

MeeGo Architecture and Compliance

Sunil Saxena

MeeGo Architect

Open Source Technology Center, Intel Corporation

Sunil.Saxena@intel.com



Agenda

MeeGo Overview

MeeGo Compliance

MeeGo Architecture

MeeGo for Developers, Roadmap, References



What is MeeGo?

- **MeeGo unifies Moblin and Maemo and supports a range of target platforms, including:**
 - Netbooks
 - Handsets
 - Tablets
 - Media Phones, Connected TVs, and In-Vehicle Infotainment devices
- **Offers a full client Linux OSS stack, including:**
 - The core OS up to UI libraries and tools
 - Standard set of APIs across client devices
 - Flexibility to support proprietary add-ons
 - Reference user experience and applications (for select target platforms)

http://meego.com/

MeeGo

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MeeGo 2010 DUBLIN IRELAND
CONFERENCE Call for proposals open

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MeeGo Conference 2010
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Welcome to MeeGo!

MeeGo's common core supports development for a variety of devices.



Netbook



Handset



In-Vehicle



Connected TV



Media phone

MeeGo blog

Latest news from the team



New releases

Get the official project releases



MeeGo Handset Project Day 1 is Here

Submitted by [valhalla](#) on 30 June, 2010 - 08:10

MeeGo Handset Day1 Developer Preview



MeeGo Key Elements

- **Full open source software stack**

- From core OS up to UI libraries and tools
- Reference user experience and applications provided
- Proprietary add-ons can be provided by vendors support hardware, services, or customized user experiences

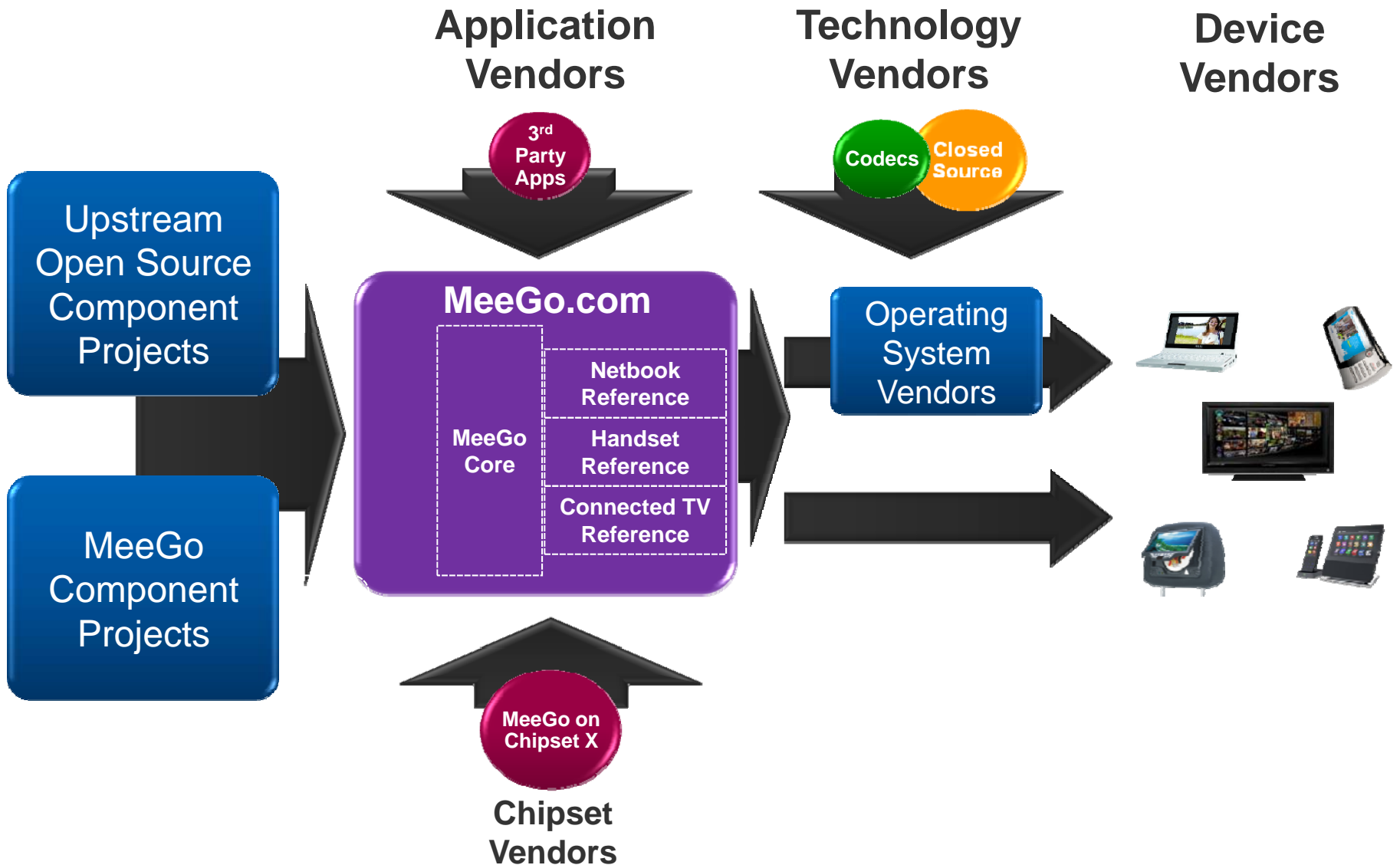
- **One set of APIs across client devices with one unified voice to developers**



- **6 month release cadence**

- Major releases targeted for spring and fall

Overall MeeGo Platform Ecosystem



MeeGo - Progress So Far



MeeGo™



Feb 15, 2010

Project launched

May 26, 2010

MeeGo 1.0 for Netbooks

July 7, 2010

MeeGo 1.0 Update 1 for Netbooks

June 30, 2010

Handset Day 1

Upcoming: Oct 30, 2010

MeeGo 1.1 for Handset

Great Progress - and We're Just Getting Started!

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MeeGo Governance / Compliance

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MeeGo Governance

- **Independent project**
 - Under the auspices of the Linux Foundation
 - Governed by a Technical Steering Group
 - Working groups for each mobile usage model
- **Fundamentally an open source project**
 - Maintainers
 - Source repository
 - Meritocracy

MeeGo Compliance Overview

- **Focus of MeeGo Compliance is Application Compatibility between MeeGo devices**
 - All MeeGo devices use the same core software stack
 - Device category profiles describe any category-specific software and hardware requirements (e.g. Netbook, Handset, Tablet, ...)
 - A MeeGo-compliant application will run on any MeeGo-compliant device, generally targeting a specific profile
 - Use of reference UX not required for compliance
- **MeeGo compliance program and test suites to verify compliance**
 - Covers both Applications and Devices / Distributions
 - Use of MeeGo brand granted based on compliance test results
 - Compliance overseen by the MeeGo Technical Steering Group

<http://wiki.meego.com/Quality/Compliance>

Stack Based Compliance

- **Must include the MeeGo core stack without re-packaging**
- **Must support at least one device category profile**
 - Not necessary to include complete reference user experiences
 - No particular set of applications required
 - But must include a MeeGo UI framework providing core user interaction and API (as specified in the supported device category profiles)
- **Patches can be added against MeeGo components as long as API and ABI compatibility is preserved**
- **Components can be added on top of the MeeGo stack as well as middleware associated with specific applications and services**

Profile based compliance

- **A profile describes a device category**
 - Handset Profile
 - Connected TV Profile
 - Tablet Profile
 - Netbook Profile
 - Other profiles may and will be approved by the TSG
- **Profile compliance specifications are created by the working groups**
- **A profile specifies required components, device category APIs, minimum hardware requirements and components requirements**
 - Screen resolutions, sensors, touch screen capabilities
- **Same rules apply to the profile-specific packages (i.e. no re-packaging, may apply patches as long as API and ABI compatibility are preserved)**

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MeeGo Overview

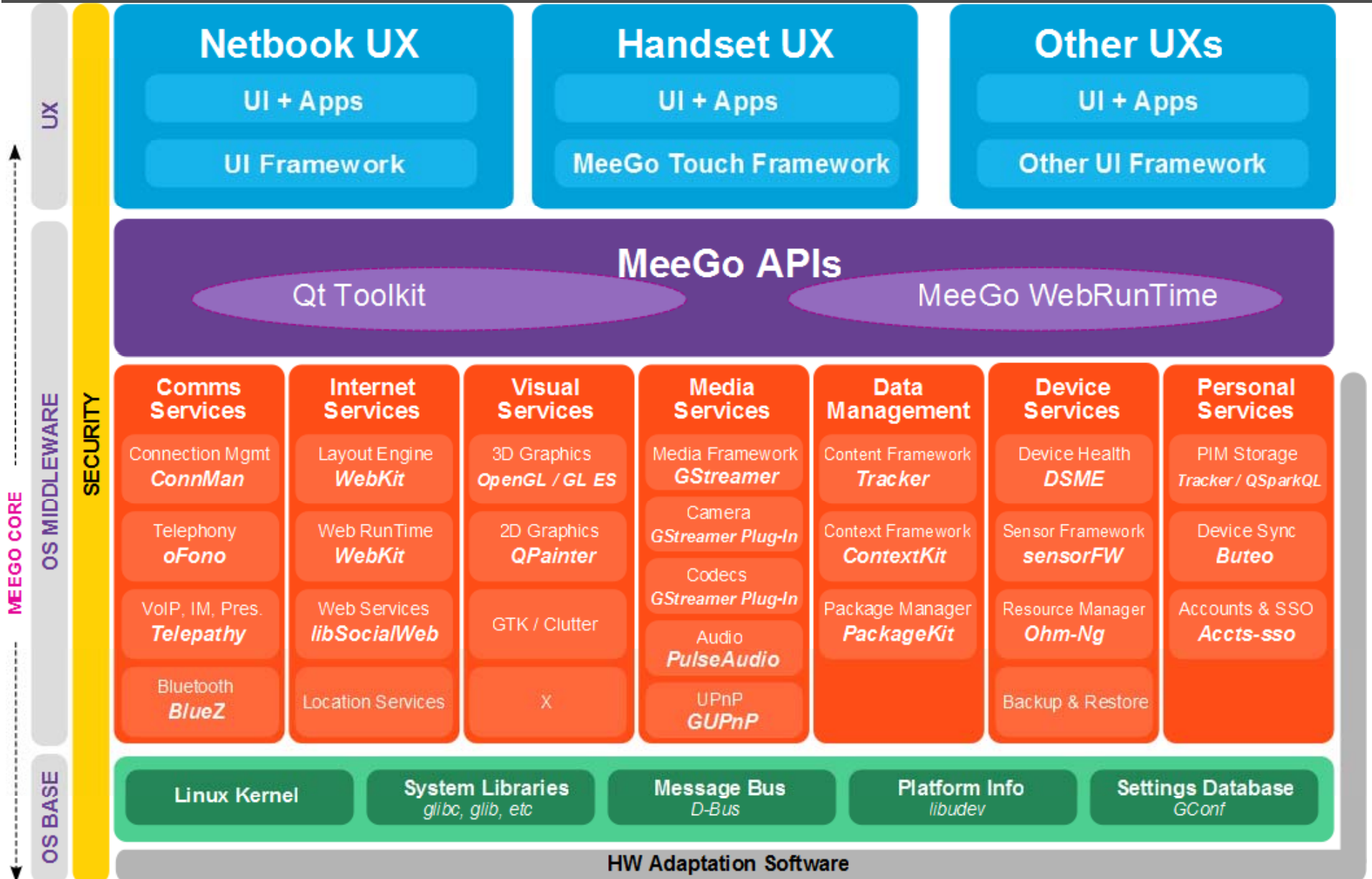
MeeGo Compliance

MeeGo Architecture

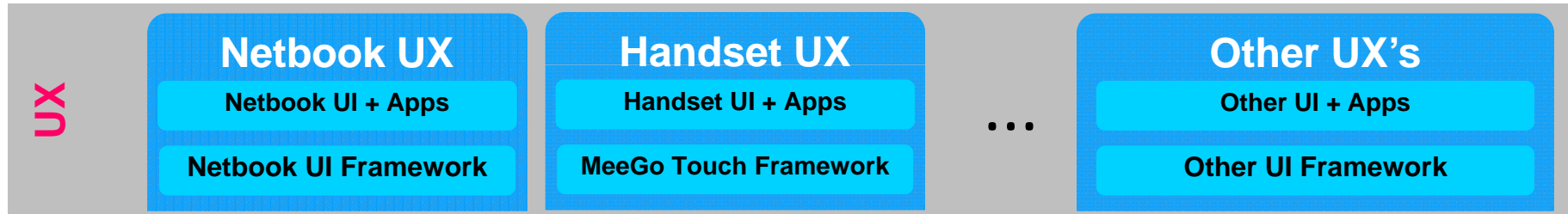
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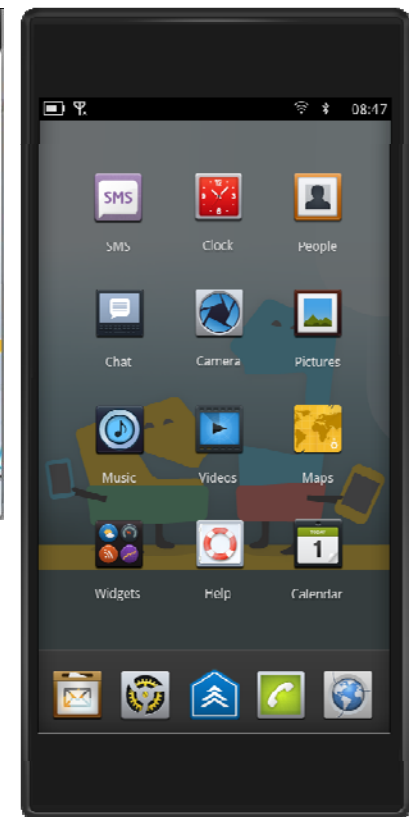
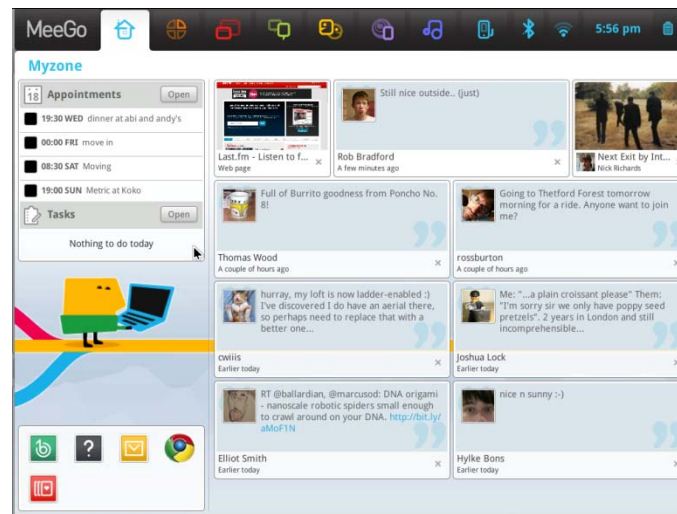
MeeGo Architecture



MeeGo Ref. User Experience for Netbook and Handset



- **Integrated – Personalized Social Networking Services & Infrastructure**
- **Easy to Use and Build Upon - Full Internet, Rich Media Consumption, Standards-based**
- **Customizable – Branded Customer Experiences, Flexible Look and Feel, Powerful Tools and Animation**



MeeGo APIs

MeeGo APIs

Qt Toolkit

MeeGo WebRunTime

- **Qt Toolkit**

- The MeeGo API is based on Qt 4.x. The development libraries (qt-devel) needed are installed in the MeeGo SDK virtual environment along with Qt Creator

- **Upcoming APIs**

- MeeGo Web Runtime

- > Web Runtime (WRT) allows web developers to use standard web languages (HTML, CSS, and JavaScript) to create applications for mobile devices. WRT exposes the features of the underlying platform so that applications can interact with device data and combine location-based context with web information.

- Qt Mobility

- > Qt Mobility extends Qt with libraries providing additional features for applications targeting mobile platforms. These include the Service Framework and Contact and Bearer Management APIs.

- MeeGo Touch Framework

- > The MeeGo Touch Framework provides the features needed for developers creating applications for touch-enabled devices. Features include standardized window navigation, list and other widget behavior, and common theming for components.

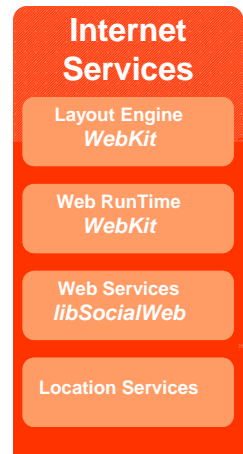
MeeGo Middleware – Comm Services

- **The Comms Services provides services to manage voice and data connectivity for the platform.**
 - ConnMan provides a modular framework to provide network connection over WiFi, WiMAX, 3G and via Bluetooth.
 - oFono provides telephony services as a flexible, modular and extensible architecture to support multiple platforms and modems.
 - Telepathy is a D-Bus based framework that unifies all supported protocols of real time communication, including, but not limited to, instant messaging, IRC, voice and video over IP, and cellular calls
 - The Bluetooth subsystem consists of the official Linux Bluetooth stack BlueZ as well as related extensions



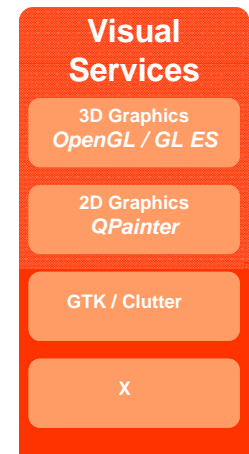
MeeGo Middleware – Internet Services

- **The Internet Services includes services for rendering web content, providing web run time support, exchanging data with web services, and determining location.**
 - MeeGo provides Qt Webkit as the layout engine for rendering web content (HTML, XML, XHTML, SVG, CSS, JavaScript, etc.) for on-screen display
 - MeeGo will provide Qt WRT as the Web Runtime framework
 - LibSocialWeb provides extensible framework for exchanging data with social networking/media sites
 - MeeGo provides GeoClue for location services from a number of sources like GPS, GSM cell, and wifi network



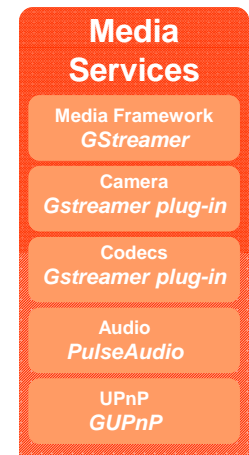
MeeGo Middleware – Visual Services

- **The Visual Services provides the core 2D and 3D graphics capabilities including rendering internationalized text and hardware acceleration for graphics**
 - OpenGL is the environment for developing portable, interactive 2D and 3D graphics applications
 - OpenGL ES is cross-platform API for full-function 2D and 3D graphics on embedded system
 - Qpainter provides advanced 2D drawing capabilities with support for hardware acceleration
 - GTK / Clutter are provided for animation and for legacy reasons
 - X provides the window system with platform specific drivers, patches and configuration as needed



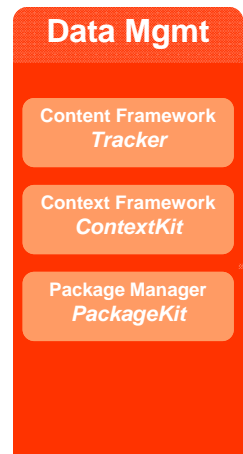
MeeGo Middleware – Media Services

- **Media services provide audio/video playback, streaming and imaging functionality**
 - Gstreamer provides cross platform Media framework for playback, streaming, and imaging
 - PulseAudio handles audio inputs, post/pre processing, and outputs in a system
 - Camera subsystem provides still and video camera functionality (including, e.g. image post processing and metadata) for applications
 - GStreamer-compatible codecs are supported for encoding / decoding of audio and video
 - GUPnP is an object-oriented framework for creating UPnP devices and control points, with extension libraries for IGD and A/V specifications



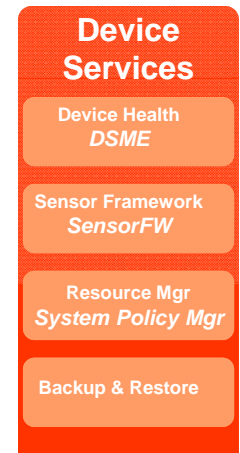
MeeGo Middleware – Data Management

- **The Data Management provides services for extracting and managing file meta-data, retrieving data about the device context, and managing the set of installed packages on the device**
 - Tracker provides indexing, meta-data extraction, and search capabilities for a variety of data types, including media files, and documents
 - ContextKit provides an access to context properties of the device by collecting all of them behind a common API
 - PackageKit uses distribution package management tools to make installing and updating software on devices easier



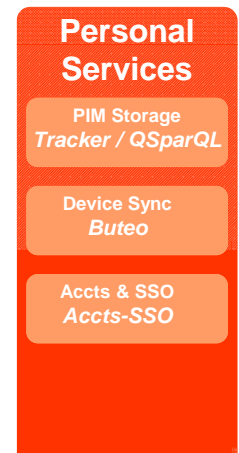
MeeGo Middleware – Device Services

- **The Device Services contains services for managing device state and exchanging data with the device, including device health, sensor data extraction, overall system policy, and device data backup and restore**
 - DSME provides basic device state machine, HW watchdog feeding, process watchdogs, thermal management and system heartbeat service
 - SensorFW provides an interface to hardware sensor drivers through logical sensors
 - System Policy Mgr provides infrastructure to manage the devices and its policies for key applications like media player and telephony application
 - Backup & Restore is expected to be provided in future



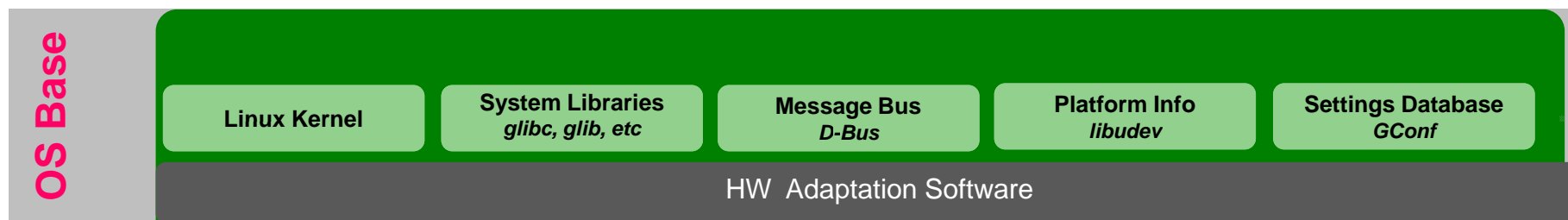
MeeGo Middleware – Personal Services

- **The Personal Services provides services for managing user data on the device, (i.e. calendar, contacts, tasks) and managing user accounts to enable single-sign-on for web services**
 - Tracker / QSparQL as the storage for contacts
 - Buteo provides device synchronization framework for contacts, calendar, mail and messaging
 - Accts-SSO provides unified account storage and single sign on functionality.



MeeGo – OS Base

- **MeeGo provides Linux for all OS services**
 - MeeGo uses a Linux kernel from kernel.org
 - Glibc is C standard library and glib provides cross platform software utility library
 - D-Bus is a message bus system, a simple way for applications to talk to one another
 - libudev is a simple system service that can enumerate devices, manage devices and send notifications when hardware is added or removed from the device
 - Gconf is a centralized settings store with complex types, defaults, and change notification
- **Hardware Adaptation Software**
 - Includes all the software that is platform specific like drivers, codecs, platform configuration etc



MeeGo Security Architecture

SECURITY

- **MeeGo security architecture provides capabilities like**
 - Hardware Root of Trust for the Device
 - Identification of trusted Software Distribution Source
 - SHA1 encryption / verifications for all packages on updates or for execution
 - Access control using resource tokens for defining sandboxing of applications
 - Secure Storage

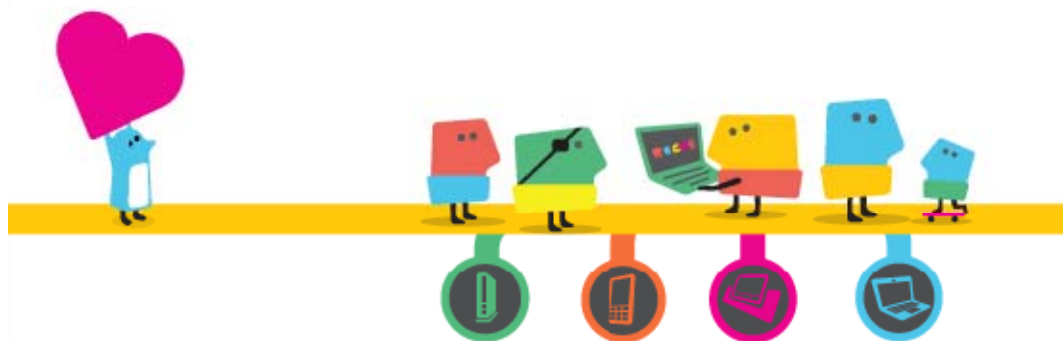
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Developers

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Developers



Developers welcome!

MeeGo brings together the best application and platform development tools available. At the heart of development is the MeeGo SDK, including Qt, which provides a full set of consistent, cross-platform APIs.

Your feedback, regarding the MeeGo development process, is valuable. Please let us know if you have ideas for how we can improve your development experience.

- [MeeGo Architecture](#)
- [MeeGo Developer Story](#)
- [MeeGo API](#)
- [Getting Started](#)

Additional Developer Resources

[Wiki](#)

Go to the [MeeGo Wiki](#) for more documentation and resources.

[Mailing Lists](#)

Sign up for a MeeGo mailing list and start contributing to the discussions. We have mailing lists for developers, SDK and localization.

[IRC](#)

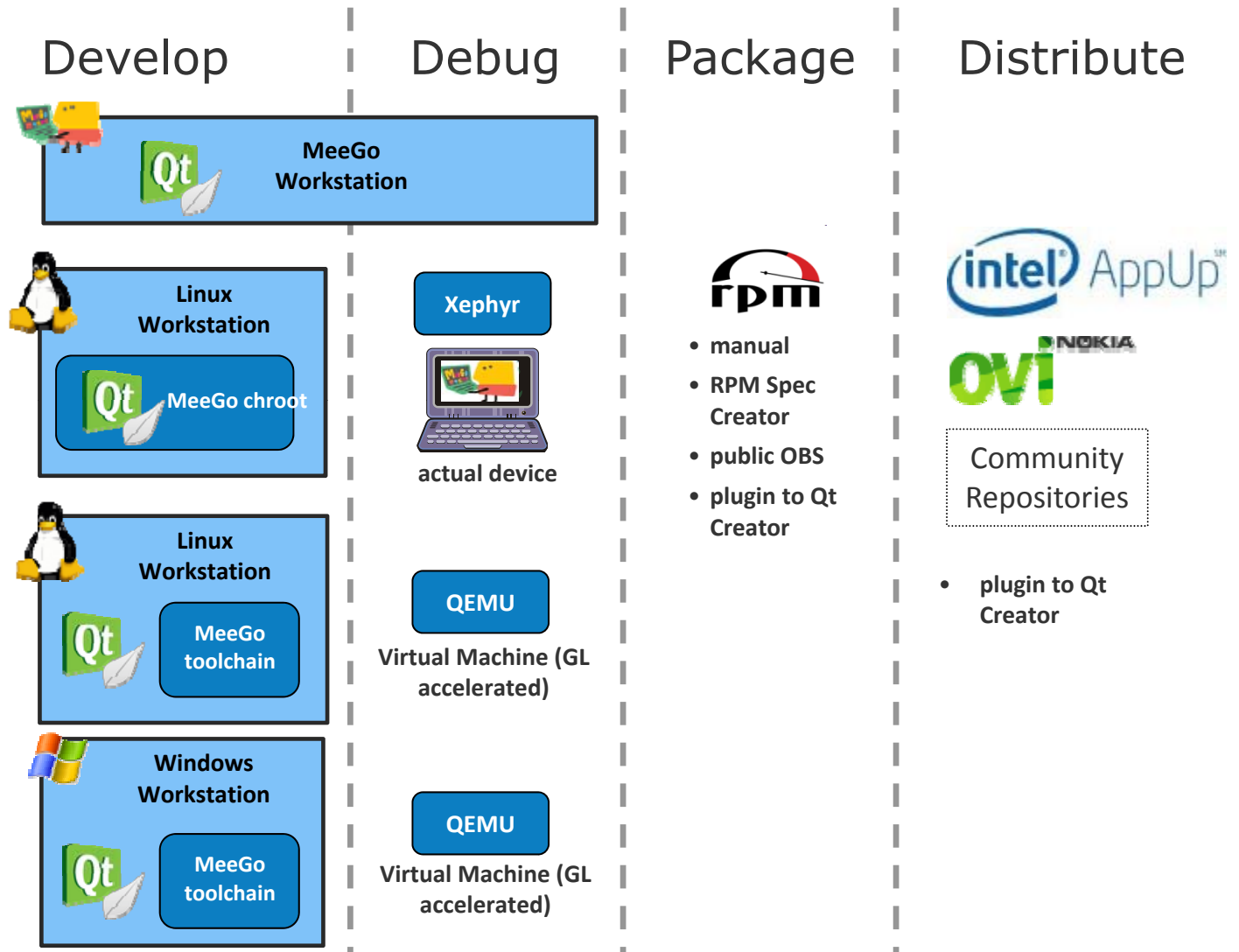
Real-time interaction is also available on our MeeGo IRC channels. Our primary channel is [#meego at irc.freenode.net](#).

The MeeGo logo, consisting of the word "MeeGo" in a purple, sans-serif font.

MeeGo SDK – Coming 2010

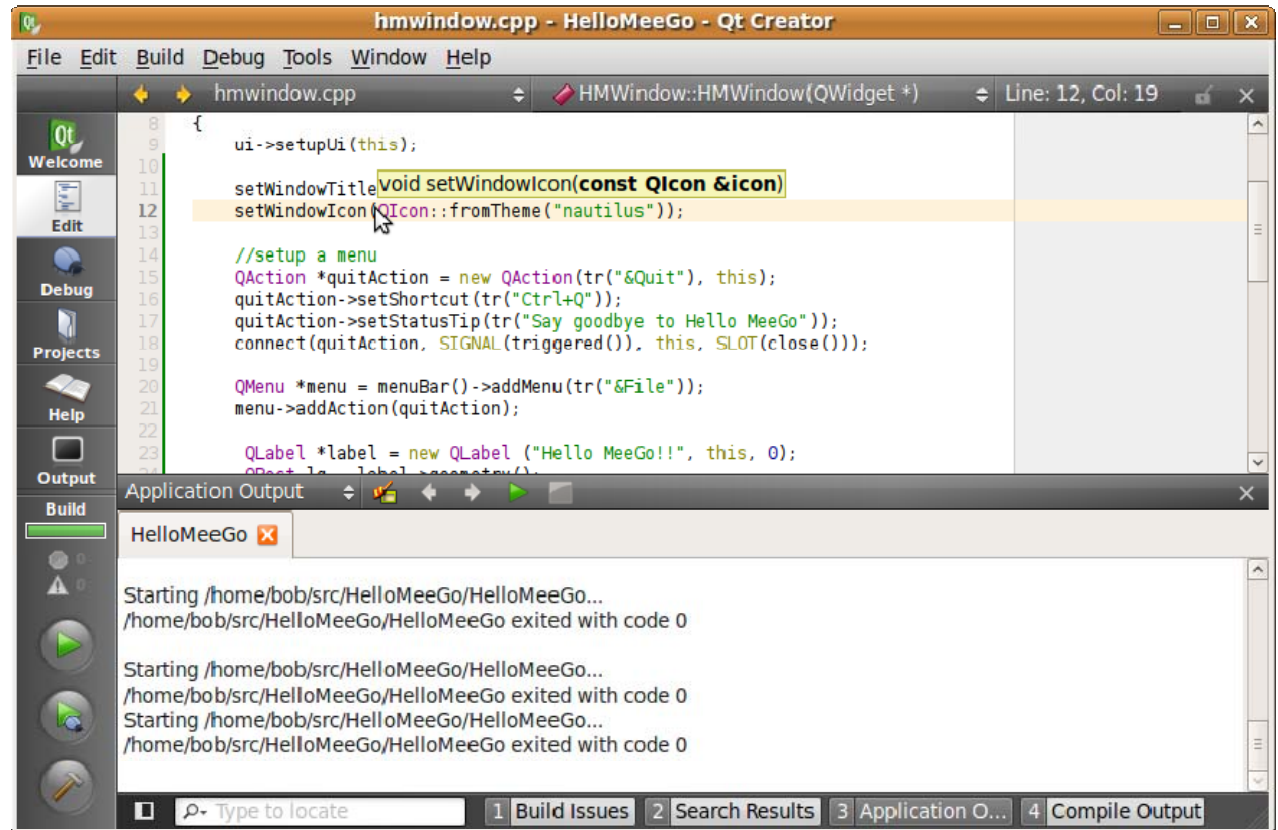
Features

- Cross-OS
- Full VM
- Any graphics device
- Device emulation
- Better packaging support
- Integration with Qt Creator



Qt Creator

- Qt Creator is the integrated development environment (IDE) for creating MeeGo applications.
 - Project creation is a snap.
 - Features such as code-completion, integrated help, and drag/drop UI design accelerate application development



Roadmap



4Q'09			1Q'10			2Q'10			3Q'10			4Q'10			1Q'11			
OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR

MeeGo Project Release Cadence: Every 6mo.

MeeGo Dev Day [30]

MeeGo

References

- **Architecture:**

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

- **SDK download:**

http://wiki.meego.com/Getting_started_with_the_MeeGo_SDK_for_Linux

- **MeeGo API:**

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

- **Developer Guides:**

http://wiki.meego.com/Developer_Guide



Thank You!

Building MeeGo: Where are We and What's Next?

Sunil Saxena

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