An in-depth look at Maemo Leste

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Me

- Merlijn Wajer
- Born in Amsterdam
- Amsterdam Hackerspace (TechInc), Sofia Hackerspace (init Lab)
- Work (remotely) for Internet Archive (archive.org)
- Maemo is a **serious hobby**

What is Maemo Leste?

- Started in 2017
- GNU/Linux, mobile OS for phones and tablets
- Base distribution is Devuan beowulf (Debian buster), Maemo Leste packages are just a repo
- No "vendor kernels", just modern (mainline) Linux kernels
- Linux experience: User freedom, hackable
- Nearing beta stage
- Association in Bulgaria since 2022

"Leste" is the name of a wind, past codenames for Maemo also used winds: Fremantle, Diablo, ...

History: Maemo Fremantle

Mobile "hacker" OS made by Nokia for the N900. (And previous versions before that for the Nokia 770, Nokia 800, Nokia 810)

Still usable today (still use it today)

- ▶ Uses the debian package manager
- ▶ GNU/Linux
- ▶ Only some parts are open source
- ▶ Still maintained by the community: CSSU (Community Seamless Software Update)
- ▶ https://wiki.maemo.org/Fremantle_closed_packages
- ▶ https://wiki.maemo.org/Free_Maemo

Idea: build on Maemo Fremantle's proven OS

- ▶ Maemo Fremantle got a lot of things right, but hard to port because a lot of components are (or were) closed source.
- ▶ Open source everything, stay mostly compatible on API level with Fremantle (no need to figure out APIs)
- ▶ Big ecosystem of open source applications written for Fremantle, recompile/port it

Why Maemo Leste?

- ▶ Apple/Android duopoly is not healthy for users and businesses
- ▶ Privacy and Security
- ▶ Open platform, "Real Linux"
- ▶ Community developed
- ▶ Other projects exist: UBports, postmarketOS, Mobian
- ▶ Fun!

What is the current status of Maemo Leste?

Have a stand at OpenFest, come check it out after the talk!

- ▶ Battery life of 1-2 days
- ▶ Phone calls work fine, user experience is still lacking somewhat
- ▶ Smooth experience, 3D graphics acceleration support
- ▶ Email, browser, terminal, calendar, contacts, mobile data, alarm

Real time communication needs more work

What are the support devices

- Nokia N900
- Motorola Droid 4
- Motorola Bionic
- PinePhone
- Development: Virtual Machine, OLIMEX Lime 2, Raspberry Pi

Future: Nokia N9, Motorola Droid 3, Motorola RAZR, Motorola Atrix 2

… and newer devices?

Architecture & Domains

Domains:

- Core
- System Software
- Connectivity
- RTCom
- Multimedia
- Location
- Toolkit
- Desktop
- Data Management
- Application

Domain: Core

- ▶ Linux kernel
- ▶ bootloader: u-boot or kexecboot (depending on the device)
- ▶ X11 window system (Subsystems: **drm**, **input**)
- ▶ Debian, Devuan, apt, dpkg
- ▶ coreutils, busybox, OpenSSL, GnuTLS

Domain: System Software

- OpenRC (init system)
- dsme: device state management entity
- D-Bus: for IPC
- MCE: (Subsystems: **iio** for accelerometer (orientation), proximity sensor, ALS sensor, **input** for other buttons, **drm** and x11 for display control)
- ofono (modem abstration layer)
- upower
- iio-sensor-proxy (iio subsystem)
- alarmd
- iphdb (IP heartbeat)
- profiled
- clockd
- maemo-launcher (for faster application start time)

Domain: Connectivity

- wpa supplicant (Subsystems: **cfg80211**, **phy**)
- cellulard
- BlueZ (Bluetooth)
- ICD2
- ConnUI libraries and dialogs
- Tor
- Wireguard

Domain: RTCom

- ▶ Telepathy libraries (telepathy-glib, telepathy-qt) and protocols (ring, gabble, idle, haze)
- ▶ Phone application
- ▶ Conversations

Telepathy is the central framework, has both advantages and disadvantages

- ▶ Integration (contacts, search, ux)
- ▶ Sophisticated
- ▶ Many supported protocols and libraries
- ▶ Limited by current specification

Domain: Multimedia

- Pulseaudio (replace with pipewire later)
- Gstreamer
- libcamera
- mafw (Media Application FrameWork)

Domain: Location

- ▶ gpsd (dbus support limited)
- ▶ location-daemon (dbus proxy & management)
- ▶ liblocation (maemo applications use this)
- ▶ Future: geoclue

Domain: Toolkit

- GTK2 (hildon native)
- QT5 (based on Qt4 port)
- GTK3 (Theming missing)
- SDL
- GConf (soon: GSettings)

Domain: Desktop

- ▶ hildon-desktop (window manager)
- ▶ hildon-home + applets
- ▶ hildon status menu + applets (connectivity, location, accounts, etc)
- ▶ Control panel
- ▶ hildon input method

Domain: Data Management

- Hildon Application Manager
- Addressbook
- ke-recv (USB storage and more)

Domain: Applications

- Clock and Alarms
- Calendar
- Email
- Browser
- Navigation applications
- Games

What's next?

- More work on real time communication system:
  - Improve chat UI
  - Improve phone UI, contacts integration
  - More protocols
  - Voice/video calls
- Improve QT5 port, add Gtk3 port
- Support more devices
- **Documentation** and example code

That's it

- ▶ Homepage: https://maemo-leste.github.io/
- ▶ Wiki: https://leste.maemo.org
- ▶ Source: https://github.com/maemo-leste/
- ▶ Bugtracker: https://github.com/maemo-leste/bugtracker
- ▶ IRC: irc.freenode.net #maemo-leste

Resources

https://wiki.maemo.org/Documentation/Maemo_5_Developer_Guide/Architecture/Top_Level_Architecture