Automotive: next hot mobile platform for MeeGo

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LG and GM partner up to develop 'a portfolio' of electric and hybrid cars

Posted by: Vlad Savov on August 26, 2011 4:35 am | View Comments

3 August 2011, 13:38

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

SEPT. 12-14, 2011 | SAN FRANCISCO

Ford Partners With Bug Labs To Develop Open Source Platform For In-Car Innovatin'
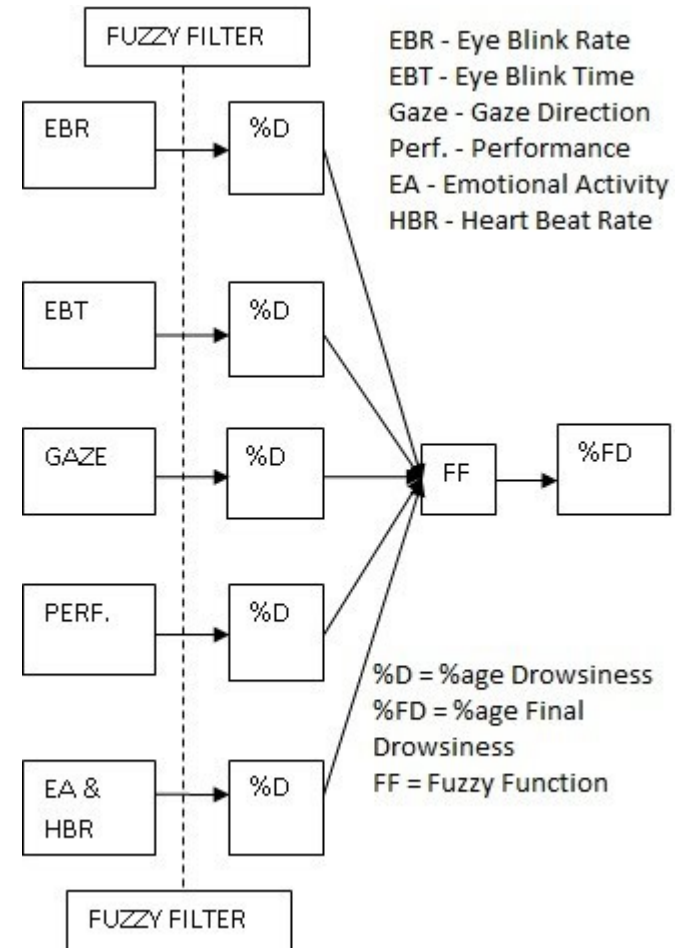
Outline

- Automotive software systems: IVI

- The MeeGo IVI project

- (lack of) hardware support for IVI

- nobdy and ExoPC demos

What is "in-vehicle infotainment"?
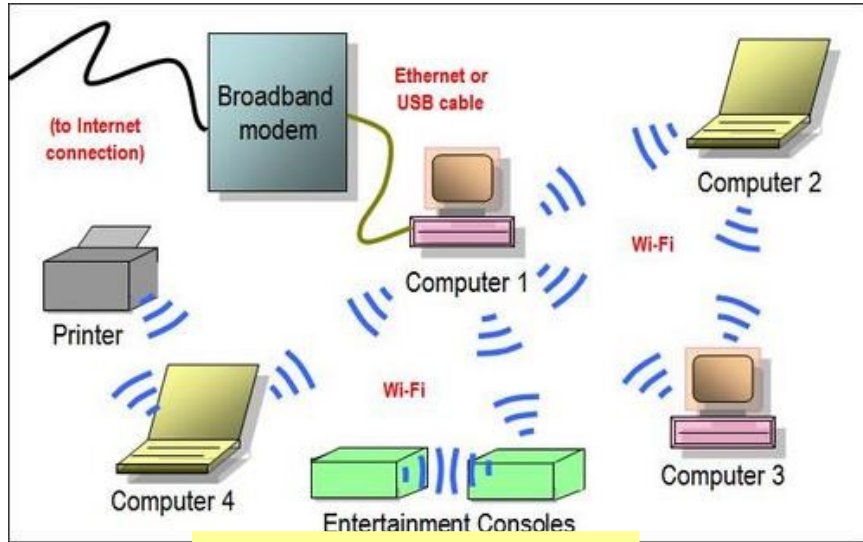

What "infotainment" calls to mind

What IVI could be

3 novel views of the auto

- Module for ad hoc convoy

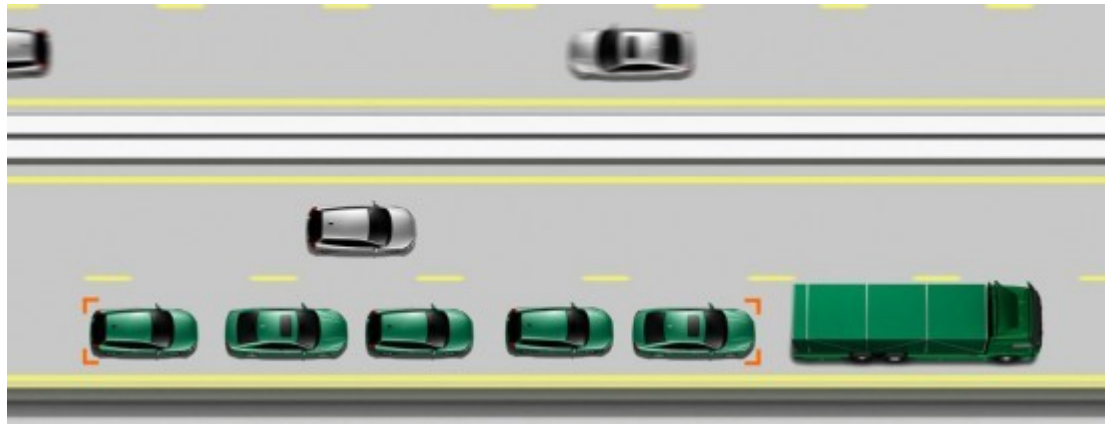- Mobile data collection platform

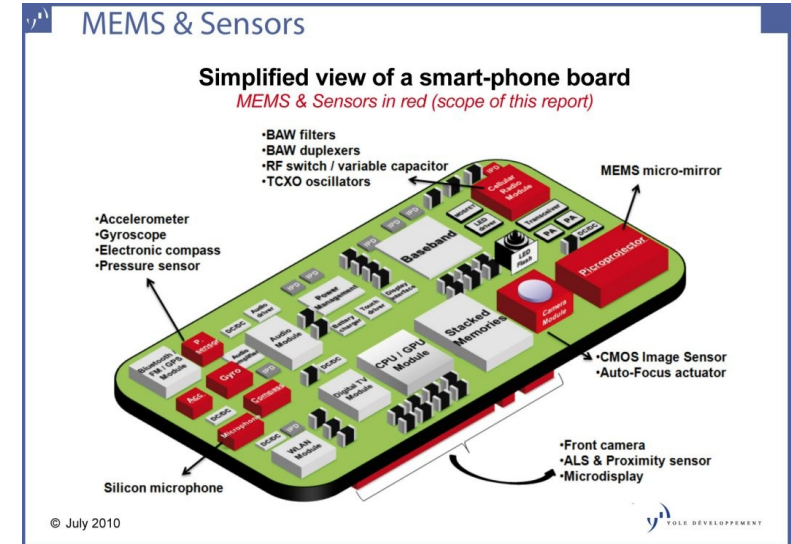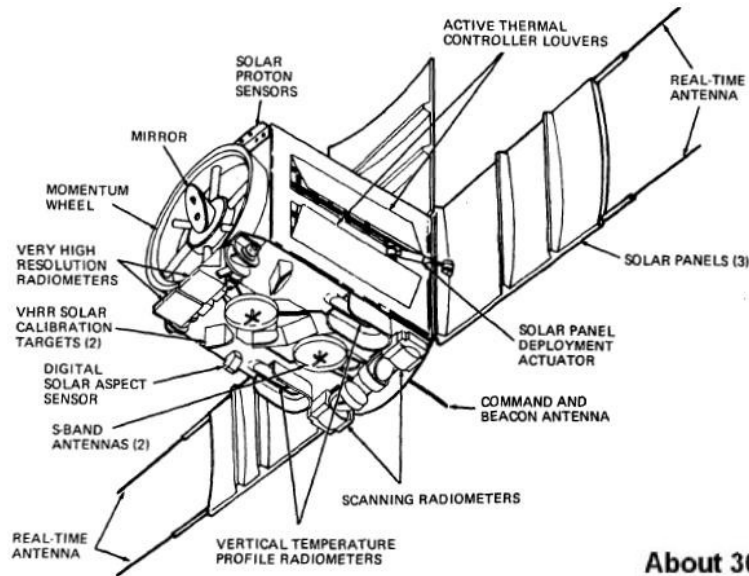- Giant portable CPU and battery

Ad hoc networking saves energy

Use this . . .

. . . to do this.

Mobile sensor platforms

MEMS & Sensors

Simplified view of a smart-phone board
MEMS & Sensors in red (scope of this report)

- BAW filters
- BAW duplexers
- RF switch / variable capacitor
- TCXO oscillators

- Accelerometer
- Gyroscope
- Electronic compass
- Pressure sensor

MEMS micro-mirror

- CMOS Image Sensor
- Auto-Focus actuator

- Front camera
- ALS & Proximity sensor
- Microdisplay

Silicon microphone

© July 2010

About 30 electric/electronic systems and more than 100 sensors

DTR CDI AAC RCU PTS LWR ECT ESP ZV ABC TPM ABS

System	Abb.	Sensors			
Distronic	DTR	3	Common-rail diesel injection	CDI	11
Electron. controlled transmission	ECT	9	Automatic air condition	AAC	13
Roof control unit	RCU	7	Active body control	ABC	12
Antilock braking system	ABS	4	Tire pressure monitoring	TPM	11
Central locking system	ZV	3	Elektron. stability program	ESP	14
Dyn. beam levelling	LWR	6	Parktronic system	PTS	12

Figure 1: Car functions and the respective sensors (source: based on DaimlerChrysler)

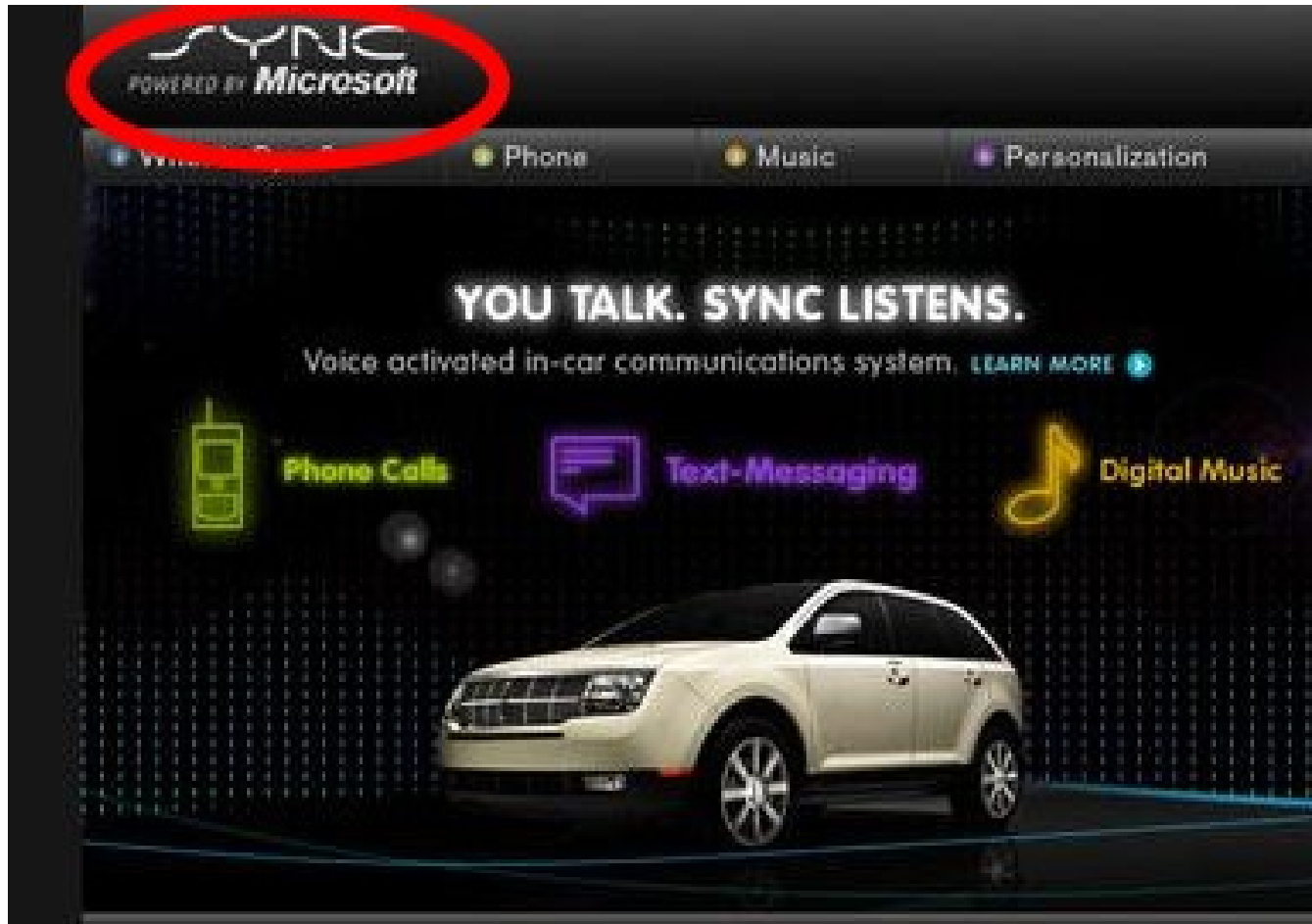# Inserting smarts into big dumb docking stations

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

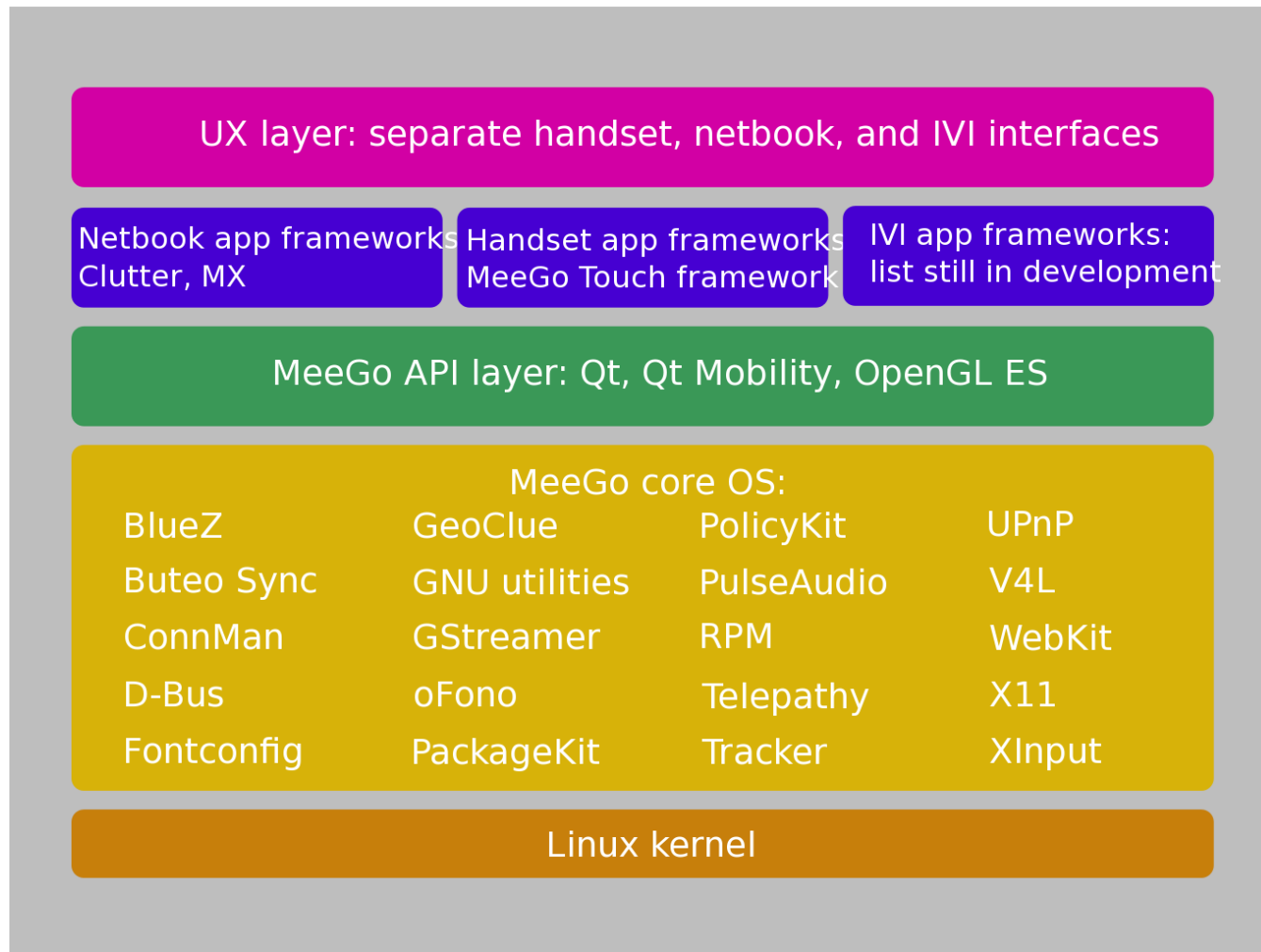CAN bus, MOST bus, wheel rotation sensors, oil level . .

Not just RT audio, but RT video too!

Maybe what we want is Android . . .

. . . from the Open *Handset* Alliance?

Why consider MeeGo?

UX layer: separate handset, netbook, and IVI interfaces

Netbook app frameworks Clutter, MX

Handset app frameworks MeeGo Touch framework

IVI app frameworks: list still in development

MeeGo API layer: Qt, Qt Mobility, OpenGL ES

MeeGo core OS:

BlueZ	GeoClue	PolicyKit	UPnP
Buteo Sync	GNU utilities	PulseAudio	V4L
ConnMan	GStreamer	RPM	WebKit
D-Bus	oFono	Telepathy	X11
Fontconfig	PackageKit	Tracker	XInput

Linux kernel

Courtesy
Nathan P. Willis,
http://tinyurl.com/3m4loer

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	Noise suppression
Split-screen video	OTA software updating
Speech recognition	Tethered device indexing
Speech synthesis	Phone synchronization
Acoustic echo cancellation	Multi-user support

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

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

Courtesy
Nathan P. Willis,
http://tinyurl.com/3m4loer

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.
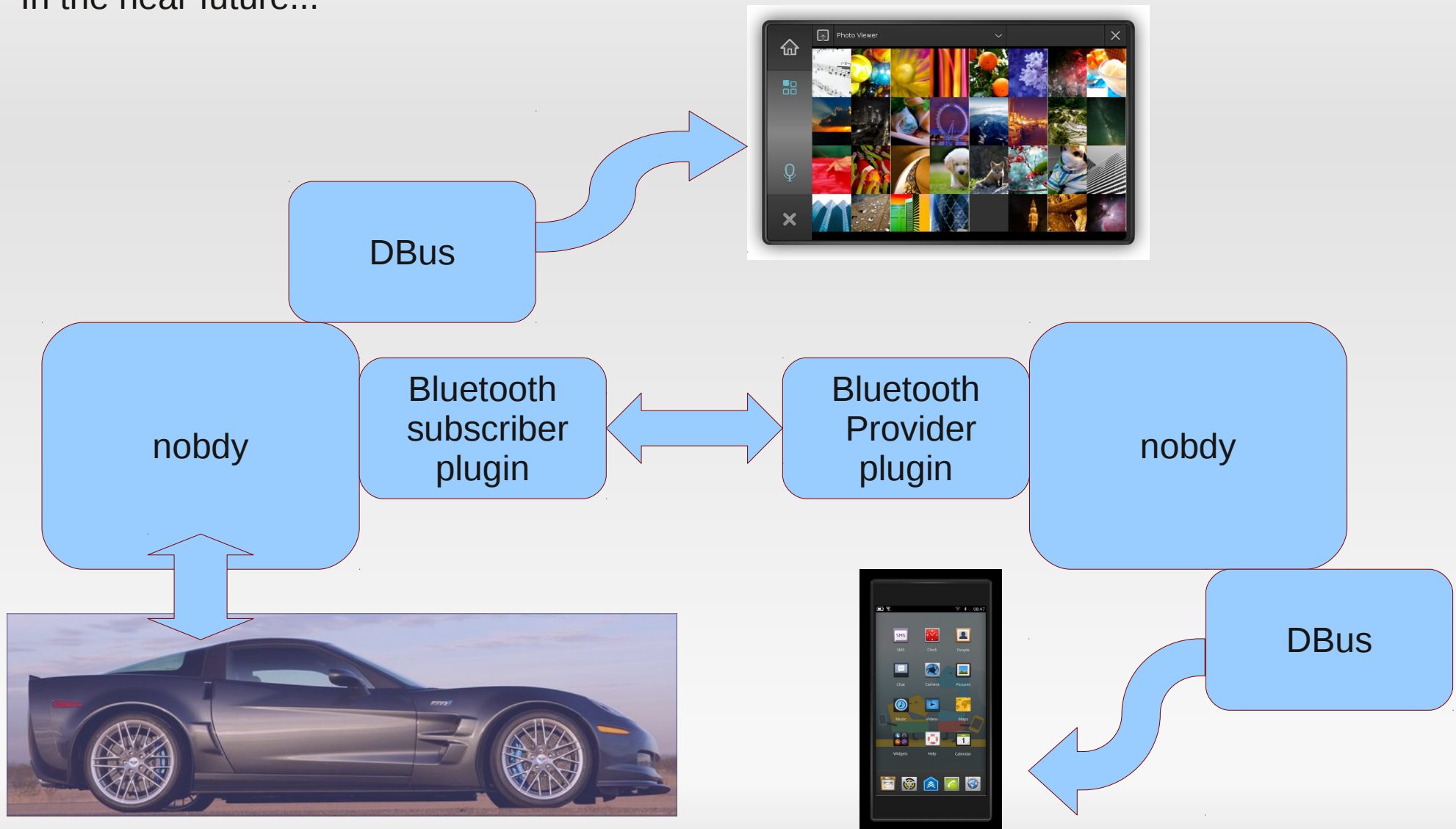
Tripzero: How do I test this in my car?

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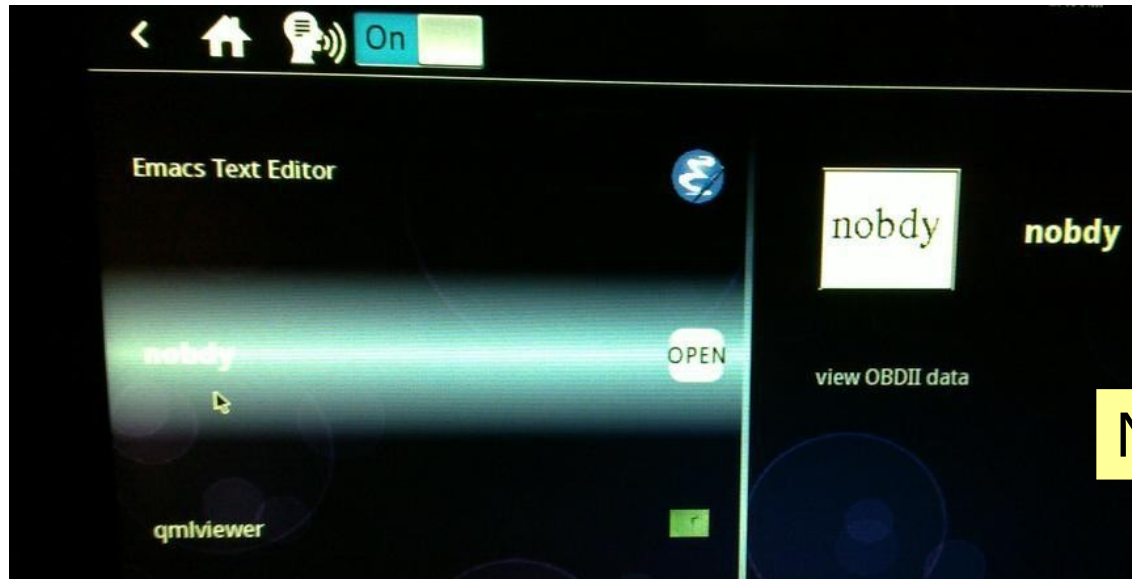- Any tablet/smartphone/laptop that runs meego

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

Tripzero: Handset/Tablet + meego ivi

In the near future...

DBus

nobdy

Bluetooth subscriber plugin ⟷ **Bluetooth Provider plugin**

nobdy

DBus

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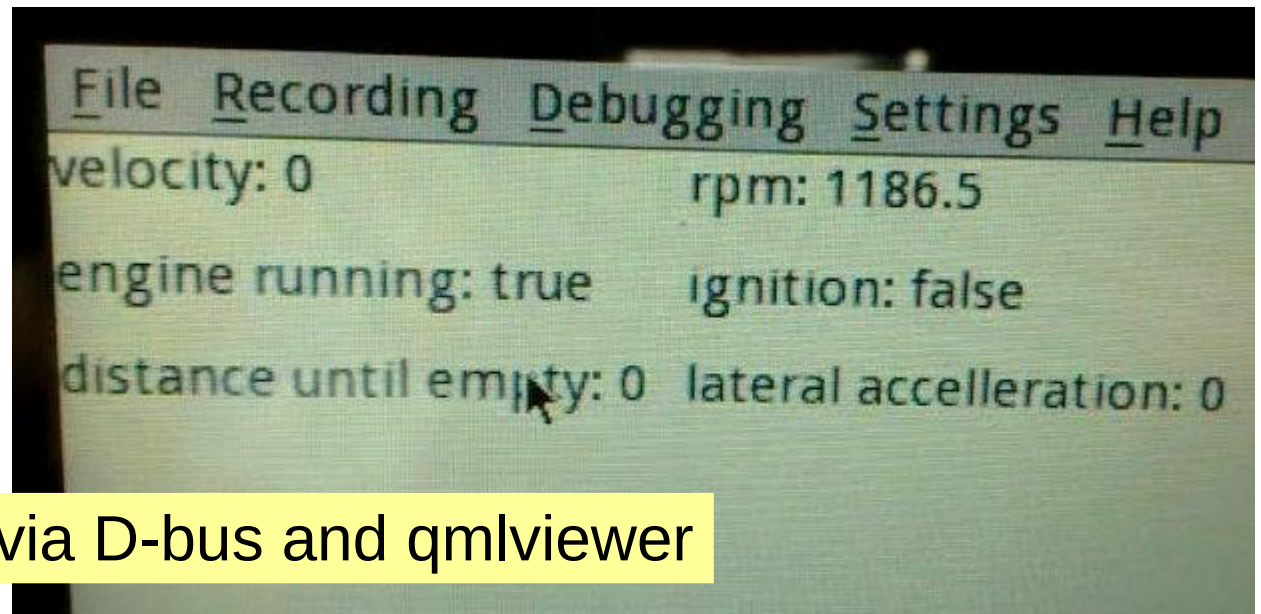
Nobdy on ExoPC

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
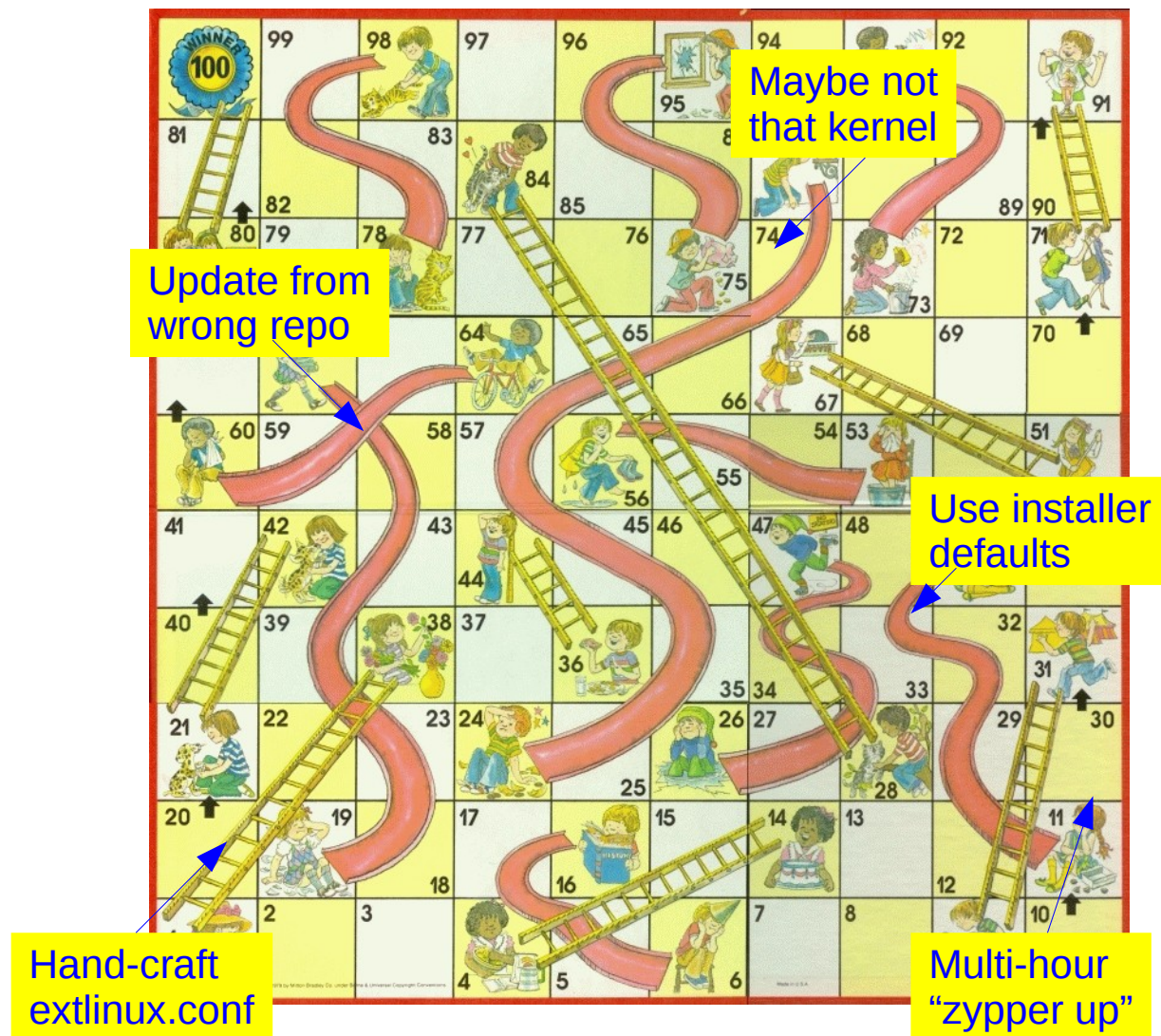
Summary

- 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
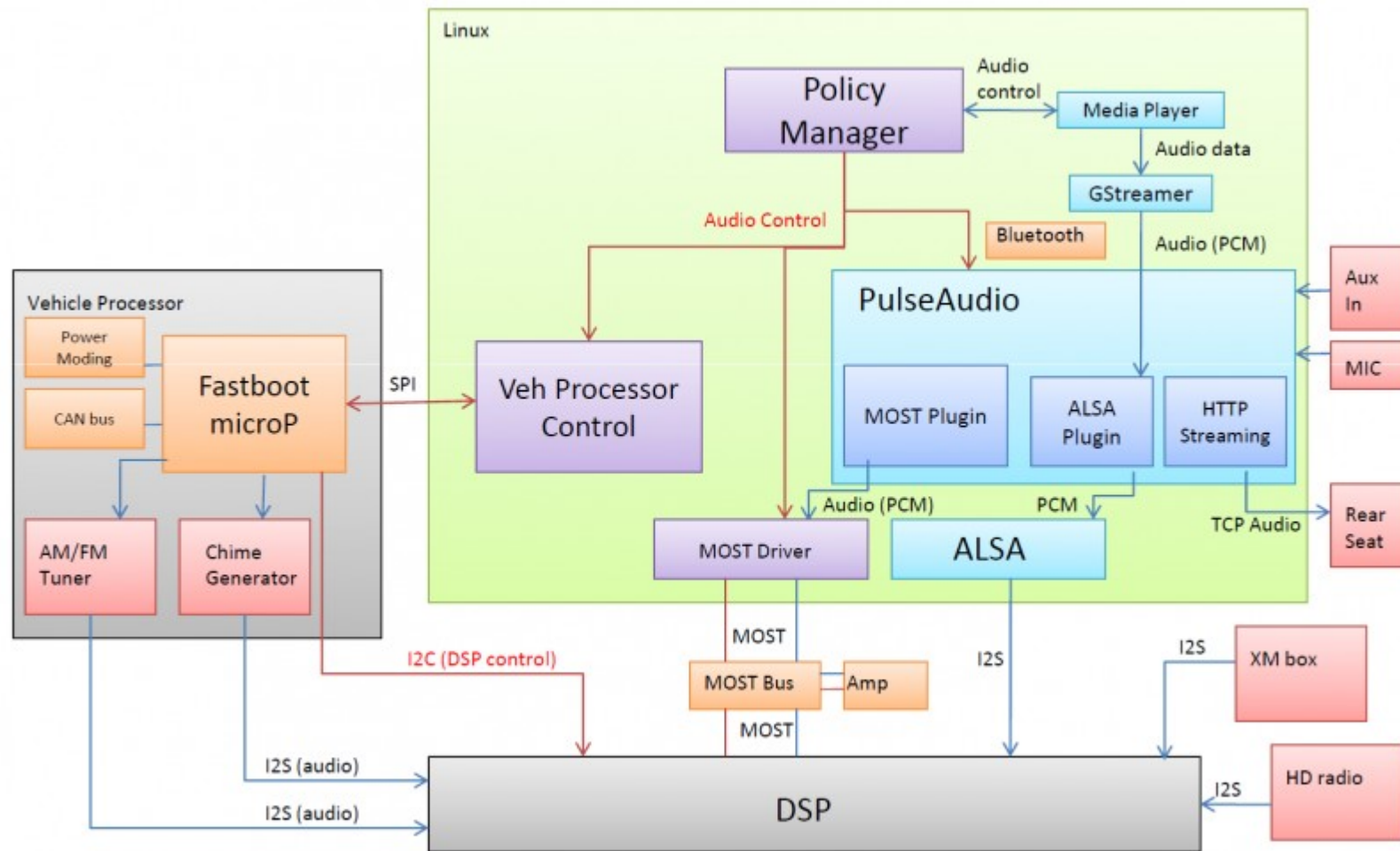
Courtesy Laci Jalics, Delphi.

How about MeeGo?
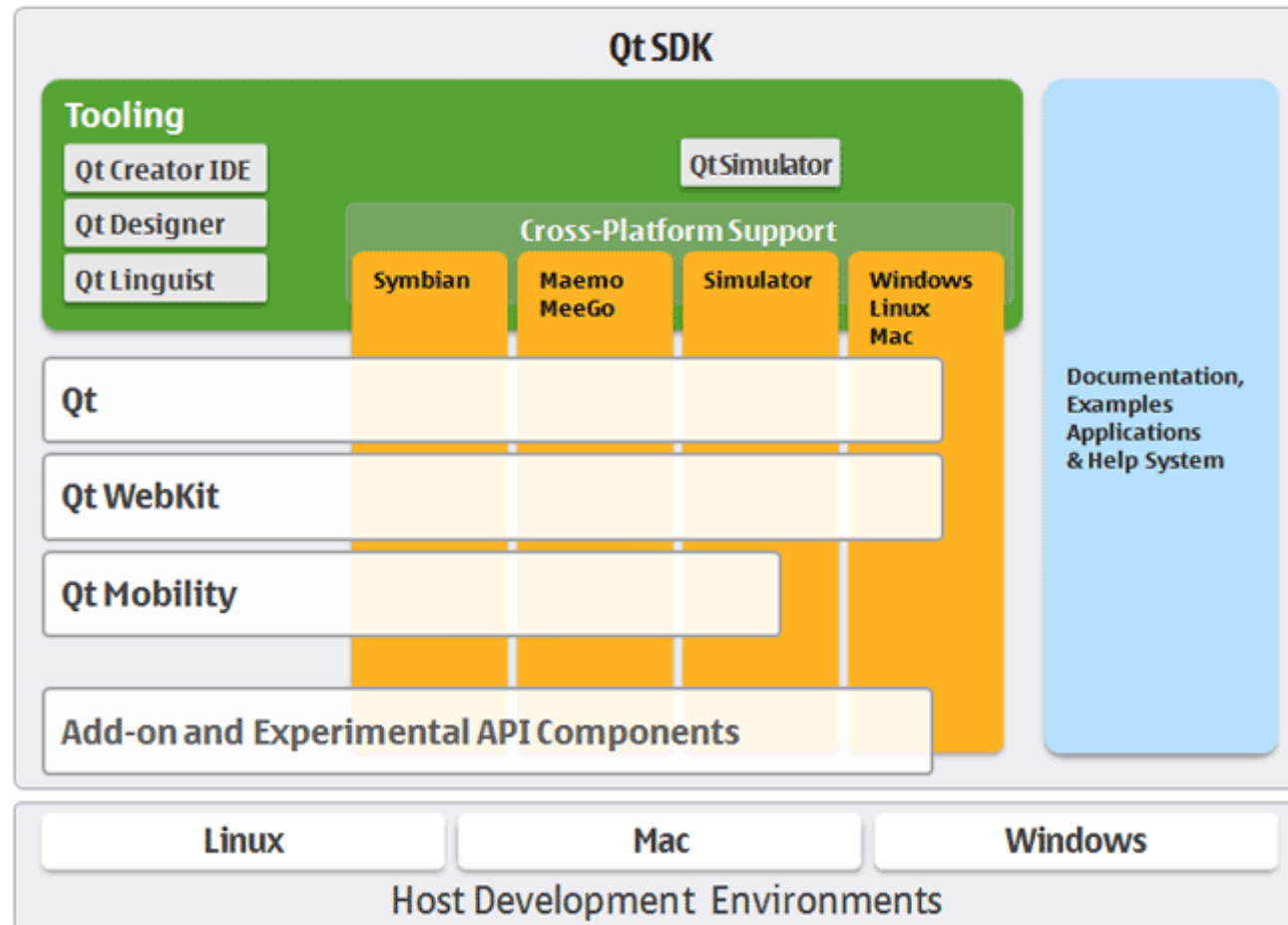
MeeGo = lightweight GNU/Linux with a Qt face.

MeeGo OS fading fast? Intel says it's 'still committed'

By: Brooke Crothers

SEPTEMBER 1, 2011 10:45 PM PDT

Print   E-mail

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.