Automotive: next hot mobile platform for MeeGo

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First four GENIVI compliant solutions approved

The GENIVI alliance for In-Vehicle Infotainment has announced a new compliance programme for member companies and the first four companies to offer approved compliant solutions: Canonical's Ubuntu IVI Remix, Mentor Graphics' Embedded IVI Base Platform, MontaVista's Automotive Technology Platform and Wind River's Platform for Infotainment.

All of the approved solutions run on Intel Atom and ARM architectures, except for MontaVista's
Outline

- Automotive software systems: IVI
- The MeeGo IVI project
- (lack of) hardware support for IVI
- nobdy and ExoPC demos
What is “in-vehicle infotainment”?

What “infotainment” calls to mind

What IVI could be
3 novel views of the auto

- Module for ad hoc convoy
- Mobile data collection platform
- Giant portable CPU and battery
Ad hoc networking saves energy

Use this . . .

. . . to do this.
Mobile sensor platforms

About 30 electric/electronic systems and more than 100 sensors

Figure 1: Car functions and the respective sensors (source: based on DaimlerChrysler)
Inserting smarts into big dumb docking stations

Dock the Atrix . . .

. . . or dock the car?

Cars can tether and sync rural businesses and homes?
3 challenges for IVI

- Security in a multiuser, mobile, often unattended device
- Safety of a complex system with power to kill
- Disparate collection of unique hardware
Challenges 1: security

Backseat kids changing nav system's destination . . . mechanic at shop installs malware.
Challenges 2: safety

Driver must receive alarms but not modify many parameters.

Prevent malfunctioning systems from interfering with driving.
Challenges 3: HW needs

CAN bus, MOST bus, wheel rotation sensors, oil level . .

Not just RT audio, but RT video too!
Maybe what we want is Android . . .

. . . from the Open Handset Alliance?
Why consider MeeGo?

Closer to traditional GNU/Linux distro than Android.
IVI UX Additional Features

- IVI UX: media player, instrument cluster, RSE, navigation, diagnostic surround view, hands-free phone
- IVI app frameworks: vehicle sensor data access, vehicle control, Terminal Mode, touch and gesture input
- IVI API layer: multi-screen video, multi-zone audio, consumer electronic device connectivity, inertia-based application control

Core OS layer:
- Sensor framework
- Split-screen video
- Speech recognition
- Speech synthesis
- Acoustic echo cancellation
- Noise suppression
- OTA software updating
- Tethered device indexing
- Phone synchronization
- Multi-user support

Kernel layer: <250ms boot, power management, vehicle buses

Drivers: automotive button/knob input devices, vehicle data sensors

Many automotive players, few public announcements.
MeeGo IVI 1.2 Home Screen

Intended to be reskinned, not as a shipping product.
What IVI reference hardware should devs use?

- ARM dominates mobile but Atom has a role in IVI.
- Atom boards with CAN bus and GPS are very expensive: use dongles.
- Nice ARM boards (e.g. BeagleBoard) far cheaper.
- Multiple display outputs preferable for IVI.
- Touch and/or gesture interface likely.
Tripzero: How do I test this in my car?

- ELM compatible scantool
- Any tablet/smartphone/laptop that runs meego

http://sf2011.meego.com/program/sessions/vehicle-communications-meego
**Tripzero**: Handset/Tablet + meego ivi

In the near future...

http://sf2011.meego.com/program/sessions/vehicle-communications-meego
Nobdy on ExoPC

Nobdy in scrollwheel menu

Live data stream via D-bus and qmlviewer
Running MeeGo-IVI on ExoPC and Pandaboard

- No SW support for HW available to small and medium businesses.
- Running IVI on ExoPC requires a mash-up of “Tablet Preview” and IVI Uxes.
- MeeGo 1.2 repositories support EMGD graphics only, while ExoPC has i915.
  - “zypper update” auto-overwrites drivers and X11 SO libraries.
- Stopped work on ARM-based Pandaboard due to missing graphics driver.
MeeGo Hardware Adaptation Process

- Update from wrong repo
- Hand-craft extlinux.conf
- Use installer defaults
- Maybe not that kernel
- Multi-hour "zypper up"
Summary

- IVI is the part of MeeGo with the most traction.

- Finding appropriate hardware for development remains a problem.

- Many companies are participating, some local.

- Opportunities at all levels: HW, accessories, embedded, platform, apps, entrepreneurs and big companies.
Resources

- IVI wiki: http://wiki.meego.com/In-vehicle
- Official site: http://meego.com/downloads/releases/1.2/meego-v1.2-in-vehicle-infotainment-ivi
- Mailing list archive: http://lists.meego.com/pipermail/meego-ivi
- Mp3car.com
- #linuxice and #meego-ivi IRC on freenode.net
- Nobdy: wiki.openice.org/index.php?title=Nobdy&oldid=4637 (current version is spam)
- My notes and instructions
  - on ExoPC: http://wiki.meego.com/MeeGo_IVI_on_ExoPC
  - on Pandaboard: http://wiki.meego.com/Hardware-accelerated_graphics_on_Pandaboard_using_MeeGo
MeeGo IVI Audio Architecture

Courtesy Laci Jalics, Delphi.
How about MeeGo?

MeeGo = lightweight GNU/Linux with a Qt face.
MeeGo OS fading fast? Intel says it's 'still committed'

By: Brooke Crothers
SEPTEMBER 1, 2011 10:45 PM PDT

An Asia-based report surfaced today that claims Intel will temporarily halt development of its MeeGo operating system for tablets and smartphones due to lack of interest. Intel, however, says it's still committed.

The DigiTimes report claimed that Intel plans to “temporarily discontinue development of its MeeGo OS due to a lack of enthusiasm for the platform from handset and tablet PC vendors.”

MeeGo hasn’t been ignored completely, however. It is also an operating system for the so-called embedded market, such as in-car devices and industrial equipment, where it is doing relatively well, according to Intel. So, MeeGo may be sticking around but don’t expect to pick up a consumer device at your local electronics retailer running the software.