

# Mineure OSS @ EPITA

## Session 3

# Dernières sessions

- Unix et sa "philosophie"
- Emergence du libre et de Linux
- Définitions du logiciel libre et de l'open source

# Plan de la session

- Errata et compléments
- Histoire (suite et fin)
- Texte(s) fondateur(s)
- Economie du logiciel

# Errata et compléments

- Sun = "Stanford University Network"
- LiSP
- Oubli de parler du "GNU Manifesto"

# LiSP @ FSF

- Emacs-Lisp
- GCL (GNU Common Lisp) - dernière release en 2014
- Guile (1993-...)
- Guix (2013-...) and Guix System

# GNU Manifesto (~1983)

"GNU, which stands for Gnu's Not Unix, is the name for the complete Unix-compatible software system which I am writing so that I can give it away free to everyone who can use it [1]. Several other volunteers are helping me. Contributions of time, money, programs and equipment are greatly needed."

"GNU will be able to run Unix programs, but will not be identical to Unix." "Unix is not my ideal system, but it is not too bad."

"I consider that the Golden Rule requires that if I like a program I must share it with other people who like it."

"GNU is not in the public domain. Everyone will be permitted to modify and redistribute GNU, but no distributor will be allowed to restrict its further redistribution."

"I have found many other programmers who are excited about GNU and want to help."

# The Open Source Definition

## Introduction

Open source doesn't just mean access to the source code. The distribution terms of open-source software must comply with the following criteria:

### 1. Free Redistribution

The license shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several different sources. The license shall not require a royalty or other fee for such sale.

### 2. Source Code

The program must include source code, and must allow distribution in source code as well as compiled form. Where some form of a product is not distributed with source code, there must be a well-publicized means of obtaining the source code for no more than a reasonable reproduction cost, preferably downloading via the Internet without charge. The source code must be the preferred form in which a programmer would modify the program. Deliberately obfuscated source code is not allowed. Intermediate forms such as the output of a preprocessor or translator are not allowed.

# The Open Source Definition

## **3. Derived Works**

The license must allow modifications and derived works, and must allow them to be distributed under the same terms as the license of the original software.

## **4. Integrity of The Author's Source Code**

The license may restrict source-code from being distributed in modified form only if the license allows the distribution of "patch files" with the source code for the purpose of modifying the program at build time. The license must explicitly permit distribution of software built from modified source code. The license may require derived works to carry a different name or version number from the original software.

# The Open Source Definition

## **5. No Discrimination Against Persons or Groups**

The license must not discriminate against any person or group of persons.

## **6. No Discrimination Against Fields of Endeavor**

The license must not restrict anyone from making use of the program in a specific field of endeavor. For example, it may not restrict the program from being used in a business, or from being used for genetic research.

## **7. Distribution of License**

The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.

# The Open Source Definition

## **8. License Must Not Be Specific to a Product**

The rights attached to the program must not depend on the program's being part of a particular software distribution. If the program is extracted from that distribution and used or distributed within the terms of the program's license, all parties to whom the program is redistributed should have the same rights as those that are granted in conjunction with the original software distribution.

## **9. License Must Not Restrict Other Software**

The license must not place restrictions on other software that is distributed along with the licensed software. For example, the license must not insist that all other programs distributed on the same medium must be open-source software.

## **10. License Must Be Technology-Neutral**

No provision of the license may be predicated on any individual technology or style of interface.

# Licences reconnues par l'OSI vs. FSF

OSI:

- <https://opensource.org/licenses/alphabetical>
- 117 licences

FSF:

- <https://www.gnu.org/licenses/license-list.html>
- ~98 licences

License	Author	Latest version	Publication date	Linking	Distribution	Modification	Patent grant	Private use	Sublicensing	TM grant
Academic Free License <sup>[11]</sup>	Lawrence E. Rosen	3.0	2002	Permissive	Permissive	Permissive	Yes	Yes	Permissive	No
Affero General Public License	Affero Inc	2.0	2007	Copylefted <sup>[12]</sup>	Copyleft except for the <a href="#">GNU AGPL<sup>[12]</sup></a>	Copyleft <sup>[12]</sup>	?	Yes <sup>[12]</sup>	?	?
Apache License	Apache Software Foundation	2.0	2004	Permissive <sup>[13]</sup>	Permissive <sup>[13]</sup>	Permissive <sup>[13]</sup>	Yes <sup>[13]</sup>	Yes <sup>[13]</sup>	Permissive <sup>[13]</sup>	No <sup>[13]</sup>
Apple Public Source License	Apple Computer	2.0	August 6, 2003	Permissive	?	Limited	?	?	?	?
Artistic License	Larry Wall	2.0	2000	With restrictions	With restrictions	With restrictions	No	Permissive	With restrictions	No
Beerware	Poul-Henning Kamp	42	1987	Permissive	Permissive	Permissive	No	Permissive	Permissive	No
BSD License	Regents of the University of California	3.0	?	Permissive <sup>[14]</sup>	Permissive <sup>[14]</sup>	Permissive <sup>[14]</sup>	Manually <sup>[14]</sup>	Yes <sup>[14]</sup>	Permissive <sup>[14]</sup>	Manually <sup>[14]</sup>
Boost Software License	?	1.0	August 17, 2003	Permissive	?	Permissive	?	?	?	?
Creative Commons Zero	Creative Commons	1.0	2009	Public Domain <sup>[15][16]</sup>	Public Domain	Public Domain	No	Public Domain	Public Domain	No
CC BY	Creative Commons	4.0	2002	Permissive <sup>[17]</sup>	Permissive	Permissive	No	Yes	Permissive	No
CC BY-SA	Creative Commons	4.0	2002	Copylefted <sup>[17]</sup>	Copylefted	Copylefted	No	Yes	Copylefted <sup>[18]</sup>	No
CeCILL	CEA / CNRS / INRIA	2.1	June 21, 2013	Permissive	Permissive	Permissive	No	Permissive	With restrictions	No
Common Development and Distribution License	Sun Microsystems	1.0	December 1, 2004	Permissive	?	Limited	?	?	?	?

License and version	FSF approval [36]	GPL (v3) compatibility [37][38][39][40][41]	OSI approval [42]	Debian approval [43][44]	Fedora approval [45]
Academic Free License	Yes	No	Yes	No	Yes
Affero General Public License 3.0	Yes	Yes	Yes	Yes	Yes
Apache License 1.x	Yes	No	Yes	Yes	Yes
Apache License 2.0	Yes	GPLv3 only <sup>[46]</sup>	Yes	Yes	Yes
Apple Public Source License 1.x	No <sup>[47]</sup>	No	Yes	No	No
Apple Public Source License 2.0	Yes	No	Yes	No	Yes
Artistic License 1.0	No <sup>[note 1]</sup>	No	Yes	Yes	No
Artistic License 2.0	Yes	Yes	Yes	Yes	Yes
Beerware License	see "Informal license" section <sup>[48]</sup>	see "Informal license" section <sup>[48]</sup>	No	No	Yes <sup>[49]</sup>
Original BSD license	Yes	No	No <sup>[50]</sup>	Yes	Yes
Revised BSD license	Yes	Yes	Yes	Yes	Yes
Simplified BSD license	Yes	Yes	Yes	Yes	Yes
Zero-Clause BSD License	?	?	Yes <sup>[51]</sup>	?	?
Boost Software License	Yes	Yes	Yes	Yes	Yes
CeCILL	Yes	Yes	Yes	Yes	Yes
Common Development and Distribution License	Yes	GPLv3 (GPLv2 disputed) <sup>[52][53][54][55][56][57]</sup>	Yes	Yes	Yes
Common Public License	Yes	No	Yes	Yes	Yes
Creative Commons Zero	Yes <sup>[58]</sup>	Yes <sup>[58]</sup>	No <sup>[59]</sup>	Partial <sup>[60][61]</sup>	Yes <sup>[62]</sup>

# -> Les grandes controverses du libre

- "Free Software" vs. "Open Source"
- Idéologie vs. pragmatisme
- Noyau monolithique vs. micronoyau
- "Linux" vs. "GNU/Linux"
- GPL vs licences "permissives"
- Faut-il faire évoluer les définitions (FSF et OSI) pour prendre en compte certaines dimensions éthiques ? Pour éviter les abus des géants du cloud ?
- GNOME vs. KDE
- Le libre vs. le cloud
- Inclusivité des communautés
- ...

# Business timeline (des haut et des bas)

1999: fondation de MandrakeSoft, qui deviendra Mandriva en 2005 et fermera en 2015

1999: Marc Fleury démarre EJB-OSS, serveur J2EE qui deviendra JBoss

1999: IPO de Red Hat et de VA Linux

2000: IBM “investit” 1 Mrd de dollars dans Linux

2004: fondation de Canonical (Ubuntu)

2006: rachat de JBoss par Red Hat pour 350 M de \$

2007: Java devient open source (*with strings attached*)

2008: rachat de MySQL par Sun pour 1 Mrd de \$

2009: proche de la faillite, Sun Microsystems est racheté par Oracle

2017: rachat de GitHub par Microsoft pour 7 Mrd de \$

2017: IPO de Mongodb (1.2 Mrds de \$)

2019: rachat de Red Hat par IBM pour 34 Mrds de \$

2021: IPO de Gitlab (15 Mrds de \$ de capitalisation)

# Développement collaboratif

- 1990: CVS (Concurrent Versions System) sous licence GPL
- 1999: Sourceforge.net (par VA Linux), code source -> Apache Allura en 2013
- 2000: Subversion (-> Apache Subversion en 2010)
- 2000: BerliOS (fermé en 2014)
- 2004: Trac (Edgewall Software)
- 2005: Git (Linus Torvalds) et Mercurial (Matt Mackall -> Olivia Mackall)
- 2006: Google Code (fermé en 2016)
- 2006: Redmine (Jean-Philippe Lang)
- 2008: Bitbucket et GitHub (propriétaires)
- 2010: Phabricator (Facebook)
- 2011: Gitlab (licence MIT + propriétaire)
- 2017: rachat de GitHub par Microsoft pour 7 Mrd de \$
- 2019: Sourcehut (Drew DeVault)
- 2021: IPO de Gitlab

# Les textes fondateurs

(Attention: sélection personnelle)

- 1985: "The GNU Manifesto" (RMS)
- 1984: "Hackers: Heroes of the Computer Revolution" (S. Levy)
- 1997: "The Cathedral and the Bazaar" (E. S. Raymond)
- 1997: "Linux, mini OS contre maxi exploitation" (JC Guédon et B. Lang)
- 1998: "Piège dans le cyberspace" (R. Di Cosmo) et "Le Hold-Up planétaire" (R. Di Cosmo et D. Nora)
- 1999: "Open sources - voices of the open source revolution" (multiples auteurs)

# Les grandes fondations

1985: FSF

1997: KDE e.V.

1999: Apache Foundation

2000: Linux Foundation (fusion de l'Open Source Development Labs du Free Standards Group)

2001: FSFE

2001: Python Software Foundation

2004: Eclipse Foundation

2007: OW2 (Fusion de ObjectWeb et OrientWare)

2010: Document Foundation (LibreOffice)

# Associations françaises

1996: APRIL

1998: AFUL

1998-1999: premiers LUGs (Parinux, GUILDE, ABUL...)

1998: Linuxfr

2001: Framasoft (2004 pour l'association)

2002: ADULLACT

2010: CNLL

# Manifestations notables

1998: "Linux Party" nationale

1999: Linux Expo Paris qui s'appellera ensuite Solutions Linux

2000: premières RMLL (Rencontres Mondiales du Logiciel Libre)

2001: OSDEM puis FOSDEM à Bruxelles

2008: Open World Forum / Forum Mondial du Libre

2015: OWF et Solution Linux fusionnent pour devenir le POSS (Paris Open Source Summit)

2021: le POSS devient l'OSXP (Open Source Experience)

# Langages de programmation "libres"

- 1987: Perl
- 1991: Python
- 1994: PHP
- 1995: Ruby
- 2009: Go
- 2010: Rust
- 2015: Zig

# Pop quizz

- Comment sont développés ces langages ?
- Qu'est-ce qui manque dans cette liste ? Pourquoi ? Est-ce justifié ?

# Aux plans législatif, réglementaire et parlementaire

- 1999: proposition de loi Laffite ("tendant à généraliser dans l'administration l'usage d'Internet et de logiciels libres")
- 2000: proposition de loi Le Déault, Paul, Cohen
- 2012: circulaire Ayrault
- 2013: loi ESR
- 2016: loi République Numérique
- 2020: rapport Bothorel puis circulaire Castex
- 2021: rapport Latombe

# Au plan judiciaire

- 2003-2010: affaire SCO v. Novell
- Depuis 2004: gpl-violations.org (Harald Welte)
- 2006: Gerby v. Darty, aka "Racketiciel", dénonciation de la vente liée ([site](#))
- 2008: Free assigné en justice pour violation de la GPL, finit par publier ses patches en 2011.
- 2010: Oracle v. Google
- 2015: CNLL v. Ministère de l'Education Nationale ("Edunathon")

# Pop quiz

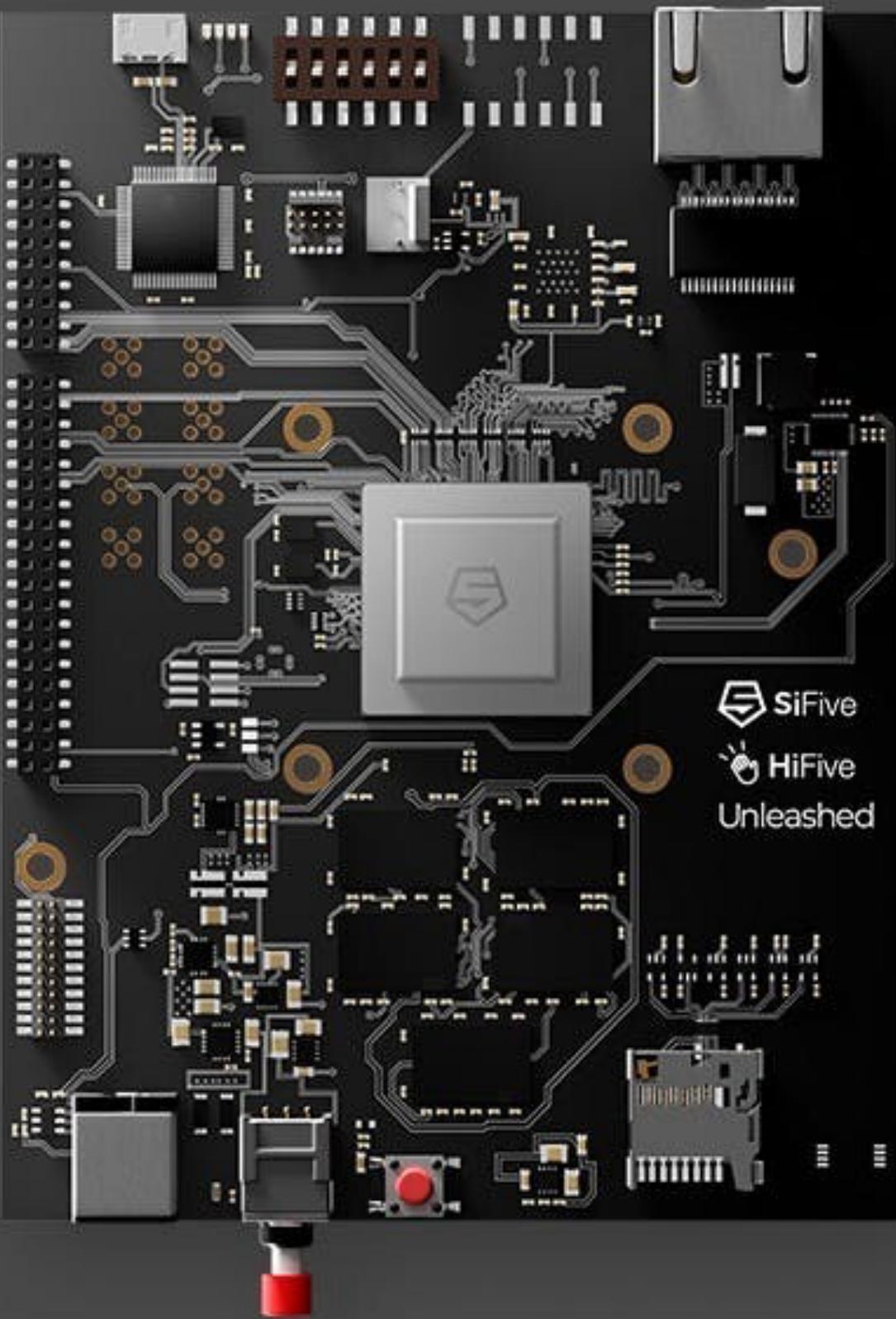
- Linux a-t-il "gagné" ?
  - Si oui, contre qui ? Et selon quels critères de "victoire" ?
  - Si oui, pourquoi ?
- L'open source a-t-il gagné ? Le libre ?
  - Même questions

# Open Hardware

# 2010 - RISC-V

RISC-V (« RISC five ») est une architecture de jeu d'instructions (*instruction set architecture* ou ISA) RISC ouverte et libre, disponible en versions 32, 64 et 128 bits. Ses spécifications sont ouvertes et peuvent être utilisées librement par l'enseignement, la recherche et l'industrie. Les specifications sont ratifiées de façon ouverte par la communauté internationale des développeurs.

Il en existe des implémentations libres (et d'autres non).



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AI + ML

## SiFive RISC-V cores picked for Google AI compute nodes

12 □

Cor, that's a shot in the arm for this upstart CPU ISA

[Dan Robinson](#)

Fri 23 Sep 2022 // 21:25 UTC



RISC-V chip biz SiFive says its processors are being used to manage AI workloads to some degree in Google datacenters.

According to SiFive, the processor in question is its Intelligence X280, a multi-core RISC-V design with vector extensions, optimized for AI/ML applications in the datacenter. When combined with the matrix multiplication units (MXU) lifted from Google's Tensor Processing Units (TPUs), this is claimed to deliver greater flexibility for programming machine-learning workloads.



MARKETS &gt; AUTOMOTIVE

### The Automotive Space Gears Up to Take on RISC-V

Sept. 26, 2022

SiFive is creating a lineup of compute IP for MCUs, MPUs, and soon, SoCs, as well as vector-processing solutions tailored for automotive applications. The first automotive family cores will become available later this year.

[Murray Slovick](#)Related To: [Electronic Design](#)

SCIENCE

## SiFive RISC-V CPU cores to power NASA's next spaceflight computer

64 □

After more than two decades, the space agency's PowerPC love affair appears to be at an end

[Tobias Mann](#)

Tue 6 Sep 2022 // 23:14 UTC

MacGeneration ▾

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MATÉRIEL

38 commentaires

### Apple chercherait à utiliser l'architecture RISC-V dans ses prochaines puces

Nicolas Forno | 20/09/2022 à 17:00

Ce n'est pas parce qu'Apple a abandonné l'architecture x86 pour créer ses propres puces qu'elle est mariée à l'architecture ARM utilisée actuellement dans les puces destinées aux iPhone et Apple Watch, comme celles des Mac et iPad. On savait que l'entreprise **s'intéressait à RISC-V**, une architecture plus récente qui a le gros avantage d'être ouverte et non propriétaire comme ses concurrents historiques. D'après Dylan Patel, analyste spécialisé dans ce domaine, Apple **travaillerait désormais activement** pour ajouter une touche de RISC-V à ses futures puces maison.

# 2011 - Open Compute Project (OCP)

La fondation Open Compute Project (OCP) a été créée en 2011 avec pour mission d'appliquer les avantages de l'open source et de la collaboration ouverte au matériel et d'augmenter rapidement le rythme de l'innovation dans, près et autour des équipements de réseau des centres de données, des serveurs polyvalents et GPU, des dispositifs et appareils de stockage et des conceptions de rack évolutives. Le modèle de collaboration de l'OCP est appliqué au-delà du centre de données, contribuant à faire progresser l'industrie des télécommunications.

Les principales avancées concernent l'efficacité énergétique des systèmes déployés, mais aussi le développement de briques open source.

Facebook a par exemple annoncé avoir économisé 2 milliards de dollars sur ses coûts d'infrastructure en trois ans grâce à ce projet.



# "TD" - Lecture du *Debian Social Contract*

# Lecture du *Debian Social Contract*

Source: [https://www.debian.org/social\\_contract](https://www.debian.org/social_contract)

Grandes lignes:

1. Debian will remain 100% free
2. We will give back to the free software community
3. We will not hide problems
4. Our priorities are our users and free software
5. Works that do not meet our free software standards

# **“Social Contract” with the Free Software Community**

## **1. Debian will remain 100% free**

We provide the guidelines that we use to determine if a work is “free” in the document entitled “*The Debian Free Software Guidelines*”. We promise that the Debian system and all its components will be free according to these guidelines. We will support people who create or use both free and non-free works on Debian. We will never make the system require the use of a non-free component.

## **2. We will give back to the free software community**

When we write new components of the Debian system, we will license them in a manner consistent with the Debian Free Software Guidelines. We will make the best system we can, so that free works will be widely distributed and used. We will communicate things such as bug fixes, improvements and user requests to the “*upstream*” authors of works included in our system.

## **3. We will not hide problems**

We will keep our entire bug report database open for public view at all times. Reports that people file online will promptly become visible to others.

## **4. Our priorities are our users and free software**

We will be guided by the needs of our users and the free software community. We will place their interests first in our priorities. We will support the needs of our users for operation in many different kinds of computing environments. We will not object to non-free works that are intended to be used on Debian systems, or attempt to charge a fee to people who create or use such works. We will allow others to create distributions containing both the Debian system and other works, without any fee from us. In furtherance of these goals, we will provide an integrated system of high-quality materials with no legal restrictions that would prevent such uses of the system.

## **5. Works that do not meet our free software standards**

We acknowledge that some of our users require the use of works that do not conform to the Debian Free Software Guidelines. We have created “*contrib*” and “*non-free*” areas in our archive for these works. The packages in these areas are not part of the Debian system, although they have been configured for use with Debian. We encourage CD manufacturers to read the licenses of the packages in these areas and determine if they can distribute the packages on their CDs. Thus, although non-free works are not a part of Debian, we support their use and provide infrastructure for non-free packages (such as our bug tracking system and mailing lists).

# Origine

To: debian-announce@lists.debian.org  
Subject: Debian's "Social Contract" with the Free Software Community  
From: bruce@debian.org (Bruce Perens)  
Date: Fri, 4 Jul 97 22:32 PDT  
Message-id: <[] m0wkNSr-00IS1iC@debian.org>  
Reply-to: Bruce Perens <bruce@debian.org>

[...]

The concept of a Linux distribution stating its "social contract with the free software community" was suggested to me by Ean Schussler. I composed a draft, and then it was refined by the Debian developers in e-mail conference during most of June. They then voted to approve it as our publicly stated policy. We hope that other software projects, including other Linux distributions, will use this document as a model. We will gladly grant permission for any such use.

# Questions

- En quoi ces principes sont importants ? Quelles conséquences opérationnelles ?
- Sont-ils suffisants ?
- Ces principes sont-ils transposables à d'autres projets ? A une entreprise ?
- Pourquoi la FSF n'approuve pas ce texte ?

# Eléments de réponse

# Commentaires de la FSF

"Debian's Social Contract states the goal of making Debian entirely free software, and Debian conscientiously keeps nonfree software out of the official Debian system. However, Debian also maintains a repository of nonfree software. According to the project, this software is "not part of the Debian system," but the repository is hosted on many of the project's main servers, and people can readily find these nonfree packages by browsing Debian's online package database and its wiki.

There is also a "contrib" repository; its packages are free, but some of them exist to load separately distributed proprietary programs. This too is not thoroughly separated from the main Debian distribution.

Debian is the only common non-endorsed distribution to keep nonfree blobs out of its main distribution. However, the problem partly remains. The nonfree firmware files live in Debian's nonfree repository, which is referenced in the documentation on [debian.org](http://debian.org), and the installer in some cases recommends them for the peripherals on the machine.

In addition, some of the free programs that are officially part of Debian invite the user to install some nonfree programs. Specifically, the Debian versions of Firefox and Chromium suggest nonfree plug-ins to install into them.

Debian's wiki also includes pages about installing nonfree firmware."

# Réaction de Bob Young

"The idea of the DSC was first proposed by Ean Schuessler after a conversation with Bob Young, co-founder of Red Hat. Schuessler said Red Hat should issue a set of guidelines that would guarantee to the community as the company expanded it would always be committed to the ideals of Free Software. Young said this would be a "kiss of death" for Red Hat, implying it would constrain the company's ability to generate profit. Concerned about Young's response, Schuessler and other Debian developers decided to broach the idea of a "social contract" that would supplement Debian's initial manifesto written by Ian Murdock."

# Commentaires de E. Gabriella Coleman (2005)

"Developers continually draw on these texts to craft a dense ethical practice that sustains itself primarily via ongoing acts of narrative interpretation."

"By “ethical enculturation,” I refer to a process of relatively conflict-free socialization. Among developers, this includes learning the tacit and explicit knowledge (such as technical, moral, or procedural knowledge) needed to effectively interact with other members of a project, as well as acquiring trust, learning appropriate social behavior, and establishing “best practices.”"

# Commentaires de E. Gabriella Coleman (2005)

"While not all developers are equally invested in the legal discussion of F/OSS, a basic understanding of normative IP law and F/OSS legal convention is required on a functional basis in order to participate in Debian."

"The third ethical moment I investigate is crisis. As the number of developers in the Debian project has grown from one dozen to nearly one thousand, punctuated crises routinely emerge around particularly contested issues. [...] Many of these crises have an acute phase in which debate erupts on several media all at once: mailing lists, IRC conversation, and blog entries. While the debate during these periods can be congenial, measured, rational, and sometimes peppered with jokes, its tone can also be passionate and uncharitable, sometimes downright vicious. During these moments, we find that while developers may share a common ethical ground, they often disagree about the implementation of its principles. "

# Crédits

- Photos: en général, viennent de Wikipedia.
- Captures d'écrans: viennent de leurs sites respectifs.
- Textes: originaux (copyright Stefane Fermigier, 2022 - licence: CC BY SA) ou dérivés de cours similaires publiés par les Pr. Di Cosmo, Riehle, Zacchiroli, sous licences permettant la réutilisation et/ou avec l'accord des intéressés.
- Slides disponibles ici: <https://github.com/sfermigier/mineure-oss-epita>