

Leveraging persistent identifiers for the transition of knowledge infrastructures towards emerging values

Jonathan Zurbach – *How to evaluate emerging knowledge infrastructures* – Lorentz Center, Leiden, 15 April 2024



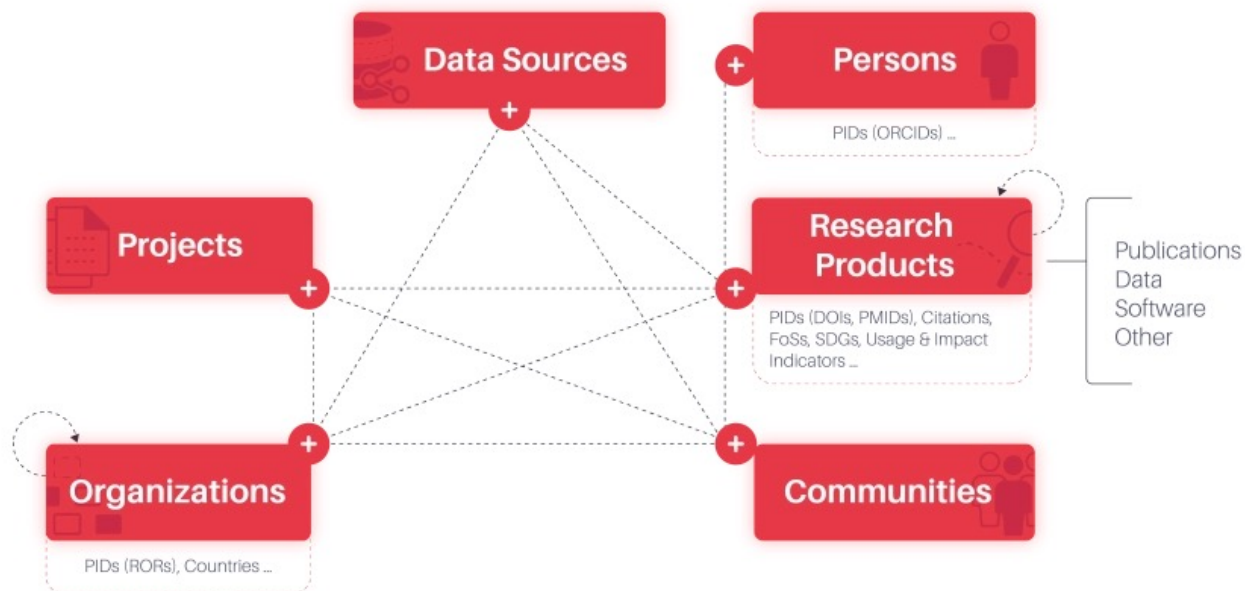
Three questions

Q1: Why should we pay attention to persistent identifiers (PIDs)?

Q2: Which approach can be mobilized?

Q3: What shifts in values can be enacted *via* PIDs implementation?

Q1: PIDs as part of the “core infrastructure” of open science infrastructure (UNESCO, 2022)



(OpenAIRE Graph, 2024)

Q1: The “taken-for-grantedness” of persistence, certification and the fragility of infrastructure (Wild, 2024; Eve, 2024)

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Millions of research papers at risk of disappearing from the Internet

An analysis of DOIs suggests that digital preservation is not keeping up with burgeoning scholarly knowledge.

By [Sarah Wild](#)

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Q1: The importance of PIDs at the crossroad of research evaluation, administration and analytics

- **Evaluation:** tracing the impact of research infrastructures (Mayernik et al., 2017; Mayernik & Maull, 2017; Fabre et al., 2021)
- **Administration and analytics:** the efficiency of research information systems (Sivertsen, 2019; Krüger & Petersohn, 2022; Meadows, 2023)

Q1: The current rise of national PID strategies

- **A science policy momentum:** mainly in the Global North (Brown et al., 2023) :

Australia, Canada, the Czech Republic, Finland, Germany, the Netherlands, New Zealand, South Korea, the United Kingdom, and the United States

- **Knowledgeable PIDs organizations:** the identification of lessons learned and “desirable characteristics” (ORFG PID Strategy Working Group, 2024)

Q1: PIDs implementation at scale as “world-making” (Tsing, 2005)

- **Legitimizing discourses** in the governance of knowledge infrastructure (Mounier & Dumas-Primbault, 2023)
- PIDs’ enthusiasts’ discourses legitimizing PIDs “**for everything**” (Dappert et al., 2017):
 - PIDs as the “**building blocks** of sustainable scholarly infrastructure” (Gould & Praetzellis, 2021)
 - PIDs as the “**indispensable building blocks** of today’s research” (de Castro et al., 2023)
 - The construction of a “**PID-optimized world**” (Meadows & Jones, 2021)
 - Ushering in the “**Intergalactic Federation of PID providers**” (Madden & Reimer, 2020)

Q2: A sociotechnical approach

- **Norman Paskin:** founding director of the International DOI Foundation (1998-2015)
- **The social:** an overlooked dimension of PIDs (Paskin, 2018: p.1326):
 - A syntax specification (prefix + suffix)
 - A resolution component
 - A metadata component
 - A “social infrastructure”

Q2: A sociotechnical approach

- PIDs providers as key entry points to the social infrastructure dimension:
 - International DOI Foundation registration agencies (e.g. Crossref, DataCite)
 - Research Organization Registry (ROR)
 - Open Researcher and Contributor ID (ORCID)
 - Research Activity Identifier (RAiD)
- What values do they enact?

Q2: A sociotechnical approach

- **An analytical inspiration for the study of “frictions” (Tsing, 2005) in PIDs implementation:**

STS approaches to internet studies of the “infrastructure turn” in “internet governance” (DeNardis & Musiani, 2016; Musiani, 2020):

- Internet Corporation for Assigned Names and Numbers (ICANN)
- Domain Name System (DNS)

Q3: DOIs are “privatizing knowledge governance through infrastructuring” (Okune & Chan, 2023)

- Not all PIDs enact the same values and worlds:
 - Capitalistic hegemonies
 - Lobbying for the dominance of DOIs (1998 - ...)
 - 2012: the DOI system becomes an International Standard (ISO 26324)
 - Invisibilities, North/South inequities and the surveillance of the scientific record
- Is the scientific world built by the DOI system a world we want to live in?

Q3: Transitions towards open and decentralized PIDs

- **The role of national approaches to PIDs:** “No one benefits until everyone benefits” (Meadows, 2023)
- Trust in the DOI system as a steppingstone rather than an obstacle to build alternative worlds with different values:
 - Open PIDs and POSI principles for DOI registration agencies (Gould & Praetzellis, 2021)
 - Decentralized PIDs and DOI as the standard (Hill et al., 2024)

Q3: Meaningful PIDs for metrics of “scientific life” (Shapin, 2010; Pardo-Guerra, 2022)

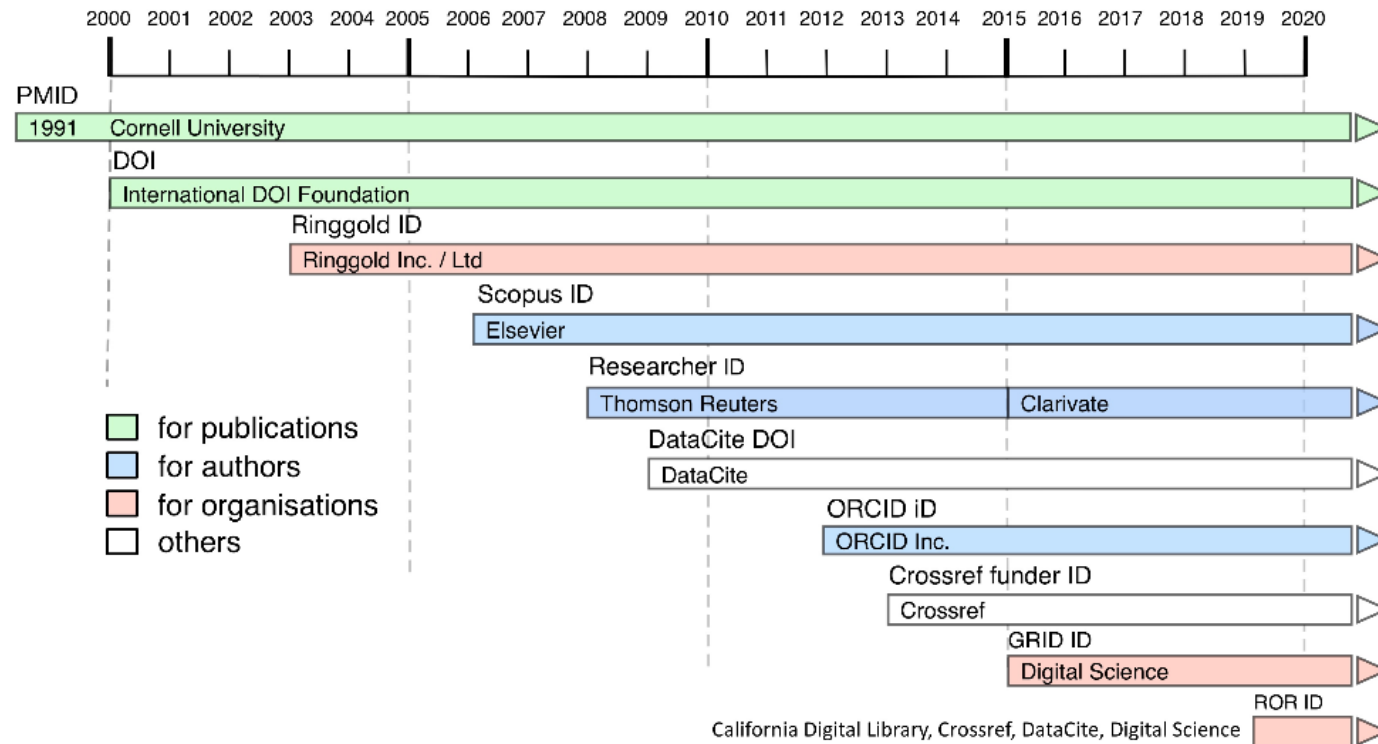
- **Conceptions of scientific life** enabled, quantified, and perpetuated *via* PIDs:
 - Prestige and individualization
 - Solidarity, care, maintenance and repair
- **Recognition of academic data labor:** evolution of “contributorType” in DOIs metadata (DataCite Metadata Working Group, 2024)
- **Translating:** the research assessment reform into PIDs (Ivanović et al., 2023)

Using PIDs for world-making “with heart” (Nardi & O’Day, 1999)

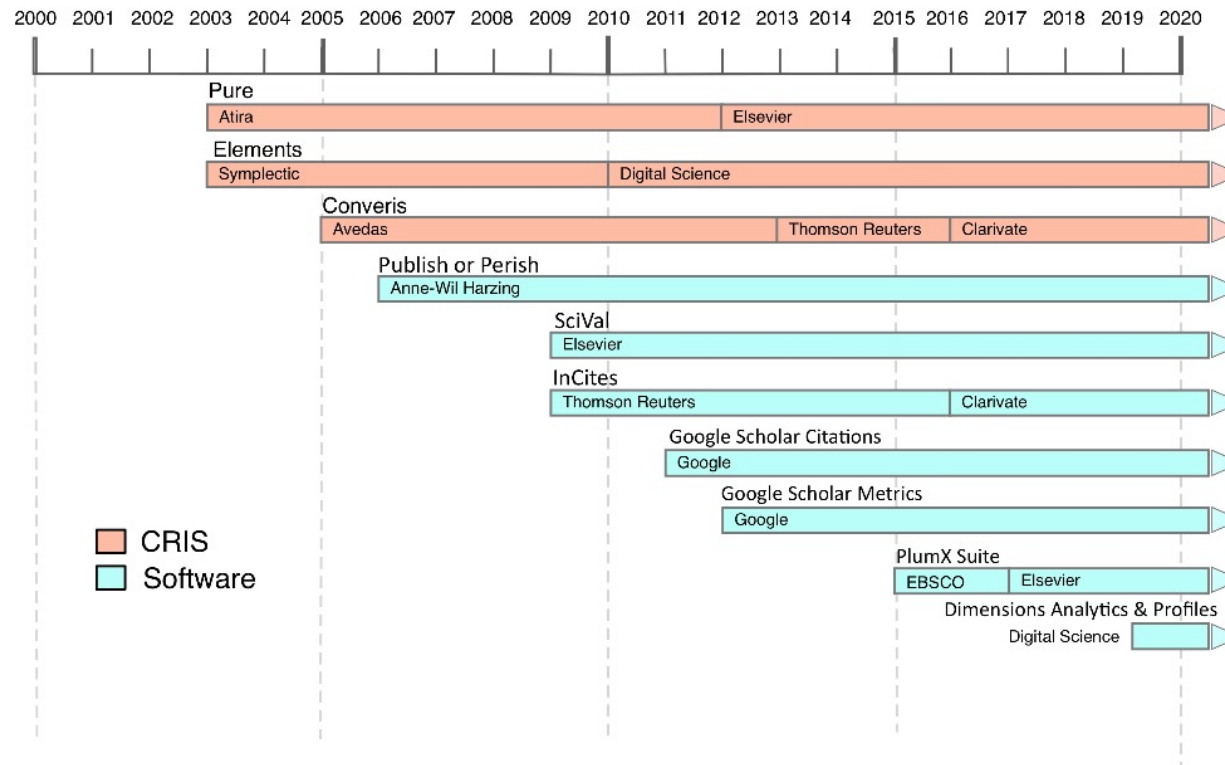
- **Transitions in PIDs implementation:** from global hegemonies to the preservation of the sovereignty of all stakeholders
- **A suggestion of research agenda:** an ethnography of PIDs providers
 - From service “promises” (de Castro et al., 2023) to worldviews ...
 - To the governance and evaluation of knowledge infrastructures

Thank you for your attention
Q & A

PIDs development (Krüger & Petersohn, 2022)



Evaluative software and CRIS development (Krüger & Petersohn, 2022)



References

Brown, C., Simons, N., Bangert, D., & Sadler, S. (2023). *RDA National PID Strategies Guide and Checklist*. Research Data Alliance. <https://zenodo.org/records/8431975>

Dappert, A., Farquhar, A., Kotarski, R., & Hewlett, K. (2017). Connecting the Persistent Identifier Ecosystem : Building the Technical and Human Infrastructure for Open Research. *Data Science Journal*, 16(0), Article 0. <https://doi.org/10.5334/dsj-2017-028>

DataCite Metadata Working Group. (2024). *DataCite Metadata Schema Documentation for the Publication and Citation of Research Data and Other Research Outputs v4.5 (4.5)*. <https://doi.org/10.14454/g8e5-6293>

de Castro, P., Herb, U., Rothfritz, L., & Schöpfel, J. (2023). *Building the plane as we fly it: The promise of Persistent Identifiers*. Knowledge Exchange. <https://doi.org/10.5281/zenodo.7258286>

DeNardis, L., & Musiani, F. (2016). Governance by Infrastructure. In F. Musiani, D. L. Cogburn, L. DeNardis, & N. S. Levinson (Éds.), *The Turn to Infrastructure in Internet Governance* (p. 3-21). Palgrave Macmillan US :Imprint: Palgrave Macmillan.

Eve, M. P. (2024). Digital Scholarly Journals Are Poorly Preserved : A Study of 7 Million Articles. *Journal of Librarianship and Scholarly Communication*, 12(1), Article 1. <https://doi.org/10.31274/jlsc.16288>

Fabre, R., Egret, D., Schöpfel, J., & Azeroual, O. (2021). Evaluating the scientific impact of research infrastructures : The role of current research information systems. *Quantitative Science Studies*, 2(1), 42-64. https://doi.org/10.1162/qss_a_00111

References

Gould, M., & Praetzellis, M. (2021). Open Persistent Identifiers: The Building Blocks of Sustainable Scholarly Infrastructure. *Research Library Issues*, 302, 5-18.

Hill, C., Koellinger, P., & Winkle, E. V. (2024, mars 14). *Guest Post - Navigating the Drift: Persistence Challenges in the Digital Scientific Record and the Promise of dPIDs*. The Scholarly Kitchen. <https://scholarlykitchen.sspnet.org/2024/03/14/guest-post-navigating-the-drift-persistence-challenges-in-the-digital-scientific-record-and-the-promise-of-dpids/>

Ivanović, D., Pölönen, J., Hyrkkänen, A.-K., & Kari, M. (2023, novembre 23). *The analysis of the available software infrastructures for supporting research assessment reform*. euroCRIS. <https://dspacecris.eurocris.org/handle/11366/2504>

Krüger, A. K., & Petersohn, S. (2022). From Research Evaluation to Research Analytics. The digitization of academic performance measurement. *Valuation Studies*, 9(1), Article 1. <https://doi.org/10.3384/VS.2001-5992.2022.9.1.11-46>

Madden, F., & Reimer, T. (2020). *An Intergalactic Federation of PID Providers?* Project FREYA. <https://www.project-freya.eu/en/blogs/blogs/an-intergalactic-federation-of-pid-providers>

Mayernik, M. S., Hart, D. L., Maull, K. E., & Weber, N. M. (2017). Assessing and tracing the outcomes and impact of research infrastructures. *Journal of the Association for Information Science and Technology*, 68(6), 1341-1359. <https://doi.org/10.1002/asi.23721>

Mayernik, M. S., & Maull, K. E. (2017). Assessing the uptake of persistent identifiers by research infrastructure users. *PLoS ONE*, 12(4), e0175418. <https://doi.org/10.1371/journal.pone.0175418>

Meadows, A. (2023, janvier 25). *Why PID Strategies Are Having A Moment—And Why You Should Care*. The Scholarly Kitchen. <https://scholarlykitchen.sspnet.org/2023/01/25/why-pid-strategies-are-having-a-moment-and-why-you-should-care/>

References

Meadows, A., & Jones, P. (2021, juin 22). *Making the Case for a PID-Optimized World*. The Scholarly Kitchen. <https://scholarlykitchen.sspnet.org/2021/06/22/making-the-case-for-a-pid-optimized-world/>

Mounier, P., & Dumas Primbault, S. (2023). *Sustaining Knowledge and Governing its Infrastructure in the Digital Age: An Integrated View* [Working paper]. <https://doi.org/10.5281/zenodo.10036401>

Musiani, F. (2020). Science and Technology Studies Approaches to Internet Governance : Controversies and Infrastructures as Internet Politics. In L. DeNardis, D. L. Cogburn, N. S. Levinson, F. Musiani (eds.), & 2020 (Éds.), *Researching Internet Governance : Methods, Frameworks, Futures* (p. 85-104). The MIT Press. <https://hal.archives-ouvertes.fr/hal-03021148>

Nardi, B. A., & O'Day, V. (1999). *Information Ecologies: Using Technology with Heart*. The MIT Press. <https://doi.org/10.7551/mitpress/3767.001.0001>

Okune, A., & Chan, L. (2023). Digital Object Identifier : Privatising Knowledge Governance through Infrastructuring. In W. Keim & L. Rodriguez Medina (Eds.), *Routledge handbook of academic knowledge circulation* (p. 278-287). Routledge, Taylor & Francis Group.

OpenAIRE. (2024). *OpenAIRE Graph—The Data Model*. OpenAIRE. <https://graph.openaire.eu/what-is-the-openaire-graph#Id-Model>

ORFG PID Strategy Working Group. (2024). *Developing a US National PID Strategy*. Zenodo. <https://doi.org/10.5281/zenodo.10811008>

References

Pardo-Guerra, J. P. (2022). *The quantified scholar: How research evaluations transformed the British social sciences*. Columbia University Press.

Paskin, N. (2018). Digital Object Identifier (DOI®) System. In J. D. McDonald & M. Levine-Clark (Éds.), *Encyclopedia of library and information sciences* (4th ed, p. 1325-1331). CRC press.

Shapin, S. (2010). *The Scientific Life: A Moral History of a Late Modern Vocation*. University of Chicago Press.

Sivertsen, G. (2019). Developing Current Research Information Systems (CRIS) as Data Sources for Studies of Research. In W. Glänzel, H. F. Moed, U. Schmoch, & M. Thelwall (Éds.), *Springer Handbook of Science and Technology Indicators* (p. 667-683). Springer International Publishing. https://doi.org/10.1007/978-3-030-02511-3_25

Tsing, A. L. (2005). *Friction: An ethnography of global connection*. Princeton University Press.

UNESCO. (2022). *Bolstering open science infrastructures for all*. UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000383711>

Wild, S. (2024). Millions of research papers at risk of disappearing from the Internet. *Nature*, 627(8003), 256-256. <https://doi.org/10.1038/d41586-024-00616-5>