

Introduction to the MeeGo Project

Ibrahim Haddad, Ph.D.



On February 15, 2010, the world's largest chip manufacturer, Intel, and the world's largest mobile handset manufacturer, Nokia, announced joining their existing open source projects (Moblin and Maemo respectively) to form a new project called MeeGo, hosted at the Linux Foundation.

This article provides an introduction to the MeeGo project, a brief overview of the MeeGo architecture, the benefits the MeeGo platform offers to the various players in the ecosystem, and discusses the role of the Linux Foundation as a host of the project.

Introduction

MeeGo is a Linux-based platform that is capable of running on multiple computing devices, including handsets, netbooks, tablets, connected TVs and in-vehicle infotainment systems.

The primary goal of the merger of the Maemo and Moblin projects was to unify the efforts of the Moblin and Maemo communities and to enable a next generation open source Linux-platform suited for a variety of client devices. Most importantly, MeeGo will be doing so while:

1. Maintaining freedom for innovation
2. Continuing the tradition of community involvement (inherited from Maemo and Moblin)
3. Accelerating time-to-market for a new set of applications, services and user experiences

With the merger, the MeeGo project has now the opportunity to significantly expand the market opportunities on a wide range of devices and support multiple chip architectures (ARM and x86) from the get go.

MeeGo also provide a rich cross-platform development environment so applications can span multiple platforms and will unify developers providing a wealth of applications and services. Such opportunities for instances were out of reach for Maemo and Moblin individually.

Furthermore, MeeGo is committed to work in the upstream projects so that everyone using those upstream projects can benefit from MeeGo's contributions to upstream projects; we will discuss this later in the article.

Maemo Background

The Maemo project, initially created by Nokia (<http://www.maemo.org>), provided a Linux-based software stack that runs on mobile devices.

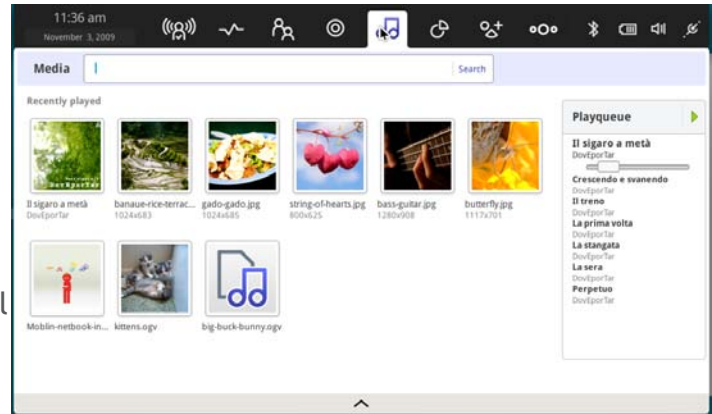
The Maemo platform is built in large parts of open source components and its SDK provides an open development environment for applications on top of the Maemo platform.

A series of Nokia Internet Tablets with touch screen have been built with the Maemo platform. The latest Maemo device was the Nokia N900, powered by Maemo 5, that introduced a completely redesigned finger-touch UI, cellular phone feature, and live multicasting on the Maemo dashboard.



Moblin Background

The Moblin project, short for Mobile Linux, is Intel's open source initiative (<http://www.moblin.org>) created to develop software for smartphones, netbooks, mobile internet devices (MIDs), and in-vehicle infotainment (IVI) systems, and other mobile devices. It is an optimized Linux-based platform for small computing devices. It runs on Intel Atom, an inexpensive chip with low power requirements. A unique characteristic to devices running Moblin is that they can boot up quickly and can be online within a few seconds.



SCREENSHOT OF THE MOBLIN 2.1 MEDIA PANEL
(IMAGE CREDIT: [HTTP://MOBLIN.ORG](http://moblin.org))

15 Facts You Must Know About MeeGo

1. Full open source project governed according to best practices of open source development: Open discussion forums, open mailing lists, open technical steering committee meetings, peer review, open bugzilla, etc.
2. Hosted under the auspices of the Linux Foundation
3. Aligned closely with upstream projects - MeeGo requires that submitted patches also be submitted to the appropriate upstream projects and be on a path for acceptance (Figure 1)
4. Offers a complete software stack including reference user experience implementations
5. Offers a compliance program to ensure API and ABI compatibility (Compliance program discussed in a later section)
6. Enables all players of the industry to participate in the evolution of the software platform and to build their own assets on MeeGo
7. Lowers complexity for targeting multiple device segments
8. Offers differentiation abilities through user experience customization
9. Provides a rich cross-platform development environment and tools
10. Offers a compliance program to certify software stacks and application portability
11. Supports multiple hardware architectures
12. Supports multiple app stores
13. Has no contributors agreements to sign; instead it follows the same “signed-off-by” language and process as the Linux Kernel
14. Has over 1000 committed professional developers and hundreds of open source developers and a very vibrant community of users and developers (~ 8000 subscribed to meego.com)
15. MeeGo 1.0 Netbook release supports the following languages: Japanese, Korean, Chinese Simplified, Chinese Traditional, Swedish, Polish, Finnish, Italian, Brazilian Portuguese, French, German, Spanish, Russian, Dutch, English, and British English.

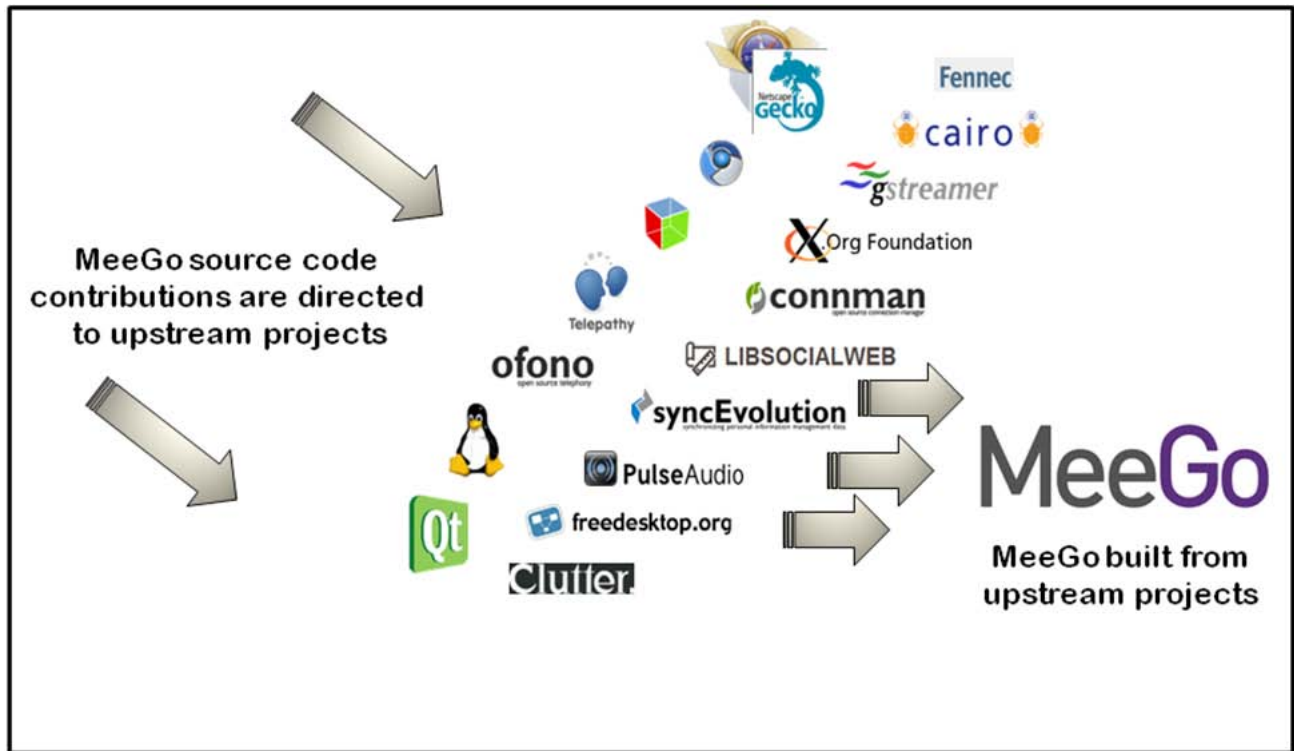


FIGURE 1: MEEGO'S CONTRIBUTIONS TO UPSTREAM OPEN SOURCE PROJECTS FROM WHICH IT IS BUILT.

There are hundreds of engineers working on MeeGo along hundreds of contributors and more joining weekly. A partial list of open source projects benefiting from MeeGo upstream contributions include:

BlueZ	ContextKit	Gstreamer	Linux Kernel	SyncEvolution
Cairo	Bus	GTK	oFono	Telepathy
Chromium	Fennec	GUPnP	Pango	Tracker
Clutter	Gecko	Kernel Drivers	Pulseaudio	WebKit
Connman	GeoClue	libsocialweb	Qt	X.Org

MeeGo Architecture

MeeGo provides a full open source software stack from core operating system up to user interface libraries and tools. Furthermore, it offers user experience reference implementations and allows proprietary add-ons to be added by vendors to support hardware, services, or customized user experiences.

Figure 2 illustrates the MeeGo architecture as divided into three layers:

- **The MeeGo OS Base** layer consists of the Hardware Adaptation Software required to adapt MeeGo to support various hardware architectures and the Linux kernel and core services
- **The MeeGo OS Middleware** layer provides a hardware and usage model independent API for building both native applications and web run time applications
- **The MeeGo User Experience (UX)** layer provides reference user experiences for multiple platform segments. The first UX reference implementation was released on May 25, 2010 and it was for the netbook UX. Other UX reference implementation will follow for additional supported device types.

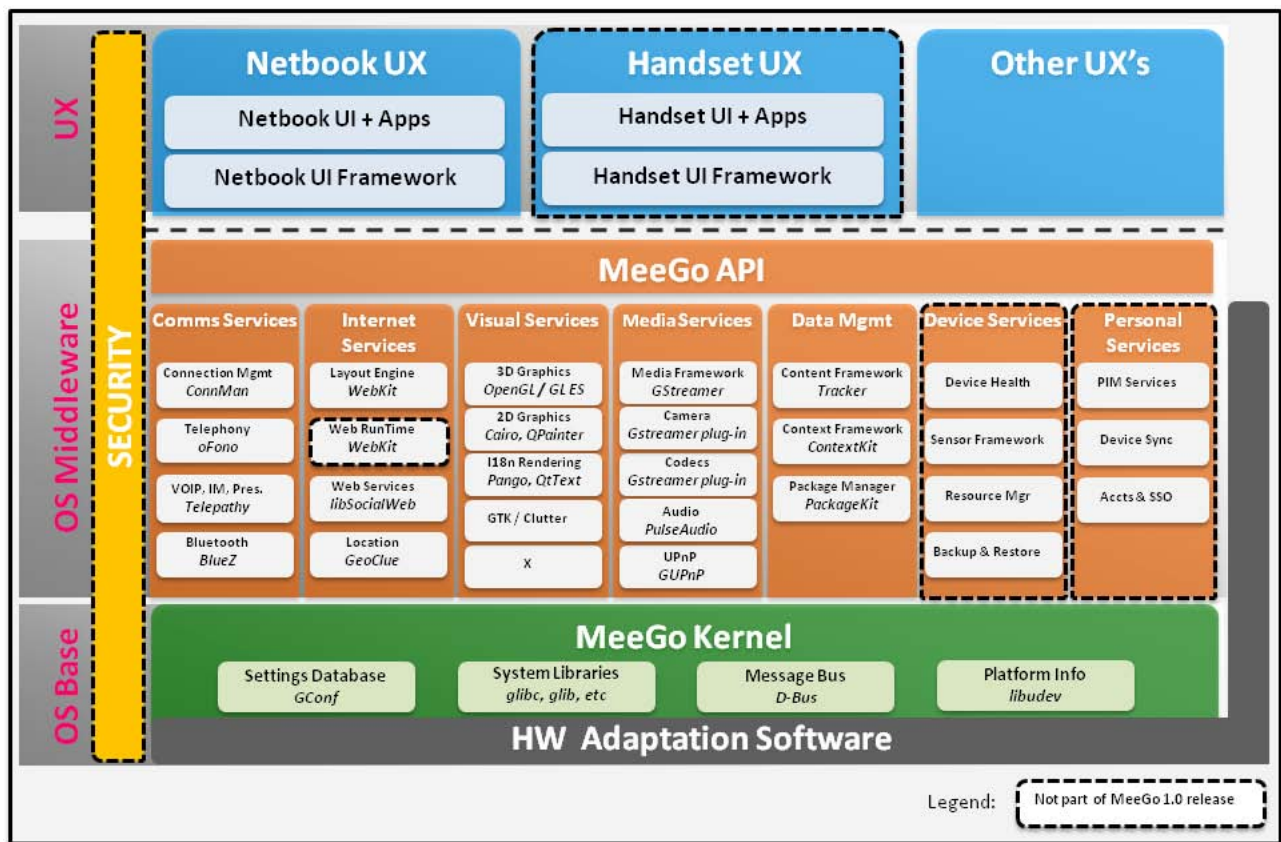


FIGURE 2: MEEGO REFERENCE ARCHITECTURE

A detailed discussion of the MeeGo software platform is available from:

<http://meego.com/developers/meego-architecture/>

Figure 2 offers a component level view of the MeeGo architecture highlighting the various building blocks inside each of the architectural layers and featuring the open source projects used to provide the implementation of the referenced building blocks. For instance, the communication services (in the OS Middleware) consist of four different services:

- Connection management, provided by the ConnMan project (<http://connman.net>)
- Telephony services, provided by the oFono project (<http://ofono.org>)
- VOIP, instant messaging and presence services, provided by the Telepathy project (<http://telepathy.freedesktop.org>)
- Bluetooth support, provided by the BlueZ project (<http://www.bluez.org>)

MeeGo Netbook UX

The netbook is the first user experience to become available for MeeGo. Released on May 25, 2010, It delivers a wealth of Internet, computing and communication experiences with rich graphics, multi-tasking and multimedia capabilities, and highly optimized for power and performance.

Figures 3, 4 and 5 provide screen shots of the netbook user experience featuring the MeeGo MyZone, the MeeGo networks panel, and the MeeGo time and date panel.

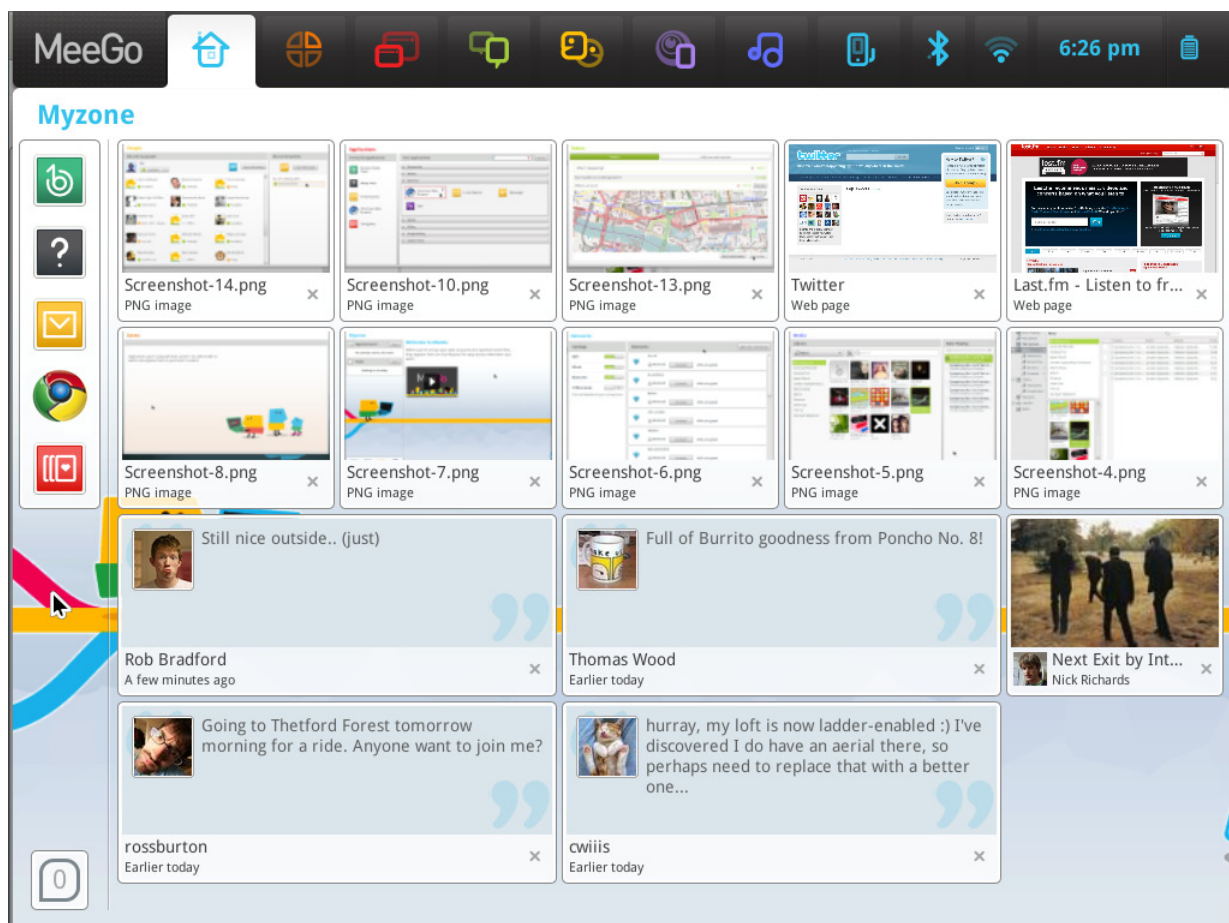


FIGURE 3: MYZONE (SOURCE: MEEGO.COM)

If you want to experience MeeGo on your netbook, MeeGo netbook images are available for download from <http://meego.com>. You can download the image, copy it into a USB drive, and start experimenting with it. Step-by-step instructions are available from <http://meego.com/devices/netbook/installing-meego-your-netbook>.

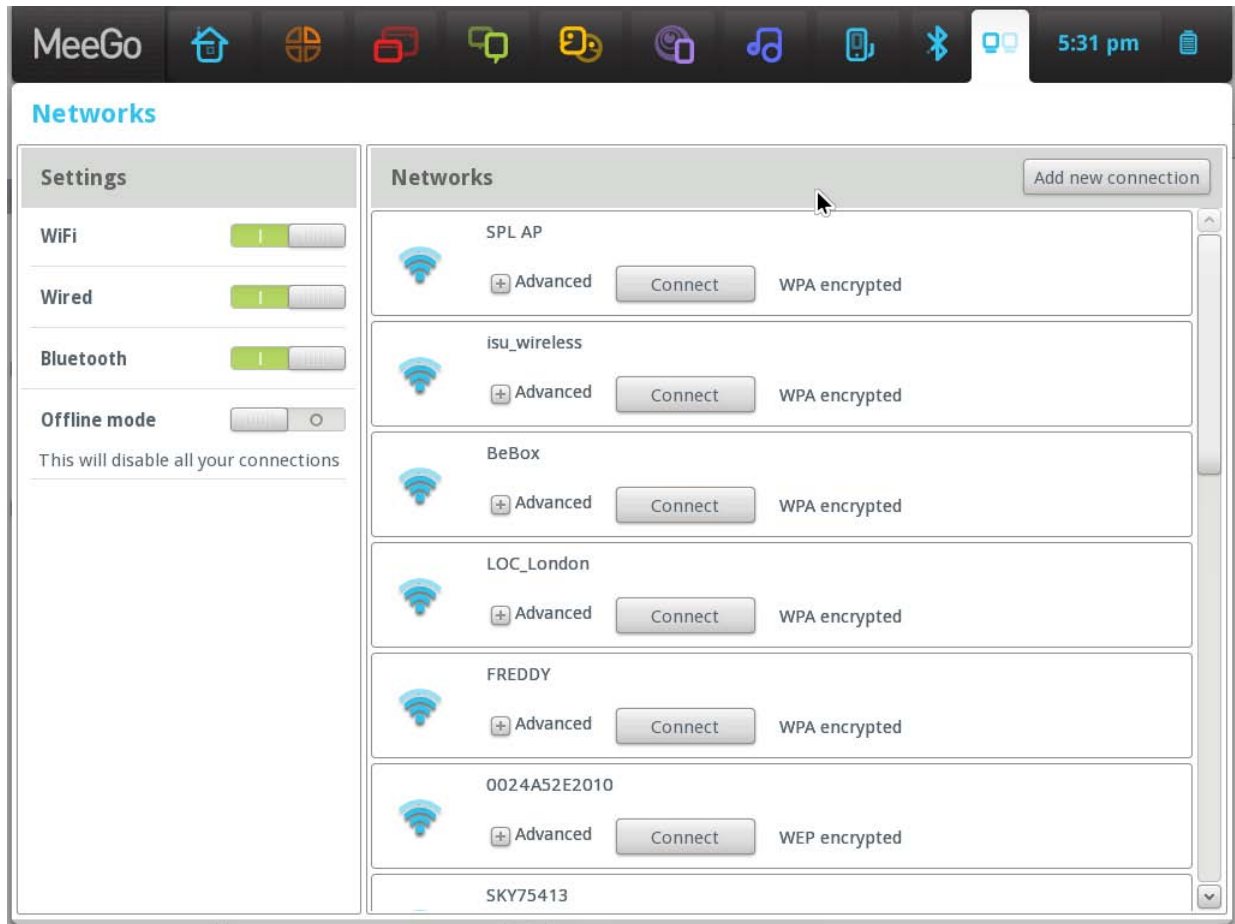


FIGURE 4: MEEGO NETWORKS PANEL (SOURCE: MEEGO.COM)

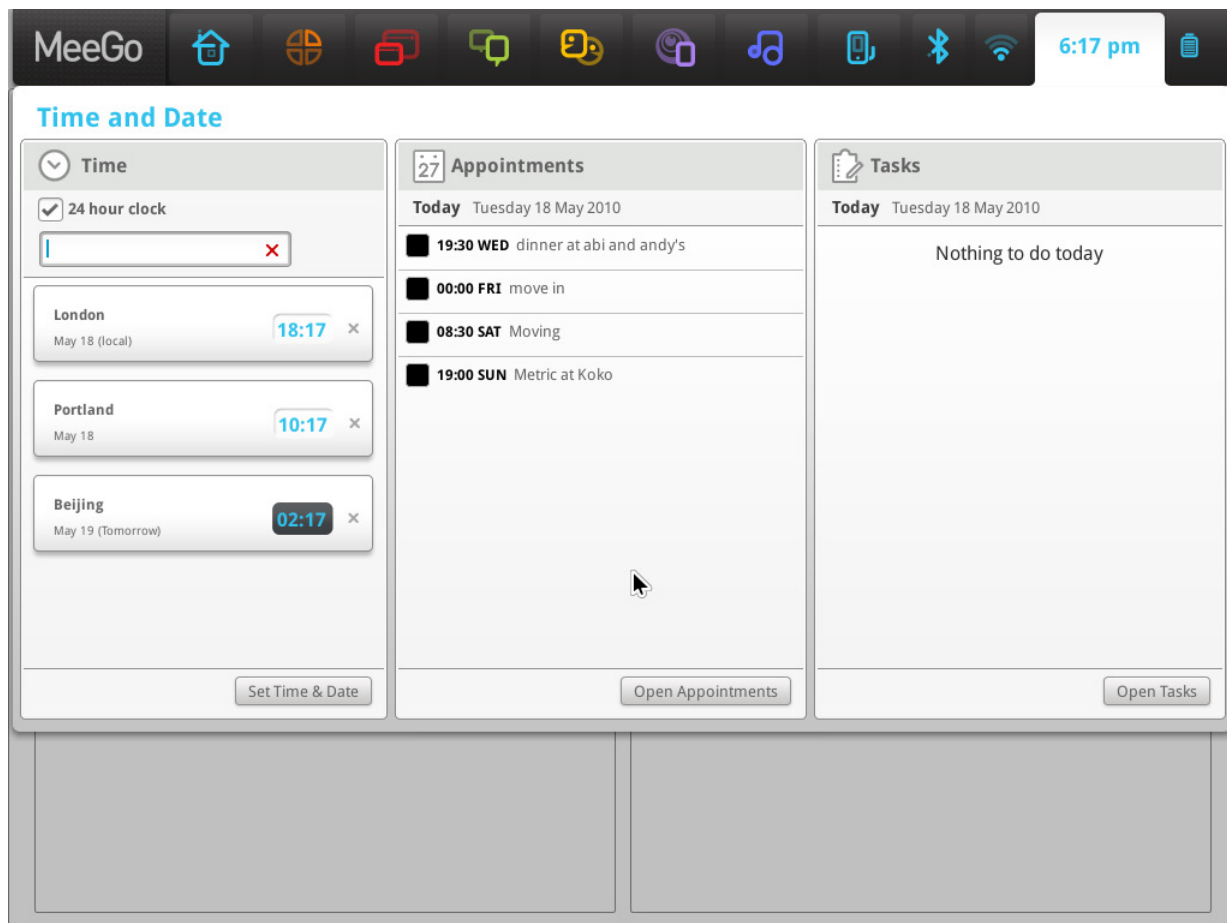


FIGURE 5: MEEGO TIME AND DATE PANEL (SOURCE: MEEGO.COM)

Benefits of the MeeGo Software Platform

The MeeGo open source project is unique in that it offers benefits to everyone in the ecosystem starting from the developer all the way up to the operator and the industry as a whole. MeeGo allows participants to get involved and contribute to an industry-wide evolution towards richer devices, to rapidly address opportunities and to focus on differentiation in their target markets.

Benefits to Open Source Developers



The MeeGo project is a true open source project hosted by the Linux Foundation and governed by best practices of open source development. From meego.com, as an open source developer, you have access to tools, mailing lists, discussion forum, accessibility to technical meetings, and multiple options to make your voice heard over technical and non-technical MeeGo related topics. Furthermore, all source code contributions needed for MeeGo will be submitted to the upstream open source projects from which MeeGo will be built.

Benefits to Application Developers



As an application developer, MeeGo significantly expands the market opportunities for you being the only open source software platform that supports deployments across many computing device types. MeeGo offers Qt and Web runtime for application development, cross platform environments, so application developers can write their applications once and deploy easily on many types of MeeGo devices or even on other platforms supporting the same development environment.

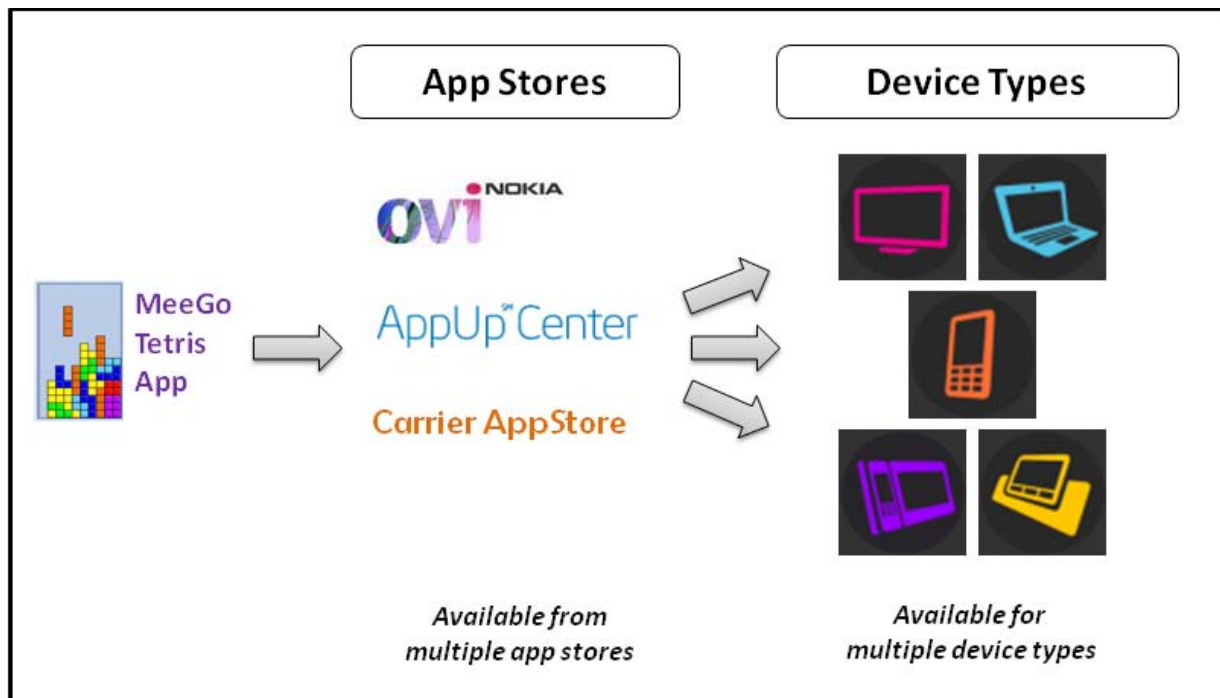


FIGURE 6: SINGLE APP AVAILABLE FROM MULTIPLE APP STORES TO A WIDE RANGE OF DEVICE TYPES

Furthermore, MeeGo offers a complete set of tools for developers to create easily and rapidly a variety of innovative applications ([see *http://meego.com/developers/getting-started*](http://meego.com/developers/getting-started)). The major advantage from this approach (Figure 6) is having a single set of APIs across client devices. In addition, in this context multiple devices is much broader than just multiple handset for instance; MeeGo device types include media phones, handhelds, IVI systems, connected-TVs and netbooks. In addition, MeeGo application developers will the opportunity to make their applications available from multiple application stores such as the Nokia's Ovi Store (<https://store.ovi.com>) and the Intel's AppUp Center (<http://www.intel.com/consumer/products/appup.htm>). In addition, there is the opportunity of hosting the applications on other app stores for specific carriers carrying MeeGo devices as part of their device offering. These MeeGo capabilities, cross-device and cross-platform development, are major differentiator and offer huge benefits to the developers.

Benefits to Device Manufacturers



MeeGo helps accelerate time to market using an off-the-shelf, open source and optimized software stack targeted for the specific hardware architecture the device manufacturer is supporting.

From a device manufacturer perspective, MeeGo lowers complexities involved in targeting multiple device segments by allowing the use of the same software platform for different client devices. In addition, as an open source project, MeeGo enables device manufacturers to participate in the evolution of the software platform and build their own assets for it through the open development model.

Benefits to Operators



For operators, MeeGo enables differentiation through user interface customization. Although many devices can be running the same base software platform, they can all have different user experiences. Furthermore, it provides a single platform for multitude of devices, minimizing the efforts needed by the operators in training their teams and allows their subscribers to be familiar with the experience common to many device types.

Benefits to the Linux Platform



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In addition, MeeGo is helpful for Linux as a platform as it combines mobile development resources that were recently split in the Maemo and Moblin projects into one well-supported, well-designed project that addresses cross-platform, cross-device and cross-architecture development. One major benefit from the MeeGo project is that all other Linux mobile and desktop efforts that use the components as MeeGo will benefit from the increased engineering efforts on those components. This is the power of the open source development model.

MeeGo Compliance Program

One of the characteristics of MeeGo is the compliance program that will allow ISVs and OSVs to go through the compliance program and have their applications, distributions, devices, etc, certified as MeeGo compliant.

Figure7 illustrates the benefits of the compliance program to the various players in the MeeGo ecosystem. MeeGo will enable application developed with MeeGo API to run on all devices running MeeGo compliant OSes with segment specific adaptations.

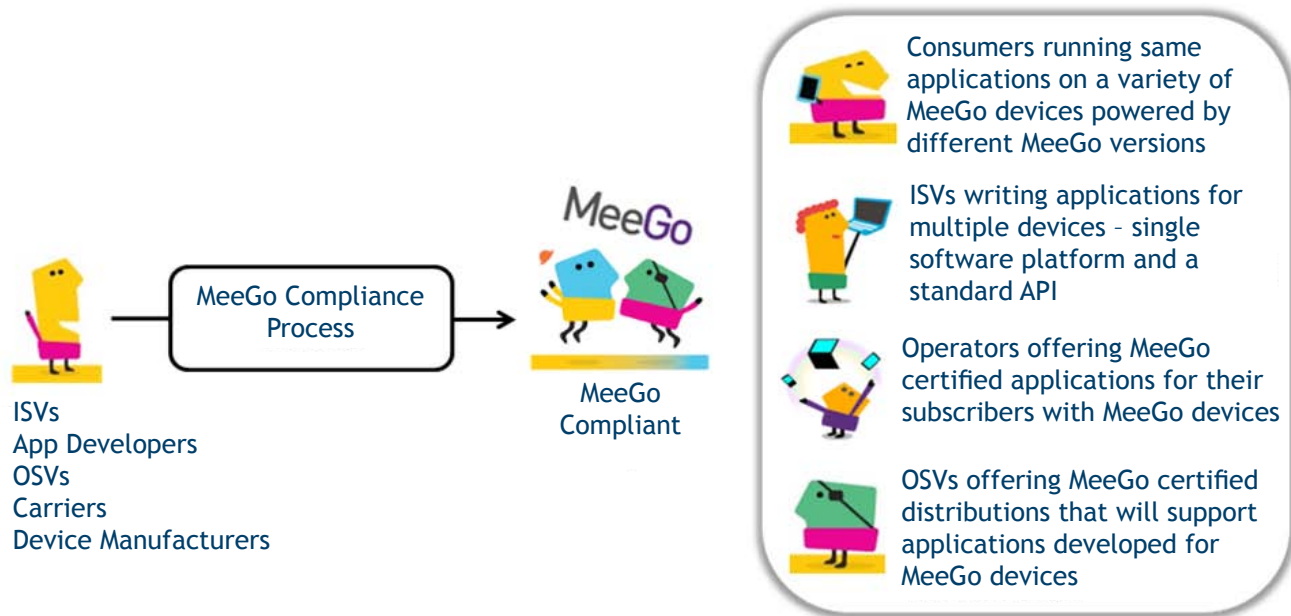


FIGURE 7: BENEFITS OF THE MEEGO COMPLIANCE PROGRAM TO VARIOUS ECOSYSTEM PLAYERS

The MeeGo compliance program is under development. Updates on the program will be made available from <http://meego.com>.

The Linux Foundation and MeeGo

The Linux Foundation (<http://www.linuxfoundation.org>) hosts the MeeGo project as an open source project, provides a vendor neutral collaboration environment, and encourages community contributions in line with the best practices of the open source development model. The Linux Foundation and MeeGo meet on various key points:

- Accelerating the adoption of Linux
- Promoting collaboration between industry players and the open source community
- Unifying efforts towards the benefits of a strong Linux platform
- Promoting a truly open Linux platform and improving Linux as a technical platform
- Encouraging companies to drive their contributions and technical work upstream

The Linux Foundation contributes to the MeeGo project through its coordination efforts, overseeing MeeGo events, hosting a number of MeeGo related technologies, services and collaboration tools, in addition to various marketing, legal, PR and other support activities. Furthermore, the Linux Foundation employs the maintainers of the cross tool chain used by MeeGo and contributes the optimizations for multi architecture support in the build service.

Open Invitation

Participation in MeeGo is open and as easy as participating in any other true open source project. Visit <http://meego.com> and be part of it!

About the Author

brahim Haddad is Director of Technical Alliances at The Linux Foundation focusing on Mobile Linux initiatives and advancing the Linux platform for next-generation mobile computing devices.