

Mer – Touching Linux

David Greaves / lbt

david@dgreaves.com

Introductions

I'm one of the Mer “project leaders”



Mer Is/Not



- Handheld
- Finger Friendly
- Touchable



- Desktop
- Laptop
- Netbook
- Wristwatch



Currently Supported Devices...



Nokia 770



Nokia N800



Nokia N810



Fujitsu-Siemens Loox 720



Neo Freerunner



SmartQ 5



Beagleboard



Nintendo Wii



Sharp Zaurus



VMWare



Sun Virtualbox



QEmu



x86 PC

Origins... Hardware

Premise:

Not under-powered embedded systems

Powerful, power-efficient, mobile computers.



So:

Provide a general platform for such devices.

Benefit:

Make it more Open. More developer-friendly.

More hackable. Align with Linux distributions.

Origins... Out of Maemo

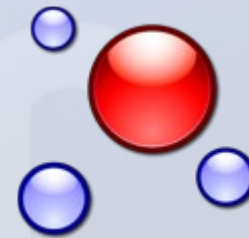
Maemo.org

Hacker Community around Nokia MIDs
(770, N800, N810)

Maemo OS

Vanilla(-ish) linux system out-of-the-box

Debian derived



Origins... Not Fully Open

- Kernel modules
- Applications
- Library Framework
- Orphaned distribution



Come back to this later

Origins... Deblet

The obligatory Debian port to the device



Showed feasibility & limitations of normal distribution software

Origins... Maemo-Reconstructed

Design:

Separate device and platform code



Open:

The Maemo platform

Allow the device-specific and vendor-specific differentiation development to be closed.

Objective:

Easy to port desktop applications.

Minimise 'mobile platform' peculiarities.

Access features.

Origins... Mer

So, a maemo.org project, owned by the community, created by the community



Goals

- Integrate the best solutions for a wide variety of small form-factor devices
- Encourage wider access to device capabilities through the Vendor Social Contract
- Demonstrably provide an easy route to market for vendors
- Focus, harness and support community contributions to the platform
- Encourage and ease migration of existing applications
- Support experimentation, innovation and development



Community

- The Maemo community is made by contributors interested in all kinds of collaboration around mobile linux software.
- A non-profit organization sponsored by Nokia, who are an active and equal member.
- Anybody can join the Maemo community, contribute to the work, and provide transparent feedback.
- The Maemo community meets at least once a year in the Maemo Summit (9-11 October 2009 in Amsterdam, NL)



What is Mer

Base on Ubuntu ARM port (and Debian)

Take free libraries from Nokia/Maemo OS



Identify and fill in the gaps left by closed SW

Select applications to provide functionality

Mer vs Maemo

Mer is not a competitor to Maemo

– there's no Mer without Maemo.

This applies to a host of other Linux systems too

A dynamic distro to support innovation



Mer - Issues



Like Maemo, Mer focuses on that a tablet has CPU, memory and bandwidth constraints – but it can be more powerful because of the environment surrounding it.

Mer - Issues



Power saving.

Think days/charge and always-connected – not 4 hours like a laptop.

Some storage constraints but not to the level of embedded systems (it's not a 64mb NAND flash system).



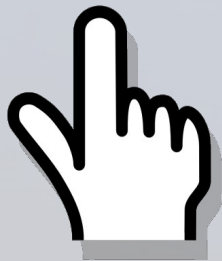
Connectivity. Need to support wi-fi, Bluetooth, USB and more.

Mer - Issues



User Interface : Touch, no cursor
Fingers are big and bulky

Small screen means limited space and many
desktop UI design ideas don't work



Fingers only have one button
Gestures are natural and expected

Power

Need to keep an eye on application and background processes

Identify polled and make event driven

Inform apps about power-save opportunities



Switch into low-power mode (PSM) in Wifi

CPU speed adjustment, backlight etc

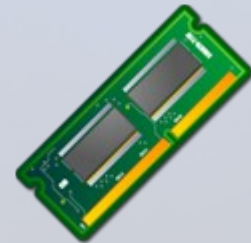
Space

Main issue is RAM, not really disk

Issues with having both Gtk and Qt

Actions:

- Remove unwanted data
- Trim packages



Connectivity

Hardware drivers

NetworkManager

- Works fairly well
- Adapting UI to fingers
- Under 'threat' by ConMan



BlueTooth

- Well supported

GPS

- Binary support

UI

Lots of work in this area

- Nokia/Maemo is closed here
- Variation in devices

Input Method (ie virtual keyboard, handwriting)

Hardware buttons

Notifications



UI

Verb 1. hildonise – to make touch friendly

Input method, theme

Gtk is hildonised already

Not perfect – lessons learnt



Qt is being hildonised

Nokia own Qt and it will be used on multiple mobile devices

Open development (gitorious.org)

Desktop

Applets

Status Bar

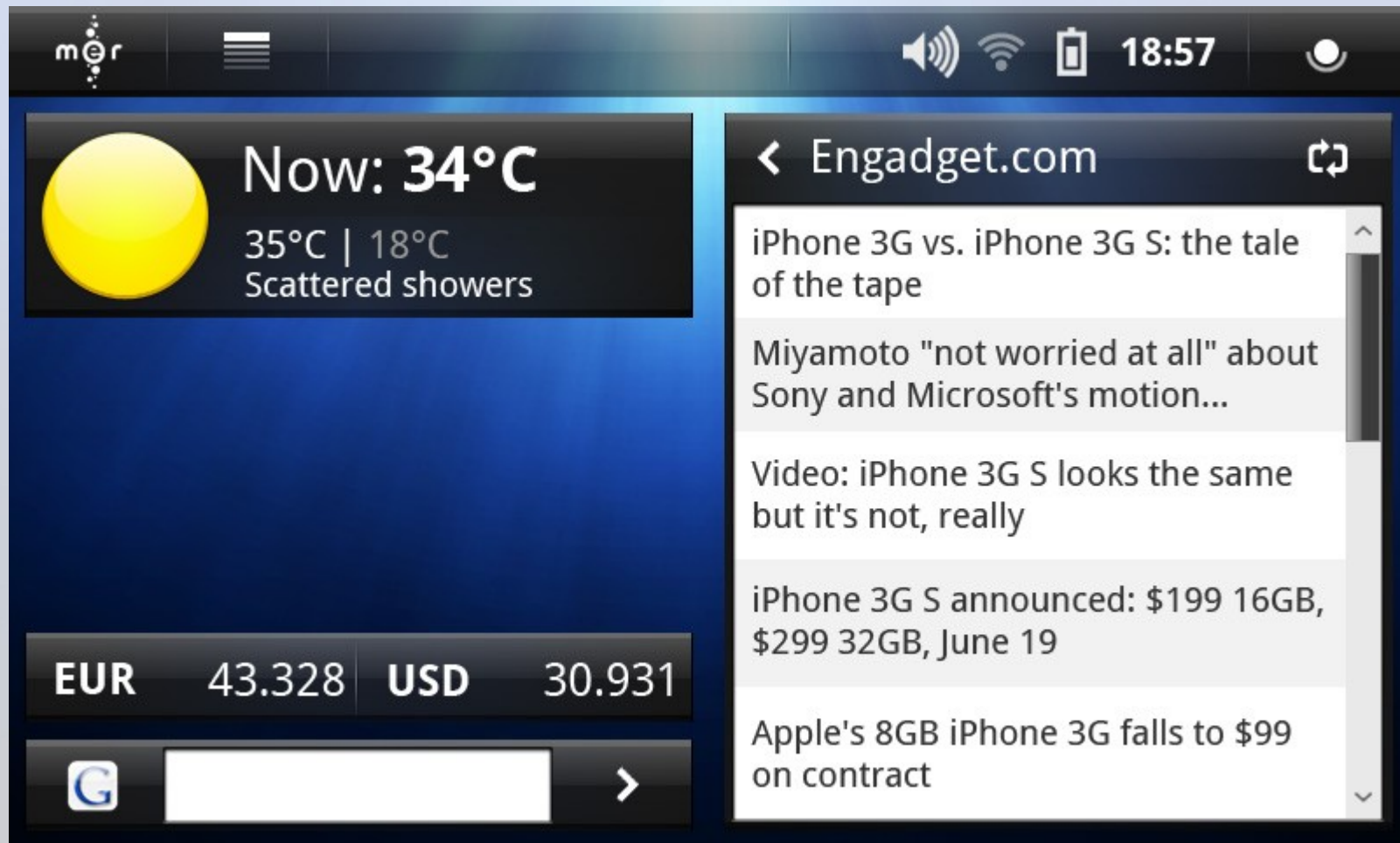
Application Launcher

Application Switcher

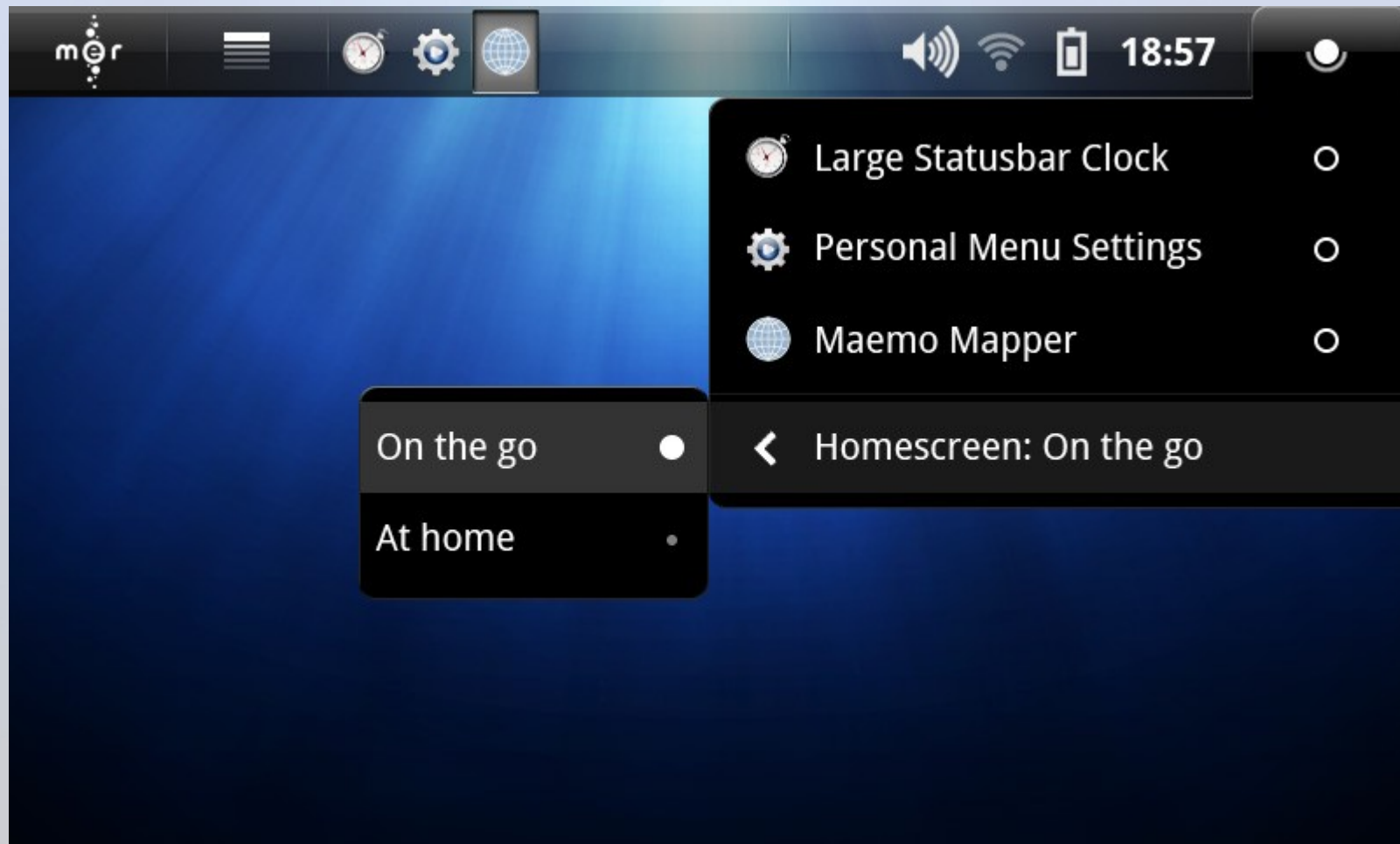


Keep these neutral and use APIs

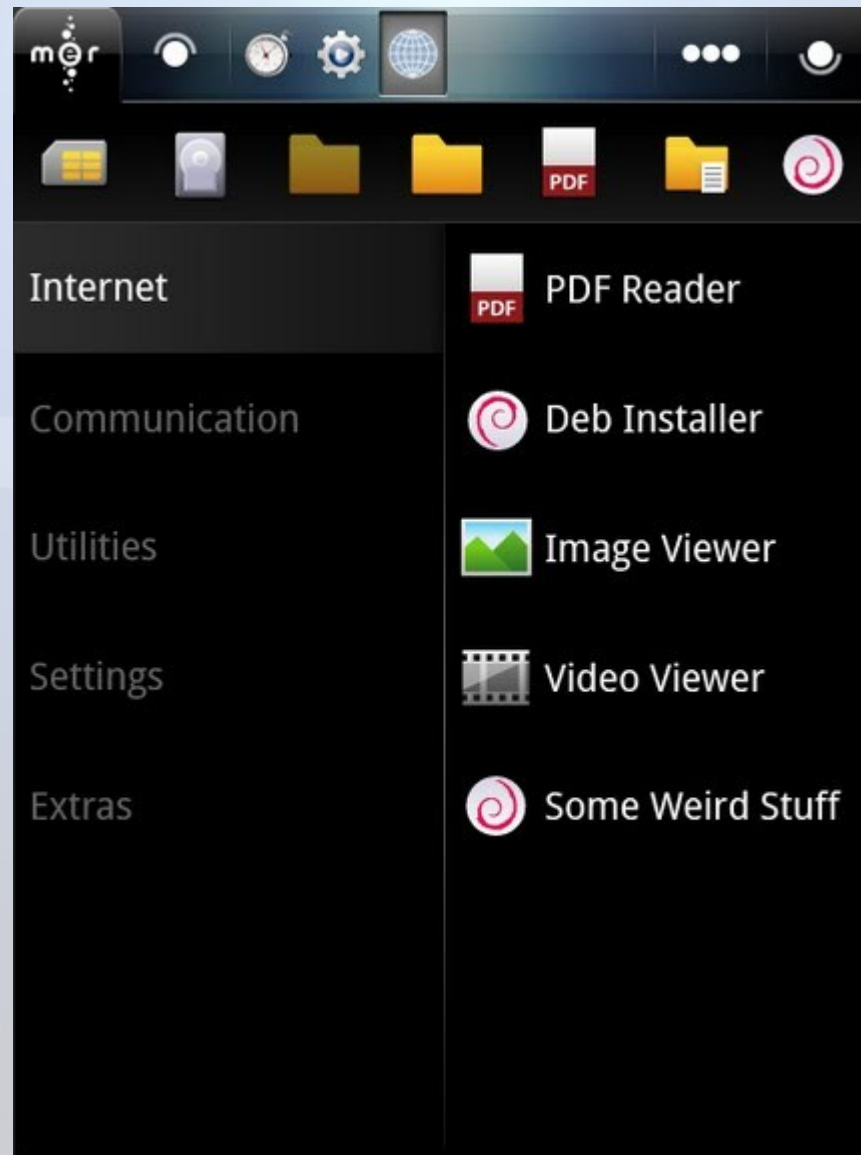
Screen Target



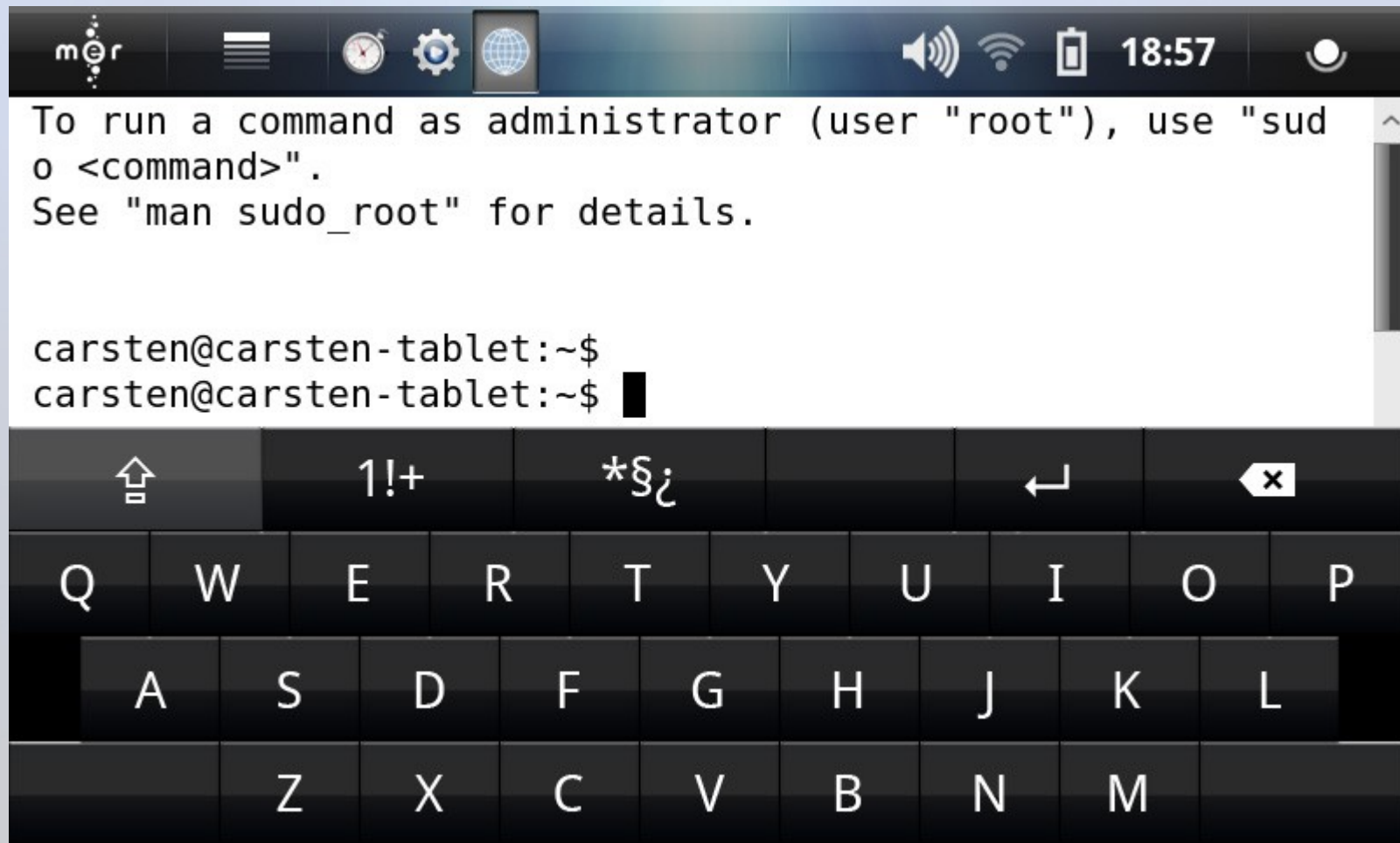
Screen Target



Screen Target - Rotation



Screen Target



Screen Target



The UI Future.... Qt

Nokia announced Gtk would be replaced in the upcoming Harmattan release.



Mer has already begun to look at Qt based UI

Touch enhancements – kinetic/finger-scrolling

3D Acceleration – OpenGL

Commercial / Open Interface

Why Closed?

- Brand / Differentiation
- IPR
- Security
- Third party



Commercial / Open Interface

Why Open?

- Leverage community
- Permit innovation
- Security
- Reduce costs



Commercial / Open Interface

- Examples
 - DSME – (battery) protocol opened up
 - GPS – driver & library
 - DSP – protocol documented
 - wifi/bt firmware
 - CAL access
 - Hardware timer libraries
 - Icons / Themes
 - OpenGL drivers – Nokia investigating actively



Vendor Social Contract

Mer is open to any vendor. We suggest :

- No tivoisation
- Open source kernel modules
- Redistribution of firmware and differentiation



Mer – Reaching Out

Additional device support :



SmartDevices (SmartQ5/7) published their kernel and bootloader

Hope Mer will be used in a future device firmware

Design Issues

- Hardware abstraction layer for sensors/input
 - Ambient light
 - HW Key press (power, zoom etc)
 - Event Handling – dbus
 - Considering OHM & GC
- Qt vs Gtk
- Input method



Mer as Midstream

Our role as a midstream as well as an end-distribution

Encourage others to join and share processes and integration.

Deliberately provide distro-neutral patches. packages handle distributed development, communication, processes, packaging and build management.



Ubuntu MID

Ubuntu MID team working with us to make Mer their destination distro.



Mer... How?



SCRUM-like sprints: 3 weeks hacking; 1 week testing then release.

Mer... Communicate?



Communicate:

Open development, encouraging team awareness through microblogging and, heavily, irc

freenode #mer

Mer... Communicate?



Manage:

Flat management structure of volunteer mentors. Currently 40+ participants off-and-on.

How We Develop

Tasks put up on Sprint list

'Taken' by someone



Tracked lightly with notes and progress

OBS supports individual projects

How We Build



- Standard Debian / Ubuntu packaging
- OBS Build Farm
 - Source → Binary → Package → Repository
- Fully emulated ARM environment – qemu

The Code

OBS – <https://build.opensuse.org>

DVCS – <http://gitorious.org>



Full, step-by-step guide to developing using our build tools and 'SDK'/Builder:

<http://wiki.maemo.org/Mer/Build>

Conclusion

- Opening a broad range of devices
- Pragmatic and Friendly Approach
- Real Problems - Real Answers
- Established Community



Conclusion

Come on in



the water's lovely!

Conclusion

Come on in

<http://wiki.maemo.org/Mer>



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