



openmoko

Openmoko Linux 2008

開放手機新體驗

台北科技大學 資訊工程系

2008-10-22, 15:30 ~ 16:45

Jollen Chen <jollen@openmoko.com>

Openmoko Inc. www.openmoko.com

Openmoko 開放源碼行動電話領導商



Openmoko 專案

授權：以 LGPL/GPL v2 授權釋出

平臺：發展一個基於 Linux 的開放手機平臺

社群：Openmoko 開發者社群、於西方具有相當高的知名度

教育研究：開放源始碼適合教育與研究

Subject	Sender	Date
Re: Congratulations Harald!	Kevin Dean	2008/3/22 12:15 AM
Re: Congratulations Harald!	Joe Pfeiffer	2008/3/21 11:57 PM
Re: Price of the Freerunner published?	Lally Singh	2008/3/21 11:32 PM
Re: Price of the Freerunner published?	Stroller	2008/3/21 11:12 PM
Re: Price of the Freerunner published?	Gabriel Ambuehl	2008/3/21 9:35 PM
Re: Congratulations Harald!	Torfinn Ingolfsen	2008/3/21 8:50 PM
Re: Price of the Freerunner published?	Peter Trapp	2008/3/21 8:49 PM
Re: Congratulations Harald!	Sébastien Lorquet	2008/3/21 8:22 PM
Re: Future hardware options	Gabriel Ambuehl	2008/3/21 8:20 PM
Re: Neo Freerunner manufacturing status	geniere90@interfree.it	2008/3/21 7:01 PM
Re: Price of the Freerunner published?	Pietro "mOnt0" Montorfano	2008/3/21 6:52 PM
Re: Neo Freerunner manufacturing status	geniere90@interfree.it	2008/3/21 6:13 PM
Re: Price of the Freerunner published?	Sean Moss-Pultz	2008/3/21 6:09 PM
Re: Price of the Freerunner published?	Andy Powell	2008/3/21 6:01 PM
Re: Price of the Freerunner published?	ramsesoriginal	2008/3/21 5:17 PM
Congratulations Harald!	Sean Moss-Pultz	2008/3/21 3:16 PM
Re: Price of the Freerunner published?	Lowell Higley	2008/3/21 2:58 PM
Re: freerunner - get it over trisoft	Carlo E. Prelz	2008/3/21 2:53 PM
Re: freerunner - get it over trisoft	Stroller	2008/3/21 1:04 PM
Re: ㄅㄤ ㄉㄤㄱㄱㄱ ～ ㄅㄤ ㄉㄤㄱㄱㄱ	SEOLJIGL	2008/3/15 1:04 PM
Re: ㄅㄤ ㄉㄤㄱㄱ ～ ㄅㄤ ㄉㄤㄱㄱ	Carlo E. Prelz	2008/3/15 1:23 PM
Re: ㄅㄤ ㄉㄤㄱㄱ ～ ㄅㄤ ㄉㄤㄱㄱ	LOWELL HIGLEY	2008/3/15 1:28 PM





Android - An Open Handset Alliance Project

The Open Handset Alliance, a group of more than 30 technology and mobile companies, is developing Android: the first complete, open, and free mobile platform. To help developers get started developing new applications, we're offering an early look at the [Android Software Development Kit](#).



Open

Android allows you to access core mobile device functionality through standard API calls.



All applications are equal

Android does not differentiate between the phone's basic and third-party applications -- even the dialer or home screen can be replaced.



Breaking down boundaries

Combine information from the web with data on the phone -- such as contacts or geographic location -- to create new user experiences.



Fast & easy development

The SDK contains what you need to build and run Android applications, including a true device emulator and advanced debugging tools.

Android Blog
Android Blog
[Android SDK m5-rc14 now available](#)
Feb 13, 2008 - Posted by Jason Chen, Developer Advocate

On behalf of the entire Android team, I'm happy to let you know that an updated version of the Android SDK ...

Community
User Group
[Default value of integer in sqlite is 0?](#)
Feb 17, 2008 - Posted by maomao

Default value of integer in sqlite is 0? why not null? sample cod: package com.google.dbtest; import ...

Getting Started

1. [Learn about Android](#)
2. [Download the SDK](#)
3. [Join the community](#). Participate in our discussion group through email or the web.



The Android Developer Challenge will award \$10 million to developers who build great apps for Android.
[Learn more!](#)

Featured Videos



openmoko
obeuwoko



圖片來源: <http://www.apple.com/iphone/features/index.html#phone>

開放平臺：技術開放、可自由修改

互動：並非裝置本身，而是與使用者的互動。

社群：開發者社群、使用者社群

symbian

Symbian OS
the open mobile
operating system

Acceler



Text

2008.06.24: symbian 也開放了

新手機時代

- 2007 年 iPhone 與 Google Android 帶起「新的手機使用概念」以及「開放式的手機平臺」的革命。
- 提供 UI 與服務開發的環境。
- Android 與 iPhone 都開始提供 SDK。Openmoko 也不缺席。
- Symbian 也加入了。

Neo FreeRunner

Neo FreeRunner 正式在 2008 CES 發佈

延續第一代產品「Neo 1973」的新版本

2008.07.04 量產上市

Neo FreeRunner 是開源手機概念的另外一個實作：手機不預載任何的應用軟體，出廠時只預載一個安裝器（installer），當使用者拿到手機後，可以透過安裝器的選單安裝「自己想要、也會用到」的應用程式。





openmoko

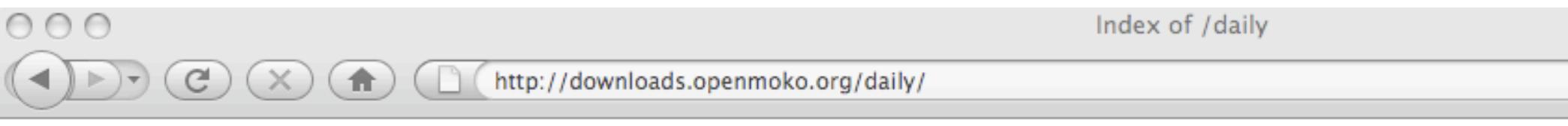
Neo FreeRunner w/ Om 2007.2

- Samsung S3C2442 with 500MHz
- 記憶體升級為 128MB
- NAND flash 升級為 256MB
- 加入 802.11b/g WiFi 硬體
- 二個 3D accelerometer
- SMedia Glam3662 2D/3D 行動繪圖晶片
- 支援 850MHz 頻帶
- 還有 Motion Sensor



每日更新 rootfs 與 kernel

- Openmoko 網站提供每天最新的 root filesystem & kernel



Index of /daily

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
Parent Directory		-	
 dfu-util	24-Sep-2008 01:52	579K	
 gta01bv4-u-boot.bin	24-Sep-2008 01:52	214K	
 gta02v5 and up-u-boot.bin	24-Sep-2008 01:52	211K	
 testing-om-gta01-20080924.rootfs.jffs2	24-Sep-2008 01:52	34M	
 testing-om-gta01-20080924.rootfs.tar.gz	24-Sep-2008 01:52	28M	
 testing-om-gta01-20080924.uImage.bin	24-Sep-2008 01:52	1.7M	

qemu-neo1973

QEMU 是一個可以模擬 x86、x86_64、ARM、SPARC、SPARC64、PowerPC、PowerPC64、MIPS、m68k 與 SH-4 處理器的 open source 軟體。簡單說，QEMU 就是一套虛擬機器 (virtual machine) 的軟體。

qemu-neo1973 是由 Openmoko 基於 qemu 所發展的手機模擬器，支援 GSM modem 的模擬功能。



Open Source 是一種軟
體發展模式 (Software
Design Methodology)

Openmoko Openness

Open Source

Open Hardware

Open Design

Open Learning

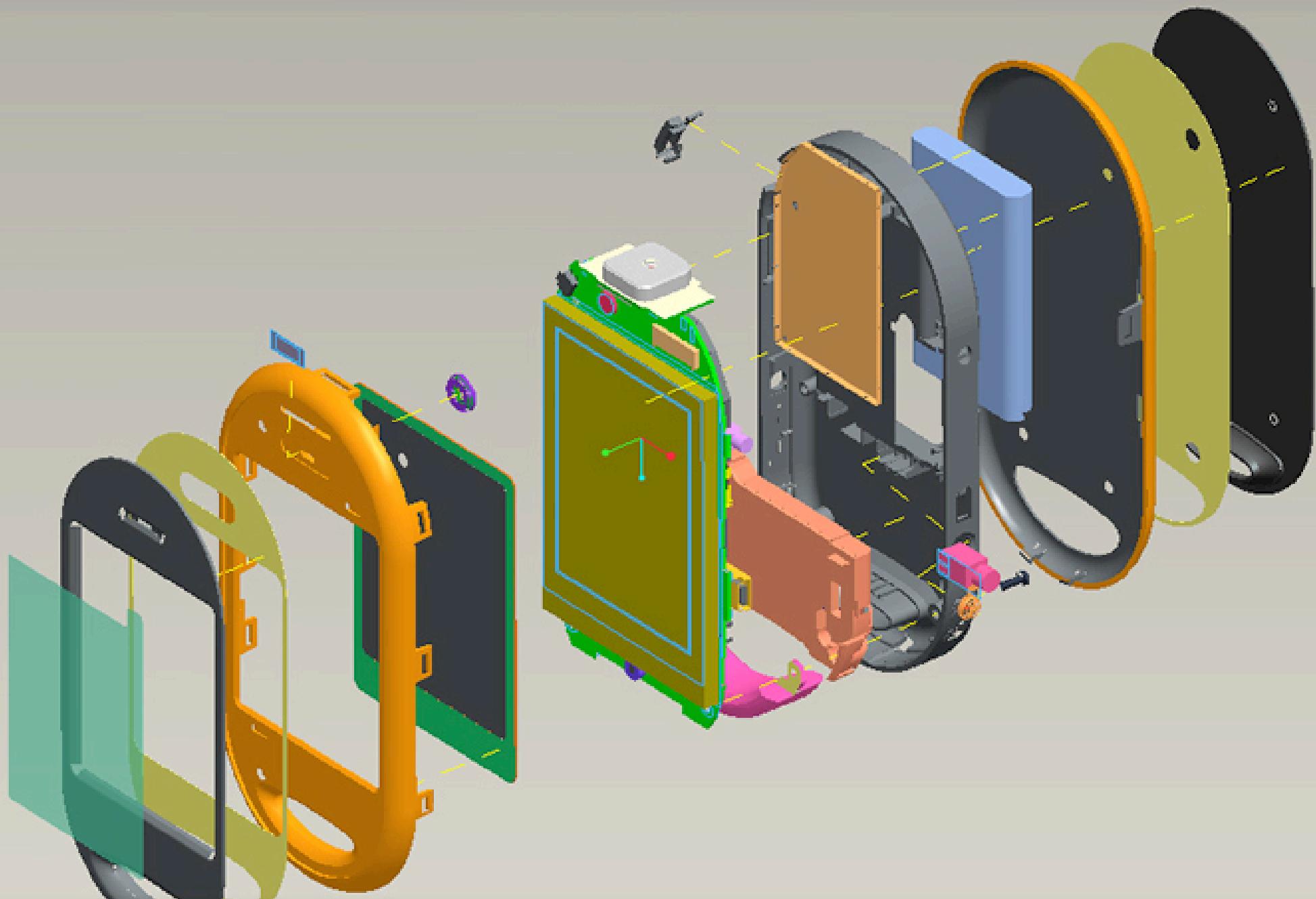


openmoko

Hardware Spec. Open.

Component	Name	Openness
CPU	Samsung S3C2442	Docs available after free registration
NAND	Samsung	Standard NAND command-set
GSM modem	TI Calypso	Speaks standard protocols
Wifi	Atheros AR6k	GPL drivers available
Bluetooth	Delta DFBM-CS320 Class2	Documentation available
GPS	U-blox ANTARIS 4 ATR0635	Serial protocol documentation available
Graphic accelerator	Smedia 3362	Documentation available under NDA, unlike previously announced
LCD	Toshiba TFT LCD chipset	GPL driver available
Sound codec	Wolfson Codec	Datasheet available
Sound amplifier	National Semiconductor LM4857	Datasheet available
Power management	Philips PCF50606	Documentation available
Battery	Proprietary	Schematic available

機構設計. Open.



電路圖. Open.

openmoko.com | Download



<http://www.openmoko.com/download-schematics.html>

PRODUCTS

DOWNLOAD / SCHEMATICS

OPPORTUNITIES

CONTRIBUTE

STORE



Om 2008

Qtopen

CAD Files

Schematics

Neo Schematics

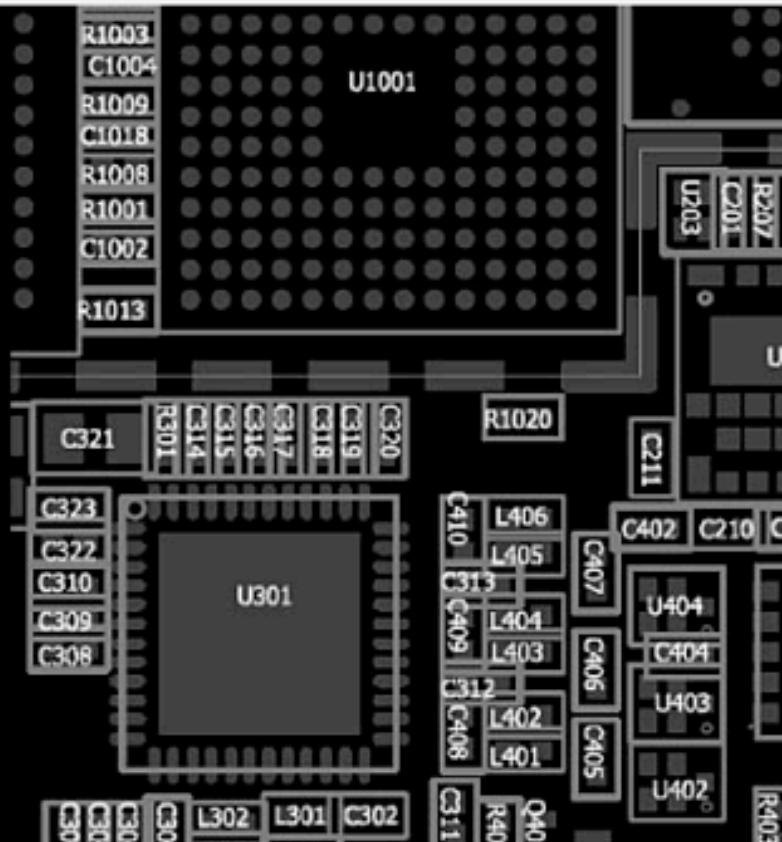
Developers who want understand the electrical design, assist in low level debugging and potentially modify their Neo's can now download the schematics from Openmoko.

NEO FREERUNNER

Download complete schematics and component placement diagrams for the Neo FreeRunner.

NEO 1973

Download complete schematics and component placement diagrams for the Neo 1973.





Openmoko Education

Openmoko 能做什麼？

- Neo FreeRunner讓學生能透過Openmoko提供的開放環境，儘情發揮創意，並開發自己的行動通訊應用程式。
- 使用Neo FreeRunner做為行動通訊課程或嵌入式系統的實驗教具。
- 歡迎加入清華大學的Openmoko OpenLab，分享教材，與Openmoko一起站上世界舞臺。
- Neo FreeRunner有完整的SDK與source code。在最先進的Mobile Application Framework上開發行動通訊程式，並進行研究。



行動通訊 開放學習. Open.



LinuxDevices.com

[Home](#) | [News](#) | [Articles](#) | [Polls](#) | [Forum](#)

Keywords:

Match: All keywords

Open source phone goes to college

Sep. 15, 2008



Openmoko has launched an educational program at National Tsing Hua University of Taiwan to teach students about mobile device design using its open-source mobile Linux phone, the Neo FreeRunner (pictured). The "OpenLab" is the first step in a worldwide educational outreach program, says Openmoko.

OpenLab will encourage students to develop their own projects based on Openmoko software and hardware, says Openmoko. Working with National Tsing Hua University, Openmoko has developed a curriculum for OpenLab that is being released under a creative commons share-alike license.

Openlab's first class based on the Neo FreeRunner was launched this summer by the

Press Coverage: Tsing Hua's Openmoko OpenLab

- › 2008-09-23, <校園風采錄> 清華大學資工系將與Openmoko合作 ↗ (Tsing Hua University 國立清華大學)
- › 2008-09-23, 清大將設開放手機實驗室 提供教學研究 ↗ (Tsing Hua University 國立清華大學)
- › 2008-09-15, Open source phone goes to college ↗ (LinuxDevices.com)
- › 2008-09-17, 清华大学引进了开放手机平台Openmoko课程 ↗ (自由&开源软件 FOSS)
- › 2008-09-22, 清大將設開放手機實驗室 提供教學研究 ↗ (Yahoo!奇摩新聞)
- › 2008-09-22, 清大將設開放手機實驗室 提供教學研究 ↗ (中央社)
- › 2008-09-22, 清大將設開放手機實驗室 提供教學研究 ↗ (Taiwan News Online)
- › 2008-09-22, 清大引用Openmoko資源開放式手機研發 ↗ (國立教育廣播電台 National Education Radio)
- › 2008-09-22, 清大引用Openmoko資源開放式手機研發 ↗ (Yahoo!奇摩新聞)
- › 2008-09-22, 清大将设开放手机实验室 提供教学研究 ↗ (大紀元 EpochTimes.com)
- › 2008-09-22, 清大將設開放手機實驗室 提供教學研究 ↗ (中時電子報 | 科技晚報 ChinaTimes.com)
- › 2008-09-22, オープンソース携帯電話OpenMokoが大学の授業の教材に ↗
- › 2008-09-22, 清大將設開放手機實驗室 提供教學研究 ↗ (中央日報網路版)
- › 2008-09-22, Email革命先鋒！歐米家族日記 ↗
- › 2008-09-22, 清大將設開放手機實驗室 提供教學研究 ↗ (我的E政府 www.gov.tw)
- › 2008-09-22, 清大將設開放手機實驗室 提供教學研究 ↗ (PChome 新聞)
- › 2008-09-22, 清大将设开放手机实验室 提供教学研究 ↗ (新唐人电视)
- › 2008-09-22, 清大將設開放手機實驗室 提供教學研究 ↗ (Sina 新浪新聞)
- › 2008-09-22, 清大將設開放手機實驗室 提供教學研究 ↗ (群益金融網)
- › 2008-09-22, 清大將以自由軟體手機做為教學及研究平台 ↗ (Techlife 科技生活)
- › 2008-09-22, 開放原始碼新聞網 ↗
- › 2008-09-22, 台灣立報 ↗
- › 2008-09-22, 國立交通大學電信工程學系 ↗

Openmoko-TW.net

論壇 - Openmoko 正體中文站

搜尋...

搜尋

進階搜尋

討論區首頁

vA^

問答集 註冊 登入

現在的時間是 2008年 9月 25日, 12:07

檢視沒有回覆的主題 • 檢視熱門的主題

OPENMOKO & NEO FREERUNNER

主題 文章 最後發表

 Openmoko & Neo FreeRunner 開發者 三軸加速感測器、藍芽、GPS、WiFi、觸控螢幕應用等程式開發技術討論。目前官方的 distribution 有 Om2007.2、Om2008.8、ASU、FSO，其它發展工具 opkg、openmoko-toolchain、dfu-util、qemu-neo1973、openembedded。底層部份有 gsm、kernel、driver、u-boot、xserver 與硬體等。	7	14	由 zzn 發表於 2008年 9月 19日, 23:33
 Openmoko & Neo FreeRunner 好好玩 開發心得、使用心得、Neo FreeRunner 各種應用程式、有趣應用、分享。	0	0	沒有文章
 Openmoko & Neo FreeRunner 手機課程 課程討論、教材分享。	2	3	由 jollen 發表於 2008年 9月 16日, 23:03
 Neo FreeRunner 新人報到區 有 FreeRunner 的同好可以到此區報到	2	3	由 htseng 發表於 2008年 9月 13日, 12:09

其它討論群組

主題 文章 最後發表

 一般討論區 閒話家常、關於 Openmoko 各種話題。	0	0	沒有文章
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網站事務

主題 文章 最後發表

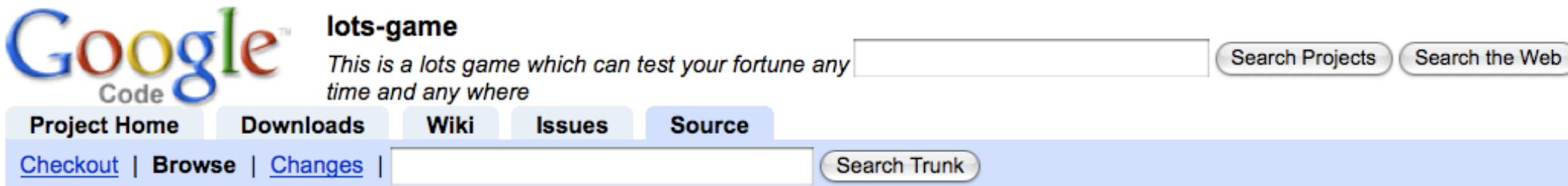
 活動資訊 研討會、社群活動、教育訓練、課程資訊。	0	0	沒有文章
 服務 資料庫、行動裝置、終端顯示、儲存装置。	0	0	服務

Openmoko Education

連絡你的指導老師

清華大學 OpenLab 邀請老師加入教材共同開發團隊

Openmoko 讓你的成果站上世界舞台



The screenshot shows the Google Code interface for the 'lots-game' project. The title 'lots-game' is displayed above a brief description: 'This is a lots game which can test your fortune any time and any where'. Below the title are several navigation links: Project Home, Downloads, Wiki, Issues, Source (which is highlighted), Checkout, Browse, and Changes. A search bar for the trunk is present, along with 'Search Projects' and 'Search the Web' buttons.

Source Path: svn/

[r1](#) [r2](#)

Directories	Filename	Size	Rev	Date	Author
svn	AUTHORS	41 bytes	r2	Aug 22, 2008	willytiger5
branches	COPYING	17.6 KB	r2	Aug 22, 2008	willytiger5
tags	ChangeLog	70 bytes	r2	Aug 22, 2008	willytiger5
trunk	INSTALL	9.2 KB	r2	Aug 22, 2008	willytiger5
	Makefile.am	433 bytes	r2	Aug 22, 2008	willytiger5

Om2008.8 於 2008.08.08 正式釋出

Dear Community,

We are proud to announce the release of Om 2008.8 for public reviewing.
It represents our current state of development over the last 6 months.
We came a long way before achieving this milestone.
Here is what you can expect:

- A stable and working phone stack realized by using Qtopia.
- A new and flexible window manager [Illume] that broadens our support for the different graphic libraries, including GTK+ and more.
- The whole system software has been reworked which leads to a very fast and reliable suspend & resume, LED control and power management.
- A graphical frontend [Installer] for package management as installing, removing or updating applications via repositories.
- Also included is an application which combines GPS and SMS [Locations] for easy sharing of locations among friends.

For detailed information about Om 2008.8 (including instructions, references and currently known issues) check out our wiki at:
http://wiki.openmoko.org/wiki/Om_2008.8

Please consider this a next step towards an open end user ready mobile platform. We are not there yet but we will continue working towards that direction. We invite you to install our latest release and give feedback:

<http://downloads.openmoko.org/releases/Om2008.8/Om2008.8.rootfs.jffs2>
<http://downloads.openmoko.org/releases/Om2008.8/Om2008.8.uImage.bin>

Soon after our release we will publish frequent snapshots of our builds to give you the possibility to follow our development and latest fixes. You can join forces with our QA team by submitting bug reports and/or patches to make the platform as robust as possible.

We are excited about this release and look forward to moving together towards upcoming milestones.

Best Regards,

Openmoko Team

Om2008.8

- Installer
- Illume
- Edje
- Theme
- Locations
- Qtopia Keyboard
- Community Repository



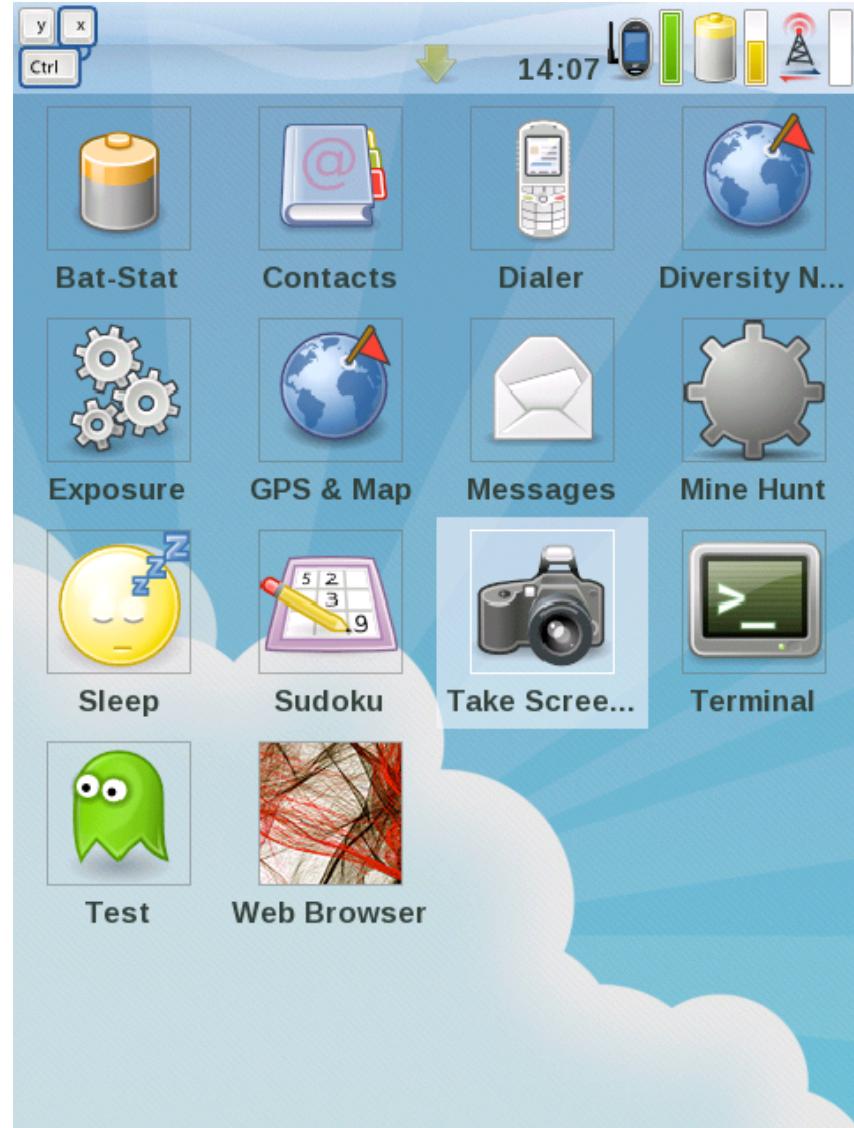
Om2008.8 介面（支援 Qtopia/EFL/GTK+）

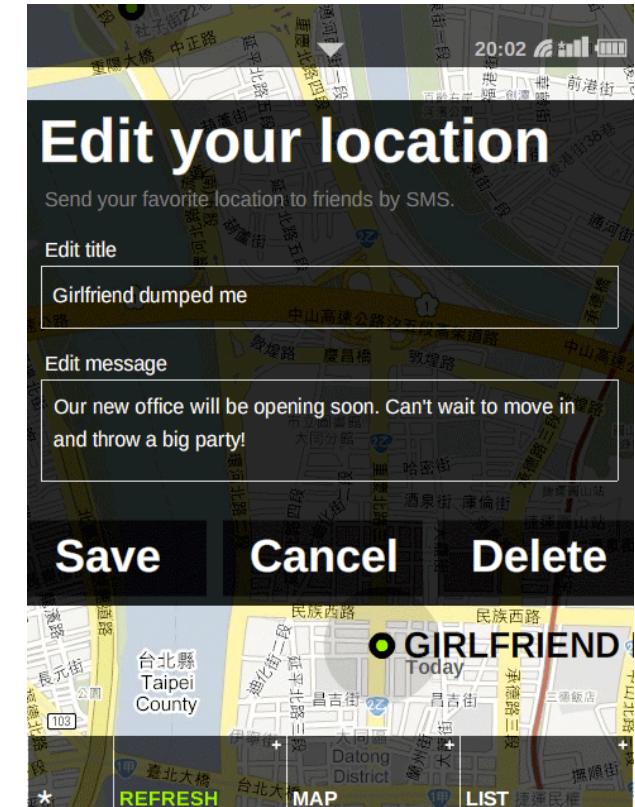
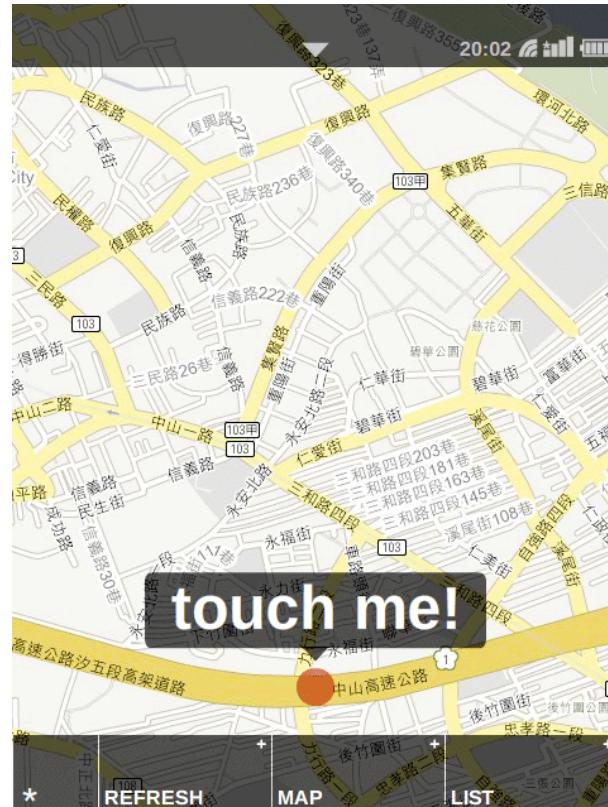
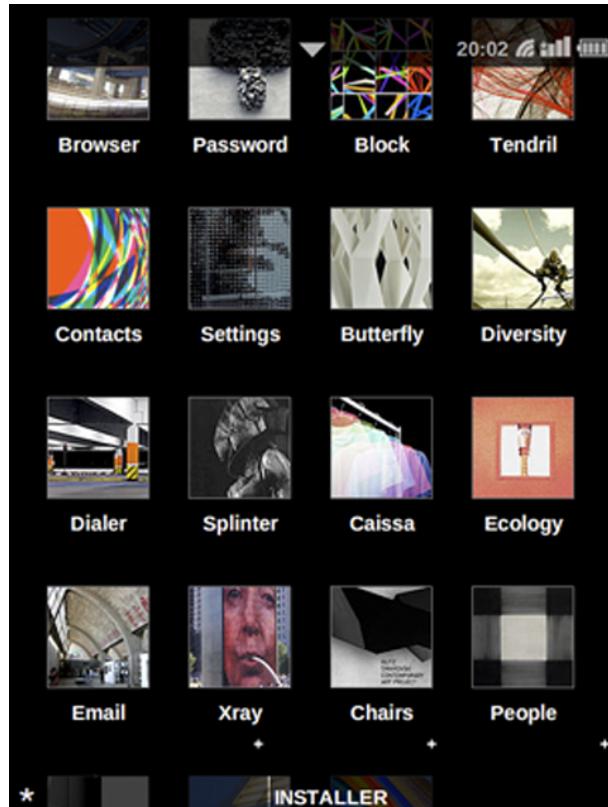
Programming FreeRunner



Edje

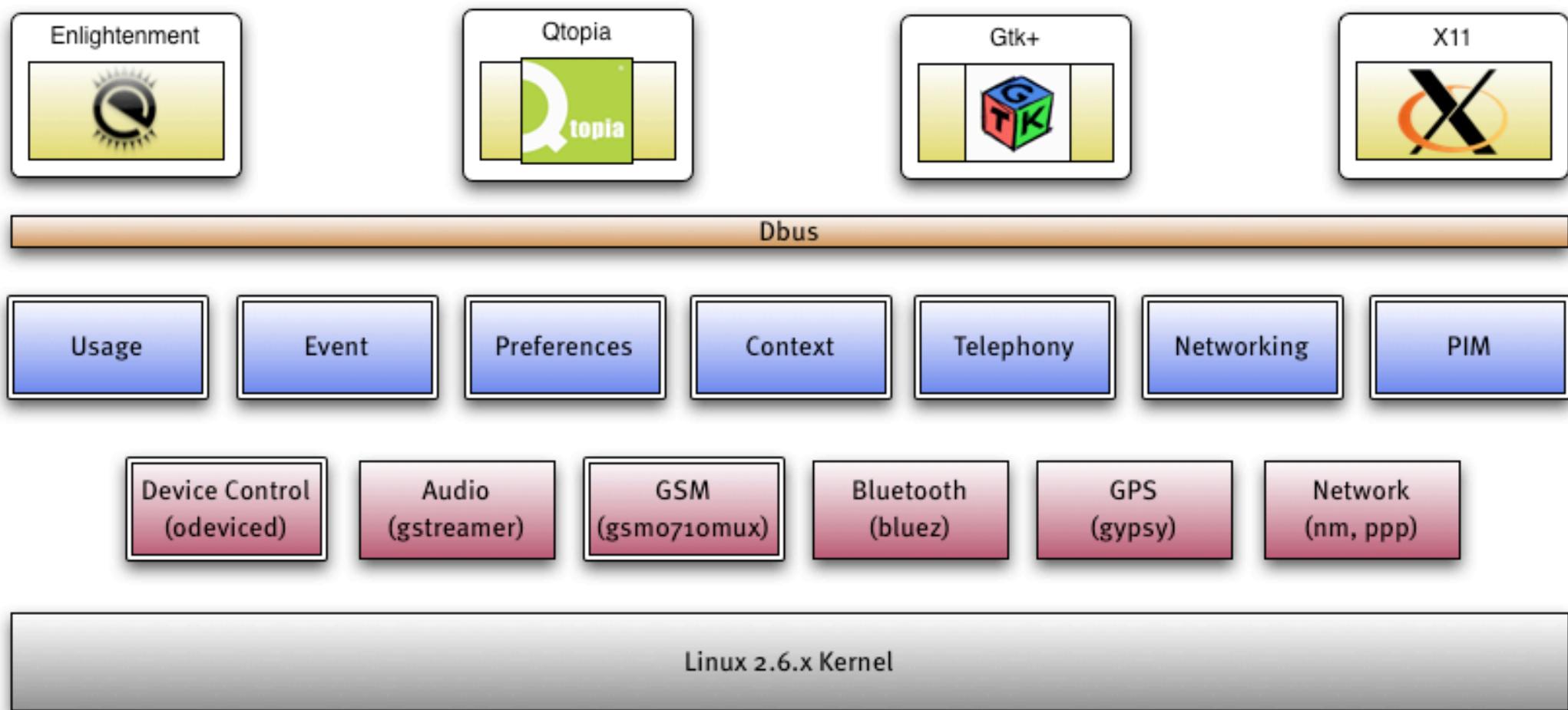
- 客製化 Neo FreeRunner 佈景主題的工具
- 搭配 Illume 視窗管理員





全新的 ASU 體驗

Openmoko 2008 Software Architecture



High-level framework service



Newly created or modified component

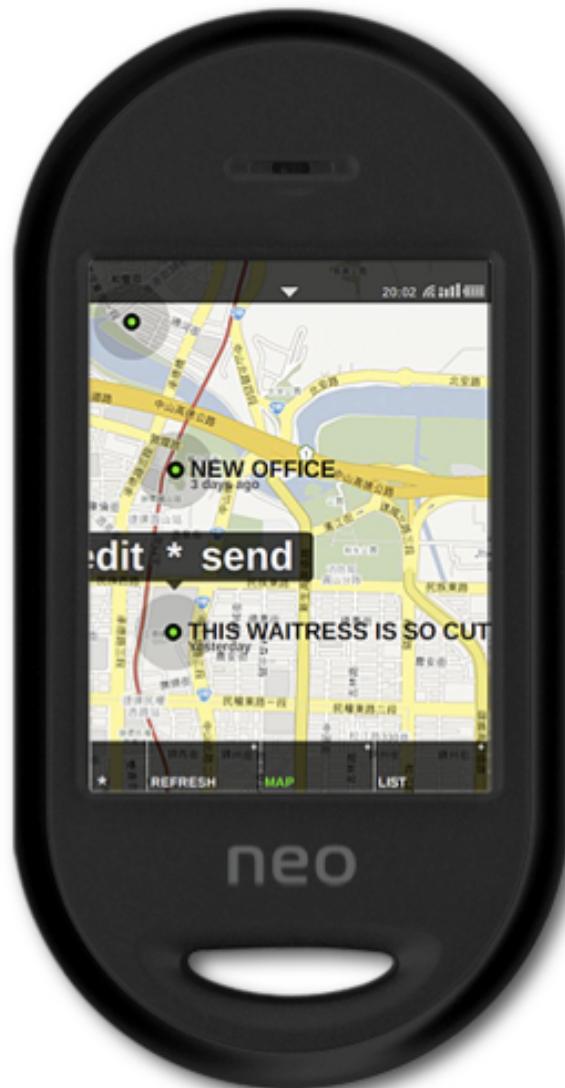


Low-level framework service



Existing component

:M:



Openmoko/EFL



Openmoko/GTK+



Openmoko/Qt



The GTK+ Project



Openmoko的Software Stack將GTK+、EFL與Qtopia整合在一起，無論使用哪一種手機UI技術，都能在Neo FreeRunner上表現。

TROLLTECH®



git tree: Om 2008

git.openmoko.org Git

http://git.openmoko.org/ Google

projects /

Project	Description	Owner	Last Change
bitbake.git	Openmoko's patched copy of ...		2 months ago summary shortlog
kernel.git	development kernel tree		31 hours ago summary shortlog
om-locations.git	Locations		6 days ago summary shortlog
openmoko.git	Openmoko's OpenEmbedded reposi ...		13 hours ago summary shortlog
processing.git	Processing 0135 with OM modifi ...		4 months ago summary shortlog
processor.git	The native library of processi ...		3 days ago summary shortlog
qi.git	bootloader for breathing Life ...		10 days ago summary shortlog
qtopia.git	Holger's qtopia repo		13 hours ago summary shortlog
system-test-suite.git	Production testing software ...		2 months ago summary shortlog
u-boot.git	development tree for U-Boot		7 weeks ago summary shortlog
xglamo.git	X driver for Glamo in GTA02		2 months ago summary shortlog
zecke/openocd.git	Unnamed repository; edit this ...		4 months ago summary shortlog
zecke/taskjuggler.git	Unnamed repository; edit this ...		2 weeks ago summary shortlog



*Programming NeoFreRunner
Om2008.8 / EFL*

實習環境。注意事項

PC 端請安裝 Ubuntu 8.04
本教材統一在此環境下示範

Ubuntu 8.04 需要額外安裝套件

```
$ sudo apt-get install gcc g++ autoconf automake binutils libtool libgl2.0-dev \
ccache libxrender-dev intltool libmokoui2-dev libgconf2-dev mtools fakeroot alien
```



實習環境。注意事項

Neo FreeRunner 開機後的預設 IP 是 192.168.0.202。請使用 USB 將手機與 PC 連接，將手機開機。手機開機完成後，將 PC 端的 USB 模擬成網路界面，並設定一個 IP，即可與手機連線。指令如下：

```
host$ sudo ifconfig usb0 192.168.0.200  
host$ ssh root@192.168.0.202      (不需密碼)
```



使用 EFL / C 開發手機軟體

- 使用 20080916 版本的 pre-built toolchain
- 安裝 EFL 開發環境至 pre-built toolchain



lots-game

- Openmoko 2008 暑假計畫成果
- 學生專案
- 使用 EFL 在 Om2008.8 開發的手機遊戲

```
$ svn checkout http://lots-game.googlecode.com/svn/trunk/ lots-game-read-only
```



更多關於 lots-game

- 結合三軸加速度感測器做應用
- 使用 openmoko-sample2 環境（修改設定）
- 安裝 EFL 開發環境、使用 pre-built toolchain 直接編譯程式
- 編譯後打包成 opkg 安裝至 FreeRunner



安裝 Library 至 Toolchain

- 使用 opkg-target 安裝套件至 pre-built toolchain

```
(ubuntu 8.04)
$ cd /usr/lib
$ sudo ln -s libcurl.so.3 libcurl.so.4
```

```
$ sudo su -
# . /usr/local/openmoko/arm/environment-setup
# opkg-target update
# opkg-target list | grep <pkg-name>
# opkg-target install <pkg-name>
```



安裝 E 開發環境

- 使用 C 與 EFL 寫程式
- 新奇的 UI 應用程式體驗
- 安裝 evas 與 etk 至 Openmoko toolchain

```
$ sudo su -  
# . /usr/local/openmoko/arm/environment-setup  
# opkg-target update  
# opkg-target install libevas-dev  
# opkg-target install libetk-dev  
# opkg-target install libts-dev  
# exit  
$
```



修改 src/Makefile.am

```
INCLUDES = -I$(top_srcdir)

AM_CPPFLAGS = \
    -DPKGDATADIR=\"$(pkgdatadir)\" \
    -DTERMINAL_LOCALE_DIR=\"\"$(prefix)/$(DATADIRNAME)/locale\"\" \
    -DDATADIR=\"\"$(datadir)\"\" -D_GNU_SOURCE

AM_CFLAGS = -Wall -pedantic -std=c99 @DEPENDENCIES_CFLAGS@

# add the name of your application
bin_PROGRAMS = game

# add the sources to compile for your application
game_SOURCES = \
    game.c \
    gs_read.c

game_LDADD = @DEPENDENCIES_LIBS@

MAINTAINERCLEANFILES = config.h.in Makefile.in
```

修改 configure.ac

```
AC_PREREQ(2.53)
AC_INIT(lots-game, 0.0.1, http://www.openmoko.org/)
AM_INIT_AUTOMAKE()
AC_CONFIG_SRCDIR(src/game.c)
AM_CONFIG_HEADER(config.h)
AM_MAINTAINER_MODE
...
dnl i18n support
GETTEXT_PACKAGE=AC_PACKAGE_NAME
AC_DEFINE_UNQUOTED(GETTEXT_PACKAGE, "$GETTEXT_PACKAGE", [Gettext package])
...
PKG_CHECK_MODULES(DEPENDENCIES, evas etk)
AC_SUBST(DEPENDENCIES)

AC_OUTPUT([
Makefile
src/Makefile
data/Makefile
po/Makefile.in
])
```

設定 Pre-Built Toolchain 環境

- 設定環境變數

```
$ . /usr/local/openmoko/arm/setup-env
```

- Pre-built toolchain 裡已經寫好環境變數設定，請直接引用。



編譯 lots-game

- 修改 openmoko-sample2 加入自己的程式
- 編譯後打包成 opk
- 須將額外資料庫（圖檔）打包至 opk 安裝到手機裡

```
$ ./autogen.sh --host=arm-linux  
$ make
```



編譯程式並打包

- 編譯後打包成 opk 格式

```
$ cd ..  
$ om-make-ipkg lots-game-read-only
```

- 使用 pre-built toolchain 所提供的 om-make-ipkg 進行打包工作
- 打包成 opk 格式就能發佈自己的套件給其他手機使用者



安裝 opk 套件至 FreeRunner

- 取得 ipk 套件後以 scp 方式安裝至手機
- 再 ssh 到手機上後以 ipkg 指令安裝套件

```
$ scp [filename] root@192.168.0.202:  
$ ssh root@192.168.0.202 opkg install [filename]
```

- 192.168.0.202 是手機開機後的預設 IP 位址
- 請自行檢查 PC 端的 IP 設定
- 重開機





取得更多與更新教材

http://wiki.openmoko.org/wiki/Main_Page/zh_tw

或 Email 至 jollen@openmoko.com 加入教材郵件名單

Openmoko Team

<http://www.openmoko.com>