10 Key Interviews

INSIGHTS INTO THE SUSTAINABILITY OF OPEN INFRASTRUCTURE SERVICES

An Invest in Open Infrastructure project
More info: www.sparceurope.org/ioiinterviews

ABOUT THE PROJECT

Gleaning Insights

Research and scholarship is underpinned by a variety of tools, technologies and services ranging from for-profit commercial solutions and offerings from vendors to community-owned, open technologies and infrastructure. We often hear about the challenges for open infrastructure tools and services to scale, maintain, and compete in the broader market.

The 10 interviews comprised in this project highlight some of the key decision-making points, funding mechanisms and models, and other learnings from a series of commonly used services and technologies used to support research and scholarship. These include both for-profit and not-for-profit services, highlighting perspectives on sustainability across the sector.

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WHO WAS INTERVIEWED?

Overview

arXiv
Code Ocean
Dryad
EDP Sciences
F1000 Research *Featured in this document.*
Figshare
Our Research
Mendeley
Redalyc
4TU.Research.Data

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"Interoperability and long-term sustainability are crucial to scholarly infrastructure"

Rebecca Lawrence, Managing Director

F1000 RESEARCH

Rebecca Lawrence,
Managing Director

At a Glance

Type of activities: Open research peer-reviewed publishing platform

Life-cycle stage: Founded in 2012, having demonstrated to the market that they needed this new and better approach, now scaling – as proven by the recent acquisition – but, at differing points in the journey for different disciplines

Current legal structure and funding model: Part of Taylor & Francis Group / 100% owned by London Stock Exchange listed company Informa (following acquisition from founding financier), charging customers for the services provided

Technology: Proprietary

Sustainability

'What is most important for scholarly infrastructure is high interoperability with all the other elements in the scholarly ecosystem and ensuring that it is underpinned by a long-term sustainability plan. The latter can often be more challenging to achieve for a not-for-profit compared with commercial entities, and whilst open source software certainly has many benefits, it can also often bring many challenges around ongoing sustainability.'

Piece of Advice

'You need an entrepreneur, a backer, who is single-minded, on a mission, and who is not looking to see a profit within four years.'

'I see quite a lot of great ideas: individuals who think they can solve the scholarly communications challenge and build or code something themselves, and think researchers will flock to it and it will take off. What I've learned is that building an infrastructure and encouraging researchers to take a risk and try something new is a huge task that is extremely challenging to achieve on your own. Don't underestimate how hard it is and how long it will take you to get there, and don't underestimate how hard it is to change people's behaviour in our environment, especially if you're trying to really move publication behaviour away from the more traditional journal approach.'

F1000 RESEARCH

F1000 Research is an innovative open research, peer-reviewed publishing platform that was recently acquired by Informa (parent company of Taylor & Francis [T&F]). It uses proprietary technology and charges customers for its services.

Original vision

F1000 Research was born from founder Vitek Tracz's observation that the traditional publishing model had many issues that could be addressed if one could start from a clean slate, especially with all the new technology available in 2012. He felt strongly that it was possible to organize things differently and to truly transform how research is communicated, which is fundamental in ultimately affecting so many aspects of our current world. As Managing Director Rebecca Lawrence explains, Tracz asked himself: 'If you started now, how would you create a publishing system trying to maximise those benefits for researchers, for funders, institutions and society, more broadly?'

Tracz and Lawrence identified five main problems with the traditional scholarly publishing system that were to be addressed with F1000 Research back in 2012: first, the length of time between a research discovery and its dissemination through publication; second, the lack of availability of original data underpinning research; third, the closed and anonymous peer review process, which can lead to inappropriately motivated decisions; fourth, publication biases preventing researchers from sharing negative/null or incremental findings; and finally, the research waste that the existing system generates if results aren't communicated.

Lawrence argues that 'if researchers want to share their results publicly, they should be able to do so and get it out there. There is no point in doing the research if we don't communicate it'. F1000 Research attempts to tackle these issues 'by coming up with something new and demonstrating to the market the benefits of such a different approach, hence creating the market'.

Growth and sustainability challenges

Founder Tracz is a successful and seasoned entrepreneur who added F1000 Research to a long list of successful companies he created over the decades. It took the form of a private company with himself as the sole financier and owner. 'That's how he's always done his businesses. He's never taken loans: he builds up companies, sells them, and then reinvests that money in the next idea.'

F1000 consisted of three separate limited companies, which provided its founder with the flexibility to sell all three or just one. This set-up remained the same over time.

Lawrence repeatedly emphasises the importance of having started out with a single founder who was determined to keep investing and pushing through, even when return on investment was not yet forthcoming and people were sceptical about what F1000 Research was trying to achieve. 'When we launched in 2012, some people were very sceptical, because things like open data and open peer review were there, but they were not as open as this. The cultural shift in the science ecosystem doesn't go that fast.'

'You have to have a backer who is willing to persist, although the numbers are not exploding, and who says it's fine, because I have a mission, and we're going to achieve it, no matter what. That was what was required.

'WHAT IS MOST IMPORTANT IS HIGH INTEROPERABILITY WITH ALL ELEMENTS IN THE SCHOLARLY ECOSYSTEM AND ENSURING THAT KEY INFRASTRUCTURES ARE UNDERPINNED BY A LONG-TERM SUSTAINABILITY PLAN.'

And without having that particular funding behind it, I don't think we'd have got to where we are now. I think if we'd had private investors, there would have been several points at which they would have got impatient, as private investors expect a return and that you're in profit in four years.'

'Now people are ready, but as with all of Tracz's projects, at the time, they're typically way ahead of their time. And they need to be, because this is what helps to shift the ecosystem. It requires somebody to see into the future, and then keep going, and keep going, and keep going to make it work.

"It is of course also in our best interest to ensure that our business model is sustainable and works as a long-term model. T&F wouldn't have bought us if they didn't think F1000 Research had a sustainable business model.'

This business model relies on several revenue components, including Article Processing Charges (APCs) on F1000 Research's platform and funders'/institutions' platforms (white-labelled platforms where F1000 Research provides the infrastructure and editorial service). 'On most of our platforms, it is like diamond or platinum Open Access (OA). We bill them directly (for the initial set-up fee and an annual license fee) and they also pay for what's published on there, without bothering the authors. This minimises the administration around payment for funders, institutions and authors alike. In addition, the publication model is much more cost-effective compared with typical OA charges levied by most other OA publications. For example, Wellcome demonstrated a 67% reduction in cost for APCs they pay on their white-labelled platform using our model (Wellcome Open Research), compared with the average charges they pay to other OA venues. One of the reasons is that you take out of the system the costs for repeated review and rejection of articles as they move between journals trying to find a home.

Moreover, costs and time across the research system are cut by having just one, thorough peer review process: 'In our approach we just do one set of checks right at the start of the publication process, and very rigorous and objective ones – probably among the most rigorous in the industry. If you do that, you check once, the work is out there, it's peer-reviewed, and you remove all sorts of costs from the system, which makes a big difference.' Our goal is to offer an approach to publishing research that tries to address the pain points that researchers face when publishing their work while absolutely ensuring that any work that we publish is as accessible and usable as possible. This approach has resonated with many of our Gateway and Platform partners – while offering an approach that works to minimise research waste.

In this way, Lawrence explains, 'F1000 Research has reached a sustainable business model for operationally running the business moving forward'.

Opportunities, considerations and choices

The fact that F1000 Research was a private for-profit company worked in its favour, Lawrence says. 'All the way along, there are significant advantages in not being not-for-profit. A not-for-profit still needs to cover its costs and make some money to continue to invest, but it can often be harder to manage if you have a big board with their own views making it harder to maintain a strong unified view and so decisions can take much longer). A commercial company with one person who ultimately makes a decision one way or the other (like F1000 Research) and provides direction enables you to work really fast.

'In addition, a for-profit model means that the company isn't dependent on short-term grants. 'A lot of new tools and really innovative projects appear, and the biggest challenge they have is financial sustainability. The problem is being funded through grants, especially in times like these. Important initiatives like DORA and CRediT also have a challenge in finding a model to fund them in a sustainable way. You can end up spending a considerable amount of your time trying to survive and source grant funding than actually doing what you need to do.

'Lawrence points out that interoperability between tools and systems in the scholarly ecosystem is another important element for sustainability, much more so than the software behind it being open source. Open source software is not a panacea, as it can be hard to be able to use open source code: 'Just because it is there, it doesn't mean there aren't barriers to uptake in terms of, for example, having the knowledge to work with it or having the technical infrastructure upon which it can sit', says Lawrence. 'We spend a lot of time on trying to make sure that we are as interoperable as we can be, to minimise any repeated effort in researchers having to provide relevant metadata across systems, and to better enable the analyses of publications and associated elements by funders, research institutions and others.' 'Being a commercial company also helps to focus the mind when developing software. It can help make you streamline and prioritise more efficiently; and it can better incentivise high quality and stable outputs because you won't be able to sell it if that high standard is not maintained.'

When the company was founded, the idea was always to sell the company to a buyer who shared its vision once it had gained sufficient momentum. F1000 Research has now been fully acquired by Informa (listed on the London Stock Exchange), although it is still a separate legal entity. 'This is what Tracz does, this is where his real skill is: he comes up with these amazing ideas and then we build them, solidify the model, and build the core infrastructure (while of course still improving and changing it) turning it into reality. Then, when it starts to become more business as usual, he sells the business, so he can reinvest that money into the next idea he has!' She explains that Informa understood what F1000 Research was trying to achieve. 'Obviously, the last thing you want to do is build it up for it all to get crushed and just absorbed into something else.'

Consequences of current funding model

Lawrence believes that T&F fully shares F1000 Research's vision and is committed to changing the publishing ecosystem and pushing it towards becoming a service provider with a community role. 'What's been encouraging is that they are still saying all the reassuring things they were saying before the acquisition, and are genuinely committed to moving towards more open publishing options that can best serve the wide variety of research communities that they serve.'

Moreover, T&F has a long history of providing world leading options for publishing across the humanities and social sciences (HSS), thus our acquisition has immediately expanded F1000 Research's reach in these areas. 'We started in the life sciences and medicine, and only started to move to HSS through our work with funders like the European Commission,

the Wellcome Trust, and the Gates Foundation.' However, shifting the HSS community towards open research will take time. 'We need to demonstrate that we can help T&F in the shift, but it is more challenging for them because of their focus on HSS content. The HSS communities are much further away at this point from adopting open research, not only open access, but also adopting open peer review and dealing with data.'

Another benefit of the acquisition is that it brings T&F's enormous marketing power and reach – much larger than the F1000 Research 40-employee company could ever hope to have – which can be fully exploited to raise awareness of and engagement with the model globally and across disciplines. 'The consequence I foresee is that it will all accelerate, as there are just more people that can go out and talk about F1000 Research. I would expect more uptake by funders and institutions, with just more people on the ground, with more reach, to have those conversations.'

While some people expressed dismay about F1000 Research having been bought by one of the 'big 4', Lawrence sees only positive outcomes: 'If through this acquisition we can help to shift one of the big 4, it should have a ripple effect across the rest of the publishing

'industry. By joining one of the big 4, with a visionary, progressive approach, they can help influence and speed up the move in the whole industry.' It also goes back to demonstrating that this is a sustainable approach to publishing, which will reassure the others that this is a route that will work for them too. And as more researchers get used to publishing in what is a very different way of thinking, and they get to experience the benefits, it reassures them more and you get that ripple effect. Then, researchers will be expecting that much more from the publishing community, which will help.'

'So I think generally, it should accelerate a broader shift. That's my hope and my aim.'

Future vision for sustainability

Lawrence sees two major ongoing challenges in sustainability across the research ecosystem. The first is around the ability for all researchers to be able to publish their findings. 'I'd like to think that together with the broader community, we'll find a way to make this work not just for those with access to grants or other funding, which is currently more common in STM disciplines, but also for disciplines and communities around the world where there isn't adequate funding. Often, researchers don't have the funding to pay for gold OA with APCs so we need to find new sustainable models. I'd like to think that in five

years, together with the community, we will have come up with an approach to address some of these challenges, and have helped T&F (and others) to make the move towards OA in HSS sustainable.'

The second challenge is about the long-term funding of major central scholarly infrastructures, for example data repositories, metadata providers and others. These types of infrastructures need to be recognised as crucial pillars of the scholarly ecosystem and hence need the safety of long-term government funding rather than the shorter-term grants that many of these are supported by currently. Furthermore, a more centralized, global approach is needed to ensure a high-quality, interlinked scholarly infrastructure. Without that, fully shifting to an open research model will be challenging, Lawrence argues. 'Better recognition is needed, particularly by funders, foundations and even governments, of how crucial infrastructure is to the system and its need to be interoperable, and not just the need to fund individual research projects. Currently many of the major tools are not well interconnected, research data is siloed making analysis across datasets challenging, and there is a lack of consistent metadata across different services and tools making integration and analysis across these tools extremely challenging, time consuming and costly.'

Ideally, Lawrence concludes, there should be coordination on a supranational scale. 'Research is global, and so ideally, you'd have a neutral central body that works with all parties to enable interoperability across national systems, but it is far from easy.'

Advice for peers

Lawrence encourages those with ideas about how to change the scholarly publishing model and infrastructure to get out there and try to develop something. But she cautions people not to under-estimate just how hard it is to get something off the ground. 'I see quite a lot of great ideas: individuals who think they can solve the scholarly communications challenge and build or code something themselves, and think researchers will then flock to it and it will take off. What I've learned is that building an infrastructure and encouraging researchers to take a risk and try something new is a huge task that is extremely challenging to achieve on your own.'

It also requires determination to press on, no matter what. 'If you're building something that is a very different model, you have to keep going and, for instance, papers won't come in by themselves. You almost have to bring them in one-by-one yourself for a long time.

"In summary, don't underestimate how hard it is and how long it will take you to get there, and don't underestimate how hard it is to change people's behaviour in our environment, especially if you're trying to really move publication behaviour away from the more traditional journal approach.'