile platform such as Gecko. It is not possible to access Gecko on other mobile OS. For example, using Gonk technologies, Gecko can have direct access to full telephone stack and display frame buffer, but doesn't have the access on any other OS.

B. Gecko

Gecko is the web browser engine of Firefox OS. Gecko implements Open standards for HTML, CSS, and JavaScript. Gecko includes a networking stack, graphics stack, layout engine, virtual machine (for JavaScript), and porting layers.

C. XUL Runner

XUL (pronounced "zool") [6] is one of the technologies used for creating Mozilla based products and extensions. Sometimes we read terms "XUL applications" and "XUL extensions", they basically refer to the projects built in XUL. It usually means that the projects were built using Mozilla technologies, XUL covers several other technologies such as JavaScript, CSS, XBL and Xpcom. XULRunner is available in binary form, and it is the base for several projects, such as Songbird, Miro and Eudora

D. Gaia

Gaia is the user interface of Firefox OS and controls everything drawn to screen. Gaia is written entirely in HTML, CSS, and JavaScript. It interfaces with the operating system through Open Web APIs, which are implemented by Gecko. Because it uses only standard web APIs, it can work on other OSs and other web-browsers. Gaia includes by default implementations of a lock screen, home screen, telephone dialer and contacts application, text-messaging application, camera application and a gallery support, plus the classic phone apps: mail, calendar, calculator and marketplace.

IV. WHY AND HOW FIREFOX IS BETTER THAN ANDROID AND IOS

A. What happened to Android and IOS [3], [4]?

There are many problems that are needed to be fixed in both operating systems. Following are few of the problems:

- 1) They are high end phone and are not affordable by everyone. so you can say that they designed for rich people shown in (Fig. 2).
- 2) They don't have good battery life. So it means they consume more battery
- 3) Phone is not upgraded every time when there is new release. Because every new version needs more memory space which will lead to slow running of device.
- 4) Left behind on older versions means you can't run new version of Apps because they require you to upgrade to particular version of the OS
- 5) You can only download apps from marketplace. In that case only apple and Google is making money from this. What if someone like us want to build their own marketplace?



Fig. 1 Example of Android and IOS home screen .

B. Problems that Firefox OS Solves?

Firefox OS consume very less resources. Because of the architectural design shown in (Fig. 3).

- 1) They can run smoothly on low end devices.
- 2) Firefox OS hardware will be much cheaper as compare to android and ios. Everyone and afford it.
- 3) Because of the less resource consumption the Firefox OS devices will have longer battery.
- 4) Web is native platform for Firefox OS in which your phone never gets obsolete. New version of apps will run easily even on your older hardware.
- 5) You are not forced to download apps from Mozilla's market place. You can add any web app on the internet as native app.
- 6) Imagine a word in your mind and try searching it in App Discovery interface of Firefox OS, it will give you high quality chosen apps from all over the internet.



Fig. 3 Example of Android and IOS home screen.

V. INTEx CLOUD FX & FIREFOX OS: FIRST PHONE LAUNCH ON FIREFOX OS

Intex Cloud FX [2] is the first Firefox OS phone that is being introduced in the Indian market. Based on the Firefox OS, the phone claims to be the lowest priced smartphone available in India shown Fig 4..All web services built using open web standards can run as apps on the phone. At the price of 1, 999, the Cloud FX can be affordable by everyone.



Fig.4 Intex Cloud Fx (First Phone Launch on Firefox OS)

- 1) The phone compact and feels solid and durable with conservative model and plastic body.
- 2) A 3.5-inch TFT display and a capacitive touch Home button.
- 3) The left edges contain a volume buttons and micro USB ports.
- 4) The top edge contains power button along with headset jack of 3.5mm.
- 5) The back feature of the phone consist of plastic back cover which offer good grip
- 6) The 2mp rear camera and the speaker grill on the back
- 7) There are two regular sim card and micro SD card slot
- 8) The company provide the memory card of 4Gb
- 9) Setting up of phone is pretty easy i.e. Wi-Fi connection, date and time.
- 10) We were able to import contacts from our Google account, sim card or even from Facebook without any hiccups.
- 11) Unlike Android or IOS, you don't need to create an account to make use of native services or for downloading apps.

VI. THINGS YOU SHOULD KEEP IN MIND BEFORE BUYING FIREFOX OS

- 1) *Relatively easy use of Firefox OS* : [5] In Firefox OS, all the features like call, messaging, calendars, and different Firefox icons are present on home screen whereas android you have to swipe the screen left and right.
- 2) *No need to have email Id to operate Firefox OS* :- [5] In Firefox, user are required to have their email id to access ,marketplace or operating system where as android phone required Gmail id to access or download apps from Google play
- 3) On Firefox OS there is word written on home screen “I am thinking of” it means user can directly search Google and accessing internet on Firefox OS in quite simple and easy
- 4) *Supports social networking apps*: [5] Firefox supports almost all social networking sites i.e. Facebook, Google, pinterset, twitter, quora.
- 5) *Non availability of What’s app* : [5] The Firefox marketplace currently does not have what’s app (instant messaging app).But you can use it with the third party app ”connect A2” with the help of this you can connect what’s app messenger.
- 6) *Popular games are missing*: [5] The game such as angry bird’s, candy crush or temple run are not there in Firefox marketplace. However you can play flappy bird. The Firefox marketplace is somewhat informal but it can be improved within some time and can easily ported apps
- 7) *Consumption of battery is low* : [5] As it uses web techniques it automatically consumes less battery. As the devices are 2G only the data consumption is less as compared to 3 g data
- 8) *Log-term battery life*: [5] As compared to low cost android handsets the Firefox OS have greater battery life shown in Fig.5.

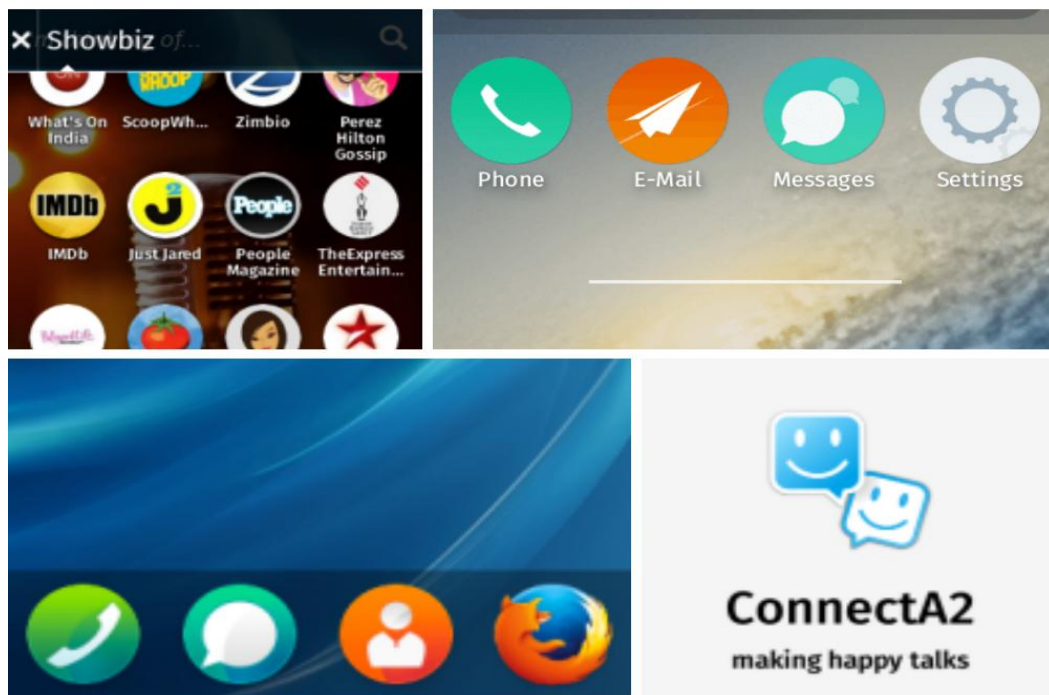


Fig 5 Example of features of Firefox OS

VII. CONCLUSION

In this paper, we have reviewed the latest upcoming technology Firefox OS, how they used various technologies to overcome the features of android and IOS. We have also presented some improvements in Firefox OS which are lacking behind in android. In particular, Gecko is web browser for Firefox OS which implements open standards for HTML, CSS and JavaScript. Finally we studied about the first phone launched under Firefox OS. These are suitable to share the knowledge of latest mobile technology in new era of technology and explained.

In second part, we have explained how Firefox OS is better and what are the main things we should in keep mind before buying any Firefox OS phones. Our main concern of this paper is to make aware of some small things and to generate knowledge about the Firefox OS. We expect that new contributors get involved and i will get new more ideas to have more and good technology.

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