Scope and Challenges in Sailfish OS: A brief overview

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Abstract: The present paper attempts to study the present conditions of Sailfish OS. Mobiles have undergone a significant evolution over the past two decades with the democratization of mobile operating systems. A mobile OS is an operating system that is specifically designed on mobile device such an operating System is Sailfish OS. In a highly competitive as mobile development environment, analyse the current situation of the sailfish OS as a platform, and their proposals in the market. The authors will also present a review trends in a past 2-3 years from its inception, new facilities and their competitive advantages over native development of other operating systems.

Keywords: Sailfish OS, Open Source Software, OEM, SDK, 64 bit OS

I. INTRODUCTION

Sailfsh OS is the logical evolution of MeeGo, an operating system developed by Nokia, based on Linux and in order to attack the market of smart phones and tablets. When Meego was dropped, some of their workers left to form Nokia Jolla, one covered by the Finnish company, which has renamed the system as Sailfsh OS. The operating system has its own programming language (Qt / QML), although accepted through their respective sdks developing apps in HTML5 (Cordoba Qt) and Java (Android apps). The architecture is similar to what we have seen in most mobile operating systems: Linux kernel, a layer of components (based on Mer), with the interface middleware and applications. Sailfish is a modern and secure operating system combining the Linux Kernel for a particular platform use. It is a general purpose linux based operating system. It is built on the heritage of MeeGo.Sailfish is developed by jolla in permanent cooperation with the Sailfish community. The Sailfish community makes development requests and decides development priorities by voting. The Mer project receives contribution from jolla community and Mer contributes middleware for jolla thereby assuring compatibility of both projects. It's like a classic Linux distribution with the great addition of the Jolla crafted Sailfish UI. There's no buttons on Sailfish devices, everything is handled with simple gestures, supported by an appealing design style. It is really a very interesting platform for both users and developer. Sailfish used in the jolla smart phone and other licensees. Sailfish OS can run Android applications through a proprietary compatibility layer.

II. WHAT IS SAILFISH OS?

An independent, partner friendly operating system that fosters innovation. It's unlike what you're used to. But once you get the hang of the gesture based Sailfish OS, you'll never want to go back. The highly adaptive Sailfish OS contains Open Source Software building blocks, welcoming collaboration or simply, free-time hacking. The independent Sailfish OS is soon reaching a major milestone as it is scaling from smart phones to tablets with the introduction of the Jolla Tablet. Co-founder and Chairman of the Board of Jolla comments: "The roadmap of Sailfish OS already from the beginning in 2012 has led the way to this point: Sailfish OS is now ready for licensing to OEMs and other partners.

III. SOFTWARE ARCHITECTURE

The Sailfish OS and the Sailfish software development kit (SDK) are based on the Linux kernel and Mer. Sailfish OS includes a multi-tasking graphical shell called "Lipstick" built by Jolla on top of the Wayland display server protocol. Jolla uses free and open-source graphics device drivers but the Hybris library allows use of proprietary graphics device drivers for Android. Jolla's stated goal is for Sailfish to be open source eventually

SAILFISH OS SDK

The Sailfish OS SDK was announced in Helsinki at Slush in 2012, and the alpha was published in February 2013. The SDK, installation and coding tutorials are available for free download from the Sailfish OS website although the overall license is not open source.

Sailfish SDK uses Qt with Virtual Box for development, compiling and emulation purposes, in contrast to simulation method. This technique allows compilation on the Sailfish OS and full testing of developed software in the Virtual Machine, emulating but not simulating the whole Sailfish OS. The technique also separates development activities and side effects from everything else running on the host particular computer, leaving it undisturbed by developments and tests. According to Jolla, development with Sailfish SDK is development on Sailfish OS itself; there are no differences between developed software appearance and behavior in the SDK and on a device running Sailfish OS.

The availability of source code to the SDK allows shaping and rebuilding for companies' or developers' specific needs, creating a context-specific environment that is set once and needs no preparation when the device is booted. The SDK runs on the operating systems Android, 32 and 64-bit versions of Linux, 64-bit versions of OS X, and Microsoft Windows. It can be used for compiling software for Sailfish OS devices from Linux sources. Its general console/terminal mode follows a commonly used standard. Compatible binaries or libraries can also be used.

IV. SOFTWARE OVERVIEW

Public "Early access" for beta testers and developers

After positive experiences with pushing early updates to a small group of opt-in users for Sailfish Update 9 and for the connectivity hotfix, Jolla has allowed all interested parties to try a new version of Sailfish OS about 1–2 weeks before official release, in a program called "Early access". It is expected to be useful for developers and technically minded users, and a step towards more community integration into the Sailfish release process, including improvement of quality by identifying critical issues which only show up in certain environments or device setups, before rolling the update out to the wider user audience. As an added bonus, it provides a window for developers to test their applications on new releases of Sailfish OS**.** In the long term it will help Jolla to establish a developer program with early release candidate access for registered developers, and to have more community involvement in platform development. The first detail Jolla is hoping to learn from this is how it can gather feedback from a large audience in a reasonable way.

VERSION HISTORY

Sailfish OS has three naming conventions: version number, update number and version name. Each Sailfish OS version is named after a Finnish lake.

| SOFTWARE VERSION	RELEASE DATE	FORMULATED BY
v1.0.0.5 (Initial release)	27 November 2013	Kaajanlampi
v1.0.1.10	9 December 2013	Update 1, Laadunjärvi
v1.0.1.12	16 December 2013	
v1.0.2.5	27 December 2013	Update 2, Maadajävri
v1.0.3.8	31 January 2014	Update 3, Naamankajärvi
v1.0.4.20	17 March 2014	Update 4, Ohijärvi
v1.0.5.16	11 April 2014	Update 5, Paarlampi
v1.0.5.19	24 April 2014	
v1.0.6.x	N/A	Update 6 was merged into Update7
v1.0.7.16	9 June 2014	Update 7, Saapunki
v1.0.8.19	14 July 2014	Update 8, Tahkalamp
v1.0.8.21	6 October 2014	
v1.1.0.38 (Opt-in update)	23 October 2014	Update 9, Uitukka

v1.1.0.39 (Opt-in update)	24 October 2014	
v1.1.1.26	18 December 2014	Update 10, Vaarainjärvi
v1.1.1.27	19 December 2014	
v1.1.2.15	19 February 2015	Update 11, Yliaavanlampi
v1.1.2.16	25 February 2015	
v1.1.3.x	N/A	Update 12 was merged into Update 13
v1.1.4.28	15 April 2015	Update 13, Äijänpäivänjärvi
v1.1.4.29	4 May 2015	
v1.1.5.x	N/A	Update 14, dropped during Release Candidate phase
v1.1.6.27	8 June 2015	Update 15, Aaslakkajärvi
v1.1.7.24	15 July 2015	Update 16, Björnträsket
v1.1.7.28	31 August 2015	
v1.1.9.28	24 September 2015	Update 17, Eineheminlampi
v1.1.9.30	22 October 2015	
v2.0.0.10	3 November 2015	Update 18, Saimaa

SAILFISH IS BETTER AS A MODERN OS
Now as smart homes and connected gadgets grow in popularity and want a unifying open OS. Sailfish could offer the software that gives hardware manufacturers the freedom that other companies are failing to deliver. Sailfish was born quite a while ago and it is the most unique and practical yet beautiful operating system ever made for a Smartphone. Sailfish is the operating system developed by Finnish firm Jolla, whose products promise "a new way of thinking". It's open source, gives developers full access to whatever they want, relies heavily on customer feedback and currently powers Jolla's own phone and tablet .the reasons why it is better than other OS are

INTERFACE
Sailfish's core is based on open source Mer Project, and interface is currently owned by Jolla. Sailfish is all about gestures and natural hand movements, which means that there is no buttons to push or to get to the home screen. It's very different from Google's Material Design because there is no need to push buttons for going back from pages or to search way to back home. It all depends on the interaction with the device and how the user is using his/her thumb
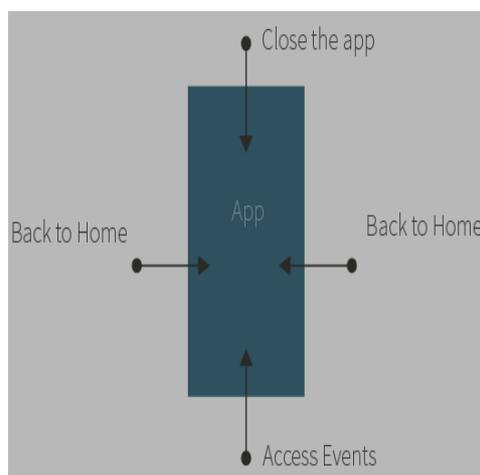
HARDWARE
Sailfish OS is available on Jolla Phones and Tablets only, But it can replace with your Android OS powered device like Nexus 5 via CyanogenMod.

SAILFISH OS 2.0 APPS AND APP STORES
Jolla just announced that its Sailfish OS has reached two-fold compatibility with Android .It support majority of Android apps, and it is find compatible ones via Jolla's own app store and Jolla-certified app stores such as Yandex, Aptoide and Anzhi. There's nothing to stop from using other app stores - if anyone can get an .apk file he can stick it into Sailfish. It can run Android apps but also the OS itself can run on Android phones. This is major news as it solves the two big problems facing any upstart OS – it's difficult to get hardware manufacturers to make devices for it and difficult to get devs to make apps for it.

V.   DESIGN PRINCIPLE OF SAILFISH OS

Diversity and different viewpoints are important to do awesome design
The basic elements here are

EFFORTLESS INTERACTION
Interaction with Sailfish devices is effortless even in a hectic mobile environment. The core interactions are based on simple gestures. This enables users to interact with the device via the complete screen estate. It require stretching fingers or moving the device up and down within their hands for interacting

TRUE MULTITASKING
Multitasking on Sailfish OS shows all the running apps conveniently in one single view. Multitasking is also a huge pull for the Sailfish OS. Sailfish apps can be changed while running at the same time. So if anyone want to pause music or a video without leaving the app that have an option. The ultimate goal is to make multitasking seamless so there is no need to hop between apps.

LOGICAL
Sailfish designs are logical and consistent. Consistency means here that similar interaction flows and visuals are reused for similar tasks. Combined, these create more fluent task flows and greater user satisfaction since users can apply a flow they've learned easily in other areas.

MAGICAL
Instead of just doing something different, the intention behind Sailfish is to always improve, innovate and create magical design. Such solutions to problems make the user's tasks easier, more pleasant and therefore create a positive surprise, in fact, to make the user smile a smile.

INTEGRATED SERVICES

Sailfish features frameworks that enable a deep integration of services. Users can access service related content and options during their core tasks instead of opening and closing a set of dedicated apps. Developers are able to hook into frameworks via plug-ins and thus speed up development time. A single plug-in is normally much easier to develop than a full UI for service features.

SIMPLY BEAUTIFUL

The aim here is to make complex user experiences simpler. Sailfish designs are simple, beautiful and uncluttered. Content is presented clearly, text is legible, and animations, haptics and sounds follow an overall theme and support user interactions. The visual style is simple, though warm and friendly; it is based on metaphors of glass and shining light.

VI.   A COMPARISON WITH OTHER OS

Gesture based operating systems are catching up lately and even the old ones are bringing gesture based updates such as iOS, even Android applications like the new Viber, or Hangouts or even Face book (Beta) are involved in the gesture war and quite frankly, it started with Web OS from Palm but defined cleanly by Harmattan on the Nokia N9.

So now the author compare Sailfish to as other operating systems as it can starting with the main rivals which has roughly the same age as Sailfish.

SAILFISH OS VS. UBUNTU TOUCH

It has more user friendly UI than Ubuntu's interface. The Ubuntu phone UI looks crisp and clean, but it requires quite a lot of effort to do basic things. After using both devices for a few months Jolla and SailfishOS feels simply better to use.

- *More lightweight than Ubuntu on slower devices*
- *It has much more applications available before launch .In Ubuntu the app bar only fits a few favourite apps nicely. If user want browse the list of all apps, he need to click and swipe many times until he arrive at the app listing.*

It is simpler to use. Tablet-wise, Ubuntu wins, but only in terms of beauty! Because it looks magnificent on tabs while Sailfish, due to its unique design is better for smaller devices such as phones. Yet it's easier to work on a tablet with Sailfish since user don't need to move his hand a lot in that big screen. True multitasking

SAILFISH OVER ANDROID

- It has modern UI [with no lag!]
- It has true multitasking with no pause on the whilst minimized
- It is more user friendly and ease of usage
- It has many of the Android apps and Sailfish apps also.
- It is more open and truly Linux [not only Linux based]
- It has the benefit of Usage of simple gestures everywhere
- No buttons needed to run the OS
- A LOT more lightweight

SAILFISH OVER WINDOWS PHONE

- Heavily gesture based UI
- Nor buttons for the back neither home
- Wider support of hardware
- Open source
- Simpler, better and more modern UI
- True multitasking
- Even before the launch it has more apps than WP
- Much more unlimited SDK for developers to play

HIS IS WHAT MAKE SAILFISH OS BETTER THAN OTHER OS

VII.   CONCLUSION AND FUTURE SCOPE:

The objective of this study is dogmatic in the benefits of Sailfish os, and display a market reality. It was explained how Sailfish OS is better the authors have also presented some improvements in Sailfish OS which are lacking behind in android. Main concern of this paper is to make aware of some small things and to generate knowledge about the Sailfish OS. Sailfish OS will surely gain its independent market share in time, and while Google reduces their support outside native Android; Jolla has no idea to advance with its Android support in a long run. While the amount of native Sailfish apps is small, Android support remains as an important part of Jolla - especially in entering markets in Asia.

REFERENCES

[1]   https://sailfishos.org
[2]   www.slideshare.net
[3]   http://jolla.com
[4]   Blog.gsmarena.com
[5]   Image.slidesharecdn.com
[6]   https://www.androidpit.com/sailfish-os-2-0-vs-android-comparison
[7]   https://www.scribd.com/doc/214444070/sailfish-ppt
[8]   https://jolla.com/.../48_PRESS_RELEASE_MWC_SAILFISHOS_2015_F
[9]   http://linuxgizmos.com/sailfish-gains-two-way-android-compatibility/