

Asterix & Obelix for Freedom of Knowledge

Raphael Zumbrunn The year is 2025 A.D. The internet is entirely filled with paywalls and ads. Well, not entirely... One small group of indomitable nerds still holds out against the invaders.



Figure 5.1: Asterix & Obelix in Digitalia

The group I'm talking about is the FOSS community (Free and Open-Source Software), who realized that the only thing that can motivate a nerd more than cash is the admiration of other nerds.

The FOSS community provides a surprising number of invaluable services, some of which you probably indirectly use on a daily basis. To name just one example: FFMPEG, a video encoding and decoding library, is managed by the FOSS community and is the backbone to YouTube, VLC media player, the Chrome video player and was even used in the Perseverance Mars rover.^[1] There is an abundance of other

FOSS projects that build the foundation of modern technology, but to name them all would probably blow the Exsi budget for the next few decades.

So what?

So you may wonder why I am telling you about some random open-source projects that are used as the backbone of some random software. You, dear reader, are not interacting with the backbone; you are interacting with the fancy front-end. "Why should I care about FOSS?" you might rightly ask. Well, FOSS is not only important in the underground, and FOSS is not only about free stuff. [FOSS is a mentality](#) that I ask you to consider adopting, especially as a future scientist or engineer.

While FOSS is nominally about free and open-source *software*, the idea can and should be expanded. Consider, for example, the PDB (Protein Data Bank), which contains almost a quarter of a million protein structures.^[2] This data didn't end up there by itself, but rather through the hard work and generous contributions of thousands of scientists.

Both scientists and programmers are fundamentally knowledge workers. Software, inventions, discoveries, and ideas are made of the same stuff. [They are infinitely replicable, arbitrarily distributable](#). They can and should be shared, especially because there

is next to no cost to you.

Let's not reinvent the wheel

There are many philosophical arguments to be made about why open-sourcing your work is a net good for society, but there is also a purely pragmatic point to be considered, as you, as a user of FOSS, obviously profit from something someone else has already built. But how do you profit as the first person to build that something?

The reasoning is quite simple. By open-sourcing your work, you can [direct the power](#) of a large number of people, and shape it towards your goals.

Consider open-sourcing your code or your research data as allowing people to use your self-made path through thick snow. Through the sheer fact that more people use your path, the path is improved. Additionally, damages to the path are found earlier and much quicker, which allows the community to fix them before they become an issue. By allowing people to use your infrastructure, you are not only benefiting society, you are also following your own self-interest.

Cynics will now claim that the point is not that there is no loss to yourself, but rather that the gain for the competition¹ is larger than your own gain. This could lead to the competition crowding you out of your research, market, etc. While I personally find this point unconvincing, I understand that

some people might believe otherwise. If that is the case I can offer you a compromise...

Licensing

Scared someone is gonna steal your idea and make tons of money with it? Well be scared no longer, with the all-new *software license*!² By choosing an appropriate license when publishing your code, you can restrict or fully bar certain usages of your intellectual property. One such license is the AGPL license,^[3] which allows for-profit operation, but only as long as they also open source their code. There are of course, many other licenses to choose from that I cannot all describe here, but this is my favorite one.

Concrete steps

So what can I, as a scientist, actually do to help out the FOSS community?

There are some actions you can take now and in your research career that I believe to be highly beneficial:

- Use FOSS tools to build credibility for the community.
- Use version control and open source your code.
- Standardize and share your research data.³
- [Share your knowledge](#) (especially of things that do not work)!

I believe that if the scientific community wholeheartedly embraces these guidelines,

¹That might be someone trying to build a for-profit company, or a researcher looking to publish their work before yours

²Only as long as supplies last

³That means not only hiding your data in the SI, but also proactively contributing it to databases

we can not only make science easier and more productive, but also make it more accessible to the rest of society. And if this is not the definition of freedom, I don't know what is.

Bibliography

- [1] "FFMPEG", *Wikimedia Foundation*, can be found under <https://en.wikipedia.org/w/index.php?title=FFmpeg&oldid=1335892729> (accessed Nov. 25, 2025).

- [2] H. M. Berman, J. Westbrook, Z. Feng, G. Gilliland, T. N. Bhat, H. Weissig, I. N. Shindyalov, P. E. Bourne, *Nucleic Acids Research* **2000**, 28, <http://www.rcsb.org/>, 235–242.
- [3] GNU Operating System, "GNU Affero General Public License", can be found under <https://www.gnu.org/licenses/agpl-3.0.en.html> (accessed Nov. 25, 2025).



Further reading

If you need help getting started with the above suggestions you can check out the following technologies/concepts.

- Git: Fed up with having fifty files all named *file_final_v3_submission_v5.py* and also interested in sharing code and working with your peers? Git is the solution!⁴
- Science libraries for Python: Don't use MatLab, please! Use numpy, scipy, sympy, matplotlib, pandas, etc.
- Checkout the webpage of the Infozentrum! Not all tools and databases are open source, but some are!

⁴Future article from my side incoming...