Open source licensing

What is it? In what way is it Free and should I use it?

Juhani Naskali, University of Turku, 27.4.2021

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Open Source

- Open source is (also) an ideology
  - “The word "free" […] does not refer to price; it refers to freedom.”
    – Richard Stallman, 1986
  - Basis for various licensing formulations, such as GPL, MIT, Apache
  - Four essential freedoms (GNU’s definition of free software)

The Four Essential Freedoms

A program is free software if the program's users have the four essential freedoms:

The freedom to run the program as you wish, for any purpose (freedom 0).

The freedom to study how the program works, and change it so it does your computing as you wish (freedom 1). Access to the source code is a precondition for this.

The freedom to redistribute copies so you can help others (freedom 2).

The freedom to distribute copies of your modified versions to others (freedom 3). 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.

https://www.gnu.org/philosophy/free-sw.html

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- Open source is built on a license for **the use of code**
  - Limited to the source code
  - Separate from distribution licensing (more on this later…)

(Another) Definition by Open Source Initiative

- Free Redistribution
- Source Code
- Derived Works
- Integrity of The Author's Source Code
- No Discrimination Against Persons or Groups
- No Discrimination Against Fields of Endeavor
- Distribution of License
- License Must Not Be Specific to a Product
- License Must Not Restrict Other Software
- License Must Be Technology-Neutral

…but to each their own (definition)

https://opensource.org/docs/osd

Open is not free “as in beer” – sometimes it’s less

- “In practice, open source stands for criteria a little looser than those of free software.”
  – Richard Stallman

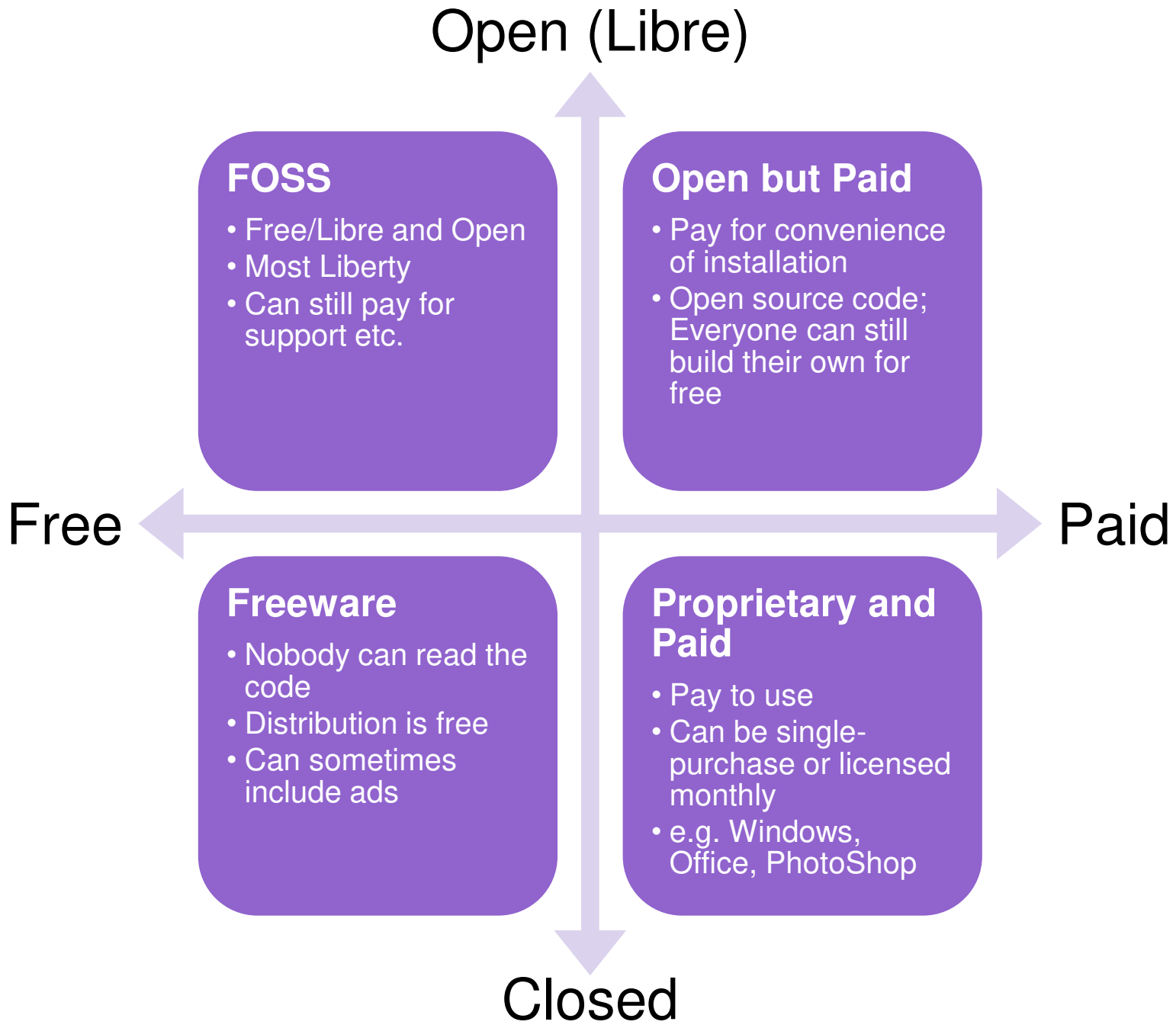
- Free: **No Cost** vs **Liberty**
  - Sometimes emphasized with L: FOSS → FLOSS (Free/Libre/Open Source Software)

- Open sourced things can still be distributed for profit (licenses usually only protect code use), or be otherwise restricted, unless specifically forbidden

- Open source software can (and some have) limited use of their programs through domain blocking, censorship and DRM.

Open Source ≠ Unlimited Liberty

Open vs **Free** in **source** and **distribution**



Licensing

What is it and what different open source licensing options are there?

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What is licensing?

- Licensing is not giving away all your copyright
  (can’t be done; moral copyright always stays)
- Licensing is a way to agree on **rules for others to use your work** without seeking individual permission or contracts
  - Granting rights to the end-user (“away” from the creator)
  - Can also compel the end user to some duties

Different types of open source licenses

- There hundreds of open source licenses
  - About a hundred most common ones here: https://opensource.org/licenses/category
- Licenses available for
  - Software code
  - Hardware
  - Art
  - Educational material
  - Communication protocols
  - Specific software
  - Etc.

Open source licenses can be categorized by restrictions on…

- License reciprocity
  - Copyleft or share alike licenses (e.g. GPL) are viral/infectious with a reciprocity requirement, protecting freedom for all users
  - Permissive licenses allow use of other licenses (e.g. MIT, BSD)
- Patent use
  - Usage rights to patents of contributors (e.g. Apache, GPLv3)
- Attribution
  - Requirement for crediting original author (e.g. CC-BY)
  - No need to name names (e.g. CC0)
- Commercial applications
- Modifications

Some examples

GNU GPL, Apache, MIT, Creative Commons

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GNU GPLv3

- Very broad freedoms, secured liberty of shared material for all
- Allowed…
  - Openly distribute and modify
  - Even commercially
  - Grants rights to all necessary patents
- Must…
  - Include original information, original license and original copyright (copyleft)
  - Not withhold installation and usage instructions (Freedom 0)
  - Not sublicense
  - Not hold liable

http://gnugpl.org/

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Version 3, 29 June 2007

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Apache v2.0

Growing fast in adoption. Similar to GPL, but more permissive:

- Not necessary to release modified versions of code
  - Makes it more appealing to Corporations
- Not necessary to make changes available to upstream
  - Likewise appealing to for-profit endeavors
- Permissive about licensing (non-viral)
- Also grants patent rights, like GPLv3

https://apache.org/licenses/LICENSE-2.0

Apache License

Version 2.0, January 2004

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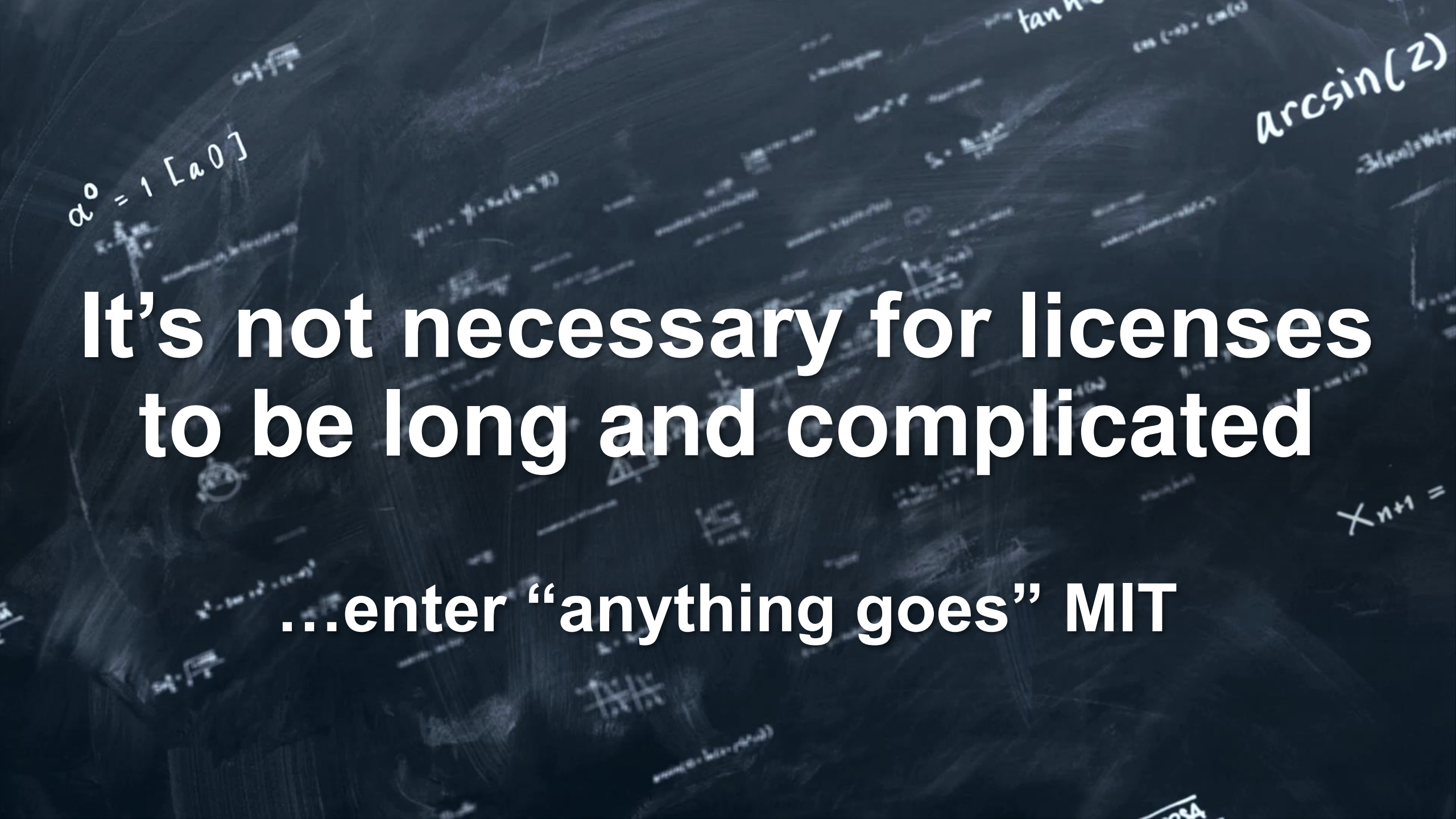
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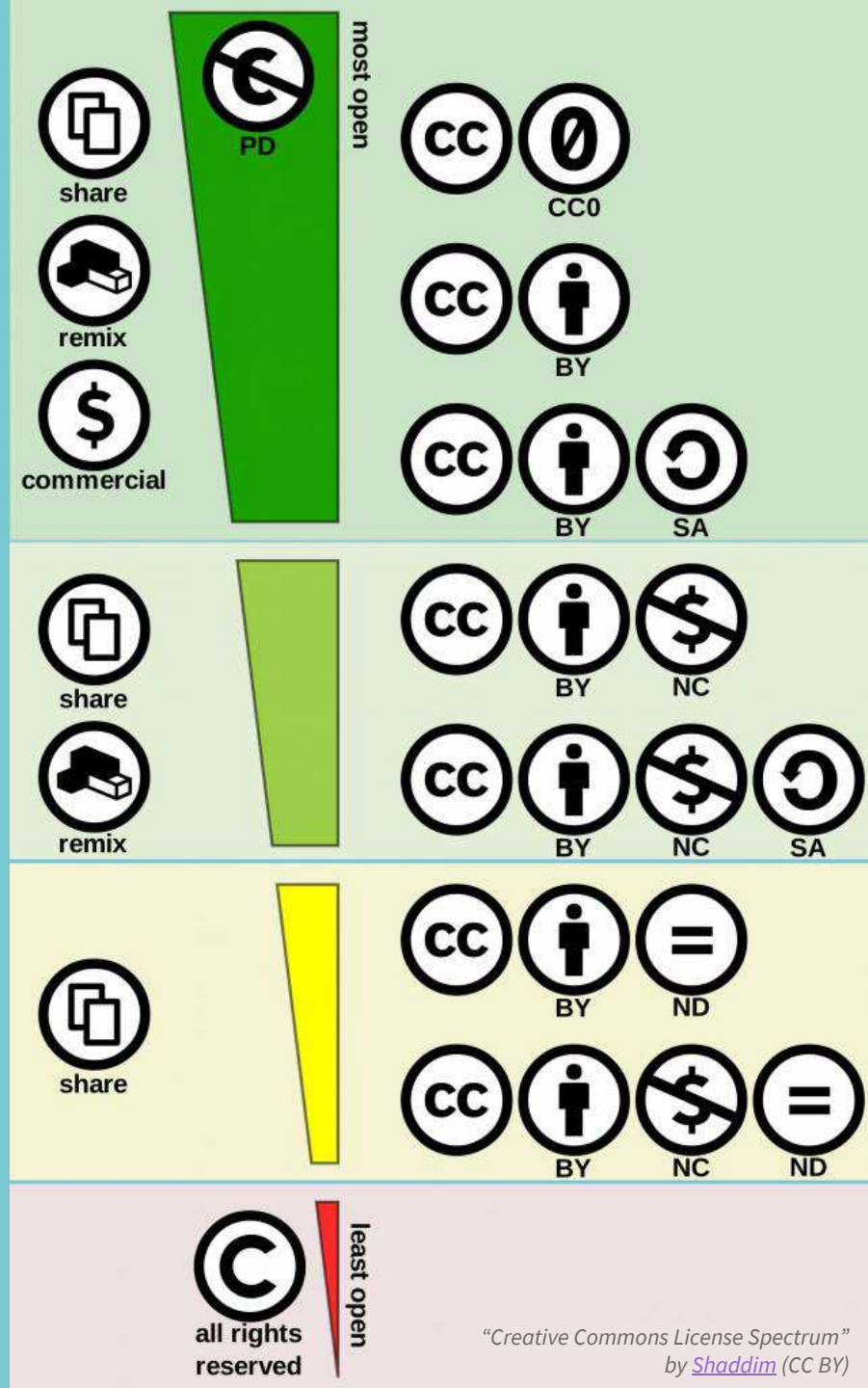
Degrees of openness (by example: CC)

- You can grant more or less licensing rights
- You can also require more or less licensing duties
- License is a contract, there are endless possibilities
- …but using a well-known license helps adoption

https://creativecommons.org/share-your-work/



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It is even possible to openly distribute scientific data and withhold usage rights through licensing

Not saying it would be best for science or necessarily the right thing to do, but it is possible.

Benefits of open source

- For licensers (authors)
  - More helping eyes and hands
    - This can help quality (code security, reliability)
    - This can lead to improvements (fixes by others)
    - Increases speed (more work gets done)
  - Drives adoption
- For licensees (end-users)
  - Power of crowd (as above)
  - Transparency; know what you get
  - Low Cost (probably still needs work)
  - Ability to work on, modify and customize
  - No lock-in, doesn’t disappear (though can stop updating)

Risks of open source

- For licensers (authors)
  - No (or less) money
  - You can sign away rights you're not aware of, if not careful
    (e.g. GPL patents, but patent income loss is usually not a big risk)
  - Loss of control
    - Someone can take your material and use it in a way you did not intend and possibly dislike
    - People see your mistakes (though usually in a helpful way)
    - You don't always know when and where it is used
- For licensees (end-users)
  - Doesn't come with support (can be offset by a community or commercial actors)

How to choose an open source license?

- Want it open, easy and don’t care about much else?
  - **Probably MIT**
- Want it open, but forbid adaptations or commercial use?
  - **Probably one of the Creative Commons licenses**
- Want it open, and want to keep derivates open and free, securing Freedom 0 for users in the future (and hold less rights for yourself, e.g. patents)?
  - **Probably GNU GPLv3**

More options categorized on Github’s https://choosealicense.com/

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Current developments in OS licensing

- Adoption of open source in software development continues to grow
- Customers are also more aware of vendor-lock and benefits of open source
- Apache (28%), MIT (26%) and GPL (25%) dominate other licenses in software projects
- Permissive licenses growth from 41% in 2012 to **76% in 2020**
  - Apache 2.0 has taken over GPL in popularity
  - This is due to mixing of corporate interests and open source development

Numbers from https://www.whitesourcesoftware.com/resources/blog/open-source-licenses-trends-and-predictions

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