

The Power of Open Source Innovation

ThingsCon 2017

Diderik van Wingerden



Think. innovation.

What is **Your** Passion?



Collaboration

Intellectual Property

Terms & Conditions

Sharing

Freedom

Copyrights

Innovation

NDAs

Abundance

Scarcity

Costs

Patents

Creativity

Values

Protection

Licensing

Openness

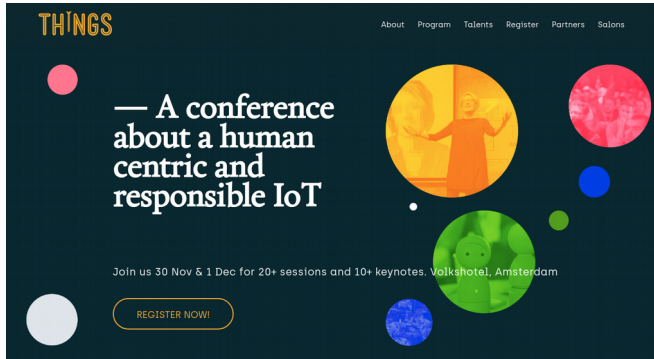
What is Open Source?

Open Source gives Freedom

To **Use**,
Study,
Change
and
Share.

Who uses Open Source Software?

Open Source Software has won!



90%



70%



Google Search

I'm Feeling Lucky

The spirit of Open Source is spreading

Bits

- Open Content
- Open Data
- Open Knowledge
- Open Education
- Open Access
- Open Science
- ...

Atoms

- Open Design
- Open Source Hardware
- Patents

Topics for today

Receive

- History
- Benefits of Open Source Innovation
- Open Licensing
- Business Models & Impact

Dialogue

- Privacy & Security
- Certification
- Ethics
- Gongban
- ...?

+ You get to work on a case!

A **History** of Open Source

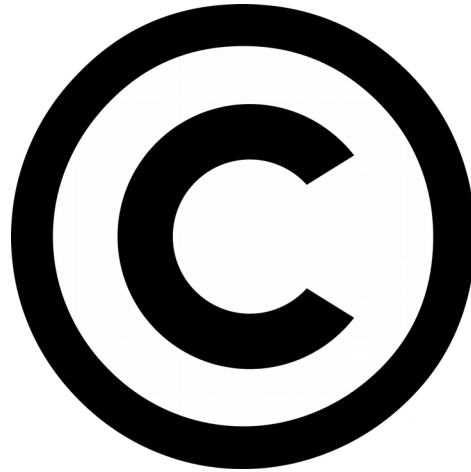
Open Source Software: How it began



Pitfall #1

“I can read it, so it is Open Source.”

Basically a legal construct



**Copyright
All Rights Reserved**

“Free and Open Source Software”

- FOSS or FLOSS
- FSF vs. Open Source Initiative
 - Ethical vs. Quality and Business
- Much heat, but identical in practice

Free Software Definition: 4 freedoms

- 1.Run** by anyone, for any purpose
- 2.Study** and **change** => access to the source code
- 3.Redistribute** copies
- 4.Distribute** copies of your **modified versions** => access to the [source code](#)

gnu.org/philosophy/free-sw.html

Open Source Definition

1. Free Redistribution
2. Source Code
3. Derived Works
4. Integrity of The Author's Source Code
5. No Discrimination Against Persons or Groups
6. No Discrimination Against Fields of Endeavor
7. Distribution of License
8. License Must Not Be Specific to a Product
9. License Must Not Restrict Other Software
10. License Must Be Technology-Neutral

opensource.org/osd

This is blue

Benefits of Open Source Innovation

Benefits of Open Source

- Better quality (less bugs)
- No vendor lock-in
- Freedom to customize
- Speed of innovation
- Unexpected value pools
- Platform opportunity
- Problem-centric
- Co-creation
- Co-investment
- Privacy-by-design
- More secure
- Reuse, Repair, Repurpose

Anti-example: John Deere



“We Can’t Let John Deere Destroy the Very Idea of Ownership” - Wired

“Farmers are hacking their tractors so they can actually fix them” - CNET

wired.com/2015/04/dmca-ownership-john-deere

Anti-examples everywhere



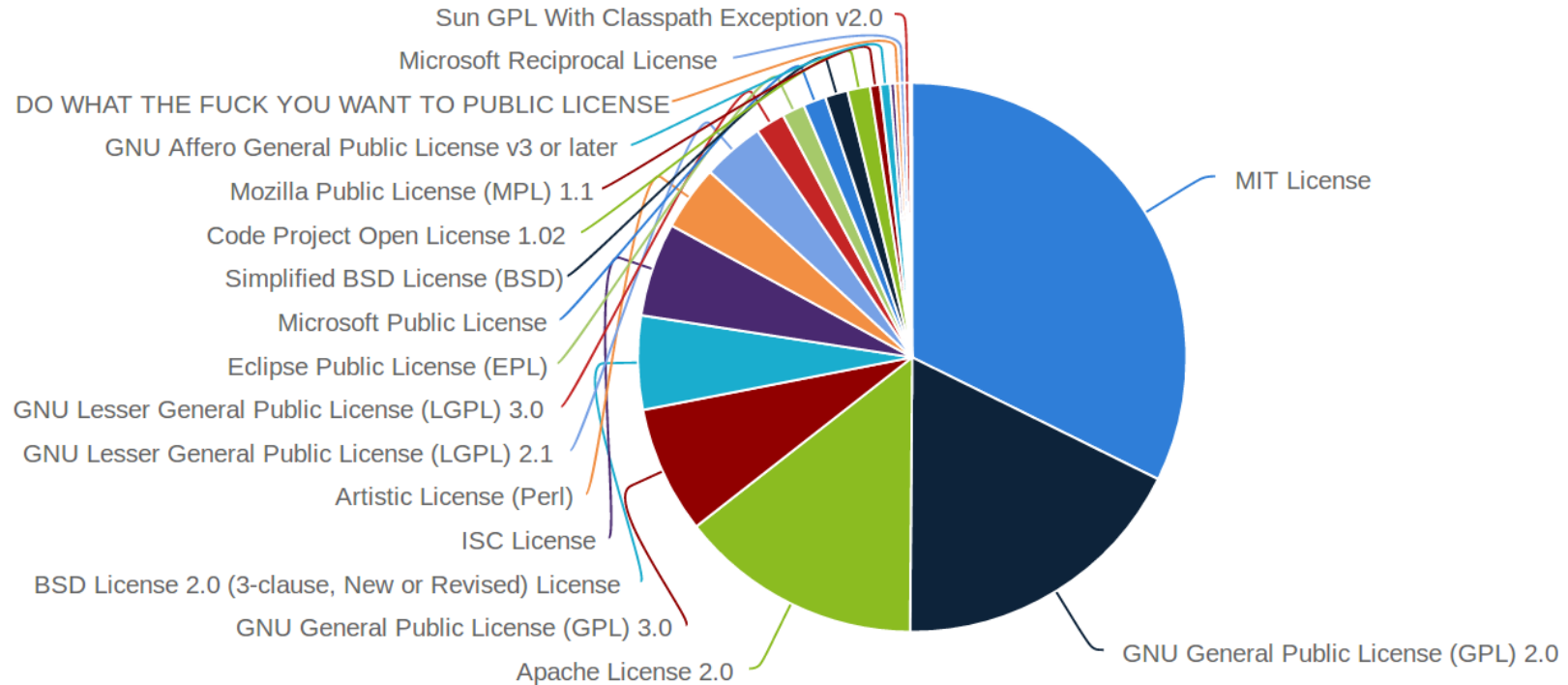
Lock-in + Planned Obsolescence

Diderik van Wingerden

Think. Innovation.

Open Licensing

Open Source Licensing



blackducksoftware.com

Think. Innovation.

Open Source Licensing

Permissive

- Apache License 2.0
- MIT License
- BSD License 2.0
- ISC License
- Mozilla Public License 1.1

Copyleft

- GNU GPLv2
- GNU GPLv3



Open Content

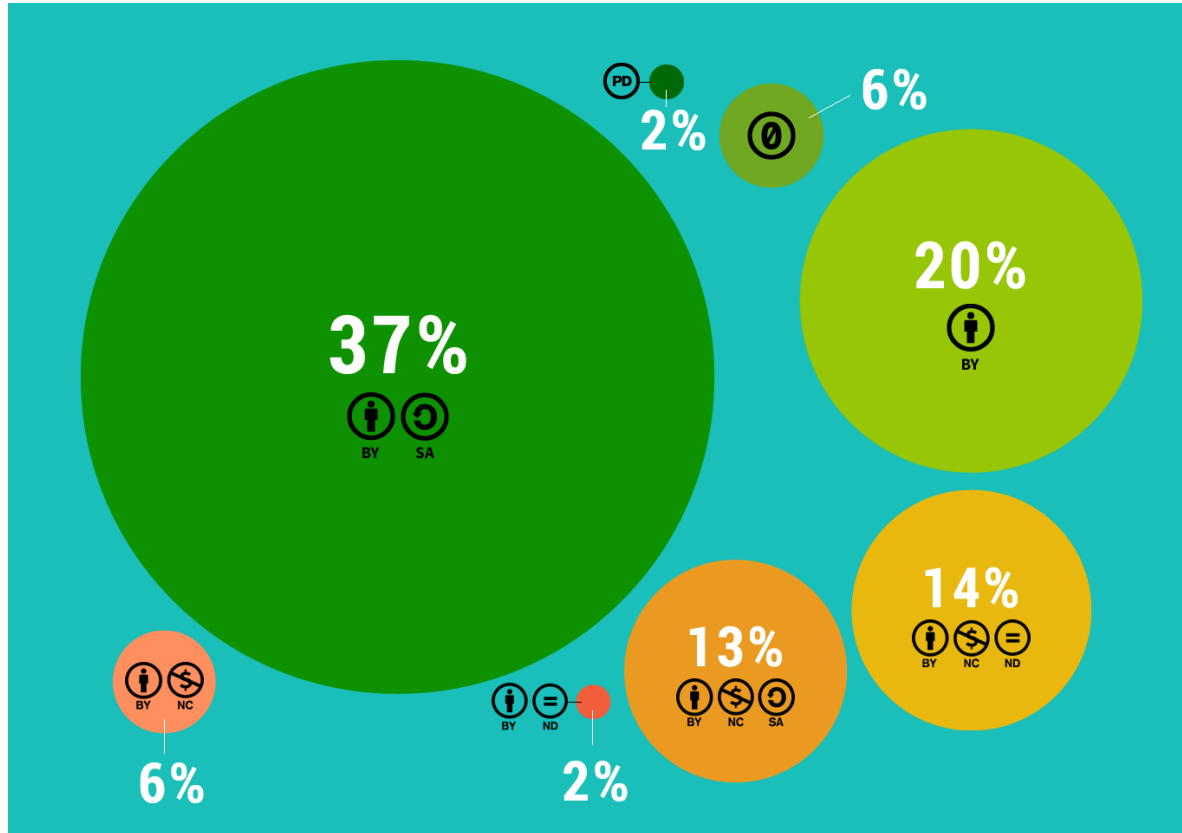


Creative Commons: 1.2 billion shared

- Flickr: 381 million images
- YouTube: 30 million videos
- Wikipedia: 42.5 million articles
- Vimeo: 5.8 million videos
- Thingiverse: 1.6 million 3D designs
- Jamendo Music: 532,000 tracks
- Medium: 257,000 posts
- Public Library of Science: 160,000 articles

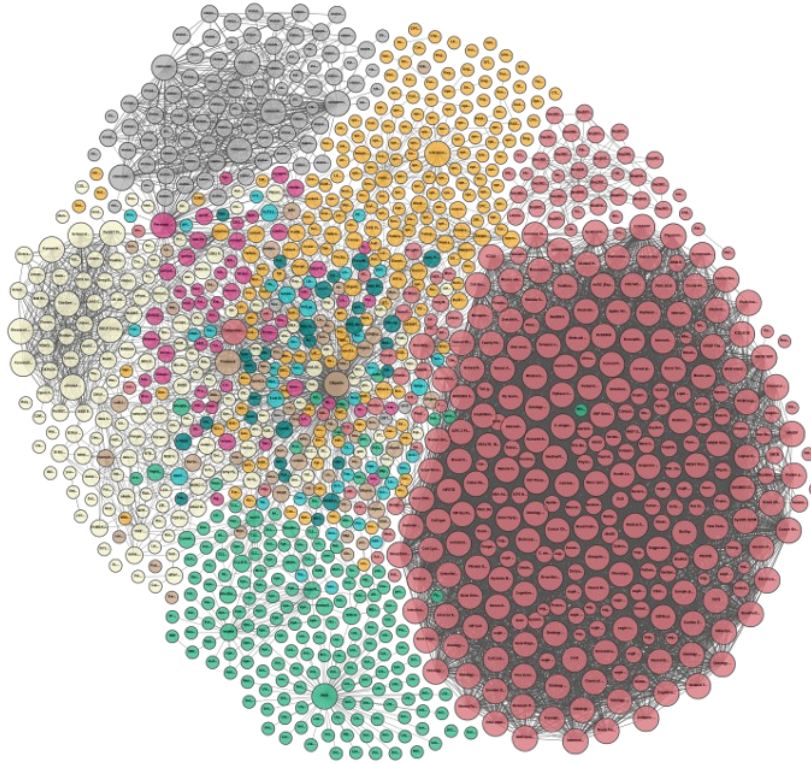
stateof.creativecommons.org

Creative Commons by License Type



stateof.creativecommons.org

Open Data



- Governments
- Science

lod-cloud.net

Pitfall #2

“It is Data and I can read it, so it is Open Data”

Open Definition

- “Open data and content can be **freely used, modified, and shared** by **anyone** for **any purpose**”
- Requirements:
 - Legal
 - Technical
 - **Financial**

opendefinition.org

Open Data Licensing

- Creative Commons:
 - Creative Commons (CC0)
 - Creative Commons Attribution 4.0 (CC-BY-4.0)
 - Creative Commons Attribution Share-Alike 4.0 (CC-BY-SA-4.0)
- Data-specific:
 - Open Data Commons Public Domain Dedication and Licence (PDDL)
 - Open Data Commons Attribution License (ODC-BY)
 - Open Data Commons Open Database License (ODbL)

opendefinition.org/licenses

The State of Open Government Data in 2017

Main obstacles found:

1. Data is hard (or even impossible) to find
2. Data cannot readily be used
3. Only a small fraction of data is truly openly licensed

index.okfn.org

Open Source Hardware Licensing

Open Source Hardware Definition

“Open Source Hardware (OSHW) is a term for tangible artifacts — machines, devices, or other physical things — whose **design** has been released to the public in such a way that **anyone** can **make, modify, distribute, and use** those **things**.”

oshwa.org/definition

Open Source Hardware Principles

1. Maximize the ability of individuals to make and use hardware
2. Give people the freedom to control their technology
3. Share knowledge and encourage commerce through the open exchange of designs

Remember the anti-examples?

Open Source Hardware Licenses

- CERN Open Hardware License
- TAPR Open Hardware License
- Creative Commons Licenses
- Open Source Software Licenses
- Patents
 - Open Patents / Patentleft
 - Defensive Patent (Pool)
 - License on Transfer, LOT
 - [Innovator's Patent License](#)

Open Source Ecology



OSVehicle



Food Computer by OpenAg (MIT)



“OpenAg is an open-source community building an ecosystem of food technologies to create a healthier, more engaging and more inventive food system”

Gameshell



Open Source Seed Initiative



“Inspired by the free and open source software movement that has provided alternatives to proprietary software, OSSSI was created to free the seed – to make sure that the genes in at least some seed can never be locked away from use by intellectual property rights.”

osseeds.org

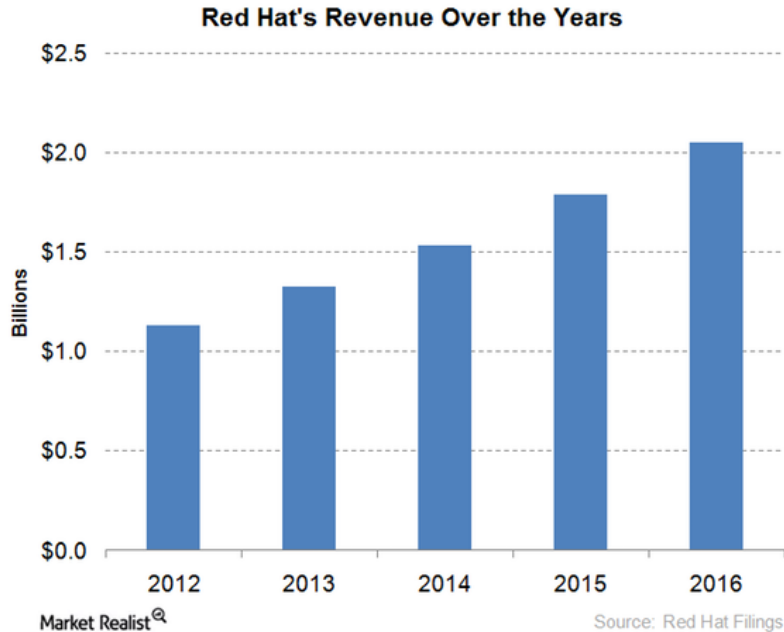
Business Models & Impact

Pitfall #3

“Open Source means giving everything away for free, so I cannot make any money”



RedHat: Build a Multinational



1993

9300 employees

35 countries



OpenDesk: Disrupt the Supply Chain

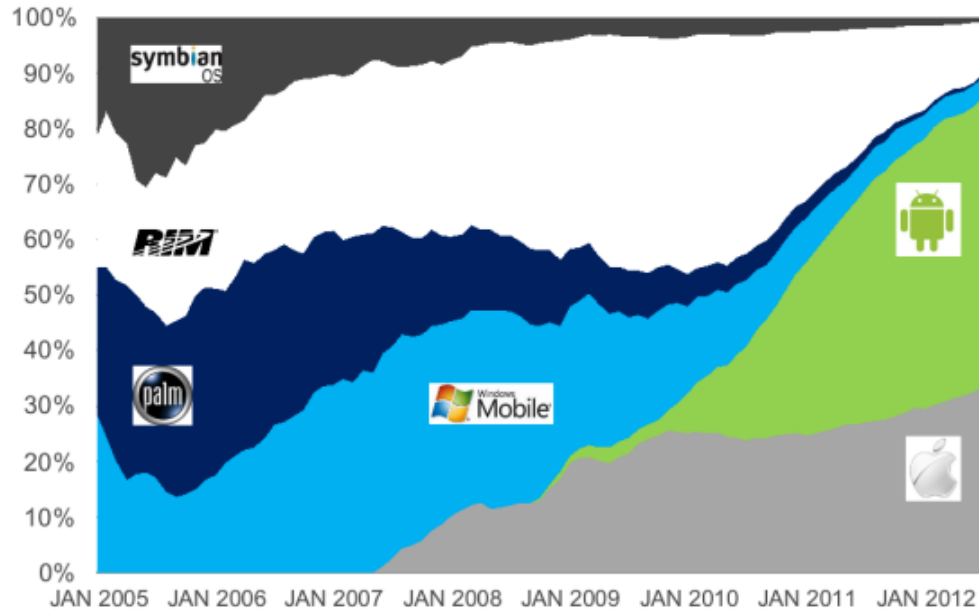
- 100 designers
- 37 countries
- 200 makers
- Example:
 - € 1000 maker
 - € 80 designer (8%)
 - € 120 platform (12%)
 - € 180 channel (18%)
 - **Total: € 1380 ex. VAT**





Android: Break Into a Market

Historically a Highly Dynamic Platform Market



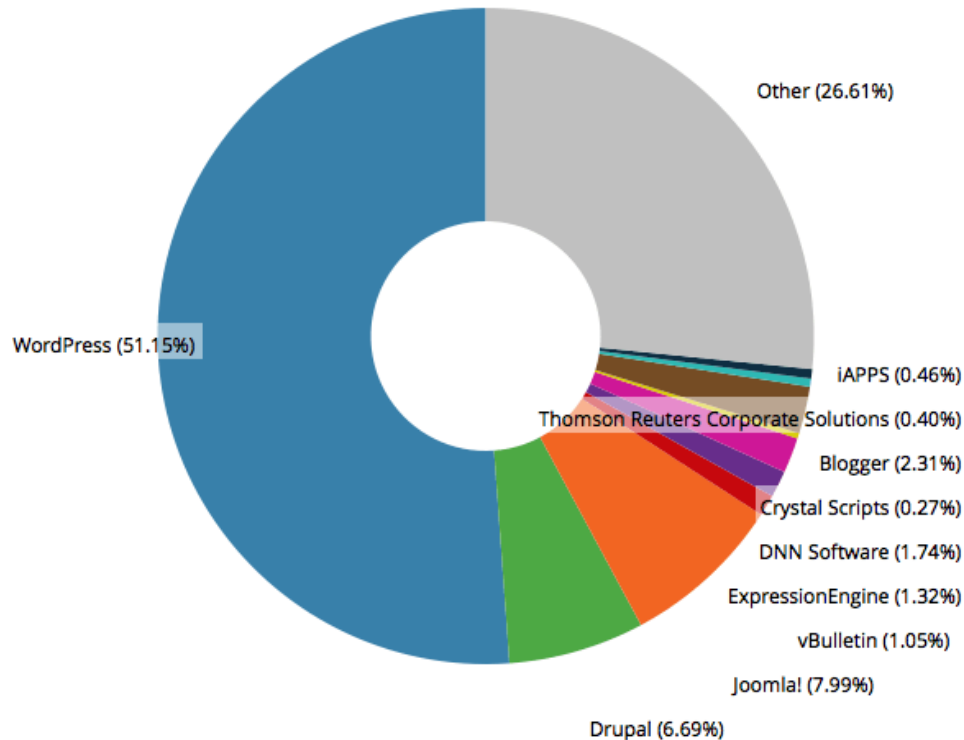
comSCORE.

© comScore, Inc. Proprietary.

Source: comScore MobiLens, U.S.

18

Wordpress: Become Global Market Leader



- 2003
- “Billion Dollar Ecosystem”
- 25% of top-10 mln. websites
- SaaS: 76 miljoen blogs
- 394 employees
- **Copyleft: GNU GPLv2+**



Arduino: Set de-facto Standard

- 2005
- € 50+ million revenue
- Adafruit: € 250k per month
- Clones
- Certification (trademark)



TTN: Beat the Big Boys

- 2015
- 27,000+ members
- 1,600+ gateways
- 84 countries
- Kickstarter: € 295,000
- Farnell



Potential Revenue Streams

- Sell or rent out physical products
- Sell services based on Open Source Creations
- Sell individual installations and customizations
- Sell education and advice
- Sell the franchise and certification (trademark)
- Sell Service and Warranty
- Make and sell proprietary premium products
- Set up a Foundation or Consortium

Pretty much everything, except selling licenses on intellectual property!

Do Not Openwash!



- Licensing tricks
- Bait & Switch

OSNO

“Open Source in Name Only”



A note on Venture Capital

- What a VC wants:
 - A return of 20-30 times
 - Increase and protect assets
- Alternatives:
 - Get customers!
 - Bootstrap
 - Grants and Funds
 - Investment based on revenue growth

“Database provider MariaDB secures €25 million from European Investment Bank”

tech.eu/brief/mariadb-e25-million

Pitfall #4

When an Open Source Startup fails:

**“You see, you cannot make money with
Open Source”**

Reasons (Open Source) Startups fail

- No market need
- Run out of cash
- Not the right team
- Get out-competed
- Pricing/cost issues
- Poor product
- No business model
- Poor marketing

forbes.com

Pitfall #6

Using “Open Source” as an excuse for...

...a poor product

...solving an imaginary problem

...not having a Business Model

Scaling up the Open Source Way

- Centralized → Distributed
- Linear → Exponential
- Coincidental negotiation-based → Speed-of-light
- Behind closed doors → The Internet on your Team
- Scarcity-based → Abundant

Changing the conversation from “**your company and you**” to **the value you can create for everyone** by sharing, multiplying and scaling fast.

Privacy & Security

Privacy & Security

- Privacy By Design
- Security By Transparency

Certification

IoT Certification

- A Trustmark for IoT
- Open Internet of Things Certification Mark
- Open Source Hardware Association Certification

iotmark.wordpress.com/principles
thingscon.com/report-a-trustmark-for-iot
certificate.oshwa.org

Ethics

Ethics

- Do you own the product or does the product own you?
- Planned obsolescence
- Externalized costs
- [Apple's Suicides](#)

Anti-example: Volkswagen



Recent headlines

- “Uber faces criminal probe over software used to evade authorities” - Reuters
- “Gig economy tech giants are 'free riding' on the welfare state” - The Register
- “Google to pay \$334 million to settle Italian tax dispute” - Reuters
- “Bose headphones spy on listeners: lawsuit” - Reuters
- “Monsanto Weed Killer Roundup Faces New Doubts on Safety in Unsealed Documents” - NY Times

Evil Empire?

- Shareholder Profit vs. Social Value
- Company focus vs. Holistic view
- Amoral vs. (im)moral
- People and nature: 'externalities' vs. intrinsically valuable

No, it is how we set up the system to work!

Buy Twitter

Twitter, Inc. (TWTR) 18.61 0.22 (1.20%) As of May 12 4:01PM EDT. Market closed.



buytwitter.org

Cooperatives on the rise

- Multi-stakeholder owned
 - Customers
 - Employees
- Special cases:
 - Platform Co-ops
 - Open Co-ops

shareable.net/blog/explainer-what-are-open-co-ops-and-platform-co-ops

Is non-free hardware an injustice?

- Richard Stallman, Wired (2015):
 - *“Why We Need Free Digital Hardware Designs”*
 - *“Hardware Designs Should Be Free. Here’s How to Do It”*

wired.com/2015/03/richard-stallman-how-to-make-hardware-designs-free

Gongban

Let's Get To **Work!**

How to feed 9+ billion people by 2050?

- Case: WasteBuster
- “[...] one third of the food [...] gets lost or wasted”




[linkedin.com/pulse/time-waste-diderik-van-wingerden](https://www.linkedin.com/pulse/time-waste-diderik-van-wingerden)

Open Platform Design Flowchart

Open Platform Design Flowchart vs 0.2
For instructions go to oscedays.org/b1 or blogtz.de/b1

Project or Company:

You	The Network/Ecosystem
1 OPEN UP <i>What assets to open?</i>	2 ENABLED ROLES & ACTIONS <i>What can others do with it?</i>
3 YOU BENEFIT <i>How can you benefit from the roles and actions?</i>	4 THE NETWORK BENEFITS <i>How can the roles benefit?</i>
Exchange Streams	
5 CHANNELS FOR EXCHANGE <i>Where is exchange happening, and what gets exchanged?</i>	6 VALUE EXTRACTION <i>What income sources do you activate for you?</i>

OSCE DAYS 

CC-BY, by Lars Zimmermann (larszimmermann.de)
For Open Source Circular Economy Days (oscedays.org)

Take Away Points

- Open Source is essentially a legal concept
- Freedom to: use, modify, share, for any purpose
 - Access to “source code” required
- Good money can be made with Open Business Models
- Scaling: distributed, exponential, at the speed of light
- *“The proof of the pudding is in the eating”*

How to make a global impact quickly?

By applying Open Source Innovation!

Get Help Here

- Diderik van Wingerden, The Netherlands
- Jaime Arredondo, Bold&Open, France
- Christian Villium, Danish Design Center, Denmark
- Lars Zimmermann, OSCEdays, Germany

Thank you!

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