

Towards a technology commons

Open software, open hardware and open standards as the building blocks for an open society

European Commission
Brussel, November 14th 2019



About me

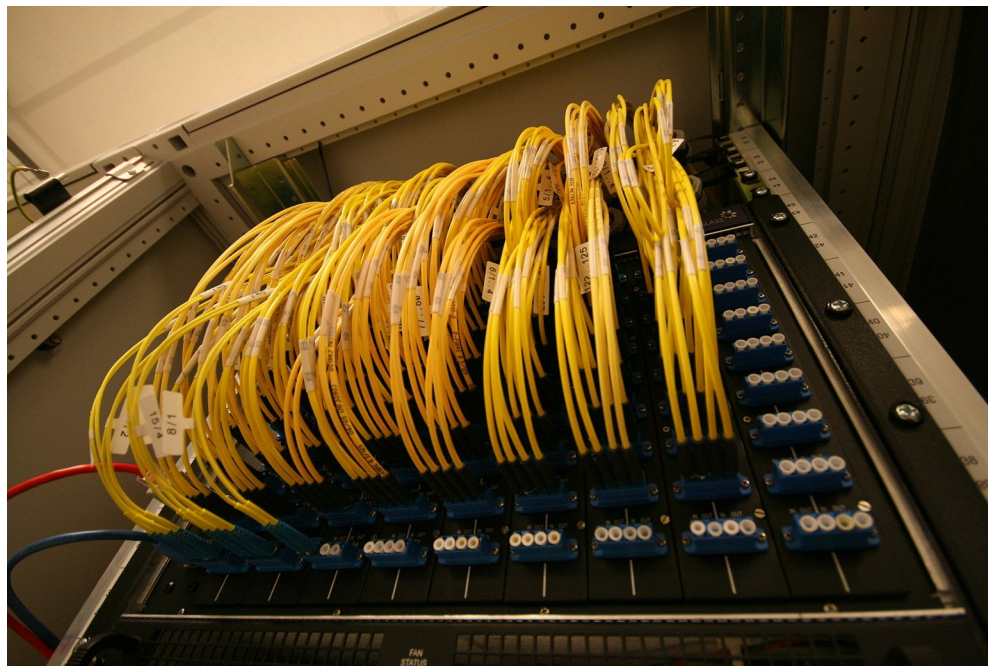


United Nations
Educational, Scientific and
Cultural Organization



The internet: brought to you by free and open source software

Operating systems
Mail servers
Web servers
DNS
BGP / RPKI
Messaging
Databases
Shells
[..]



10 / 10

Largest cloud service providers are Linux Foundation project contributors and members

About licensing

A **license** does not change how **software** works internally, but it changes how **you** and **others** can work with software.

- It impacts how we manage daily operations
- It determines how we scale and design resilience
(*all you can eat versus pay through your nose*)
- It determines to what level we can understand security
(so indirectly the trustworthiness of the technology)
- It determines who we can hire to work on improvements we want
(or we might even be able to learn how to ourselves)



If the free and open source model works best for all of big tech, for science and industry, from toaster and smartphone to supercomputer – is there any reason governments should stay behind?



The biggest computers on the planet run open source



Oak Ridge

Location: In eastern Tennessee, near Knoxville

Staff: 4,750, including scientists and engineers in more than 100 disciplines

Budget: \$1.4 billion

Established: 1943 as part of the **Manhattan Project**

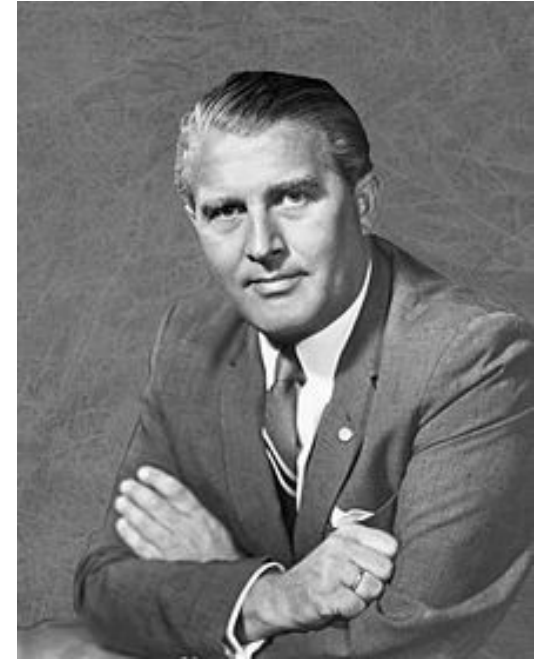
US patents issued since 2005: 665



The Manhattan project... remind me?



Robert Oppenheimer



Wernher von Braun

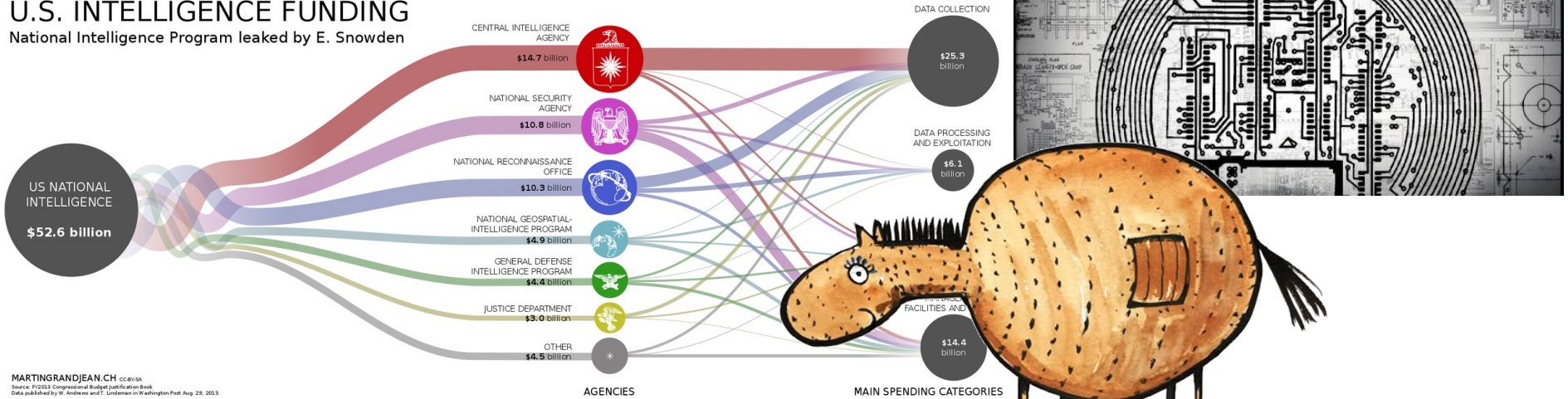


Technology is at the core of our most strategic resources

And our suppliers seem to have a double agenda

U.S. INTELLIGENCE FUNDING

National Intelligence Program leaked by E. Snowden



MARTINGRANDJEAN.CH cc0/1.0
Source: FY2013 Congressional Budget Justification Book
Data published by W. Andrew and T. Lindeman in Washington Post, Aug. 29, 2013.



Autonomy does not come cheap... but do we have a choice?

What can we do to improve privacy and trustworthiness?

Well, remove dependencies and work towards a trustworthy trusted computing base

A lot of the technology we depend on is actually somewhat of a liability

- Potentiall written in languages that make it easy to make nasty mistakes with a large security impact
- By parties we don't necessarily trust anymore
- We cannot inspect what it actually does, and whether it is still safe to use in our own complex context.
- Amount of technical debt invisible



Who really controls our devices when push comes to shove?

The screenshot shows the Gartner website header with navigation links: WHY GARTNER, ANALYSTS, RESEARCH, EVENTS, CONSULTING, ABOUT. Below is the Gartner Blog Network header with the author's name, Annette Zimmermann, and a 'Become a Client' button with the phone number +1 800-213-4848. The main content area features the article title 'Google's revoked Android license has global consequences' by Annette Zimmermann, dated September 4, 2019. The article text discusses the impact of Google's decision to revoke its Android license from Huawei. A 'Gartner Webinars' sidebar on the right promotes an event for analysts to explore the latest IT trends.

Google's revoked Android license has global consequences
by Annette Zimmermann | September 4, 2019 | 1 Comment

With several product announcements expected this fall, I am highlighting how the ongoing issue between Google and Huawei impacts the smartphone market on a global level.

On May 21st we saw a series of events unravel that I would describe as an unprecedented business backlash for one of the largest tech companies in the world. Followed by the U.S. Administration's executive order restricting companies in the U.S. to supply products to Huawei, Alphabet (Google) revoked its Android license from the Chinese company.

Some of the key consequences impact Huawei's current as well as its future business:

- it will be unable to install Google Play Service on future smartphones. It will not be able to apply or receive Android certification under the Compatibility Test Suite (CTS), which any OEM must pass to allow Google branded apps to be installed.

As long as someone else can deny you “life support” of the technology you use for political or business reason, you are in a continued unresolvable state of **uncertainty** and **unnecessary dependency**.

It is **just not logical** to continue to give that kind of overarching control away. ICT is not alien magic: just a slab of silicon with a casing and a battery or power plug, with suitable electrons flowing through it.



Another angle: permission free innovation

If you use it, you may want or need to understand it and to innovate upon it:

incremental innovation. Free and Open source allows anyone to make targeted improvements anywhere for any reason (or have others do it), without having to ask for permission from anyone.

Everyone can independently realign the ethical and normative aspects of open technology: meaning that open technology removes **thresholds** and gives raw **empowerment.**

Statistic:
over 99.9% of the people on this planet do **not** work for a tech giant



A nice moment to introduce the NGI vision

“The overall mission of the Next Generation Internet initiative is to re-imagine and re-engineer the Internet for the third millennium and beyond. **We envision the information age will be an era that brings out the best in all of us.** We want to enable human potential and creativity at the largest possible scale. In order to preserve and expand the European way of life, we shape a value-centric, human and inclusive Internet for all.”



Calls, coordination, other...

Accessibility

FOSS licensing

fsfe



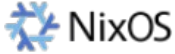
Security scan



FOSS legal issues

ifrOSS

packaging



Diversity management



Community building



Community building

Documentation

p.s.:

Localisation/i18n



Standardisation



Secure software guidelines

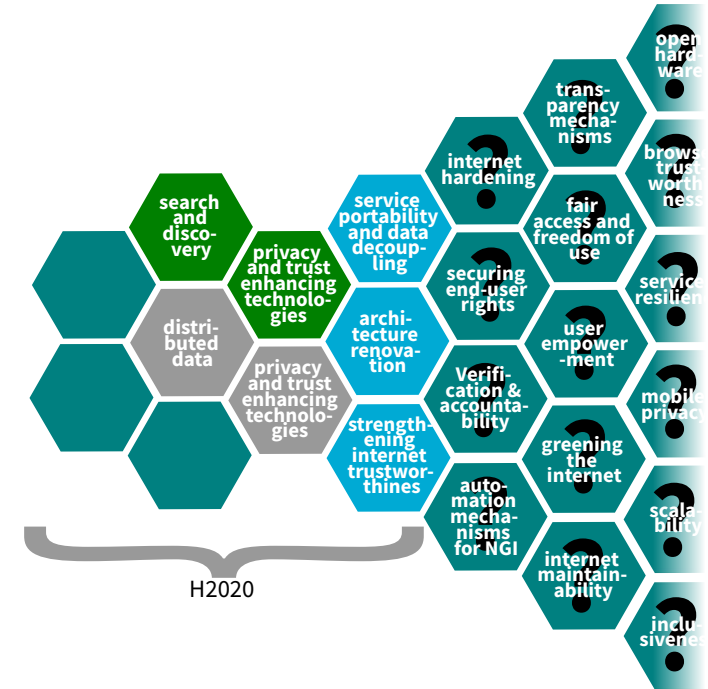


Cutting edge open source, hardware and seeking new standards



Z E R O

Next Generation Internet
Research & Innovation actions



Key characteristics

privacy and trust enhancing technolo- gies

5.6 million euro
in small grants until 2021

**82 projects already
running**
90% new to H2020

Competitive calls every **two months** until the budget is allocated.

Projects between 5k-50k

Walk the talk:

Inclusion

Security

Localisation

Open Standards

Free & Open Source

Free & Open Hardware

Deliver to deploy

search and disco- very

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in small grants until 2021

**47 projects already
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90% new to H2020



Full transparency from top to bottom

The ultimate dream is to have the full technology stack available from silicon via software to services - as a **technology commons**



“We want to enable human potential and creativity at the largest possible scale.”

Why settle for anything less?



What works for software, equally works for hardware...



fairwaves

umTRX



Our target audience



DIGITALEUROPE 



Working on trust at different layers...

- New end user applications bringing Privacy, Trust (and better security) to users
 - Conversations, Sylk, Briar, Autocrypt, Cryptpad, Manyverse
- Human-centric middleware/Enablers:
 - IRMA, node-TOR, ValOS, Replicant OS, Rocket CWMP, Mobile Nixos, SCIM, ARPA2 ACL/SASL
- New standards and protocols to solve critical issues “upstream”
 - DID*, GNU Name System*, IMSI Pseudonymisation, TLS-KDH, SASL XMSS, Reowolf
- Technical and fundamental building blocks for trustworthiness
 - e.g. Noise Explorer/Verifpal, Libre-RISCV SoC, IMSI pseudonymisation, Identity Based Encryption, Tor Padding, GNU Mes, ..
- Explorative
 - Distributed private trust, ValOS, Vframe



An example project: WireGuard

Wireguard

WireGuard is a next generation VPN protocol that uses state of the art cryptography. One of the most exciting recent crypto-networking developments, WireGuard aims to drastically simplify secure tunneling.

WireGuard presents a new abuse-resistant and high-performance alternative based on modern cryptography, with a focus on implementation and usability simplicity.



An example project: WireGuard

Wireguard

"Can I just once again state my love for it [...] compared to the horrors that are OpenVPN and IPSec, it's a work of art."

Linus Torvalds

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WireGuard (continued)

"Can I just once again state my love for it [...] compared to the horrors that are OpenVPN and IPSec, it's a work of art."
Linus Torvalds

Multiple independent symbolical proofs of protocol (University of Oxford, VerifPal)

Small, prize winning code base that has been seriously scrutinized (almost irresponsible **not** to use it)

Available as a free download for many platforms





... locked out of the Commons?

Reusable building blocks for the Next Generation Internet

..might be useful in the here and now?

What happens with projects like these, that we believe are directly relevant to the European Commission itself?

Is there **any real-world path** that can be created where this actually does not have to wait for the next billion Euro framework tender to land on EC desktops? What would that take?

How about not just using it, but actually helping to prove its value and get this adopted world-wide as necessary step toward a Next Generation Internet?



Can we mainstream this to our common benefit?

Creating synergy
between R&D and
operations is needed
from both ends

Lead by example in terms of security and trustworthiness leads to a more secure European Commission as a result?

R&D project funding can deliver sustainable technology but cannot deliver long term support



Lets find out

We have two days and some of the most brilliant people in the sector around (decision makers not excluded)

So let's see
if we can break
down these walls



TODAY WE CREATE THE
INTERNET
OF TOMORROW

