Replicant: A fully free Android distribution approved by the FSF

Denis 'GNUtoo' Carikli and David 'dllud' Ludovino

December 26, 2019

Quick Facts

- Website: replicant.us
- Exists since September 2009.
- Currently based on LineageOS.
- Android versions:
  - Replicant 6: Android 6, last security update: October 2017[1].
  - Replicant 9: Android 9, work in progress[2].
- Supports $\sim$ 10 devices (smartphones and tablets).
- $\sim$ 2 full time equivalent contributors and a big community.

SAMSUNG
11:56
Contacts
F-Droid

12:14
Apollo
E-mail

SAMSUNG
2:34
Contacts
F-Droid

SAMSUNG
19:30
Apollo
E-mail

SAMSUNG
11:24
Contacts
F-Droid

SAMSUNG
19:11

SAMSUNG

Best effort:

minimum feature set required to support a device:

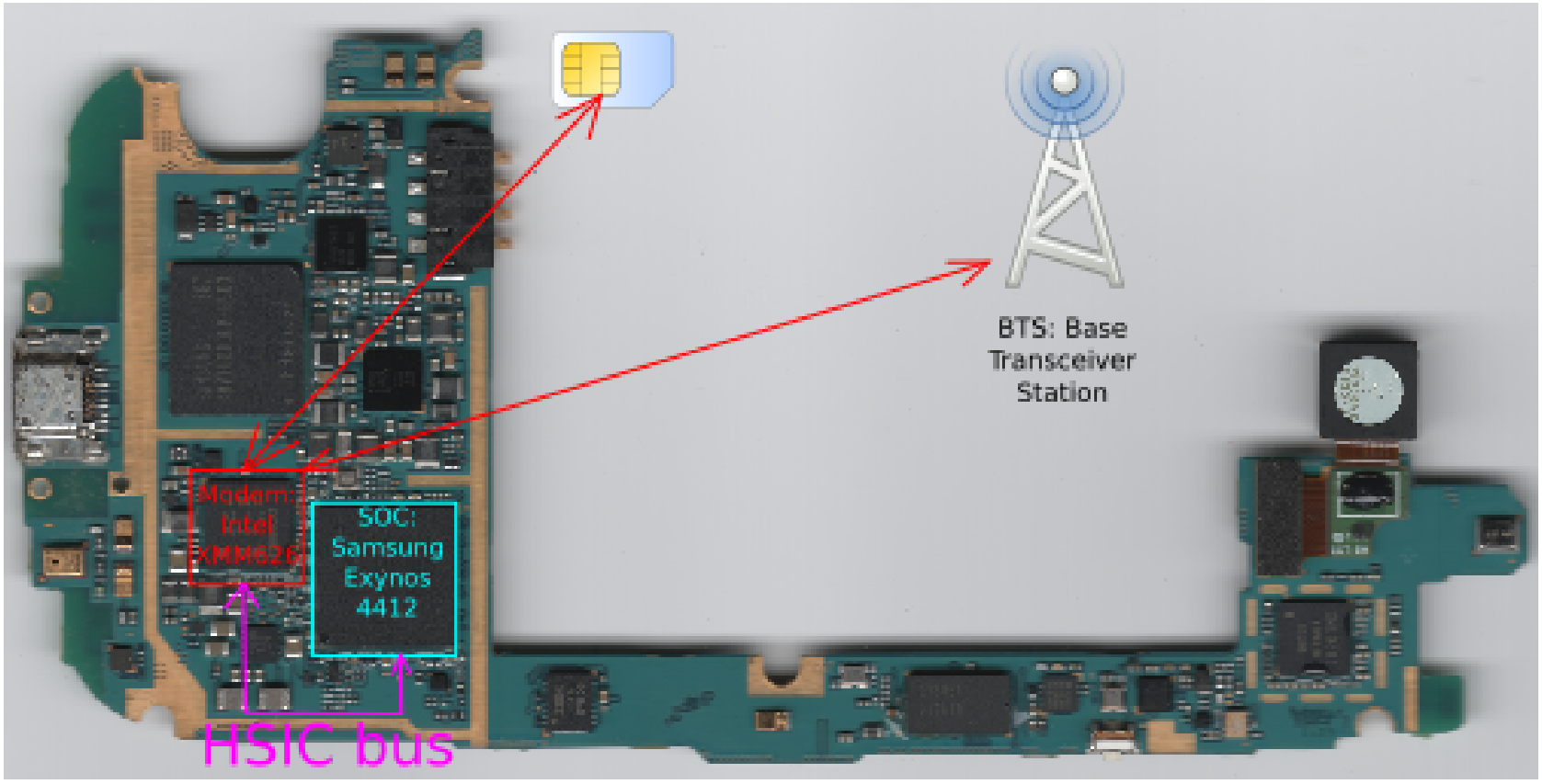
- Display working and graphics fast enough.
- Sound working.
- Be able to make calls.
- etc.
- GPS, camera, and other non crucial hardware may not work, or work in later releases.

Fully free distribution on smartphones?

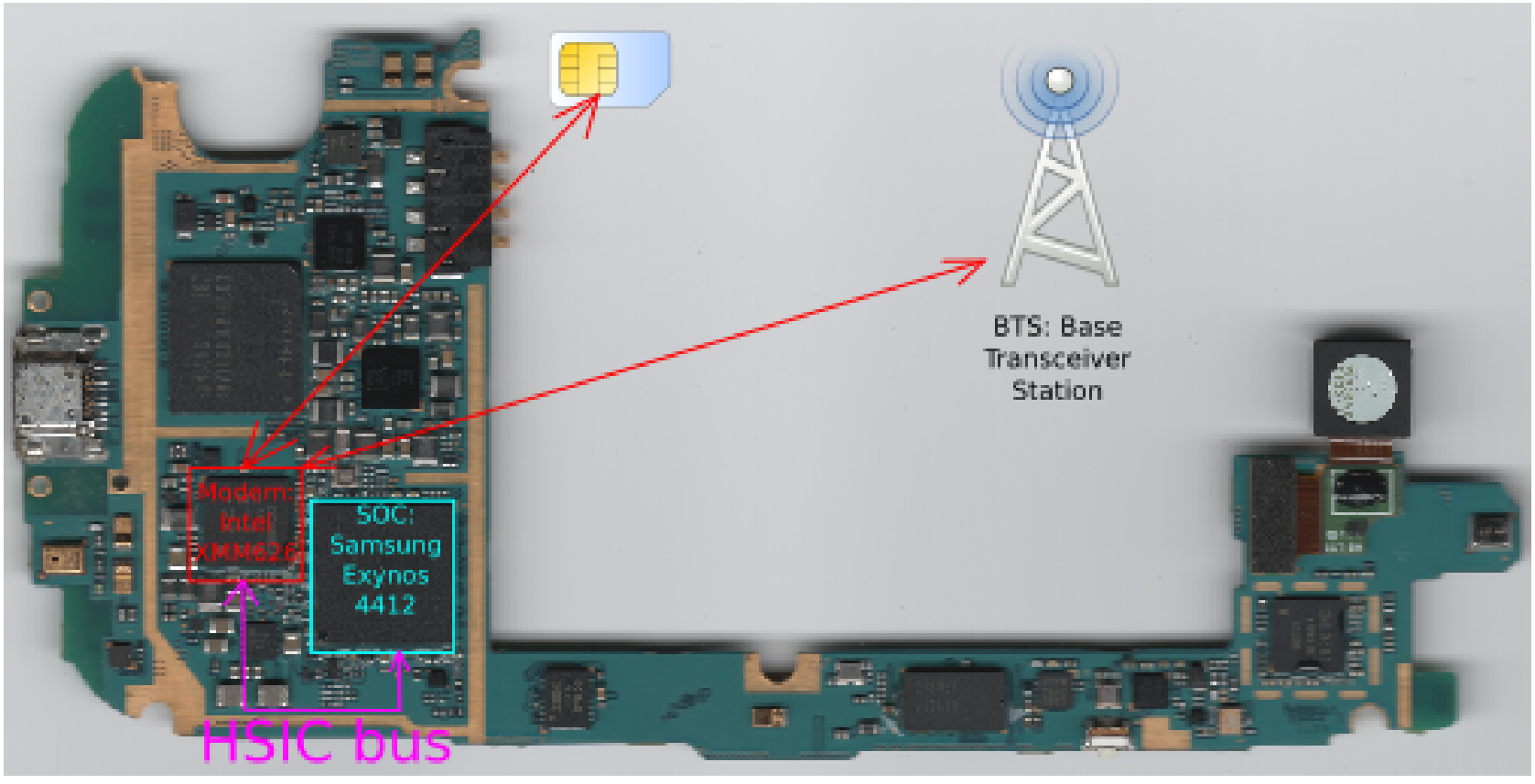
"Present-day cell phones are Stalin's dream."
Richard Stallman[3]

We have a lot of freedom issues...

A Galaxy SIII (I9300):



Freedom issues in supported devices

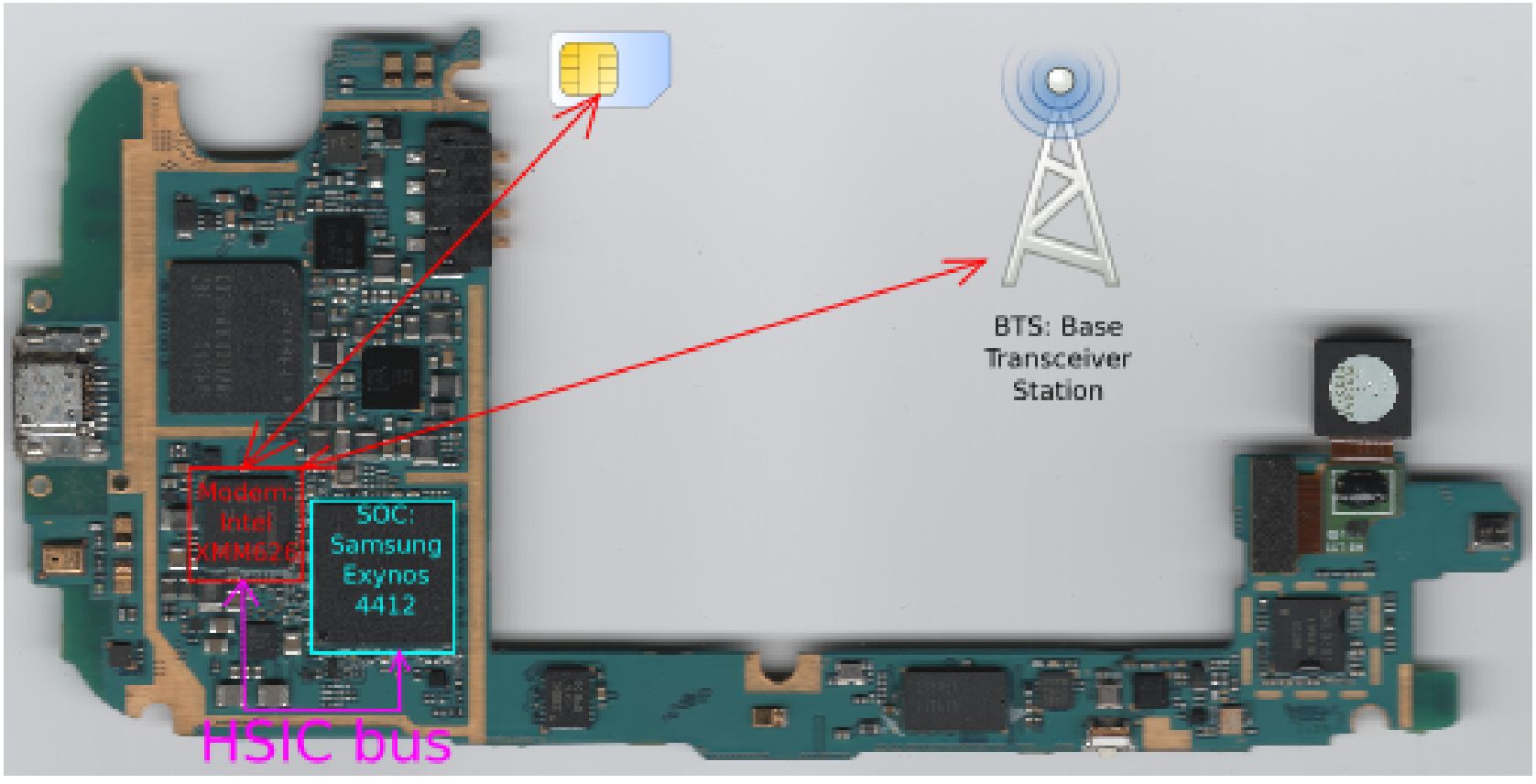


- The cellular network
- The modem firmware
- Other nonfree firmwares
- Bootloaders and TrustZone
- Upstream anti-feature and huge code base

Tablets without modem?

- ~~The cellular network~~.
- ~~The modem firmware~~.
- Also possible to "disable" the modem on some devices.

Freedom issues in LineageOS (without Google Play)



- += Modem control over the device (MSM7K) or shared memory.
- += Nonfree libraries: RIL backdoor, etc.
- += Anti-features.

Worst case with stock devices:

- $+=$ Only the kernel is free software.
- $+=$ Users potentially locked out of their devices.
- $+=$ Many anti-features or unwanted applications.
- $\rightarrow$ Remaining freedoms: The ability to install F-Droid or other applications.

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So that's why...

Along with the fact that nowadays there is way more surveillance than in the USSR...

Why Android?

- Advantages:
  - GUI and applications adapted to big fingers.
  - $\rightarrow$ Run on devices that:
    - Lack keyboard.
    - Have capacitive touchscreen and no stylus.
    - Have very small displays with very high number of pixels.
- Issues
  - Part of the GNU/Linux software architecture is light years away: package management and build system, graphics, audio, etc.
  - Huge unknown code from Google
  - Meant to run proprietary software, not to empower users.

Areas of work:

- Porting to Android 9 and upstreaming and related graphics work (thanks to NLnet/NGI funding).
- Soon: PinePhone (and maybe the Librem5 too)
- New Replicant 6 release and fixing bugs:
  - SIM cards not recognized
  - Graphics and application compatibility $\rightarrow$ Being fixed
  - F-Droid freedom issues
  - FSDG distributions and licensing issues (build system)
  - WebView and build system
- Bootloaders (Galaxy SIII and Galaxy Note II: XBOOT)
- Documentation, presentations, etc.
- Infrastructure

Licenses

- This presentation: CC-BY-SA 4.0 International
- The Galaxy SIII internals: CC-BY-SA 4.0 International
- The supported devices pictures: CC-BY-SA 3.0 Unported

https://en.wikipedia.org/wiki/Android_Marshmallow#cite_note-2

https://redmine.replicant.us/projects/replicant/wiki/PortingToAndroid9

https://stallman.org/archives/2011-nov-feb.html