


**vliru@os**  
SHARING MINDS, CHANGING LIVES

# Free & Open Source Software

Prof. dr. Frederik  Questier - Vrije Universiteit Brussel

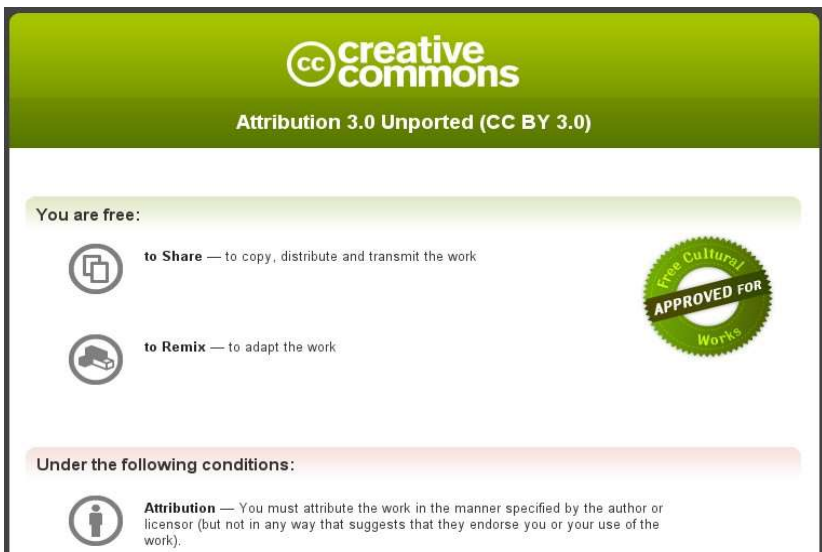
Workshop for Lib@web 2015 - International Training Program @ University of Antwerp  
Management of Electronic Information and Digital Libraries

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-  **to Remix** — to adapt the work

**Under the following conditions:**

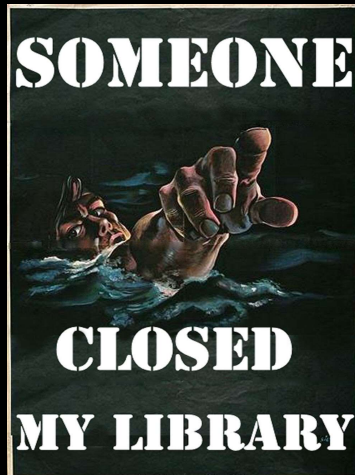
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This presentation can be found at  
<http://questier.com> [http://www.slideshare.net/Frederik\\_Questier](http://www.slideshare.net/Frederik_Questier)



Let's start by analysing some related problems



Would you accept **tools** with these rules?

> You are **forbidden** to

**modify** this paper-clip



● **modify** this paper-clip

● **let other people use** your hammer

● **use** this hammer **for** removing nails

● **tell others** what is written in this book



## Why do you accept such rules for software **tools**?

- > You are **forbidden** to
  - > **copy**
  - > **reverse engineer** **modify**
  - > **use in certain circumstances**
  - > **use in certain countries**
  - > **...**
  - >

## Electronic books?

- > Would you buy or advise your students
  - > electronic versions of (educational) books
  - > if they were **30% cheaper** than paper books
  - > maybe many books on a **good reading device** ~ paper?
- > **Be aware: often**
  - > **limited to 1 year**
    - > **no access in the higher years of study**
  - > **limited to buyer**
    - > **no second hand buying or sale**
    - > **no library**
  - > **no extensive printing**



## Text To Speech software on e-books

- › Blessing for the blind
- › 'Copyright violation' according to 'Author's Guild' (publishers)

→ TTS **disabled** in Amazon Kindle 2

### Remote kill flags

- › for features
- › for books

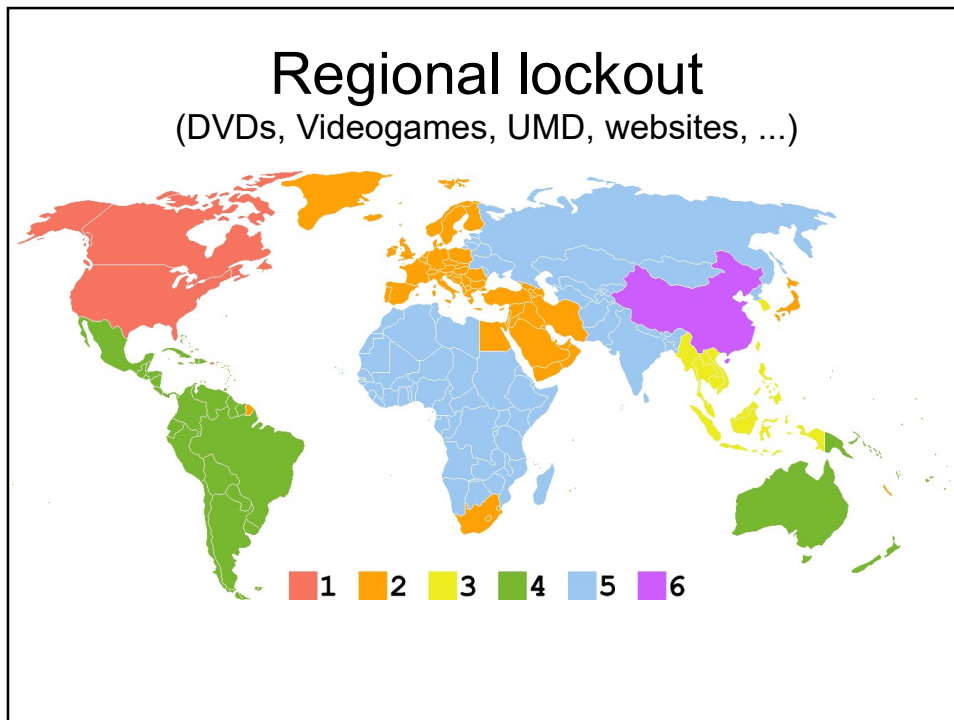


## DRM:

### Digital Rights Management or Digital Restrictions Management?

- › **Restricted**
  - › **export**
    - › copying
    - › printing
    - › Text To Speech
  - › **in time**
  - › **to buyer** (no second hand market)
    - › biometric identification
    - › user info "inscribed" in the work (Microsoft Reader)
    - › access info sent back to publisher
  - › **to certain hardware**
    - › (e.g. Mac OS X - Apple hardware)
  - › **to geographic regions**





## DRM Digital rights management

- › is **killing innovation**
- › can **prevent legal rights** such as
  - › fair use private copying
  - › time shifting
  - › lending services (library)
  - › 2nd hand resale of works
  - › donation
  - › access for disabled
  - › archival
  - › public domain



## Libraries battle with e-book publishers

STEPHEN BELL

Last updated 13:42 28/08/2012

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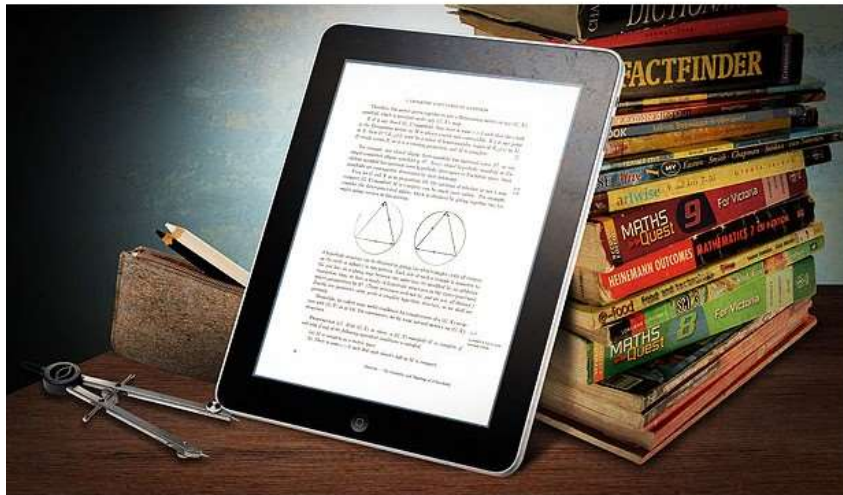
Like 10

10

Tweet 15

+1

Share



BOOK 'EM: Many publishers are protecting e-books with digital rights management which restricts the number of times they can be issued

## Copyright Law started good...

- > UK 1710:
  - > “for the **encouragement of learning**”
  - > 1 copy for royal library and each academic **library**
  - > protection for authors
    - > against abuse and monopoly of publishers !
  - > reproduction privilege
    - > on request 14 year; on request 14 year renewal
    - > afterwards public domain

## Copyright Law started good...

- › US 1790:
  - › “to promote the progress of science and useful arts
    - › by securing for **limited** times
    - › to authors and inventors
    - › the exclusive right
    - › to their respective writings and discoveries.”

## Copyright Law started good...

- › Balance between
  - › stimulating authors
  - › and allowing reuse



→ Private or non-commercial reproductions allowed



## Today: disturbed balance

- › Educational and scientific goals
  - › replaced by **economic goals**
- › Protection **automatically**, not on request
- › Copyrights most often again owned by **publishers**
- › Protection term **extended**:
  - › now 70 years after dead author
- › American & international **lobby** work
  - › pro
    - › copyright protection term extension
  - › against
    - › exceptions for private, educational and scientific use

## Today: disturbed balance

- › Technological anti-copy measures (DRM)
  - › are bypassing legal exceptions and public domain
  - › are protecting
    - › not authors or artists
    - › but corporate profits and broken business models
- › The law provides protection
  - › for "technological measures",
  - › in any technology device or component
  - › which is designed
  - › to restrict or prevent certain acts
  - › which are not authorised by the right-holder.

## Limiting your control



## The horror of 'Trusted' computing

- > DVD User Operation Prohibition
- > HD-DVD key revocation system (disable your player)
- > Broadcast flag (no TV recording)
- > Advanced Access Content System (AACP)
- > High-Definition Content Protection (HDCP) Image
- > Constraint Token (ICT)
- > MS Next-Generation Secure Computing Base (NGSCB)
  - > not protecting
    - > users against viruses and malware,
    - > but media companies against users

# Technology

A technology blog from **NewScientist Blogs**

Thursday, September 11, 2008

Submit a story to [techblog@newscientist.com](mailto:techblog@newscientist.com)

Buy New Scientist

## Apple's latest DRM will restrict your wardrobe

Is garment an authorized garment?

N

Y

You've heard, of course, of digital rights management - used to control how you play, copy or otherwise use media files like music.

Now Apple wants to apply that concept to your sporting wardrobe. In US patent application 2008/0218310, the company details a way to stop us using unauthorised training shoes with the in-sole sensors it sells as part of the [Nike + iPod kit](#). The shoe sensors work as pedometers, sending the data to your iPod as you run.

Subscribe

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- [reddit SUBMIT](#)
- [NEWSVINE](#)
- [DEL. ICI0 . US](#)
- [XML FEEDS](#)
- [Google READER](#)
- [ADD MY YAHOO!](#)



## Side effects of DRM

- › extra cost extra
- › waste lower
- › quality
- › less competition
- › less innovation



Digital Rights Management:

A failure in the developed world, a  
danger to the developing world

[http://www.eff.org/IP/DRM/itu\\_drm.php](http://www.eff.org/IP/DRM/itu_drm.php)

## Software Patents

- › Software can be protected by
  - › copyright
    - › (not perfect, but acceptable)
  - › software patents
    - › killing (incremental) innovation
    - › killing fair competition
      - › Compare with patent on books with passionate murder story
      - › Companies file patents to get protection against patents
        - › ~ People buy guns to get protection against guns

## Software Patents

- > Valid and enforceable in US
- > Not valid nor enforceable in EU
  - > but already >30.000 EU software patents
    - > registered by European Patent Office (€€.€€€)

**DAILY YOU USE PROGRAMS WITH TABBED DIALOGUES...**



**...THEY INFRINGE ADOBE E-PATENT EP689133**

**DAILY YOU USE PROGRAMS WITH PROGRESS BARS...**



## Monopoly abuse

US justice department 1999:

- > “Microsoft is a monopolist and it engaged in massive anticompetitive practices that harmed innovation and limited consumer choice”



## Monopoly abuse

Findings of Judge Thomas Penfield Jackson, 1999:

- › *“Most harmful of all is the message that Microsoft's actions have conveyed to every enterprise with the potential to innovate in the computer industry. Through its conduct toward Netscape, IBM, Compaq, Intel, and others, Microsoft has demonstrated that it will use its prodigious market power and immense profits to harm any firm that insists on pursuing initiatives that could intensify competition against one of Microsoft's core products. Microsoft's past success in hurting such companies and stifling innovation deters investment in technologies and businesses that exhibit the potential to threaten Microsoft. **The ultimate result is that some innovations that would truly benefit consumers never occur for the sole reason that they do not coincide with Microsoft's self-interest.**”*

## Browser wars



## Secret data formats Secret protocols

- › Vendor and data lock-in
  - › (changes) force us/others to buy (and buy again)
  - › → viral
  - › vendors don't want us to talk together or to share data
  - › vendors want us to use buy their products
  - › no free competition
  - › no guarantee eternal access

## The computer of the future?

- › # mobile phones > 3 x # PCs



- › powerful performance
- › positive mobile e-learning studies!

P. Thornton & C. Houser, Using mobile phones in English education in Japan, 2005, Journal of Computer Assisted Learning 21, pp217–228



→ Dead of the multi purpose computer !?

- > (Initially) **forbidden** to
  - > run your own programs
  - > use other phone company
    - > Unlocked iPhones remotely destroyed
- > Now
  - > software requires
    - > approval
    - > non disclosure agreement
  - > no approval for 'duplicate software'
    - > e.g. no iTunes competition
  - > remote software kill switch

## iPad tablet-pc




ENTERING APPLE RESTRICTION ZONE

- NO FREE SOFTWARE
- NO INSTALLING APPS FROM THE WEB
- NO SHARING MUSIC OR BOOKS
- WE CAN REMOTELY DISABLE YOUR APPS & MEDIA

YOUR COMPUTER IS OUR COMPUTER

Apple "Security" Administration

defectivebydesign.org



## One man in one company can restrict everyone's freedom...

- > Apple customers
  - > *"We want porn, if necessary with parental control"*
- > Steve Job, CEO Apple
  - > *"Folks who want porn can buy an Android phone"*

**CENSORED**



## Apple Rejects Pulitzer Prize-Winning Cartoonist for 'Ridiculing Public Figures'

BY AMAR TOOR — APR 16TH 2010 AT 11:00AM



**CENSORED**

For journalists, winning a Pulitzer Prize is the ultimate crowning achievement. For Apple, though, it's still not enough to let an app past its [App Store](#) guard dogs.

Political cartoonist [Mark Fiore](#) made history this week by becoming the first exclusively Internet-based cartoonist or journalist to [take home a Pulitzer Prize](#). Both the achievement and Fiore's sense of satire, however, were apparently lost on Apple, which has rejected the cartoonist's iPhone app on the grounds that it "ridicules public figures." In December, the company sent Fiore an e-mail informing him of its [decision to reject his 'NewsToons' app, which Apple interpreted as a clear violation of its iPhone Developer Program License Agreement](#). Attached to Apple's e-mail were screenshot examples of particularly offensive illustrations, including Fiore's rendering of the White House gate crashers, as well as images pertaining to torture and last fall's Balloon Boy hoax.

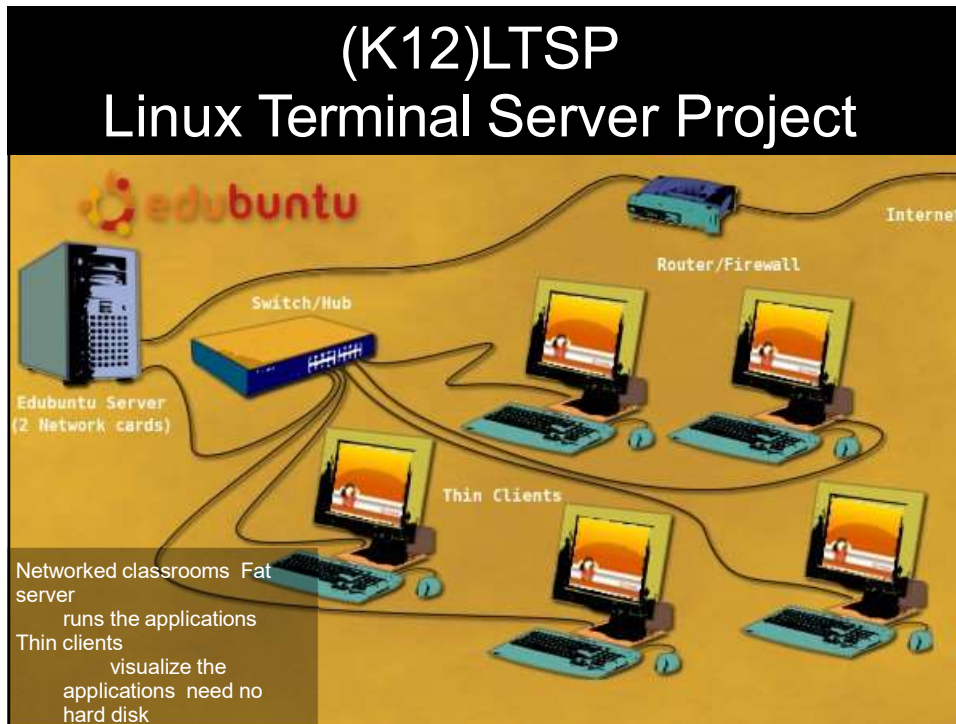
## My fear

- › Some (media and software) companies will do everything possible to limit your possibility to copy their works, or to otherwise maximize their profits, even if it means that user freedoms and privacy are reduced in internet, technologies and law, to an unworkable level.

## Effect on education?

- › Computers without programming environment
- › Black box devices and software
- › Point and click courses
- › → less students study computer science?





*"Unquestionably one of the great seminal figures of the hacker culture."  
—Eric Raymond, open source evangelist and author of The Cathedral and the Bazaar*

## FREE AS IN FREEDOM

**RICHARD STALLMAN'S  
CRUSADE FOR FREE SOFTWARE**

**SAM WILLIAMS**

*"The most fundamental way of helping other people, is to **teach** people how to do things better or how to better their lives.*

*For people who use computers, this means **sharing** the recipes you use on your computer, in other words the programs you*

## Early software days

- › In the 1950s and into the 1960s almost all software was produced by computer science academics and corporate researchers working in collaboration.
- › Source code was generally distributed with the software
- › IBM “SHARE” user group
- › Digital Equipment Computer Users' Society (DECUS)

Source code: `if encrypt(password) == encryptedpassword, then login=1, end`

Compiled code: `00100101110101001100110000111101100011000111000110101`

### Open Letter to Hobbyists:

*“Your sharing is stealing”*

Bill Gates, 1976



-2-  
February 3, 1976

An Open Letter to Hobbyists

To me, the most critical thing in the hobby market right now is the lack of good software courses, books and software itself. Without good software and an owner who understands programming, a hobby computer is wasted. Will quality software be written for the hobby market?

Almost a year ago, Paul Allen and myself, expecting the hobby market to expand, hired Monte Davidoff and developed Altair BASIC. Though the initial work took only two months, the three of us have spent most of the last year documenting, improving and adding features to BASIC. Now we have 4K, 8K, EXTENDED, ROM and DISK BASIC. The value of the computer time we have used exceeds \$40,000.

The feedback we have gotten from the hundreds of people who say they are using BASIC has all been positive. Two surprising things are apparent, however. 1) Most of these "users" never bought BASIC (less than 10% of all Altair owners have bought BASIC), and 2) The amount of royalties we have received from sales to hobbyists makes the time spent of Altair BASIC worth less than \$2 an hour.

Why is this? As the majority of hobbyists must be aware, most of you steal your software. Hardware must be paid for, but software is something to share. Who cares if the people who worked on it get paid?

Is this fair? One thing you don't do by stealing software is get back at MITS for some problem you may have had. MITS doesn't make money selling software. The royalty paid to us, the manual, the tape and the overhead make it a break-even operation. One thing you do do is prevent good software from being written. Who can afford to do professional work for nothing? What hobbyist can put 3-man years into programming, finding all bugs, documenting his product and distribute for free? The fact is, no one besides us has invested a lot of money in hobby software. We have written 6800 BASIC, and are writing 8080 APL and 6800 APL, but there is very little incentive to make this software available to hobbyists. Most directly, the thing you do is theft.

What about the guys who re-sell Altair BASIC, aren't they making money on hobby software? Yes, but those who have been reported to us may lose in the end. They are the ones who give hobbyists a bad name, and should be kicked out of any club meeting they show up at.

I would appreciate letters from any one who wants to pay up, or has a suggestion or comment. Just write me at 1180 Alvarado SE, #114, Albuquerque, New Mexico, 87106. Nothing would please me more than being able to hire ten programmers and deluge the hobby market with good software.

*Bill Gates*  
Bill Gates  
General Partner, Micro-Soft

## 1980's: RMS defined “Free Software”

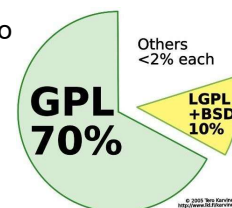
- > The freedom to
- > use
- > study
- > distribute
- > improve
- the program



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## Free Software Licenses

- > The freedoms are guaranteed and enforced by licenses, e.g.
  - > **GNU GPL (General Public License)**
    - > The 4 freedoms + copyleft (share alike)
    - > if binary offered, source code must be offered too
      - > (on request, at low cost)
      - > must stay GPL.
  - > **BSD (Berkeley Software Distribution)**
    - > Attribution
    - > No copyleft requirements for distribution
    - > BSD code often in closed source software (MS, Mac, ...)
  - > **Apple Public Source License v2**



1998: “Open Source” sounds better as “Free Software”?



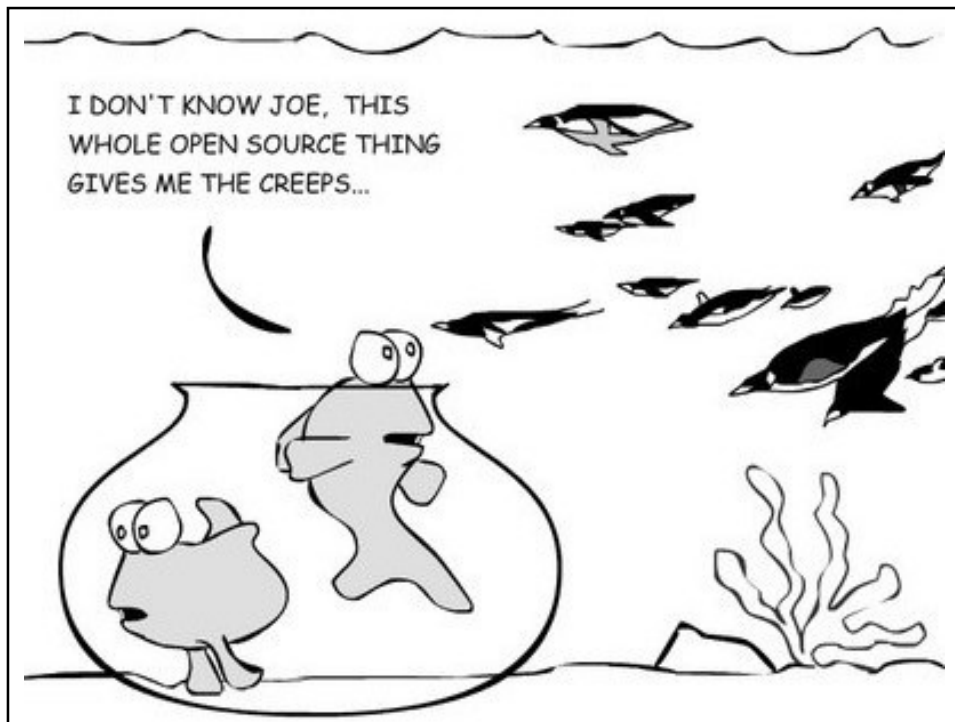
The software Freedoms  
require access to the source code

Source code: `if encrypt(password) == encryptedpassword, then login=1, end`

Compiled code: `001001011101010011001100001111011000110001110001101`

→ “Open Source Software”  
Free Libre Open Source Software  
(FLOSS)

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## Different kinds of software

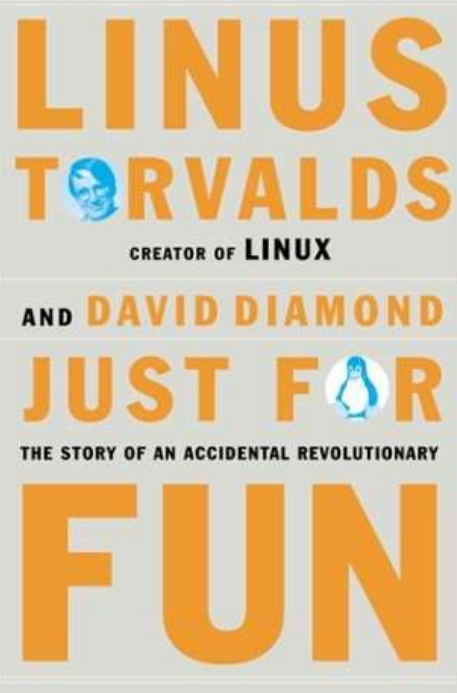
- > Proprietary software (closed source – 'commercial')
  - > \$\$\$
- > Shareware
  - > trial versions: x days for free, afterwards \$
- > Adware
  - > for free, with ads
- > Freeware
  - > for free (small projects and often spyware!)
- > Free Software / Open Source Software
  - > Free as in Freedom, not as in free beer
  - > OSS, FOSS, FLOSS (Free Libre Open Source Software)



1991 comp sci student

Usenet posting to the newsgroup "comp.os.minix.":

*"I'm doing a (free) operating system (just a hobby, won't be big and professional like gnu) for 386(486) AT clones."*





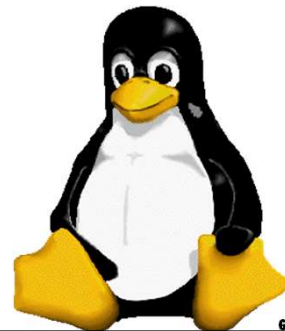
## 6117 persons, 659 companies have contributed to Linux kernel

Company Name	Number of Changes	Percent of Total
None	35,663	18.9%
Red Hat	23,356	12.4%
Novell	13,120	7.0%
IBM	13,026	6.9%
Unknown	12,060	6.4%
Intel	11,028	5.8%
consultants	4,817	2.6%
Oracle	4,367	2.3%
Renesas Technology	2,621	1.4%
The Linux Foundation	2,488	1.3%
academics	2,464	1.3%
SGI	2,450	1.3%
Fujitsu	2,293	1.2%
Parallels	2,226	1.2%
Analog Devices	1,955	1.0%
Nokia	1,896	1.0%
HP	1,854	1.0%
MontaVista	1,821	1.0%
Google	1,565	0.8%
AMD	1,518	0.8%



Linus Torvalds

*“Making Linux GPL'd  
was definitely  
the best thing I ever did.”*



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“Open Source ... it's just a superior way of working together and generating code.”

“Like science, Open Source allows people to build on a solid base of previous knowledge, without some silly hiding.”

“you can obviously never do as well in a closed environment as you can with open scientific methods.”

Linus Torvalds (2007-03-19). The Torvalds Transcript: Why I 'Absolutely Love' GPL Version 2.

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*“Congratulations, you're on the winning team. Linux has crossed the chasm to mainstream adoption.”*

> Jeffrey Hammond, principal analyst at Forrester Research, LinuxCon, 2010

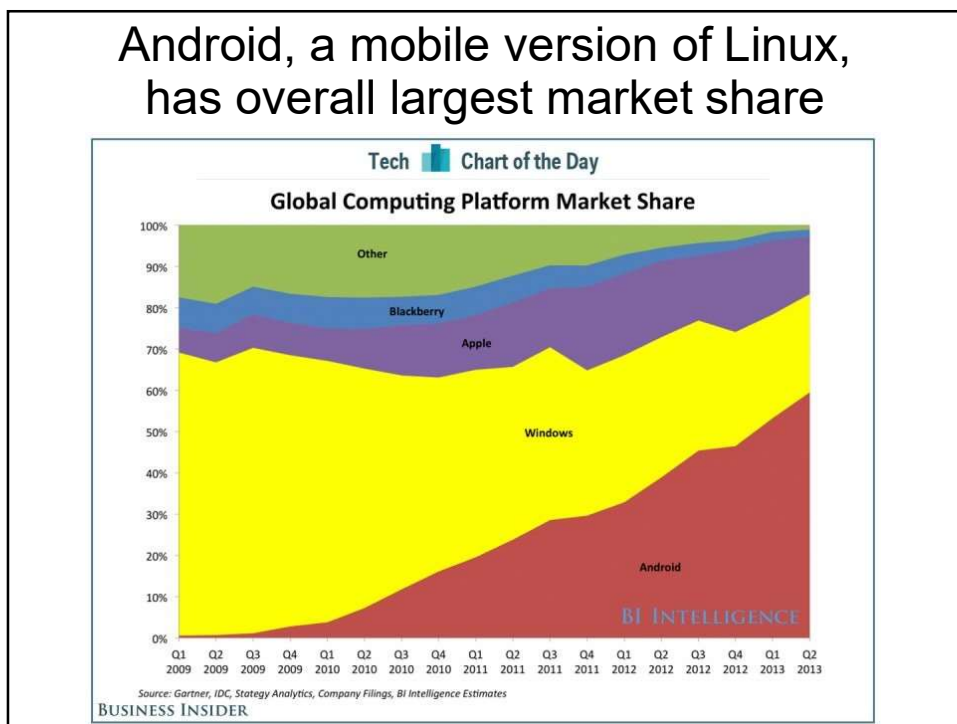
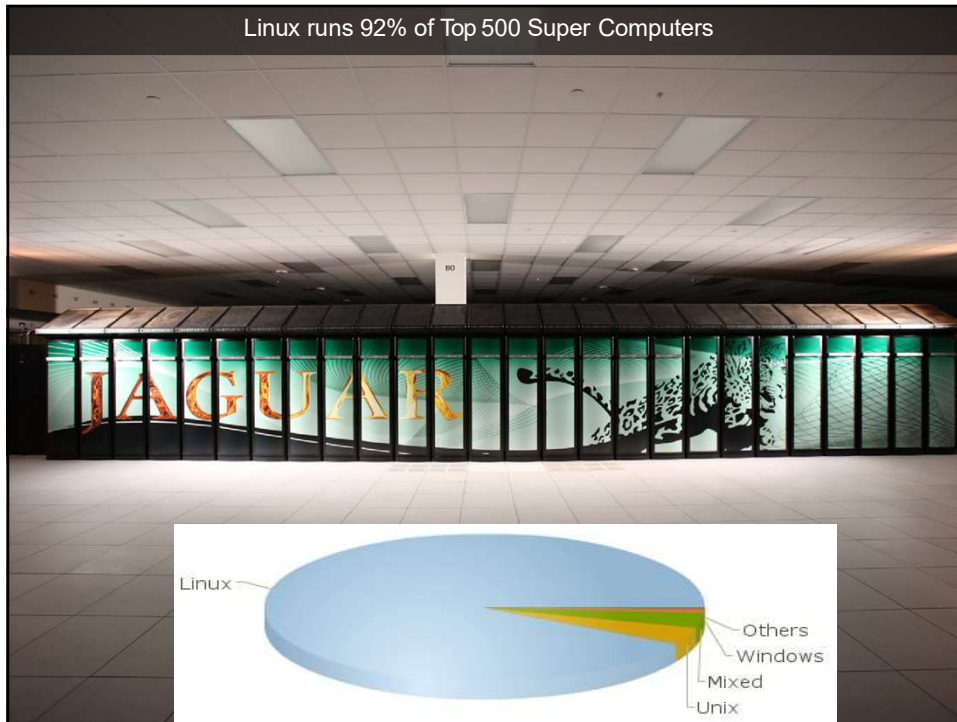
*“Linux has come to dominate almost every category of computing, with the exception of the desktop”*

> Jim Zemlin, Linux Foundation Executive Director, 2011

*“Linux is the benchmark of Quality”*

> Coverity Report 2012






# Android

**open handset alliance**

Home Alliance Android Developers Press Contact



## What would it take to build a better mobile phone?

A commitment to openness, a shared vision for the future, and concrete plans to make the vision a reality.

Welcome to the Open Handset Alliance™, a group of 80 technology and mobile companies who have come together to accelerate innovation in mobile and offer consumers a richer, less expensive, and better mobile experience. Together we have developed Android™, the first complete, open, and free mobile platform.

We are committed to commercially deploy handsets and services using the Android Platform.

Develop for Android  
**Get the SDK**

Contribute to Android  
**Get the Source**

## Top 20 of 301 Linux Distributions tracked by distrowatch.com

1	<a href="#">Mint</a>
2	<a href="#">Debian</a>
3	<a href="#">Ubuntu</a>
4	<a href="#">Mageia</a>
5	<a href="#">Fedora</a>
6	<a href="#">PCLinuxOS</a>
7	<a href="#">openSUSE</a>
8	<a href="#">Manjaro</a>
9	<a href="#">Arch</a>
10	<a href="#">Puppy</a>
11	<a href="#">OS4</a>
12	<a href="#">Zorin</a>
13	<a href="#">CentOS</a>
14	<a href="#">CrunchBang</a>
15	<a href="#">FreeBSD</a>
16	<a href="#">Lubuntu</a>
17	<a href="#">Bodhi</a>
18	<a href="#">elementary</a>
19	<a href="#">Slackware</a>
20	<a href="#">Sabayon</a>

### distribution

e.g. Debian, Red Hat, SUSE, Mandriva

distribution specific applications  
(e.g., for configuration, installation like Yast, mcc)

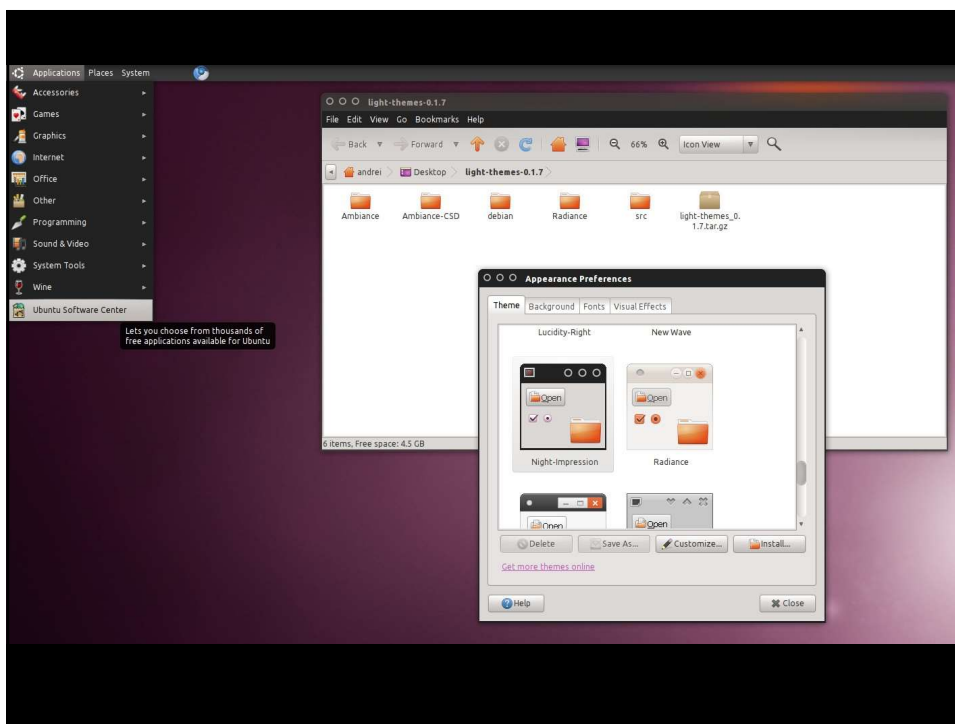
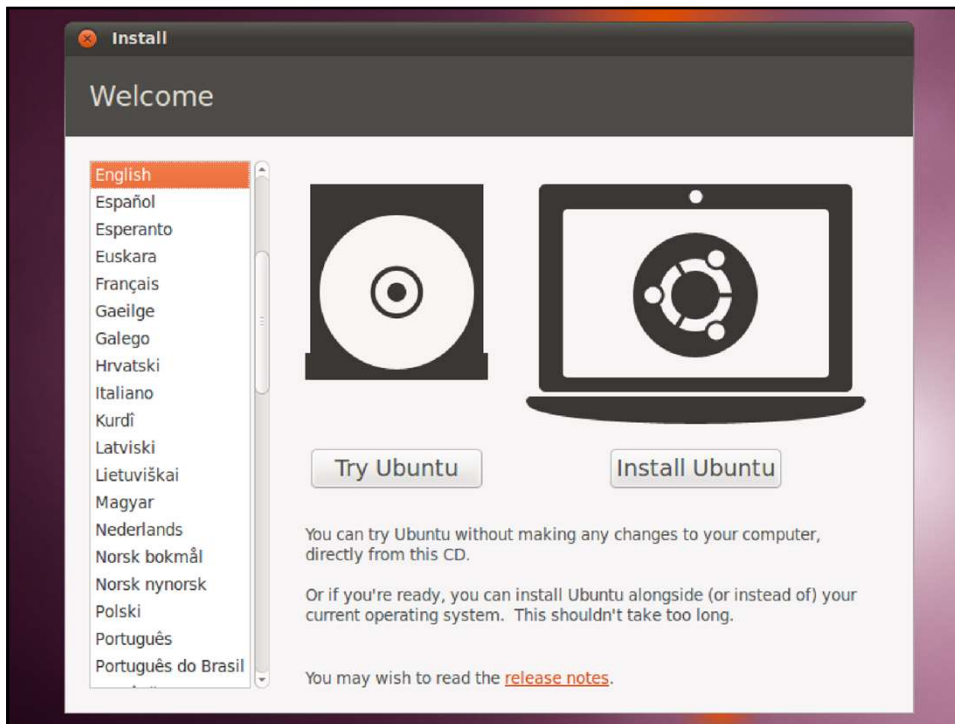
**proprietary applications**  
(e.g. Adobe Reader, graphics driver)

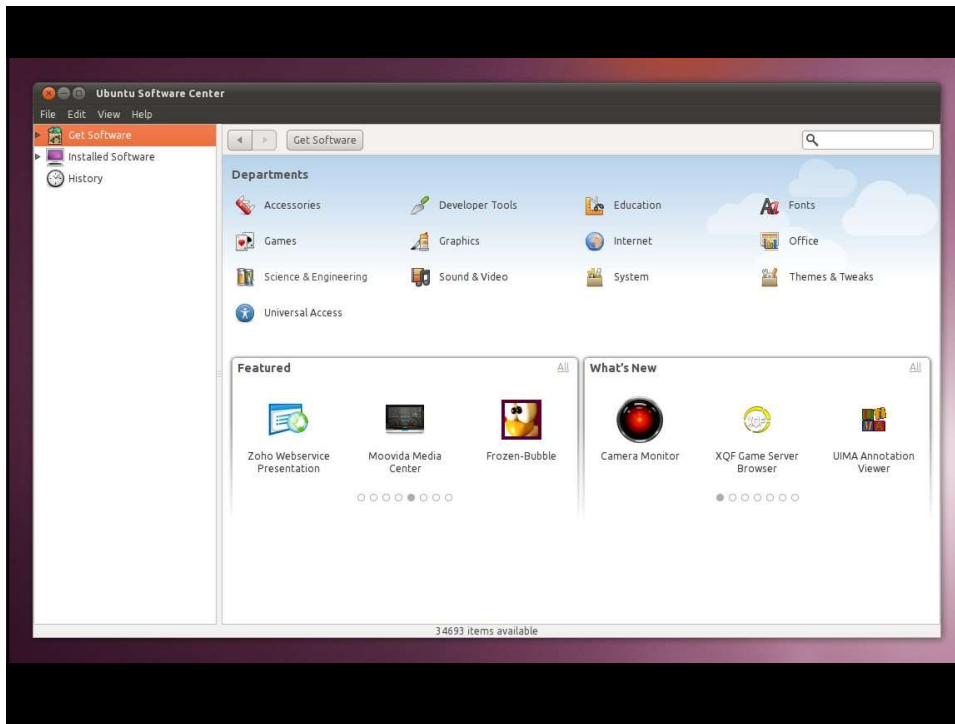
**Linux kernel**  
**free applications**  
(e.g. KDE, OpenOffice, Apache)

**Manuals**

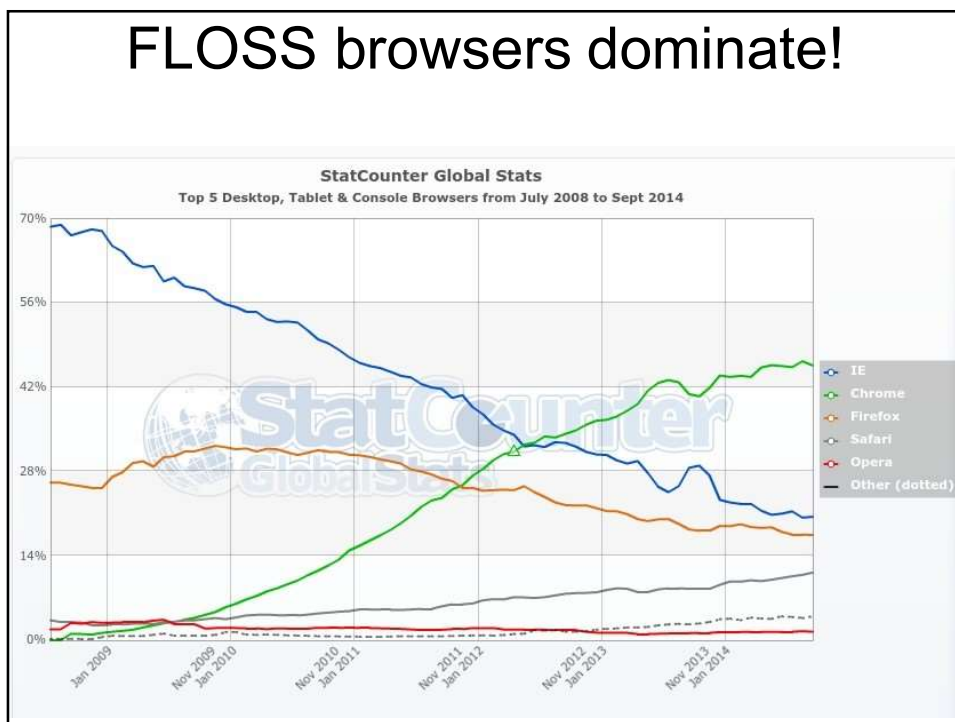
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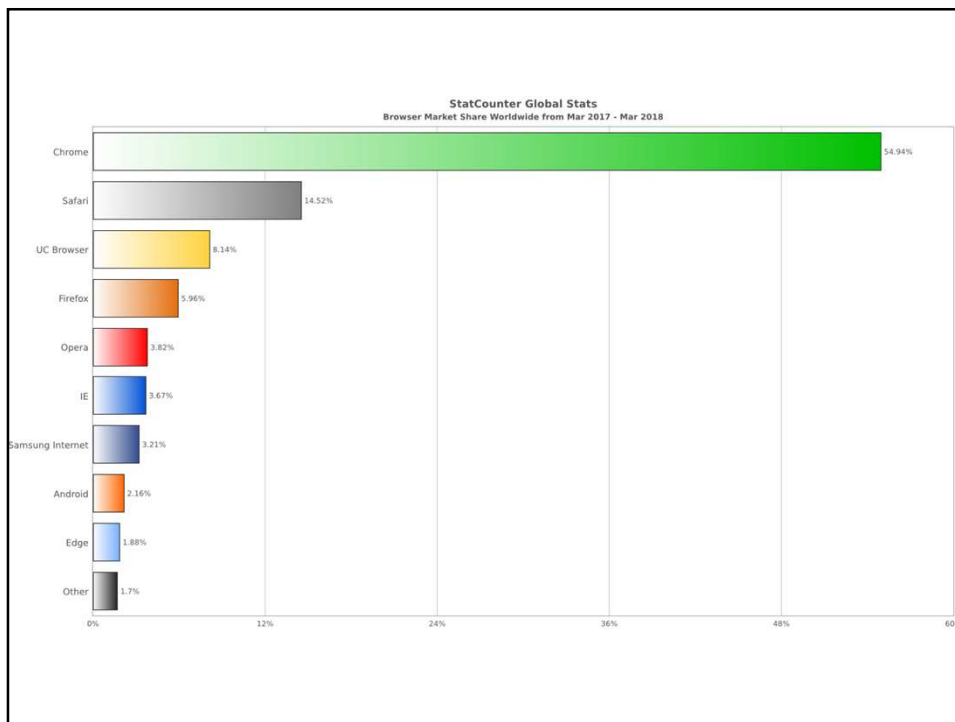
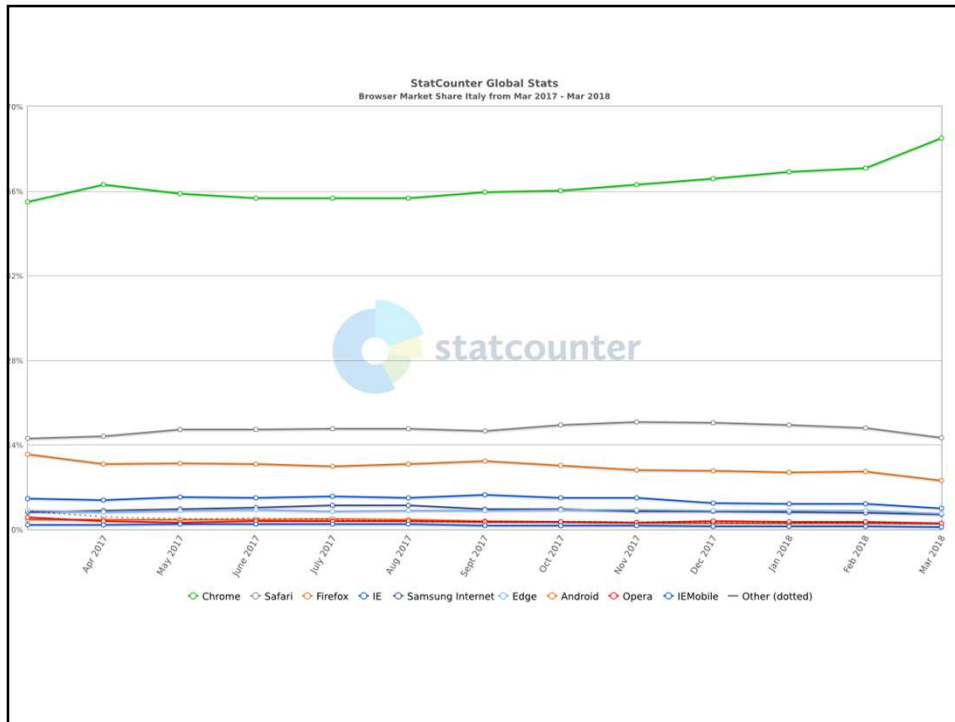
**Support**  
(phone mail, etc)






## FLOSS browsers dominate!











- > Compatible with MS Office
- > Cross-platform (Win, Linux, Mac, ...)
- > Open document Format (ODF)
  - > XML based, OASIS & ISO standard
- > PDF & Flash export
- > Bibliographic manager

### Quick Facts


**The Name**  
OpenOffice.org

**The Community**  
Registered Members: >750,000  
Sponsored developers: >100  
FTE  
Committers: > 500  
Native Language Projects: >100

**The Software**  
Version: 3  
Downloads: >100m  
Applications: 6  
Platforms: 6  
Languages: >90  
Development: >20 yrs elapsed  
Size: >10,000 kloc  
Licences: OSI approved  
File format: ISO approved

**Licensing**  
Source Code: LGPL  
Other: PDL

**Major Contributors**  
Sun Microsystems, Inc.  
Novell, Inc.  
Beijing Redflag CH2000  
Red Hat, Inc.  
IBM Corp.  
Google Inc.





**LibreOffice 4.0**  
The Document Foundation

**FREE OFFICE SUITE**

LibreOffice 4: The free office suite the community has been dreaming of for twelve years.





LibreOffice 4

Discover it

Donate

Main website

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[Impressum \(Legal Info\)](#)

**LibreOffice**  
The Document Foundation

Your contribution to our 2013 budget!

1k 20k 50k 100k >

Home Download **Features** Get Help Get Involved Developers International Sites About Us Security

Writer Calc Impress Draw Base Math Extensions Templates 3.6 Features 4.0 Features

### Features

LibreOffice is a comprehensive, professional-quality productivity suite that you can **download** and **install** for free. There is a large base of satisfied LibreOffice users worldwide, and it is available in more than 30 languages and for all major operating systems, including Microsoft Windows, Mac OS X and GNU/Linux (Debian, Ubuntu, Fedora, Mandriva, Suse, ...).

You can **download**, **install** and distribute LibreOffice freely, with no fear of copyright infringement.

#### What's outstanding about LibreOffice?

LibreOffice is a feature-packed and mature desktop productivity package with some really great advantages:

- ✔ It's free – no worry about license costs or annual fees.
- ✔ No language barriers – it's available in a large number of languages, with more being added continually.
- ✔ LGPL public license – you can use it, customize it, hack it and copy it with **free user support** and **developer support** from our active worldwide community and our large and experienced developer team.
- ✔ LibreOffice is a free software community-driven project: development is open to new talent and new ideas, and our software is tested and used daily by a large and devoted user community; you, too, can **get involved** and influence its future development.

LibreOffice gives you high quality:

- ✔ The roots of LibreOffice go back 20 years. This long history means it's a stable and functional product.

The LibreOffice Start Center (Click on image)

## Servers Internet / Institution

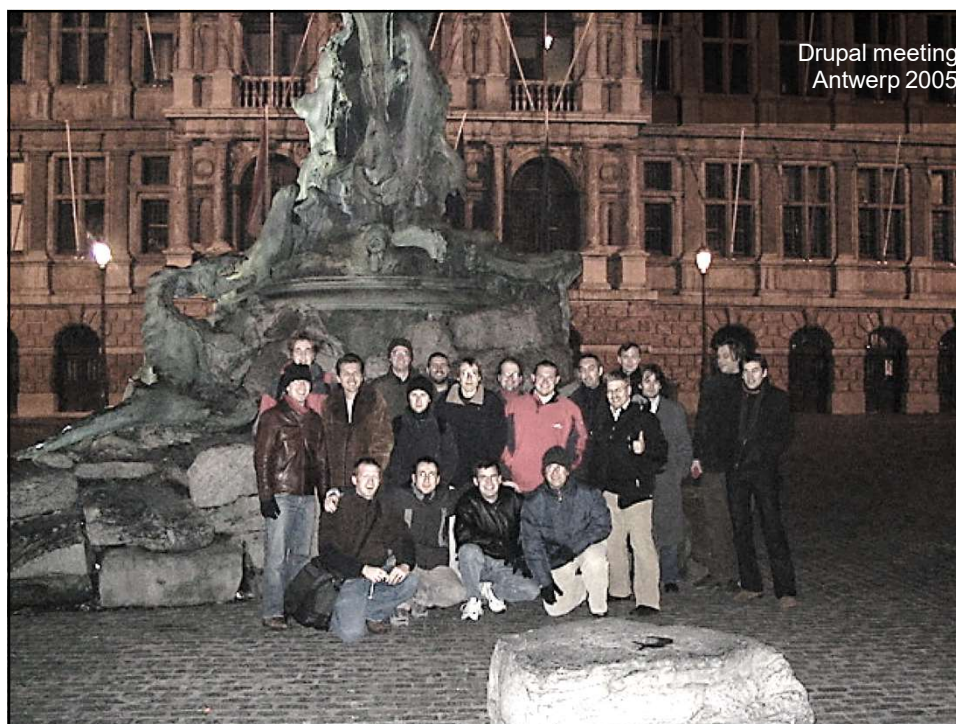
- ▶ Operating systems: Linux, BSD, OpenSolaris, Android, ...
- ▶ Domain Name Resolving: BIND
- ▶ Web server: Apache
- ▶ Mail: Sendmail, Postfix, Cyrus, Exim
- ▶ E-learning: Moodle, Chamilo, Dokeos, Chisimba
- ▶ Helpdesk: Open Ticket Request System, RT
- ▶ ERP: Compière, SugarCRM, (Chisimba)
- ▶ Library: ABCD, Greenstone, Koha, Evergreen
- ▶ Institutional repository: Greenstone, Dspace, Eprints, Fedora
- ▶ ...

## Free & Open Source Integrated Library Systems

- › Greenstone <http://www.greenstone.org>
- › Koha <http://koha.org/>
- › Evergreen <http://www.evergreen-ils.org/>
- › PhpMyBibli <http://www.sigb.net> NewGenLib
- › <http://www.newgenlib.com/>
- › ABCD <http://reddes.bvsalud.org/projects/abcd>

## Free & Open Source (institutional) repository software

- › Dspace <http://www.dspace.org/>
- › Eprints <http://software.eprints.org/>
- › Fedora <http://fedora-commons.org/>
- › Greenstone <http://www.greenstone.org>





# Drupal Content Management Platform

- > Powers 2% of websites
  - > USA White House, MTV UK, Sony Music, Al Jazeera, ...
- > 1111 themes
- > 9732 modules
- > 7815 developers
- > 1M registered users on drupal.org
- > 2M/month unique visitors on drupal.org




## Yes, there is a huge world of FLOSS communities

**sourceforge** FIND AND DEVELOP OPEN SOURCE SOFTWARE Welcome, [Frederik Questier](#) [Log Out](#) | [Account](#)

[Find Software](#) [Develop](#) [Create Project](#) [Blog](#) [Site Support](#) [About](#)

**Find free open source software.**

By default, we'll show you software that runs on Linux  [\(change\)](#) [Learn more about SourceForge](#) [What is open source software?](#)

**About**

**What is SourceForge.net?**  
SourceForge.net is the world's largest open source software development web site. We provide free services that help people build cool stuff and share it with a global audience. [See a list of our software development features.](#)

As of August, 2010, more than **240,000 software projects** have been registered to use our services by more than 2.6 million registered users, making SourceForge.net the largest collection of open source tools and applications on the net.

**102**

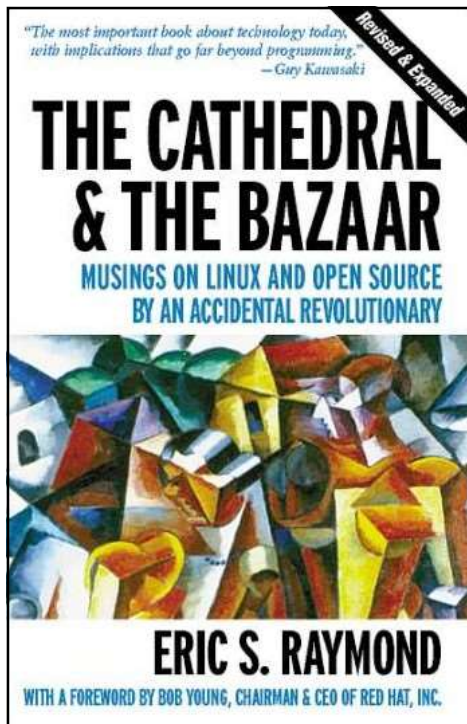


Development  
Linus Torvalds' style

- release early and often
- delegate everything you can
- be open to the point of promiscuity

Linus' Law  
"given enough eyeballs,  
all bugs are shallow."

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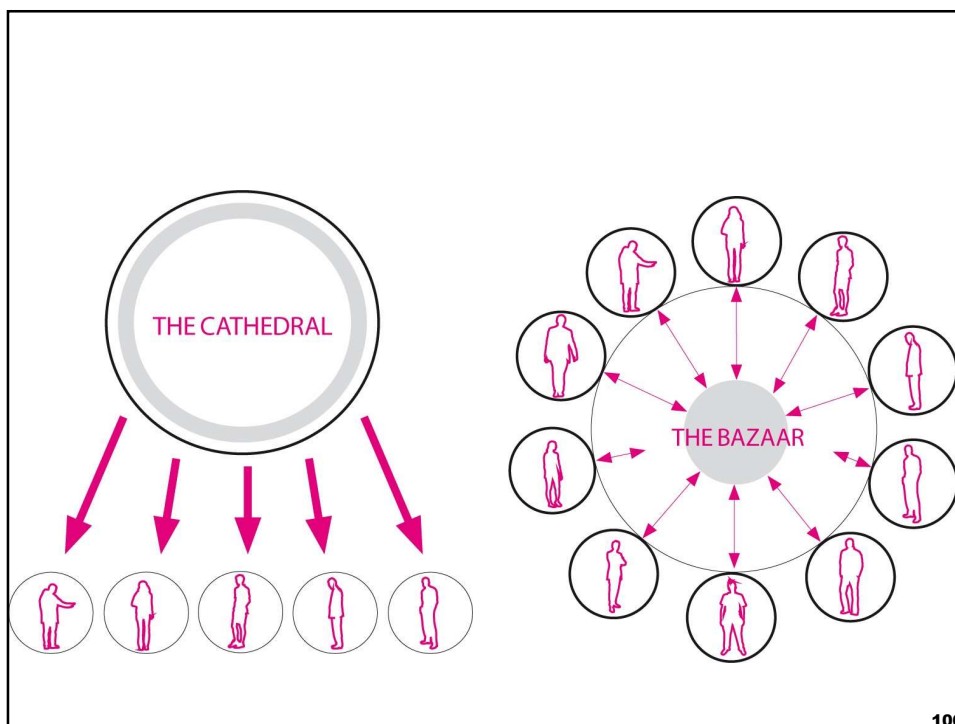
Book published under Open Publication License

19 lessons for open source development

Commercial development = Cathedral style

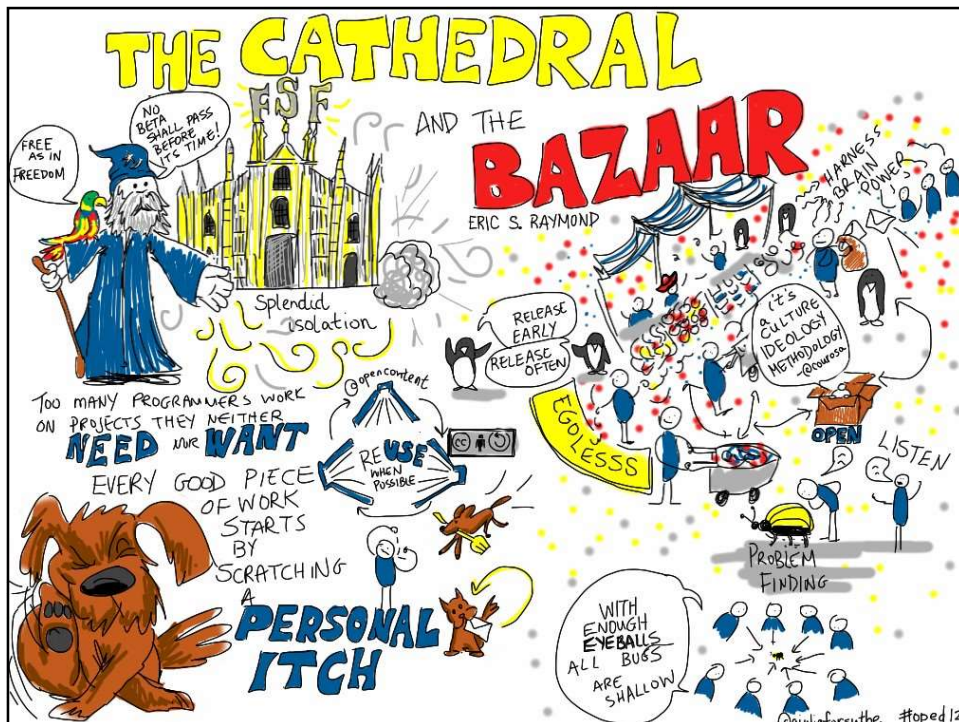
Open Source development = Bazaar style

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## The Cathedral and the Bazaar *about developers*

1. Every good work of software starts by scratching a developer's **personal** itch.
2. Good programmers know what to write.  
Great ones know what to **rewrite (and reuse)**

## The Cathedral and the Bazaar *about users*

6. **Treating your users as co-developers** is your least-hassle route to rapid code improvement and effective debugging.
6. **Release early. Release often. And listen to your customers.**
6. Given a large enough beta-tester and co-developer base, almost every problem will be characterized quickly and the fix obvious to someone.
11. The next best thing to having good ideas is recognizing good ideas from your users. Sometimes the latter is better.

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## The Cathedral and the Bazaar *about development*

17. A security system is only as secure as its secret.  
Beware of pseudo-secrets.
17. To solve an interesting problem,  
start by finding a problem that is interesting to you.
19. Provided the development **coordinator**  
has a medium at least as good as the **Internet** and  
knows how to lead without coercion, many heads  
are inevitably better than one.

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**Just because you pay for it,  
Doesn't mean it's better**

**Secure** **Fast** **Free**

**Welcome to Open Source,  
The future of computer software**

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## FLOSS characteristics

- ⊕ Ethical ← freedoms
- ⊕ *User friendly* ← written by users for users
- ⊕ Cross-platform ← recompile source code
- ⊕ High development pace ← reuse of best modules
- ⊕ High quality ← peer review, reuse = survival of the fittest
- ⊕ High security ← peer review, Unix origin, modular, encryption



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## What does the competition say?

- > Microsoft:
  - > “Linux is a cancer” (Steve Ballmer, CEO)
  - > “Windows (Total Cost of Ownership) is cheaper than Linux”
  - > “Linux violates at least 228 patents”
  - > “GPL is viral”



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## What does the competition **REALLY** think?

- › We get a good idea about what they really think from their “**Halloween documents**”, which comprise a series of confidential Microsoft memoranda on potential strategies relating to free software, open-source software, and to Linux in particular.

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### “Halloween Document I” (1998) Microsoft confidential memo:

- › “OSS poses a direct, short-term revenue and platform **threat** to Microsoft, particularly in server space.”
- › “Additionally, the intrinsic parallelism and free idea exchange in OSS has **benefits** that are not replicable with our current licensing model and therefore present a long term developer mindshare **threat**.”
- › **FUD** tactics can not be used to **combat** it.

## “Halloween Document I” (1998) Microsoft confidential memo:

- “Recent case studies (the Internet) provide very dramatic evidence ... that **commercial quality can be achieved / exceeded** by OSS projects.”
- “Linux and other OSS advocates are making a progressively more credible argument that OSS software is **at least as robust -- if not more --** than commercial alternatives. The Internet provides an ideal, high-visibility showcase for the OSS world.”
- “OSS is **long-term credible**”

## “Halloween Document II” (1998) Microsoft confidential memo:

- “Linux represents a best-of-breed UNIX, that is trusted in mission critical applications, and - due to its open source code - has a **long term credibility which exceeds** many other competitive OS's.”
- “**Most of the primary apps** that people require when they move to Linux are already available for **free**. This includes web servers, POP clients, mail servers, text editors, etc”
- “Consumers **Love** It.”
- “The effect of **patents and copyright in combatting** Linux remains to be investigated.”

## “Halloween Document VII” (2002) Microsoft confidential survey results:

- 81% were at least 'somewhat' **familiar** with OSS
  - 78% of those had a **favorable** impression of OSS
- 77% were at least 'somewhat' **familiar** with Linux
  - 86% of those had a **favorable** impression of Linux
- most compelling reasons to support OSS:
  - 40%: “**Low total cost of ownership**”
  - 34%: “**Alternative to Microsoft**”

## “Halloween Document VIII” (2002) Microsoft confidential memo:

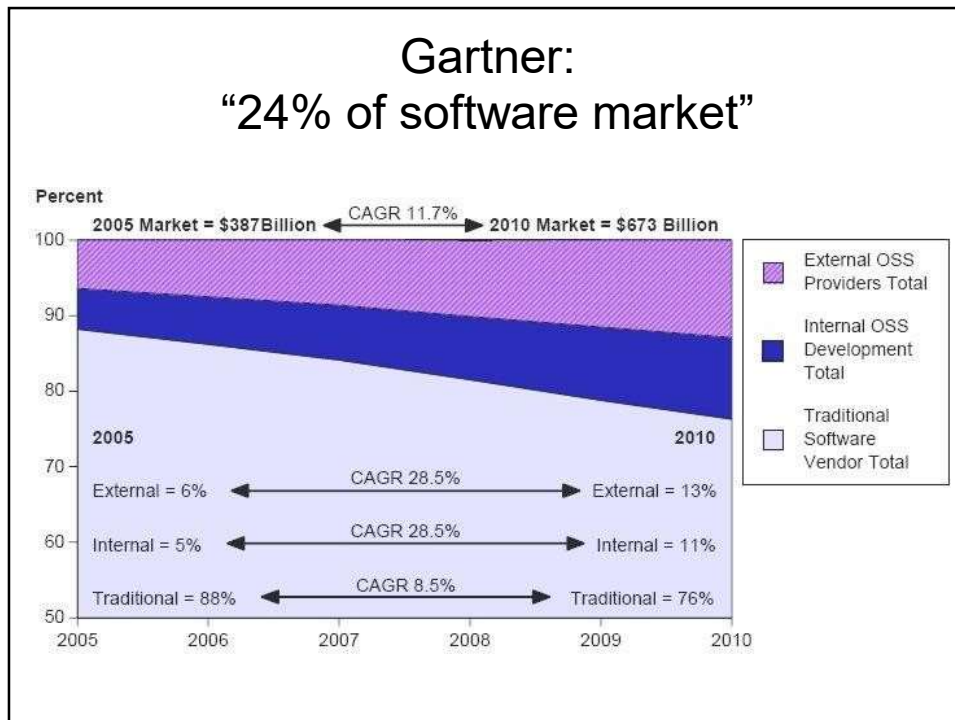
- Microsoft tries to develop an emergency-response team to cope with Linux conversion announcements

## “Halloween Document X” (2004) Microsoft confidential memo:

- › Shows how Microsoft gave money under the table to **SCO** to attack Linux with copyright claims.
- › 2007 & 2010: court ruled that **Novell**, not **SCO**, is the rightful owner of the copyrights covering the Unix operating system.
- › **Novell** announced "We don't believe there is Unix in Linux"

**Business ?**





## Study on Economic impact

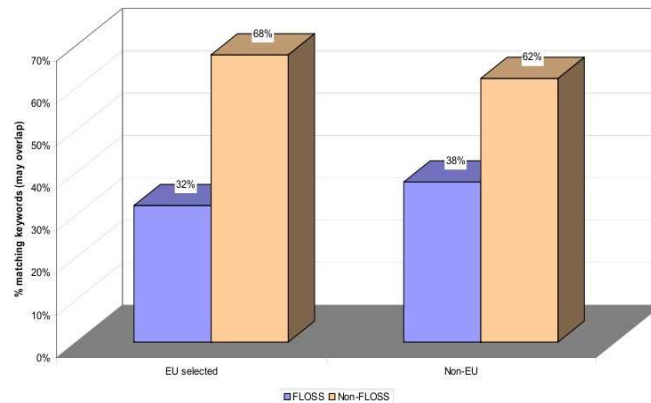
Study on the Economic impact of open source software on innovation and the competitiveness of the Information and Communication Technologies (ICT) sector in the EU, 2006, R.A. Ghosh, UNU-MERIT, NL. et al., 287 pp.

- › FLOSS applications are 1st, 2nd, 3<sup>rd</sup> in many markets
- › High market penetration
- › 65% written by individuals, 15% companies, 20% other institutions
- › FLOSS code base = \$12B
- › FLOSS code base = 131000 programmers years
- › FLOSS code base doubles every 18-24 months
- › Proprietary software firms only responsible for 10% of total software developers, so no cannibalisation fear
- › FLOSS can save companies 36% on R&D costs
- › Unique (European) opportunities to create new software businesses

## Study on Economic impact

Study on the Economic impact of open source software on innovation and the competitiveness of the Information and Communication Technologies (ICT) sector in the EU, 2006, R.A. Ghosh, UNU-MERIT, NL. et al., 287 pp.

Figure 42: Job postings, FLOSS and non-FLOSS



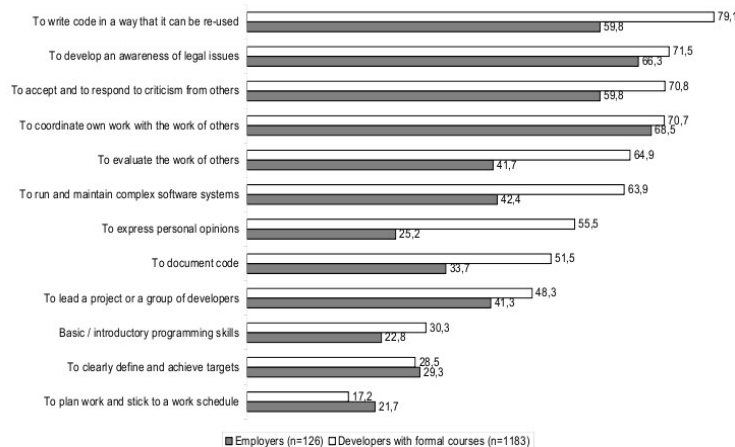
Copyright © MERIT, from the FLOSSWorld project. FLOSS & non-FLOSS may overlap. Searches on jobs websites for FLOSS and non-FLOSS keywords<sup>64</sup>, 379010 postings matched. Non-EU: Argentina, Brazil, Bulgaria, Croatia, India, Malaysia, South Africa. EU is for 10 selected EU25 countries. >50 jobsites were searched in July-Sept 2006.

## Study on Economic impact

Study on the Economic impact of open source software on innovation and the competitiveness of the Information and Communication Technologies (ICT) sector in the EU, 2006, R.A. Ghosh, UNU-MERIT, NL. et al., 287 pp.

Figure 32: Skills learnt from FLOSS compared to formal courses

"Which of the following skills can better be learnt within the FLOSS community as compared to a formal computer science course?" - Employers, FLOSS developers with experience in formal courses

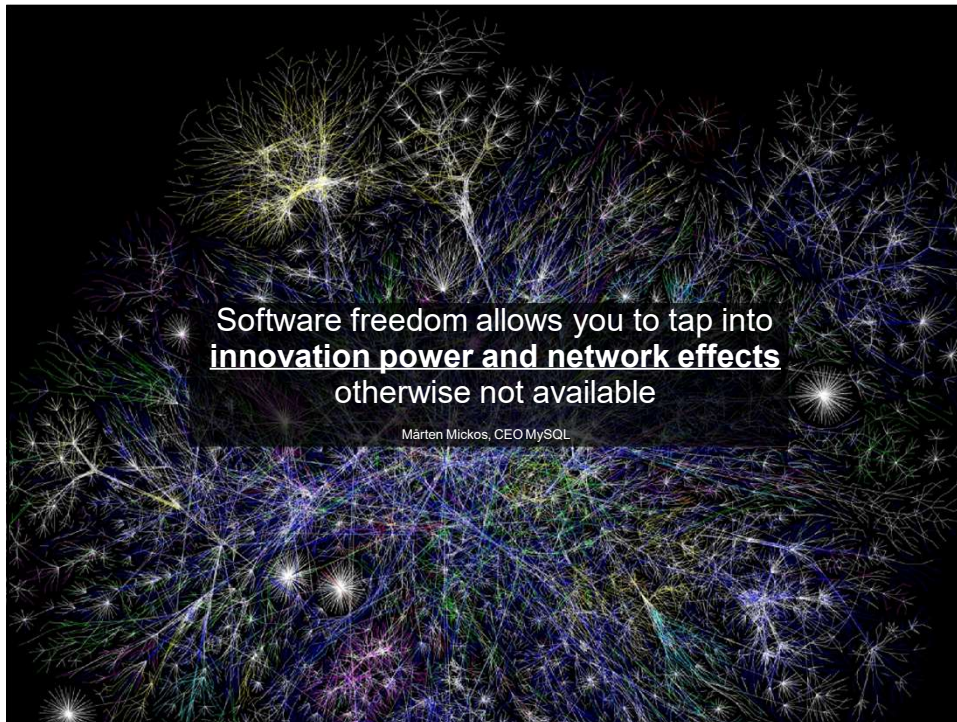


## "Open Source: Why Freedom Makes a Better Business Model" Mårten Mickos, CEO MySQL, 2009

- › FLOSS
  - › is
    - › not against ownership
    - › not anti-commercial
    - › not a business model
  - › but is
    - › a smarter way to produce the goods
    - › a smarter way to distribute the goods
- › Differentiation!

**Success** in FLOSS requires you to serve  
- those who **spend time** to save **money**  
- those who **spend money** to save **time**  
- Mårten Mickos, CEO MySQL





# Creating wealth by sharing

"Seven open source business strategies for competitive advantage" John Koenig, IT Manager's Journal, 2004

*"Companies continue to waste their development dollars on software functionality that is otherwise free and available through Open Source. They persist in buying third-party proprietary platforms or creating their own proprietary development platforms that deliver marginal product differentiation and limited value to customers"*

Picture reproduced with permission

The diagram illustrates seven business strategies for open source software, each associated with a list of companies:

- Embedded:** Employeease, Salesforce.com, NetSuite, Rightnow, AthenaRMS
- Optimization:** Oracle, TIVO, Cisco, Neoteris, Panasonic
- Dual:** Zope, SleepyCat, Trolltech, MySQL, SugarCRM, ActiveBPEL
- License Based:** Novell, JBoss, OpenLogic, Linspire, RedHat, SourceLabs, SpikeSource
- Subscription:** Optaros, 10X Software, Cignex, Gluecode, GroundWork
- Consulting:** IBM, Hewlett Packard, Sun, Computer Associates
- Patronage:** Amazon, E\*Trade, Paypal, Ticketmaster, Travelocity

Copyright (c) 2005 John Koenig  
www.riseforth.com



The screenshot shows the IBM website's 'Linux & IBM' section. The main heading is 'IBM & the Linux Community' with the subtitle 'Supporting the community development of Linux since 1999'. The page content includes a list of achievements, a paragraph about IBM's investment in Linux, and a paragraph about the open source community's growth. On the right side, there are service boxes for 'We're here to help' (with 'Request a quote' and 'E-mail IBM' buttons) and 'Twitter' (with 'Follow IBM Linux news on Twitter' and 'Keep up to date!' buttons).

United States [ change ]

Home Solutions Services Products Support & downloads My IBM Welcome [ IBM Sign in ] [ Register ]

Linux & IBM

IBM Solutions for Linux

IBM & the Linux Community

Linux distribution partners

Migrating to Linux

IBM Linux Technology Center

Drivers & technical resources

The Linux Library

Global Linux Portals

Additional Links

- IBM Smart Planet
- Linux for Business Partners
- developerWorks

Linux & IBM >

## IBM & the Linux Community

Supporting the community development of Linux since 1999

IBM began participating in the community development of Linux in 1999. Since then IBM's commitment, investments, and support of the Linux community have resulted in:

- All IBM servers supporting the Linux operating system
- Over 500 IBM software products on Linux
- A full line of implementation, support, and migration services for Linux

Along with IBM's investments, the Linux community's innovation is changing the game by accelerating adoption of open standards, especially in today's work around virtualization, SELinux, and real time Linux.

The open source community thrives because invested individuals, groups, and corporations are actively creating, developing, testing, and supporting the software that comprises the Linux and open source software ecosystem. Being an active Linux community participant means making real and tangible investments, promoting true collaboration, and participating in shared decision making.

Eight years following our initial announcement, Linux and open source development at IBM is still going strong. Today, IBM has committed over 600 people to open source development, actively contributing to Linux and other open source projects. We have made a substantial investment into Linux and open source - and it's working.

The following are a subset of the projects, organizations, conferences, and Linux entities to which IBM actively contributes and participates. The list below is not exhaustive, and it does not cover all of the more than 150 open source projects and communities in which IBM employees participate.

**We're here to help**

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Request a quote

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Or call us at:  
877-426-3774  
Priority code:  
109HH03W

**Twitter**

Follow IBM Linux news on Twitter

Keep up to date!

Follow us

## Reflect about these questions

1. Why would you **use FLOSS** as an **individual**?
2. Why would you **use FLOSS internally** as an **organisation**?
3. Why would you **use FLOSS in your products or contribute to FLOSS** as an **organisation**?

## Why would you use FLOSS as an individual?

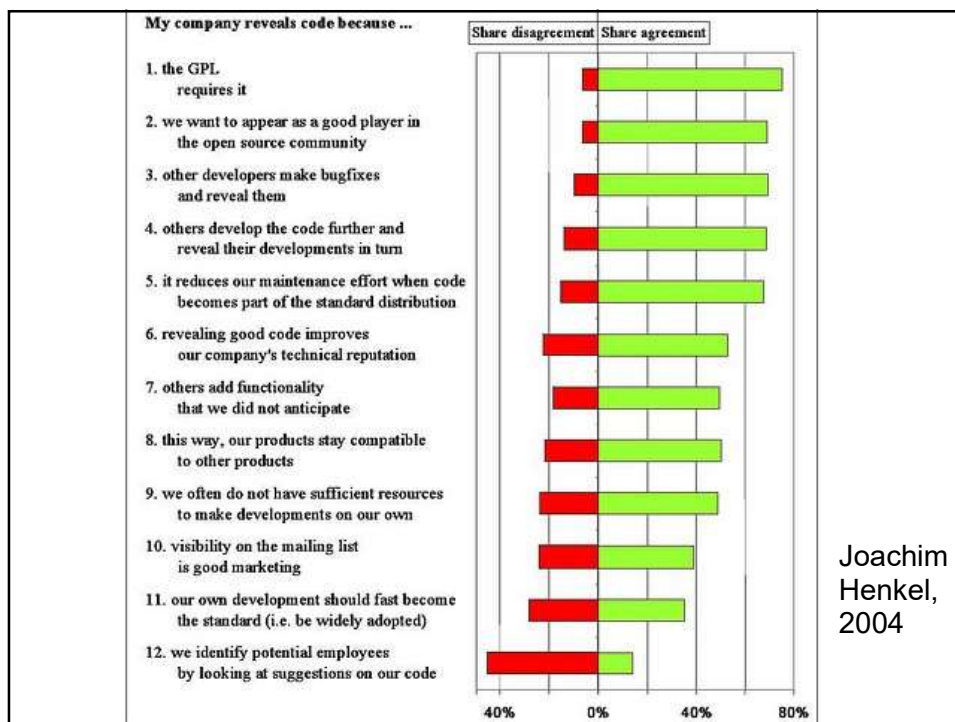
- › Freedom
- › Quality
  - › Made by users for users
  - › Robustness
- › Security & trust Fun - learn
- › skills
- › Use on old / many machines
- › No costs
- › Avoid piracy

## Why would you use FLOSS internally as an organisation?

- › Less dependencies
  - › No data lock-in No vendor lock-in
  - › *Many* companies can give support Eternal
  - › license
  - › Platform independency (code can be recompiled)
  - ›
- › No license costs, low TCO
- › No license management burden
- › Security audits possible

## Why would you use FLOSS in your products or contribute to/as FLOSS?

- › If selling licenses is not core of business model
- › Non-paying users can be useful in different ways (market share, feedback, contributions, ...)
- › No need for anti-piracy and sales efforts Less
- › development costs by reuse
- › Join bigger networks, collaboration
- › Foster external innovation Reputation
- › No exclusion when clients require FLOSS
- ›





## Why is FLOSS not used more?

- › Anti-competitive behaviour of closed source companies
  - › Monopoly abuse
  - › Secret formats & protocols
    - › Data lock-in
    - › Vendor lock-in
- › Not a lot of advertising
- › Not a lot of teaching

## Who can break the monopoly?

- › Education
  - › *We teach MS because that is what companies use*
- › Companies
  - › *We cannot use OSS because our employees don't know it*
- › Employees
  - 😊 › Growing number starts using OSS at home
  - 😞 › Not happy with inferior software at work

## Why for education?

- › **Social responsibility**
  - › freedom and user rights
  - › home use for students without costs or piracy !
- › **Savings**
  - › Zero cost of software acquisition
  - › Less administration effort
  - › No license management effort
- › **Study of internal workings of software**
  - › Student projects
    - › experience international online collaboration
  - › FLOSS knowledge = competitive advantage

**FLOSS benefits  
for libraries?**

JISC Digital Infrastructure Team  
Toiling on the digital infrastructure...

[Home](#)   [About](#)   [RSS](#)

---

### The Benefits of Open Source for Libraries

**What are the main benefits to the library of adopting open source?**

There are some well known benefits that open source could bring to libraries, these include:

- **Lower costs:** Open source offers a lower total cost of ownership than traditional library systems. There are none of the traditional license costs associated with open source. Libraries are able take advantage of the reduced costs the cloud offers by reducing local support and hosting costs (if it is supported and hosted by a third party).
- **No lock-in:** Libraries are, in a sense, removed from the traditional lock-in associated with library systems. There is a greater opportunity to pick and choose components, and take advantage of what is, generally, better interoperability with open source solutions. Related to this is also the idea that open source is more sustainable: If a vendor goes out of business the software may disappear or be sold-on. With open it is always available, and there is usually a community involved in it to continue its development.
- **Adaptation and Innovation:** Connected to the above is the greater capacity that libraries have to innovate with open systems and software. There is no need to await the next update or release, instead in either isolation or collaboratively, can develop the functionality required. This enables much more agile services and systems, as well as ensuring user expectations are exceeded.
- **A richer library systems ecosystem:** A less direct impact of open source is a richer library systems ecosystem. This is both in terms of the library solutions available (a healthier marketplace with both proprietary and open solutions) and in terms of collaboration and engagement between libraries themselves. Libraries are able to collaborate and share code on the functionality and fixes they require. Indeed, there are open source systems such as Evergreen, which were developed as an open source library system for a consortial approach.

While these benefits are the headline grabbing ones, it might be argued there are more subtle, but none the less powerful benefits in the adoption of open source in libraries, especially within higher and further education. There are broader trends and themes emerging (and some fairly well entrenched) within the new information environment that make open source particularly timely for libraries. These developments include: open (linked) data; managing research data; open scholarship and science; Open content such as OERs; crowdsourcing, and, of course, open access. Open source solutions for the library fit very well into this broader open momentum affecting the academic world at present.

Away from the academic world it is difficult not to notice the close correlation between the open, learning, sharing and peer-production culture libraries embody and that of the open source culture.

So it may be that **one of the greatest benefits of adopting open source is that it mirrors the very philosophy and values of the library itself.**

# www.foss4lib.org

Free/Open Source Software for

## LIBRARIES

**FOSS4LIB**  
powered by LYRASIS

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Register for the next Introducing FOSS4Lib Webinar [DETAILS](#)

on October 28th

### WELCOME TO THE FOSS4LIB SITE

Is your library thinking about jumping into open source software, but not sure if you have the tools in place to succeed, or where to start? You've come to the right place.

Whether you are looking to decide *if* open source software is right for your library or need help finding *which* open source software package meets your needs, this site has the content and the community to help you with those decisions.

**UPDATED PACKAGES**

**RECENT RELEASES**

**UPCOMING EVENTS**

looking for something specific?

NAVIGATION

- [Login](#)
- [Create Account](#)
- [Forums](#)

ANNOUNCEMENTS

FOSS4Lib Now Publishes Package and Release Updates to Twitter  
*posted Wed, 2013-08-14 17:24*

Software Selection Methodologies for ILS and Discovery Layer Now Available  
*posted Tue, 2012-11-06 12:54*

## **Institutional FLOSS taskforce / expertise / innovation center**

- › Create awareness
  - › Involve all stakeholders
    - › including highest management
- › Expertise & capacity building
- › Resources for experimentation & innovation
- › Provide support – sustainability
  - › Documentation
  - › Training → certification

## **Policies**

- › Purchasing policies
  - › FLOSS, except if no good alternative
  - › Ask
    - › argumentation
    - › which alternatives considered
- › Build or buy? Open
- › standards Open
- › courseware
- › Free & Open Licenses

## How to handle the plethora of choice?

- › define requirements
- › indicators of high quality & sustainability
  - › mature, stable software active community
  - › availability of support & documentation
- ›
- › need/possibility to change the code?
- › need/possibility to participate in the community?

## When to migrate?

- › Time transitions
  - › at the end of existing contracts
  - › at hardware / software upgrade times
- › Consider migrating in phases
  - › servers
  - › desktop applications
    - › → multi-platform
    - › → web-based
  - › desktop OS

## Key success factors for migration & implementation

- › resources to experiment an evidence-based choice
- › involvement of both technical and non-technical users in the selection process
- › choice for a new system which is in all aspects at least as good and easy as the previous one
- › reporting detailed migration plan to management and get their approval and support
- › in-house expertise with open source software and communities
- › contact with the developers and users community
- › Constant communication with all stakeholders
- ›

## Advantages of being a contributing community member

- › co-decide the direction of development
- › create extensions
  - › user requested
  - › research driven innovation
- › more contacts with other educational institutions
- › programming projects for students
- › better knowledge of the system better trouble solving possibilities for grants
- ›

## The open way

- › avoid local customization without
  - › contributing back
  - › participating in the community
- › establish an 'open source culture' of re-use, collaboration and sharing
  - › Provide FLOSS repositories / CDs
- › share experiences

## Where to find more FLOSS?

- › [Use your software package manager](#)
  - › if your are using a Free and Open Operating System!
- › [Sourceforge.net](#)
  - › Hosting and tools for >240K Open Source projects
  - › >2M registered users (contributors)
- › [Freshmeat.net](#)
  - › >40.000 projects, mostly Free Software
- › [Google](#): x AND GPL OR “open source”

## Where to find more FLOSS?

- › <http://livecdlist.com/>
  - › If you want to test software without installing
- › <http://www.theopendisc.com/>
  - › High Quality OSS for Windows: Firefox, Openoffice, Inkscape, Scribus, Clamwin, GIMP, Audacity, Filezilla, 7-zip, PDFCreator, Freemind, ...



## Total Cost of Ownership

- › Free Software is about freedom, not price
  - › In practice: zero cost acquisition
- › Support is similar or cheaper because of competition
- › No license management / procurement needed
- › Cheaper hardware can be used
- › Less administration work
- › Bandwidth savings (local central update/software repository)
- › Training
  - › Usability tests
    - › {MS Windows XP → Vista} = {MS Windows → Linux}
    - › {MS Office 2003 → 2007} > {MS Office 2003 → OpenOffice}



## Privacy and security?

- > From the European Parliament investigation into the Echelon system (05/18/2001):
  - > *“ensure that sensitive information is **only transmitted via secure media...**”*
  - > *“If security is to be taken seriously, **only those operating systems should be used whose source code has been published and checked, since only then can it be determined with certainty what happens to the data.**”*

## From open source to open innovation?

- > Software development started Open Source avant la lettre
- > **1976: Bill Gates open letter to hobbyists: 'your sharing is stealing'**
- > Modifiable nature and modularity ideal for fostering innovation
  - > All major internet software started open
    - > TCP/IP, mail, web, newsgroups, irc, wiki, ...
  - > Community maintained software repositories (→ app markets)
  - > Live CDs
  - > 3D desktops
  - > Virtual Networking Computing Netbooks, \$100 laptop
  - > Google (File system, Chrome browser, ...)
  - > ...
  - >
  - >

## Disadvantages? Issues?

- › **Plethora of choice can be overwhelming**
  - › Largest projects are high quality and well supported
  - › But be aware of small projects
- › **(US) software patents could be used for FLOSS attacks**
  - › Not enforceable in EU. Africa/Asia/...?
  - › Now: patent attacks against closed > against open source
  - › In OSS: possibility to remove the patented feature
  - › Legal awareness and willingness to comply is large
  - › Patented multimedia codecs not included in main repository
  - › DRMed content most often not readable

## Secret data formats Secret protocols

- › Vendor and data lock-in
  - › (changes) force us/others to buy (and buy again)
  - › → viral
  - › vendors don't want us to talk together or to share data
  - › vendors want us to ~~use~~ buy their products
  - › no free competition
  - › no guarantee eternal access
- › *Students need more and more (costly?) software*
- › *Students' IT diversity risks to be beaten down*
- › *Integration with other tools is hindered (e.g. indexing on e-learning platforms)*

# Concepts related to Free Open Source Software

- Open standards
- Open content licenses
  - e.g. Creative Commons
- Open hardware
- Open innovation Open culture
- Open education Open data
- Open access for scientific publications
- 
- 

**WHAT IS OPEN SOURCE HARDWARE?**

Physical item whose source files have been **OPENLY SHARED** with the world and can be **FREELY COPIED OR MODIFIED**.

Anyone can **STUDY, MODIFY, DISTRIBUTE, MAKE and SELL** the design or hardware based on that design.

Open source hardware gives people the freedom to **CONTROL** their technology while **SHARING** knowledge and **ENCOURAGING** commerce through the open exchange of designs.

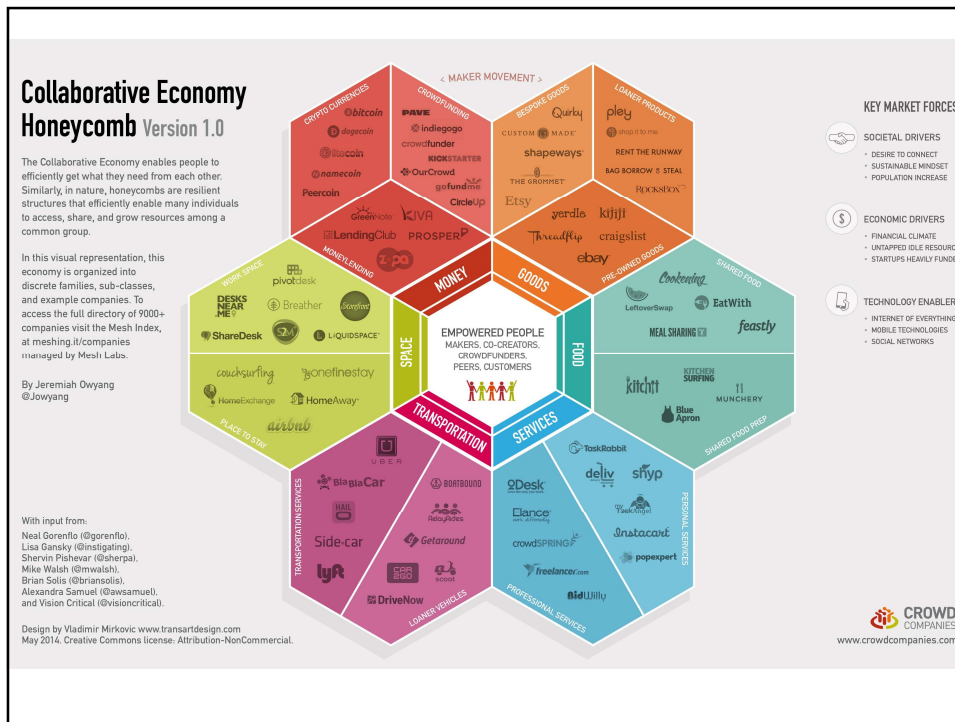
Sharing designs allows **RAPID INNOVATION** on a global scale

**DON'T REINVENT THE WHEEL**, anyone can reuse and improve on Open Hardware designs

**Popular Open Source Hardware Designs**

- Electronic prototyping platform
- Open Source Satellite
- 3D printer
- Volunteer Space Program

**DIY SPACE EXPLORATION**  
www.DIYSpaceExploration.com



## (Open?) standards

- **De facto “standards”**
  - Wrong term for something that is used a lot.
  - No real standards unless published
  - e.g. MS Office file formats
- **De jure standards**
  - Quality recognized by a standards organization
  - E.g. ethernet, WiFi

## Open standards

- › Definition EU commission:
  - › The standard is adopted and will be maintained by a **not-for-profit organisation**, and its ongoing development occurs on the basis of an open decision-making procedure available to all interested parties (consensus or majority decision etc.)
  - › The standard has been **published** and the standard specification document is available either freely or at a nominal charge. It must be **permissible to all to copy, distribute and use** it for no fee or at a nominal fee.
  - › The intellectual property - i.e. patents possibly present - of (parts of) the standard is made **irrevocably available on a royalty-free basis**.

## Open standards

- › E.g.: TCP IP, HTML, XML, ODF, PDF,...
- › Sometimes called 'open specifications' until approval by standards organization

## Office standard

- > **Open Document format**
  - > Developed by OASIS (Organization for the Advancement of Structured Information Standards) and OpenOffice
  - > Incorporates other open standards (SVG, MathML, ...)
  - > ISO (International Organization for Standardization) standard since 5/2006
  - > Native format of OpenOffice, KDE Office, ...
  - > Open (Document) Formats requested by growing number of governments
  - > Decision Belgian government 23<sup>th</sup> of june 2006:
    - > ODF obligatory in administration
    - > in 2008 administration can only exchange documents in ODF

## Office standard?

- > **Microsoft Office Open XML (OOXML)**
  - > Complex
    - > 6000 pages
    - > No incorporation of existing standards Reference to unpublished old MS Office formats
    - > MS needed 150 man years for Mac version → competition?
  - > Patent problems
  - > Ecma (European Computer Manufacturers Association) standard since 7<sup>th</sup> of december 2006
  - > ISO fasttrack approval april 2008
    - > Many complaints about irregularities
    - > No implementation in software

## EU recommendation

- › For all parties involved,
  - › the exchange of documents and data
  - › between authorities, businesses and citizens
  - › must be possible without technical barriers.
- › The public administration
  - › must not exclude anyone
  - › from participating in an electronic procedure
  - › owing to the use of a specific product.
- › The Member States are agreed that in the future
  - › electronic documents should be exchanged
  - › fully on the basis of **open document exchange formats**

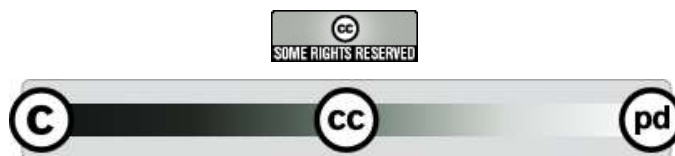
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- › Free licenses
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    - › No attribution required
    - › Can be locked up in commercial works
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    - › Interesting for technical documentation, manuals, ...
  - › **Creative Commons Public License = CCPL**

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- > [www.creativecommons.org](http://www.creativecommons.org)

*Share what you want,  
keep what you want*



- > 6 combinations of
  - > Commercial – no commercial use allowed
  - > Modifications – no modifications allowed
  - > Sharealike – not sharealike

## Creative Commons

- > Movie
  - > Wanna work together?
  - > <http://support.creativecommons.org/videos/#wwt>
- > > 1000 journals under CCPL !



## Reflection task

- › Which recommendations do you take home?
- › What can you do for a more open world?

## Recommendations for libraries

- › Use FLOSS for
  - › Integrated Library System
  - › Repository
  - › library computers
- › Use multiseat computers or thin clients
- › Lend out or distribute CDs/DVDs with FLOSS
- › Provide links to
  - › Open Access journals and repositories
- › Consider local cache systems such as LOCKSS
- › If internet in your country is slow: take copies with you!

## **Recommendations for teachers & researchers**

- › Publish your research and teaching material using
  - › Free Licenses
  - › Open Access journals
  - › Open repositories
- › Teach students FLOSS and give Free CD/DVDs

## **Recommendations for universities**

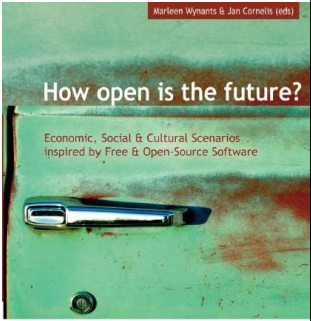
- › Start with Open Source Lab and sensitization
- › Consider migrating in phases
  - › servers / (multiplatform) desktop applications / desktop OS
  - › starting with new computers
- › Policy: FLOSS, except if no good alternative
  - › Ask argumentation and which alternatives considered
- › Policy: open formats
- › Contribute to FLOSS
- › Share experiences

## Open Society?

➤ **"How open is the future?  
Future Economic, Social & Cultural Scenarios  
based on Free & Open Source Software"**  
*Book: Eds. M. Wynants & J. Cornelis (Crosstalks)*

Open Courseware and Open Scientific Publications  
*Chapter: F. Questier, W. Schreurs*

Openly published under CCPL  
See [questier.com](http://questier.com), [crosstalks.vub.ac.be](http://crosstalks.vub.ac.be)



Marleen Wynants & Jan Cornelis (eds)

**How open is the future?**

Economic, Social & Cultural Scenarios  
Inspired by Free & Open-Source Software

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