

# What is Free and Open Source Software

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*This presentation is an introduction and a quick overview of Free / Libre and Open-Source Software.*

*This presentation was given to a MSc class at GET/INT.*



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# Introduction

# Who is Olivier Berger ?

**Not a native english speaker!**

**Research Engineer at the Computer Science Department (Département INF) of GET1 / INT2**

**Free Software activist / evangelist : Vice-President of APRIL (<http://www.april.org>, french Free Software association since '96, associate member of FSF Europe)**

**Before INT : several years consulting to Public Sector (at Cap Gemini, then Idealx)**

**More details : <http://www-inf.int-evry.fr/~olberger/>**

**1Groupe des Écoles de Télécommunications (<http://www.get-telecom.fr/>)**

**2Institut National des Télécommunications (<http://www.int-evry.fr/>)**

## **Quick poll**

**Ever had any classes on that subject ?**

**Free Software ?**

**Linux ?**

**GNU ?**

**FSF ?**

## **Goal of this presentation**

**Give a global overview of what free software / OpenSource software is,**

**Highlight the importance of the phenomenon,**

**Both technical and non-technical perspective,**

**Why this matters to us.**

# Table of Contents

- 1. Principles**
- 2. Geopolitics of Software Industry**
- 3. History**
- 4. "Sociology" of the movement**
- 5. Legal considerations**
- 6. Choosing Free/OpenSource software**
- 7. Why address this question in classes at INT**

# Principles

# Free Software Definition

Think about *free speech* or *free trade* , not free beer !

It's a matter of *freedom*, not price.

**Definition :** a program is Free Software only when there are 4 Freedoms for the Public<sup>3</sup> :

1. Freedom to *run the program*, for any purpose
2. Freedom to *study* how the program works, and adapt it to your needs
3. Freedom to *redistribute copies*
4. Freedom to *improve* the program, and *release* your improvements

<sup>3</sup>definition borrowed from the FSF (<http://www.gnu.org/philosophy/free-sw.html>)



# Terminology

Various terms used to talk about the same thing :

- **Free Software**
- **OpenSource Software (OSS)**
- **Libre Software / Software Libre (?)**
- ... and of course various languages (*Software Libero* (italian), *Software Livre* (portuguese), *Freie Software* (german), *Logiciel Libre* (french), etc.)

**Debate on terminology... Free Software vs. OpenSource (more on this later)**

**More recently, some new terms appeared : F.L.O.S.S. : Free/Libre/OpenSource Software, for instance in some EC reports/papers.**

# Considerations

**Besides these, many other concepts that must be clearly distinguished : freeware, public domain, shareware, shared source, etc.**

**Free vs. no cost... after all, it always costs**

**OpenSource vs. open / shared, ... who controls what ?**

**Freeware,**

**Shareware,**

**...**

**Don't believe what vendors claim.**

**What is the real importance of the "software industry" : Software off-the-shelf / shrink-wrap vs. custom made.**

# F.L.O.S.S. vs. Proprietary Software

How to make the difference : Examine the *licensing terms*:

- In theory, it's quite easy : see the table bellow.
- In practice, consult the experts.

Basic picture :

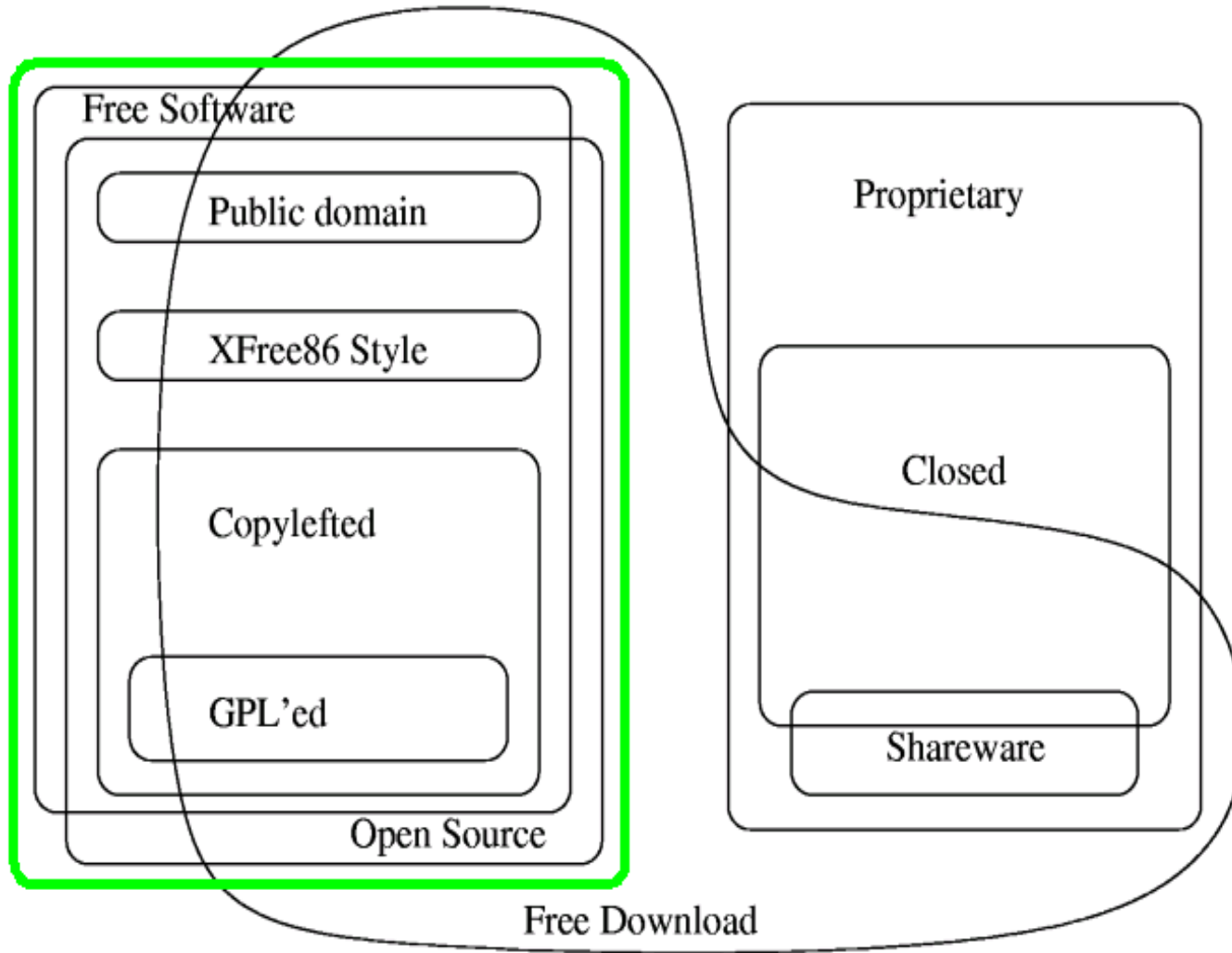
**Table 1. Rights granted**

	Proprietary software	FLOSS
Right to use :	Yes (but limited)	Yes
Right to study :	No	Yes
Right to modify :	No	Yes
Right to copy :	No	Yes

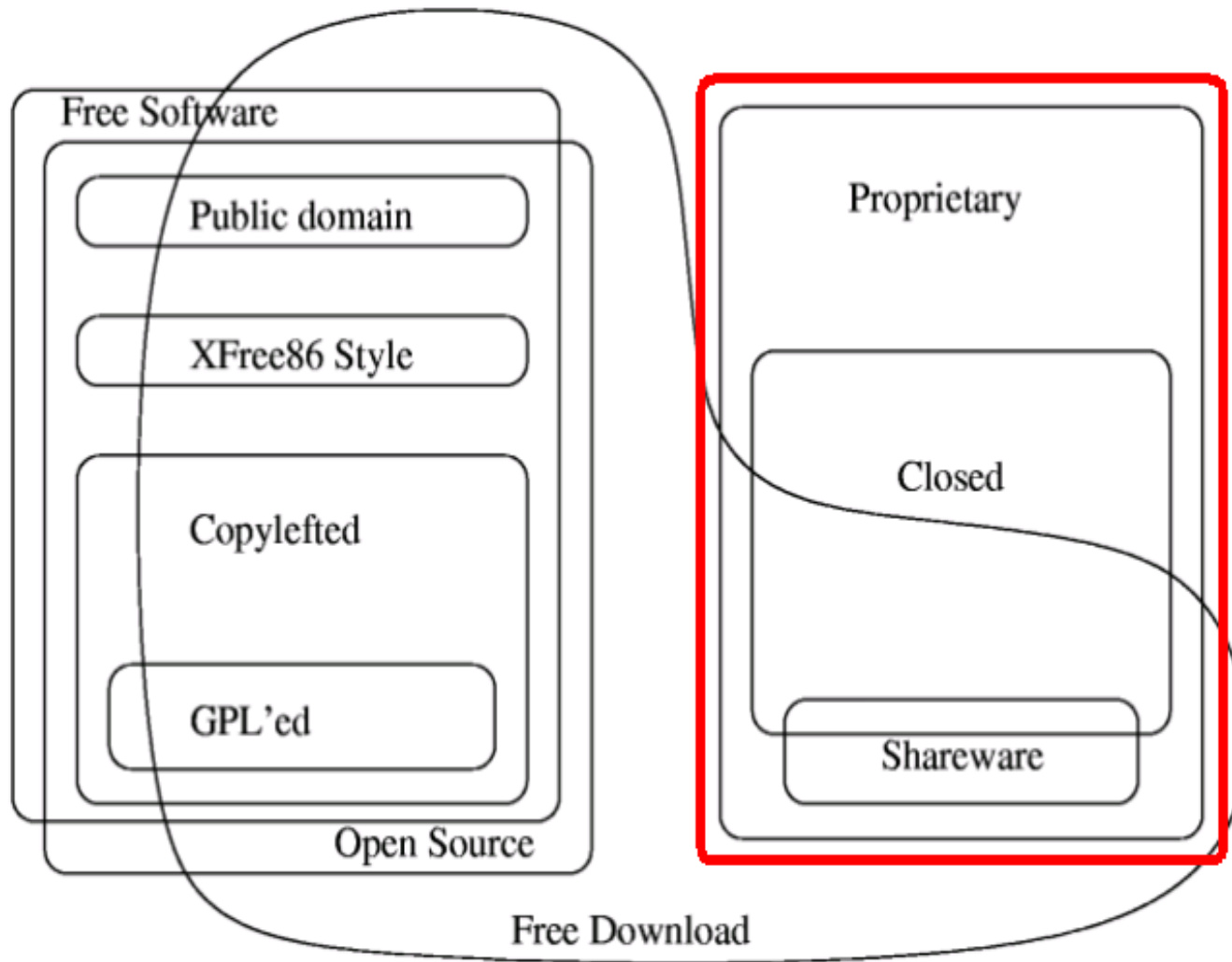
Sometimes, vendors tend to invent complicated licenses, and it becomes hard to interpret the licensing terms.

**So rather trust experts : Free Software Foundation (<http://www.fsf.org/>), Open-Source initiative (<http://www.opensource.org/>).**

# Free Software



# Proprietary software



# Examples of Free Software

Here are some particularly successful free software examples :

- **XXXX to be written**

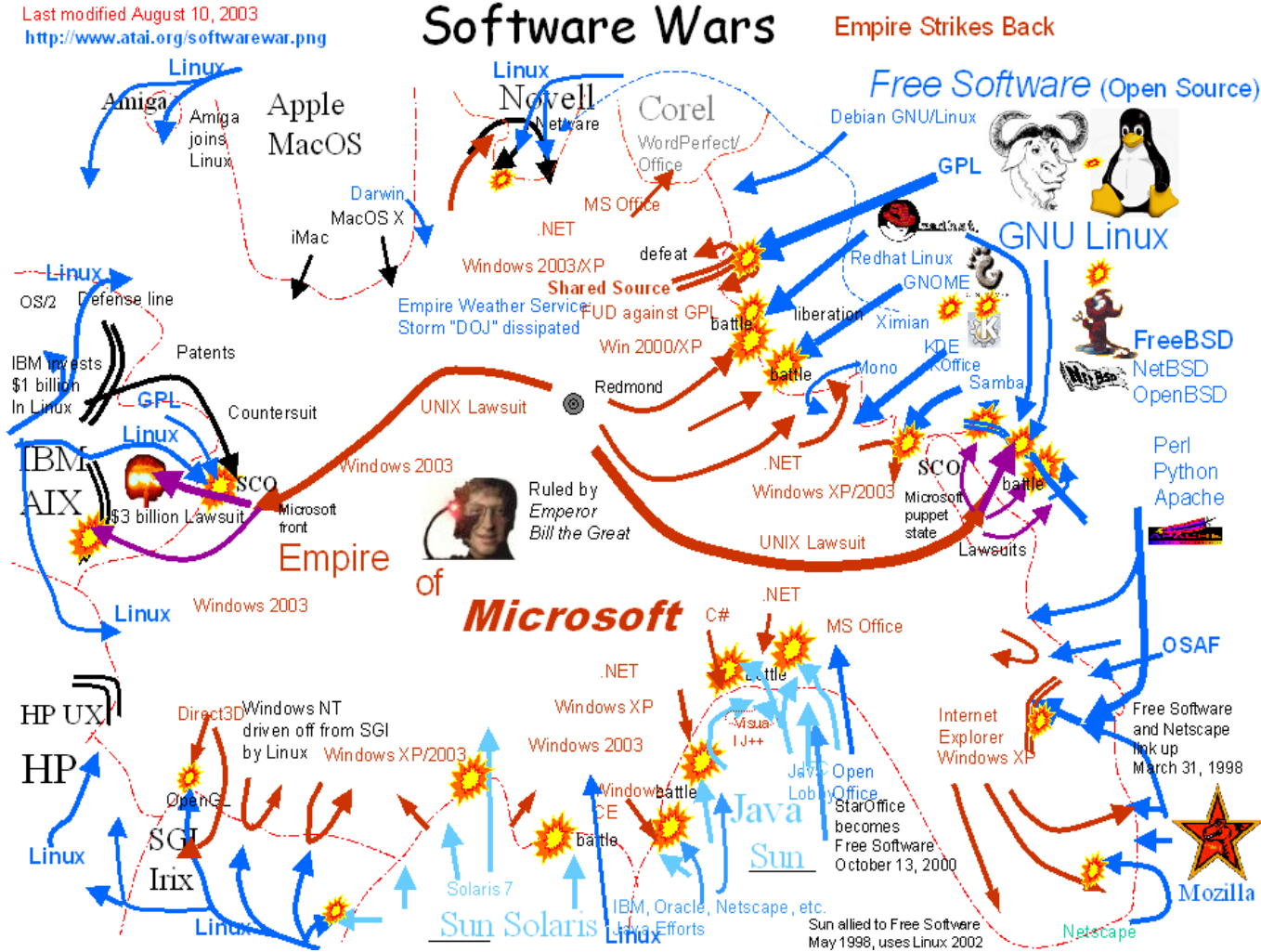
# **Geopolitics of Software Industry**



# Software Wars

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Last modified August 10, 2003  
<http://www.atai.org/softwarewar.png>

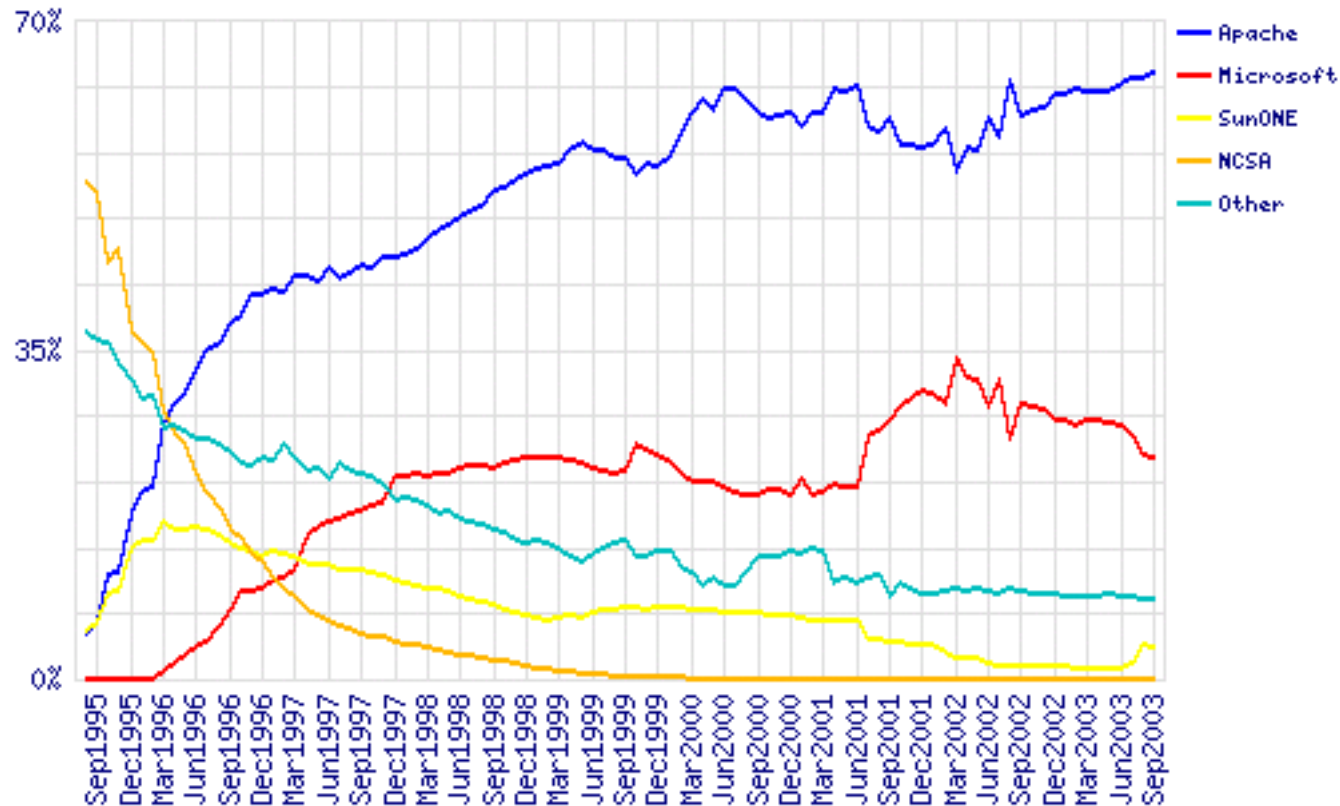


(Full size : [click here \[mediaobjects/softwarewar.png\]](#))

# Huge battle

The importance of Free Software is now really a concern for every IT related actor, including vendors.

Just a few figures :



# **Global impact on society**

**Impacts every aspects of production and diffusion of knowledge, and more generally all immaterial artefacts :**

- **Science publication and data (open archives, etc.)**
- **Artistic creation**
- **Entertainment**
- **Public debate, democracy, resource usage regulation, etc.**

**New paradigm : Commons**

# History

# Free / OpenSource Software Development timeline

- **First there was the source code (< 80)**
- **Unix, BSD (> 80)**
- **GNU project<sup>4</sup> and Free Software Foundation created by Richard M. Stallman (> 84)**
- **Linux kernel started by Linus Torvalds (> 91)**
- **GNU/Linux Distributions ( > 95)**
- **IBM steps in (2001)**
- **Sun buying StarOffice and creation of OpenOffice.org (2002)**

<sup>4</sup>these days, it's the 20th anniversary of the GNU project first announce by RMS

# **Importance today**

**20 years later...**

**Internet : Web / Mail / DNS ...**

**Public Administration / e-Government**

**Companies**

**Home users (hobbyistes)**

**Main threat for Microsoft Corp.**

# Solutions for the server

The magical L.A.M.P. :

- Linux
- Apache
- Mozilla
- Pxxx :
  - Perl
  - Python
  - Php

...but also :

RDBMS : PostGreSQL, MySQL, etc.

Java / J2EE solutions : JBoss, Jonas (ObjectWeb), and all the Apache Founda-

**tion projects, etc.**

**also in the O.S : OpenBSD, NetBSD, FreeBSD**

**Zope, PhpGroupware, etc.**



# **Solutions for the desktop**

**GNU/Linux Distribution**

**Gnome / KDE**

**Mozilla**

**Evolution**

**OpenOffice.org (Office suite, standard XML format for word processing applications : OpenOffice submitted to OASIS)**

**Wine / Crossover (Windows emulation)**

# **"Sociology" of the movement**

# Who's participating

## Volunteers

- sometimes on a really isolated and very singular way (lonely enthusiast, small teams)
- sometimes organised in non-profit associations and foundations (Apache, GNU project, etc.)

## Companies

Not a single way to participate :

- using, testing, filing bug reports
- supporting others (forums, lists, etc.)
- coding
- doing business
- etc.

**Sometimes, interacting with Free Software communities requires a new attitude :  
adapting to the *hacker* community's laws and codes**

# How is free software developed

## Tools :

- Internet, CVS, mailing-lists, IRC chat
- Publicly accessible projects hosting platforms : SourceForge (<http://sourceforge.net/>), Savannah (<http://savannah.gnu.org/>), etc.

## Projects structure

- old-style traditional model : Cathedral
- new unexpected style : Bazaar

See Eric Raymond's essay "The Cathedral and the Bazaar"<sup>5</sup>

<sup>5</sup>More detailed bibliography in appendices.

# Free Software movement

Philosophy : *Liberté, Égalité, Fraternité*

- Freedom : Make copies, improve, distribute
- Equality : Same rights for everyone
- Brotherhood : Co-operation among all to build something together

Free Software movement :

- ethics, philosophy, political activism
- Richard M. Stallman and the FSF (Free Software Foundation : <http://www.fsf.org>)
- Debian distribution

# Open Source movement

**A more market-oriented pragmatic approach which was created to be more appealing to businesses:**

- **Technical benefits**
- **Costs**

**Open Source movement :**

- **Open Source Initiative (<http://www.opensource.org>)**
- **Most software vendors (distributions vendors, hardware vendors, consulting corps, ...)**

# Legal considerations



# Software Protection / Control

How is software legally protected ("Intellectual Property") :

- Basic legal nature of software defined by Copyright law (aka. *droit d'auteur* in continental europe)
- Various grants through a License

Whose business is it ?

- Author
- Publisher
- Customer
- Public / Community

# The 4 freedoms, again

## 4 Freedoms for the Public :

1. Freedom to run the program, for any purpose
2. Freedom to study how the program works, and adapt it to your needs
3. Freedom to redistribute copies
4. Freedom to improve the program, and release your improvements

Nothing really left for the author to control : the software tends sometimes to *deliberately* become a "moral person" which interacts with the users and contributors without intervention of the author.

# Protections vs. Control

A proper exercise of control ?

**<subtitle>A proper exercise of control ?</subtitle>**

Copyright controls whether one may :

- Use
- Copy in order to give or sell
- (try to) Modify
- Go outside the limits granted by a license

Free and OpenSource software demonstrate the need to limit control by authors (and editors)

Not a total control, to preserve basic freedoms of the public, competitors : innovation, privacy, freedom of the markets,...

# Software Patents

**Copyright doesn't control whether one will write a new program with similar features, compatible, inter-operable**

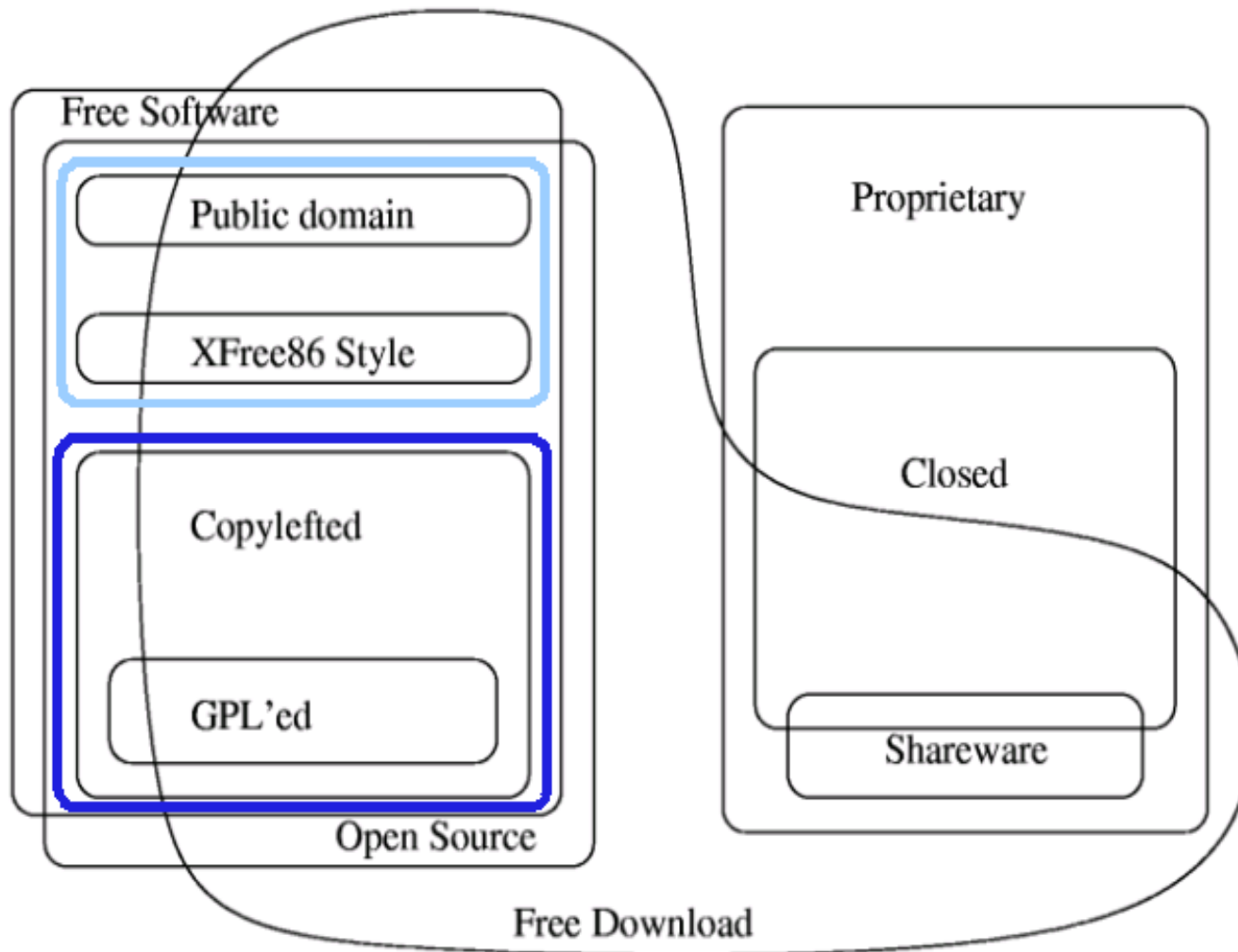
**Controversy between proprietary software vendors and (mainly) the FOSS community**

**Legislation change in Europe**

# Categories of Licences :

Two main categories :

- "Public Domain" like (BSD, X11)
- Copylefted (e.g. GPL, LGPL) :
  - Freedom to change the software
  - No possibility to change the licence terms



One single piece of software may have mixed licences : *dual-licensing* (Qt, MySQL, ...)

# Choosing a licence

**Who are you :**

- **User**
- **Initial author**
- **Contributor**
- **Regulator (kinda)**
- **Commercial software vendor**

**In case of doubt :**

- **better not write your own (necessarily flawed) license**
- **adhere to one commonly used license (GPL, LGPL, BSD, Apache, Artistic, etc.)**

# GPL and LGPL

It's important to understand the key characteristics of these licenses since they're widely used (GPL maybe more than 70% of total free software).

- **GNU GPL (*GNU General Public License*<sup>6</sup>) :**
  - All the 4 freedoms (of course :-))
  - + One may not redistribute modified software with changes to the licensing terms : every derivative (improved, modified, mixed, etc.) version must remain under the GPL.
  - + One may not mix code under GPL with software under incompatible license (i.e.: proprietary software)
- **GNU LGPL (*GNU Lesser General Public License*<sup>7</sup>)**
  - Main difference with the GPL : allows mix between software protected by the GNU LGPL and proprietary software.

<sup>6</sup><http://www.gnu.org/copyleft/gpl.html>

<sup>7</sup><http://www.gnu.org/copyleft/lesser.html>



**Both copylefted licenses enforce users rights and the software freedom through a tight legal control.**

**This is the best way to ensure a live and rich long-lasting free software portfolio.**

# FAQ: Open Source vs. Free Software

What's the difference between *Free Software* and *OpenSource Software* ?

*Talking about the movements ?*

*Talking about the licences ?*

Well... there's much to say.

Free Software Foundation definition (4 freedoms<sup>8</sup>)

Open Source Definition (10 requirements<sup>9</sup>)

... in practice : 99 % the same

<sup>8</sup><http://www.gnu.org/philosophy/free-sw.html>

<sup>9</sup>[http://www.opensource.org/docs/definition\\_plain.php](http://www.opensource.org/docs/definition_plain.php)

# Choosing Free/OpenSource software

# Quality Benefits

**Future Proof**

**Safety**

**Adaptability**

**Independence**

**Low cost**

**Portability**

...

# **Being part of a new community**

**Freedom and responsibility :**

**Freedom for your businesses**

**Freedom to change**

**Ethics and responsibility (sustainable development)**

**National independence**

**Why address this question in classes at INT**

# **Free Software, Free Knowledge, and Research perspective**

**Free Software values are just what Research is all about :**

- **Learn by example and experiment**
- **Freely share and diffuse knowledge**

**Sounds nice, and all...**

**But : Directly applicable in corporate environment**

## **Being part of it this year**

**Projects developed at INT (and outside)**

**Using PicoLibre : <http://picolibre.int-evry.fr/> (see other presentation)**

**Hopefully, open process outside and after classes, and in partnership with the outside world.**



# Free Software dynamics at INT

Students trained on dual-boot systems with GNU/Linux, basis of Computer Science classes

Research projects releasing Free Software

Group FreeINT / Logiciels Libres : <freeint@int-evry.fr> : details at [http://www.minet.net/spip/rubrique.php3?id\\_rubrique=8](http://www.minet.net/spip/rubrique.php3?id_rubrique=8).

Students association : MiNET (<http://www.minet.net>).

*Autour du Libre* yearly conference in Groupe des Écoles des Télécommunications : <http://www.autourdulibre.org> (next edition in may 2004 in Brest).

PicoLibre platform development : <http://www.picolibre.org>

## **Conclusion**

**I hope you will join this community, and hope to see great contributions.**

# Miscellaneous

## Reference and Bibliography

The GNU project : <http://www.gnu.org/>

The OpenSource Initiative : <http://www.opensource.org/>

FSF Europe : <http://www.fsfeurope.org/>

Bibliography :

- David A. Wheeler's "*Why Open Source Software / Free Software (OSS/FS)? Look at the Numbers!*" : [http://www.dwheeler.com/oss\\_fs\\_why.html](http://www.dwheeler.com/oss_fs_why.html)
- Eric Raymond's "*The Cathedral and the Bazaar*" : <http://catb.org/~esr/writings/cathedral-bazaar/>

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# Appendices

# Open Source Definition

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

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