

Collaborative notes for Session 3 - “Persistent identifiers”

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Session overview

The goal of this session is to provide input for the PID Policy assessment regarding the more qualitative factors, especially those related to trust and sustainability. The session will begin with short presentations of the PID Compliance Assessment Tool done in FAIRCORE4EOSC and the integrated PID use cases in FAIR-IMPACT. Representatives of these use cases, PIDs in data production workflows, PIDs in complex data citation and PIDs and sensitive data, will reflect on the relevant PID solutions and requirements and identify gaps. They will also describe how they evaluate different PID services and systems.

Following this, the workshop will be organised around three questions:

- 1. What does your project or initiative do to implement PIDs? (Please provide any relevant links.)
- 2. What are the guiding principles for you when choosing a PID system or service?
- 3. What does in your opinion constitute trust in a PID service?

In the EOSC context this session is related to the objective OO11 Implement the EOSC persistent identifier (PID) policy and architecture by 2025 in the [Strategic Research and Innovation Agenda](#) and relates to the following recommendations in the draft [EOSC Multi-Annual Roadmap \(MAR\) 2025 and 2026–2027](#):

- Promote and sustain the use of Persistent Identifiers (PIDs) that are already common practice. Support activities where PID usage is not yet a common practice. (2.1 A, 2.2 H)

and it supports the national and institutional level recommendation:

- Integrate widely used and adopted PIDs into institutional services and incentivise usage of PID technologies being developed in EOSC (like PID Meta Resolver, Data Type Registry, PID graph, PID Policy Compliance Assessment Toolkit). (2.2 I, 2.3 K)

In this session work we will also use some recommendations from the Knowledge Exchange report on PIDs, read more: <https://www.knowledge-exchange.info/event/pids-risk-and-trust>

Expected outcomes

The expected outcome of this session is to produce a short report on the current PID landscape in conjunction with EOSC and EOSC PID Policy implementation, as well as to provide input for PID policy assessment CAT especially regarding the more qualitative assessment.

Preliminary questions and responses received

Project or initiative	1. What does your project or initiative do to implement PIDs?
OpenAIRE	
RDA France	
GO FAIR Foundation	We document all our data and results via nanopublication identifiers and metadata (https://nanopub.net/). We also use OSF for all our events which use OSF identifiers but can also generate DOIs
Semantics in Astronomy, Planetary Sciences and Heliophysics	Some data providers are implementing DOIs for data citation, ORCID for authors, and ROR/Re3Data for institutions/repositories. However, not all providers are implementing all.
Reactome database of biomolecular pathways	We are maintaining our own stable identifiers, and use identifiers.org for external use of our identifiers as PIDs. We also assign DOIs to larger database objects (pathways).
A CRIS system for Open Science and FAIR publications	
University of Bologna (FAIR Champion + Data Stewards)	
PerSciDo: The French Labex Persyval-Lab	PerSciDo (datasets repositories platform) helps you share research datasets https://perscido.univ-grenoble-alpes.fr We encourage researchers to reference their datasets using persistent identifiers such as HAL (national repository) or DOI (Digital Object Identifier), highly recommended by the DataCite consortium. To this end, we have signed an agreement with INIST, the French representative of DataCite, to issue DOIs upon request from researchers within the scope of the PERSYVAL-lab labex. PerSciDo thus enables researchers to obtain a DOI during the deposit. However, this request is not mandatory if another PID already exists.

Project or initiative	1. What does your project or initiative do to implement PIDs?
Integrated Carbon Observation System (ICOS)	<p>ICOS applies Handle System-based PIDs to all the digital objects that we manage. At ingestion into the Carbon Portal repository, all observational data files – raw (level 0), near-real-time (level 1, after automated QA/QC) and processed (level 2, after full QA/QC and time-interval aggregation) – are assigned a basic Handle identifier. (ICOS has its own prefix,). Collections of level 2 data (grouped e.g. according to observation domain and stations, or variable type) are registered with DataCite and assigned a DOI (again, ICOS has its own prefix). ICOS also hosts and curates legacy observational data as well as data outputs from users of ICOS observations (level 3, or “elaborated data products”). All of the latter are also assigned PIDs, as appropriate. All ICOS PIDs resolve to landing pages, designed to be readable by humans as well as interpretable & actionable by machine processes. Rather uniquely, the suffixes of Handle PIDs are created from the respective object’s checksum. See the Carbon Portal web page (https://www.icos-cp.eu/) for examples. ICOS metadata is based on linked data principles, where each node & concept definition is assigned a persistent URL. While these may not be considered as “persistent” as such, ICOS finds the URLs to be expected to remain stable and resolvable in a reasonably long run.</p>
ELIXIR	Mint DOIs via datacite, describe them within the identifier schema subtype of the FAIRsharing standards registry
IVOA, ~ESCAPE	<p>IVOA has an internal identifier for its resources (IVOID) that cannot be considered completely persistent. Resource persistence is taken care of by resource providers that can attach to the IVOID other PIDs, e.g. DOIs. https://www.ivoa.net/documents/IVOAidentifiers/20160523/REC-Identifiers-2.0.pdf</p>
ISIDORE BYCOVID OSCARS	First UUID, but migration to PID for projects in open calls
Blue-Cloud2026	
FNS-Cloud, Comfocus, FishEUTrust, SIESTA, Fair-Champion	
FAIR-IMPACT FC4E RDA TIGER	Provide DtaaCite DOIs and URN:NBN to depositors, increasingly support links to vocabularies and registries for metadata (ORCID, variable URIs, ...)
FAIR-IMPACT BY-COVID EuroScienceGateway	Use DOIs in WorkflowHub to identify workflows which are downloadable as RO-Crate. Using w3id and Handles in RO-Crate publications to GitHub Pages.
FAIR Impact and RDA TIGER	Many relevant RDA Groups, important to make this a global initiative to solve these problems not just at European/EOSC level but to share with other research commons

Project or initiative	1. What does your project or initiative do to implement PIDs?
BY-COVID	We recommend best practices. If provided by the source, COVID-19 Data Portal shows PIDs.
Virtual Atomic and Molecular Data Centre	We use UUID and DOI for data, IVOID for resources and software

Project or initiative	2. What are the guiding principles for you when choosing a PID system or service?
OpenAIRE	
RDA France	
GO FAIR Foundation	We want to be as close as possible to the definition of FAIR Data Objects
Semantics in Astronomy, Planetary Sciences and Heliophysics	No guideline, but a generic community usage. However, some documents are available: https://pds.nasa.gov/datastandards/citing/#data-providers . And some other are being prepared.
Reactome database of biomolecular pathways	As we maintain our own stable identifiers, we prefer identifiers.org as a lightweight, low overhead PID system.
A CRIS system for Open Science and FAIR publications	
University of Bologna (FAIR Champion + Data Stewards)	
PerSciDo: The French Labex Persyval-Lab	We have adopted the Datacite DOI definition, which is a reference in the field and is perfectly suited as a persistent identifier (PID) for identifying scientific output. The annual renewal of the contract to be a DOI provider is very straightforward through the CNRS.
Integrated Carbon Observation System (ICOS)	For ICOS, considering that our data holdings are unique and irreplaceable (as we observe the environment, which continuously changes), security, longevity and continuous 24/7 access are central. In addition, the PID registry should support community/user-specific kernel information profiles, and be coupled to efficient resolving systems – the latter preferably supporting complex queries allowing to retrieve the full kernel information set linked to a PID.

Project or initiative	2. What are the guiding principles for you when choosing a PID system or service?
ELIXIR	
IVOA, ~ESCAPE	Combining IVOID and DOIs are the usual way to interface VO resources to other domains or general FAIRness
ISIDORE BYCOVID OSCARS	Sustainability, ability to work as a federated system
Blue-Cloud2026	
FNS-Cloud, Comfocus, FishEUTrust, SIESTA, Fair-Champion	
FAIR-IMPACT FC4E RDA TIGER	
FAIR-IMPACT BY-COVID EuroScienceGateway	Ease of access, reliability of service. Easy to get started.
FAIR Impact and RDA TIGER	Main highlight is the national PID guidance that RDA has produced. https://www.rd-alliance.org/rda-national-pid-strategies-guide-and-checklist-final-outputs-and-supporting-materials-available
BY-COVID	
Virtual Atomic and Molecular Data Centre	Our guiding principles are those contained in https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjCgbrLkYeDAxUtTgQEHZ2wD7AQFnoECBQQAQ&url=https%3A%2F%2Fwww.rd-alliance.org%2Fgroup%2Ffair-digital-object-fabric-ig%2Foutcomes%2Fpersistent-identifiers-consolidated-assertions&usg=AOvVaw1jhcgQBM3gi0MwKgayD3Sl&opi=89978449

Project or initiative	3. What does in your opinion constitute trust in a PID service?
OpenAIRE	
RDA France	
GO FAIR Foundation	Transparency and provenance

Project or initiative	3. What does in your opinion constitute trust in a PID service?
Semantics in Astronomy, Planetary Sciences and Heliophysics	We use generic PID (DOI, ORCID, ROR ID...) which are supposed last for some time, since they are widely used
Reactome database of biomolecular pathways	Established track record, non-commercial, low overhead.
A CRIS system for Open Science and FAIR publications	
University of Bologna (FAIR Champion + Data Stewards)	
PerSciDo: The French Labex Persyval-Lab	A combination of technical robustness, community acceptance, transparency, and a long-term reliability and support: DOI answers to these properties for our use.
Integrated Carbon Observation System (ICOS)	For ICOS, this includes international recognition of good service practices, such as secure storage and maintenance of metadata, very high accessibility/up time (of both registries and resolvers), transparent and independent governance structure, clear cost models and publically stated long-term operationability goals.
ELIXIR	Follow the recommendations being produced by https://zenodo.org/doi/10.5281/zenodo.7463420 as to what constitutes a PID (uses the EOSC PID policy document for a definition)
IVOA, ~ESCAPE	The ability to resolve the identifier over time and to understand its current status as well as retrieve all the available metadata and access solutions. IVOID are trusted by astro community being one REC standard endorsed by the IVOA
ISIDORE BYCOVID OSCARS	
Blue-Cloud2026	
FNS-Cloud, Comfocus, FishEUTrust, SIESTA, Fair-Champion	
FAIR-IMPACT FC4E RDA TIGER	Open governance, open availability of code and data, justifiable costs, widespread use

Project or initiative	3. What does in your opinion constitute trust in a PID service?
FAIR-IMPACT BY-COVID EuroScienceGateway	Service should be mature, for instance not have self-signed SSL certificates (as happened with B2Handle). Quick response on issues or registration (w3id is notably stable and quick)
FAIR Impact and RDA TIGER	
BY-COVID	Transparency and openness
Virtual Atomic and Molecular Data Centre	Persistent of resolving. Having a landing page giving access to data