



# History of Unix, Linux and the Open Source

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DEC PDP-7

# History of UNIX



- 1969: First version of "Unics" by Ken Thompson and Dennis Richie
- Multi user operating system for the mainframes at the time
- Out of private interest, to port a computer game
- Written in Assembler
- Bell Laboratories, USA
- Rapid internal distribution and popularity within Bell Labs



Ken Thompson, Dennis Richie



DEC PDP-11

# UNIX, a "free" operating system



- 1971: UNIX First Edition on DEC PDP-11
- Ported to C
- 1975: UNIX Sixth Edition, popular in the academic sector
- Software shipped as an "appendix" with the hardware
- Free exchange of the system incl. source code
- Wide-spread culture of software and knowledge sharing, like common practice in science
- 1978: world-wide 600 computers running UNIX
- Big companies are using UNIX: HP, IBM, Microsoft, Siemens etc.



- Early 1980s: Change of paradigm - software as a (independent) product
- 1981: Licencing of UNIX introduced
- Free exchange of software inhibited
  
- 1983: Founding of the Free Software Foundation (fsf.org)
- 1984: GNU Project



Richard M. Stallman



"Free software" is a matter of liberty, not price. To understand the concept, you should think of "free" as in "free speech," not as in "free meal."

The Free Software definition:

Free software is a matter of the users' freedom to run, copy, distribute, study, change and improve the software. More precisely, it refers to four kinds of freedom, for the users of the software:

- The freedom to run the program, for any purpose (freedom 0).
- The freedom to study how the program works, and adapt it to your needs (freedom 1).  
Access to the source code is a precondition for this.
- The freedom to redistribute copies so you can help your neighbor (freedom 2).
- The freedom to improve the program, and release your improvements to the public, so that the whole community benefits (freedom 3). Access to the source code is a precondition for this.



1989: Development of the GNU General Public Licence (GPL):

"Developers who write software can release it under the terms of the GNU GPL. When they do, it will be free software and stay free software, no matter who changes or distributes the program. We call this copyleft: the software is copyrighted, but instead of using those rights to restrict users like proprietary software does, we use them to ensure that every user has freedom."

<http://www.gnu.org/licenses/gpl-3.0.html>





- 1984: GNU Project: „Gnu's Not Unix“
- Unix alternative with the main goal:  
„to revive the spirit of cooperation which prevailed  
in the early years of the computer society“
- Unix-like operating system
  
- 1991: Development of the most important Unix system tools mostly finished  
(C compiler, text editors, shell, boot loader)
- A free, working Unix kernel was still missing



## What is Linux?

The Linux kernel is the heart of the Ubuntu operating system. A kernel is an important part of any operating system, providing the communication bridge between hardware and software. Linux was brought to life in 1991 by Finnish student named Linus Torvalds. At the time, it would run only on i386 systems, and was essentially an independently-created clone of the UNIX kernel, intended to take advantage of the then-new i386 architecture. Nowadays, thanks to a substantial amount of development effort by people all around the world, Linux runs on virtually every modern computer architecture.

The Linux kernel has gained an ideological importance as well as a technical one. There is an entire community of people who believe in the ideals of free software and spend their time helping to make open source technology as good as it can be.

People in this community gave rise to initiatives such as Ubuntu, standards committees that shape the development of the Internet, organizations like the Mozilla Foundation, responsible for creating Mozilla Firefox, and countless other software projects from which you've almost certainly benefited in the past.

The spirit of open source, commonly attributed to Linux, is influencing software developers and users everywhere to drive communities with common goals.

# Linux



- 1990: Linus Torvalds, a student in Helsinki/Finland, is using "Minix" on his 386 PC and is unsatisfied with it.
- Starting to develop a self-booting terminal emulation to dial in into the campus network
- Soon adding harddisk drivers and support for a variety of software
- Notices, he's quite on the way to develop a whole operating system
- 1991: Releases Linux kernel V0.01 on the FTP server of his university  
later under the terms of the GPL



Linus Torvalds

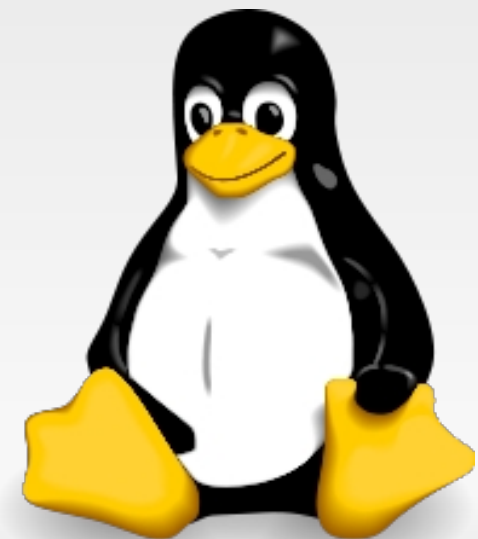
# Linux



- Together with the GNU tools a fully operational operating system
- Today many ten thousand developers involved world-wide
- Big number of Linux distributions, commercial and free
- World-wide acceptance as a professional and industry-grade operating system, mainly in the area of network and servers



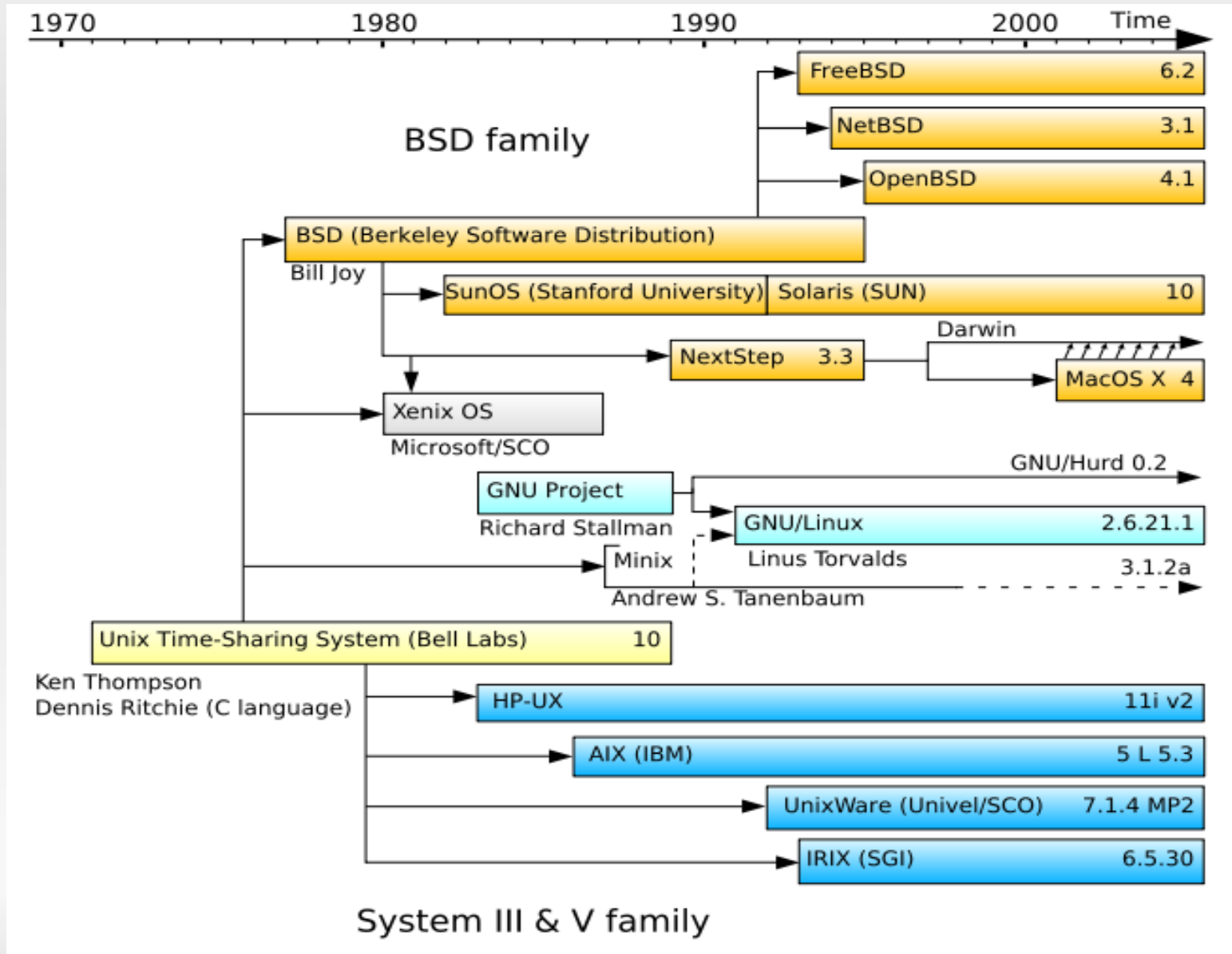
GNU logo



„TUX“, the linux mascot

ubuntu

# Unix timeline



# Free Software vs. Open Source



- Attitude of the Free Software movement towards commercial, proprietary software is very negative:
  - "Non-free software carries with it an antisocial system that prohibits cooperation and community. You are typically unable to see the source code; you cannot tell what nasty tricks, or what foolish bugs, it might contain. If you don't like it, you are helpless to change it. Worst of all, you are forbidden to share it with anyone else. To prohibit sharing software is to cut the bonds of society." (R. Stallman)
  - ⇒ very confrontative towards the commercial software industry ("anti-business message")
  - commercial companies need to "protect" the source code and make it a secret
  - FSF wants to cultivate sharing of the source code to create a "free" society
  - ⇒ very low acceptance of Free Software in the software marketplace and throughout the industry

in 1998, Netscape surprisingly decided to open the source code of its web browser "communicator"



"It hit the newspapers around the world, and even the Open Source community was surprised at the move. Never before had a major software company opened up its proprietary code. What was Netscape up to now? We had decided to change the playing field, and not for the first time. [...] When Netscape initiated unrestricted distribution of early versions of its browser over the Internet in 1994, people said ,That's crazy!' When Netscape said ,Free Source Code' they said the same thing."

(Hamerly, Paquin, Walton / Netscape)

A group of famous software developers gathered and discussed further actions

The term "Open Source" was created:

- To promote the pragmatic benefits of source code sharing to the business community
- Promote the Open Source development model
- Certify Open Source Licences

⇒ Open Source Initiative, for marketing of the Open Source idea

⇒ Open Source Definition

This led to a wide-spread adoption of OSS:

- Linux has 30-40% market share on server systems
- Red Hat Inc. stocks went to \$72 after Initial Public Offering (IPO), setting the market value of the company to \$4.8 billion
- in 2000, IBM announced to support Linux development with \$1 billion
- Apache web server is serving >60% of the Internet's web sites
- OpenOffice, Eclipse, GIMP, Mozilla (Firefox, Thunderbird) ...

Other, non-software Open Source projects:

Creative Commons

Wikipedia

Open Law Project, Open Journalism (blogging, wikis etc.)

...the attitude of all the Web 2.0 is highly affected by user generated (open) content, technology, Open Source hardware etc.

