Using the oFono based Java RIL in Replicant

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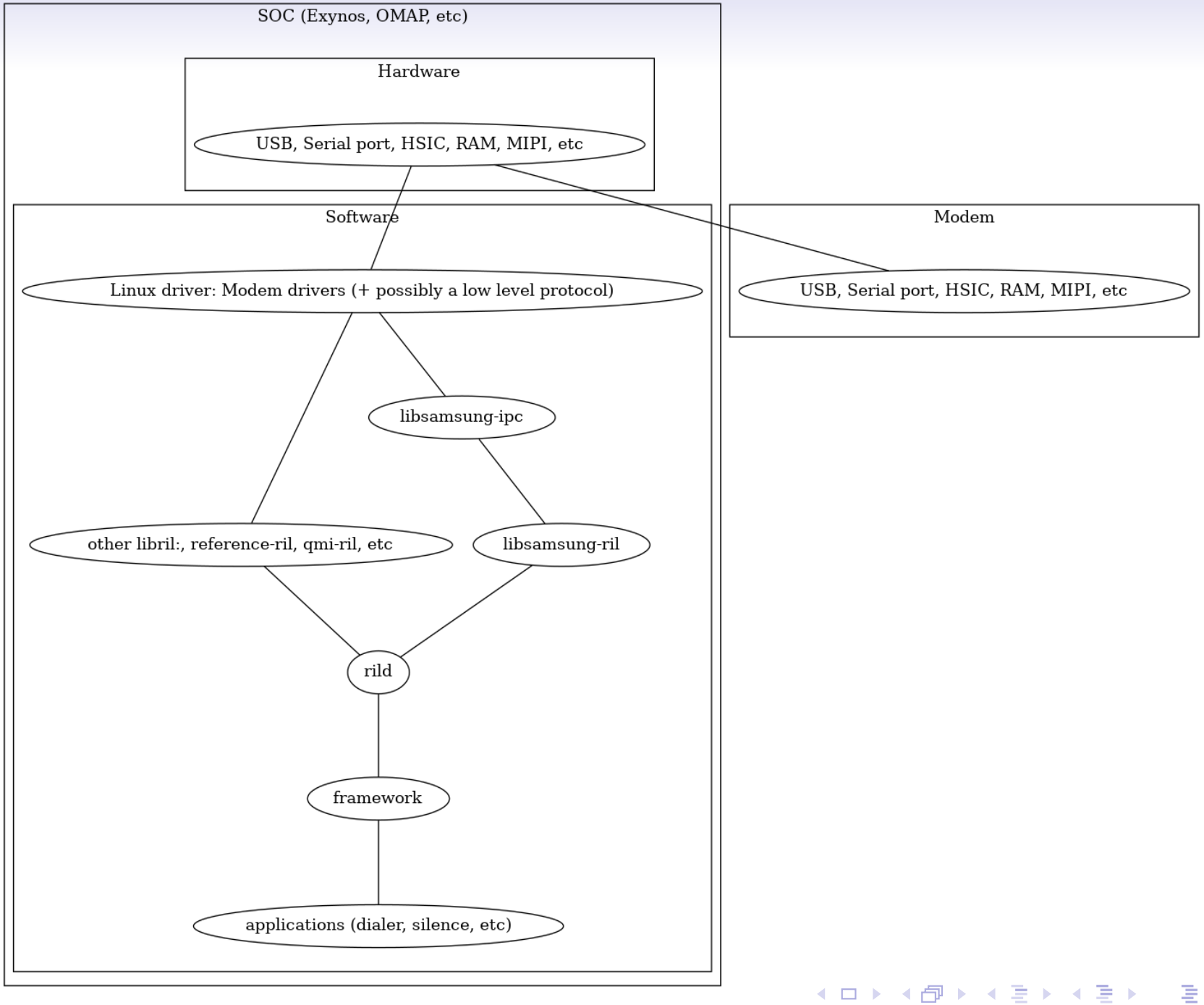
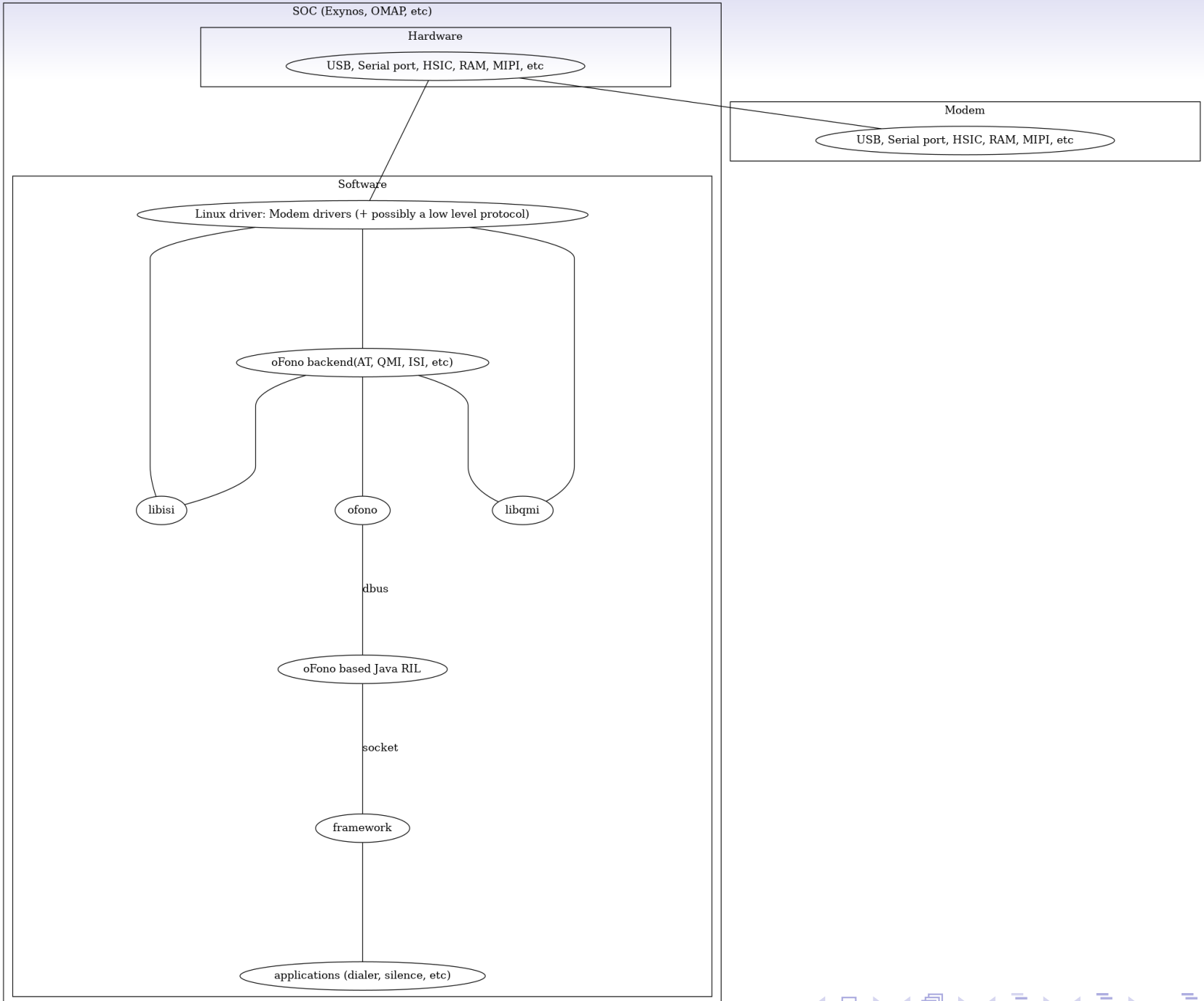
Classical architecture


SOC (Exynos, OMAP, etc)
Hardware
USB, Serial port, HSIC, RAM, MIPI, etc
Software
Modem
Linux driver: Modem drivers (+ possibly a low level protocol)
USB, Serial port, HSIC, RAM, MIPI, etc
libsamsung-ipc
other libril:, reference-ril, qmi-ril, etc
libsamsung-ril
rild
framework
applications (dialer, silence, etc)

Ofono based Java RIL


SOC (Exynos, OMAP, etc)
Hardware
USB, Serial port, HSIC, RAM, MIPI, etc
Modem
USB, Serial port, HSIC, RAM, MIPI, etc
Software
Linux driver: Modem drivers (+ possibly a low level protocol)
oFono backend(AT, QMI, ISI, etc)
libisi
ofono
libqmi
dbus
oFono based Java RIL
socket
framework
applications (dialer, silence, etc)

Why using Ofono based Java RIL?

- Adds supports for AT modems, could be used to support many devices:
  - GTA04: Free software bootloader
  - Optimus black: Free software bootloader
  - PinePhone (EG25 modem?): Will probably have a free software bootloader
  - Librem 5 (EG25 modem?): Free software bootloader, nonfree firmware for the DDR4 controller[1] on a flash chip $\rightarrow$ No redistribtion issues for Replicant.
- Already has QMI support. Could be used add support for 4G with the following devices:
  - Galaxy SIII 4G (I9305)
  - Galaxy Note II 4G (N7105)

Status

- Already tested on Replicant 6 with a smartphone that uses a Qualcomm System On a Chip (SOC)
- Tested with Voice calls, SMS, MMS, USSD, data, SIM ID, voicemail[3]

oFono Substainability

- Ofono is Maintained, has several modems and protocols
- Supports GNU/Linux modems (Smartphones with free software bootloaders often run GNU/Linux)

oFono based Java RIL

- BuildRilWrapper.java[2] seem to use introspection to build the Framework$\leftarrow\rightarrow$ RIL API.
- Last commit from 2017
- Written in Java $\rightarrow$ We would need more people fluent in Java.

Licenses:

- https://creativecommons.org/licenses/by-sa/4.0/

- https://puri.sm/posts/librem5-solving-the-first-fsf-ryf-hurdle/
- https://github.com/scintill/android_frameworks_opt_telephony_ril_ofono/blob/master/build/java/net/scintill/ril_ofono/BuildRilWrapper.java
- https://github.com/scintill/android_frameworks_opt_telephony_ril_ofono/blob/master/README.md