

Implementation of PIDs and Plans for FDOs in the RSpace Digital Research Platform

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Abstract. In this contribution we describe our plans to use FDOs in the RSpace research platform and express our interest to include RSpace into the FDO testbed.

Keywords: Persistent Identifiers, Fair Digital Objects (FDO), Research Data Management

1. RSpace Overview

As depicted in the Figure 1, RSpace is a digital research platform that enables integrated management of experimental and sample data and connects with a rich ecosystem of research tools and research data management resources to enable passage of data and metadata between tools and different phases of the research lifecycle. As a platform for data workflows in the early stages of research, RSpace is thus uniquely positioned to contribute to/set the stage for the FAIRification of research objects by managing and propagating high quality metadata from the start of the research process.

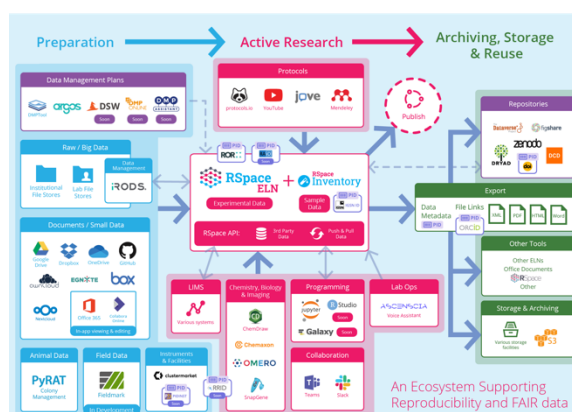


Figure 1. The RSpace platform integrates into an ecosystem supporting the production of FAIR research objects

2. PIDs and Metadata in RSpace

We will describe our current work focused on increasing support for PIDs and rich object metadata in RSpace in such a way that data interoperability with other tools, including general-purpose and domain-specific repositories, is complemented by PID interoperability. In late 2023, we incorporated IGSN IDs in the RSpace sample management module [1] through ex-

tensive collaboration with DataCite, FieldMark and research institutions, and we are now working with Rolf Krahl and Markus Stocker from the RDA PIDINST Working Group on incorporating PIDINST IDs into the RSpace sample management system to enrich objects with instrument metadata. In 2024, we will also add the ability to associate DOIs and RAIDs with records in the RSpace ELN. (Automatic) PID metadata generation, with a focus on ensuring the completeness and quality of PID Kernel Attributes [2], will be a guiding concept for the upcoming development/improvements of RSpace workflows.

3. FDOs and RSpace

Our understanding is that the specification of FDOs is still being finalized, but that the core concept of enabling a 'thin' discovery layer to improve machine actionability of digital research objects by a set of universal core metadata items is a central part of the specification that will remain unchanged [3]. As such, we've already added support for the RO-Crate format [4] to fully describe (sets of) research objects in a standardized and community-inspired metadata format. We believe that both the completed and upcoming PIDs and metadata work described above provides an excellent foundation and reference both for incorporating FDOs into RSpace and creating/supporting the creation of FDOs from within RSpace.

We wish to share the experience of collaborating on these complex, multi-stakeholder PIDs integrations, as the process benefited greatly from an iterative and collaborative process that made use of user research and design methodology to ensure the implemented solution reflected the use cases for the particular PID in context of the tools involved.

4. RSpace in the FDO Testbed

We have discussed including RSpace in the FDO testbed, which will provide a good opportunity to move forward with the addition of FDO support in RSpace, and to get feedback from researchers and administrators who have access to the testbed. Based on our experience incorporating PIDs, we anticipate that key issues for exploration will include:

1. The interchange between the full data record captured in RSpace and the FDO metadata.
2. Developing a UI and workflow for users that is both intuitive and to the extent possible minimizes manual data entry.
3. Developing support for institutional set up and administration of FDOs, so that RSpace becomes a resource that can be deployed for administration of FDOs by research organisations.
4. Developing a design that is compliant with and supports workflows mandated by a future FDO registry.

Author contributions

R.M. and T.M. both contributed to conceptualizing and writing of this presentation.

Competing interests

The authors declare the following competing interests: R.M. and T.M. work at Research Space, the maintainer and commercial service provider for the RSpace platform.

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References

- [1] V. Plankytė, R. Macneil and X. Chen, 'Guiding principles for implementing persistent identification and metadata features on research tools to boost interoperability of research data and support sample management workflows', Zenodo, Aug. 2023. doi: 10.5281/zenodo.8284206.
- [2] Weigel, T., Plale, B., Parsons, M., Zhou, G., Luo, Y., Schwardmann, U., Quick, R., Hellström, M., Kurakawa, K., 'RDA Recommendation on PID Kernel Information (Version 1)' (2018) doi: 10.15497/RDA00031.
- [3] Kahn, R., Wilensky, R. A framework for distributed digital object services. *Int J Digit Libr* 6, 115–123 (2006). doi: 10.1007/s00799-005-0128-x
- [4] Stian Soiland-Reyes, Peter Sefton, Mercè Crosas, Leyla Jael Castro, Frederik Coppens, José M. Fernández, Daniel Garijo, Björn Grüning, Marco La Rosa, Simone Leo, Eoghan Ó Carragáin, Marc Portier, Ana Trisovic, RO-Crate Community, Paul Groth, Carole Goble, 'Packaging research artefacts with RO-Crate' *Data Science* 5(2) (2022) doi: 10.3233/DS-210053