Free software, Open source software, licenses.

A short presentation including a procedure for
research software (and data) dissemination

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Workshop on open licenses: Data licencing and policies
EGI 2015 - Lisbon, 18-22 may 2015

Plan

Motivation (1/2)

- this is about research software(*): developed to do a scientific study, to make a computation, to visualize the results of a model, ... within the research community, and related to a research paper
- a lot of software is produced in every scientific community
- still not a clear procedure for software publication or distribution
- most of this production is in unknown status
- **wanted**: *use*, *copy*, *modify*, *(re)distribute*, *mine*, *link*... (note: *legal terms*) in order to study, collaborate, validate... **(open) access**
- part of this software is or has intention to be FLOSS
- it is currently accepted that to distribute FLOSS increases publication citing
- accessible research software increases validation, reproducibility, and free/open access to science

(*) Also about research data (with adaptations).

Motivation (2/2)

It is still necessary to spread these concepts in the scientific community:

- Free software: R. M. Stallman, FSF, 1985
- Open Source Software: OSI, 1998
- FLOSS == Free/Libre/Open Source Software
- at the top of the iceberg: licenses (legal contracts)
- under the surface: law (copyright, droit d'auteur, ...)
- what, how should I do to give my software away?

Revisit the essentials:

"Free software, Open source software, licenses.
A short presentation including a procedure for research software and data dissemination"
T. Gomez-Diaz (09/2014, CC-BY-SA)

arXiv, dblp, HAL, OpenAIRE, Zenodo (http://zenodo.org/record/11709/)

Free software

First defined by R. M. S. and the Free Software Foundation (FSF, 1985), well known examples: TeX by D. Knuth (1978) or the Berkeley Software Distribution (BSD) by U. of California (1977-1995).

See http://www.gnu.org/philosophy/free-sw.html.
"A program is *free software* if the program's users have the four essential freedoms:

- Freedom 0 The freedom to run the program as you wish, for any purpose.
- Freedom 1 (*) The freedom to **study** how the program works, and change it so it does your computing as you wish.
- Freedom 2 The freedom to redistribute copies so you can help your neighbor.
- Freedom 3 (*) The freedom to distribute copies of your modified versions to others. By doing this you can give the whole community a chance to benefit from your changes."

(*) Access to the source code is a precondition for this.

All four freedoms respected: need of license.
Concept well adapted to the research environement.

Open source software

Defined by the Open Source Initiative (OSI) in 1998.
See http://www.opensource.org/docs/osd.

"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* ...
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. License Must Not Restrict Other Software
10. License Must Be Technology-Neutral"

**All** conditions must be verified: need of license.
The word "open" exceeded quickly the software community.

Licenses and some vocabulary

- two different philosophies, two different communities?
- same goal: develop software of quality
- FLOSS: Free/Libre/Open Source Software
- most licenses make software *free software* **and** *open source software*
- examples of differences: NASA v1.3, executable in devices
- licenses are (*legal*) contracts
- give *rights*: *use*, *copy*, *modify*, *redistribute*
- also have reciprocity clauses to be respected
- free, open means *gratis*? or no private collaboration?
- source code available means free, open?
- **no license means "*All rights reserved*"**

License classification

- Strong copyleft, for ex. GNU GPL
  - Initial license remains over all.
  - Reciprocity obligation, prevents closing.

- Weak copyleft, for ex. GNU LGPL
  - Initial license remains in A'.
  - New adds can have any license.

- Non copyleft, for ex. Apache, BSD
  - Initial license can disappear.
  - Derivated work or new adds can have any license.
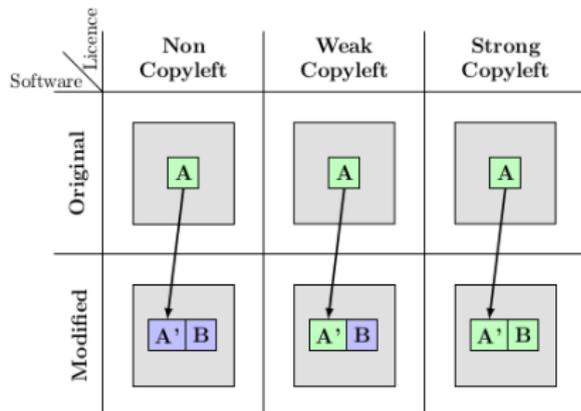
GPLv2 : « *You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.* »

Licenses and research

The ~~twofold~~ threefold role of licenses.

- Licenses complete the law and establish a "default" legal framework to ensure the rights of use, copy, modify, redistribute.

- Licenses also correspond to the application of free/open access policies for the research production (articles, data, software...).

- Licenses also correspond to the expression of values of a (development) community: license mut be adopted by all, even new members.

Free software licenses (FSF, TeX, BSD) are born in scientific communities, they are particularly well adapted: international collaborations, students or non salaried participation, strong mobility among research institutions...

Changes needed: adoption of free/open access policies in our institutions.

⚠ What means **open**? Check definitions, licenses, policies...

(Research) Software is a legal object

- icebergs' top: licenses
  - in place before distribution
  - give rights
  - have reciprocity clauses
  - compatibility
  - inheritance from existing works
  - needed or All rights reserved

- under the surface: law
  - copyright, droit d'auteur, ...
  - work, authors, rights' holder
  - dates
  - derivated work
  - country jurisdiction

Research software is also a **scientific object**, part of the scientific production of a laboratory or an institution, see "*Article vs. Logiciel : questions juridiques et de politique scientifique dans la production de logiciels*", (11/2011, CC-BY-NC-ND, in French)
http://www.societe-informatique-de-france.fr/wp-content/uploads/2015/04/1024-5-gomez-diaz.pdf (04/2015)

Image: R. Willaert (09/2015, CC-BY), http://commons.wikimedia.org/wiki/File:
Danmark_0,_Fohn_Fjord,_Renodde.70%C2%B0N_26%C2%B0W_%2876566707%29.jpg

A dissemination procedure

To be adapted, also valid for data:

- Choose a name, avoid trademarks.
- (*) Establish list of authors and affiliations with % of participation.
- (*) Establish list of main functionalities.
- (*) Establish list of included software and data components and their licenses.
- Choose a license, with the agreement of all the rights' holders and authors, have a signed agreement if possible. Consider inheritance and compatibility.
- Choose a web site, forge, or deposit for distribution. Licensing and conditions of use, copy, etc. clearly stated, as well as how to cite your work. Good metadata, permanent links, respect of open standards are best practices. Give licenses to the documentation, the web site...
- (*) Traceability of new functionalities is important, archive regularly.
- Inform your laboratories and head institutions (if not done in the license step).
- Create and indicate clearly a contact address.
- Distribute the software or data component.
- Inform the community. Consider publication in software or data journals.

Steps marked with (*) are to be revisited regularly in each version release.

References

- FSF, http://www.fsf.org

- OSI, http://www.opensource.org

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  la production de logiciels, last version:
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  previous versions: https://www.projet-plume.org/ressource/article-vs-logiciel

- Thème PLUME : patrimoine logiciel d'un laboratoire,
  https://www.projet-plume.org/patrimoine-logiciel-laboratoire