Openmoko

Development environment

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2008/09

Outline

- Introduction
- 2007.2
- 2008.8
- Development
- Sample/Demo

Introduction

Introduction

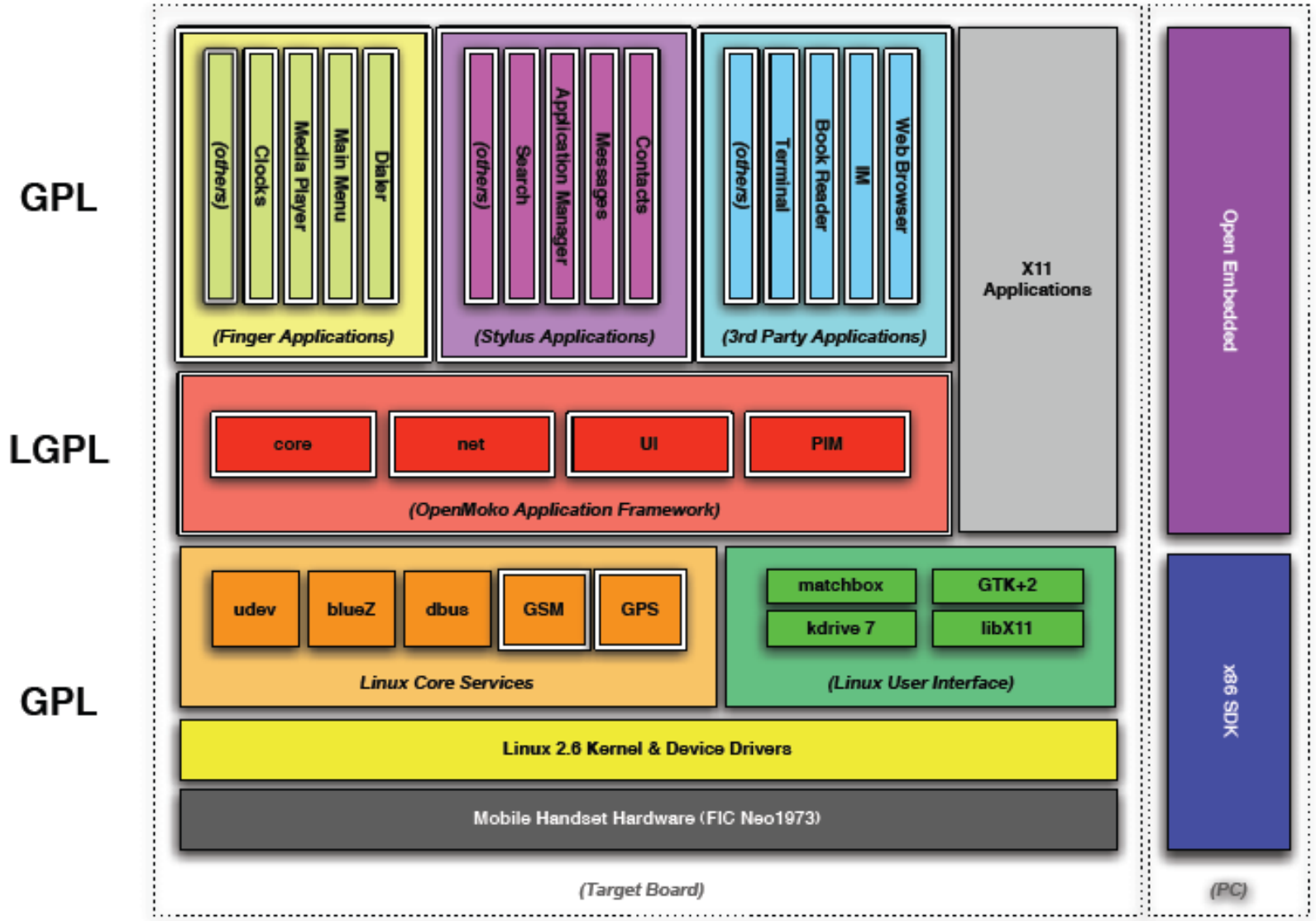
- Openmoko development
  - GTK
  - Om2008.8 (Qt/x11)
  - FSO (python)
  - Others
- Community Image
  - Debian
  - Gentoo
  - Qtopia
  - Others

Popular Distro

- Current
  - GTK (2007.2)
    - http://downloads.openmoko.org/releases/Om2008.4/
  - QT/X11 (ASU)
    - http://downloads.openmoko.org/releases/Om2008.8-update/
  - *Qtopia
    - http://www.qtopia.net/modules/mydownloads/singlefile.php?lid=83
  - FSO
    - http://wiki.openmoko.org/wiki/FSO
  - *Debian
    - http://wiki.debian.org/DebianOnFreeRunner
- Others

2007.2

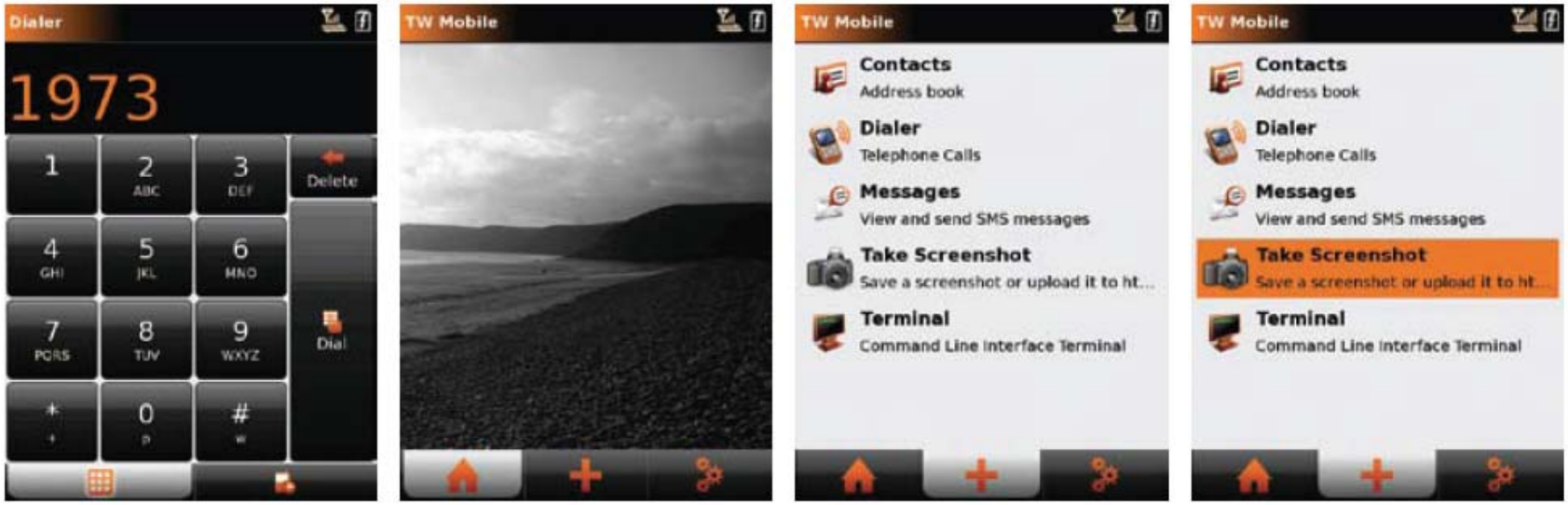
2007.2


GPL
LGPL
GPL
(others)
Clocks
Media Player
Main Menu
Dialer
(Finger Applications)
(others)
Search
Application Manager
Messages
Contacts
(Stylus Applications)
(others)
Terminal
Book Reader
IM
Web Browser
(3rd Party Applications)
X11 Applications
core
net
UI
PIM
(OpenMoko Application Framework)
udev
blueZ
dbus
GSM
GPS
Linux Core Services
matchbox
GTK+2
kdrive 7
libX11
(Linux User Interface)
Linux 2.6 Kernel & Device Drivers
Mobile Handset Hardware (FIC Neo1973)
(Target Board)
Open Embedded
x86 SDK
(PC)

2007.2

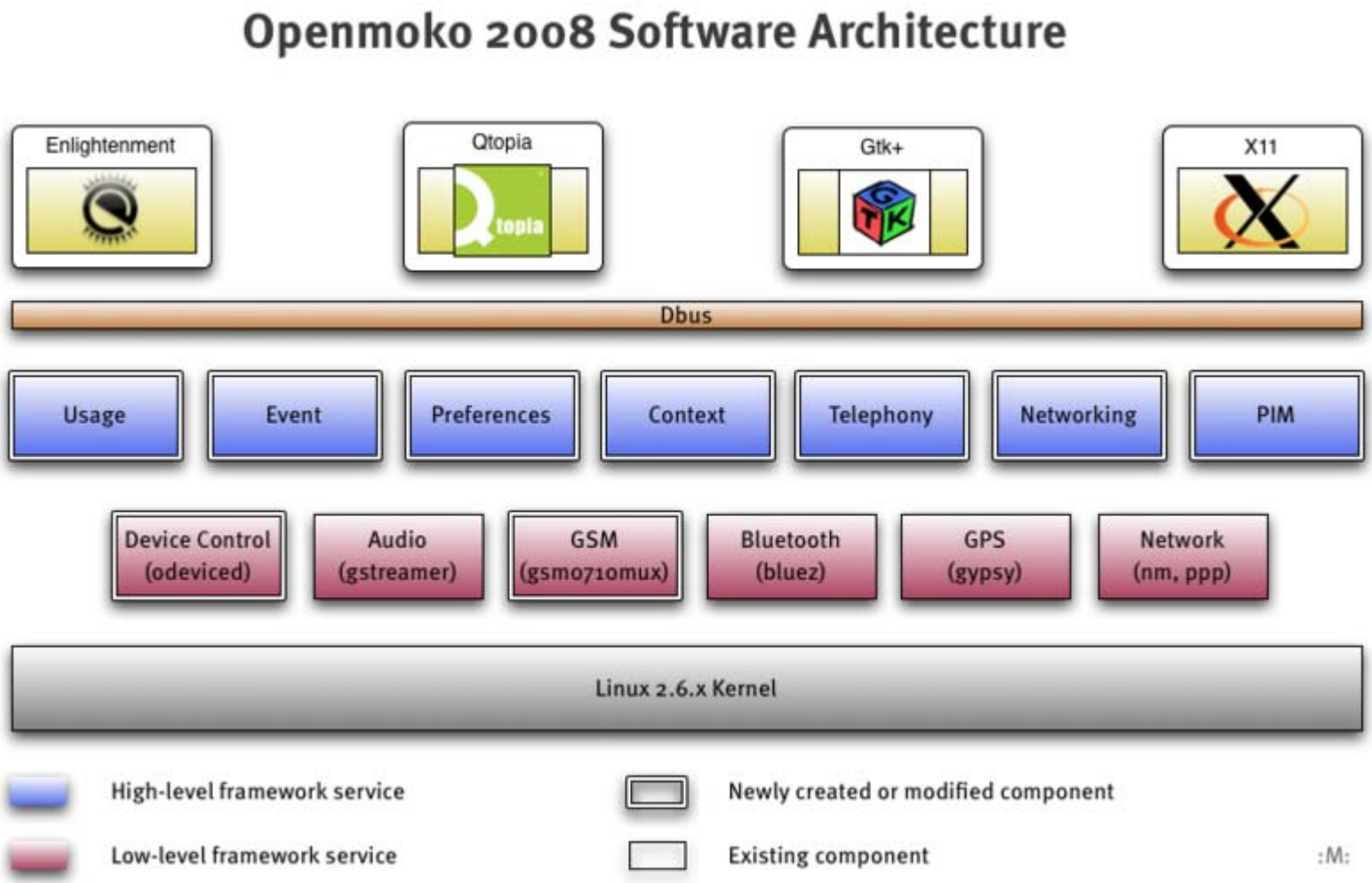
- OM2007.2
  - same foundation as OM2007.1
  - leaner
  - cryptic
  - GTK based
  - Migrated to 2008.8 and FSO

GTK screenshot



2008.8

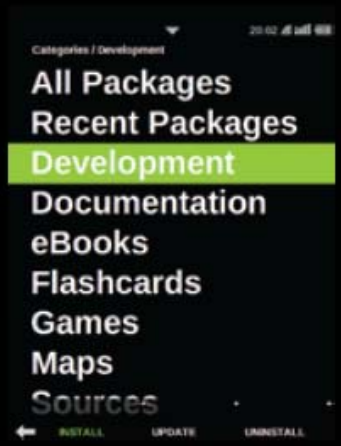
Architecture

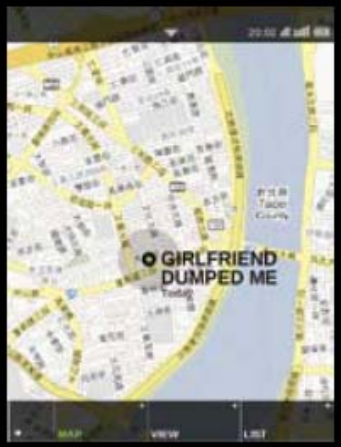


ASU

- Qtopia-based + X11
  - Mature "standard" applications (from Qtopia) plus our own goodies (built around EFL, Enlightenment Foundation Libraries)
  - "Illume" (Enlightenment module: Application launcher, keyboard, applets, etc.)
- Application
  - Installer (opkg)
  - "Splinter" (GPS maps and annotations - POI)
  - Setting (configuration - suspend time, change ring profiles, select Wifi)

ASU screenshot

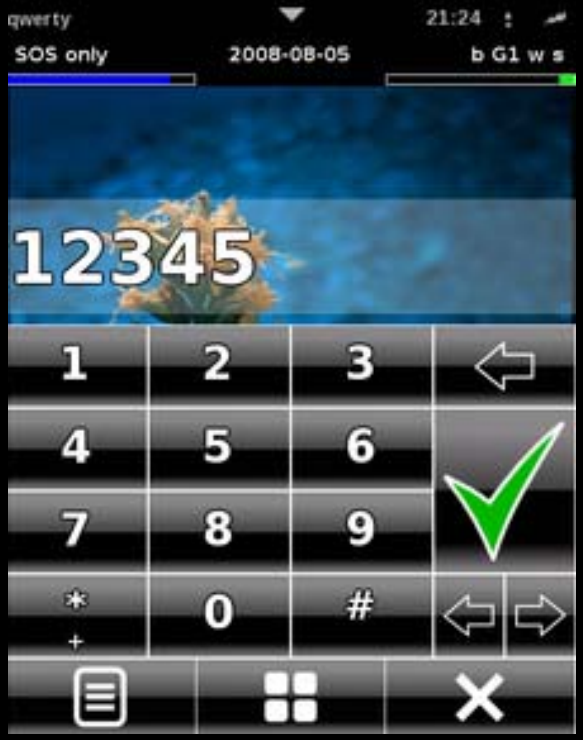




FSO

- FSO (@ milestone 3 now)
  - Not a GUI per se but middleware/framework (hw abstraction, GSM, GPS,PIM services, etc.)
  - Dbus-based
  - Proof-of-concept EFL-based UI on top of it (might get scrapped)
  - Language-agnostic (as long as you speak dbus)
  - Basis for future development
  - Python is recommended language for GUI apps
- Localtion
  - http://downloads.openmoko.org/framework/milestone3/

FSO screenshot



Development

How-to start?

1. What is your needs
2. Check wiki
3. Ask question in community
4. Select images
5. Install toolchain or mokomakefile
6. Start development
7. Join community, find answer by yourself

Development Resources

- General
  - wiki www.openmoko.org
- Shop
  - www.openmoko.com
- Mailing lists
  - http://lists.openmoko.org/mailman/listinfo/
- Sources
  - git.openmoko.org
  - svn.openmoko.org
- Schematics/mechanical CAD files
  - downloads.openmoko.org
- Production test
  - git.openmoko.org

Firmware Update

- DFU-util
  - Device Firmware Update (USB standard implementation)
- Install

  svn co http://svn.openmoko.org/trunk/src/host/dfu-util/

  cd dfu-util

  ./autogen.sh

  ./configure

  Make
- Boot from SD card
  - http://wiki.openmoko.org/wiki/Booting_from_SD

Partitions

- GTA02 have following partitions
  - U-boot (u-boot)
  - U-boot environment (u-boot_env)
  - Kernel (kernel)
  - Splash
  - Factory
  - Rootfs
- Command
  - ./dfu-util -a 1 -R -D /path/to/openmoko-devel-image.jffs2
  - ./dfu-util -a u-boot -R -D /path/to/openmoko-devel-image.jffs2

Toolchain

- Wiki
  - http://wiki.openmoko.org/wiki/Toolchain
- How to install toolchain
  - Put in the /usr/local/openmoko
- Meta toolchain
  - More flexible
  - Small footprint

MakeFile

- Function
  - Automatic download all sources
  - Automatic download required tools
- Mokomakefile
  - http://wiki.openmoko.org/wiki/MokoMakefile
- Others
  - fsomakefile

U-boot

- Download Source
  - git clone git://git.openmoko.org/git/u-boot.git
- Toolchian
  - http://wiki.openmoko.org/wiki/Toolchain

make ARCH=arm CROSS_COMPILE=/usr/local/openmoko/arm/bin/arm-angstrom-linux-gnueabi- u-boot

Kernel

- Download source
  - git clone git://git.openmoko.org/git/kernel.git linux-2.6
- Tree
  - Development tree
  - Stable tree
  - Function specific tree
- Build
  - git clone git://git.openmoko.org/git/kernel.git linux-2.6
  - cd linux-2.6
  - git checkout -b mystable origin/stable
  - cp defconfig-gta02 .config
  - ./build
- make ARCH=arm CROSS_COMPILE=/usr/local/openmoko/arm/bin/arm-angstrom-linux-gnueabi- uImage

QEMU

- Function
  - Work without device
  - Accelerate development
  - Good for high level development
- Install
  - Install from Mokomakefile

Application

- Source
  - http://downloads.openmoko.org/sources/
- Development process
  - Download proper image
  - Select language RAD tool
  - Deployment

Samples/Demo

Openmoko Sample

- Location
  - http://wiki.openmoko.org/wiki/Mokomakefile

  cp -r /usr/local/openmoko/source/openmoko-sample2 ~/
- Remember to set the proper environment variables (again with "sh" or "bash") for openmoko:

  . /usr/local/openmoko/arm/setup-env
  om-conf openmoko-sample2

- Optionally now you can modify the source code in openmoko-sample2/src. Before the next step, go into the sample directory.

Openmoko Sample

```
cd openmoko-sample2
```

- If you are using an older version of the toolchain, you may have to create the makefile by running "./autogen.sh". Otherwise, to build the application from the source code just type:

```
Make
```

- If there are errors (i.e. "You need to install gnome-common from the GNOME CVS") deal with them. Also see "Troubleshooting" section at the end of this page for known issues.
- If you want to install this project on host for staging usage later, a shared library, for example, you can do the following to install it into a given configured prefix.

```
om-conf --prefix=/usr/local/openmoko openmoko-sample2
cd openmoko-sample2
make install
```

Python

```
import etk

#create a button (not yet on any window)
b = etk.Button(label="Hello")

#create a (nonvisible) window and put the button on the window
w = etk.Window(title="Hello", child=b)

#create a silly callback function
def hello(target):
    print 'Hello World'
    etk.main_quit()

#make the button call the callback when pressed
b.on_clicked(hello)

#make the window display
w.show_all()

#start processing screen events
etk.main()
```

Now, “Free Your Phone.”

Thanks for Your Time.