



Open Source Development for Linux Based Mobile Devices with Qtopia and Greenphone

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08 | 07



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INTRODUCTION

Trolltech, products, community, customers

- ⏻ Founded 1994
- ⏻ >200 employees world-wide (Norway, Germany, USA, Australia, China)
- ⏻ Qt – C++ library for GUI (and more) development
- ⏻ Qtopia – Qt-based embedded application platform
- ⏻ Jambi – Qt bindings for Java

- ⏻ KDE – largest Open Source projects using Qt
- ⏻ Numerous commercial customers, e.g. Google, Adobe, Skype

Qtopia BY TROLLTECH.
ONE PLATFORM. NO LIMITS.

QTOPIA

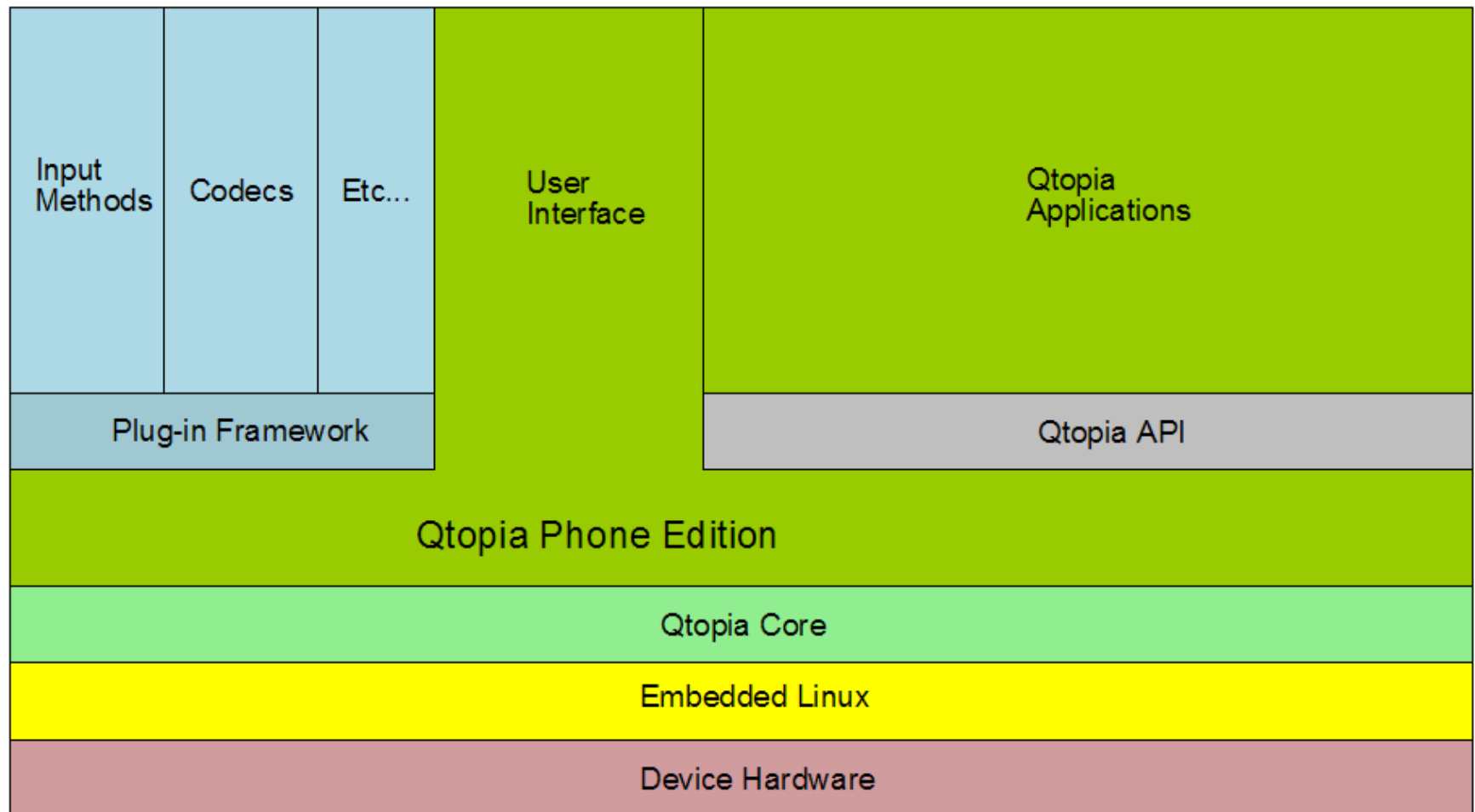
What that is...

- ⏻ Application platform for embedded devices, current focus on mobile phones
- ⏻ Introduced in 2001
- ⏻ Currently in version 4.2

- ⏻ Uses Qt in the form of “Qtopia Core” - former “Qt/e”
- ⏻ “Qtopia Core” = “Qt” - “some classes” + “frame buffer”
- ⏻ “Qtopia Platform” = “Qtopia Core” + “middle ware”
- ⏻ “Qtopia Phone Edition” = “Qtopia Platform” + applications

QTOPIA

Main building blocks of the Phone Edition



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QTOPIA

in Open Source

- ⏻ First version in Qtopia 2
- ⏻ “Opie” community project
- ⏻ New start for Trolltech in fall 2006 – Qtopia 4 GPL release and Greenphone introduction
- ⏻ Beginning 2007 – second GPL release – ver. 4.2.2
- ⏻ Working more with community
- ⏻ More to come, stay tuned...

GREENPHONE



Found by Google at www.jetsetmodern.com. Very nice!

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GREENPHONE

The real one - key hardware features

- ⏻ “candy bar” form factor
- ⏻ Intel/Marvell XScale PXA270, 312MHz
- ⏻ 64MB RAM, 128MB flash
- ⏻ Broadcom 2121 GSM/GPRS modem
- ⏻ Tri-band radio
- ⏻ QVGA color display with touchscreen support
- ⏻ Mini-USB port (with charging)
- ⏻ MiniSD card slot
- ⏻ Bluetooth
- ⏻ 1.3 MP camera



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GREENPHONE

some insides

- ⌚ Uses DiskOnChip IC from M-Systems (Sandisk), initialized in the bootloader
- ⌚ Can be flashed via USB or mini-SD
- ⌚ Flashing over miniSD is automated (for cases the system does not boot)
- ⌚ Supports SSH, Samba, NFS, FTP
- ⌚ Connected to the host via Ethernet-over-USB

- ⌚ 2.4 kernel
- ⌚ Root FS and kernel modules are available from trolltech.com
- ⌚ The toolchain is in the SDK

GREENPHONE

Why did we do it to you?!

- ⌚ Facilitate application development in combination with SDK
- ⌚ Possibility to test on a real device, inside of Trolltech development too!
- ⌚ Perfect for rapid prototyping and some proof-of-concept
- ⌚ Open-source and commercial developer ecosystem

GREENPHONE

Qtopia running on a device

- ⏻ Runs as an application on top of Linux or other OS
- ⏻ About 34MB uncompressed flash space (15MB in CRAMFS), can be even less with “single exec”
- ⏻ At least 32MB RAM and 200MHz ARM
- ⏻ Is capable to be configured to run on read-only file systems, but still needs a writable partition
- ⏻ Usually started at the end of the boot process, like a desktop on PC
- ⏻ At runtime is comparable with desktop, but still has several specifics, e.g. IPC, content databases, application startup

SDK

Qtopia packages and SDK

The development environment consists of the SDK and a source code package

- 🔌 SDK is available as an VMware image
- 🔌 Debian based Linux with KDE
- 🔌 SDK contains all needed tools and docs pre-installed:
- 🔌 **/usr/local/arm-linux**
ARM Crosscompiler (g++)
- 🔌 **/opt/Qtopia**
Qtopia (source, headers, binaries)
- 🔌 **/opt/Qtopia/SDK/scripts, ./extras**
Useful scripts and default flash images
- 🔌 **/home**
Empty drive for your files :-)

SDK

Using it...

Enough talking!

A demo!

BUILDING QTOPIA

with the open source package

- ⏻ Copy the package to SDK, unpack
- ⏻ Use shadow builds!
- ⏻ Create a build directory and call configure from there
- ⏻ Default options configure a standard build for x86
- ⏻ `make; make install`
- ⏻ Create a directory for a Greenphone build, use `-device greenphone`, and repeat the make step before
- ⏻ You now have four binary builds in the SDK: pre-installed one for x86 and Greenphone in `/opt` and from Open Source Package in `/devel`

YOUR APPLICATION

integrating it into the image

- ⏻ Make sure your environment points to the right build
- ⏻ `qtopiamake; make; make install`
- ⏻ `make install` moves binary files to the image folder
- ⏻ Just recreate the image and update the device

COMING UP

next versions

- ⚡ Qtopia 4.3 gets come “cleaning” and more features:
 - ⚡ Performance and UI improvements
 - ⚡ More API documentation
 - ⚡ more Bluetooth profiles and usability improvements
 - ⚡ SIM toolkit enhancements
 - ⚡ audio policy management
 - ⚡ GStreamer integration
 - ⚡ user selectable font sizes
- ⚡ Provide incremental updates of the SDK
- ⚡ Support installing SDK parts outside VMware
- ⚡ More cool news to come!

COMING UP

other related activities

- ⏻ Qtopia Greenphone Developer Challenge
- ⏻ Working to renew the community portal
- ⏻ Partner program (currently >150)
- ⏻ Greensuite Initiative – integrating partner technologies on Qtopia and Greenphone

RESOURCES AND LINKS

- 🔌 Qtopia and Greenphone - <http://www.trolltech.com/products/qtopia> incl. sections for Open Source
- 🔌 Qtopia Component Matrix - <http://doc.trolltech.com/qtopia4.2/qtopia-components.htm>
- 🔌 Current community site - <http://www.qtopia.net>
- 🔌 Greenphone web shop - <http://www.shoptrolltech.com/>
- 🔌 Qtopia Greenphone Developer Challenge - <http://www.trolltech.com/developer/tt/gpdevchallenge>
- 🔌 Partnering page - <http://www.trolltech.com/partners>