Higher Education: Facing the 'New Normal'

Open Source and the Value of the Apereo Foundation

An Apereo White Paper
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This is the second, illustrated version of this white paper. It was first published in October 2020.

Introduction: About Apereo

The Apereo Foundation is a vibrant and value-driven membership organization, committed to open software and open innovation in the service of higher education. Apereo member institutions and commercial partners serve higher education on five continents. The Apereo community are realists: we expect higher education to continue to make use of a "mixed economy" of open and proprietary software, infrastructure and services for the foreseeable future, but the default should always be to *consider open first*.

'Facing the 'New Normal' provides a comprehensive summary of the value of open source software for higher education, and the case for an independent entity to steward such software. The document is a substantive update of 'The Value of a Common Foundation' published prior to the formation of Apereo in 2012 and updated in 2014.

'Facing the 'New Normal' is designed to be read as a whole but is structured in such a way that its component parts can be used together or separately. It is above all a practical document which is intended to be used in advocacy for open source in education. Please treat it as a living document. If you have suggestions, contributions, or your own open source success stories to add, please mail them to ed@apereo.org, or use the Apereo "open" discussion list. You can find details of how to join the list at http://bit.ly/apereolists

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1. Challenges: Framing the Issues

The COVID-19 Pandemic has sharply challenged traditional higher education institutions to move their offerings wholly, or very significantly, online. In what is widely perceived as an existential crisis for higher education as a whole, uncertainty has become the new normal. For higher education information technology, that general uncertainty is compounded by widely-used commercial-proprietary software. Will the "sweetheart licensing deals" offered by proprietary vendors early in the pandemic be maintained? How long for? How will this impact cost and the capability to innovate to meet new challenges? With technology now central to the existence of higher education institutions, can we accept a future where innovation is constrained to proprietary software that is effectively invisible to us, and subject to vendor-provided modification only? Responses to the COVID-19 Pandemic remain, naturally, the most visible and almost all-consuming focus of attention in higher education. That does not mean other challenges have disappeared or been reduced. Indeed, early signs indicate that the pandemic is acting to compound them. Open source software can help institutions meet those challenges.

Licensing Costs

Commercial-proprietary software licensing costs include significant spend on overhead (1) Higher education might consider reprioritizing this investment to reduce costs or spend the same amount to retain, rather than reduce, capacity and the ability to innovate. In other words, invest in open source. Ben Werdmüller summarized this succinctly: "In education, government, and anywhere primarily supported by public funding, it makes sense to use software that doesn't lock you in or quietly convert public funds into private equity (2)."

Student Debt

Global student debt is unevenly distributed, but in the US and the UK it is reaching massive proportions (3). Commercial-proprietary software licensing fees make a minor, but not insignificant, contribution to higher education costs (4). Against the backdrop of spiralling student debt any potential cost saving should be examined critically.

The Cloud

For three or four decades, institutional IT strategies have changed, swinging from locally hosted to centrally hosted, and on to the prevailing fashion (at least in the US and UK) for remote hosting in the "cloud". The dangers associated with commercial-proprietary software "lock-in" are exaggerated by the emergence of what has amounted to a "cloud-only" strategy by significant segments of higher education. A particular means of service provision has

effectively become an unchallenged default. The approach has acted to remove technical capacity from institutions, and with it reduced the ability to innovate to meet changing circumstances. As institutions in the Northern Hemisphere returned in September 2020, there are already strong signs that the "reliability" of cloud offerings is not as great as was supposed.

Privacy

The "cloud-only" approach has seen higher education pass student data to remote hosting providers, occasionally without adequate safeguards. This has generated a mounting level of concern within the sector. As education cloud providers eye - or use - activity and other student data generated by their platforms as the basis for a monetization strategy apparently modelled on major platforms and search providers, higher education is right to be concerned. It is time to make a strategic adjustment and evaluate alternatives to prevailing wisdom and groupthink. Solutions based around open, auditable, software should be considered as part of any strategic review.
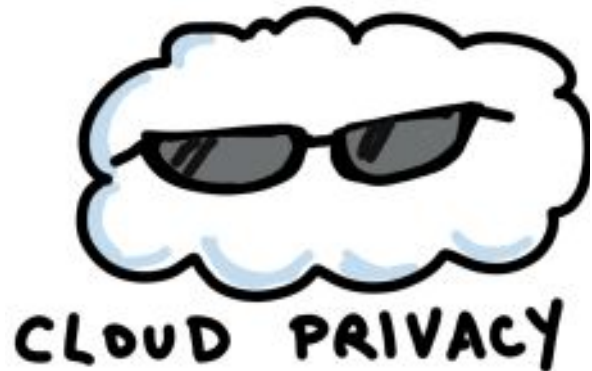
Cooperative Provision

Recent initiatives within higher education seek to combine the benefits of above-campus service provision with the ability to innovate. Cooperative and collegiate governance of services is viewed as an essential safeguard. This is reflected in the approaches of two close partners of the Apereo Foundation: the North American LAMP Consortium and ESUP-Portail Consortium in France. LAMP schools negotiate collectively with commercial service providers who provide offerings based around open source software. In France, ESUP-Portail has begun to build out collaboratively and cooperatively provided national services which are by higher education, for higher education (5).

The Post-Pandemic Landscape

As higher education emerges from the long shadow of the pandemic, resilience and sustainability are becoming watchwords. The role of diversity in generating innovation is beginning to be better understood. Dialogue around higher education as a public good, rather than simply a private commodity, is widespread. We should be very clear: there is no technological solution to the problems facing higher education, neither will open source software answer every question. Our vision of open source software will, however, make a powerful contribution to innovation and sustainable development by offering flexibility and control. Join Apereo help to realize that vision.

Apereo Foundation Board of Directors - October 2020

(1) This is thrown into sharp relief when a commercial-proprietary vendor undertakes an initial public offering. One such IPO in the mid teens of the 21st century was highly illustrative: 52% of revenue spent on sales and marketing, 25% on administration and only 24% on research and development.

(2) https://werd.io/view/5ca3c283d3c9b259255f0bd2

(3) In the first quarter of 2020 US student debt was $1,683 billion, or 7.8% of GDP (https://en.wikipedia.org/wiki/Student_debt). In England it reached £121 billion, with a UK Government forecast of £450 billion of student debt by the middle of the 21st century (https://commonslibrary.parliament.uk/research-briefings/sn01079/).

(4) Total IT spend in US institutions, for example, averaged 3 to 5% in 2014

(5) The ESUP-Portail approach has parallels with that of platform co-operativism. https://en.wikipedia.org/wiki/Platform_cooperative

2. The Value of Open Source Software

The last twenty-five years have seen open source software move from the periphery to the mainstream of the global information technology landscape. Thousands of open source projects exist. Some serve relatively small groups of individuals. Others support the activities of organizations operating at significant scale, or underpin web-delivered services for millions of users. Governments increasingly advocate or mandate the consideration or use of open source software in a variety of contexts within the public sector. The Fee Software Foundation Europe 'Public Money: Public Code campaign (1) has made striking progress at a municipal level in Europe. In higher education itself, many funders mandate open licenses. In the private sector, open source software has grown to underpin the activity of thousands of businesses around the world, including those as diverse as the London Stock Exchange and Netflix.

A "Free Lunch"?

The key driver for this growth might at first appear obvious: who could turn down an apparent "free lunch"? The cost of licensing is, however, only one factor driving the increased adoption and use of open source software. The examples of Linux and Apache speak not only to the cost of software consumption, but also to the success of extended and highly distributed development communities collaborating to realize software innovation at scale. This is one reason why major corporations, such as IBM, make such significant investments in open source software.

Choice and Innovation

Open source software offers several distinct advantages beyond freedom from licensing costs. These advantages are intimately connected with both choice and innovation.

Organizations adopting open source software can choose to support it with internal resources, with external contractors, with the support of open source software communities, or with a combination of the three. In these scenarios, then, software licensing can often be decoupled more readily from software support services. The forced march of upgrades or migrations to maintain "officially supported versions" of software can be avoided, or at least the risks associated with them more readily mitigated or controlled.

Quality

Software licensing – whether open source or proprietary – is, of course, a guarantee neither of quality nor sustainability. It is manifestly the case, however, that a significant number of open source licensed projects now produce software that is equal to, or better than, their commercial-proprietary counterparts in terms of quality and performance. Such software often has a considerable lineage. Sustainability is a journey, rather than a destination, but a range of open source software has now proved itself at least as sustainable as its commercial counterparts.

Openwashing...

Open source has been so successful in some market segments that "open" and "open source" have been widely applied to software which is far from open. The education blogger Audrey Waters has described openwashing as "having an appearance of open-source and open-licensing for marketing purposes, while continuing proprietary practices". Openwashing.org has this suggested advice: "When you see an individual, organization, or company claim that their software is "open," check to see if their software is licensed under an OSI approved license. If it is not, they are openwashing".

Community

Those who adopt open source software are free to choose to contribute their own improvements and innovations back into a common community pool and take advantage of the innovative contributions of others. A strong collaborative community returns many times the value of the individual contributions of individual participants. Indeed, there is a strong economic imperative to collaborate: past a certain point, a local adaptation of open source software becomes in effect, a "fork". The cost of maintaining such a fork is no longer shared by those maintaining the pool but becomes a matter of in-house support. Community participation and shared alignment makes profound business sense.

(1) https://publiccode.eu/

3. The Value of Open Source Software in Education

Higher education faces an increased and increasing series of financial, policy and structural challenges. These of course operate against the backdrop of the COVID-19 Pandemic and global threats to the environment. All the signs are that the sector is becoming more reliant on software to deliver its mission. Standard, closed and proprietary software is often a poor fit for the academic enterprise. It frequently does not serve often unique processes supporting institutions. Critically, it may act to stifle innovation at precisely the economic and educational inflexion points where innovation is most required.

"The Cloud"

Cloud solutions, while apparently offering immediate economies, raise a series of concerns about data ownership, protection, and capacity to innovate. Differences in national or supra-national legal frameworks - particularly around privacy - make a complex set of issues more complex still, with insufficient experience or case law to provide rounded and mature perspectives. Above all, if cloud offerings are not to become another means of proprietary lock-in, and act to retard innovation, stable, open interfaces are essential. At a time when higher education is seeking to innovate to respond to crisis, and operates in an increasingly global context, the lack of resolution of legal issues surrounding cloud offerings remains a ticking time-bomb.

Costs, Resources and Mission

Urgency surrounding resource constraint and cost certainly are appropriate reasons to consider open source software more thoroughly, but such exploration should be much more comprehensive. It is becoming increasingly obvious to many that, in higher education, the cost of information and communication technologies supporting administrative purposes is disproportionate, when set against the costs of technologies deployed to support the core mission areas of learning, teaching and research. This is why Apereo has a specific focus on software to support the academic mission.

Licensing costs, however, are not the only factors. We should remind ourselves that supporting the academic mission with digital technology is a new phenomena. Certain areas are better understood than others, but higher education is at the start of a transformative journey in this respect. Collaboration and cooperation within education to produce software and services can help realize and integrate innovation far more rapidly than by commercial-proprietary routes. Disintermediation of innovation, closing the loop between the practitioner capable of identifying needs, and developer capable of creating software to realize solutions to meet them, is arguably the central problem space of educational

software development. Methods associated with open source software do not necessarily close this loop automatically - but they do make the loop far easier to close by making its elements more visible and transparent. This is why Apereo stewards software that is "by education, for education".

Open Source Program Offices

Open source software has made a variety of connections with higher education practice. Open Source Program Offices have been created in many businesses to act as a single interface between internal developments and external open source communities. During late 2019 and early 2020 an initiative was formed, led by Johns Hopkins University, to create lighthouse OSPOs in twenty higher education institutions. The initiative has a specific emphasis on the potential for developing sustainability for software outputs of the research process. The JHU internal OSPO has strong support from senior management within the institution. Apereo supports moves to establish OSPOs in higher education.

Commercial Affiliates

Open source software is sometimes portrayed as being "anti-commercial". The opposite is true. Licensed appropriately, open source software creates conditions for commercial opportunity, and such commercial opportunity is an essential component of the development of a healthy software ecosystem serving innovation in education, rather than acting to restrain it. Apereo's Commercial Affiliates Program engages with a variety of commercial partners, and is a vital part of ensuring choice and flexibility for educational institutions. We remain committed to developing commercial engagement in our support ecosystem. Strong and inclusive communities, with strong organizations to serve them, are the best guarantee both against monopolization and for innovation.

Discover more stories of open source success in education here - https://www.apereo.org/content/apereo-foundations-higher-education-open-source-success-stories

4. The Value of Apereo

The Apereo Foundation provides a framework for the development of open source software 'by education for education'. Apereo provides a shared space for higher education institutions to identify objectives, connect with other institutions and work to secure the resources required for the realization of common solutions. A key aspect of this aggregation of effort is the reduction of friction associated with collaboration.

Common Licensing

Apereo reduces friction by providing a range of common licensing, community and technical services, together with a range of opportunities to collaborate and construct partnerships around common goals. Agreement around this flexible service and shared intellectual property framework reduces the necessity of negotiating point-to-point agreements between multiple institutions.

Services

The services Apereo offers are provided collectively because they would be less efficiently provided on an institution-by-institution basis. Apereo is at core an organization rooted in the principle of subsidiarity (1), performing only those tasks that cannot be more effectively provided at a more local level. This reduces overhead and encourages direct participation and contribution. Apereo...

- Manages inbound and outbound licensing, providing a neutral point from which to share contributed intellectual property. A shared licensing and intellectual property regime greatly facilitates the development and maintenance of trusted partnerships to undertake shared work.
- Provides community and technical infrastructure in the form of mailing lists, wikis, web sites, issue tracking systems, conferencing facilities etc. where appropriate.
- Maintains a series of metrics demonstrating the health of Apereo Software Communities.
- Provides financial management, including financial management for projects, software communities and communities of interest where required.
- Promotes projects, software communities and communities of interest through outreach activities.
- Hosts and manages an incubation process, where new projects can gain and share experience of sustainable software development and community building.
- Provides a series of physical and virtual spaces and events where higher education institutions and others can share experience, access the experience of others, and broker new initiatives.

The Foundation is a legal non-profit entity registered in the state of New Jersey. It is deliberately lightly staffed to provide key services in a cost-effective manner. The Foundation hires a small number of staff who work with individual and institutionally committed volunteers to work towards common goals identified by foundation and project governance bodies. These include a foundation-level Board of Directors, and bodies governing individual projects, software communities and communities of interest.

5. Apereo Software Communities

Apereo provides an enabling framework for open source software communities, rather than seeking to direct and micro-manage them. Projects are encouraged to learn from the experience of others and consider the potential for developing paths to sustainability that do not rely solely on a single organizational or resourcing model (such as cash or other direct resource contribution) throughout their lifecycle.
Apereo Software Communities

Apereo OAE: The Open Academic Environment is a powerful new way for researchers, students and faculty to create knowledge, share, collaborate and connect with the world. It is a multi-tenant and highly scalable platform that is able to support multiple institutions. https://oaeproject.org/

Bedework: Bedework is an open-source enterprise calendar system that supports public, personal, and group calendaring. https://www.apereo.org/projects/bedework

CAS: CAS is an enterprise single sign-on solution. While the project is rooted in higher education, it has grown to an international audience spanning Fortune 500 companies and small special-purpose installations. https://www.apereo.org/projects/cas

ELMS Learning Network (ELMS:LN) is an open source educational technology platform for building and sustaining innovation in course technologies. It is a Next Generation Digital Learning Environment (NGDLE) that utilizes a Suite of Tools approach to system design and deployment. https://www.apereo.org/projects/elms-learning-network

Karuta: Karuta is a flexible tool for the incremental prototyping and the diffusion on the web of digital portfolios or eportfolios for various purposes; showcase portfolio, learning portfolio, assessment portfolio. http://karutaproject.org/ https://karuta-france-portfolio.fr/

OnTask: OnTask aims to improve the academic experience of students through the delivery of timely, personalised and actionable student feedback throughout their participation in a course. https://www.ontasklearning.org/

Opencast: The Opencast community is a collaboration of individuals, higher education institutions and organizations working together to explore, develop, define and document best practices and technologies for management of audiovisual content in academia. https://opencast.org/

openEQUELLA: openEQUELLA is a digital repository that provides a single platform to house teaching/learning, research, media, and library content. https://www.apereo.org/projects/openequella

Sakai LMS: The Sakai LMS is a robust system supporting over 4 million educational users to enhance collaborative teaching, learning and research.
 https://www.sakailms.org/

UniTime: UniTime is a comprehensive educational scheduling system that supports developing course and exam timetables, managing changes to these timetables, sharing

rooms with other events, and scheduling students to individual classes. https://www.unitime.org/

uPortal: uPortal is the leading open source enterprise portal framework built by and for higher education institutions, K-12 schools and research communities. https://www.apereo.org/projects/uportal

Xerte: The Xerte Project provides a full suite of open source tools for elearning developers and content authors producing interactive learning materials. https://www.xerte.org.uk/

6. Incubation: Growing Sustainable Solutions

Creating a successful open source software offering, and a community to sustain it, is considerably more complex than uploading some code into Github. An incubation process plays a significant part in the formative steps on the path from software innovation to sustainability. It supports a critical part of the software and community lifecycle, bringing to bear the experience of those who have travelled the path before – successfully or unsuccessfully – for the benefit of new initiatives.

INCUBATOR

Some of the collective experiences represented in the Apero Incubation Process are relatively hard-edged; the need for a consistent inbound and outbound licensing regime, for example. Others, such as growing sustaining communities around software, reflect specific experiences and contexts that are less easy to codify. This is why incubation is, at core, concerned with scaffolding a systematic mentoring process, rather than simply laying down a set of "rules" to follow. The process is two-way: in addition to the benefits for the software community in question, incubation will add to the collective experience of the Apereo community as a whole.

The Apereo Incubation Process

The Apereo Incubation Process was established shortly after the Foundation was formed. It benefits software communities seeking to grow open source solutions together with adopters of those solutions. It benefits creators by providing scaffolding and structured support in the early stages of software and community development. Adopters, in turn, gain clarity around the steps early-stage projects have taken to guarantee clean intellectual property, and build a sustaining community. You can discover more about the Apereo incubation process on the Apereo website - www.apereo.org.

Objectives

The objective of the incubation process is not to guarantee sustainability, but to ensure that a number of criteria drawn from collective experience are met at a formative stage of development - before a project or community is approved as an endorsed Apereo Software Community. The incubation process serves as an entry point for a project or community seeking to become part of Apereo.

Mentors

Whilst it is important to draw general lessons around software sustainability from the experience of projects and communities, it is important to remember that sustainability is a concrete issue, rooted in the lifecycle and context of a specific software community. There are therefore likely to be limits to the transferability of a model or models. This is why the Apereo incubation process provides both a written checklist, summarizing distilled community experience, and community-based mentors to provide advice for an incubating project.

Progression

A project that does not progress from incubation to operate as an endorsed Apereo Software Community should not be considered a failure. There are a variety of reasons why this might happen, ranging from technical feasibility to lack of broader community interest. The process is designed to identify such issues and test the viability of an initiative from a number of perspectives at an early stage. This outcome of the process acts to mitigate against an extended investment of resources by institutions or individuals where this is inadvisable. This, in itself, represents a significant benefit of incubation.

Into the Future: Accelerating Incubation

The Apereo incubation process is unashamedly borrowed from the proven Apache incubation process, with tweaks and modifications to ensure a better fit with higher education. The process is regularly reviewed and developed by the Apereo Incubation Working Group and Board of Directors. Responses to the COVID-19 pandemic have sharply demonstrated a need to further develop higher education software resilience. An urgent future focus for Apereo incubation work will be to examine ways that we can learn from business and other software accelerators, adding greater agility and speed to incubation.

Benefits of Apereo Endorsement

Participation in the community brings a series of tangible benefits for a software initiative. These range from access to the experience of others working in similar fields as mentors, through to Intellectual Property Rights (IPR) management, technical expertise, licensing, legal, meeting, and communications infrastructure. Participation also provides access to a range of potential global adopters and contributors, and to the outreach resources of the Foundation itself. Fundamentally, participation allows a project or community to become part of a larger network, and gain the benefits of network effects. This network is not confined to membership of the Apereo Foundation. We seek to build reciprocal relationships with other similar organizations. This is at the heart of our growing relationship with the LAMP Consortium in North America, ESUP-Portail consortium in France, and our developing regional foci in Japan, South Africa, and Europe. Apereo is a global community.

Apereo Projects and Communities can be found here:
https://www.apereo.org/content/projects-communities

7. Regional and National Partnerships

As part of its commitment to diversity, Apereo was founded on the principle that there is not a single, universal organizational or development path appropriate to all open source software initiatives serving education. These will vary by geographical, cultural or other contexts, or at different points in the development lifecycle. International collaboration is necessary and practical, but requires recognition and respect for diversity. It is from these perspectives that Apereo develops and maintains partnerships of reciprocal benefit and understanding. Our partnership with the North American LAMP consortium and ESUP-Portail in France are exemplars of how we intend to progress this agenda.

ESUP-Portail is a distinct and self-governing consortium serving the higher education community in France, where it represents over 80% of the sector. Apereo, recognizing that ESUP-Portail represents the needs of the community in France, negotiated a practically focused and annually reviewed memorandum of understanding between our organizations. Apereo does not recruit organizational members in France. ESUP-Portail makes a financial contribution to Apereo, and encourages its member institutions to participate in Apereo communities. The two organizations collectively focus on

- Resource pooling around the incubation and growth of new initiatives, software communities and communities of interest.
- Encouraging the adoption of Apereo software, and of contributions of code, documentation and experience back into our software communities and communities of interest. Adoption of uPortal, CAS, Karuta and the Open Academic Environment as a platform in France all are examples of how our partnership has made a significant difference.

The LAMP Consortium is a group of small institutions, largely located in North America, which cooperate to negotiate support for commercially provided hosted services based around open source software. There are advantages in this approach: cooperation creates a more powerful negotiating position, and basing services on open source software acts to mitigate risks of lock-in should the need arise to transition to a different provider.

Apereo is actively growing regional communities in many parts of the world. As they continue to develop, we anticipate that they may establish their own non-profit entities to meet specific local needs, and work with Apereo where it makes most sense to do so. The principles of subsidiarity and federalism will guide us into this more collaborative, complex – and more rewarding – future.