Author's rights (in France) and licenses for your Research Software

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It includes work in collaboration with Prof. T. Recio (Univ. Nebrija, Madrid)

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Open Science, University of Strasbourg, 14th February 2024

Beware...

Please note that I am not a legal expert, but I have acquired some basic legal notions in author's rights and licensing issues, mainly in the French legal context.

I am a Research Software, Research Data and Open Science expert
(see the complete list of references at the end of this presentation).

The intention of this presentation is to introduce some basic concepts.

It is important to understand them correctly when producing and disseminating software in an academic environment.

Some of these concepts are legal concepts. I refer to the French law.
Sometimes I will refer to the Directive 2009/24/EC of the European Parliament and of the Council.

Usually I do this presentation in French. I have done my own translations into English (with the help of Google Translate and Linguee).

Motivation: Who?, What?, How?

Today, we are all **software users**, they are often *free/open source* software.
As **developers**, we disseminate software that can contain existing software components, maybe modified and included (or integrated) with our own code.
We can also to contribute to existing *free/open source* software.

For Who?: *authors*, *contributors*
This course is aimed at software producers, members of a research lab.

What is done?:

use, **contribute**, **write**, **modify**,
produce, **disseminate**, **include and re-distribute**

How? (are you doing): *in collaboration*

- in a research context, often international
- with other persons that may have every kind of status:
  student, trainee, doctoral student, post-doctoral student, salaried staff (or not), from the same establishment, from another establishment, from the same lab., from another lab., from the same country, from another country, retired staff...

Main goal of this talk

Article vs. Logiciel : questions juridiques et de politique scientifique dans la production de logiciels

T. Gomez-Diaz (Projet PLUME, 2011, et SIF, 2015), https://hal.archives-ouvertes.fr/hal-01158010

Aspects légaux		
	Article	**Logiciel**
Droit auteur	droits moraux, droits patrimoniaux	droits moraux réduits droits pat. dévolus à l'employeur
Œuvre	article	code source, code objet, doc., ...
Auteurs	signataires, même %	notion complexe, pb. légal, établir % de participation
Propriétaires	auteurs, même % cession des droits	tutelles en général, mais dépend du régime salarié, des contrats, ...
Dates	soumission, publication	matériel de conception, versions
Évolution	œuvre indépendante	œuvre indépendante ? il faut revoir auteurs, dates, lic., ...
Travaux préc.	références, citations	briques : compatibilité, héritage lic.
Diffusion	éditeur, web	web, forges, besoin de licence
Droits	lire, citer, ne pas copier	lire, ne pas utiliser, ..., besoin lic.
Licences	droits et obligations, CC (web)	droits et obligations, libres, propriétaires

Plan

Definition of Free software

Defined by R. M. Stallman and the Free Software Foundation (FSF, 1985).
https://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.

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

Well known examples: TEX by D. Knuth (1978), the Berkeley Software Distribution (BSD) by the University of California (1977-1995).

Free software respects **all** these four freedoms, a **license** is needed to verify them.
Free software is not *free of rights*, it is legally protected by the **CPI** (slide 11).
Proprietary software is another name for nonfree software.

Concept well adapted to the research environment.

Definition of Open source software

Defined by the Open Source Initiative (OSI) in 1998, 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 (that are not detailed here):

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

Open source software respects **all** these conditions, a **license** is needed to verify them.
The word "open" exceeded quickly the software community.
Concept born in business context.

Licenses and some vocabulary

- two different philosophies, two different communities ?
- same goal: develop software of quality
- FOSS: Free/Open Source Software
- 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 (DRM)
- licenses are (*legal*) contracts
- they give *rights*: *use*, *copy*, *modify*, *redistribute*
- also have reciprocity clauses that are to be respected
- free, open means *gratis*? or no private collaboration?
- source code available means "free" or "open source software" or "open software" ?

⚠ **No license means "All rights reserved"**

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

Plan

Motivation

La diffusion des logiciels libres (2005)

Dominique Dalmas, Directrice juridique (CNRS)
Lyasid Hammoud, Juriste (CNRS)

> *Il est regrettable de constater que les* **aspects juridiques** *sont encore trop souvent méconnus et négligés par les créateurs lors de la diffusion de leurs logiciels.*
>
> *Les surprises peuvent être douloureuses notamment en cas de litiges car les auteurs de bonne foi risquent de voir leur licence invalidée ou leur responsabilité mise en cause.*
>
> *Il est pour eux essentiel de veiller à accompagner leur logiciel d'une licence bien construite, seule garantie que celui-ci vivra selon les principes qu'ils auront choisis.*

Yes, legal aspects are still (2024) too often misunderstood and neglected...

Definition: what means software?

Definition of *software* as a **legal object**

– Article L. 112-2 of the French Code of Intellectual Property (CPI):

un logiciel est une œuvre de l'esprit protégée par le droit d'auteur.

software is an intellectual work protected by the CPI.

– (7) of the Directive 2009/24/EC, on the legal protection of computer programs:

For the purpose of this Directive, the term computer program shall include programs in any form, including those which are incorporated into hardware.

This term also includes preparatory design work leading to the development of a computer program... if a computer program can result from it at a later stage.

From a legal point of view, software is an intellectual work, with a title, with authors, and has associated **rights**. It is a broad concept, which contains the source code, the compiled code and possibly documentation, preparatory work...

The definition that applies is a **legal** one, not a mathematical nor informatics one. It inevitably applies (and very much in spite of us) in all its dimension at the **dissemination** stage.

Author's rights (1/2)

Rights protected by the Code of Intellectual Property (CPI)
https://www.legifrance.gouv.fr/codes/id/LEGITEXT000006069414/
are automatically associated to the head of the author at the creation time,
there is a condition of **originality** (which depends of the date).

The work should have some **form**: ideas, concepts, algorithms are not protected.

Two kinds of rights: moral rights and patrimonial rights.

Moral rights: they are imprescriptible, inalienable, non-transferable, usually associated to natural persons (authors and their heirs).

There are four:

- Right to authorship, relating to the mention of the author.
- Right of disclosure, relating to the time and conditions of delivery.
- Right to repent, allows you to withdraw a work.
- Right to work's respect, allows you to oppose to its modification.

Author's rights (2/2)

Patrimonial or property rights: concern the exploitation of the work, these are rights that can be exchanged for money, transferable, temporary.

There are two types of exploitation:

- the performance (for example of a theater work) and
- reproduction (music on CD for example).

These are rights often associated with legal entities (following transfers made by the authors), we then speak of the **property rightholders**, or **owners**.

Terminology:

- Orphan works:
  there is no longer a natural person associated with the moral rights.
- Public domain works:
  end of patrimonial rights, 70 years after the death of the author.
   This term is sometimes (mis)used in the context of FOSS.

Software: special treatment

There are some **differences** for software:

- Reduced moral rights: authorship.
- The author cannot (unless otherwise stipulated) oppose to the modification of the work or exercise her/his right of withdrawal.
- The property rights (unless otherwise stipulated) are associated to the employer. This also applies to their documentation.
- Originality (Arrêt Pachot, 7/03/1986): *effort personnalisé allant au-delà de la simple mise en œuvre d'une logique automatique et contraignante*.
  - *Quelle place reste-t-il pour l'originalité du logiciel ?* CNEJITA (3/04/2023)
    https://www.cnejita.org/product/colloque-3-avril-2023/ – enregistrement vidéo
  - 5 idées fausses sur la protection juridique des logiciels, APP, Le Monde du Droit (15/11/2022)
    https://www.lemondedudroit.fr/on-en-parle/84399-5-idees-fausses-sur-la-protection-juridique...

Holders of property rights (owners, joint ownership) of software are involved in licensing decisions. The rightholder's list is established based on:

- software authors
- their status and/or mode of collaboration
- contracts: employers, collaboration, orders, agreements, etc.
- ⚠ research labs: agreements between Head Institutions
- Entrust the administration of joint ownership to one of the institutions

Who can use software?

(15) of the Directive 2009/24/EC

The unauthorised reproduction, translation, adaptation or transformation of the form of the code in which a copy of a computer program has been made available constitutes an **infringement of the exclusive rights** *of the author.*

[CPI] to use, copy, modify or distribute without explicit authorization $\Longrightarrow$ *contrefaçon, passible de trois ans d'emprisonnement et de 300000 euros d'amende. (Art. L. 335-2)*

Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs, https://eur-lex.europa.eu/eli/dir/2009/24/oj
See also: T. Aimé, A Practical Guide to Using Free Software in the Public Sector, 2010, https://zenodo.org/records/7096100

Licenses complete the legal framework established by law, as if there is no explicitly given right, using software constitutes infringement of the rights.

Licenses are **contracts** and protect authors, users and potential collaborators.

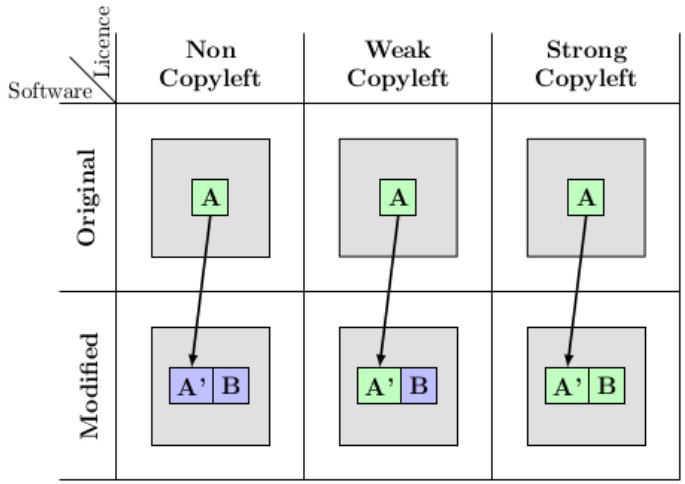
They grant **rights** (and freedoms) and may contain reciprocity clauses or may impose **obligations** that must be respected.

⚠ **No license == All rights reserved.**

Types of free/open source licenses

- Strong copyleft
  - redistributed with or without modifications
  - initial license remains
  - reciprocity requirement
  - goal: avoid exclusive appropriation
- Weak copyleft
  - initial license remains
  - added code can have other licenses
- Non copyleft
  - redistributed with or without modifications
  - maybe with other license

- Strong copyleft: GNU GPL, CeCILL v2, EUPL
- Weak copyleft: MPL, GNU LGPL, CeCILL-C
- Non copyleft: Apache, BSD, MIT, CeCILL-B



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."*

Source, image: T. Aimé, 2010, A Practical Guide to Using Free Software in the Public Sector, https://zenodo.org/records/7096100

J.-L. Archimbaud, T. Gomez-Diaz, Projet PLUME, 2009, FAQ : Licence & copyright pour les développements de logiciels libres de laboratoires de recherche, https://zenodo.org/record/7063146

License compatibility and inheritance (1/2)

License incompatibility: if two licenses impose contradictory obligations (p. 230, Framabook B. Jean).

Some hints:

- to edit, compile, study, save your code with free or proprietary software does not produce license inheritance into your code
- it is possible to distribute your XXXX code (with XXXX proprietary software) under a free license, but do not distribute XXXX with... tell your users that they have to have XXXX to use your code, and if this is not possible, at least they will be able to see the code
- to include a lot of software components in your own software can create license incompatibility problems and have consequences in the license that you can take for your software, see more information on license compatibility issues on:
  - GNU, http://www.gnu.org/licenses/gpl-faq.en.html#AllCompatibility
  - Annexe A, Framabook B. Jean (p. 315)
  - Joinup Licensing Assistant - Compatibility Checker - https://joinup.ec.europa.eu/collection/eupl/solution/joinup-licensing-assistant/jla-compatibility-checker

License compatibility and inheritance (2/2)

- it is possible to distribute software under several licenses, which helps to deal with incompatibility problems
- never modify copyright or license information of recovered software, if this information is not clear, please take contact with the authors or with the rightholders of the project
- if the license is not suitable for the intended use, or if there is no license, please take contact with the authors, request for another license or for a (written) agreement to ensure that you can *use*, *copy*, *modify*, *redistribute*

EC tool Joinup: https://joinup.ec.europa.eu/collection/eupl/solution/joinup-licensing-assistant

References:

- http://www.gnu.org/licenses/gpl-faq.en.html
- Framabook Option Libre. Du bon usage des licences libres, B. Jean (2011) http://framabook.org/option-libre-du-bon-usage-des-licences-libres
- Software: FOSSology, OSLC, BlackDuck, ScanCode, Sourcetrail...
- Open standard: SPDX (hosted by the Linux Foundation). They also give a list of most commonly used licenses, see https://spdx.org/licenses/

The license "European Union Public License" (EUPL)

- https://joinup.ec.europa.eu/collection/eupl/eupl-text-eupl-12
- Instrument of European law, Version 1.2, see the Official Journal of 19 May 2017
  complies with the laws of the European Union and Member States
  https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017D0863
- Multilingual, 23 languages, with the same legal value,
  jurisdiction of the country of the software producer, which grants the license
- F/OSS, with obligation of reciprocity, to avoid exclusive appropriation (GAFAM) and to guarantee shared access to possible improvements
- With compatibility mechanisms, list of compatible licenses included
- Used for European Commission software, Decision C(2021)8759 du 8/12/2021 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021D1209(01)
- France: included in the list of the Decret N. 2021-1559 (1/12/2021) completing the list of reuse licenses authorized for administrations and that modifies the Decret N.2017-638 (27/04/2017) https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000044401895

ADULLACT : Présentation de la licence EUPL v1.2

https://faq.adullact.org/juridique/presentation-licences/eupl-v1.2/

Vidéo : Patrice-Emmanuel Schmitz (Consultant Joinup, EC), Atelier BlueHats, 25/02/2022

https://communs.numerique.gouv.fr/ateliers/eupl/

Software free and proprietary: it's possible

It is possible to give several licenses to your software.

This means that you give the user the freedom to choose the legal context that will adapt better to each situation or to the intended use.

Therefore it is possible to have software under FOSS and proprietary licenses at the same time.

Proprietary licenses may be accompanied by signed contracts to establish (for example) the terms of support and collaboration, and/or economic returns.

Imperative: see with the *services de valorisation* of your institution.
Imperative: coherent legal framework, maybe forks will be needed.

It is also possible to distribute software with modules licensed under different licenses, for example a calculation kernel under a free license and a graphic interface with other license (useful for the academic context?).

Contributor License Agreements

Software like GCC can have a long list of authors, it can be very complicated to contact all of them when facing with a legal problem.

The FSF will be able to represent the interests of developers if transfers of rights are made (disclaimer of rights, copyright holder).

Contributor License Agreements (CLAs) are becoming more and more common.

Conversely, if you are responsible for a software project, it is necessary to keep track of all contributors, their status, and all the contracts, agreements, funding information, etc. that concern the software.

Are transfers of rights necessary? and signed licensing agreements required?

⚠ droit anglosaxon $\neq$ droit français, où toute cession de droits moraux ou de droits *d'œuvres futures* est invalide.

⚠ Traineeship (*Stages*): patrimonial rights are associated to the hosting institution.

Leurs droits patrimoniaux sur ces logiciels et leur documentation sont dévolus à la structure d'accueil.

See Art. L. 113-9-1 CPI, https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000044501327

References:

- http://www.gnu.org/prep/maintain/maintain.html#Legal-Matters
- http://www.oss-watch.ac.uk/resources/cla
- Diffuser un logiciel de laboratoire : recommandations juridiques et admin., https://zenodo.org/records/7096216

If you are a software ...

user

- have you the right of use, modify?
- is there free/open source software that meets your need?

developer

- put licenses in place **before** the software dissemination
- pay attention to the included components, their rights, their licenses

responsible with collaborators, with project funding...

- in addition, keep track of contributors (status, affiliation)
- keep track of every contract, agreement...

contributor

- pay attention to the transfer of rights agreement **before** its signature
- which law applies (USA, France, Europe...)?

A dissemination procedure for your software

Easy to adapt to many situations, also valid for data.

- Choose a name, avoid trademarks and proprietary names, associate date, version...
  (2018) DoRANum or Harvard. File Naming Conventions
- (*) (research team step) Establish list of authors/contributors (% participation, affiliations). Consider a Software Management Plan (2018, TGD, G. Romier, PGLR V3.2, PRESOFT)
- (*) Establish the list of main functionalities.
- (*) Establish the list of included software & data compon., their lics. Best citation practices?
- **Choose a license**, have an agreement (signed) with rightholders and authors, consider FLOSS licenses. Beware of license compatibility and inheritance issues.
- Choose a website, forge, deposit for dissemination, indicate licenses and how to cite the work. Use PIDs if possible.
- (*) Archive a tar.gz or similar regularly to keep track of added functionalities.
- Inform your laboratories and head institutions (if not done in the license step).
- Set and indicate clearly a contact address, propose a citation form.
- **Distribute** your (research) software or data component.
- Inform the target scientific community. Consider Software or Data papers...

(*) To be reviewed with each new version.

(2010) TGD. Diffuser un logiciel de laboratoire : recommandations juridiques et administratives
(2014) TGD. Free software, Open source software, licenses. A short presentation including a procedure for RS and data...
(2022) TGD, T. Recio. Research Software vs Research Data II (Dissemination, CDUR)

How to put a license

The license must be in place before the software is disseminated.
Pay attention to specifications and contracts (Intellectual property clauses, licenses).

At the head of every file:

- File name, software name
- Copyright (©, Droits patrimoniaux), year(s), legal or natural persons
  also: some rights reserved?, all rights reserved?
- Author(s), software contact address
- License(s)
- Important: creation date, last modification date
- Useful: format SPDX https://spdx.dev/, DOIs...

Add a license file (`COPYING`, `LICENCE`, `README`, ...) to the whole set of files, with the whole text, include a SPDX link for the license...

In addition:

- Propose a citation form for your software.
- Indicate the used and/or included software components with their licenses. Consider best citation practices.
- Clearly indicate authors, contributors, and licenses in the documentation, website...

Legal aspects revisited

Article vs. Logiciel : questions juridiques et de politique scientifique dans la production de logiciels

T. Gomez-Diaz (Projet PLUME, 2011, et SIF, 2015), https://hal.archives-ouvertes.fr/hal-01158010

Aspects légaux		
	Article	**Logiciel**
Droit auteur	droits moraux, droits patrimoniaux	droits moraux réduits droits pat. dévolus à l'employeur
Œuvre	article	code source, code objet, doc., ...
Auteurs	signataires, même %	notion complexe, pb. légal, établir % de participation
Propriétaires	auteurs, même % cession des droits	tutelles en général, mais dépend du régime salarié, des contrats, ...
Dates	soumission, publication	matériel de conception, versions
Évolution	œuvre indépendante	œuvre indépendante ? il faut revoir auteurs, dates, lic., ...
Travaux préc.	références, citations	briques : compatibilité, héritage lic.
Diffusion	éditeur, web	web, forges, besoin de licence
Droits	lire, citer, ne pas copier	lire, ne pas utiliser, ..., besoin lic.
Licences	droits et obligations, CC (web)	droits et obligations, libres, propriétaires

Plan

Understanding Research Software: Article vs. Logiciel

Article vs. Logiciel : questions juridiques et de politique scientifique dans la production de logiciels

T. Gomez-Diaz (PLUME, 2011 et SIF, 2015), https://hal.archives-ouvertes.fr/hal-01158010

	Aspects relatifs à la politique scientifique		
		Article	**Logiciel**
*	**Définition (L, T)**	ok	à définir
	Signature (C, T)	ok, déf. par tutelles	à définir (copyright) associer les laboratoires
	Références (L, T)	HAL	PLUME
	Liste des œuvres (L, T)	document à jour	document inconnu, PLUME peut être utile
*	**Libre accès (C, L, T, CSI)**	politique (+/-) ok, dépôt ok (HAL)	politique (lic.) à définir, dépôt à établir
	Validation (C, L, T, CSI)	procédure *referee*, reproductibilité	à définir, validé au sens PLUME
*	**Qualité/évaluation (C, L, T, CSI)**	nb. citations	articles associés, attirer utilisateurs, contrats
	Motivation (C, L, T, CSI)	recherche, article	recherche, pas le logiciel
	Objet (C, L, T, CSI)	scientifique	3D : scientifique, potentiel de transf. de tech., obj. industriel

Seul point rouge pour les articles (reproductibilité) est lié à l'accès au logiciel associé.

Open Science: proposed definition - article

(2018) JP. Tennant. Open Science is just good science, DARIAH, https://www.youtube.com/watch?v=UEEcwRUgQu8
(2020-21) TGD, T. Recio. Towards an Open Science definition as a political and legal framework: on the sharing...

Open Science is...

> [EN] *the political and legal framework where research outputs are shared and disseminated in order to be rendered visible, accessible and reusable*
>
> [FR] *le cadre politique et juridique dans lequel les productions scientifiques sont partagées et diffusées afin d'être rendues visibles, accessibles et réutilisables.*

Version	**Title**	**Date**	**Publication**
V3	Towards an Open Science definition as a political and legal framework: on the sharing and dissemination of research outputs	02/2021	https://zenodo.org/record/4577066 With ref.: Alma Swan, UNESCO, 2012
V2	Towards an Open Science definition as a political and legal framework...	12/2020	POLIS N. 19, pp. 36-56 - PDF
V1	A policy and legal Open Science...	09/2020	https://zenodo.org/record/4075106

Goal: to understand what Open Science is, the motivation for the proposition of this definition, but also to structure information in a complex landscape.

Open Science: structuring the landscape - poster

The future of Open Science asks for a common understanding

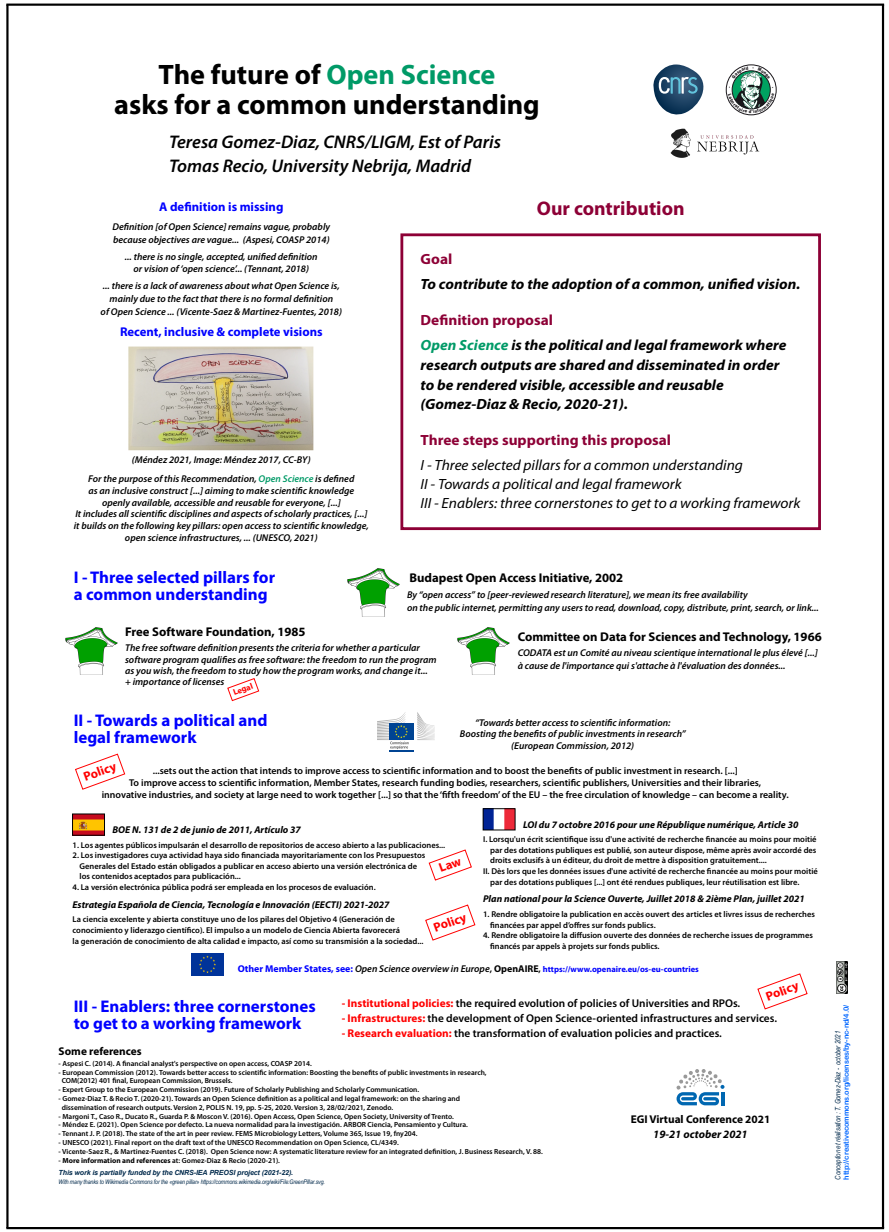
Open Science is
the political and legal framework
where research outputs are shared
and disseminated in order to be rendered
visible, accessible and reusable.

I Three selected pillars
- BOAI (2002)
- Free Software Foundation (1985)
- CODATA (1966)

II Towards a political and legal framework

III Enablers:
- Institutional policies
- Infrastructures
- Research evaluation

EGI Virtual Conference 2021, Lisbon, 19-21 october 2021
https://padlet.com/gwenfranck/EGI2021Posters



The future of Open Science asks for a common understanding

Teresa Gomez-Diaz, CNRS/LIGM, Est of Paris
Tomas Recio, University Nebrija, Madrid

A definition is missing

Definition [of Open Science] remains vague, probably because objectives are vague... (Aspesi, COASP 2014)

... there is no single, accepted, unified definition or vision of 'open science'... (Tennant, 2018)

... there is a lack of awareness about what Open Science is, mainly due to the fact that there is no formal definition of Open Science ... (Vicente-Saez & Martinez-Fuentes, 2018)

Recent, inclusive & complete visions

(Méndez 2021, Image: Méndez 2017, CC-BY)

For the purpose of this Recommendation, Open Science is defined as an inclusive construct [...] aiming to make scientific knowledge openly available, accessible and reusable for everyone, [...] It includes all scientific disciplines and aspects of scholarly practices, [...] it builds on the following key pillars: open access to scientific knowledge, open science infrastructures, ... (UNESCO, 2021)

Our contribution

Goal

To contribute to the adoption of a common, unified vision.

Definition proposal

Open Science is the political and legal framework where research outputs are shared and disseminated in order to be rendered visible, accessible and reusable (Gomez-Diaz & Recio, 2020-21).

Three steps supporting this proposal

I - Three selected pillars for a common understanding
II - Towards a political and legal framework
III - Enablers: three cornerstones to get to a working framework

I - Three selected pillars for a common understanding

Budapest Open Access Initiative, 2002
By "open access" to [peer-reviewed research literature], we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link...

Free Software Foundation, 1985
The free software definition presents the criteria for whether a particular software program qualifies as free software: the freedom to run the program as you wish, the freedom to study how the program works, and change it... + importance of licenses
Legal

Committee on Data for Sciences and Technology, 1966
CODATA est un Comité au niveau scientique international le plus élevé [...] à cause de l'importance qui s'attache à l'évaluation des données...

II - Towards a political and legal framework

"Towards better access to scientific information: Boosting the benefits of public investments in research" (European Commission, 2012)

Policy

...sets out the action that intends to improve access to scientific information and to boost the benefits of public investment in research. [...] To improve access to scientific information, Member States, research funding bodies, researchers, scientific publishers, Universities and their libraries, innovative industries, and society at large need to work together [...] so that the 'fifth freedom' of the EU – the free circulation of knowledge – can become a reality.

BOE N. 131 de 2 de junio de 2011, Artículo 37

1. Los agentes públicos impulsarán el desarrollo de repositorios de acceso abierto a las publicaciones...
2. Los investigadores cuya actividad haya sido financiada mayoritariamente con los Presupuestos Generales del Estado están obligados a publicar en acceso abierto una versión electrónica de los contenidos aceptados para publicación...
4. La versión electrónica pública podrá ser empleada en los procesos de evaluación.

Law

LOI du 7 octobre 2016 pour une République numérique, Article 30

I. Lorsqu'un écrit scientifique issu d'une activité de recherche financée au moins pour moitié par des dotations publiques est publié, son auteur dispose, même après avoir accordé des droits exclusifs à un éditeur, du droit de mettre à disposition gratuitement....
II. Dès lors que les données issues d'une activité de recherche financée au moins pour moitié par des dotations publiques [...] ont été rendues publiques, leur réutilisation est libre.

Estrategia Española de Ciencia, Tecnología e Innovación (EECTI) 2021-2027

La ciencia excelente y abierta constituye uno de los pilares del Objetivo 4 (Generación de conocimiento y liderazgo científico). El impulso a un modelo de Ciencia Abierta favorecerá la generación de conocimiento de alta calidad e impacto, así como su transmisión a la sociedad...

Policy

Plan national pour la Science Ouverte, Juillet 2018 & 2ième Plan, juillet 2021

1. Rendre obligatoire la publication en accès ouvert des articles et livres issus de recherches financées par appel d'offres sur fonds publics.
4. Rendre obligatoire la diffusion ouverte des données de recherche issues de programmes financés par appels à projets sur fonds publics.

Other Member States, see: *Open Science overview in Europe*, **OpenAIRE**, https://www.openaire.eu/os-eu-countries

III - Enablers: three cornerstones to get to a working framework

- **Institutional policies:** the required evolution of policies of Universities and RPOs.
- **Infrastructures:** the development of Open Science-oriented infrastructures and services.
- **Research evaluation:** the transformation of evaluation policies and practices.

Policy

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With many thanks to Wikimedia Commons for the «green pillar» https://commons.wikimedia.org/wiki/File:GreenPillar.svg

EGI Virtual Conference 2021
19-21 october 2021

UNESCO Recommendation on Open Science

- 40th session, 11/2019
- Members States asked for an international standard-setting instrument
- 2020: awareness, consequence of the COVID-19 pandemic
- Large consultative process, global and regional consultations, preliminary report
  https://unesdoc.unesco.org/ark:/48223/pf0000374409
- 41st session, 23/11/2021 - final UNESCO Recommendation on Open Science
  https://unesdoc.unesco.org/ark:/48223/pf0000379949
- Unanimously adopted by the Member States (193 countries)

For the purpose of this Recommendation, **open science** is defined as an **inclusive construct** that combines various movements and practices **aiming to make** multilingual **scientific knowledge openly available, accessible and reusable for everyone**, to increase scientific collaborations and sharing of information for the benefits of science and society, and to open the processes of scientific knowledge creation, evaluation and communication to societal actors beyond the traditional scientific community.

It comprises **all scientific disciplines and aspects of scholarly practices, including basic and applied sciences, natural and social sciences and the humanities**, and it builds on the following key pillars: open scientific knowledge, open science infrastructures, science communication, open engagement of societal actors and open dialogue with other knowledge systems.

Followed by Open Science working groups,
https://www.unesco.org/en/open-science/implementation#open-science-working-groups

Open Science in France

2016 Loi pour une République numérique (7 octobre 2016), article 30

https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000033202746/

Lorsqu'un écrit scientifique issu d'une activité de recherche financée au moins pour moitié par des dotations de l'Etat... son auteur dispose ... du droit de mettre à disposition gratuitement
Dès lors que les données issues d'une activité de recherche financée au moins pour moitié par des dotations de l'Etat... et qu'elles ont été rendues publiques par le chercheur, ... leur réutilisation est libre.

2018 1er Plan national pour la Science ouverte (juillet 2018)

https://www.enseignementsup-recherche.gouv.fr/fr/plan-national-pour-la-science-ouverte-87868

La **science ouverte**, *c'est la diffusion sans entrave des publications et des données de la recherche.*

Open science *refers to the unhindered dissemination of results, methods and products from scientific research.*

2021 Feuille de route 2021-2024 du MESRI relative à la politique des données, des algorithmes et des codes sources (mai 2021)

https://www.enseignementsup-recherche.gouv.fr/fr/la-feuille-de-route-2021-2024-du-mesri-sur-la-politique-...

2021 2ième Plan national pour la Science ouverte (juillet 2021)

https://www.enseignementsup-recherche.gouv.fr/fr/le-plan-national-pour-la-science-ouverte-2021-2024-vers-une-...

4 axes: publications, research data, **source codes**, Open science the default principle

2022 Journées européennes de la Science ouverte (OSEC) à Paris, https://osec2022.eu/

Links:
- Open Science at MESRI: https://www.enseignementsup-recherche.gouv.fr/fr/science-ouverte
- Open Science committee: https://www.ouvrirlascience.fr/home/

Open Science and software in France

- Loi pour une République numérique (7 octobre 2016), article 30
- Site Etalab. Décret N.2017-638 (27/04/2017) gives the list of licenses applicable to data, databases, and software. Liste **modified** by Décret N.2021-1559 (1/12/2021).
- Les logiciels produits par les administrations sont passés en Open Source par défaut, cela comprend les logiciels développés par les chercheurs. Blog de Lionel Maurel (7/12/2017) : https://scinfolex.com/2017/12/08/les-logiciels-produits-par-les-administrations-sont-passes-en-open-source-par-...
- MESRI - 2ième Plan national pour la Science ouverte (juillet 2021)

  4 axes: publications, research data, **source codes**, Open science the default principle
- Le Décret N. 2021-1572 (3/12/2021) relatif au respect des exigences de **l'intégrité scientifique** par les établissements publics contribuant au service public de la recherche, voir Article 2 : https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000044411360

  Les établissements publics et fondations reconnues d'utilité publique mentionnés au troisième alinéa de l'article L. 211-2 du code de la recherche : Promeuvent **la diffusion des publications en accès ouvert et la mise à disposition** *des méthodes et protocoles, des données et des* **codes sources** *associés aux résultats de la recherche afin d'en garantir la traçabilité et la reproductibilité.*

- Site Etalab: obligation to choose among these licenses when a reuse license can be established, see https://www.data.gouv.fr/fr/licences
  - non copyleft: Apache-2.0, BSD-2-Clause, BSD-3-Clause, CECILL-B, MIT
  - copyleft:
    CECILL-2.1, CECILL-C, GPL-3.0, LGPL-3.0, AGPL-3.0, MPL-2.0, **EPL-2.0**, **EUPL-1.2**

Plan

Evolution of research evaluation practices

It is now widely accepted the need to change the research assessment system:

- (2012) San Francisco Declaration on Research Assessment (DORA), https://sfdora.org/read/
- (2019) Foro Latinoamericano sobre Evaluación Científica (FOLEC-CLACSO)
- (2021) EC Scoping report Towards a reform of the research assessment system
- (2022) Coalition for Advancing Research Assessment (CoARA)

Among others, the question is now how to take better into account the production of software and data (and not just publications)?

In 2018, the collaboration with Prof. Tomas Recio (Univ. Nebrija, Spain) was launched to study how to improve research evaluation practices in order to take into account the software production in the academic context.

In the F1000Research publication

(2019) TGD, T. Recio. On the evaluation of research software: the CDUR procedure

we study the Research Software concept and, among others, we propose the CDUR protocol(s) to evaluate Research Software. This work can help to build a new research assessment system.

It has been adapted to Research Data in 2022, see

(2022) TGD, T. Recio. Research Software vs Research Data I (Definition)

(2022) TGD, T. Recio. Research Software vs Research Data II (Dissemination, CDUR)

(2024) TGD. On the sharing and dissemination of RS and RD in the Open Science context

Research Software (RS) definition (1/2)

(2007) TGD. Autour de la valorisation de logiciels développés dans un laboratoire de recherche
(2009) TGD. Guide laboratoire pour recenser ses développements logiciels
(2011-15) TGD. Article vs. Logiciel : questions juridiques et de politique scientifique dans la production de logiciels

Un logiciel du laboratoire *est un programme utile pour faire avancer la recherche qui a été produit avec la participation d'un membre du laboratoire. Il arrive souvent que des publications de recherche soient associées.*

- goal: to do research
- a member of the lab participates to the code writing (similar to publications)
- the main production is the publication, software is an associated object

(2019) TGD, T. Recio. On the evaluation of research software: the CDUR procedure, (section 2.1)

Research software (RS) *is a well identified set of code that has been written by a well identified research team. It is software that has been built and used to produce a result published or disseminated in some article or scientific contribution.*

Each RS encloses a set of files containing the source code and the compiled code. It can also include other elements as the documentation, specifications, use cases...

These definitions do not take into account the status or condition of the RS:

"in project", "finished", disseminated, quality, scope, size, documented, maintained, used only by a team to produce a publication, or used in several laboratories...

Research Software (RS) definition (2/2)

Conclusions of the RS definition:

- what is done: code, that is to say a set of well-identified files,
- who does it: author(s), but also contributors and/or scientific experts,
- to do what: research, science, ie. associated article(s) and scientific contributions,
- **important:** quality and accuracy of the produced scientific results.

Other works on RS, see for example:

- (2020-24) RDA FAIR 4 Research Software (FAIR4RS) working group, https://www.rd-alliance.org/groups/fair-research-software-fair4rs-wg
- (2021) Gruenpeter, M. et al. Defining Research Software: a controversial discussion https://zenodo.org/record/5504016
- (2021) Katz, D. et al. A Fresh Look at FAIR for Research Software, Patterns, https://doi.org/10.1016/j.patter.2021.100222
- (2022) Source Codes and Softwares College, Research software as a pillar of open science https://www.ouvrirlascience.fr/research-software-as-a-pillar-of-open-science/
- (2023) RDA Policies for Advancing Research Software in Research Performing Organisations (PRO4RS) https://www.rd-alliance.org/policies-research-organisations-research-software-pro4rs https://www.youtube.com/watch?v=xgfyeAQqE7U

Research Software authors

(2011-15) TGD. Article vs. Logiciel : questions juridiques et de politique scientifique dans la production de logiciels
(2019) TGD, T. Recio. On the evaluation of research software: the CDUR procedure

What means RS author?

- legal concept: the author writes the code
- scientific concept: expert contributions, maybe no writing code
  without the scientific expert, the RS will not exist
- maybe other contributions:
  documentation, bug fixing, test, maintenance, translations...

Definition of a RS author. In the article we select three roles (limits can be fuzzy):

(i) RS leader,

(ii) main or important contributor (code writing),

(iii) minor contributor (code writing or other contribution).

Persons with no code writing can be assigned with some participation percentage of code writing by the team.

Protocol(s) **CDUR**: research evaluation and RS

(2019) TGD, T. Recio. On the evaluation of research software: the CDUR procedure

(2022) TGD, T. Recio. Research Software vs Research Data II (Dissemination, CDUR)

Designed to help evaluated researchers, evaluation committees, decision makers...
also valid for data.

(C) Citation measure if RS is well identified as a research output:
good citation form, but also metadata, best citation practices...
legal point: authors, affiliations, participation %

(D) Dissemination best dissemination practices, in agreement with
the scientific policy of the evaluation context
policy point: Open Science, **legal point:** licenses

(U) Use "software" aspects **of RS**: correct results, facilitate reuse, good softw.
practices: doc, test, install, up to read the code, launch RS...
point reproducibility: validation of scientific results

(R) Research "research aspects": quality of the scientific work, proposed and coded
algorithms & data structures, related publications, collaborations...
point research: impact

Flexibility of application: each decision maker or evaluation committee **sets its own CDUR protocol** adapted to the evaluation context and goals.

Conclusion

We have studied the complexity of Research Software and the free/open source licenses which are involved in their dissemination.
Their production in the scientific framework involves three aspects:

1. Philosophy, community
   - **RS**: production of a community
   - **License**: expression of community values
2. Legal
   - **RS**: work protected by the intellectual property law
   - **License**: contract, gives rights and obligations
3. Scientific policy
   - **RS**: scientific production
   - **License**: scientific policy tool

Some questions revisited

Have you the answers?

- Which are the characteristics of the different licenses?
- Which license can I use for my software?
- How to choose a license?
- Which are the criteria to choose a license?
- How to deal with software that includes free/open source components?
- How to manage the compatibility of licenses?

And others:

- What means Open Science?
- What means Research Software?
- How much documentation and maintenance should I provide?

  (2024) TGD, T. Recio, Open comments for the NIH Request for Information : Best Practices for Sharing NIH...

Others?

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