The cool features and imminent obsolescence of the Nokia N900

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Lately I've been a bit obsessed with resurrecting old, discarded devices. It started with my eMachine netbook from 2010. (See my last post!) I think this has been partly motivated by how thin, light, and flimsy modern devices tend to be, both laptops and mobile phones. In comparison, the eMachine feels like it's made of Bakelite. The new battery also makes it somewhat heavy for its size (10.1"), which means it sits safely on my lap when I type.

Almost regardless of the specs of a device, there is a Linux distribution that will run comfortably on it, and anything that can at least serve as an X terminal for my Raspberry Pi is of use to me. (Again see my last post.)

Another gadget that I've wanted to use is my Nokia N900 mobile phone from 2009. This won't be a deep technical tour of the N900–I'll just explain some things about it that I've come across while trying to make it do a few things. I'll save the sad news for last.

I like the physical form factor. The N900 has a 3.5" resistive touchscreen. This technology works well with the provided stylus, for example for drawing in the sketch app. It has a simple but functional built-in stand that makes the screen easy to view when the N900 sits on a table. It has an FM transmitter. This is a feature I had never heard of, but some other mobile phones have it as well. With it, you can select a vacant FM frequency, tune your granddad's car radio to this frequency, and listen to music from the N900's media player on the radio. Such a cool solution. The N900's camera is simple compared to modern mobile phones, but it works. The best part of it is however the slide-out physical QWERTY keyboard.

The operating system of the N900 is called Maemo, and was used in a few other Nokia devices. While it hasn't had an update in years, several app repositories are still live, and the package manager works. Getting root access is as easy as installing the *rootsh* package.

To the casual eye, Maemo looks pretty much like a standard Debian installation. After loading an xterm, bash and most of the usual tools are there, including apt and several programming languages like Perl and Python. With its physical keyboard, the N900 feels like a Linux computer with constant Internet access that fits in your pocket. It's a bit sad that all mobile phones are iPhone-shaped these days.

My N900 is the reason this web site exists. I got it into my head a while back that I wanted my own web site again, and that it should be delivered by my Nokia N900. (Because why not.) Getting a web server up and running on the N900 is easy, although this might be when you discover that Maemo is not a standard Debian installation. Many of the usual command line tools in Maemo are not stand-alone programs, but part of a single executable called BusyBox. BusyBox also includes a tiny http server. BusyBox thus delivered the first version of this web site.

While this was a lot of fun, it wasn't very practical. BusyBox's http server has no problems with CGI scripts, but installing Perl modules proved to be a pain, mostly because Maemo is not current. So I couldn't really *do* anything with my web site. Hence the upgrade to the Raspberry Pi 4 that's delivering the site when I'm writing this.

It was also a dumb idea for a different reason. What's the point of having that nice physical keyboard if you only use the N900 as a web server? It's the input

features that are the cool thing about the N900. Thus, if anything, it should be the computer from which you *manage* your web site.

It wasn't reasonable for me to get a second mobile subscription just for the N900, which meant that it only had Internet access when a wifi network was available. Moreover, it can't use wifi that requires login with a user name and password, which excludes my workplaces. So it wasn't really very mobile after all, and I stopped trying to use it for anything. This changed when I received a new mobile phone for work, and could move the SIM-card from the iPhone they had provided to the N900. My pocket Linux machine was now fully functional!

The obvious mission was now to set up the N900 as an X terminal for the Raspberry Pi, specifically so I could run my Emacs Org Mode setup on it the same way I do on all my other devices. While this works fine with the Juice SSH app on my Samsung Galaxy S7, it only runs Emacs in a text terminal. The N900 surely is using X for its graphical user interface, and should be able to run Emacs remotely in an X window?

Enter *complication #1*: Maemo uses something called the "Hildon application framework." Here's some info from Maemo.org:

"**Hildon application framework**
Hildon application framework introduces a new desktop for handheld devices. It is composed of the following components:

- *Task navigator* for starting programs and switching between applications. The task navigator has some novel capabilities build into it, such as its ability to show email headers and browser bookmarks inside the menu.

- *Home* provides the idle screen to embed different plugins, such as news feed reader plugin and clock plugin.

- *Status bar* provides a plugin interface used to follow device status changes.

- *Control panel* provides a framework for running applets used to change user settings. The applets are libraries that provide an interface to change, modify or set configurations.

- *Hildon UI* provides additional widgets on top of the GTK+ ones, and theming modifications which make the entire UI match the maemo style.

- *LibOSSO* is an additional library containing required and helpful services for maemo applications to better integrate them with the platform."

Okay... Somewhere in this environment there is a chunk of code that makes an additional row of keys, beside those on the physical keyboard, appear on the screen when text can be entered into an N900 app. One of those keys is [TAB]. The N900 will happily start an arbitrary remote X application and put it on its screen, but that application won't get the extra buttons. And it is absolutely impossible to use Org Mode without [TAB]. I don't know how to fix this.

Oh well, text terminal it is. Enter *complication #2*: I insist on one-click access to my Emacs Org-based note-taking system. Speed is everything in a tool like this. In X, this means creating a desktop shortcut to an xterm instance which in turn launches ssh with parameters to login to the Raspberry Pi (password-less, of course) and run a script on that computer which launches Emacs in the right way. Now, xterm's default behavior in this situation is to run the ssh command and immediately exit. You never get the chance to even see Emacs start. To fix this all you have to do is provide the *-hold* switch to xterm, to prevent it from closing. Maemo uses a terminal called "osso-xterm." It has no *-hold* switch. It has no switches, as far as I can tell. (Here's the man page.)

Shockingly, it was starting to look as though the N900 was the only one of my devices that could not be used for my note-taking system. This was until I considered the possibility of *remapping the keys* on the N900 keyboard. I found documentation for this, and it was actually pretty simple. (I did it by SSH-ing to the N900 from the eMachine, before breakfast, and without being late for work.) With [TAB] mapped to [FUNCTION]+[BACKSPACE], I can use Emacs Org Mode remotely in an X window on the N900, no problem!

Now for the sad news. The Nokia N900 uses 3G. The reception is poor around the Stockholm area and I lose my connection to the Internet occasionally. This could be because 3G is just worse than the 4G network I'm used to. But it could also be because the mobile operators are dismantling their 3G networks. In fact, *The Swedish Post and Telecom Authority* has determined that the 3G mobile network should be completely shut down by 2025. There is no workaround for this– no tricks to google around for. (A friend contemplated whether there might be some pin-compatible 5G circuits. Yeah, even if there are, that's a bit outside my skill set...) So, my N900 has a limited lifespan after all. Some things can't be resurrected, for reasons of infrastructure. (Unless someone finds a pin-compatible 5G circuit. Please let me know!)

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