

What makes an ethical smartphone OS?

Digital rights strengthened by open source, open data and open standards



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E Foundation

www.e.foundation

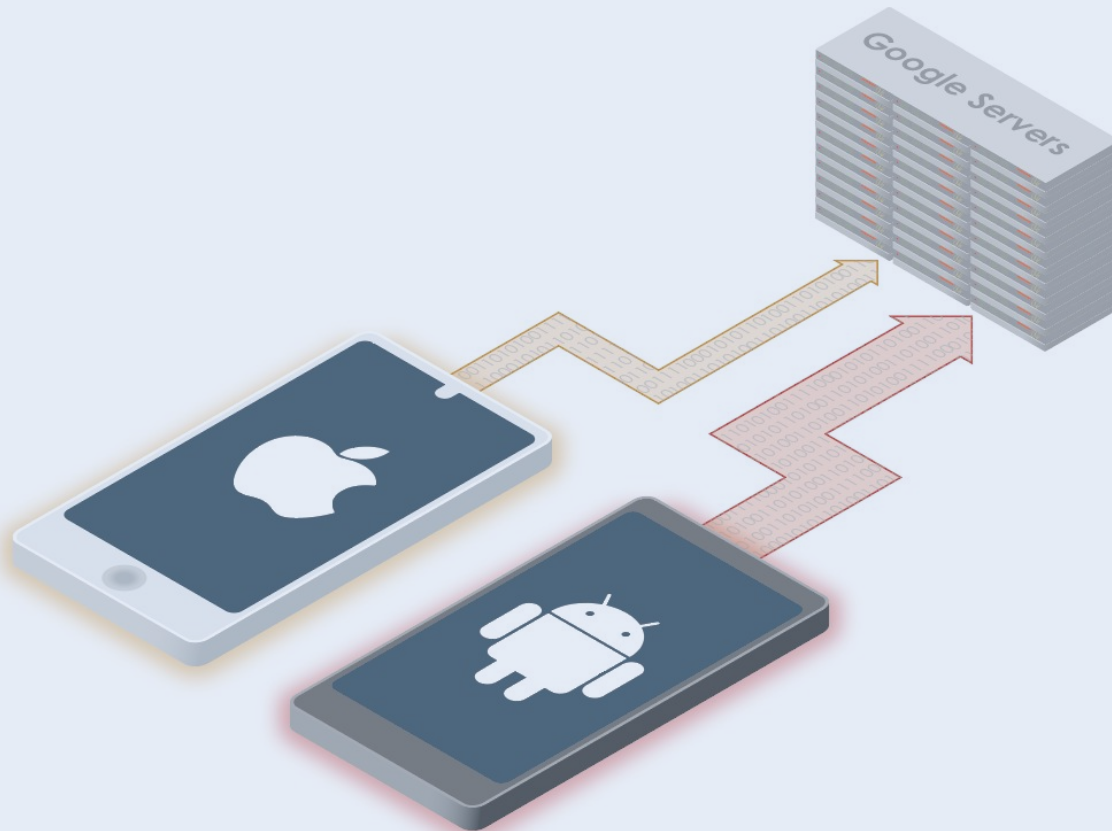
The maintainer of /e/OS

The problem: Google / Apple phones leak personal data



EPSILON®

acxiom™



On a typical day, your smartphone sends tons of personal data to Google Servers*:

- with your Android Smartphone, **90 times per hour** (11,6MB of data per day)
- with your iPhone, **51 times per hour** (5,7MB of data per day)

The problem 2: other unethical practises at Big Tech



WHY: THE PROBLEM

Big Tech: bad for people and the environment

Mobile software development has been dominated in the past 20 years by Big Tech companies, who have created an IT-ecosystem that is characterized by closed-source software, proprietary standards, private data sources, harvesting of user data, privacy violations, poor labour standards and production practices that are bad for the environment. We think this needs to change.



Poor privacy



Proprietary



Lock-in of users /
monopolies



Poor labour standards



Closed-source



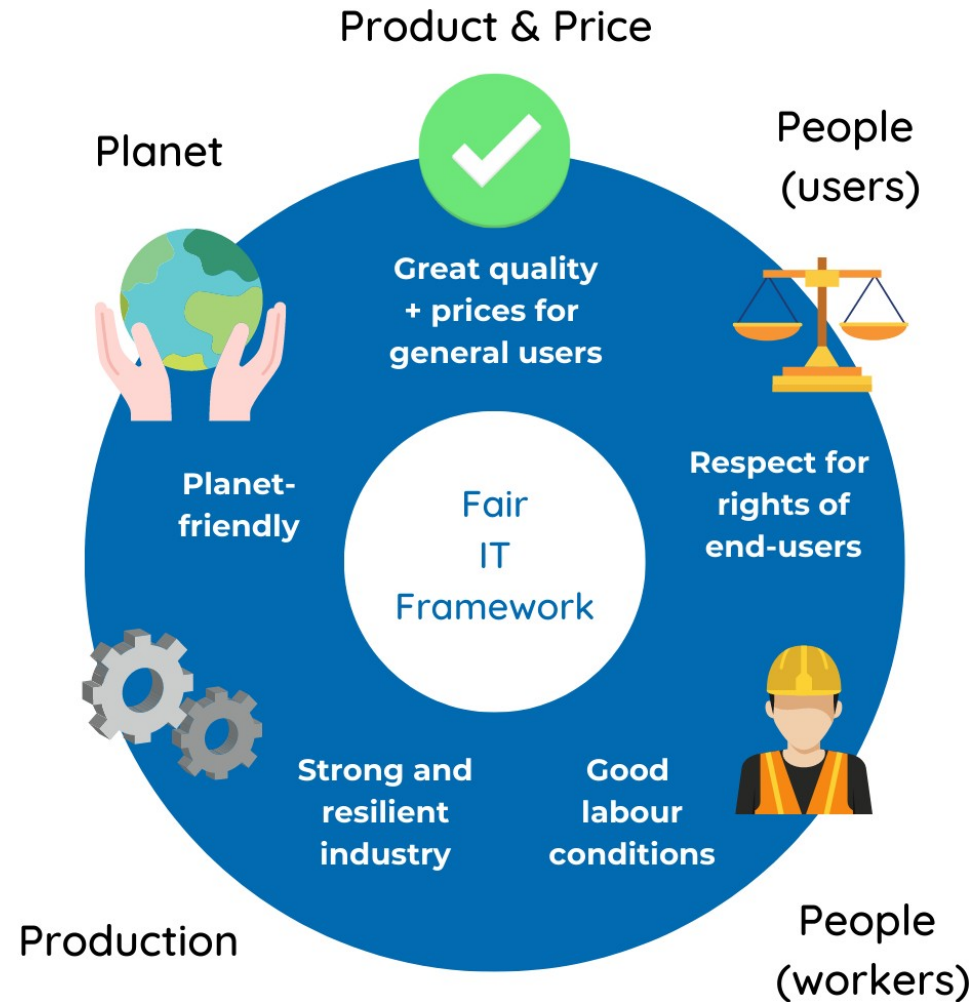
Bad for environment

What does it mean to be “ethical” in IT?

- Our Fair IT Framework: **the 6P model**

Product/Price → fair competition! (Big Tech monopolies, portability)

Digital rights: privacy, freedom, accessibility



Ethics of open-source software

Advantages of open-source

The list below contains all the advantages we view open-source software to have. We prepared this list for the main text of our proposal, but omitted it to stay within the 50-page limit. Therefore, we now provide it here. Openness in software development is beneficial because ... :

- It enables **portability and interoperability** → that, in turn, generates **fair and competitive software markets** and prevents ‘lock-in’ → fair competition, in turn, improves the **quality and pricing** of products, thus making products better and cheaper for consumers and businesses → this, in turn, **boosts the economy**.
- It facilitates **software and data autonomy**, by allowing – inherently – self-hosting of all software and data and making it easy for users to adapt the software to their need, thus improving the autonomy of any entity, citizen, business, non-profit or (semi-)public institution, using the software → this in turn facilitates **digital sovereignty** for states.
- It **prevents loss of R&D efforts**: when companies go bankrupt or cease operations for another reason, proprietary software may be lost or end up in a digital drawer. Open-source software retains its value even after the original developer ceases operations.



- It prevents companies being bought to end the competitive risk they bring, which also represents a loss of R&D and is detrimental for fair competition in the market.
 - It **improves collaboration** by multiple companies on a software product, **stimulating innovation**. It also makes it easy for anyone to fork software and make their own product.
 - It enables development of software products that are built on top of each other, or as add-ons or plug-ins of each other, thus **stimulating the innovation of more complex, multi-component software products**.
 - It provides a rock-solid, non-proprietary foundation for **Europe’s software industry**, which benefits the **resilience** of this industry.
 - It also provides a great foundation for local innovation in countries where the economic situation is too limited to make use of software solutions developed in high-income countries, thus **supporting economic development in lower-income countries**.
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- It draws in volunteers to help with writing the code, thus **encouraging user feedback** and the development of user-oriented software.
 - For the same reason, it makes it easier and more feasible for governments and non-profits to sponsor developments to the code that are beneficial to the public good or to particular groups within the general public.
 - It **lowers initial R&D costs** for new companies, as they can build from existing software; this is a great **enabler of a vibrant economic climate for software start-ups**.
 - It decreases budget spent on lawyers and lawsuits around Intellectual Property (IP), leaving more money for innovation and product development.
 - It enables **independent audits of the software**, e.g. on topics of privacy (is the hosting company collecting any data on users?), freedom (is the company or government limiting access to the web in any way?), and security vulnerabilities.
 - It **facilitates IT education**: it helps beginning programmers to learn and progress in their software development skills (thus also stimulating the IT economy).

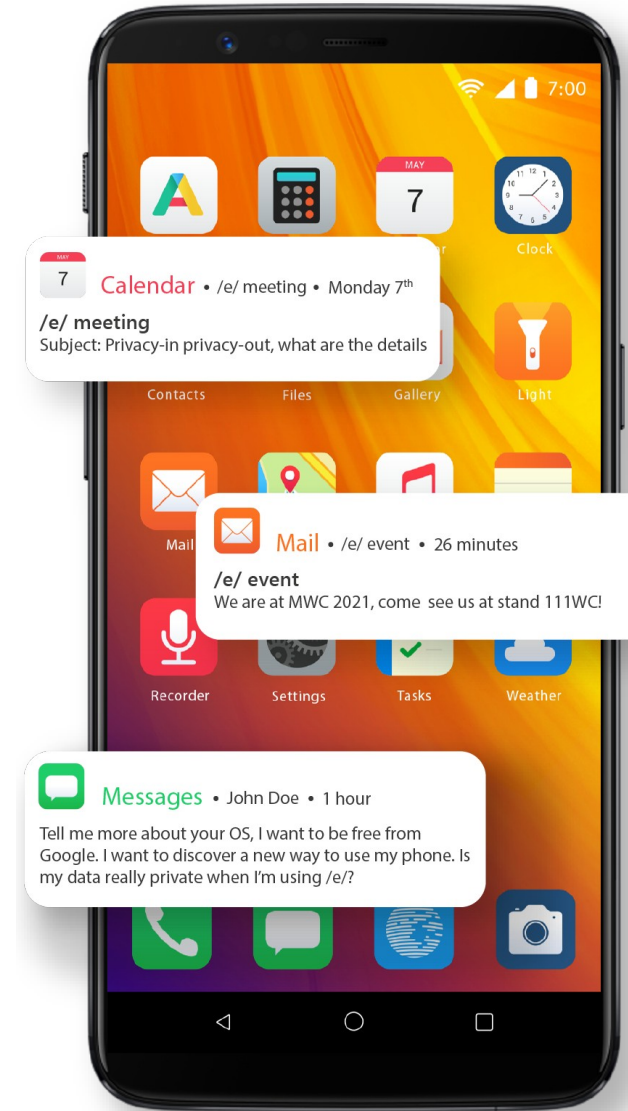
Our solution: Murena

Our goal: To provide mainstream mobile phone users with mobile phone software + related cloud services that are:

- pro-privacy**
- open source**
- sustainable**
- user-friendly for everyone ('moms and dads')**

Product 1: smartphone software

- Base: /e/OS, our operating system: a fork of the Android Open Source Project
- 100% open-source + 'deGoogled'
- We combine /e/OS with lots of other open-source apps. The result is a **package of open-source, privacy-safe mobile services: A) OS + B) default apps**
- Users can download, install and use all regular Android apps



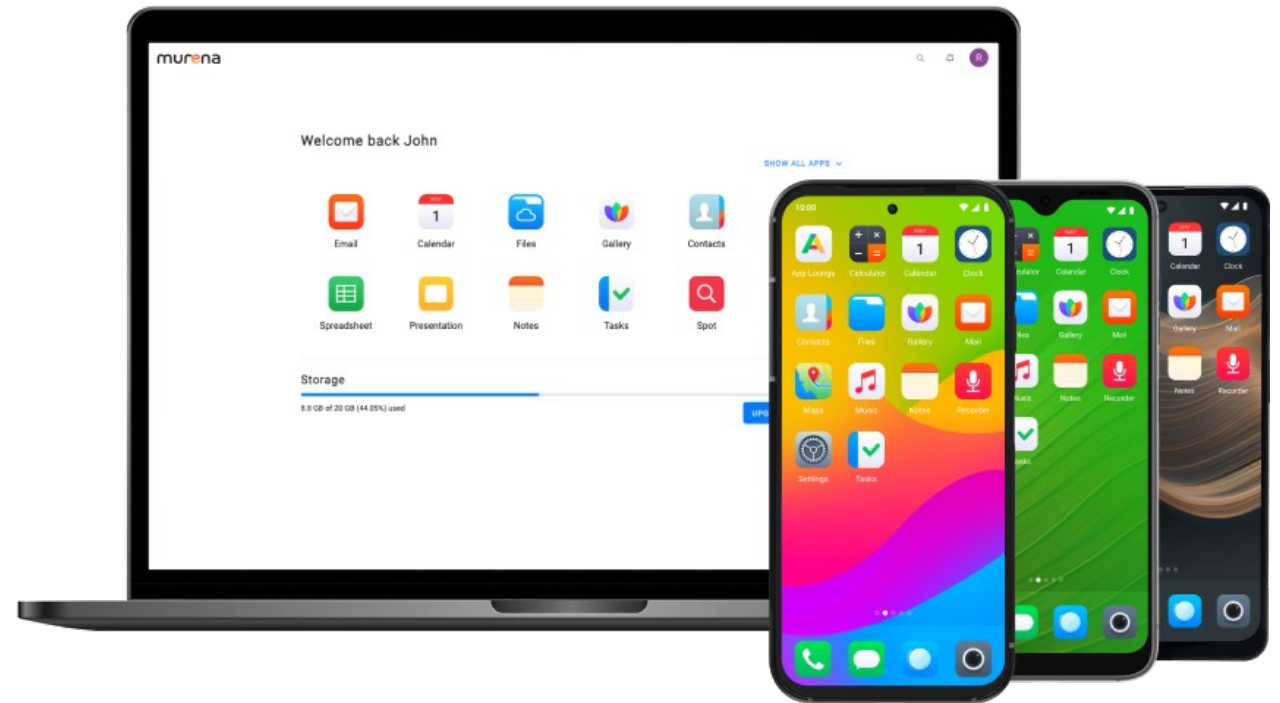
How we bring it to people: + hardware!

- We work with hardware manufacturers to offer consumers a “**1-stop shop**” for a privacy-safe mobile on www.murena.com. Examples: Fairphone, Teracube, Gigaset and Pixels.
- We often double OEM support, longest 11 years!



Product 2: Murena Workspace (www.murena.io)

- Using the Nextcloud architecture and ecosystem
- But strongly forked to provide more functionality (e.g. email)
- 100% open-source
- Zero data collection about users
- Runs on green energy



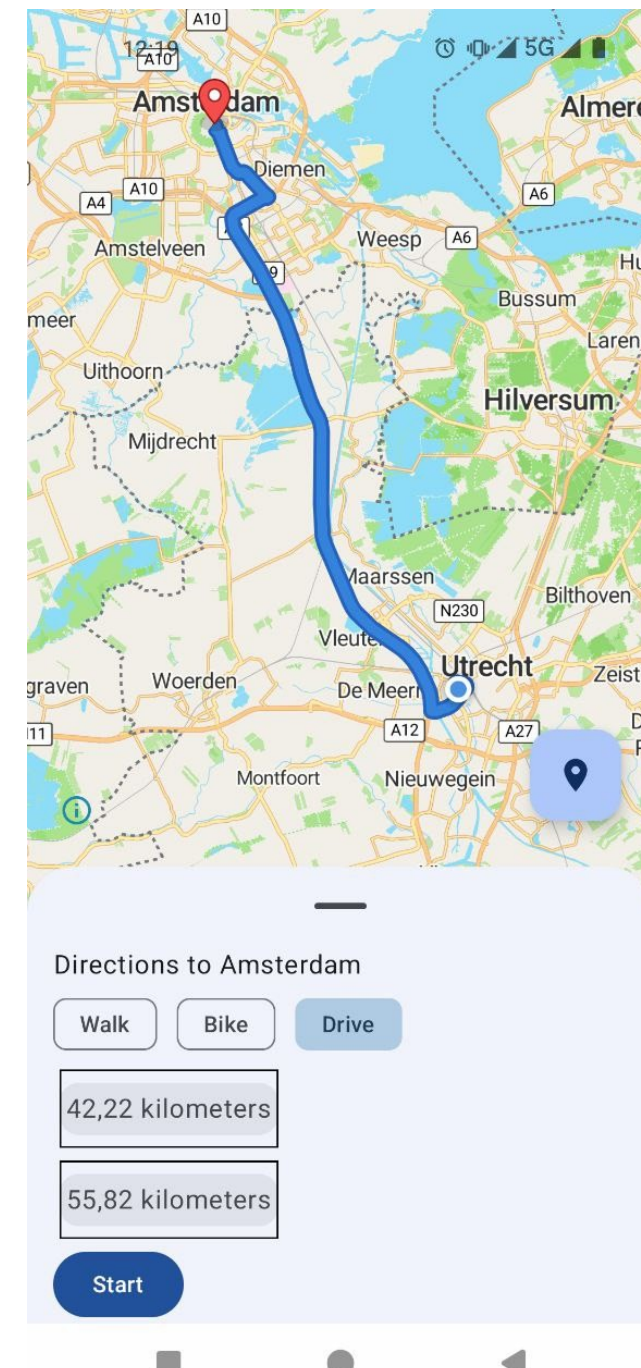
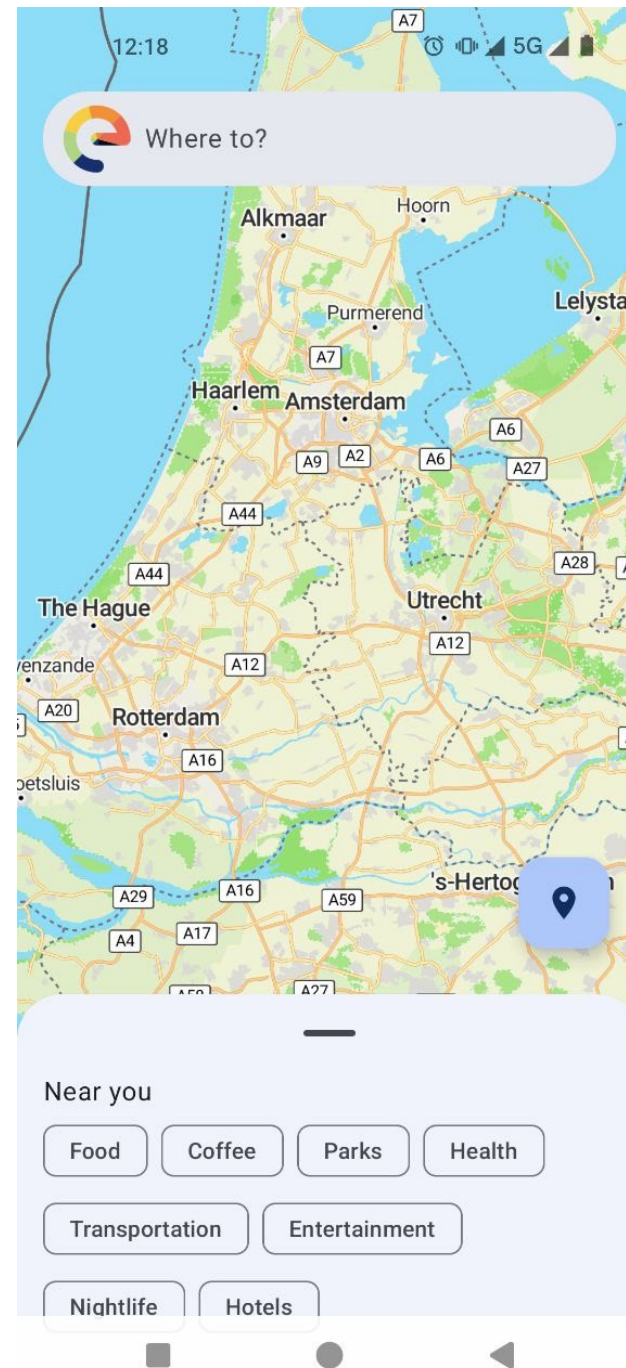
Why are we at OSSYM? → The 1 thing that is not open source...: the maps app

- Everything we build and provide to users is open source, except ... the maps application
- Why?
- Only open source apps are *offline* maps apps (OsMand, Organic Maps)
- → we want *online* maps for mainstream user-friendliness



Until 2024

- We have now started developing our own maps app: Murena Maps
- Current state: PoC
- Planning: beta end of 2024
- Launch: mid 2025
- Goal: an open source mainstream Google Maps competitor



Major challenge: improving search

- Major challenge for Murena Maps in 'getting as good as Google': search quality
- For many areas: POIs, addresses, reviews, routes
- E.g. for geocoding, the software stack that we use is Pelias (pelias.io). Pelias is already very good, but a lot of improvement is also still needed. For example:
 - Searches for categories doesn't work well. For example, very few Chinese restaurants have the terms "chinese food" in their name.


Major challenge 2: combining data for search

Pelias is designed as a geocoder, **not an aggregator of different sources of data available** about points of interest (POIs). There are GREAT open data sources for POIs. For example, WikiData has a lot of information about famous points of interest that a user would like to see in a maps app or a knowledge panel. Pelias doesn't have any built-in mechanism for cross-referencing between different datasets, so even though it'll return the correct result for "Eiffel Tower", the search results won't contain rich data. We'd like to address this by creating an open-source web service that will connect search results from a geocoder with additional information from OpenStreetMap, Overture Maps, WikiData, Wikipedia, reviews databases and future datasets.

Project: Open Mobile Maps Search (OMMS)

- Goal: to improve open source mobile maps search functionalities on Android using technologies from the Open Web Search and Analysis Infrastructure (OWSAI)
- Examples of outcomes:
 - Improvements to categorical search for maps geocoding and search
 - Pioneering better ways to combine data for search in maps:
 - e.g. a Unified POI Search that makes available combined search of myriad sources
 - Routing search combinator that sends routing requests out to different routing engines as appropriate for selected options

Steps

- 1. Hiring an open maps and search expert 
Where we are now and next steps:
 2. An analysis / exploration of which technologies in the Open Web Search and Analysis Infrastructure (OWSAI) could be used to improve categorical and combinatorial geocoding and search in maps
- 3. Proposal for using OWSAI technologies to improve 1 or more specific aspects of our categorical or combinatorial search facilities
- 4. Integration in MVP and launch of Murena Maps mid 2025

Questions?

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