Tuning An Old But Free Phone

Neo FreeRunner
from Openmoko Inc
(the successor to Neo1973)

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6.11.2010

...this presentation is intended to be positive, even though it mostly talks about problems...

Best of both worlds

Best of both worlds! Similarities between Openmoko *hardware* and...

Debian stable

- Good things come to those who... wait
- "Obsolete already when released"

Ubuntu's LTS+1 release

- Unstable
- Buggy

(disclaimer: I'm Debian Developer and Ubuntu member)

Fix, hack, fix

Hardware and software/drivers problems tuned by the Openmoko Inc (until 2009) and community (still)

Problem	Fix?
Buzzing problems @ 900MHz	GTA02 A7 from Openmoko Inc or self-made hw fix
GPS signal drop	Software (+ GTA02 A7 but not needed)
SIM card registration fails	Firmware b11
Bug #1024 ie. deep sleep bug	GTA02 A7+ by http://www.handheld-linux.com/ or self-made hw fix
Bass fix ie. headphones output	GTA02 A7++ by http://www.handheld-linux.com/ or partially with mixer settings, or self-made hw fix
Incompatibilities with SD cards	Fixed mostly in u-boot / Qi / etc
GSM/GPRS hangs with too many connections	Calypso chipset/firmware bug (replacement from Harald Welte's group one day?), chip can be rebooted. But: tc qdisc add dev ppp0 root tbf rate 7kbit latency 4500ms burst 3200
Glamo (graphics) slowness	Bus speed limited, fatal design mistake. Different approaches to help the situation 2-4-2 timings, overclocking (CPU + GPU), DMA transfers
WLAN unstability	Hacks around ar6000 driver (a driver that will never go upstream). New ar600x maybe promising.
WSOD	Über-patience by some community people in tweaking jbt (LCD panel driver) timings
Bluetooth bandwidth	Possibly unresolvable, but not much tweaked

Distributions

Openmoko Inc:s OpenEmbedded based software choices over time below:

Distribution	Toolkit and software	Fate
Om2007	GTK, a suite bought from Opened Hand, own phone daemon	Abandoned, but best they ever had GUI wise
Om2008	Qt, Trolltech's Qtopia ported to X11, Qtopia's phone daemon	Abandoned, terribly slow and buggy
Om2009	Enlightenment 17, Paroli (Python + E17), FreeSmartphone.Org daemons	Abandoned, no features but simple and fast. FSO initiative and usage theoretically a great thing.

It also fits well in the tradition of Openmoko that after several toolkit changes, finally settling down to a non-released one, nowadays in 2010 the whole FSO stack has been rewritten in Vala, a programming language that has not been released.

(I do support changing from slow Python to Vala/C, though, it's just that releases would be nice)

Distributions

Community waited too long for productization that never happened, but now:

Distribution	Toolkit and software	Fate
SHR ("Stable Hybrid Release")	Based on OE & E17/GTK/ etc., own SHR phone software, FSO daemons.	By far the most popular distribution, the only problem that there hasn't been any stable releases... and no testing release maintainers either...
Debian	Anything you want, FSO example phone software + SHR software, FSO daemons	Debian is the universal operating system and here to stay. Kernel the biggest hurdle not yet overcome to keep Openmoko support alive in the long term. Not very productized for end users.
QtMoko (Debian)	Qt Extended Improved (Qtopia), simply Debian + hacking	The most productized and stable, but own framebuffer always limits software options and starting X separately breaks most of the integration

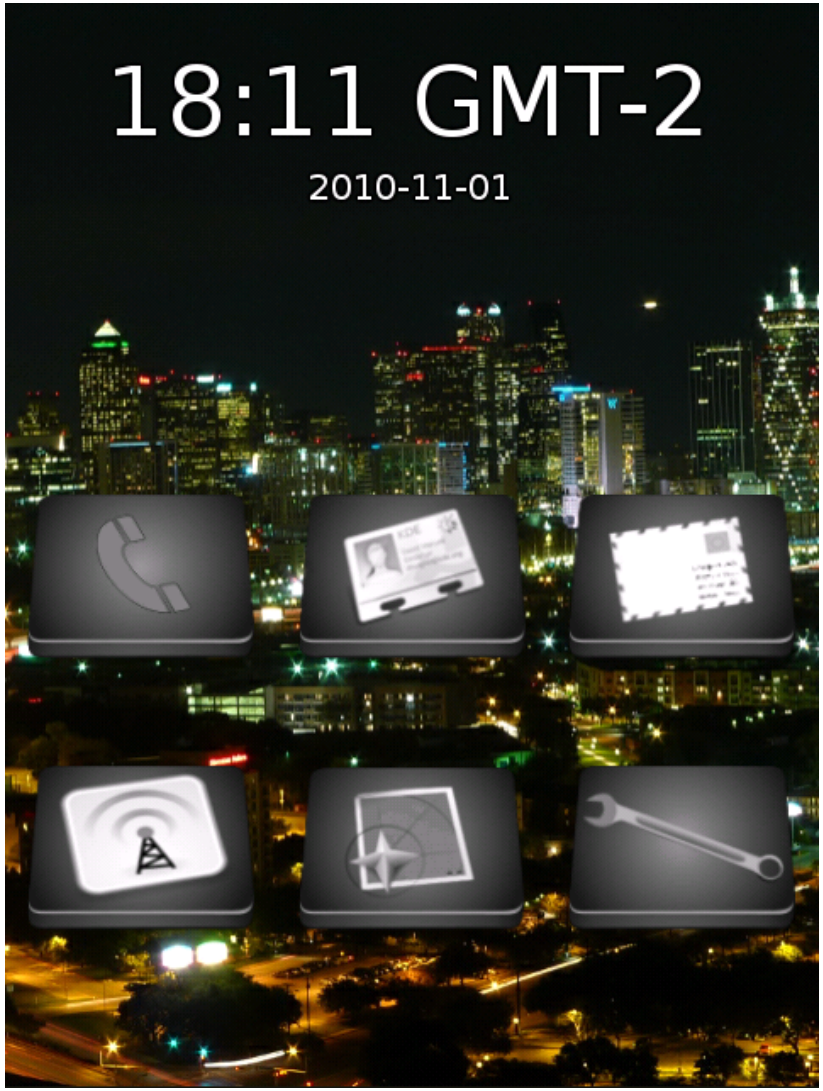
My Debian [http://wiki.openmoko.org/wiki/User:TimoJyrinki]

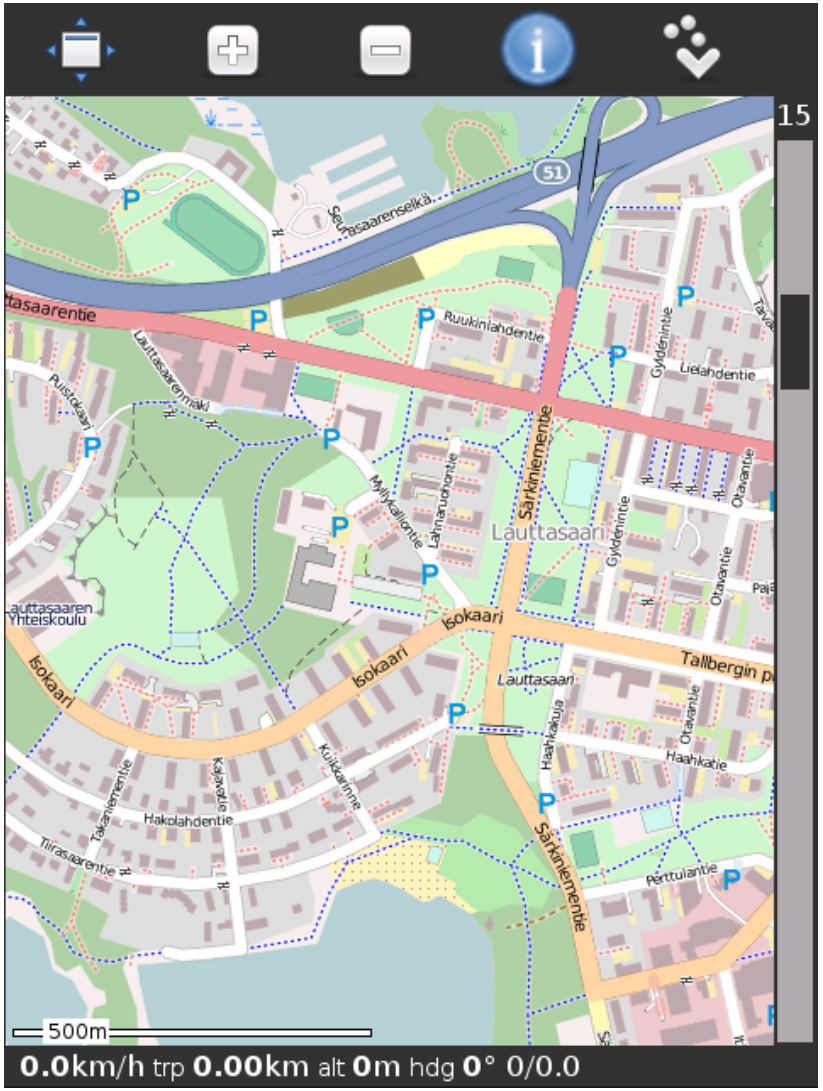
I don't have enough time, but I've achieved one important thing I wanted: all applications run full screen. I've created a crude home application invoked with AUX key press. Finger usable application switching, new application launching and hardware control.

TODO

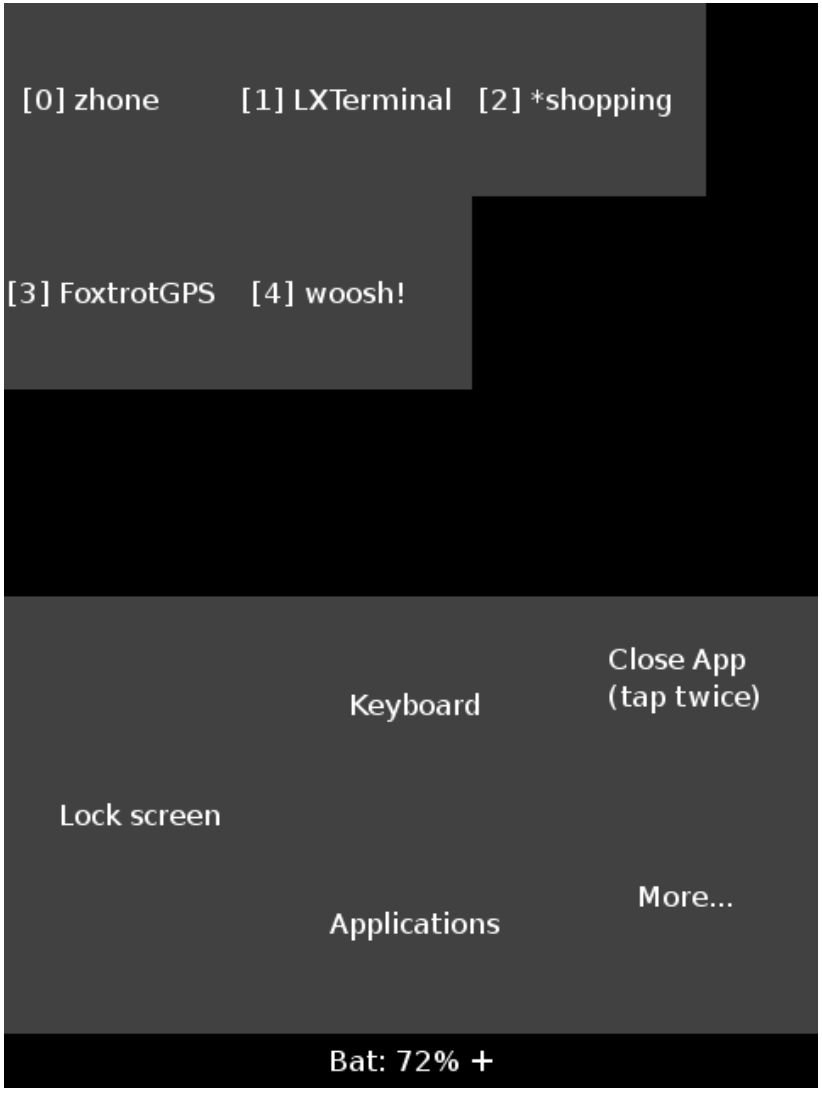
- Fix Intone music player to not be so slow by doing unnecessary drawing of gradients et cetera
- Productize the home screen app more
- See about packaging WebKit for E17 (webkit-efl), which is used by the Eve browser
- Get into wonderful world of configuring navit (to get real navigation in addition to FoxtrotGPS's "here you are" and external (net) navigation services functionality)
- Fix literki keyboard swipe area to be always on top
- Maybe move the daily phone's Debian to NAND flash on ubifs

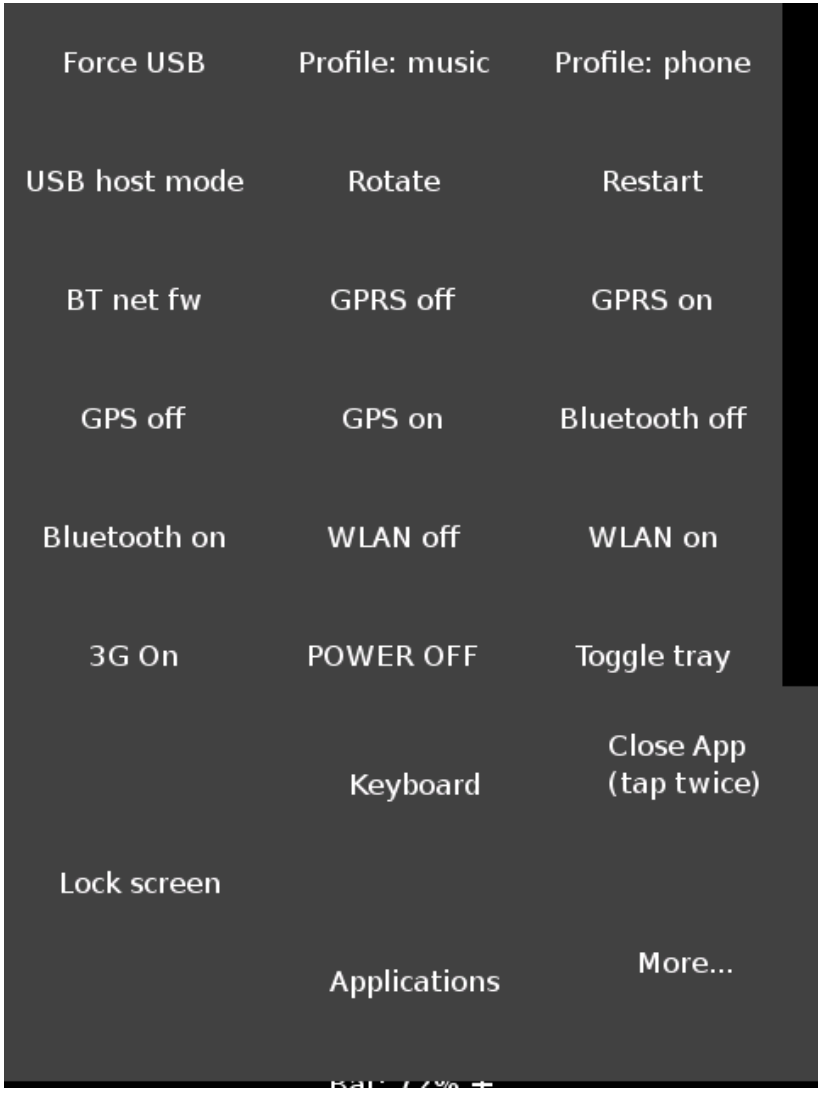
Screenshots 1/2





Screenshots 2/2





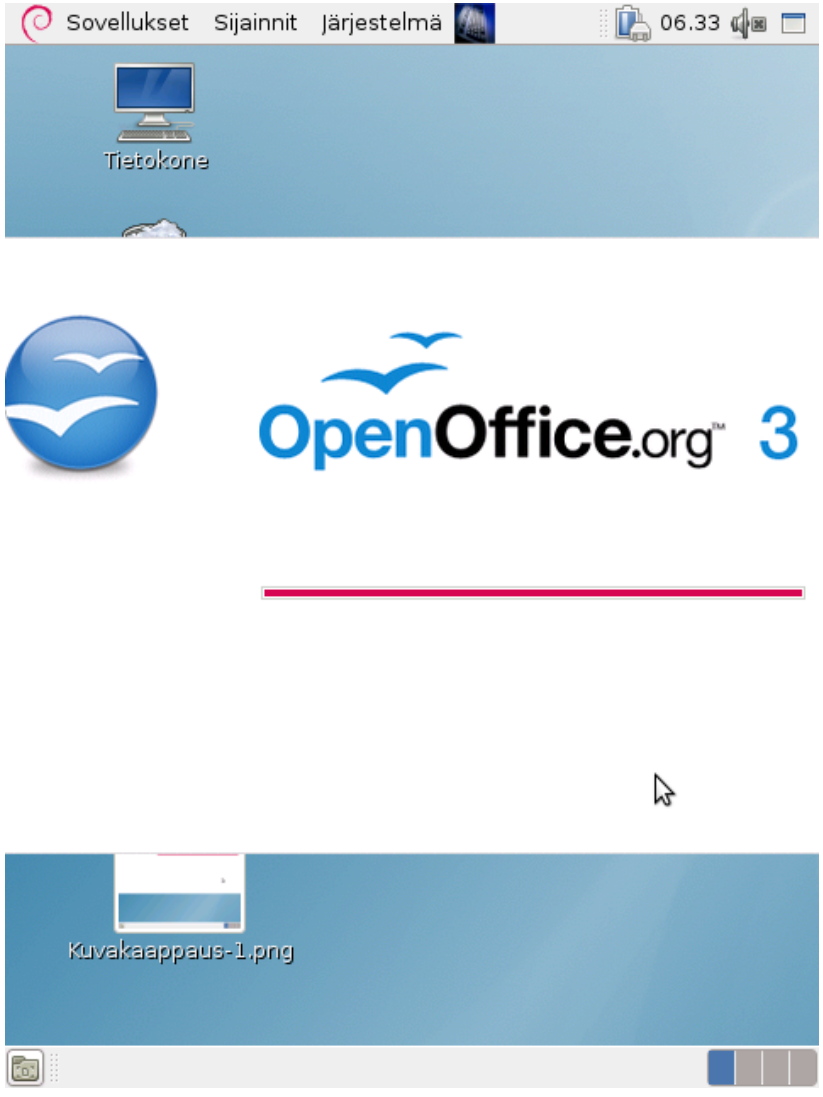
As you may have guessed...

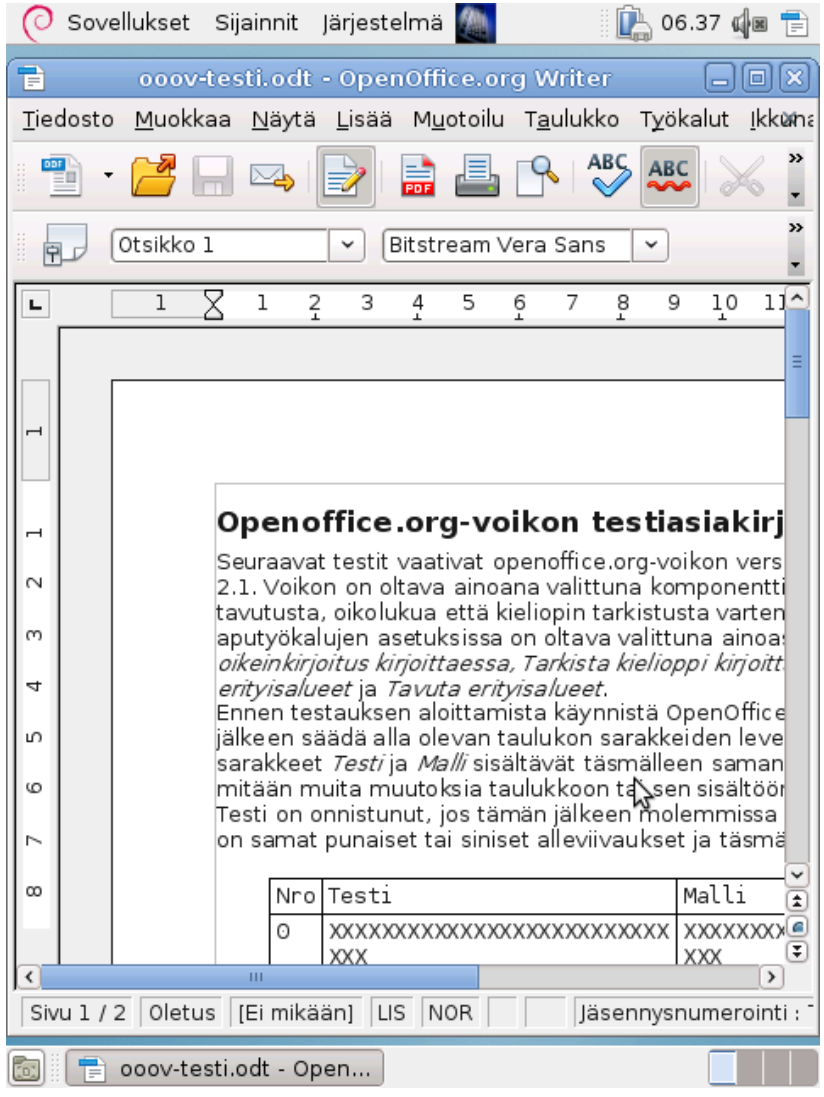
...this presentation is ran over VNC over Bluetooth personal area network between my computer and Neo, using simply Evince (presentation made with latex-beamer).

For people who like pain

- OpenOffice.org 3 is available from Debian repositories
- You can try running it under eg. GNOME
- Actually I have this another Neo with me which does just this
- (it also has dual-boot of QtMoko and Debian)

GNOME + OpenOffice.org





Future

You do want a phone computer that runs free software, if you are not in the group that thinks phone simply as an appliance (understandable as well, those are the two different camps). I usually want also my appliances (like camera) to run free software.

My survival plan:

- Next free phone comes up
- I take the SD card from my Neo FreeRunner
- Copy a new kernel to /boot
- Boot the new free phone to my very own Debian and start calling

Nokia N900 is the closest (`https://elektranox.org/n900/`). Of course, actually Openmokoish kind of freedom driven product would be more optimal... Openmoko Inc? "GTA04"? Always Innovating?

Thank You

- Questions?