

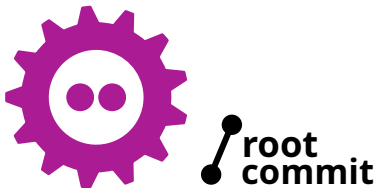
# BoF — FOSS Applications for Android

## FOSDEM 2025

Michael Opdenacker

Root Commit

Feb. 2, 2025



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## Embedded Linux consultant and trainer

- Former founder of Bootlin
- New founder of Root Commit
- Offering embedded Linux training courses with a focus on practical activities, interactivity and learning techniques.
- Free Software enthusiast

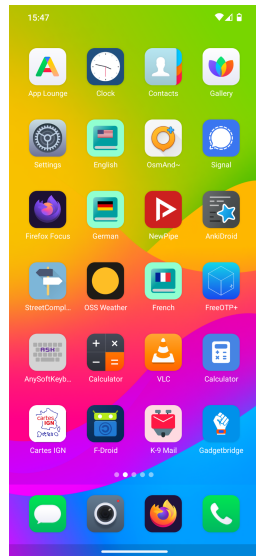


# Introduction

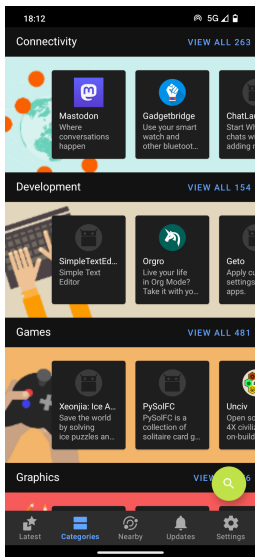
- Google play doesn't help finding such Free Software applications
- Though Android is based on Free Software components
- Google's interests are elsewhere...
- Also an opportunity to do some research, improve and rethink my own **digital hygiene**.
- Share my experience and promote

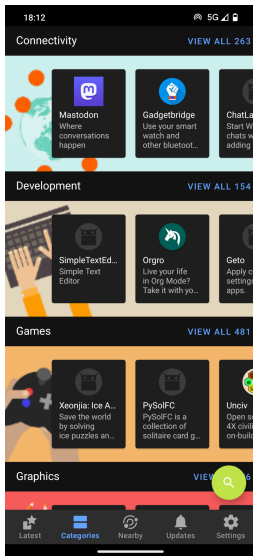
# The first steps I took

- Bought a Fairphone 5, 5 years of warranty, 8 years of software updates!
- Installed Murena's /e/OS on it (also available pre-installed).
  - Google-free phone.  
Forces you to do without the main Google apps (Maps, etc).
  - Murena offers its own Cloud services instead of Google's.
  - You can use your own too (such as Nextcloud), as in stock Android.
  - Primary focus on privacy: block trackers, fake geolocation, fake IP (TOR)...
  - Second focus on Free Software: most apps are FOSS.

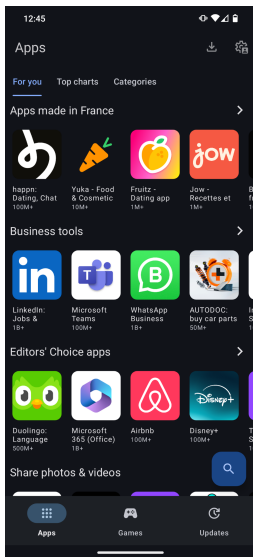


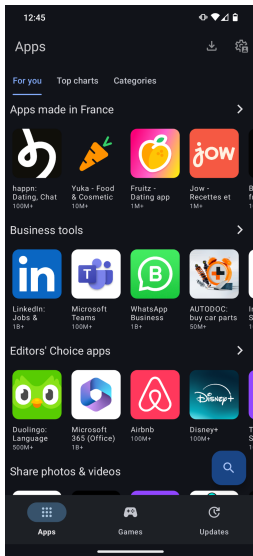
# Freedom friendly application stores



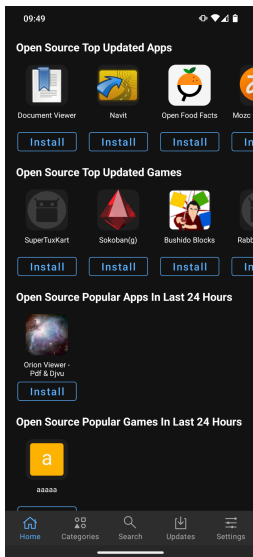


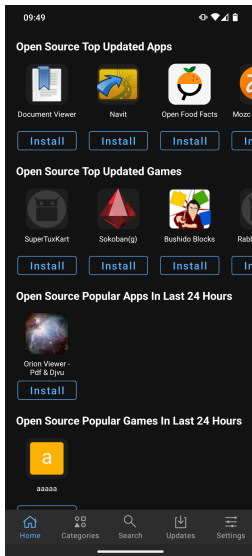
- The best catalog of FOSS applications, a great way to discover new ones.  
Not available in Google Play: need to download and install it as an APK file.
- Gives you access to more apps not found on Google Play.
- Store: APK file to download and install
- <https://f-droid.org/>





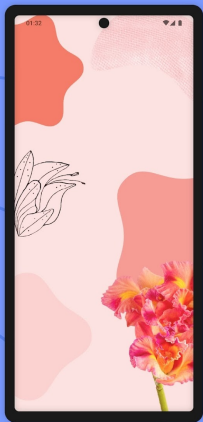
- An alternative to Google Play, working even if you don't have Google services.
- Particularly useful in a Google free phone (LineageOS...) to get some proprietary apps you can't do without (bank, etc.)
- Unlike in Google Play, downloads applications anonymously.
- Stores: F-Droid or APK file
- <https://aurorastore.org/>



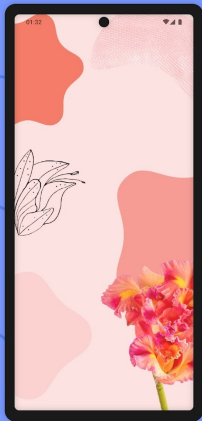


- The application store from /e/OS.
- Provides anonymous access to applications in Google Play (anonymously) and F-Droid.
- Unlike Google Play, advertises the FOSS apps
- Also shows a privacy score based on trackers.
- More convenient to update applications than in Google Play and F-Droid
- Intermittent performance or networking issues though
- Store: preinstalled on /e/OS
- [https://doc.e.foundation/support-topics/app\\_lounge](https://doc.e.foundation/support-topics/app_lounge)

# Interface applications



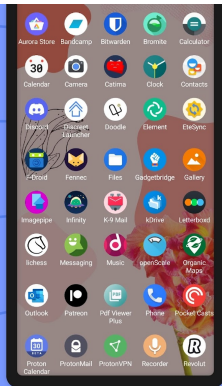
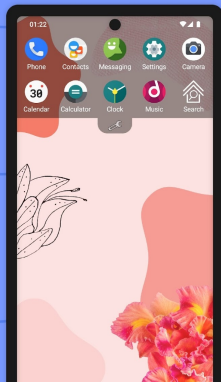
Enjoy a clean home screen,  
while accessing everything in an instant!



Enjoy a clean home screen,  
while accessing everything in an instant!

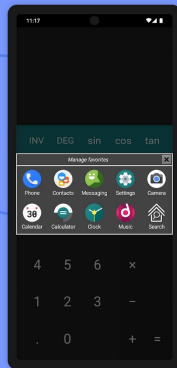
- Improvement on the standard Android Launcher
- Adds several convenient features (search, app settings, favorites...)
- Cleaner home screen
- Stores: F-Droid, Google Play
- <https://vincent-falzon.com/>

Quick access to your favorite applications...  
(swipe down)



...or to any other application!  
(swipe up)

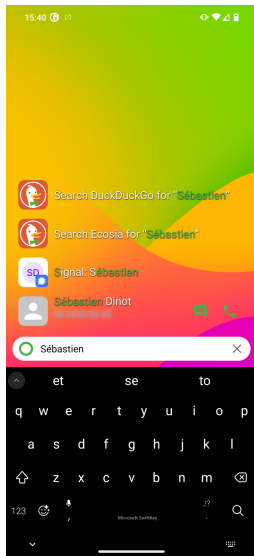
Access favorites from anywhere,  
thanks to the notification!



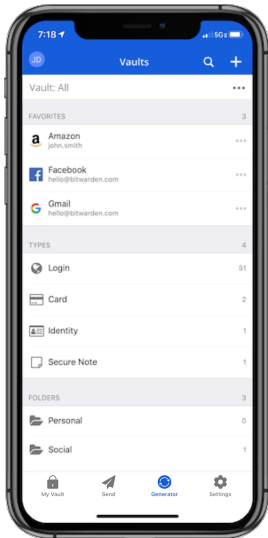


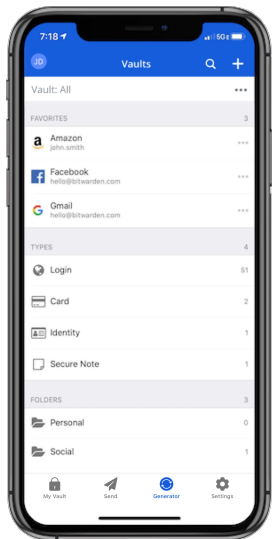


- My new Android launcher, adopted very quickly
- Unclogs your screen, shows most recent applications and actions (calls...)
- Much faster to look for applications (need to remember their names) and contacts
- Manually set favorites bar
- Stores: F-Droid, Google Play
- <https://kisslauncher.com/>

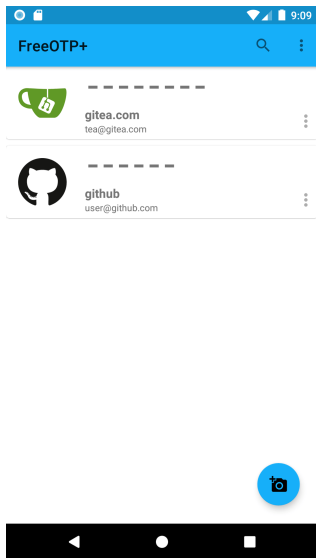


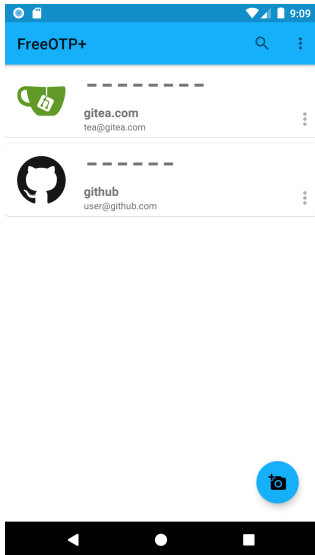
# Security





- Password manager application
- Allows to have stronger passwords, and never show them on screen
- Synchronized between phone, desktop and browser extension.
- Unlock it by passphrase or fingerprint scanner.
- Can use Bitwarden's (FOSS) server for free or deploy your own.
- Encrypted data cannot be decrypted by the server.
- Additional features if a subscriber: authenticator app, attach files (10 USD/year)
- Caution: make sure you configure it to clear the clipboard quickly (10 seconds?).  
Set it on the desktop app too.
- Make the password manager the "Autofill" app. More secure.
- Store: Google Play
- <https://bitwarden.com/>





- FOSS authenticator app (Two Factor Authentication)
- Always worked as a replacement for Google's or Microsoft's.
- Must have for security (SMS vulnerable to SIM card attacks)
- Stores: F-Droid, Google Play
- <https://f-droid.org/en/packages/org.liberty.android.freeotpplus/>

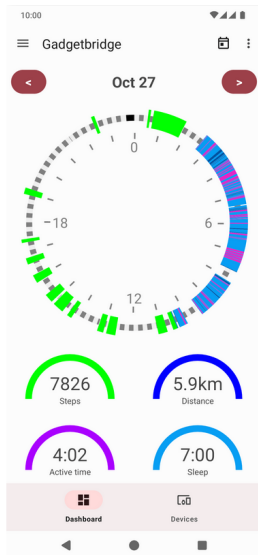
- PrivacyIDEA
  - Can be used with the PrivacyIDEA server (also FOSS) to deploy company/organization wide 2FA authentication.
  - <https://www.privacyidea.org/>
- Yubico Authenticator
  - Generate OATH codes with YubiKey NEO over NFC
  - <https://developers.yubico.com/yubioath-flutter/>

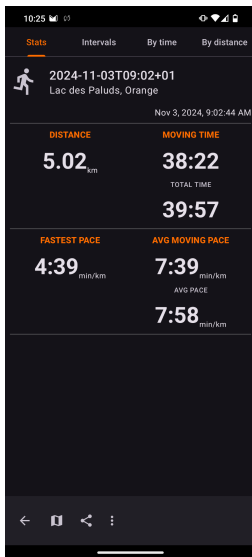
# Fitness





- FOSS application to pair and manage smart watches, bands and headphones without needing the vendor application (and cloud!).
- Much better for privacy!
- Nov 2024: 150 gadgets are already well supported
- The project can help you to add support for your gadget.
- Store: F-Droid
- <https://gadgetbridge.org/>







- *Sport tracking application that completely respects your privacy*
- Can replace applications storing activity data on the cloud (Strava, Garmin...)
- Can work bluetooth sensors (heart rate...)
- Allows to make interesting places (photos, markers) while tracking
- Can be used fully off-line
- Store: F-Droid (caution: different app on Google Play)
- <https://opentracksapp.com/>



- OpenStreetMap display of your OpenTracks activities
- Works offline too (predownloaded maps)
- Tip: can't use it standalone.  
Call it from OpenTracks (press the map button in an activity)
- Store: F-Droid
- <https://f-droid.org/packages/de.storichp.opentracks.osmplugin/>

# Navigation

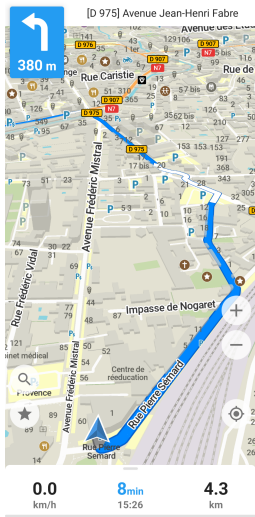


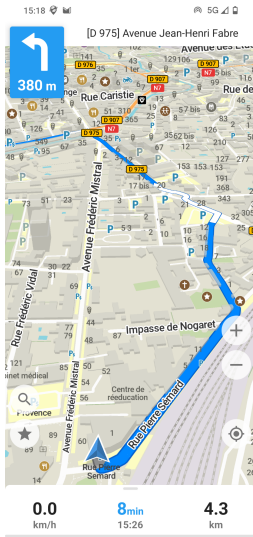


- *Offline maps and navigation*
- Used it for 4 weeks in the USA for 99% of my navigation needs (car and pedestrian)
- Offline functionality was also critical to find some trails and stay on them
- At the beginning, was overwhelmed by the amount of information on the screen.  
Useful to tweak settings to hide some map elements.
- Main drawback: missing live traffic information
- Several flavors:
  - OsmAnd (Google Play): free but limited to 7 map downloads
  - OsmAnd+ / Map+ (Google Play): one time purchase (39.99 EUR/USD)
  - OsmAnd~ (F-Droid): unlimited maps, F-Droid recompilation

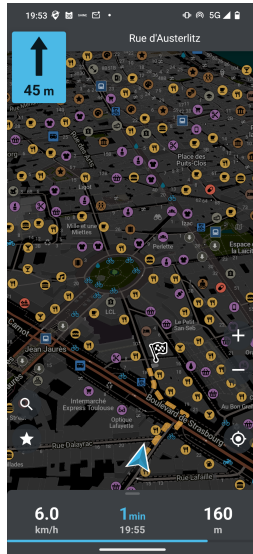
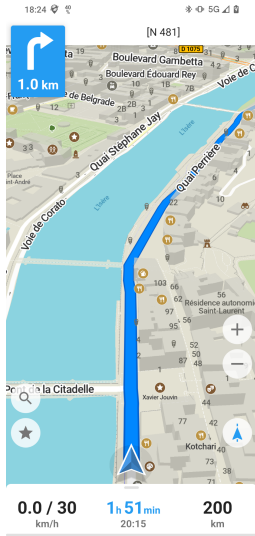
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5G





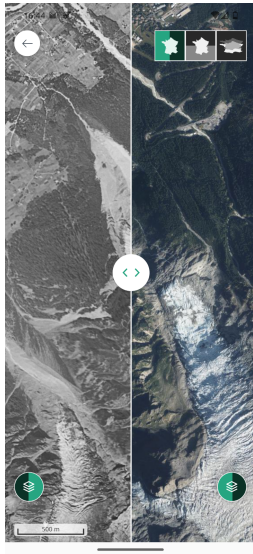
- *Offline Hike, Bike, Trails and Navigation*
- Also based on OpenStreetMap
- Found it after taking the OsmAnd learning curve.  
More user friendly. Better to get started with this app.
- Also missing live traffic information
- Stores: F-Droid, Google Play
- <https://organicmaps.app/>

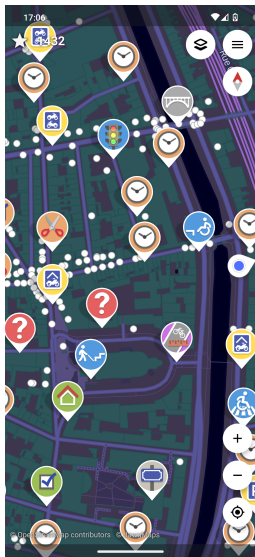


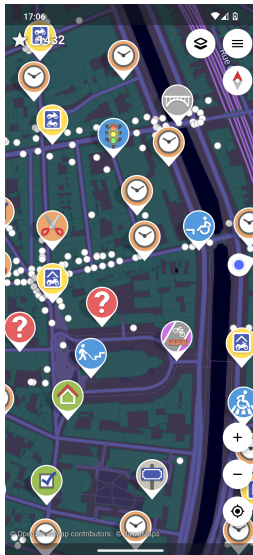




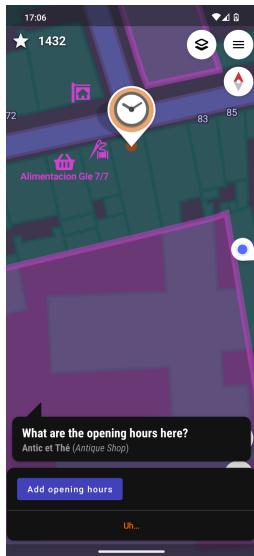
- Recently open-sourced (GPLv3), from the French Institut Géographique National
- Covers only France
- Several features: navigation, map data analysis, comparison with historic data
- Depends on non-free servers, but data are open
- Stores: F-Droid, Google Play
- <https://www.ign.fr/telechargez-application-cartographique->





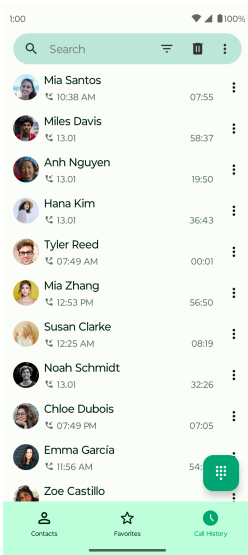


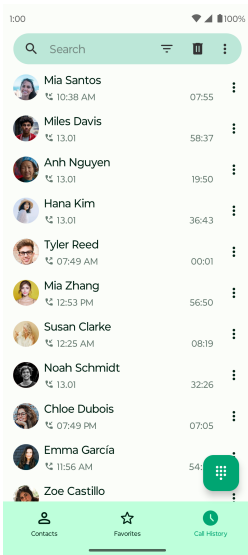
- Complete and update OpenStreetMap data around you
- Very fun to do, and even addictive
- Stores: F-Droid, Google Play
- <https://streetcomplete.app/>



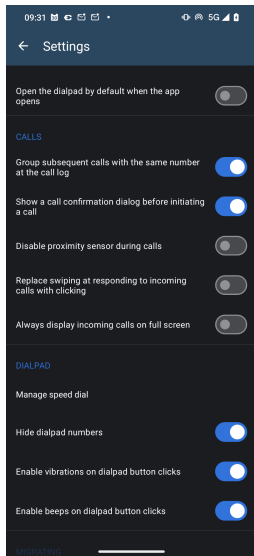
- Sometimes navigation fails to start (both OsmAnd and Organic Maps).  
You have to navigate by yourself (reading the map)
- Navigating with public transportation doesn't look easy. I struggled in Vienna find a streetcar on the map! And I can't have Google Maps (degooglized phone).
- Your experience?

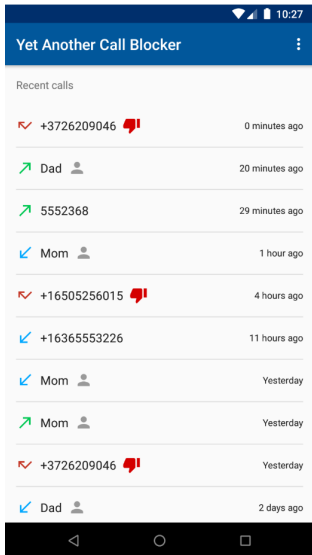
# Communication



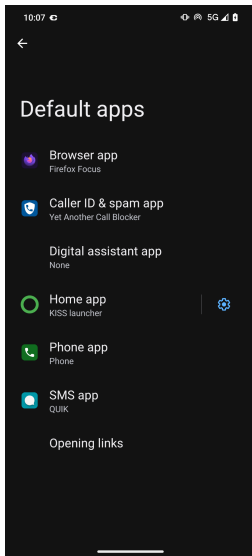
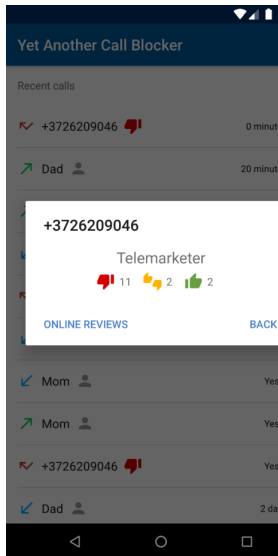


- Replacement for the stock Android app
- Offers more settings, like confirming before making a call
- Supposed to focus on privacy
- Stores: F-Droid, Google Play
- <https://www.fossify.org/>



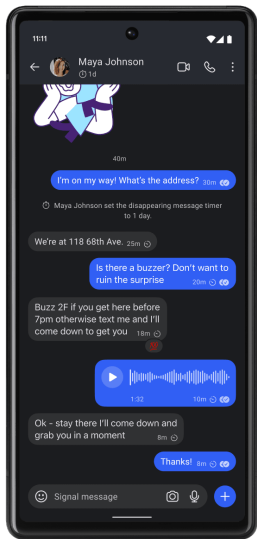


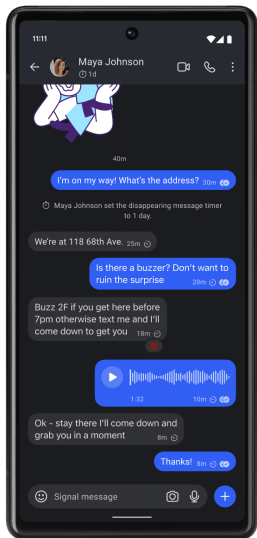
- Helps to block unwanted calls
- However, depends on a proprietary database fetched from a Gitlab repository (last updated 3 years ago!)
- Also manages local block lists
- But better than letting a proprietary app access your calls and contacts.
- Make sure you set it as default "Caller ID and spam app"
- Didn't seem to work properly the only time I got an unwanted call.
- Any better solution?
- Stores: F-Droid
- <https://gitlab.com/xynngh/YetAnotherCallBlocker>





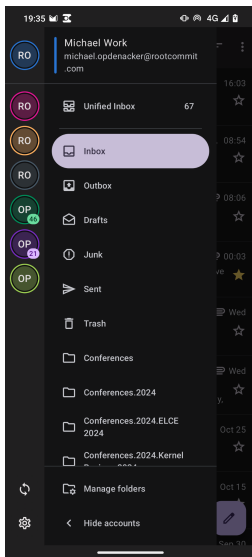
- A fork of the stock Android app? Very similar settings and features
- Adds more color to your phone though.
- Stores: F-Droid, Google Play
- <https://github.com/octoshrimpy/quik>

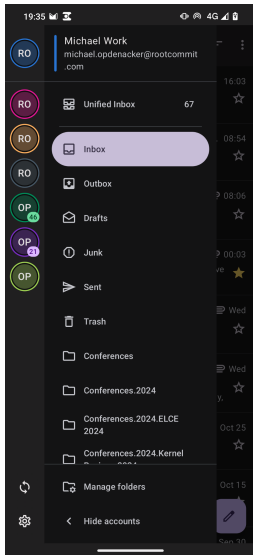




- Very well known now
- Privacy protecting and FOSS alternative to WhatsApp
- Unlike on WhatsApp, the server cannot decrypt the messages
- Unlike Telegram, both the server and clients are FOSS
- Has all the features you need: messages, calls, video
- No need to share your phone number any more
- Downside: maybe FOSS, but its owners only allow their own clients on their network. You can't run a modified version.
- Store: Google Play (only)
- <https://signal.org/>

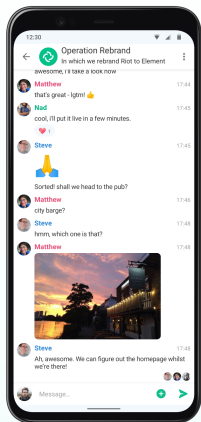




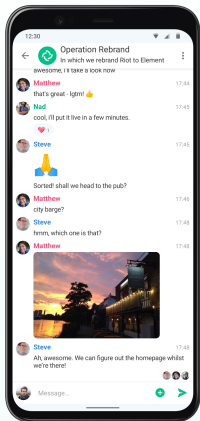


- Most popular FOSS e-mail app on Android
- Supports multiple accounts and most useful features
- Now being developed together with the new Thunderbird for mobile.
- Stores: Google Play
- <https://k9mail.app/>

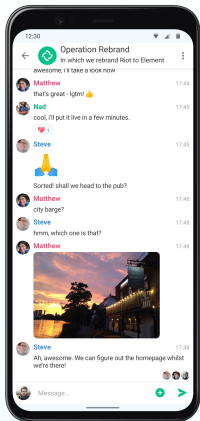
**Get stuff done.  
Securely.**



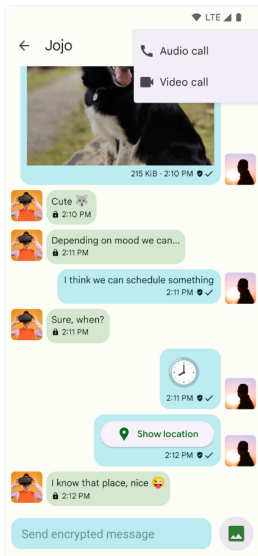
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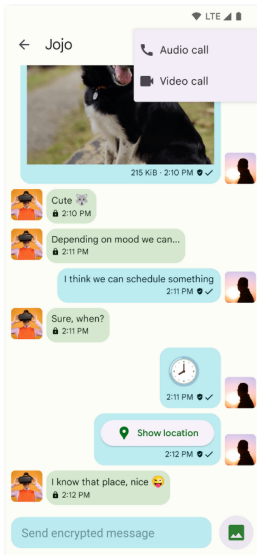


**Get stuff done.  
Securely.**



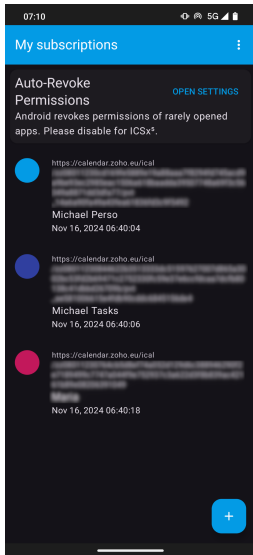
- Client for a Matrix server, primarily for messaging, but also for video calls
- Used it for 3 years without any major issue.
- Stores: F-Droid and Google Play
- <https://element.io/>



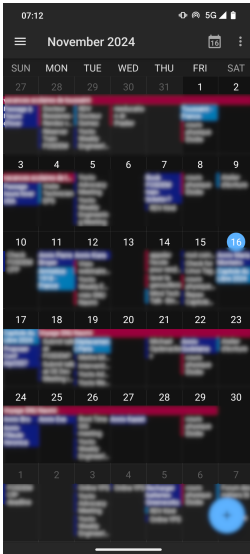


- Encrypted, easy-to-use XMPP instant messenger for your mobile device
- Relying on existing, well established protocols
- Also support audio and video calls
- Servers are interconnected. You can use the server of your choice, and no phone number is necessary.
- Claims it has a very low impact on battery life.
- Good desktop client if you are addicted: Gajim
- <https://conversations.im/>

# Time management



- Application to fetch remote iCal calendars
- Store: F-Droid
- <https://f-droid.org/en/packages/at.bitfire.icsdroid/>



- You can then see the calendars in Android's stock calendar app

# Web browsing

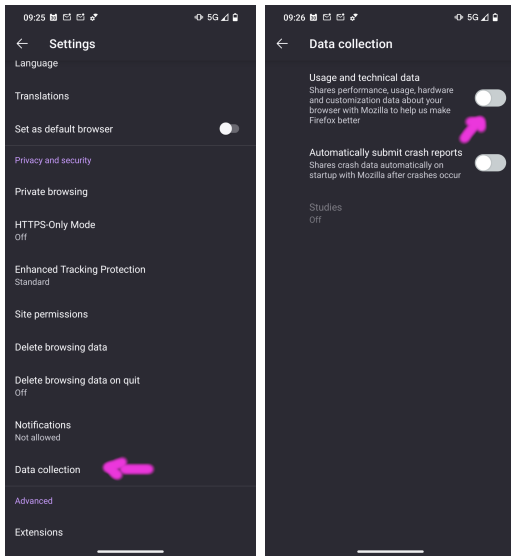


- Privacy oriented browser connecting directly to Tor
- Better than VPNs!
- Blocks trackers: each website is accessed in isolation. Cookies automatically removed when you are done browsing.
- /e/OS privacy rating: 7/10
- Stores: Murena's App Lounge at least, custom APK download
- <https://rhatto.pages.torproject.net/tpo/download/>

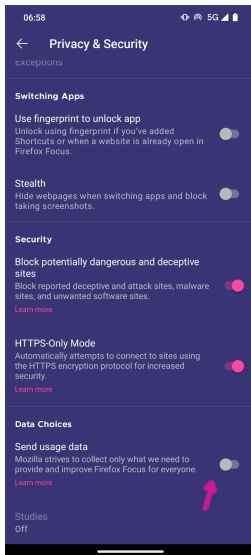
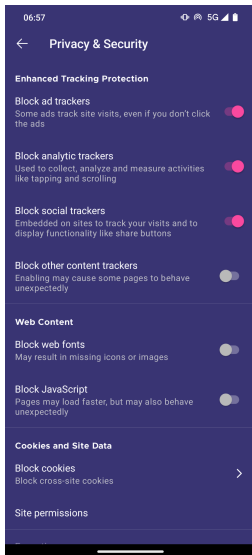




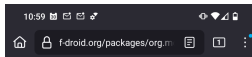
- The well known browser from Mozilla, focusing on privacy protection
- Better than Google Chrome, which also protects your data from attackers, but not from Google.
- For example, Chrome doesn't disable third party cookies (thanks Benjamin Bellamy!)
- However, Firefox contains a few proprietary bits (mostly connecting to Mozilla)
- /e/OS privacy rating: 6/10
- Store: Google Play
- <https://www.mozilla.org/en-US/firefox/>



- The main reason why Firefox is not in F-Droid (replaced by Fennec)
- By default, Firefox tracks how you use this browser, to "help improve performance and stability"
- You can disable this telemetry though.
- <https://support.mozilla.org/en-US/kb/telemetry-clientid>



- Firefox tuned for privacy control
- More tunables are also available
- You can disable telemetry too ("Send usage data")
- /e/OS privacy rating: 6/10
- Store: Google Play
- <https://www.mozilla.org/en-US/firefox/browsers/mobile/focus/>



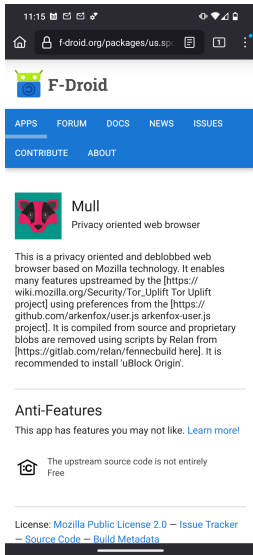
## Fennec F-Droid

Browse the web

- Wide collection of addons, including ad blockers.
- Improved tracking protection.
- Private mode available in a single tap.
- Customizable start screen layout and navigation bar position (top or bottom).
- Dark theme.
- Collections of tabs.
- Synchronization of tabs, bookmarks, passwords, etc. across multiple devices via Firefox Sync.
- Picture-in-picture mode.

Fennec F-Droid is based on the latest Mozilla Firefox release. It has proprietary bits and telemetry removed, but still connects to various Mozilla services that can track users.

- F-Droid rebuild of Firefox, but with telemetry and proprietary bits removed
- But still connects to various Mozilla services that can track users
- /e/OS privacy rating: 7/10
- Store: F-Droid
- [https://f-droid.org/packages/org.mozilla.fennec\\_fdroid/](https://f-droid.org/packages/org.mozilla.fennec_fdroid/)



11:15 f-droid.org/packages/us.sp...

## F-Droid

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### Mull

Privacy oriented web browser

This is a privacy oriented and deobfuscated web browser based on Mozilla technology. It enables many features upstreamed by the [https://wiki.mozilla.org/Security/Tor\_Uplift Tor Uplift project] using preferences from the [https://github.com/arkenfox/user.js arkenfox-user.js project]. It is compiled from source and proprietary blobs are removed using scripts by Relan from [https://gitlab.com/relan/fennecbuild here]. It is recommended to install 'uBlock Origin'.

#### Anti-Features

This app has features you may not like. [Learn more!](#)

 The upstream source code is not entirely Free

License: [Mozilla Public License 2.0](#) — [Issue Tracker](#) — [Source Code](#) — [Build Metadata](#)

- Another F-Droid rebuild of Firefox, with telemetry and proprietary bits removed
- Supposed to be configured with stricter privacy settings
- Can be seen as a "Focus" equivalent to Fennec.
- /e/OS privacy rating: 7/10
- Store: F-Droid
- [https://f-droid.org/packages/org.mozilla.fennec\\_fdroid/](https://f-droid.org/packages/org.mozilla.fennec_fdroid/)

# Multimedia

15:19

5G

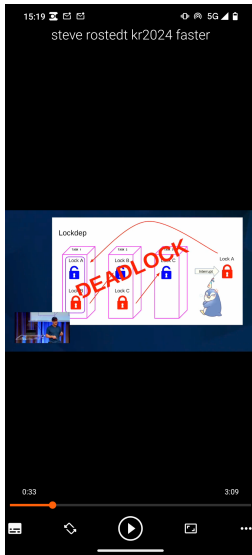
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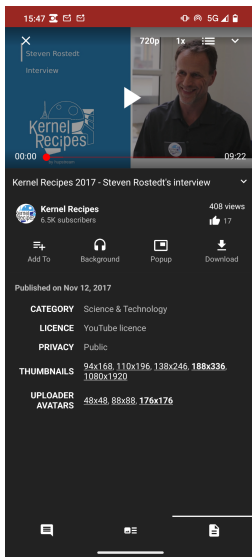


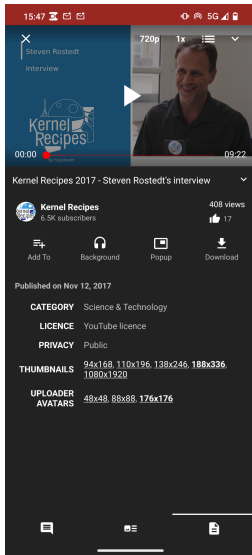
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3:09

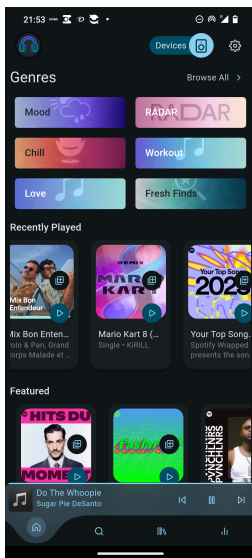


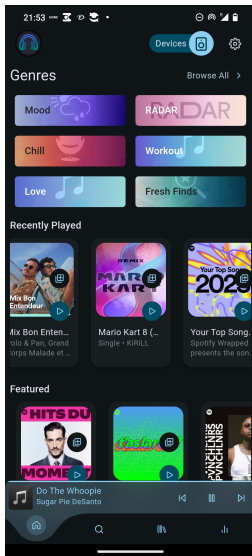
- Best known video player, supporting most codecs
- Stores: F-Droid, Google Play
- <https://www.videolan.org/vlc/download-android.html>



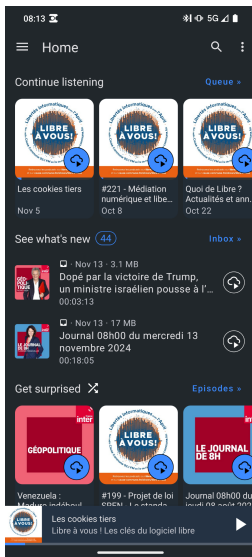


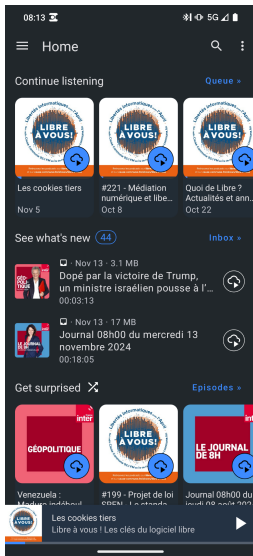
- Watch YouTube videos with an intuitive, feature-rich and privacy friendly app
- Can download videos offline, and "watch" them with the screen off
- No adds, anonymous usage of YouTube (not feeding Google's algorithm)
- Supports other platforms: PeerTube, Soundcloud, Bandcamp, media.cc.de
- Store: F-Droid (not Google Play! 📦)
- <https://newpipe.net/>



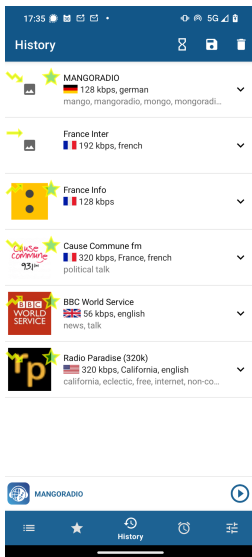


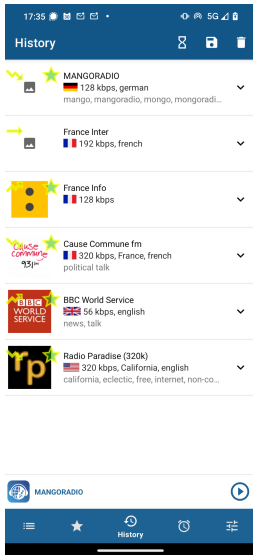
- *An Open Source Spotify client for every platform*
- Sleek interface, as pleasant as the regular proprietary client.
- If you are a Spotify subscriber like me, you still have access to your playlists and favorites.
- Also supposed to work without a Spotify Premium subscription, using Spotify's public APIs for data, and Youtube Music for audio.
- How long will it last?
- Stores: F-Droid Google Play (and also Windows, Linux, MacOS)
- <https://spotube.krtirtho.dev/>





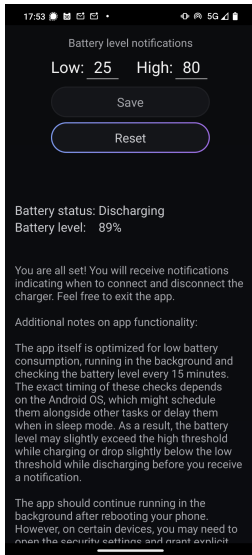
- FOSS Podcast player
- Created by volunteers without commercial interests
- Stores: F-Droid, Google Play
- <https://antennapod.org/>





- Great to listen to radios available online, and discover new ones
- Radios can also be used as an alarm
- Project making it easy to add more radios to the database
- Stores: F-Droid
- <https://f-droid.org/packages/net.programmierecke.radiodroid2/>

# Device Management



- Helps to keep your battery with an optimum charge level
- In theory, better to keep Li-ion batteries between 20% and 80% charge levels
- You get a notification when you get out of the range.
- Store: F-Droid
- <https://f-droid.org/packages/biz.binarysolutions.healthybatterycharging/>

# Learning



## Ploutocratie

(politique) État d'une société dans laquelle les plus riches exercent plus ou moins directement le pouvoir politique ou jouissent d'une influence prépondérante.



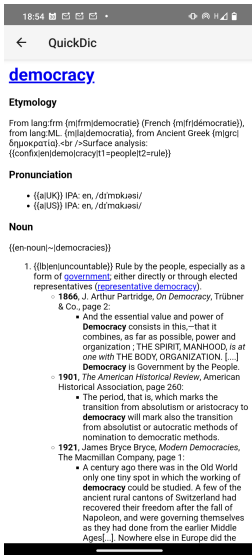
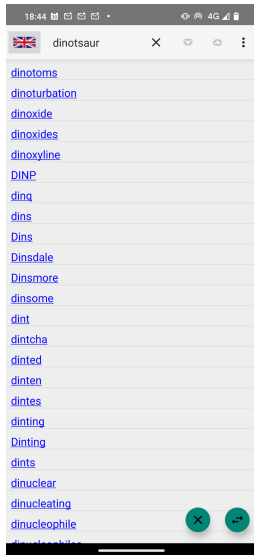


## Ploutocratie

(politique) État d'une société dans laquelle les plus riches exercent plus ou moins directement le pouvoir politique ou jouissent d'une influence prépondérante.

- Flash card software using spaced repetition to remember what you learn.
- I have about 6,700 cards on all types of topics
- See my dedicated presentation.
- Loved by students and lifelong learners
- Using it both on the smartphone and desktop
- Ankiweb hosts your card decks for free (support them!)
- Stores: F-Droid, Google Play
- <https://apps.ankiweb.net/>





- Single language and bilingual dictionary from Wiktionary data
- Offline support: makes it easy to download the language packs of your choice.
- Formatting issues though. The free but proprietary dictionaries from "Livio" are much better. Their wiki to HTML engine is Apache 2 licensed though, and could be used in FOSS apps:  
<https://github.com/javalc6/wikiparser-java>.
- Fortunately, provides links to Wiktionary pages (when online)
- An application needing contributors to fix issues.
- Store: F-Droid
- <https://github.com/rdoefffinger/Dictionary>

# Closing thoughts

- Now using a password manager (Bitwarden) and stronger passwords. No longer typing passwords.
- Now using the KISS launcher. I can't get back!
- Podcasts: replacing Spotify by AntennaPod
- E-mail and calendar: replaced Zoho Mail by K-9 Mail and ICSx5
- Navigation: moved from Waze to OsmAnd and then Organic Maps
- Removed the Radio France app (worst number of privacy leaks). Using RadioDroid instead.
- Replaced Orange Phone app by Yet Another Call Blocker and Fossify Phone.
- Removed Garmin Connect. Now using OpenTracks, though I'm missing all the health data for the moment.
- Keeping a closer look at my battery status (trying to keep it between 20 and 80%)

- Good, usable, multilingual, predictive keyboard, that allows to leave Microsoft SwiftKey
- Reliable navigation through public transportation.
- Gadgetbridge support for my Garmin watch.
- Good application to take notes, either from Android or from the desktop (or a web app).  
Currently using SimpleNote from Automattic (GPLv2 client but proprietary server).
- Good FOSS offline dictionaries based on Wiktionary
- Should elaborate on servers (like Nextcloud) for self-hosting one's data.

- To people who answered my questions and shared their favorites: Leszek Grzanska, Werner Fischer, Yann B., Sébastien Dinot, Philip-Dylan Gleonec, Jean-Martin Haran, Benoît Taine, Luca Ceresoli, Mikkel Kirkgaard Nielsen, Cornelius Kölbel, Christophe Blaess, Julien Stephan, René Dubois.
- To the maintainers of F-Droid and its contributors.

- mo@rootcommit.com
  - XMPP: omichael@conversations.im
  - Signal: rootcommit.01
- 
- Slides available under the CC-BY-SA 4.0 license  
<https://rootcommit.com/pub/conferences/2025/fosdem/foss-apps-android/>
  - Sources ( $\text{\LaTeX}$ ):  
<https://gitlab.com/rootcommit/foss-apps-android/>