A REVIEW PAPER ON FIREFOX OS

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Abstract- **Firefox OS (project name:** *Boot to Gecko***, also known as** *B2G***) is a Linux kernel-based open-source operating system for Smartphone's and tablet computers and is set to be used on smart TVs.[8] It is being developed by Mozilla, the non-profit organization best known for the Firefox web browser. Firefox OS is designed to provide a complete community-based alternative system for mobile devices, using open standards and approaches such as HTML5 applications, JavaScript, a robust privilege model, open web APIs to communicate directly with cell phone hardware, and application marketplace. As such, it competes with commercially developed operating systems such as Apple's iOS, Google's Android, Microsoft's Windows Phone[9] and Jolla's Sailfish OS as well as other community-based open source systems such as Ubuntu Touch.**

I. PROJECT INCEPTION AND ROLL-OUT

Commencement of project

On July 25, 2011, Andreas Gal, Director of Research at Mozilla Corporation, announced the "Boot to Gecko" Project (B2G) on the mozilla.dev.platform mailing list. The project proposal was to "pursue the goal of building a complete, standalone operating system for the open web" in order to "find the gaps that keep web developers from being able to build apps that are – in every way – the equals of native apps built for the iPhone, Android, and Windows Phone 7." The announcement identified these work areas: new web APIs to expose device and OS capabilities such as telephone and camera, a privilege model to safely expose these to web pages, applications to prove these capabilities, and low-level code to boot on an Android-compatible device.

This led to much blog coverage. According to Ars Technica, "Mozilla says that B2G is motivated by a desire to demonstrate that the standards-based open Web has the potential to be a competitive alternative to the existing single-vendor application development stacks offered by the dominant mobile operating systems."

In 2012, Andreas Gal expanded on Mozilla's aims. He characterized the current set of mobile OS systems as "walled gardens" and presented Firefox OS as more accessible: "We use completely open standards and there's no proprietary software or technology involved." Gal also said that because the software stack is entirely HTML5, there are already a large number of established developers. This assumption is employed in Mozilla's WebAPI. These are intended W3C standards that attempt to bridge the capability gap that currently exists between native frameworks and web applications. The goal of these efforts is to enable developers to build applications using WebAPI which would then run in any standards compliant browser without the need to rewrite their application for each platform.

II. DEVELOPMENT HISTORY

In July 2012, Boot to Gecko was rebranded as 'Firefox OS', after Mozilla's well-known desktop browser, Firefox, and screenshots began appearing in August 2012.

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 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 Corporation 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 push notifications, and three state setting for Do Not Track.

Async Pan and Zoom (APZ), included in version 1.3, should improve user interface responsiveness.

III. DEMONSTRATIONS

At Mobile World Congress 2012, Mozilla and Telefónica announced that the Spanish telecommunications provider intended to deliver "open Web devices" in 2012 based on HTML5 and these APIs. Mozilla also announced support for the project from Adobe and Qualcomm, and that Deutsche Telekom's Innovation Labs will join the project. Mozilla demonstrated a "sneak preview" of the software and apps running on Samsung Galaxy S II phones (replacing their usual Android operating system). In August 2012, a Nokia employee demonstrated the OS running on a Raspberry Pi.

Firefox OS is compatible with a number of devices, including Otoro, PandaBoard, Emulator (ARM and x86), Desktop, Nexus S, Nexus S 4G, Samsung Galaxy S II, Galaxy Nexus and Nexus 4.

In December 2012, Mozilla rolled out another update and released Firefox OS Simulator 1.0, which can be downloaded as an add-on for Firefox. The latest version of Firefox OS Simulator, version 4.0, was released on July 3, 2013 and announced on July 11, 2013.

Mozilla's planned US$25 Firefox smartphone displayed at MWC, is built by Spreadtrum. Mozilla has collaborated with four handset makers and five wireless carriers to provide five Firefox-powered smartphones in Europe and Latin America so far. In India, Mozilla planned a launching at $25 in partnership with Intex & Spice, but the price ended up being $33 (converted from 1,999 Rupees).

IV. CORE TECHNOLOGIES

The initial development work involves four major software layers:

GONK

Gonk consists of a Linux kernel and user-space hardware abstraction layer (HAL). The kernel and several user-space libraries are common open-source projects: Linux, libusb, BlueZ, etc. Some other parts of the HAL are shared with the Android project: GPS, camera, among others. Gonk is basically an extremely simple Linux distribution and is therefore from Gecko's perspective, simply a porting target of Gecko; 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, since the development team have full control over Gonk, the developers can fully expose all the features and interfaces required for comprehensive mobile platforms such as Gecko, but which aren't currently possible to access on other mobile OSes. For example, using Gonk, Gecko can obtain direct access to the full telephony stack and display framebuffer, but doesn't have this access on any other OS.

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.

XUL Runner

XUL Runner is the run-time system for anything written in XUL, especially any Firefox add-ons.
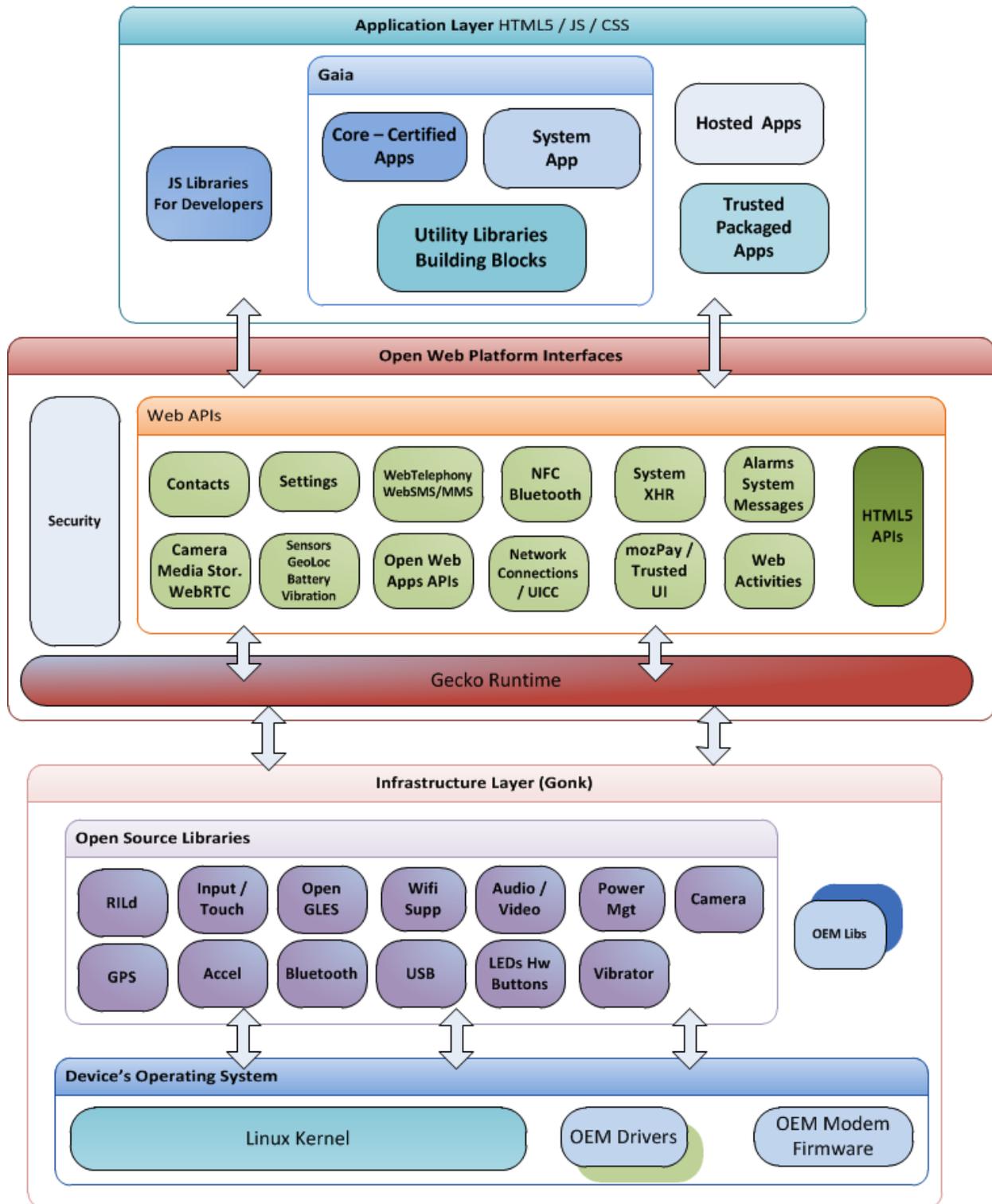
Firefox OS architecture diagram

<u>Gaia</u>

Gaia is the user interface of Firefox OS and controls everything drawn to screen. 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. 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 OSes and other web-browsers.
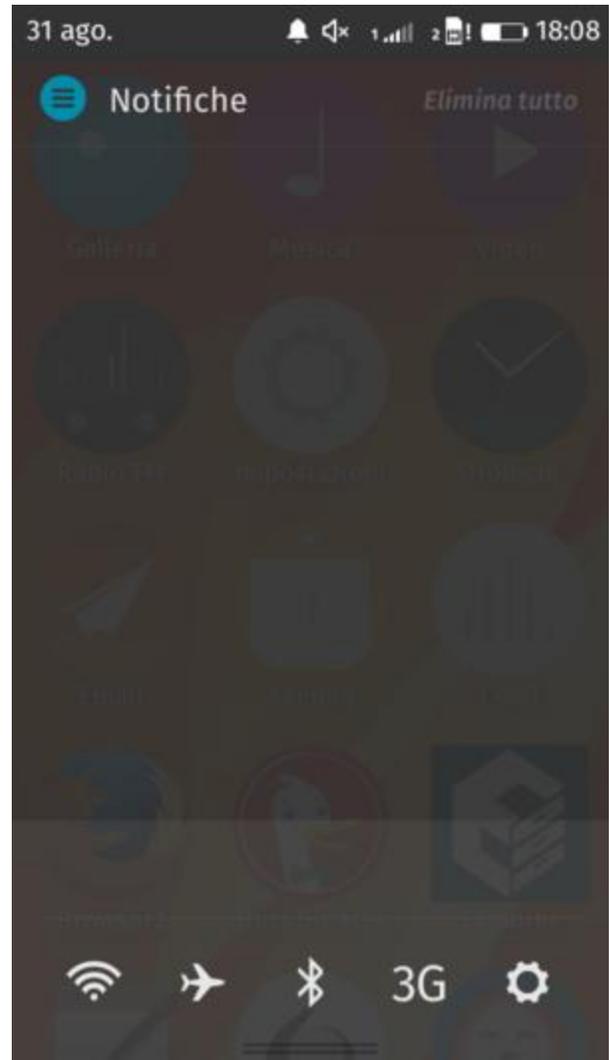
V.   GALLERY

Some screenshot of the firefox os 2.1 are as follows:

VI.   UNOFFICIALLY-SUPPORTED DEVICES

The structural similarities between Firefox OS and Android allow the Mozilla platform to run on a number of devices that ship with Android. While some ports of Firefox OS are hardly different from their original versions, others are heavily modified to fit the device in question.
Firefox OS has been ported to the following devices:

- Sony Xperia SP

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