

# The Free Software movement

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September 14, 1999

# What do these organisations have in common?

Adobe, Agfa, AMD, Amdahl, AT&T, Baan, Bellcore, Boeing, Bosch, British Telecom, Caltech, Canon, CERN, CMU, Compaq, Cygnus, Daimler-Benz, Dasa, DEC, DLR, Ericsson, FAA, Ford, GMD, Harvard, Honeywell, HP, IBM, Inria, Intel, J.P. Morgan, Kodak, Lockheed, Lucent, MCI, MIT, Motorola, NASA, Netscape, Nokia, Oracle, Philips, Raytheon, SAIC, SAP, SGI, Shell, Siemens, Stanford, Star Division, SUN, Thomson, TI, US Air Force, US Navy, VocalTec, Xerox

People from all these organisations have sent in bug reports about **DDD**, an GUI interface for command line debuggers. DDD is free software.

## Free software

- Think free speech, not free beer.
- Free software is software whose licence(s) encourage widespread distribution, sharing and modification ( $\Rightarrow$  source available).

## Open Source software:

- Free software defined through the **Open Source Definition**.
- A label for free software that emphasises its openness rather than its philosophical, moral, ethical, political aspects.

# Proprietary software

- Proprietary software is software whose license(s) try to limit user's freedom as much as possible (restrict copying, no access to source, restrict use (e.g. forbid reverse engineering, only one copy running at a time, yearly license fees)).

# Debian Free Software Guidelines

- Free redistribution
- Availability of source code
- Derived works
- Integrity of the author's source code
- No discrimination against persons or groups
- No discrimination against fields of endeavour
- Distribution of license
- License must not be specific to a product
- License must not contaminate other software

Example DFSG-free licenses: [GNU GPL](#), [BSD](#), [X Consortium](#), [Artistic License](#), [QPL](#).

# Free software: origins and history

Prehistory Academia, hackers. Before there was a software industry, software was free.

Late 1960's Computers become more widespread. Distinction between users and programmers. Software increasingly complex (first complex OSes: Multics, OS/360). Discipline of Software Engineering born.

Late 1960's – early 1970's Couple of frustrated former Multics developers at AT&T Bell Labs hack together Unix. With hardware developments, Unix is ported to new machines after rewrite in “portable assembly”: C. Unix source is made freely available to academia (anti-trust!). Elsewhere: birth of Arpanet.

# Origins and history (cont'd)

Late 1970's – early 1980's Academic hackers (esp. at Berkeley) dig Unix and extend it. Unix gains networking and X. (Both X and BSD code are true free software).

Mid 1980's **AT&T** split into baby Bells. Unix goes commercial. Legal battle over BSD Unix. Richard Stallman starts the **Free Software Foundation** (FSF) and the GNU (GNU is Not Unix) project. GPL and LGPL licenses created.

Late 1980's – early 1990's Last tainted code in BSD replaced. BSD becomes free; still aimed at big systems.

# Origins and history (cont'd)

Early 1990's Helsinki Univ. student Linus Torvalds buys a 386 to learn protected mode programming. Project mutates into from scratch implementation of Unix kernel ideas.

1991–1992 First Linux distributions emerge, starting Linux' accessibility for non-hardcore hackers. Elsewhere, the web is born.

1993 SLS 1.03 distribution is extremely buggy. Ian Murdock starts project for an openly developed Linux distribution: Debian.

1993–1994 Debian pioneers package concept.

1994–1997 Steady Linux growth. Steady Debian growth; growing pains in organisation.

# Origins and history (cont'd)

April 1997 Debian system **controls** plant growth experiment on board of **space shuttle** Columbia.

Mid 1997 Debian adopts its **social contract**, writes down the **Debian Free Software Guidelines** (DFSG). Eric Raymond considers it the best definition of free software so far.

Mid-late 1997 **Netscape Inc.** foresees losing the browser war; rethinks its business strategy. Linux desktop development projects become visible.

Jan 1998 **Netscape** announces intention to release browser source under a DFSG-free license. Free software community realises it may indeed change the world.\*

\*1998 material based on Linux Weekly News, <http://www.lwn.net/>

## Origins and history (cont'd)

Feb 1998 Think tank comes up with "Open Source" to market free software.

Apr 1998 Mozilla project born. Linux starts to get mainstream press coverage.

Late 1998 Oracle, Informix announce Linux support. Mainstream press starts to have doubt over Windows 2000. Linus on Forbes cover. IBM announces DB2 for Linux support, contributes updated "Haifa" instruction scheduler and other improvements to EGCS.

Oct 1998 Intel and Netscape invest in Red Hat. Intel joins Linux International. Microsoft cites Linux as evidence it isn't a monopoly. Corel announces WP8 for Linux will be "free for personal use". 144,000 Mexican schools will run Linux with GNOME.

Nov 1998 Halloween documents: Microsoft internal memos about Linux and Open Source development leak.

## Origins and history (cont'd)

1998–1999 **SGI** joins **Linux International**; later decides to drop NT and phase out IRIX in favour of Linux. **Sun** announces Linux on UltraSparc support. Linux sales growth over 1998 estimated at more than 200%; unmatched market share growth. IBM releases **AFS** and **DB2** beta for Linux. IBM releases **Jikes** and **Secure Mailer** (aka **PostFix**) as free software. “Linux” and “Open Source” are listed as IT trends of 1998 everywhere. **IBM Software** joins **Linux International**.

April 1999 **Corel** announces development of its own Linux distribution (based on **Debian** and **KDE**).

May 1999 **SGI** announces it will release the XFS filesystem as free software.

August 1999 **Red Hat** IPO. The stock **soars**.

# Free software development

More fluid; does not suffer many of the problems of proprietary software development:

- More people have access to the source code. No “security through obscurity”.
- Distinction between users and developers blurs; natural evolution user → power user → contributor → maintainer, developer.
- “Debugging is parallelisable”; “release early, release often” (CVS servers: mozilla, EGCS, GNOME, ...)
- No fixed amount of manpower available.
- Not deadline driven.

# Free software development (c'd)

- Not marketing driven; less chance for creeping featurism.
- Driven by technical insight and appreciation of hack value.
- More code reuse possible.
- Utilises solid free development tools (`gcc`, `gdb`, `gmake`, `autoconf`, `automake`, `libtool`, `CVS`, `DDD` etc).
- Global development using the net (mail, web, CVS, usenet, IRC).
- Development may branch and remerge.

## Example: Debian GNU/Linux

Distribution: selected, integrated, documented, consistent collection of software packages.



Intermediate between end users and coders. **debian**

Distribution maintainers:

- Build packages, integrate (update menu, register MIME viewer. . . ), test, provide conveniences (eximconfig).
- Determine Debian **policy**.
- Provide feedback to upstream developers.
- Lobby: licenses (**mozilla**, **ncftp**, **KDE/Qt** . . . )
- Help users.
- Provide first-line **bug tracking**.
- Provide infrastructure for the Debian community.

# Debian community

- **Mailing lists** (debian-user, debian-announce, debian-news, debian-devel, debian-policy, debian-legal ...)
- **Website**
- Mail/web based **bugtracking system**
- Web-based **FAQ-o-matic**.
- **Internet Relay Chat** (irc.debian.org # debian).
- Usenet (comp.os.linux.\*)
- Conferences (e.g. **Linux Kongress**)
- In real life (e.g. vacations)

# The bigger perspective: intellectual property in the digital age?

- Ownership of scientific publications? Author, institution or publisher?
- What constitutes a violation of copyright? (Linking to mp3s???)
- Shrink-wrap licenses
- Software patents: XOR, LZW compression in GIF, MP3, RSA, IDEA etc.
- Mass-market digital recording, copying, broadcast equipment (MP3)

# Recommended reading

- Eric S. Raymond, *The Cathedral and the Bazaar*
- Eric S. Raymond, *Homesteading the Noosphere*
- Ian Jackson, *Why is software freedom useful, and what does it mean?*, SANE'98,
- **Halloween I**: *Open Source software: A (New?) Development Methodology*
- **Halloween II**: *Linux OS Competitive Analysis: The Next Java VM?*,
- Mark Koek, *Free software licensing*
- Eben Moglen, *Anarchism Triumphant: Free Software and the Death of Copyright*

# Recommended news sites

- [Slashdot: News for Nerds: Stuff that Matters.](#)
- [Technocrat.net](#)
- [Linux Today](#)
- [Linux Weekly News](#)
- [Linuxworld](#)
- [Freshmeat](#)