How Can Open Source Program Offices (OSPOs) Support Research Software?

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Did you know that an organisational Open Source Program Office (OSPO) has the potential to improve sustainability of research software in universities, governments, and civic institutions? OSPOs can help facilitate the adoption of and contribution to open source software (OSS) both within and across organisations, thereby cultivating an institutional culture that values open source (and leverages its benefits) and supporting the broader research software community. Considering that scientific research increasingly relies on OSS (Strasser et al., 2022) and research software is often open source, institutional support for OSS can be a vital building block. In addition to improving sustainability, OSPOs can support the management of research software by promoting collaboration, driving innovation, and finding solutions to common challenges. Below, we explore these themes.

To provide some context, an OSPO is a formal construct in an organisation that has been mandated to deal with the challenges (e.g., licensing, compliance, security) and take advantage of the opportunities (e.g., non-traditional business development, other approaches to intellectual property) of working with OSS. An OSPO develops an institutional strategy surrounding open source implementation and aligns open source tools and techniques with the needs of its organisation (Proffitt, 2019). Within a university, for example, an OSPO functions as an organisational convener with dedicated staff who coordinate and support open source activity. The OSPO construct used widely within technology companies offers a model that institutions in the public sector can adapt to reflect their unique needs. Since open source tools are commonly used in scientific research and open source offers many advantages for researchers, it would be prudent for universities, governments, and civic institutions to consider establishing OSPOs for managing their open source research software.

Sustainability

Several American universities are exploring OSPOs, with institutions in other countries likely to follow suit. The Digital Research Alliance of Canada (the Alliance) – a nonprofit organisation funded by the Government of Canada, and one of ReSA's founding members – is interested in how OSPOs can address a key challenge for grant-funded research software platforms (RSPs): sustainability. As previously funded RSPs may become core infrastructure in the national or global research community, their sustainability can be precarious because, as existing infrastructure, they may no longer clearly fit the traditional innovation mandates held by funders. An OSPO, therefore, offers a valuable approach to extending the use and application of research software.

The Alfred P. Sloan Foundation has played a fundamental role in helping universities establish OSPOs. Since 2020, the Sloan Foundation has approved grants to support six university OSPOs. The Sloan Technology Program identified several key benefits associated with OSPOs and better institutional support for open source practices as part of its recent call. For advancement and sustainability of software and other research outputs within universities, implementing strong project oversight—clearly defined activities, procedures, and policies—supported by strong documentation practices can help ensure the continuity of

individual projects. Stakeholders can thus continue engaging with projects beyond their tenure at a particular institution. By leveraging the collaborative nature of open source, outputs generated within an institution can be utilised by other stakeholders and can encourage further innovation across the broader community.

The [Australian Research Data Commons](#) (ARDC) is currently [seeking expressions of interest](#) in co-investment to establish a national network of OSPOs within the research sector in Australia. For the ARDC, OSPOs offer a systematic approach to address three key challenges related to increasing the recognition of research software as a first-class output of research: seeing research software by making it more visible; shaping new software for the broadest applicable audiences; and sustaining existing research software that is valued and valuable.

Collaboration

The purpose of an OSPO is twofold: to provide internal value for the organisation through compliance, security, and governance of OSS and to contribute to the external community through collaboration, networking, and procurement. In [The OSPO: A New Tool for Digital Government](#), the authors recommend the following:

> The OSPO needs to provide direct value for the organisation that it serves through its internal mandate. Due to the nature of Open Source, however, OSPO-enabled organisations are meant to be part of communities that co-create value. Thus, the modern OSPO has a significant external mandate to be able to identify new projects, tools, actors and practices that can improve the organisation's work, effectiveness and future strategies of the OSPO and of the organisation as a whole. (OpenForum Europe & the OSPO Alliance, 2022, p. 10)

In addition to supporting OSS within institutions, OSPOs embrace an external component of networking with the broader OSS community, including other OSPOs. Moreover, OSPOs encourage collaboration and offer a mechanism for institutions to work together in novel ways. Whereas universities have typically engaged through competitive research grants, open source activities present additional opportunities to collaborate (Stalfort, 2020; Littauer, 2020). Through OSPOs, institutions may have increased opportunities to broaden their engagement with the external community – for example, by networking and collaborating with stakeholders from other sectors.

Innovation

As open source is critical to scientific research and discovery, institutional support for OSS can help attract external research funding. OSPOs often offer an additional and complementary pathway to formal mechanisms already in place within organisations (e.g., commercialisation offices in academia) and help institutions leverage the robust benefits associated with OSS. They can accelerate research efforts and strengthen the impact of scientific research.

At universities, researchers work with technology transfer offices (TTOs) to commercialise and grow impact; however, OSPOs can play a significant role too (Higher Education

Leadership Initiative for Open Scholarship [HELIOS], 2021). OSPOs represent a powerful tool in enabling reproducibility through the sharing of software, for example. A key difference is an OSPO's focus on leveraging the open and collaborative approach of the open source community/philosophy for research and economic development, while TTOs depend on a closed business approach and more traditional processes and IP approaches (patents, copyright, etc.). In an [OSPO++ case study on University Open Source Program Offices](), Sayeed Choudhury, Director of the OSPO at Carnegie Mellon University, notes, "The OSPO embraces the opportunity for open source software as an additional pathway for translation and impact". While translation is typically related to technology transfer or commercialisation within academia, it is not the only pathway – open source software is an important consideration and OSPOs represent a way in which to facilitate this work.

Finding solutions to common challenges

OSPOS can play an important role in supporting open source activity within the public sector: they offer institutions a more transparent and innovative approach to managing research software. OSPOs can provide stakeholders with more pragmatic options (in terms of cost, flexibility, and control) than proprietary solutions, in order to meet diverse and complex demands encountered within and by their organisations. For example, OSPOs can strategically help public sector organisations through digital sovereignty, economic growth, service interoperability, career development, and accountability (OpenForum Europe and The OSPO Alliance, 2022). And considering that many organisations are developing strategies and policies related to open source practices, OSPOs can help implement and maintain them.

While governments across the globe have introduced national policies on open science, to support OSS effectively, institutions need a formal mechanism to implement these policies. As Grzegorzewska (2021) notes,

> The level of prescriptiveness or the exact legal instrument of an Open Source policy seem to be less crucial for reaping benefits of Open Source than their enforcement and maintenance in a more horizontal, strategic manner coupled with ensuring its implementation in a daily practice of public sector institutions.

OSPOs can function as a tool for the public sector to manage research software practices and processes and draw on the benefits of open source.

Working with OSS can present challenges related to licensing requirements and compliance. The difference between managing the use of open source software and software from a proprietary source is the lack of visibility and control over the development of a given library (FOSSA, 2021). An OSPO, therefore, could be responsible for developing robust documentation and project governance to enhance awareness of how stakeholders can contribute effectively to existing projects. OSPOs are often responsible for developing and implementing processes to ensure compliance and contributions to OSS projects by organisational members, thus supporting the collaborative nature of the open source community and encouraging an organisational culture that reinforces the principles and best practices of the open source ecosystem.

OSPOs can offer a variety of services that support members of an organisation and the research software ecosystem. An OSPO might support the people who build and maintain research software by facilitating training and mentoring opportunities and helping stakeholders evolve their work into community-driven projects. By engaging with organisational members and facilitating relationships within and beyond the organisation, OSPOs help to establish the value of working with OSS.

Examples of OSPOs Beyond Industry

Examples of OSPOs within academic institutions include [Johns Hopkins University](#), [Rochester Institute of Technology](#), [University of Vermont](#), [UC Santa Cruz](#), [St. Louis University](#), and [Carnegie Mellon University](#) in the US; and [Trinity College Dublin](#) in Ireland.

Among governments/public funders, the [European Commission Open Source Program Office](#) (EC OSPO) was established in 2020 in response to the EC's [Open Source Software Strategy for 2020-2023](#). The EC OSPO facilitates activities outlined in the strategy. The Government of France has established an OSPO ([Pôle d'expertise logiciels libres](#)) – the first of its kind for a national government. France's *[Free Software and digital commons action plan](#)* informs the OSPO's mandate. The [Brno Open Source Declaration](#) aims to initiate the process of creating the Czech National Open Source Programme Office (Czech OSPO) for the public and academic sectors in Brno, Czech Republic.

Since 2002, the City of Paris has been implementing a Free and Open Source Software (FOSS) policy, and more recently, has created an [OSPO](#). [Lutece](#), an open source platform developed by the City of Paris, enables municipalities to share, reuse, and adapt digital services created by other cities. The City's OSPO aims to increase its digital sovereignty, economic gain, and transparency.

And in March 2022, the World Health Organization [announced](#) it would be launching an OSPO – the first in the greater United Nations (UN) system.

Conclusion

The increasing number of OSPOs beyond the private technology industry suggests that other sectors have discerned the value that these entities offer for supporting OSS. OSPOs provide not only valuable internal support for organisations by coordinating and supporting open source activity, but also contribute to the broader community by sharing best practices and creating partnerships within and outside organisations.

While the work of OSPOs is embedded in the standards and practices of open source software, OSPOs can also support other forms of work based on open practices and philosophies, such as physical infrastructure, hardware, and data. The advantages described above are not exhaustive and the needs of each organisation vary; however, the momentum towards open source and the development of OSPOs beyond the technology sector is precedented.

Is your organisation interested in forming an OSPO? Below are some OSPO-related resources to help you get started:

- The TODO group's
  - OSPO mindmap
  - OSPO 101 Course
  - OSPO guides
- OSPO++ is a global network and a community of collaborative OSPOs in universities, governments, and civic institutions.
  - OSPO++ Guide to Set Up a University Open Source Program Office
- Linux Foundation guide to creating an OSPO
- OSPO Alliance

References

Alfred P. Sloan Foundation. (2023). *Call for letters of inquiry: Institutional support for open source software in research.* https://sloan.org/programs/digital-technology/ospo-loi

Choudhury, S. University Open Source Program Offices. Case Study: Johns Hopkins Sheridan Libraries. *OSPO++.* https://ospoplusplus.org/resource/university-open-source-program-office/

FOSSA Editorial Team. (2021, March 8). Building an Open Source Program Office (OSPO). *FOSSA Blog.* https://fossa.com/blog/building-open-source-program-office-ospo/

Grzegorzewska, P. (2021, February). *What can governmental OSPOs learn from the private sector ones?* https://openforumeurope.org/what-can-governmental-ospos-learn-from-the-private-sector-ones/

Higher Education Leadership Initiative (HELIOS). (2021, November). Spotlight Series recap: Open Source Tech Transfer & Commercialization*. HELIOS News.* https://www.heliosopen.org/news/spotlight-series-recap-open-source-tech-transfer-amp-commercialization

Littauer, R. (Host). (2020, November 14). Sayeed Choudhury on using Open Source at Johns Hopkins University to map COVID-19 (No. 2) [Audio podcast episode]. In *Impactful Open Source*. Fireside.FM. https://impactfulopensource.fireside.fm/2

OpenForum Europe and the OSPO Alliance. (2022, June). *The OSPO: A new tool for digital Government*. https://openforumeurope.org/wp-content/uploads/2022/06/The-OSPO-A-New-Tool-for-Digital-Government-2.pdf

Proffitt, B. (2019, December 12). What does an open source program office do? *Red Hat Blog*. https://www.redhat.com/en/blog/what-does-open-source-program-office-do

Stalfort, H. (2020, December 4). Hopkins OSPO featured on 'Impactful Open Source' Podcast. *The Sheridan Libraries & University Museums Blog.*

https://blogs.library.jhu.edu/2020/12/hopkins-ospo-featured-on-impactful-open-source-podcast/

Strasser, C., Hertweck, K., Greenberg, J., Taraborelli, D., and Vu, E. (2022). Ten simple rules for funding scientific open source software. *PLoS Comput Biol 18*(11): e1010627. https://doi.org/10.1371/journal.pcbi.1010627