



# PID services for FAIR data

Connected open identifiers for discovery, access,  
and use of research resources

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European  
Commission

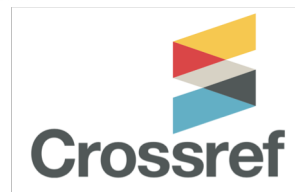
Horizon 2020  
European Union funding  
for Research & Innovation

# the FREYA project



- Improved discovery and access of research data
- Develop new types of PIDs
- Demonstrate disciplinary PID systems
- Integration with EOSC

# FREYA partners



# PID Graph



The PID Graph is a network of connections between PIDs available through a set of federated RESTful JSON APIs.

PID

PID

PID

PID

PID

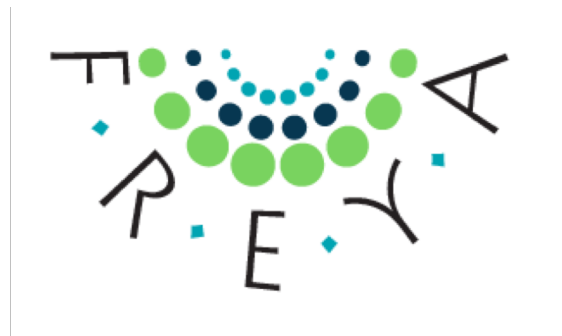
PID

Introducing the PID Graph: <https://doi.org/10.5438/jwvf-8a66>

# PID Graph implementation – DataCite Event Data



- Event Data: social media mentions and data citations
  - **Added:** author-resource links (ORCID) and funder-resource links (Crossref funder IDs)
  - dataset usage statistics (work in Make Data Count Project)
- This enables the following two use cases:
  - Show all datasets created by a particular researcher and their usage stats
  - Show all datasets funded by the European Commission that have been cited by a journal article



**Where are PIDs in the research  
data life cycle?**

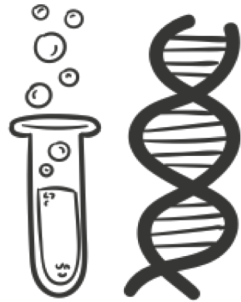
# Research data lifecycle



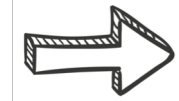
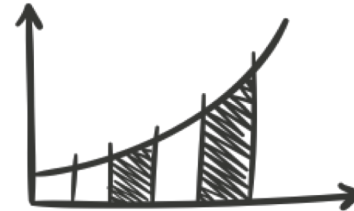
Ideas



Research



Store & publish



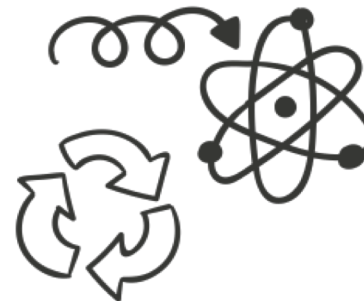
Impact



Search



Find!



Reuse



Credit



**What aspects of FAIR does your service support and how?**

**What are the strengths and gaps in FAIR service provision?**



# PIDs & FAIR



## Findable

*‘F1. (Meta)data are assigned a globally unique and persistent identifier (PID)’*

*‘F3. Metadata clearly and explicitly include the identifier of the data it describes’*

# PIDs & FAIR



## Accessible

*'A1. (Meta)data are retrievable by their identifier using a standardized communications protocol'*

# PIDs & FAIR



## Interoperable

*'13. (Meta)data include qualified references to other (meta)data'*

Creates links between digital objects, provides context

# PIDs & FAIR



## Reusable

*'R1.2. (Meta)data are associated with detailed provenance'*

A potential reuser needs to know who to cite and acknowledge

# PIDs & FAIR



## Strengths

- PIDs contribute to FAIR in each of the four aspects

## Gaps

- **Adoption**
  - Assigning PIDs to research resources
  - Adding linked PIDs to metadata for context
- **PID type availability**
  - FREYA is working on new and emerging PID types

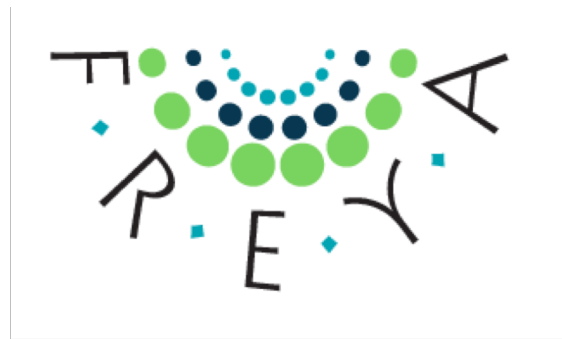


**How do you  
interoperate/collaborate/engage  
with other services to help support  
FAIR data?**

# PIDs & other services

- DMPs
- RDM training
- Repositories
- Publishers
- Research information systems
- Research Infrastructures





**What is the one key change you think  
needs to happen to implement FAIR  
data and FAIR services?**



# Richer metadata



<pre>"id": "<a href="https://doi.org/10.5281/zenodo.1434827">https://doi.org/10.5281/zenodo.1434827</a>", "doi": "<a href="https://doi.org/10.5281/zenodo.1434827">10.5281/ZENODO.1434827</a>", "url": "<a href="https://zenodo.org/record/1434827">https://zenodo.org/record/1434827</a>", "creators": [ { "name": "Vrba, Stian Z.", "nameType": "Personal", "givenName": "Stian Z.", "familyName": "Vrba", "affiliation": "Quine AS" }, { "name": "Groven, Gunleik", "nameType": "Personal", "givenName": "Gunleik", "familyName": "Groven" } ], "titles": [ { "title": "Stockholm Reconstruction Shots With Lidar" } ]</pre>	<pre>"rightsList": [ { "rights": "Creative Commons Attribution 4.0", "rightsUri": "<a href="https://creativecommons.org/licenses/by/4.0">https://creativecommons.org/licenses/by/4.0</a>" }, { "rights": "Open Access", "rightsUri": "info:eu-repo/semantics/openAccess" } ], "fundingReferences": [ { "awardUri": "info:eu-repo/grantAgreement/EC/H2020/731970/", "awardTitle": "Live Action Data Input and Output", "funderName": "European Commission", "awardNumber": "731970", "funderIdentifier": "<a href="https://doi.org/10.13039/501100000780">https://doi.org/10.13039/501100000780</a>", "funderIdentifierType": "Crossref Funder ID" } ], "relatedIdentifiers": [ { "relationType": "HasVersion", "relatedIdentifier": "10.5281/zenodo.1434828", "relatedIdentifierType": "DOI" } ]</pre>
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# Richer metadata



<pre>"id": "<a href="https://doi.org/10.5281/zenodo.1434827">https://doi.org/10.5281/zenodo.1434827</a>", "doi": "<a href="https://doi.org/10.5281/zenodo.1434827">10.5281/ZENODO.1434827</a>", "url": "<a href="https://zenodo.org/record/1434827">https://zenodo.org/record/1434827</a>", "creators": [ { "name": "Vrba, Stian Z.", "nameType": "Personal", "givenName": "Stian Z.", "familyName": "Vrba", "affiliation": "Quine AS" }, { "name": "Groven, Gunleik", "nameType": "Personal", "givenName": "Gunleik", "familyName": "Groven" } ], "titles": [ { "title": "Stockholm Reconstruction Shots With Lidar" } ]</pre>	<pre>"rightsList": [ { "rights": "Creative Commons Attribution 4.0", "rightsUri": "<a href="https://creativecommons.org/licenses/by/4.0">https://creativecommons.org/licenses/by/4.0</a>" }, { "rights": "Open Access", "rightsUri": "info:eu-repo/semantics/openAccess" } ], "fundingReferences": [ { "awardUri": "info:eu-repo/grantAgreement/EC/H2020/731970/", "awardTitle": "Live Action Data Input and Output", "funderName": "European Commission", "awardNumber": "731970", "funderIdentifier": "<a href="https://doi.org/10.13039/501100000780">https://doi.org/10.13039/501100000780</a>", "funderIdentifierType": "Crossref Funder ID" } ], "relatedIdentifiers": [ { "relationType": "HasVersion", "relatedIdentifier": "<a href="https://doi.org/10.5281/zenodo.1434828">10.5281/zenodo.1434828</a>", "relatedIdentifierType": "DOI" } ]</pre>
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Towards a more connected and complete scholarly record



# PID services for FAIR data

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