



Welcome



Free Software Alternatives for Google Android

Strategies & Solutions

by Rijk Ravestein • rijkr@savapage.org

Saturday • September 21 • 2019





Utrecht University

1980

Cognitive Psychology

1985

Software Engineer



1998

www.dataverse.nl



SavaPage
Open Print Portal

2011

www.savapage.org



LibrePractice
A Business Model for Free Software Practitioners

www.librepractice.org



Dataverse
A Libre Software Practice

www.dataverse.com



- What's happening?
- Are we safe?
- Are we free?
- What's at stake?
- Freedom Strategies and Tactics
- Past, Present and Future



Software Freedom Day (SFD) is an annual worldwide celebration of Free Software. SFD is a public education effort with the aim of increasing awareness of Free Software and its virtues, and encouraging its use.



Free to Use



Free to Study



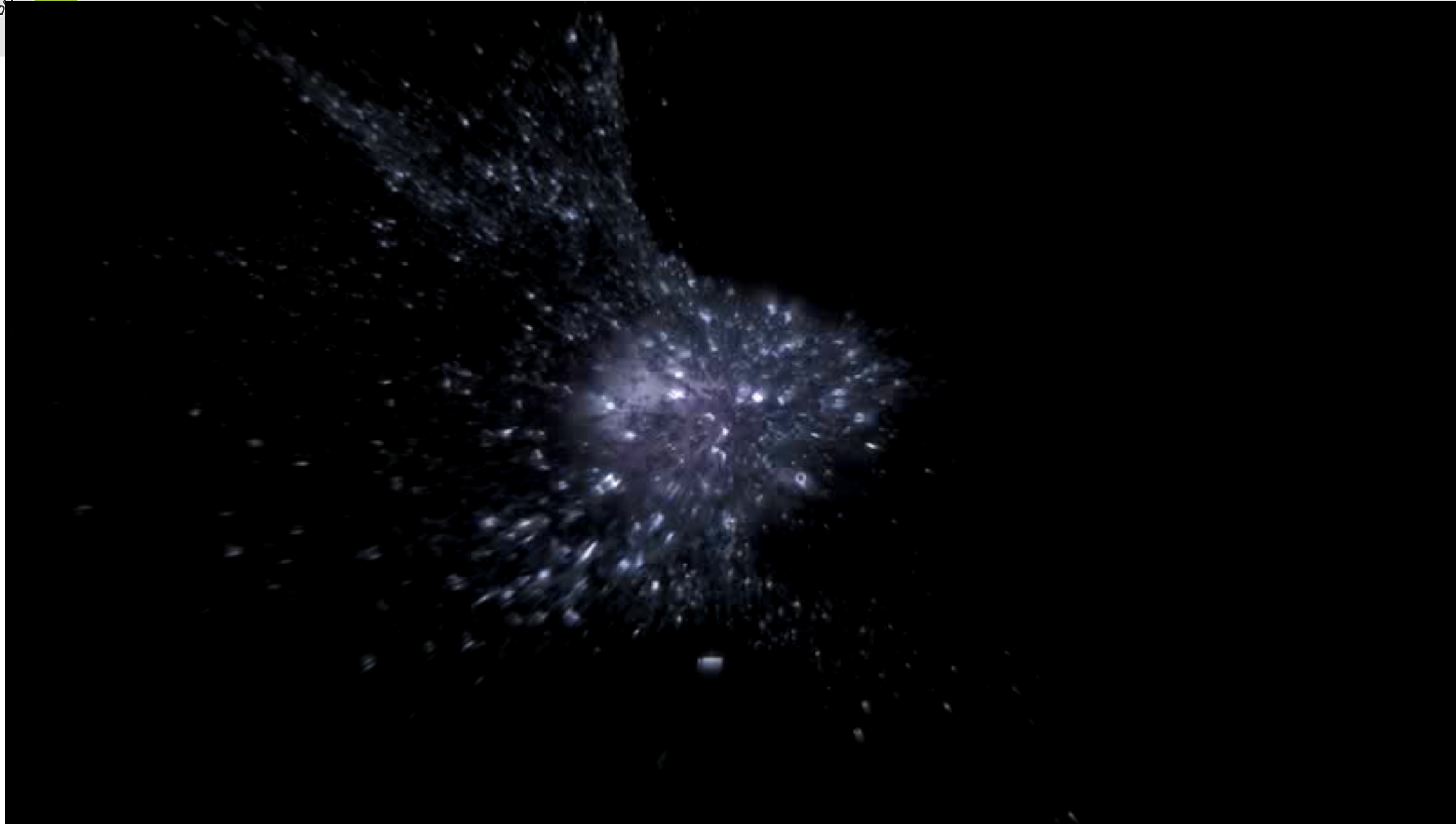
Free to Distribute



Free to Modify



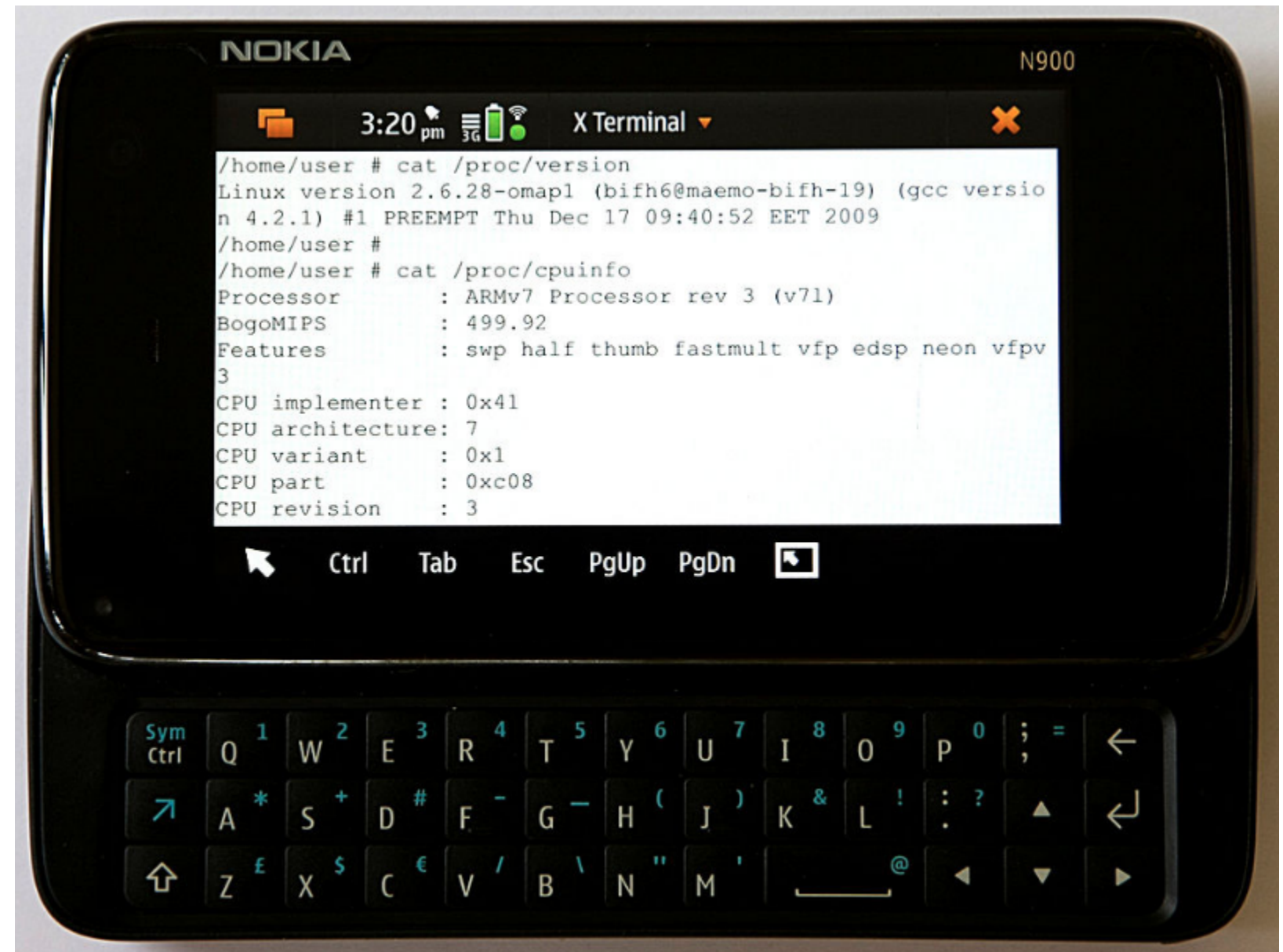
But first, a fairy tale . . .





Once upon a time ...

- Symbian OS
- 2008: Android 1.0
- 2009: N900
- Maemo 5 → MeeGo
- Nitdroid
- 2010: Stephen Elop
- Nokia → Windows Phone
- 2014: Nokia Devices & Services acquired by Microsoft
- 2014: Microsoft dismisses 12,500 former Nokia employees
- 2016: Nokia sold by Microsoft to former Nokia employees: \$300bn → \$300m
 - Jolla ~ Sailfish OS
- Nokia → Android





- Ubuntu Touch/Phone
- Convergence
- 2011: start
- 2014: release
- 2015: BQ Aquaris E4.5 (EU)
- 2015: Meizu MX4 (China)
- 2017: Canonical
- 2017: UBports
- <https://devices.ubuntu-touch.io>
 - Core: 12
 - Community: 1

Ubuntu now fits your phone

Introducing the superphone that's also a full PC



Backed by Canonical

We provide hardware enablement services to the world's biggest PC OEMs and, as a result, Ubuntu now ships pre-installed on many of the world's new PCs. With staff and offices all over the world, we have the resources you need to deliver Ubuntu on smartphones.

[Learn more about Canonical >](#)

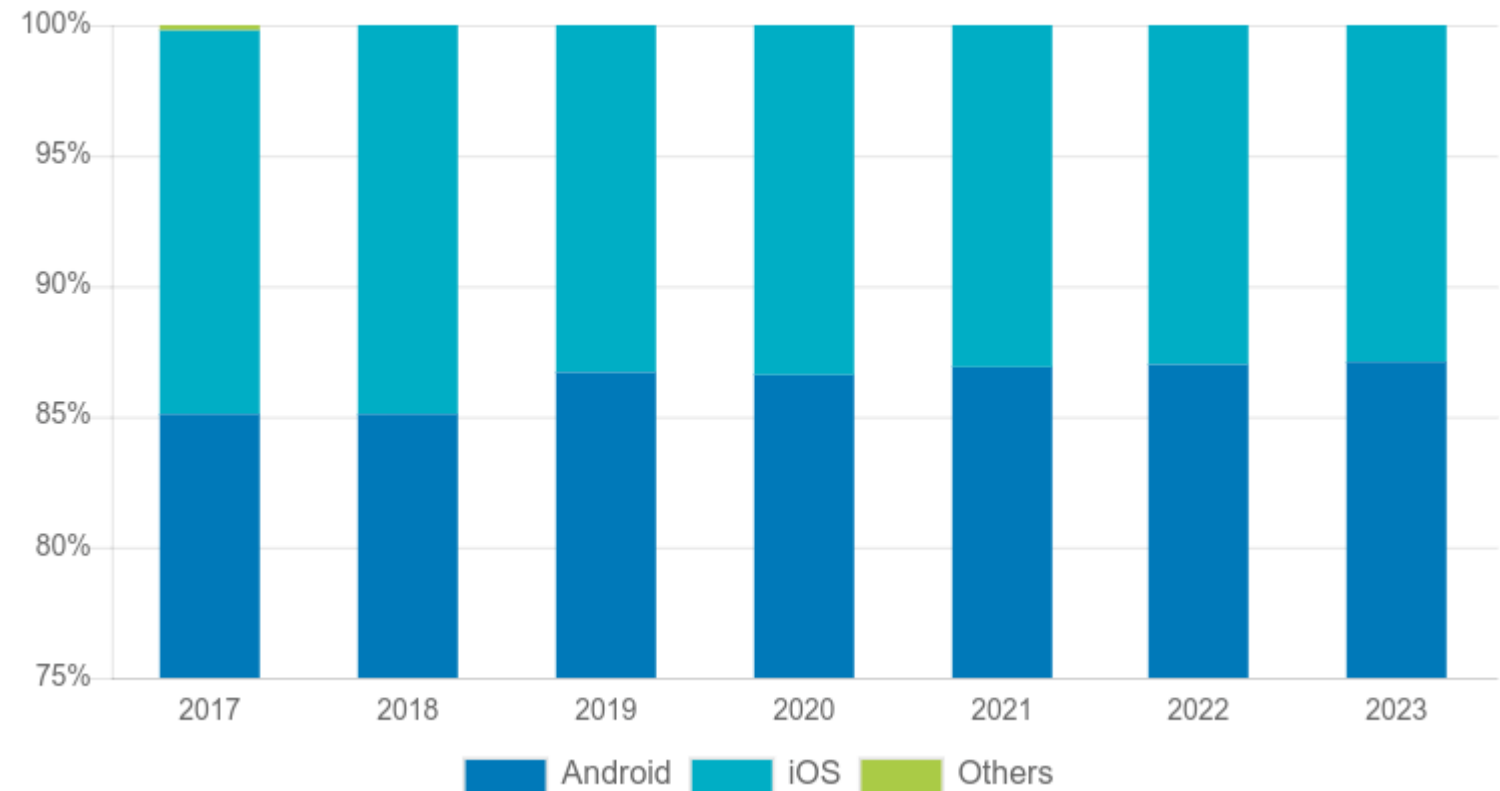


Fast forward 2019 – Smartphone Market Share



- Google Android : 86.7%
- Apple iOS : 13.3%
- ~~Windows Phone~~
- Others : 0.0%

Worldwide Smartphone Shipment OS Market Share Forecast



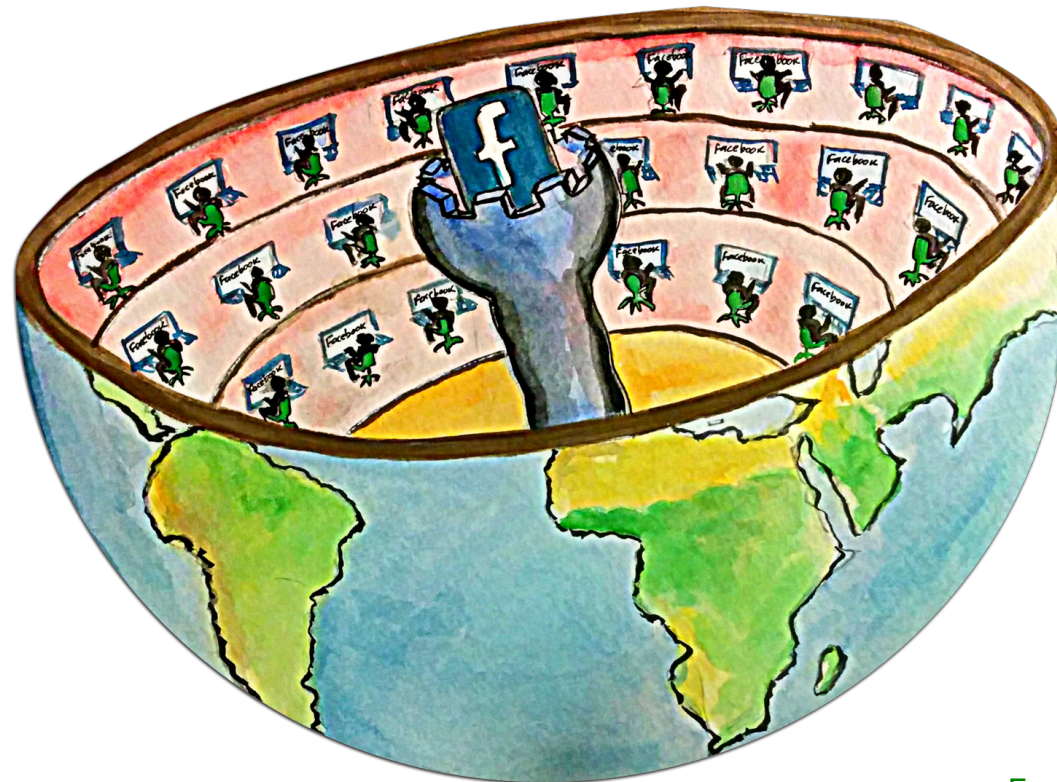
<https://www.idc.com/promo/smartphone-market-share/os>



What's happening

"The Building circular - an iron cage, glazed - a glass lantern about the size of Ranelagh - The Prisoners in their Cells, occupying the Circumference - The Officers, the Centre. By Blinds, and other contrivances, the Inspectors concealed from the observation of the Prisoners: hence the sentiment of a sort of invisible omnipresence. - The whole circuit reviewable with little, or, if necessary, without any, change of place."

— Jeremy Bentham (1791) Panopticon, or The Inspection House



 **Joelle L** [+ Follow](#)

Facebook: The Panopticon of Modern Age

Understanding the surveillance in Facebook and its relevance to the Panopticon.

<https://www.flickr.com/photos/ilifeinicity/13048344414/>



THE AGE OF SURVEILLANCE CAPITALISM

THE FIGHT FOR A
HUMAN FUTURE
AT THE NEW
FRONTIER OF POWER

SHOSHANA
ZUBOFF

The challenges to humanity posed by the digital future, the first detailed examination of the unprecedented form of power called "surveillance capitalism," and the quest by powerful corporations to predict and control our behavior.

In this masterwork of original thinking and research, Shoshana Zuboff provides startling insights into the phenomenon that she has named surveillance capitalism. The stakes could not be higher: a global architecture of behavior modification threatens human nature in the twenty-first century just as industrial capitalism disfigured the natural world in the twentieth.

Shoshana Zuboff

Shoshana Zuboff is the Charles Edward Wilson Professor of Business Administration at the Harvard Business School. One of the first tenured women at the Harvard Business School, she earned her Ph.D. in social psychology from Harvard University and her B.A. in philosophy from the University of Chicago. [Wikipedia](#)



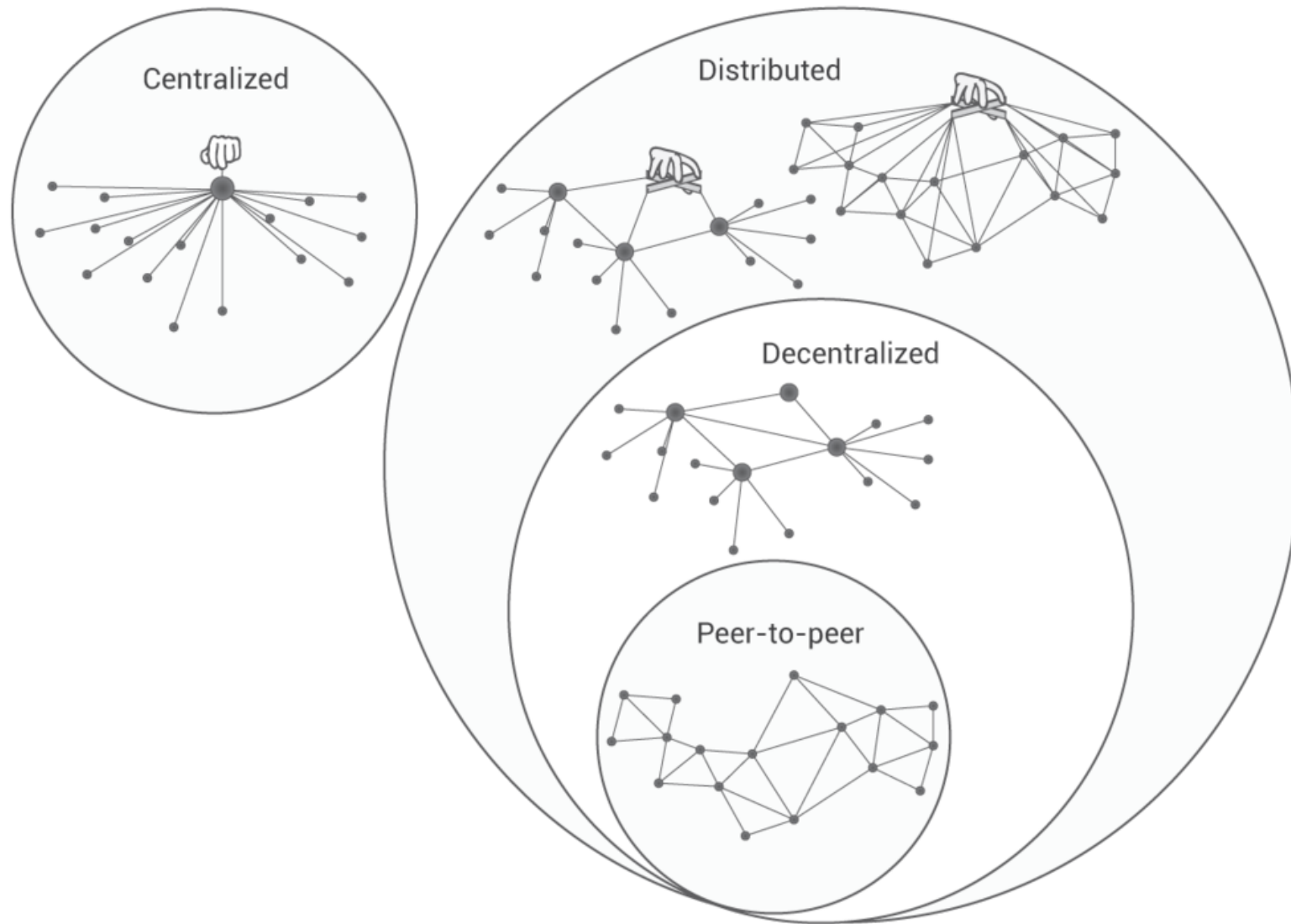
It's the ecosystem, stupid!



- ~~Right to Repair~~
- ~~Replaceable battery~~
- ~~Audio jack~~
- ~~Lifetime updates~~



Liberty and Justice for All



“With Free Software, users control their computer instead of being controlled by their computer.”



“Freedom and Privacy on the Internet”



“Principles of the Free Software movement as model for socio-economic relations.”





New era, new chances, Librem 5

The only modern smartphone you can (truly) own.

To many in the world, modern smartphones have become the single most significant piece of technology in their lives, a gateway to the world and representing your digital life. This comes at a price however: the tech industry have progressively turned you into the product or entrapped you into constantly buying new hardware. They design phones with services and apps that track and analyze your habits, your friends and acquaintances, and then exploit that information.

We believe phones should not track you nor exploit your digital life.

The Librem 5 represents the opportunity for you to take back control and protect your private information, your digital life through free and open source software, open governance, and transparency. The Librem 5 is **a phone built on PureOS**, a *fully* free, ethical and open-source operating system that is ***not* based on Android or iOS** (learn more about [why this is important](#)).





Librem 5 Phone



- Librem One
 - a growing bundle of ethical services
- User-Replaceable Battery
- 3.5mm headphone jack
- Lifetime updates
- HTML5 (web) applications
- Purism PureOS
- Initial release in Q3 2019
- Preorder special pricing **\$699**





An Open Source Smart Phone Supported by All Major Linux Phone Projects

Perhaps you're in a line of work where security is a must, or a hard-core Linux enthusiast, or perhaps you've just got enough of Android and iOS and you're ready for something else – the PinePhone may be the next Phone for you. Powered by the same Quad-Core ARM Cortex A53 64-Bit SOC used in our popular PINE A64 Single Board Computer, the PinePhone runs mainline Linux as well as anything else you'll get it to run.

The purpose of the PinePhone isn't only to deliver a functioning Linux phone to end-users, but also to actively create a market for such a device, as well as to support existing and well established Linux-on-Phone projects. All major Linux Phone-oriented projects, as well as other FOSS OS', are represented on the PinePhone and developers work together on our platform to bring support this this community driven device.

PINEPHONE – LINUX SMARTPHONE (Prototype Batch Solely For Developers)

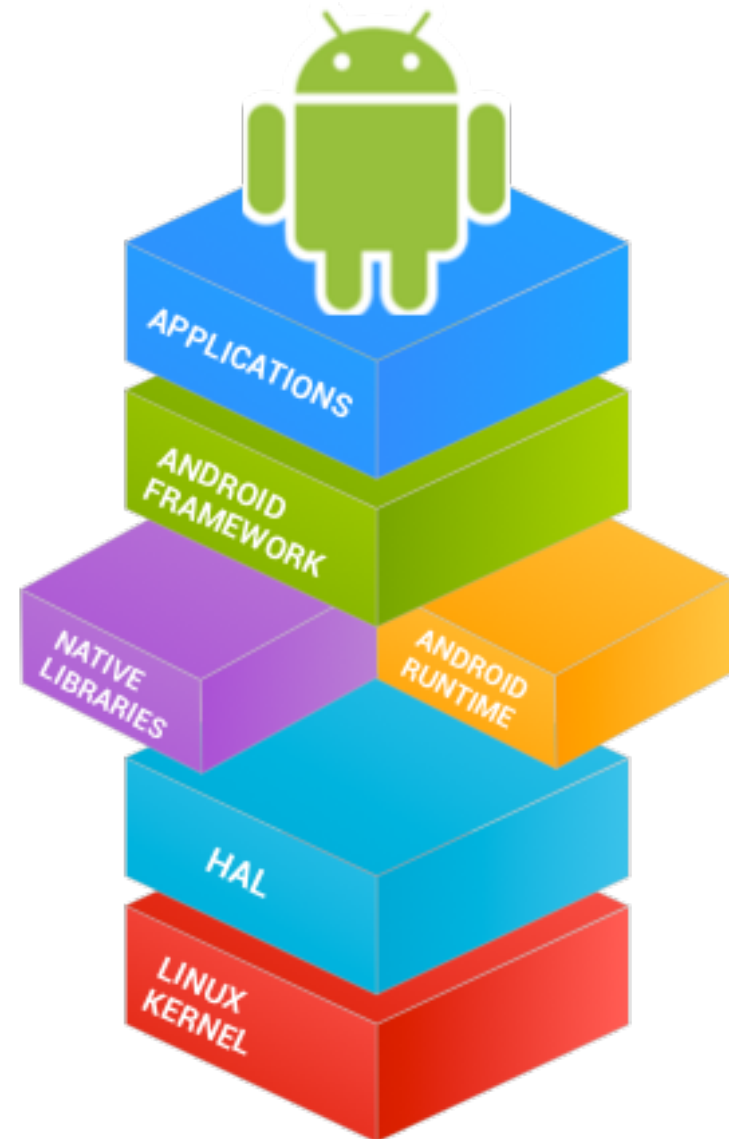
\$149.99

- <https://www.pine64.org/pinephone/>

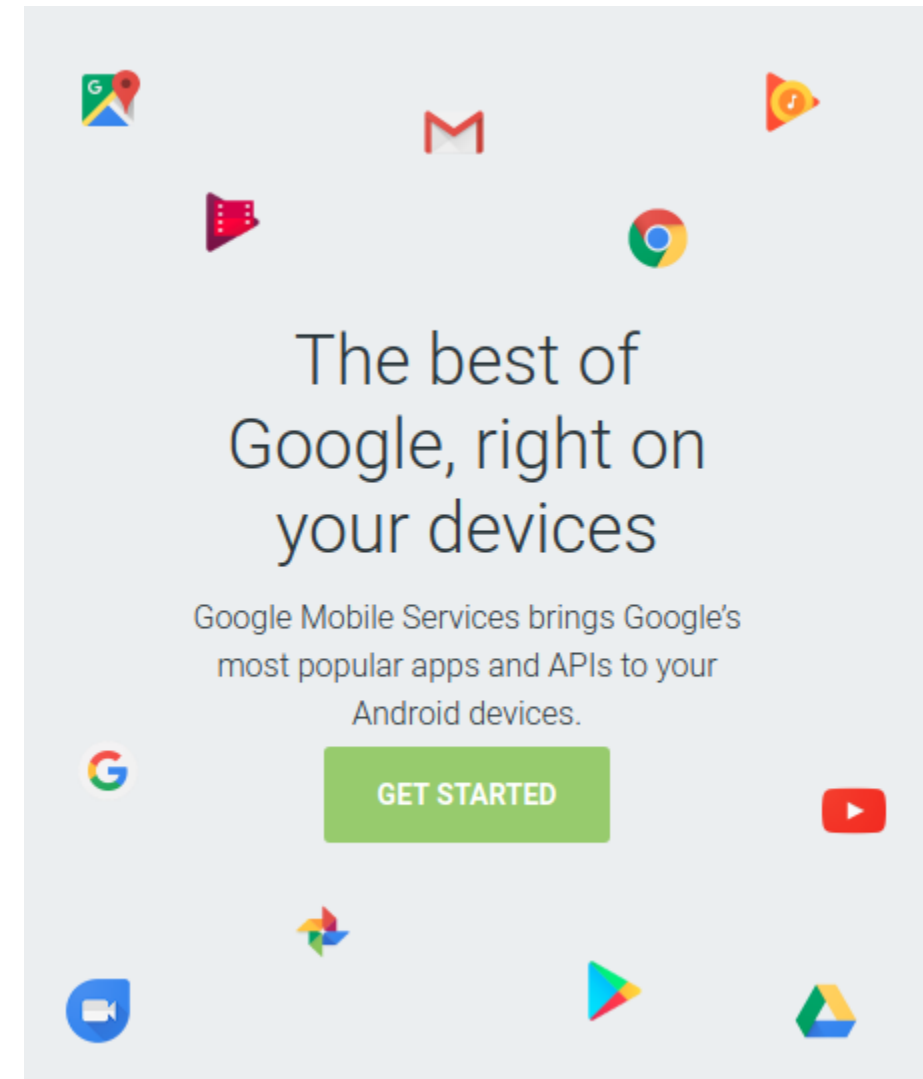




Android Open Source Project (AOSP) + GMS



[https://en.wikipedia.org/wiki/Android_\(operating_system\)#AOSP](https://en.wikipedia.org/wiki/Android_(operating_system)#AOSP)



<https://www.android.com/gms/>



If I'm not a manufacturer, how can I get Google Play?

Google Play is only licensed to handset manufacturers shipping devices. For questions about specific cases, contact android-partnerships@google.com.

How can I get access to Google apps for Android, such as Maps?

Google apps for Android, such as YouTube, Google Maps, and Gmail are Google properties that aren't part of Android and are licensed separately. Contact android-partnerships@google.com for inquiries related to these apps.

<https://source.android.com/setup/start/faqs>

Aren't Google's SDK and libraries free, open source software?

While much of Android is free open source software, much of it is not at all. The Android SDK binaries is made available by Google under a proprietary license but almost all of the source code for the Android SDK is available under the Apache license. Google APIs, used for building apps using Google Services like Maps, GCM, etc, are free to the extent that the library comes pre-installed on the device. Almost all of the Google libraries, like Play Services, Google Admob, and GCM, are proprietary and cannot be included in the main F-Droid repository.

https://f-droid.org/en/docs/FAQ_-_App_Developers/



Replicant

Replicant is a fully free Android distribution running on several devices,
a free software mobile operating system putting the emphasis on freedom and privacy/security

- LineageOS/Android6/F-Droid
- Available for 10 smartphones, GPS?



<https://e.foundation/>

/e/ is a complete mobile ecosystem

We could have just focused on an OS, but apps and online services are critical components of a smartphone experience, too.

/e/ consists in a mobile operating system (OS) and carefully selected applications, together forming a privacy-enabled internal environment for mobile phones.

Combined with online services, such as a search engine, email, storage and other online tools, it creates a unique environment privacy-in privacy-out.

- Forked from LineageOS (successor of CyanogenMod) + Android 7/8/9
- <https://microg.org/> (microG is a free version of the set of APIs equivalent to Google's proprietary core libraries and applications)
- Available for 81 smartphones
- Refurbished Samsung S7 with /e/ €279





/e/ Roadmap



 **Gaël Duval** @gael@mastodon.so... 5h
This is something I didn't talk about yet, but you can expect /e/OS on @PINE64 #Pinebook in a near future.

Then will probably have a version for Olimex @olimex laptops, and then /e/OS for #Pinephone

#mydataisMYdata #android
#ungoogle #opensource
e.foundation



 1+   



Don't be evil



microG Project

A free-as-in-freedom re-implementation of Google's proprietary Android user space apps and libraries.

The linux-based open-source mobile operating system Android is not only the most popular mobile operating system in the world, it's also on the way to becoming a proprietary operating system. How is that?

While the core operating system is still released as part of the Android Open Source Project, the majority of core apps are not. It gets worse: More and more libraries and APIs are only available on phones that run various Google apps pre-installed, effectively locking third-party apps to the Google ecosystem. For these reasons Android is [described as being](#) a "look but don't touch" kind of open.

At this point, several popular open-source applications already require some of Google's proprietary libraries to be installed. Increasing demand in the free software community in addition to severe problems in Google's proprietary software discovered by the Android modding community, have led to the development of a free software clone of Google's proprietary core libraries and applications - the microG Project was born.

- **Service Core (GmsCore)** is a library app, providing the functionality required to run apps that use Google Play Services or Google Maps Android API (v2).

[More details and installation instructions](#)

- **Services Framework Proxy (GsfProxy)** is a small helper utility to allow apps developed for Google Cloud to Device Messaging (C2DM) to use the compatible Google Cloud Messaging service included with GmsCore.

[Read GmsCore documentation for details](#)

- **Unified Network Location Provider (UnifiedNlp)** is a library that provides Wi-Fi- and Cell-tower-based geolocation to applications that use Google's network location provider. It is included in GmsCore but can also run independently on most Android systems.

[More details and installation instructions](#)

- **Maps API (mapsv1)** is a system library, providing the same functionality as now deprecated Google Maps API (v1).

[More details and installation instructions](#)

- **Store (Phonesky)** is a frontend application providing access to the Google Play Store to download and update applications. Development is in early stage and there is no usable application yet.



Google Android One + F-Droid

- <https://www.android.com/one/>
- Regular security updates for 3 years
- F-Droid



[← Nokia smartphones](#)

Nokia 3.2 Zwart

★★★★☆ 7 reviews



In de kleur:

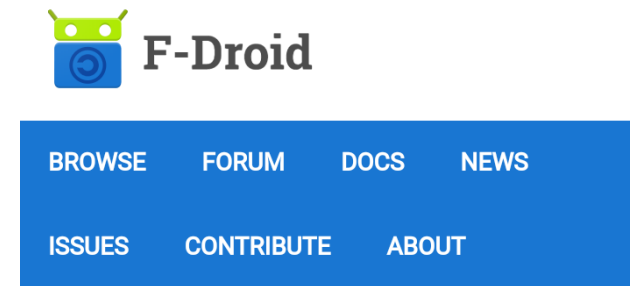
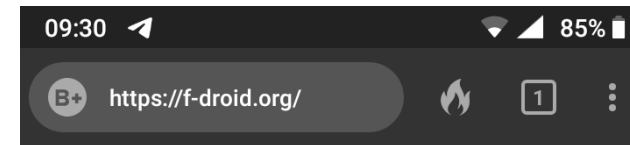
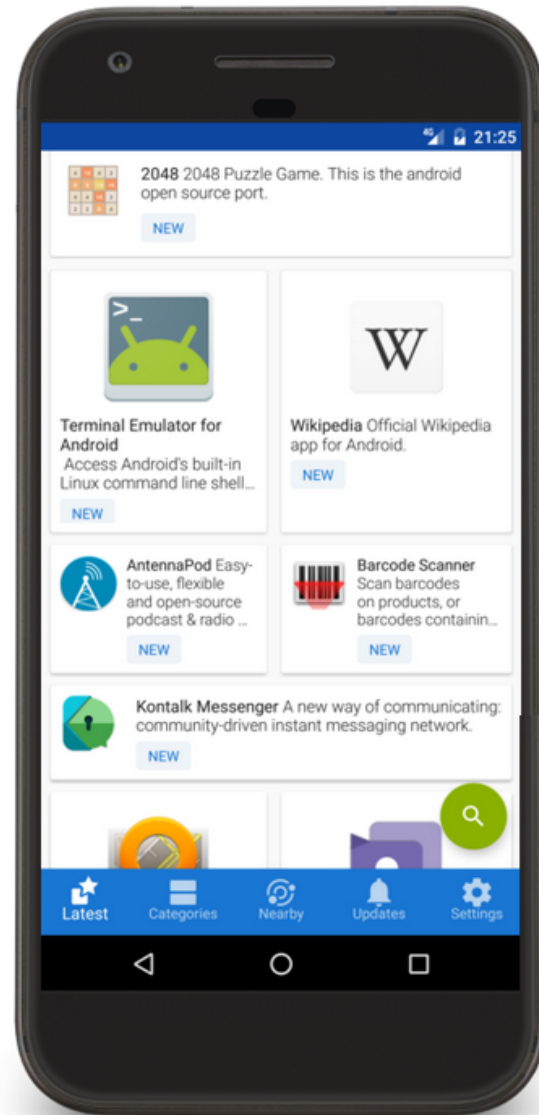
135,99  **Morgen in huis**



What is F-Droid?

F-Droid is an installable catalogue of FOSS (Free and Open Source Software) applications for the Android platform. The client makes it easy to browse, install, and keep track of updates on your device.

[DOWNLOAD F-DROID](#)
[PGP Signature](#)



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[PGP Signature](#)





Why isn't F-Droid on Google Play?

Pick your favourite reason (both are true and valid):

- We don't use proprietary software: Google Play is proprietary software;
- F-Droid, as an app that “competes” with Google Play, is against their [Terms of Service](#).



Telegram

Telegram is a messaging app with a focus on speed and security.

▼ **This app has features you may not like.**

- [NonFreeNet](#)
- [UpstreamNonFree](#)

Notifications

Since [Android 8.0 Oreo](#), [Google doesn't allow apps to run in the background anymore](#), requiring all apps which were previously keeping background connection to exclusively use its Firebase push messaging service.

As one can't use Google's push messaging in a FOSS app, Telegram-FOSS has to show you a notification to keep the background service running. Otherwise, you wouldn't be notified about new messages.

Antifeature:NonFreeNet

This [Antifeature](#) is applied to apps that promote or depend entirely on a non-Free network service.

Antifeature:UpstreamNonFree

This [Antifeature](#) is applied to apps where the upstream source code is Non-Free in some way.



DuckDuckGo Privacy Browser

Privacy, simplified

▼ This app has features you may not like.

- [NonFreeNet](#)



K-9 Mail

Full-featured email client



OpenKeychain

Encrypt your Files and Communications. Compatible with the OpenPGP Standard.

Antifeature:NonFreeNet

This [Antifeature](#) is applied to apps that promote or depend entirely on a non-Free network service.



VLC

The best video and music player. Fast and “just works”, plays any file



RadioDroid

Browse and stream internet radios



Telegram

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DAVx⁵

CalDAV/CardDAV Synchronization and Client

DAVx⁵ is a CalDAV/CardDAV management and synchronization app for Android which natively integrates with Android calendar/contact apps.

Contacts, Calendars, Tasks
All bound to one powerful app that is seamlessly integrated into the device and performs synchronization silently in the background

Simple account setup
Connect your server or service and setup a reliable synchronization within minutes!

Multiple accounts
Manage multiple CalDAV/CardDAV accounts with ease and stay connected with different services at once!

Rich settings
Important and yet simple to understand settings help you to get the most out of your new synchronization!

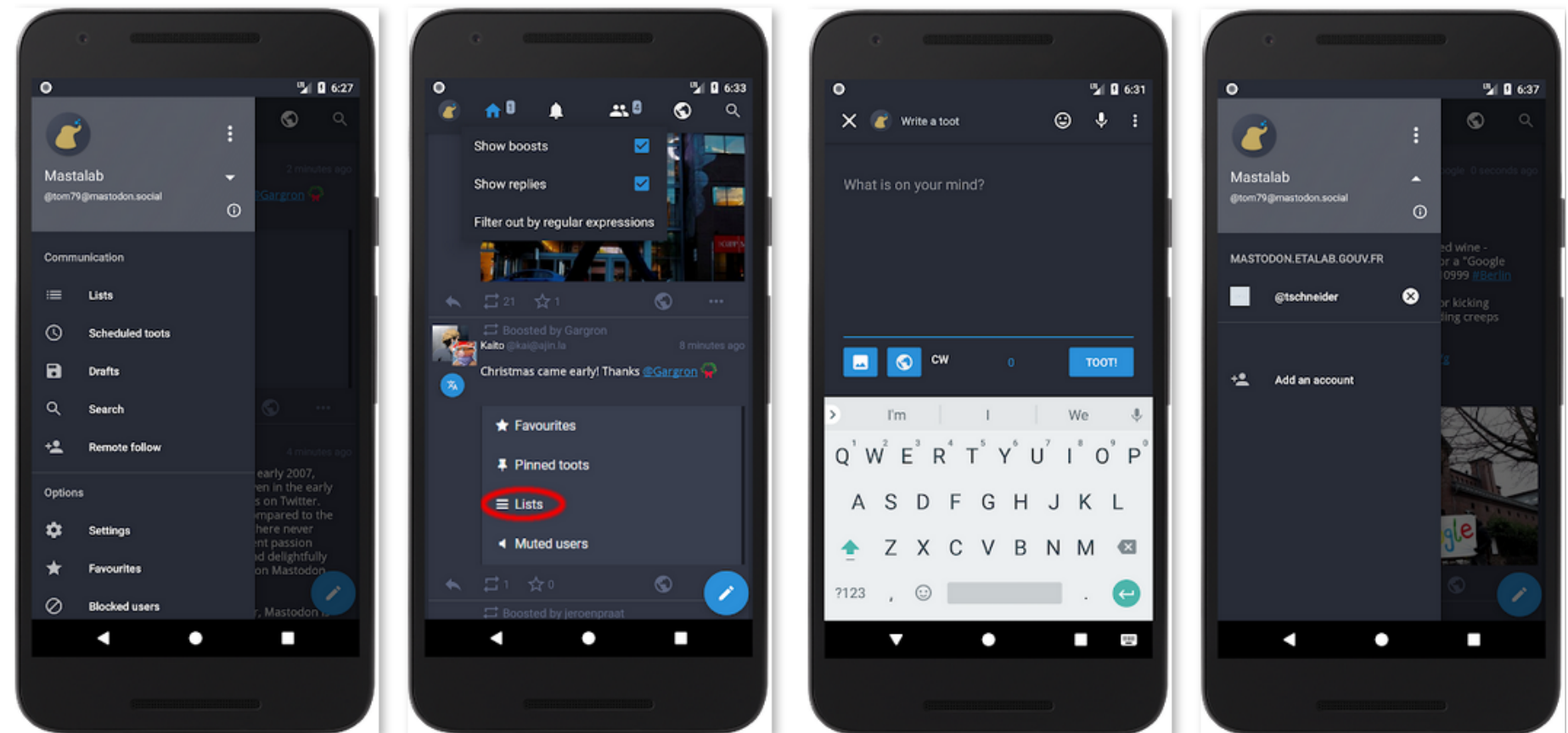
Choose your favorite apps
Whether you like *Etar*, *SPlanner*, *acalendar+*, *digical* or *Business Calendar*... DAVx⁵ is compatible with almost every Calendar or Contacts app!



Fedilab

A multi-account client for the Fediverse

Fedilab is a multifunctional Android client to access the distributed Fediverse, consisting of micro blogging, photo sharing and video hosting.





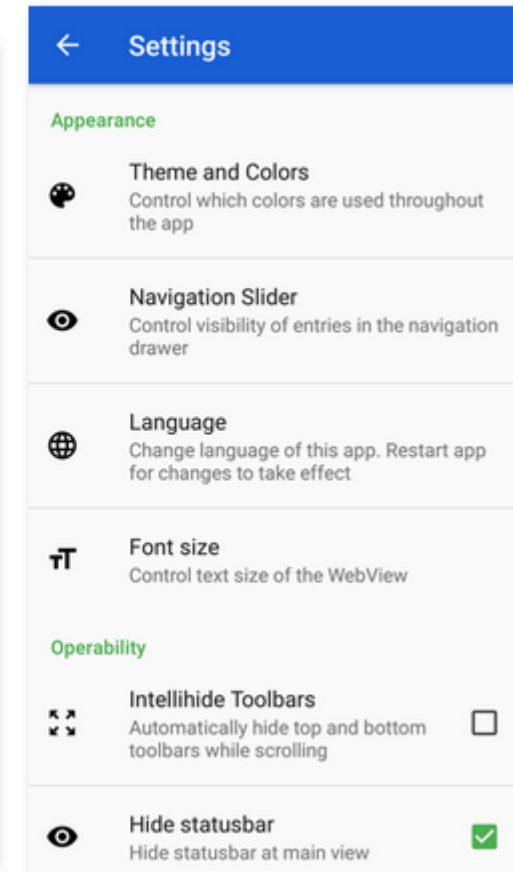
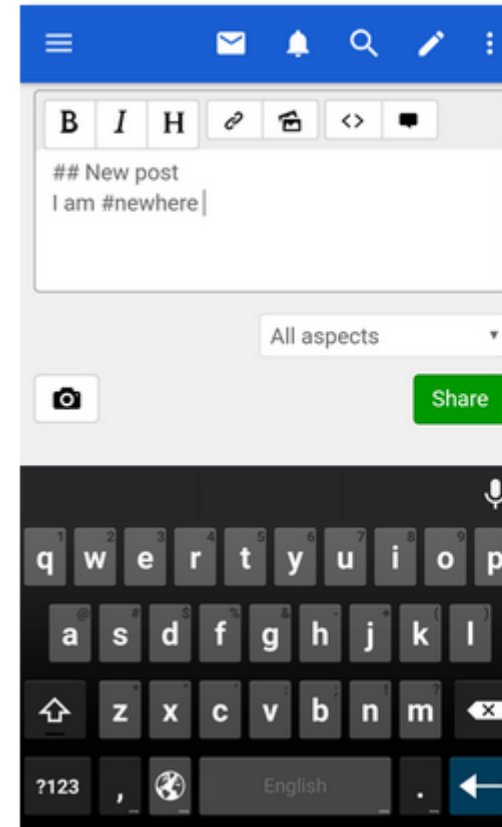
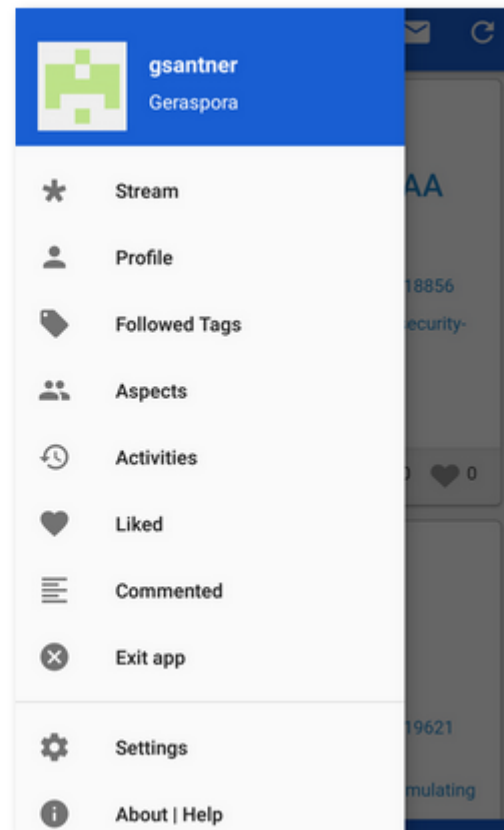
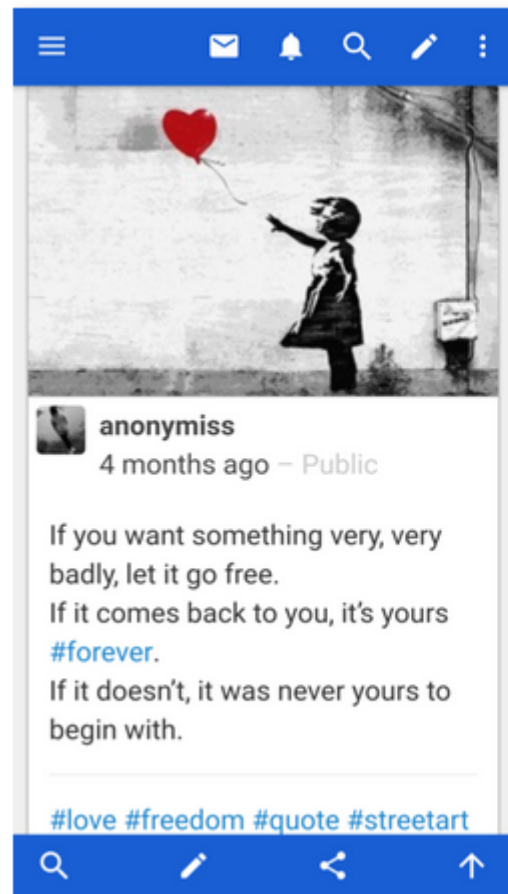
F-Droid Apps



dandelion*

diaspora* social network client

A client for the community-run, distributed social network diaspora*.





OsmAnd~

Global Mobile Map Viewing & Navigation for Offline and Online OSM Maps

OsmAnd+ (OSM Automated Navigation Directions) is a map and navigation application with access to the free, worldwide, and high-quality OpenStreetMap (OSM) data.

Enjoy voice and optical navigation, viewing POIs (points of interest), creating and managing GPX tracks, using contour lines visualization and altitude info, a choice between driving, cycling, pedestrian modes, OSM editing and much more.

▼ This app has features you may not like.

- [NonFreeAssets](#)
- [NonFreeNet](#)
- [NonFreeAdd](#)

Antifeature:NonFreeAssets

This [Antifeature](#) is applied to apps that contain and make use of non-free assets.

The most common case is apps using artwork - images, sounds, music, etc - under a non-commercial license.

Antifeature:NonFreeNet

This [Antifeature](#) is applied to apps that promote or depend entirely on a non-Free network service.

Antifeature:NonFreeAdd

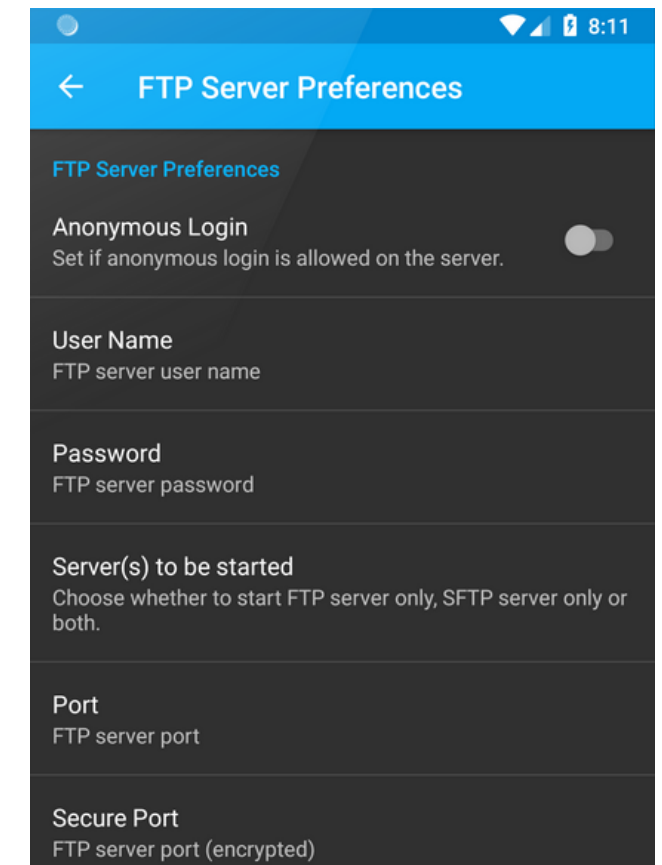
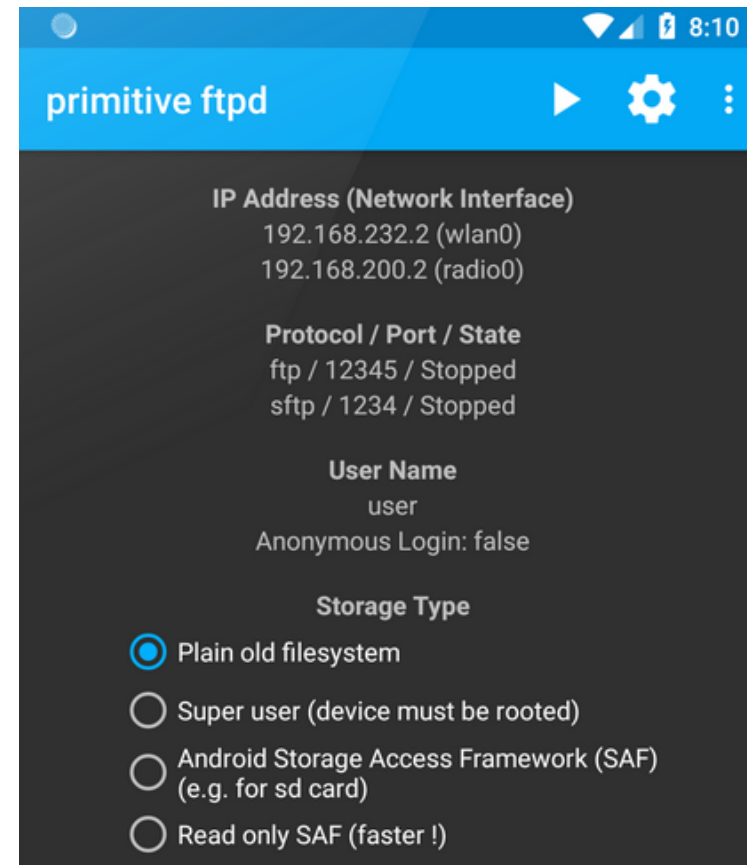
This [Antifeature](#) is applied to apps that, although Free Software themselves, promote other non-Free applications or plugins.



primitive ftpd

FTP server

A simple FTP and SFTP (SSH file transfer) server. Allows to exchange files with other machines over WiFi. No more USB cable searching. Runs without root privileges and is not started when device boots: Control yourself when the server runs. However, while it runs it prevents standby to avoid long uploads and downloads to abort.





2048
Puzzle game



Minetest
Near infinite world block sandbox game



1010! Klooni
libGDX game based on 1010

Just some samples, a lot more games are present . . .



Packages

Although APK downloads are available below to give you the choice, you should be aware that by installing that way you will not receive update notifications and it's a less secure way to download. We recommend that you install the F-Droid client and use that.

[DOWNLOAD F-DROID](#)

Version 1.4.0 (9) - Added on 2017-05-06

This version requires Android 7 or newer.

It is built and signed by F-Droid, and guaranteed to correspond to [this source tarball](#).

► **Permissions**

[Download APK](#) 1.5 MiB [PGP Signature](#)

Is your building and signing process secure?

The building and signing is done in an secure **offline** (i.e. inaccessible from the internet) environment. Every package is built in a completely fresh isolated virtual machine environment which is discarded once the build is complete. Additionally, that build environment is completely separated from the signing environment.

So yes, as far as we know, it's secure. However, as with everything else on the site, bear in mind this is a small community project which you are warned to use at your own risk. As with apps you get from elsewhere, including Google Play, you should exercise caution regarding the permissions they request when you install them. If in doubt, don't install.



Can I see who's installing my app?

No. While information and metrics about installations would be interesting and useful to you, it would also require us to track and monitor our users, something we won't do. We don't have any information about what apps or versions people install, whether they keep them installed, what other software or OS version they're running, or indeed anything else, so we can't pass that information on to you.



Security Model

The security architecture is based on models proven by [Debian](#), [The Update Framework](#), and others:

- [HTTPS connections by default](#)
- server only works over HTTPS, HTTP is a redirect
- [Android enforces](#) that all apps have a valid signature over the entire contents of the APK file
- [Android verifies updates](#) based on the signature of the installed app
- [file integrity](#) protected by [signed metadata](#)
- signed metadata includes hashes of [the app](#) and its [signing key](#)
- [signed metadata generated on a separate machine](#) (which is fully offline for [f-droid.org](#) and [guardianproject.info](#))
- [public key for verifying metadata signatures built into F-Droid client app](#)
- signed metadata includes [timestamp](#) and [expiry](#)
- easy Tor support via Settings
- [client-side HTTP “etag” cache check](#) so the ETag cannot be abused to track users
- list of official mirrors included in signed metadata, then the client [chooses mirrors](#) based on availability and freshness based on local criteria like whether Tor is in use

Initial Installs

Most users of F-Droid download the APK from [f-droid.org](#) and install it. This is a potential vector of attack that built-in app stores do not have. Therefore, many additional security precautions are taken to make it as hard as possible to exploit this vector.

- included on the [HSTS preload list](#), so major browsers will only ever use HTTPS for all connections to [f-droid.org](#)
- a [strong](#) TLS/HTTPS configuration
- a [strong](#) HTTP Content Security Policy
- [PGP-signature](#) on the initial install [download link](#)
- automated [regular](#) and [random auditing](#) that [F-Droid.apk](#) has not been tampered with
- F-Droid Limited controls many potential phishing domains like [fdroid.org](#), [f-droid.com](#), and [f-dro1d.org](#). (donations of more are welcome!)
- website is [statically generated](#) to greatly reduce the attack surface
- website is fully functional when Javascript is disabled in the browser, eliminating all possibility of XSS attacks



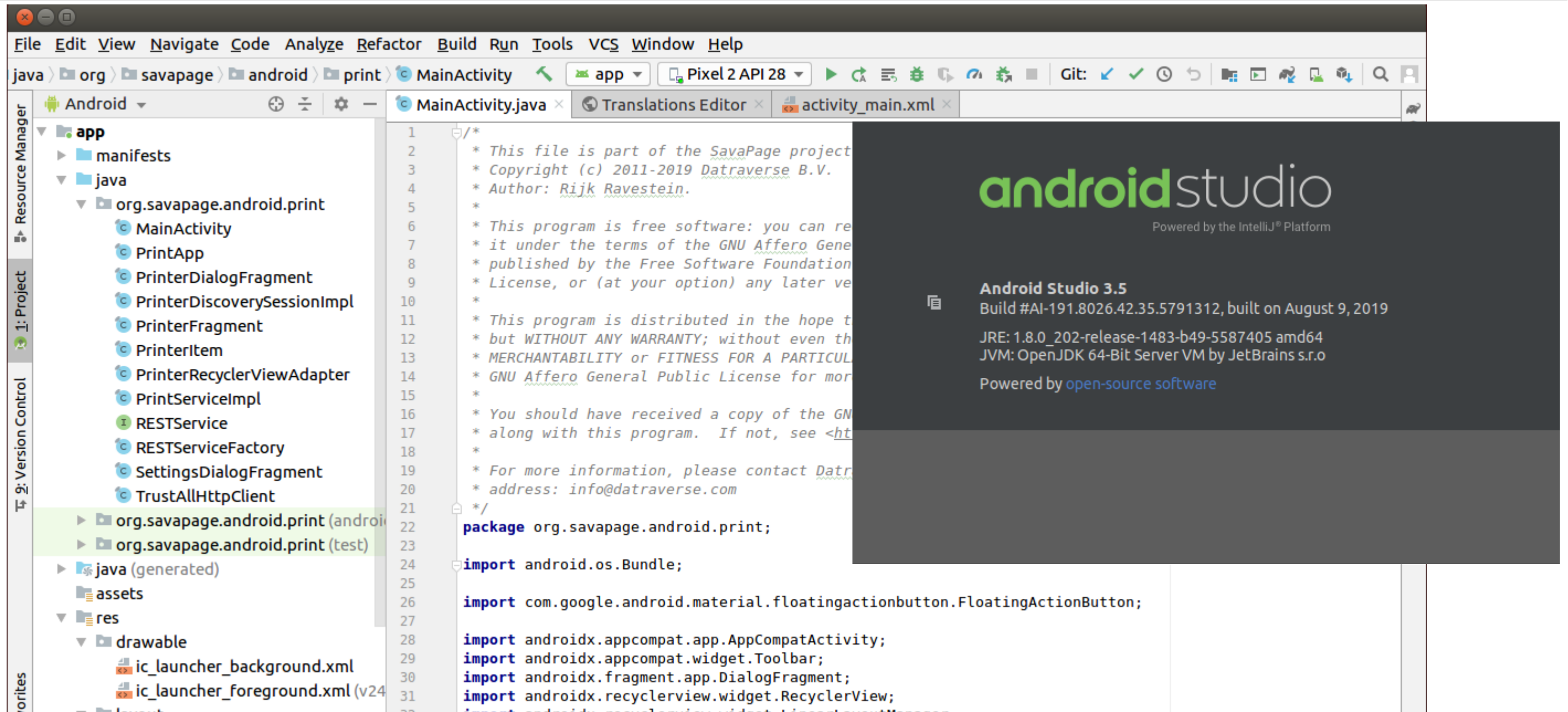
F-Droid



Hands-on . . .



How to create an F-Droid App



The screenshot shows the Android Studio IDE with the following components:

- Project Manager:** Shows the project structure for 'app' with packages 'org.savapage.android.print' and 'org.savapage.android.print (test)'. The 'print' package contains classes like MainActivity, PrintApp, PrinterDialogFragment, etc.
- Code Editor:** Displays the MainActivity.java file with the following code:

```
1  /*
2  * This file is part of the SavaPage project
3  * Copyright (c) 2011-2019 Datraverse B.V.
4  * Author: Rijk Ravestein.
5  *
6  * This program is free software: you can re
7  * it under the terms of the GNU Affero Gene
8  * published by the Free Software Foundation
9  * License, or (at your option) any later ve
10 *
11 * This program is distributed in the hope t
12 * but WITHOUT ANY WARRANTY; without even th
13 * MERCHANTABILITY or FITNESS FOR A PARTICUL
14 * GNU Affero General Public License for mor
15 *
16 * You should have received a copy of the GN
17 * along with this program. If not, see <ht
18 *
19 * For more information, please contact Datr
20 * address: info@datraverse.com
21 */
22 package org.savapage.android.print;
23
24 import android.os.Bundle;
25
26 import com.google.android.material.floatingactionbutton.FloatingActionButton;
27
28 import androidx.appcompat.app.AppCompatActivity;
29 import androidx.appcompat.widget.Toolbar;
30 import androidx.fragment.app.DialogFragment;
31 import androidx.recyclerview.widget.RecyclerView;
```
- Overlay:** A dark overlay on the right side of the IDE displays the Android Studio logo and version information:

androidstudio
Powered by the IntelliJ® Platform

Android Studio 3.5
Build #AI-191.8026.42.35.5791312, built on August 9, 2019

JRE: 1.8.0_202-release-1483-b49-5587405 amd64
JVM: OpenJDK 64-Bit Server VM by JetBrains s.r.o

Powered by [open-source software](#)



Android Studio

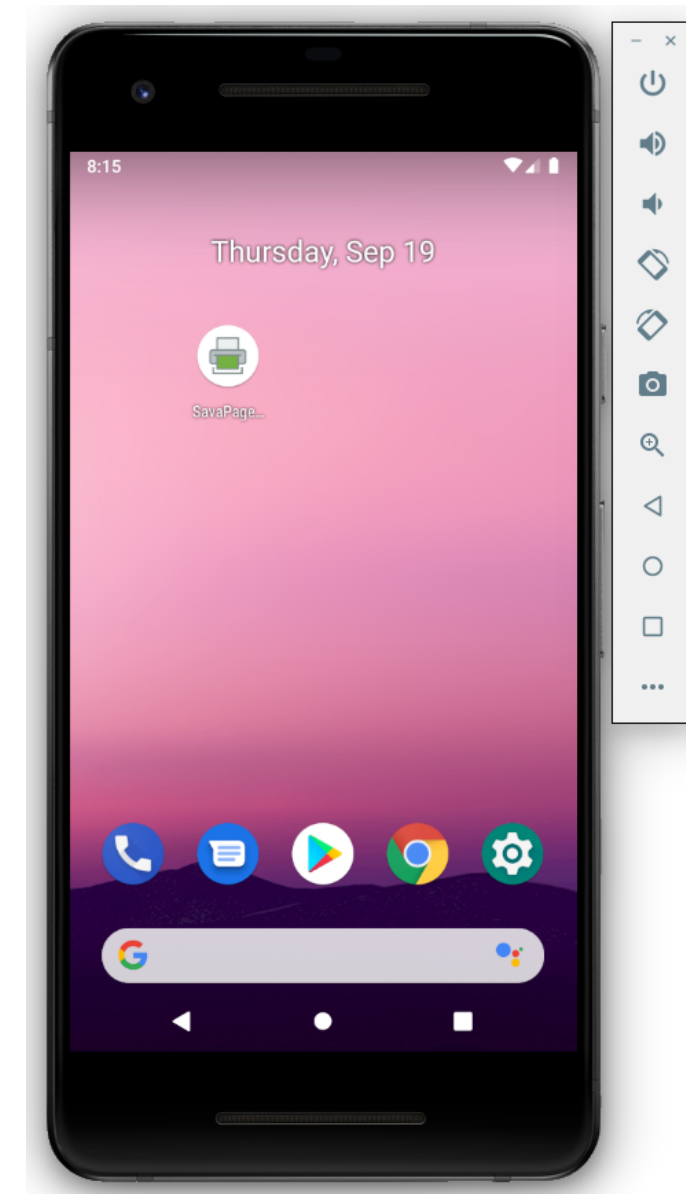


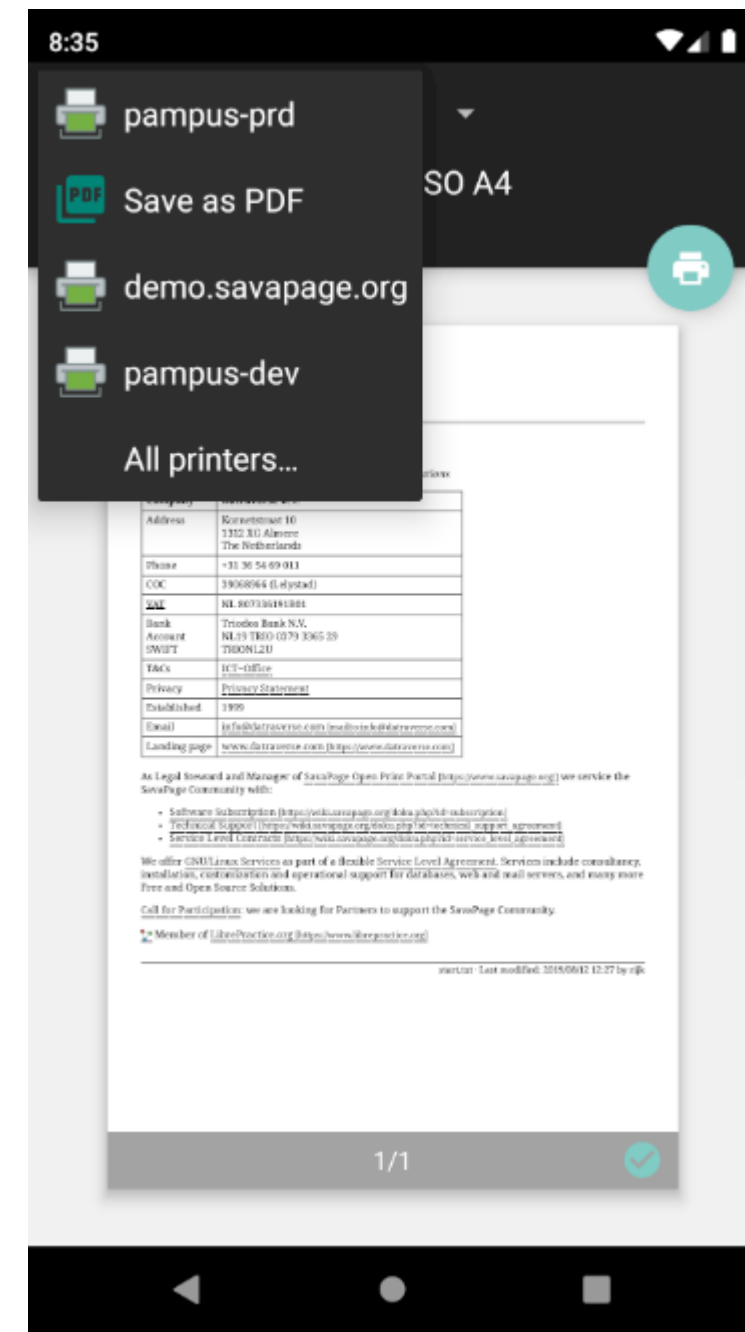
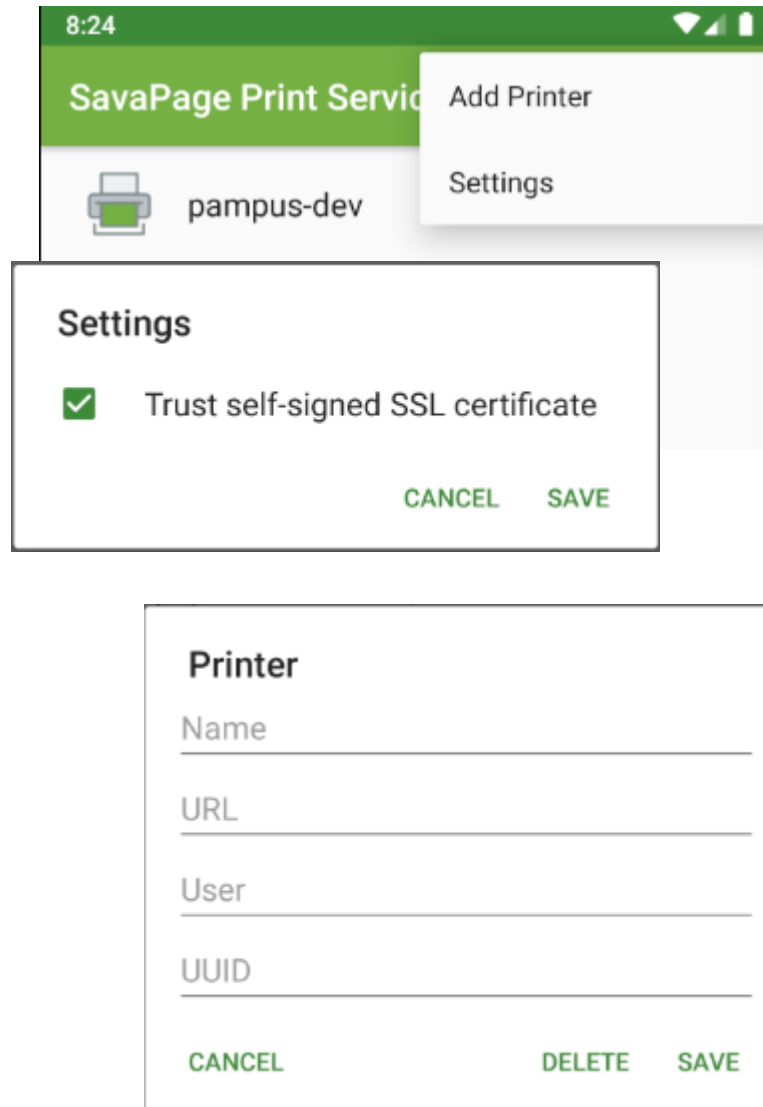
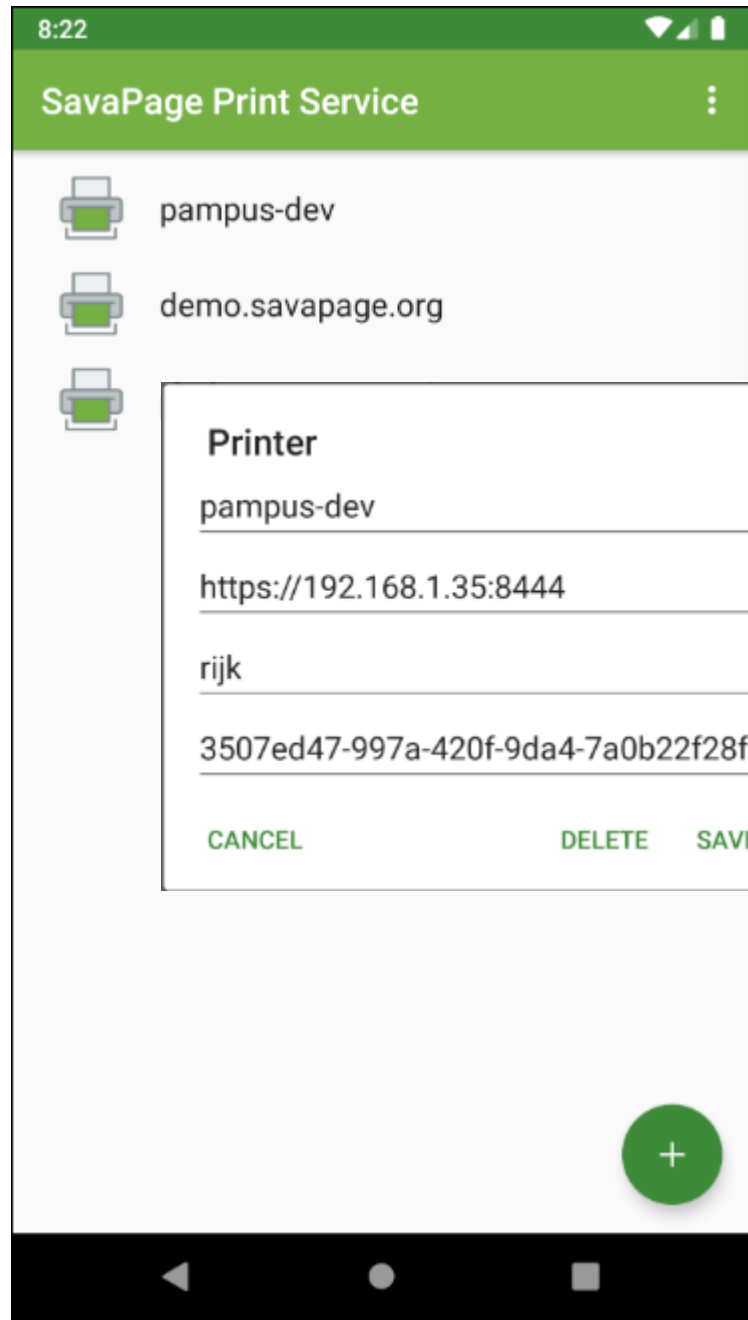
Android Virtual Device Manager

Your Virtual Devices
Android Studio

Type	Name	Play Store	Resolution	API	Target	CPU/ABI	Size on Disk	Actions
	Nexus S API 22		480 x ...	22	Andro...	x86	4.4 GB	
	Pixel 2 API 28		1080 ...	28	Andro...	x86	11 GB	

+ Create Virtual Device...





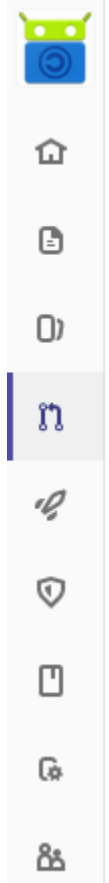


Adding a new F-Droid App



```
# fork https://gitlab.com/fdroid/fdroiddata.git
git clone git@gitlab.com:savapage-android/fdroiddata.git
git clone https://gitlab.com/fdroid/fdroidserver.git
# ~/.profile
export ANDROID_HOME=~/.AndroidSdk
export PATH=~/.fdroidserver:$PATH
# Create python venv
mkdir ~/my-pyvenv
cd ~/my-pyvenv
python3.6 -m venv fdroidserver-env
# activate
. fdroidserver-env/bin/activate
# install all python mods for fdroidserver
pip3.6 install fdroidserver
cd fdroiddata
# Create app metadata
cp templates/app-full \
  metadata/org.savapage.android.print.yml
```

```
gedit metadata/org.savapage.android.print.yml
# Check for errors
fdroid readmeta org.savapage.android.print
# Clean up .yml file
fdroid rewritemeta org.savapage.android.print
# Fill automated fields like Auto Name and Current Version
# Use --allow-dirty to prevent
# ERROR: Build metadata git repo has uncommitted changes!
fdroid checkupdates --allow-dirty org.savapage.android.print
INFO: Processing org.savapage.android.print
INFO: ...updating to version 0.1.0 (1)
INFO: Finished
# Fix lint warnings and build!
fdroid lint org.savapage.android.print
fdroid build -v -l org.savapage.android.print
BUILD SUCCESSFUL in 43s
# git add → commit → push → create merge request
```



F-Droid > Data > Merge Requests > !5488

Merged Opened 3 days ago by SavaPage 4 of 4 tasks completed Edit

Newapp: SavaPage Print Service

- ✓ The app complies with the inclusion criteria
- ✓ The original app author has been notified (and supports the inclusion)
- ✓ All related fdroiddata and rfp issues have been referenced in this merge request
- ✓ Builds with `fdroid build`

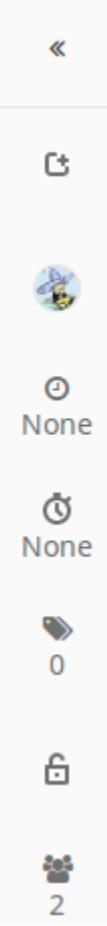
Edited 3 days ago by Licaon_Kter

Request to merge savapage-android:master into master

Download icon

✓ Merged by Licaon_Kter 3 days ago

The changes were merged into master with 9415263b



SavaPage @savapage · 23 hours ago

Thanks for the merge. I see "SavaPage Print Service" is present as <https://gitlab.com/fdroid/fdroiddata/blob/master/metadata/org.savapage.android.print.yml>, but the app seems not to be built (yet), since it's not visible in F-Droid: <https://search.f-droid.org/?q=savapage&lang=en> gives no result. Is there something I need to do?

Edited by SavaPage 23 hours ago

Licaon_Kter @licaon-kter · 23 hours ago (Maintainer)

@savapage You'll wait... look at the build server output almost in realtime (<https://f-droid.org/wiki/Index.php?title=Special:RecentChanges&days=7&from=&hidebots=0&hideanons=1&hideliu=1&limit=500>) timezone UTC...and maybe catch a glimpse of your app being build...oh wait..already: <https://f-droid.org/wiki/page/org.savapage.android.print/lastbuild>

:)

Now we wait a bit more so all the apps (that need) get build, then signed, then published.

Edited by Licaon_Kter 23 hours ago



Sava - separate summary Licaon_Kter authored 3 days ago 83268719

org.savapage.android.print.yml 1.63 KB Lock Edit Web IDE Replace Delete

```

1 Categories:
2   - Connectivity
3   - Internet
4   - Multimedia
5 License: AGPL-3.0-or-later
6 AuthorName: Rijk Ravestein
7 AuthorEmail: rijkr@savapage.org
8 Website: https://www.savapage.org
9 SourceCode: https://gitlab.com/savapage-android/savapage-android-print
10 IssueTracker: https://issues.savapage.org
11 Changelog: https://gitlab.com/savapage-android/savapage-android-print/blob/HEAD/CHANGELOG
12
13 AutoName: SavaPage Print Service
14 Description: |-
15     Enable this app in the "Print services" section of the Settings app, add
16     [https://www.savapage.org SavaPage Open Print Portal] printers of your choice with your credentials,
17     and use them to print to SavaPage from any app.
18
19     Preview the result in the SavaPage Print Portal's HTML5 Web App and proceed
20     the print work-flow in the confines of your organization from there.
32 RepoType: git
33 Repo: https://gitlab.com/savapage-android/savapage-android-print.git
34
35 Builds:
36   - versionName: 0.1.0
37     versionCode: 1
38     commit: 0.1.0-fdroid
39     subdir: app
40     gradle:
41       - yes
42
43 AutoUpdateMode: Version %v-fdroid
44 UpdateCheckMode: Tags
45 CurrentVersion: 0.1.0
46 CurrentVersionCode: 1

```



org.savapage.android.print



Waiting for publication on <https://www.f-droid.org/>



F-Droid

SEARCH



SavaPage Print Service

A Print Service for SavaPage Open Print Portal AGPL-3.0-or-later

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F-Droid

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SavaPage Print Service

A Print Service for SavaPage Open Print Portal

Enable this app in the "Print services" section of the Settings app, add [SavaPage Open Print Portal](#) printers of your choice with your credentials, and use them to print to SavaPage from any app.

Preview the result in the SavaPage Print Portal's HTML5 Web App and proceed the print work-flow in the confines of your organization from there.

Author: [Rijk Ravestein](#) License: [AGPL-3.0-or-later](#) | [Website](#) | [Issue Tracker](#) | [Source Code](#) | [Changelog](#) | [Build Metadata](#) | [Technical info](#)

Packages

Although APK downloads are available below to give you the choice, you should be aware that by installing that way you will not receive update notifications and it's a less secure way to download. We recommend that you install the F-Droid client and use that.

[DOWNLOAD F-DROID](#)

Version 0.1.0 (1) - Added on 2019-09-19

This version requires Android 4.4 or newer.

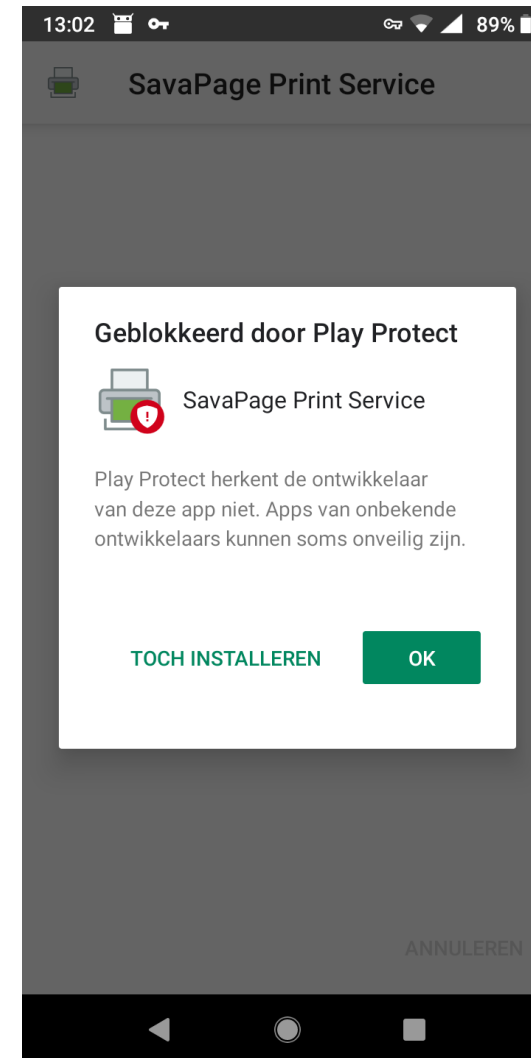
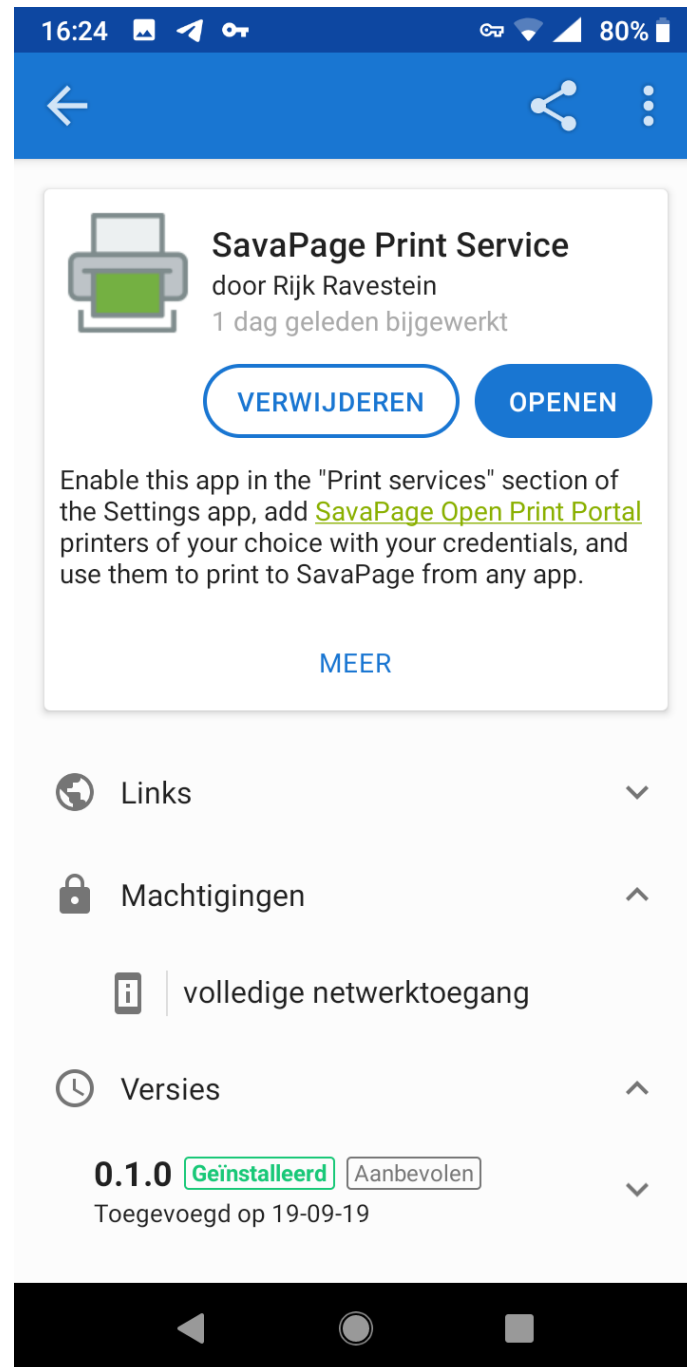
It is built and signed by F-Droid, and guaranteed to correspond to [this source tarball](#).

▼ Permissions

- have full network access

Allows the app to create network sockets and use custom network protocols. The browser and other applications provide means to send data to the internet, so this permission is not required to send data to the internet.

[Download APK 2.2 MiB PGP Signature](#)





Free as in Freedom



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[15u8aAPK4jJ5N8wpWJ5gutAyyeHtKX5i18](#)

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SWIFT: BARCGB22

T-shirts from



F-Droid will receive 3€ per shirt sold.



Questions . . .



Thanks for your attention.