# Persistent identifiers – building trust and supporting openness in digital scholarship

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*The inevitable ambiguities arising from using names can hamper our ability to reliably and transparently discover, connect, and access resources. If we're to fully realise the potential of open, digital scholarship then automatic, resolvable connections between researchers, institutions, research outputs and funders are essential. ORCID's **Josh Brown** and **Alice Meadows** outline how persistent identifiers are able to make these connections, allowing for a seamless, unambiguous, and – crucially – trustworthy exchange of information between systems. Adoption of persistent identifiers is increasing all the time and should boost the openness of research and facilitate collaborations.*

Names are messy! Whether for people, places, or things, names are rarely unique, they may change over time, and they exist in many variations and character sets. This messiness causes problems for open research. It is challenging to make an unambiguous connection between you, the researcher, and your works – two of the most basic elements in scholarly communications. This, in turn, affects our ability to reliably and transparently discover, connect, and access resources – all fundamental to open research.

Luckily, persistent identifiers (PIDs) can help address these challenges. Identifiers such as ISBNs (international standard book numbers) have been around for a while and are adding even more value as scholarly communications move online. And the widespread adoption of resolvable DOIs (digital object identifiers) is now revolutionizing the discoverability and usage of publications – in particular, research articles. CrossRef, the leading provider of scholarly DOIs that has minted more than 80 million identifiers since it launched in 2000, and DataCite, which has minted 8 million DOIs for datasets, are two great examples of organizations that are helping facilitate the search for and access to content globally.

Of course, ISBNs and DOIs are just two of the many identifiers used in the research community to reliably identify researchers, their organizations, funding, and contributions. It's when this information is connected in a machine-readable format that the seamless, unambiguous, and trustworthy exchange of information between systems starts to become a reality. As we wrote in our recent paper: "To fully deliver the potential benefits of open, digital scholarship, automatic, reliable, resolvable connections must be made systematically between researchers, their employment, their publications and other research outputs, their research activities, and the funding that supports it all. Truly open research is also transparent, which requires a mesh of information to surround each output or action."

**Image credit: Stand Out from The Crowd Unique Golf Tee Game September 19, 2011 by Steven Depolo. This work is licensed under a CC BY 2.0 license.**

Like DOIs for publications and datasets, ORCID iDs are rapidly becoming established as a trusted persistent identifier for researchers – open, non-proprietary, and interoperable with other identifiers. Identifiers for research organizations have proved more challenging, however, and this was one of the topics of discussion at PIDapalooza, the first "festival of persistent identifiers", held in Reykjavik on 9-10 November. Organized by California Digital Library, CrossRef, DataCite, and ORCID, it was attended by a mix of PID creators and users, including researchers and representatives from organizations and service providers working across the research community – in publishing, funding, research institutions, and more. The idea was, as with its namesake Lollapalooza, to bring together people with a shared passion – in this case, PIDs. And, despite the admittedly geeky nature of the topic, we had a lot of fun – from the opening primal scream to the Lollapalooza-inspired closing session, Reaching Nirvana: The Future of Persistent Identifiers!

Another hot topic at PIDapalooza was demonstrating the value and benefits of identifiers to researchers – to encourage wider use, improve data quality, and save time for everyone involved in scholarly communications. A brainstorming session on this subject resulted in several analogies that could be used to help researchers understand how identifiers work and why they're important. For example, an ORCID iD works like a credit card: a unique number connected to information about you (your name, address, etc.) that can, in turn, be securely and reliably connected to other systems that collaborate with your credit card company (such as your bank), enabling you to exchange information with them (for example, making a payment). Similarly, as a researcher, if you use your ORCID iD when submitting a manuscript, a collaboration between CrossRef, DataCite, and ORCID means you can opt to have the DOI for your paper automatically added to your ORCID record.

Sharing information in this way requires the trust of all parties involved. For ORCID, that trust is built on a core principle of respect for researcher privacy. This includes enabling you to choose what information is connected to your ORCID record; who has access to it and whether or not they can edit or update it; and what information is made publicly available, shared only with trusted parties, or kept completely private. So, before anything can be added to your ORCID record, you will be asked to sign in and give permission. By doing so, not only is your record updated – by the organization whose system you're using, such as a grant application or manuscript submission system – but you can also see where the data has come from. This is what transparent control of your own information looks like.

Looking to the future, a potentially powerful new use for identifiers is to boost the openness of research and facilitate the tools researchers need to collaborate. We discuss lots of ways this could work in our paper, but we'll sketch out a couple of examples here. Imagine if your funders, your works, and your institution all had unique identifiers, and that your ORCID iD was embedded in them: then funders could automatically connect you – and your institution – to your open access publications, making reporting much less onerous, and a lot quicker. Or imagine that you've created a dataset, stored it in a DataCite member organization's data centre, and given DataCite permission to update your ORCID record as described above. Your university and funder can now see where that data is being stored, and be assured that it is being preserved and managed properly – a fast way to demonstrate that you are complying with their research data management policy.

With nearly 3 million researchers already registered for an iD, connected to more than 7.5 million DOIs and over 300,000 organization IDs, identifiers like ORCID are already well-embedded in research workflows. Collectively, we're making it easier for your research to be discovered, used, cited, and accessed online. Best of all, when you share an identifier, for yourself or for your contributions, you also help increase the reliability and openness of digital scholarship for everyone.

If you don't already have an ORCID iD, it's quick and easy to register!

*Note: This article gives the views of the author, and not the position of the LSE Impact Blog, nor of the London School of Economics. Please review our comments policy if you have any concerns on posting a comment below.*

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