How Identifiers Can Help you in Open Science

OSFair

17 September 2019

Agenda

Introductory Presentations (40 mins)

- A PID for everything & why would you use them? (Helena Cousijn, Ivo Wijnbergen)
- Research Graphs: Getting the best out PIDs (Paolo Manghi)
- Creating a PID policy and good practices (Jessica Parland-von Essen)
- Information and training materials from the projects (Frances Madden)

Drafting an approach on how to (further) promote PIDs in your organisation (35 mins)

How to design messages for your communities (30 mins)

Action Plan: Three things you will do after this workshop (10 mins)

A PID for everything & why would you use them?

Helena Cousijn (DataCite) & Ivo Wijnbergen (ORCID)
17 September 2019

DataCite
FIND, ACCESS, AND REUSE DATA

ORCID

What is a persistent identifier?

persistent identifier

an organization
made a promise
to keep it alive

globally unique
string

(known as PIDs to their friends)

How PIDs work (in a nutshell)

PIDs are typically backed by a **registry** that indicates what item is being identified. Different kinds of PIDs have varying degrees of descriptive metadata.

PIDs today are often expressed as **URLs**, and the registry indicates where that URL should ultimately resolve. That PID will always point to the correct item even if the item's location changes.

What kind of stuff gets a PID?

Journal articles. via Crossref (https://crossref.org)

People. via ORCID. (https://orcid.org)

Data, software, and other stuff. via DataCite. (https://datacite.org)

Research organizations. via ROR. (https://ror.org)

And others.

DOIs and ORCID IDs are persistent identifiers

DOIs (digital object identifiers) are one type of persistent identifier.

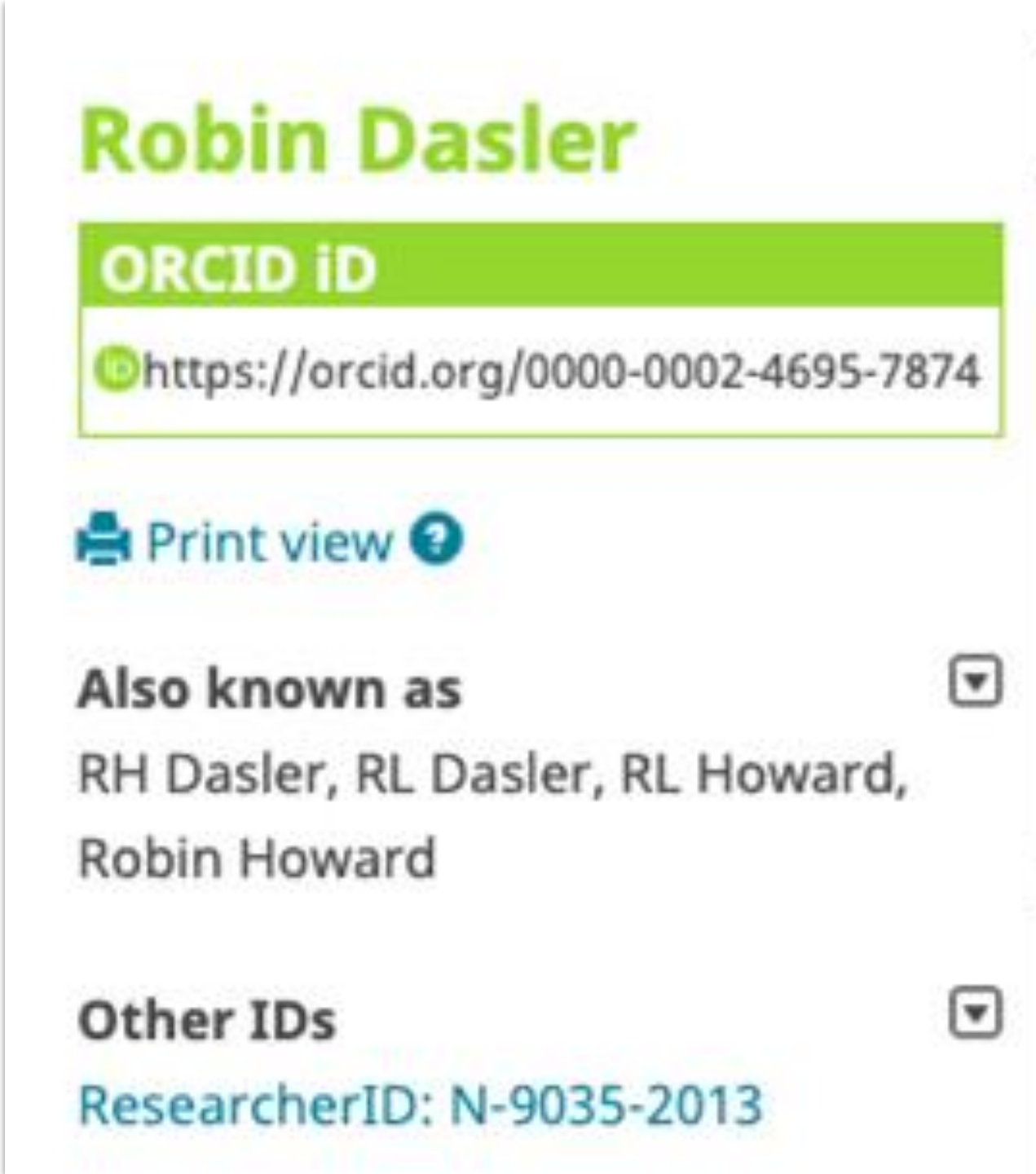
https://doi.og/10.5072/abc123 ← If you've seen this on a research paper, you've seen a persistent identifier..

An ORCID ID is also a persistent identifier, based on a 16-digit ISNI number.
https://orcid.org/0000-0001-5540-748X

Often PIDs are displayed and linked to the source by URLs

. . . but what can PIDs *do*?

PIDs Disambiguate



PIDs Link

This article references these other things.

References

Abd Ellah and Abouelmagd, 2016 N.H. Abd Ellah, S.A. Abouelmagd
Surface functionalization of polymeric nanoparticles for tumor drug delivery: approaches and challenges
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Biosynthesis of gold nanoparticles: a green approach
J. Photochem. Photobiol. B: Biol., 161 (2016), pp. 141-153,
10.1016/j.jphotobiol.2016.04.034
Article Download PDF View Record in Scopus
Google Scholar

Akhavan et al., 2011 O. Akhavan, R. Azimirad, S. Safa, E. Hasani

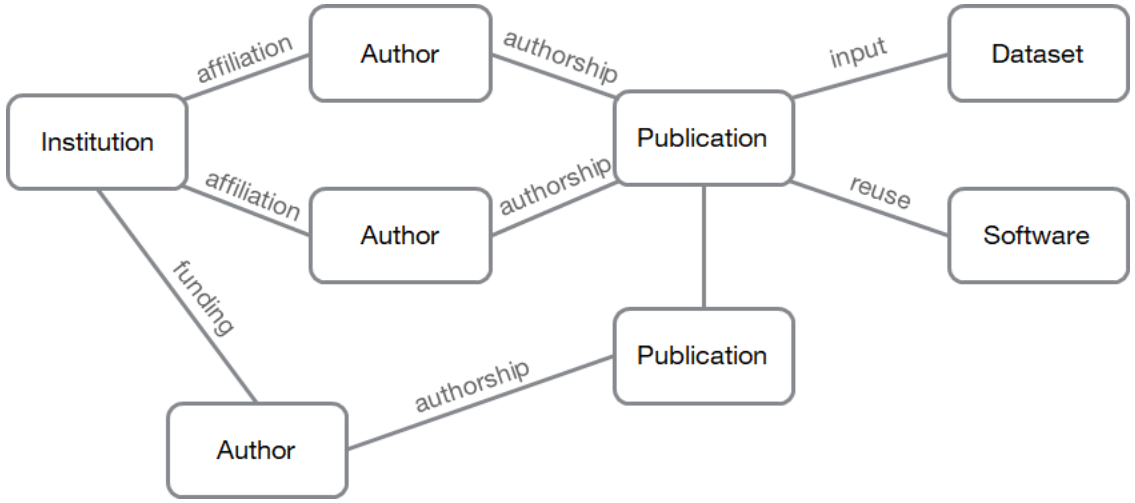
PIDs make research FAIR

Findable	To be Findable any Data Object should be uniquely and persistently identifiable.
Accessible	Data is Accessible in that it can be always obtained by machines and humans
Interoperable	Data should include qualified references to other data, and the format should use a shared vocabulary.
Reusable	To achieve this, data should comply with the above, and refer to their sources with rich metadata and provenance.

Good start, but we want more

By connecting everything, you can see the true power of PIDs

Researchers, institutions, publications, datasets, and more are already interconnected in real life, and this can be reflected and tracked through PIDs



And what can you do?

Step 1: Give PIDs to your stuff

It’s hard to connect things when we don’t know they exist.

So get an ORCID iD for yourself → https://orcid.org

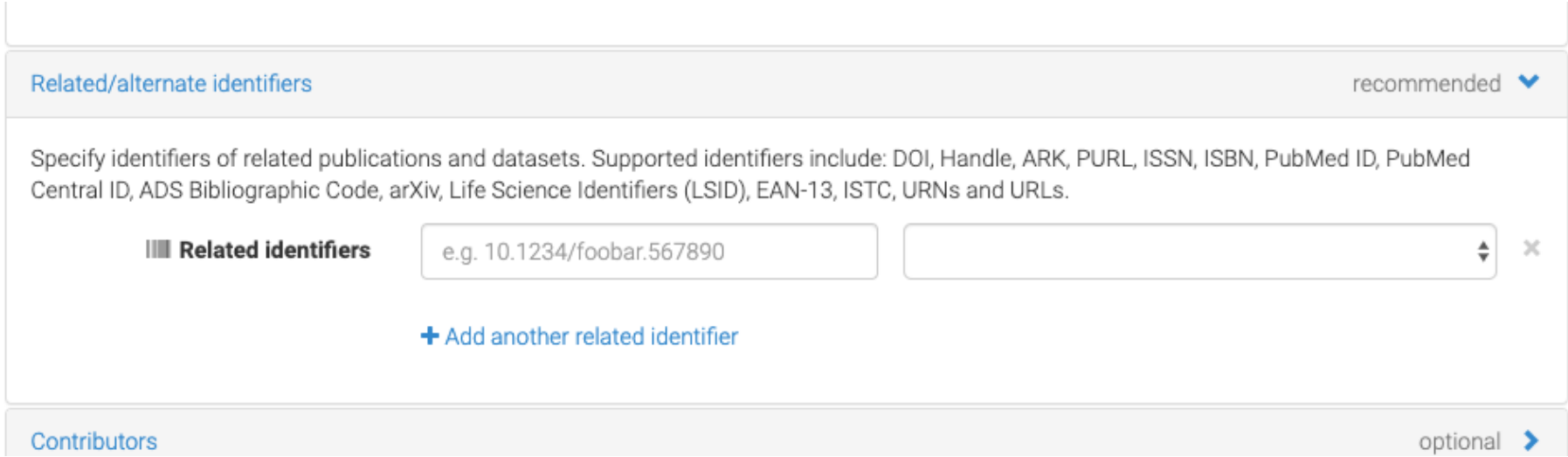
Give DOIs to your data and software → https://datacite.org, https://guides.github.com/activities/citable-code/

Put your reports and white papers into a repository that gives out PIDs → https://repositoryfinder.datacite.org or your institutional repository

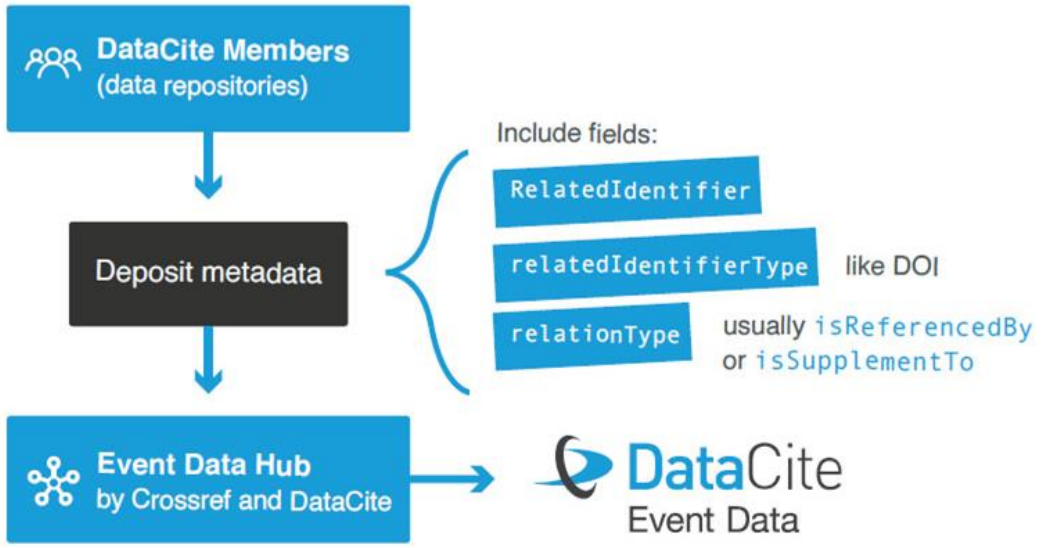
Step 2: Tell your PIDs about your other PIDs

Include relevant related PIDs in the metadata for your software, dataset, and paper PIDs, even if your repository says they're optional.

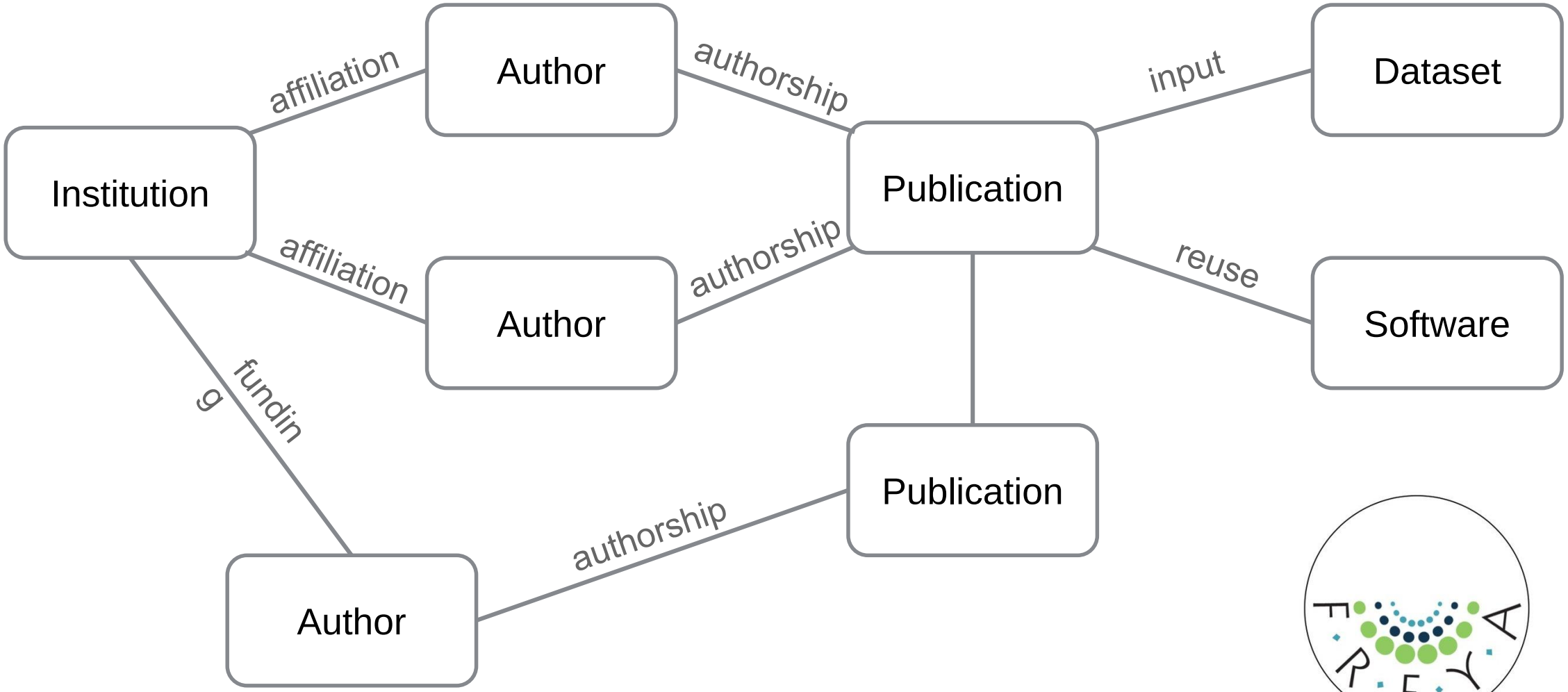
In Zenodo (for example), it looks like this:



Step 3: Share these connections with the community

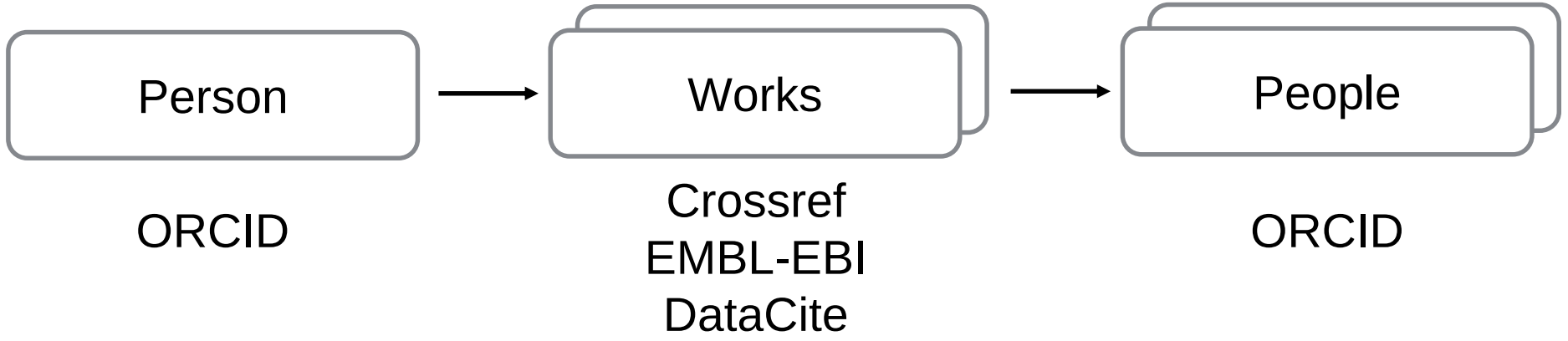


Interested in using this information? Find out more at: https://support.datacite.org/docs/eventdata-guide

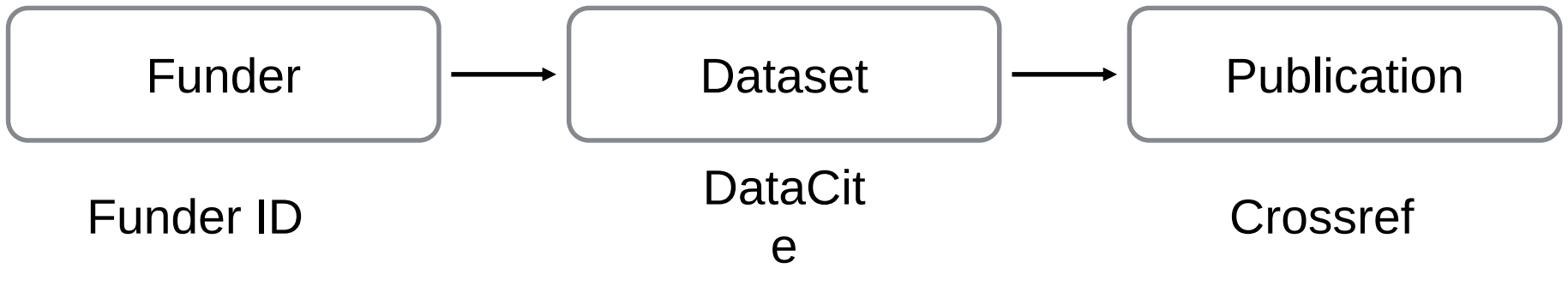


All this information feeds into a graph

Who are all the co-authors of a given researcher?

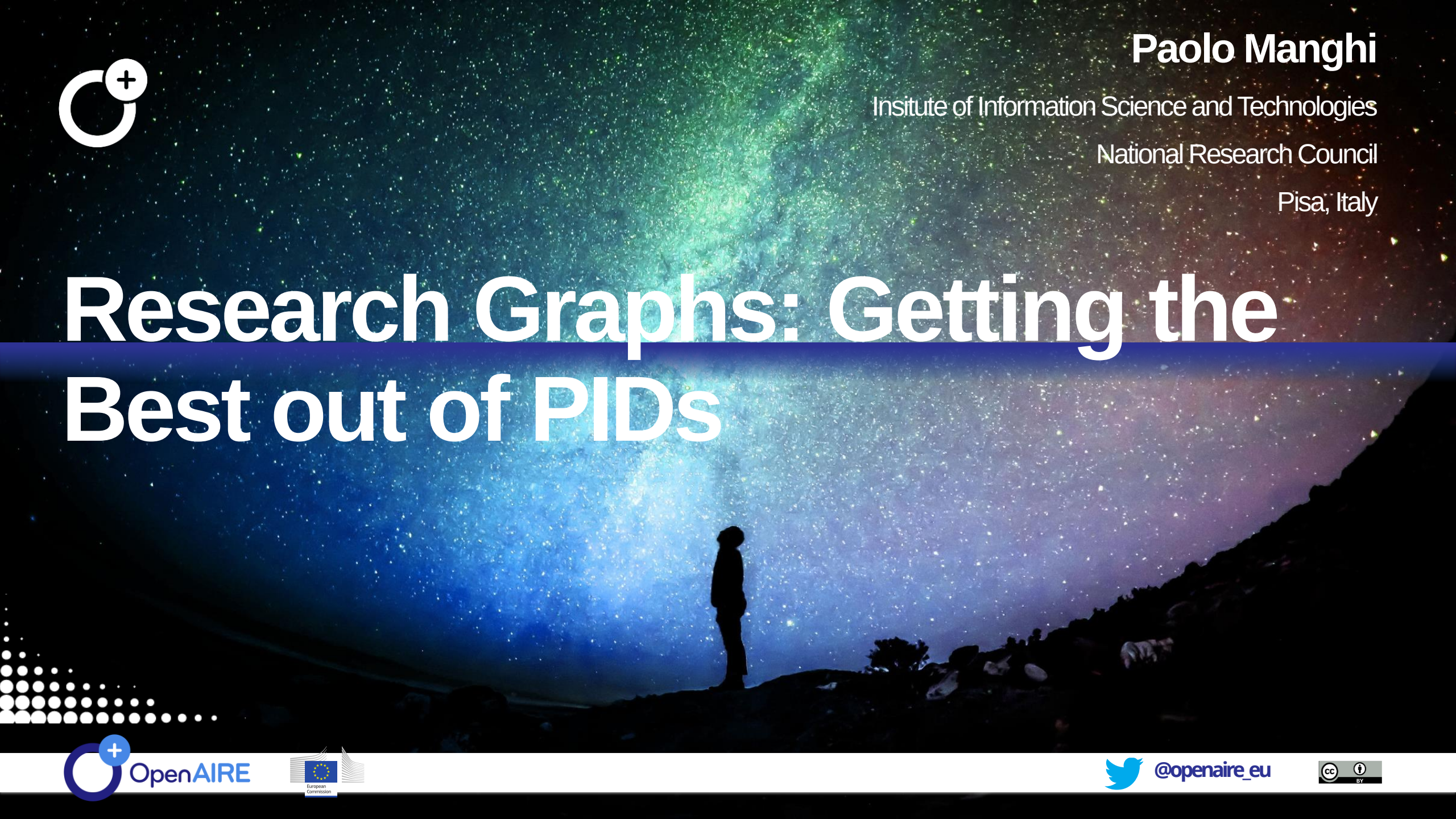


Show all datasets funded by the European Commission that have been cited by a journal article



Which can be used to answer new questions

If you take the first steps, we'll do the rest!



Paolo Manghi

Insitute of Information Science and Technologies

National Research Council

Pisa, Italy

Research Graphs: Getting the Best out of PIDs

What's a research graph?

- **It's a graph…**

  So it must connect some objects with some links!

- **It's a research graph…**

  So objects and links must be related with research entities!

- **Which are such research entities? Do links have a meaning?**

  Depends on targeting use-cases and customers!

Some examples of research graphs

FREYA

Datasets, authors, publications, funder

With PIDs

ResearchGraph

Datasets, researchers, grants (Australian), publications

With PIDs

OpenCitations

Publications

With PIDs

OpenAIRE Research Graph

Publications, Datasets, software, other products, projects, funders, oganizations, data sources, research communities

With PIDs and URLs

Common use-case driven methodology

Metada ta collecti on

- Collect information from selected scholarly data sources

Graph populat ion

- Materialization: Aggregate information to build the graph

Graph enrichm ent

- Enrich graph by deriving/inferring information

Graph provisi on

- Publish graph to third-party consumers

Added- value service s

- Enable a number of added-value services

Research Graph magics

- Discovery and recommendations
- Reproducing
- Scientific rewarding
- Science assessment
- Open Science Monitoring
- Research strategies planning
- ….

How can we ensure to get the best out of PIDs?

Decentralization

Exchange information with other Research Graphs

Preserve value-added information by enriching scholarly data sources

Quality

Provenance of data source PIDs

Shared understanding of quality

Openness

Licensing metadata as CC-0 as possible

Interoperability across graphs

Open Science Graphs for FAIR data RDA IG

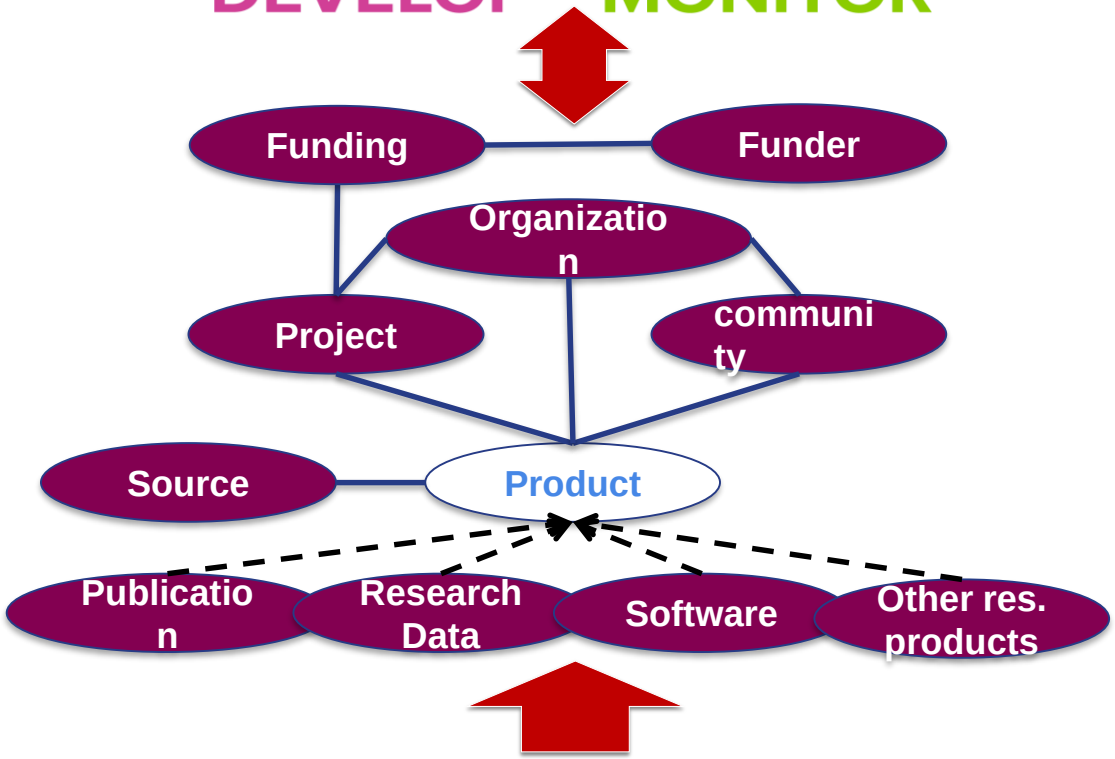
Interoperability of research graphs

OpenAIRE Research Graph use-case

OpenAIRE Research Graph

CONNECT PROVIDE EXPLORE

DEVELOP MONITOR



End-user feedback

Deduplication

Harvesting metadata

Mining

Harvesting metadata

csc

Software Heritage
PRESERVING TECHNICAL KNOWLEDGE

… and more

GitHub

OpenCitations

unpaywall

Microsoft Academic Graph

10K sources

OpenAIRE RESEARCH GRAPH

DataCite

schema.org

ScholeXplorer
The Data Literature Interlinking Service

ORCID

… and more

re3data.org
REGISTRY OF RESEARCH DATA REPOSITORIES

GRID

OpenAIRE

… and more

European Commission

CORDIS
Community Research & Development Information Service

Crossref

F1000
Faculty of 1000

frontiers

PLOS

… and more

BASE

egi

EPOS
EUROPEANPLATEOBSERVINGSYSTEM

PARTHENOS
Pooling Activities, Resources and Tools for Heritage E-research Networking, Optimization and Synergies

elixir

DARIAH-EU

… and more

Cornell University Library
arXiv.org

OpenDOAR

zenodo
Research. Shared.

PubMed

RePEc

DOAJ
DIRECTORY OF OPEN ACCESS JOURNALS

SciELO

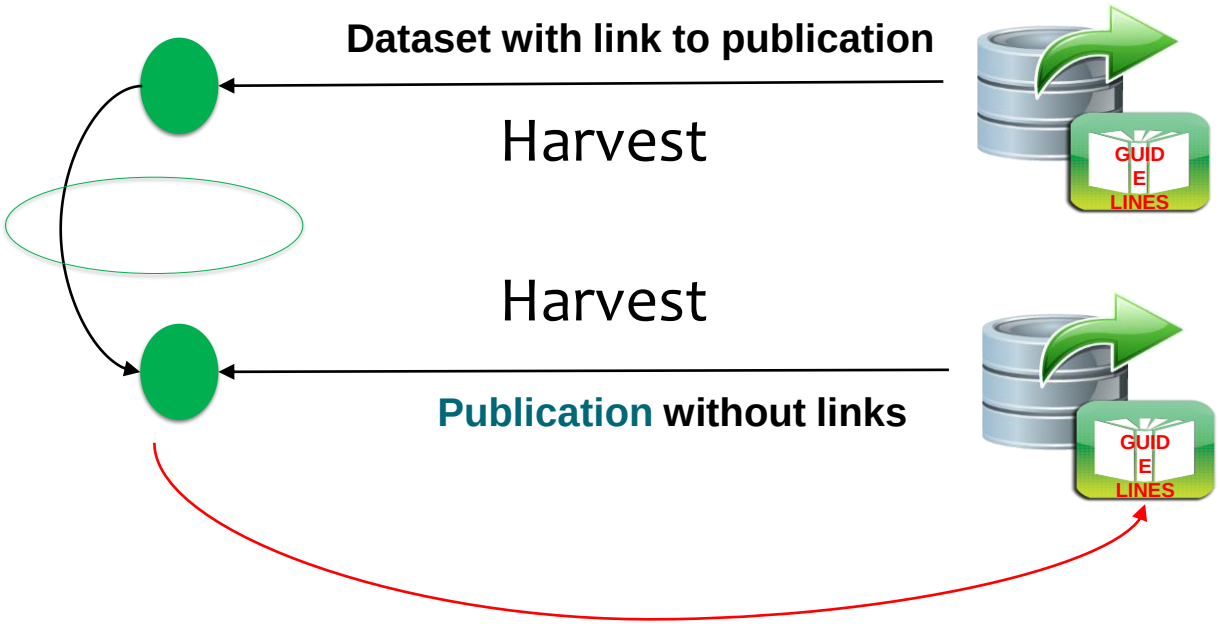
… and more

Harvesting metadata records

Harvested content

- Records
  - 450Mi
- Links
  - 130Mi

Scholexplorer
The Data Literature Interlinking Service



Notify link to dataset to data source

Text-mine full-text of Open Access articles

11Mi OA full-texts

Links

- Text-mined links
  - 400Mi
- Text-mined values
  - 178Mi

Link publication-software

Research software with DOI and no links

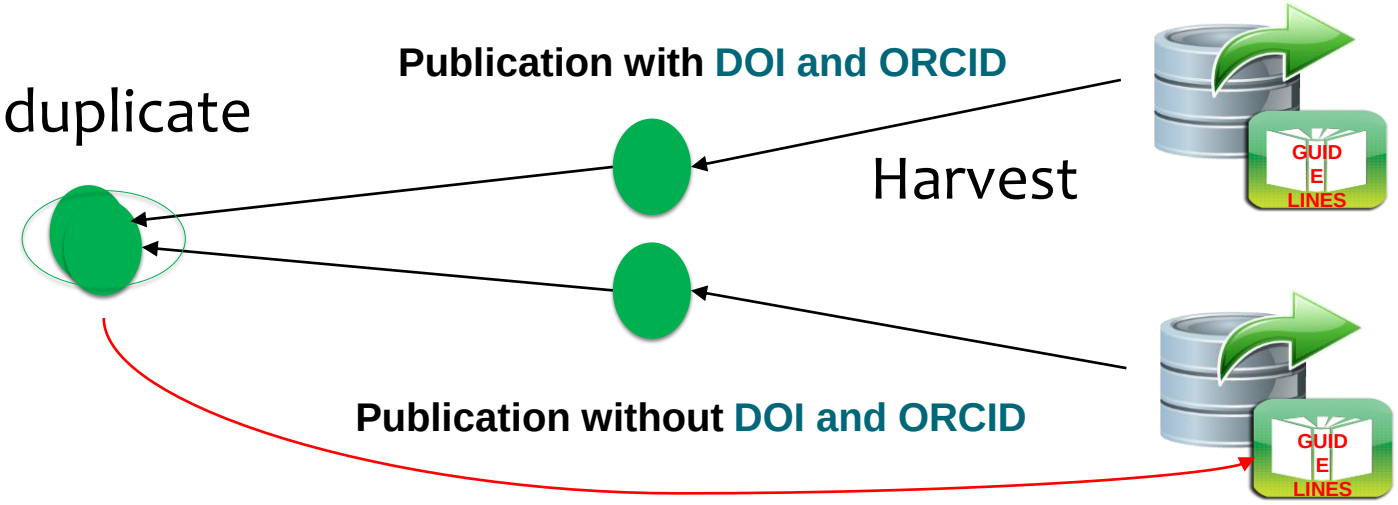
Harvest

Publication without links

Notify link to software to data source

Deduplication

Metadata records corresponding to equivalent objects are merged



OpenAIRE RESEARCH GRAPH

101mi publications, 8mi research data, 8mi other research products, 201K software
from 9,900 content providers and 28 funders linked together for an integrated discovery of research outcomes

Notify DOI and ORCID for the record to data source

Propagation via links

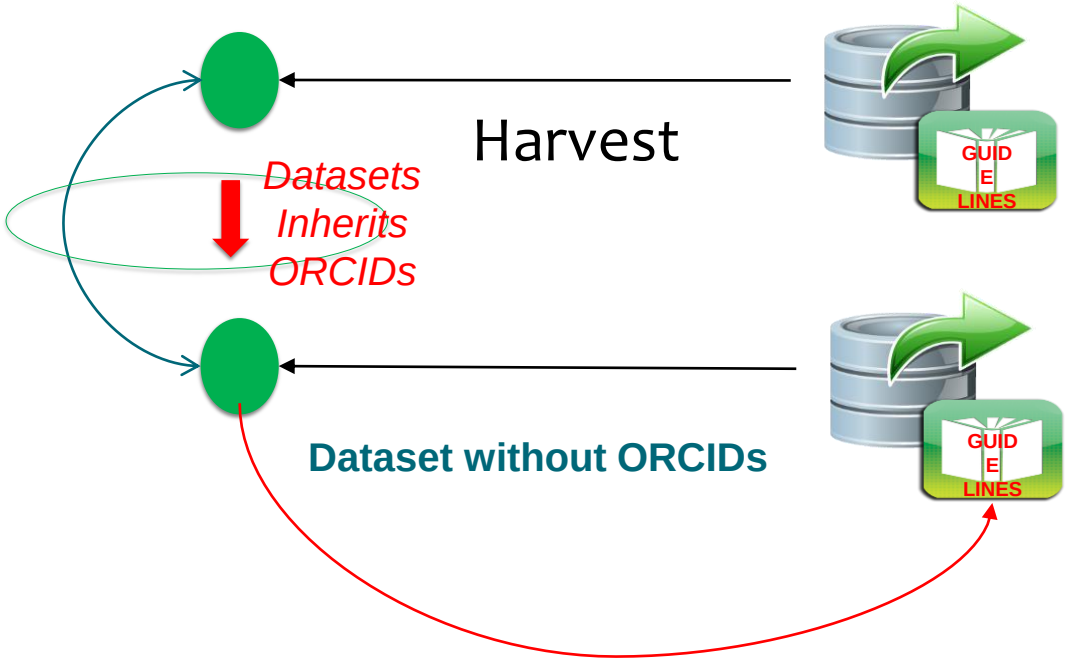
Project, countries, and communities information

from publications to other products

8Mi

OpenAIRE RESEARCH GRAPH

Publication and dataset author names are the same



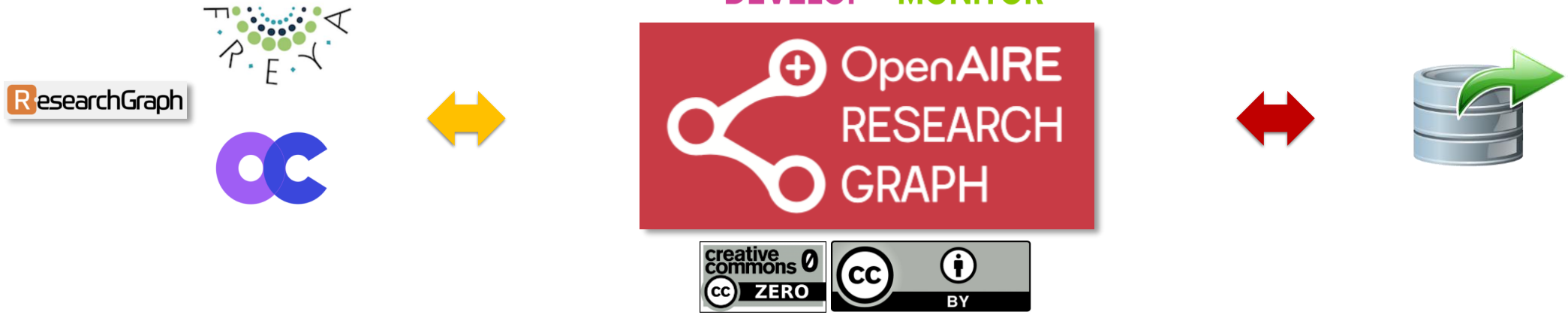
Interoperability and decentralization

Interconnecting Research Graphs

Decentralization

CONNECT PROVIDE EXPLORE

DEVELOP MONITOR



RESEARCH DATA ALLIANCE EUROPE

OpenAIRE | PROVIDE

OpenAIRE

BETA Graph Open Consultation

- **September-October 2019:**

  OpenAIRE Research Graph open for consultation

  Collecting feedback via Trello (operational end of September)

- **November 2019:**

  OpenAIRE Research Graph in production

http://beta.explore.openaire.eu

Thank you!

Paolo Manghi

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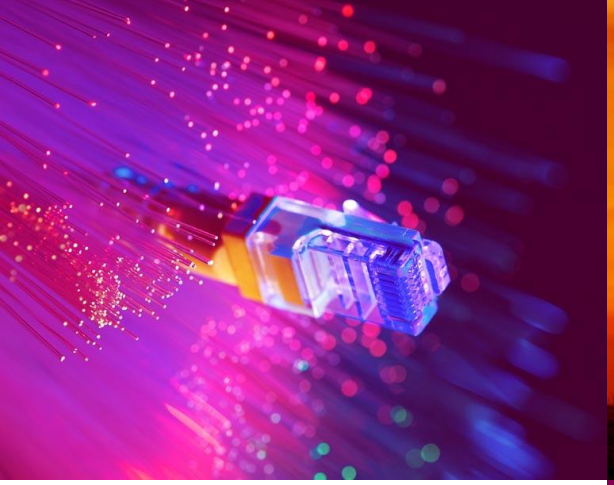
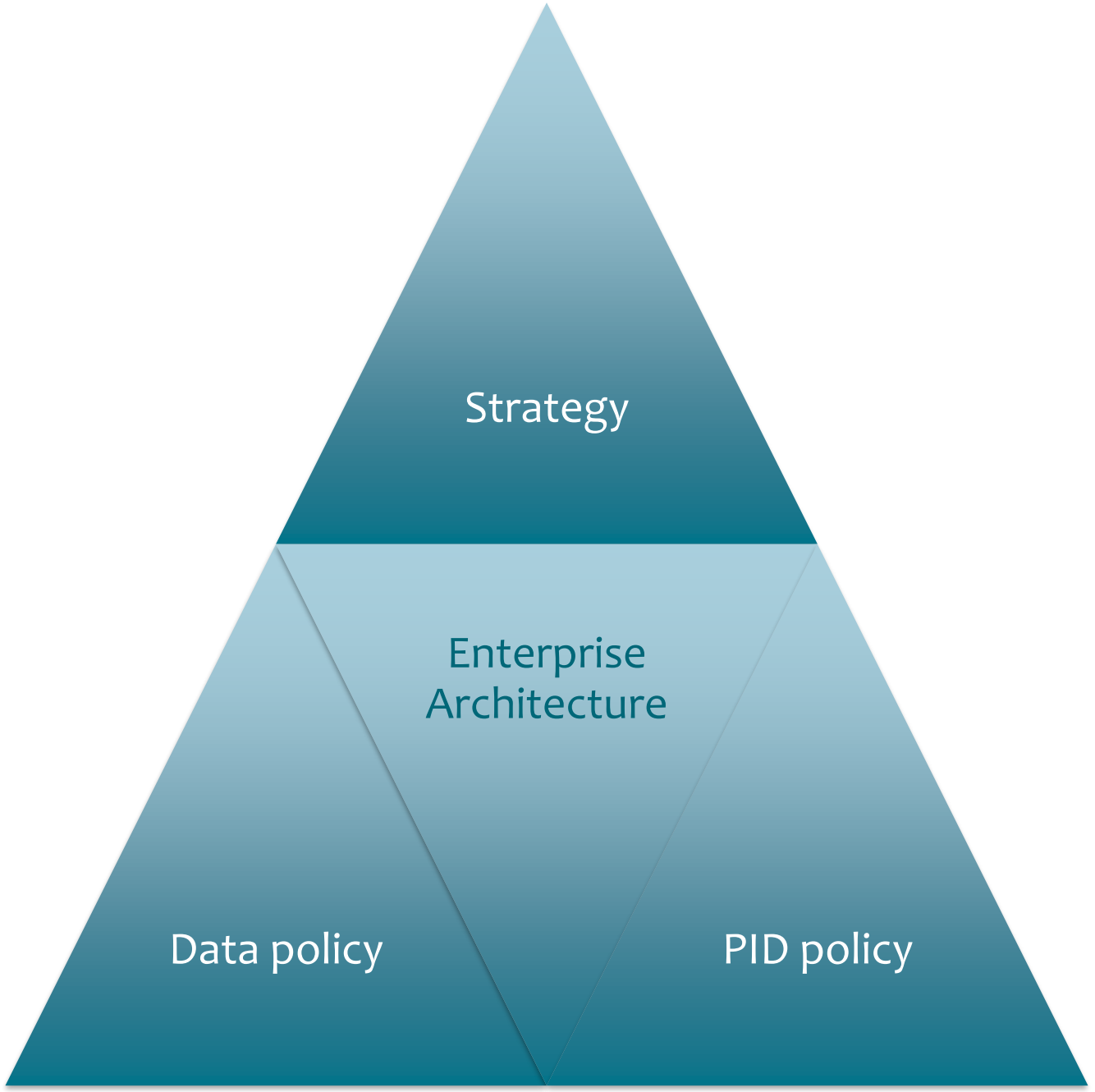


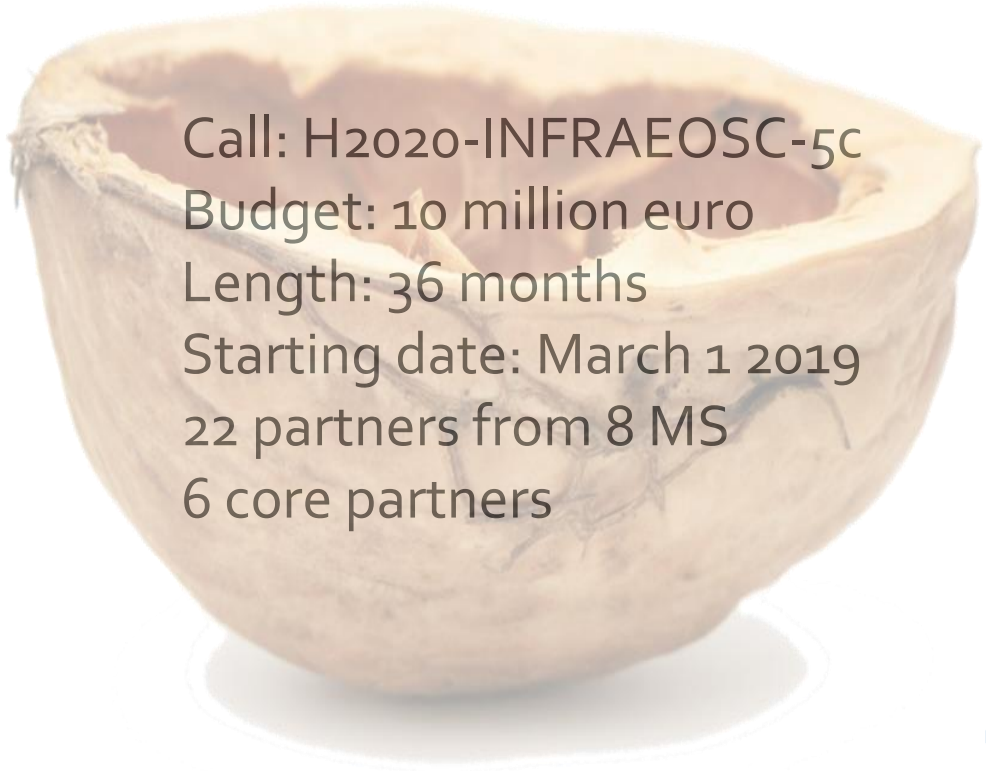
Creating a PID policy

Jessica Parland-von Essen. https://orcid.org/0000-0003-4460-3906

CSC – Suomalainen tutkimuksen, koulutuksen, kulttuurin ja julkishallinnon ICT-osaamiskeskus


Strategy
Enterprise Architecture
Data policy
PID policy

FAIRsFAIR in a nutshell



Call: H2020-INFRAEOSC-5c
Budget: 10 million euro
Length: 36 months
Starting date: March 1 2019
22 partners from 8 MS
6 core partners

Data Archiving and Networked Services
DANS

EUA
European University Association

DCC

CSC

Trust-IT Services
Communicating ICT to markets

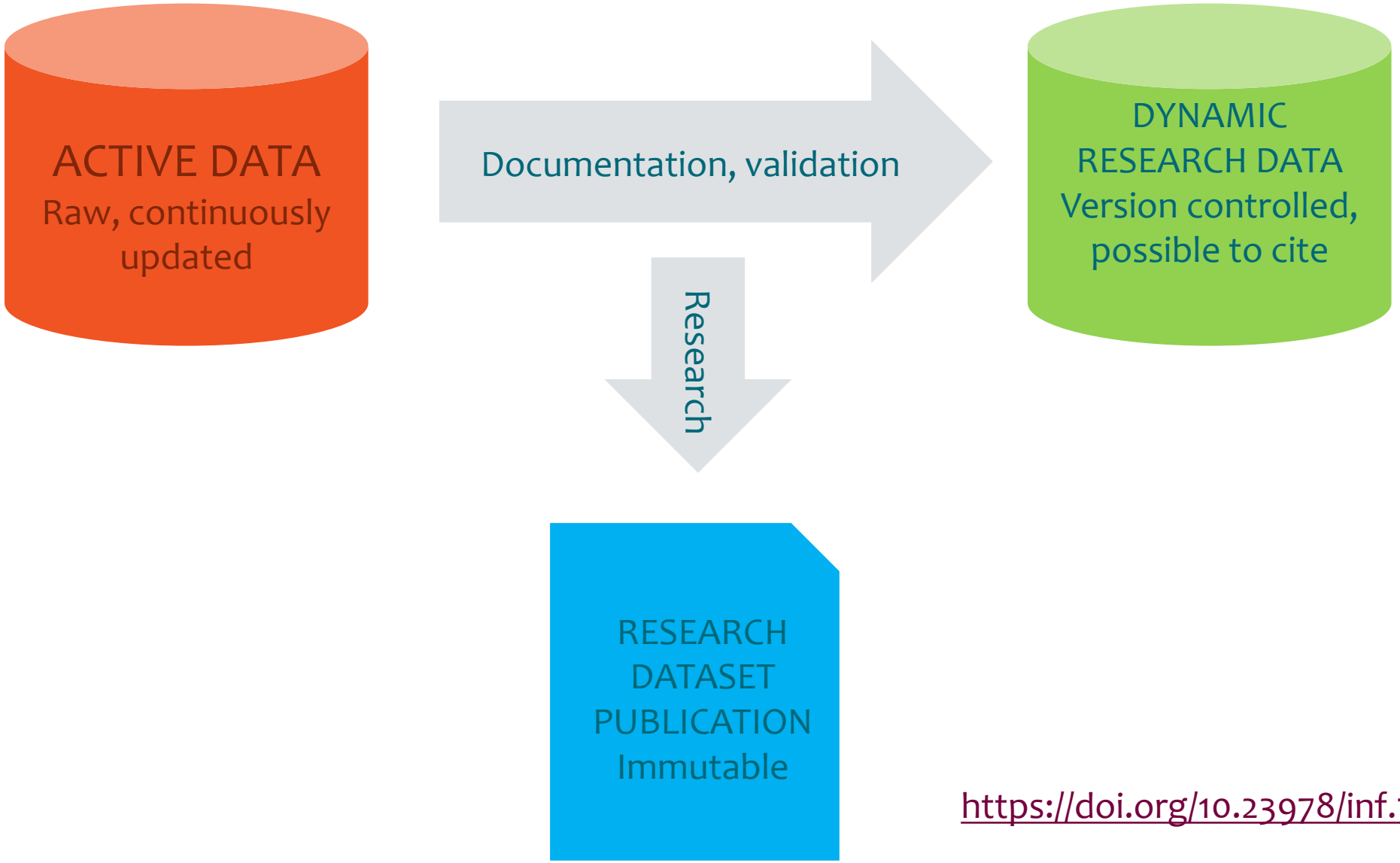
Science & Technology
Facilities Council

FAIRSFAIR

Fostering Fair Data Practices in Europe

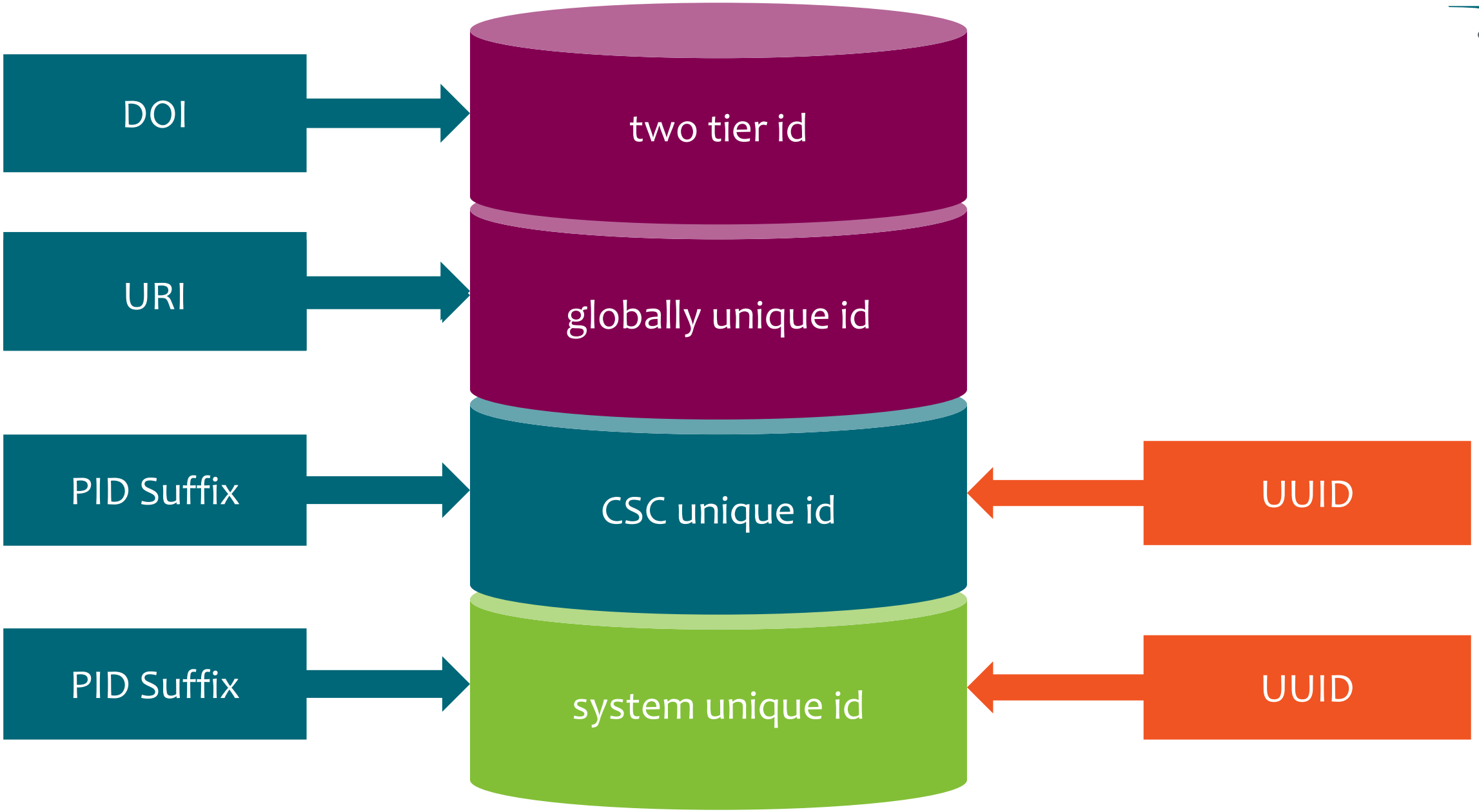
- Semantic interoperability and sustainability are key features to make FAIR work
- Persistent identifiers are in the DNA of FAIR
- FAIR research data is also linked data
- Research data is often complex and dynamic
- The life cycle and deletion often not sufficiently planned and documented
- Traditional research dataset publications are often “article like”, static outputs
- FAIRsFAIR has a wide definition of data

Research Data Types



https://doi.org/10.23978/inf.77419

A PID is a Promise


DOI
URI
PID Suffix
PID Suffix
two tier id
globally unique id
CSC unique id
system unique id
UUID
UUID

CSC PID POLICY

All datasets have appropriate identifiers

If an object has an identifier use it

One object can have several identifiers

Identifiers are unique in their context

Use and management of identifiers is documented

No identifier is reused in its context

Identifiers have minimal semantic meaning and strictly defined structure

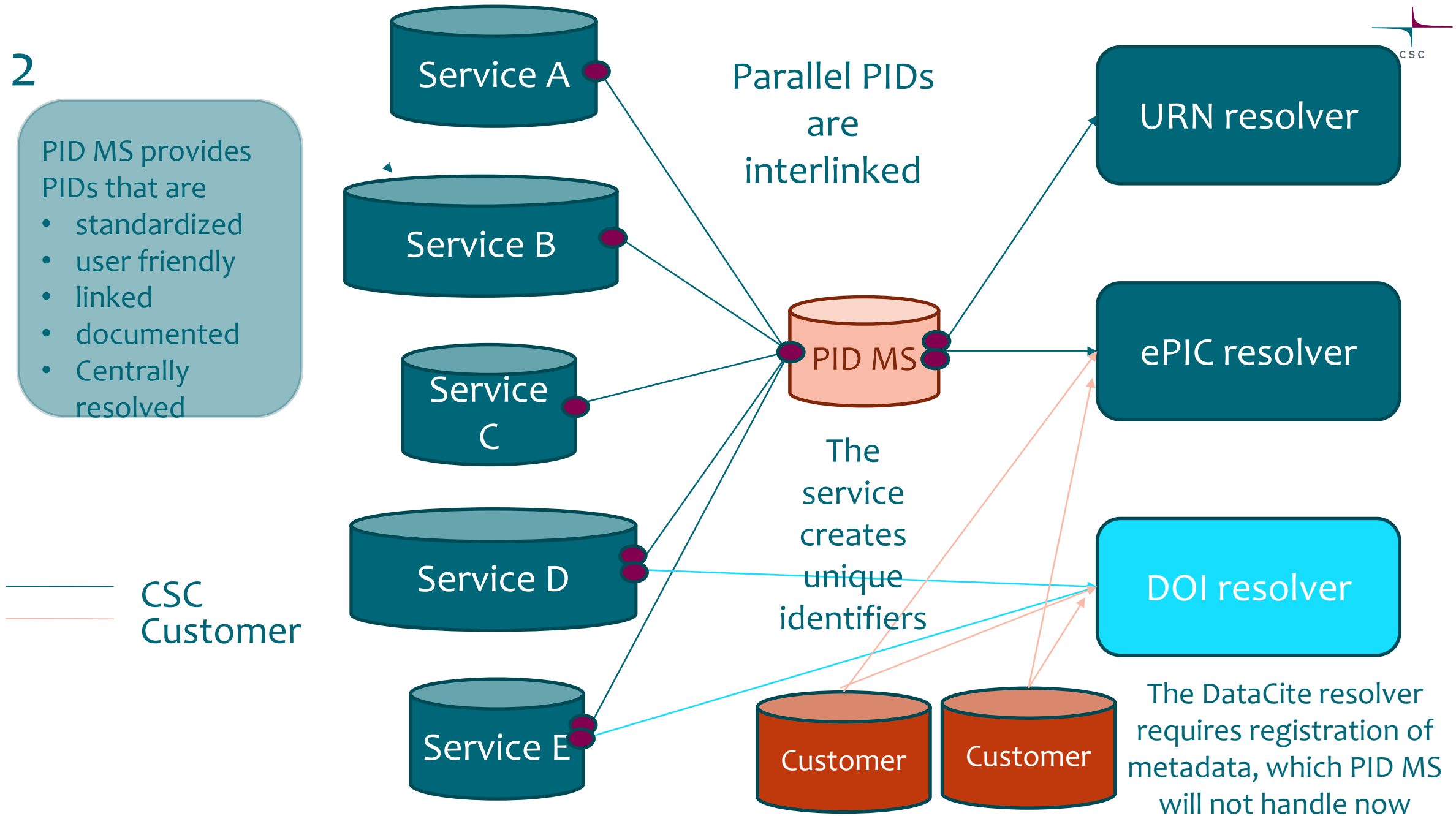
Identifiers comply with documented standards

Policies for object versioning are documented

Human readable identifiers are user friendly

2

PID MS provides PIDs that are
- standardized
- user friendly
- linked
- documented
- Centrally resolved



The DataCite resolver requires registration of metadata, which PID MS will not handle now

FINNISH NATIONAL GUIDELINE (DRAFT)

- The use of identifiers should be documented and support the needs of the research community
- All research datasets that are opened or of which the metadata is published has a PID, preferably a URN or DOI
- The PID directs the user to sufficient metadata
- If the data is not available the landing page is a tombstone page
- One dataset can have several PIDs from different systems
- DataCite relation types are used to describe relations
- Semantics should be used with consideration
- Identifiers have a defined structure
- Identifiers for human use are user friendly
- Avoid creating superfluous PIDs

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youtube.com/CSCfi

linkedin.com/company/csc---it-center-for-science

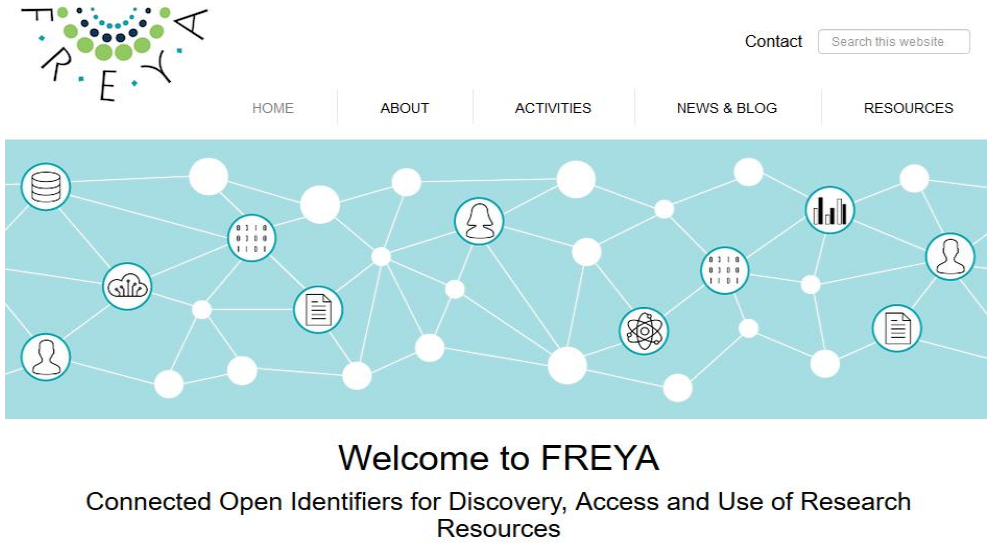
github.com/CSCfi

Where to learn more?

FREYA in a nutshell

- FREYA = persistent identifiers
  - "… iteratively extend a robust environment for Persistent Identifiers (PIDs) into a core component of European and global research e-infrastructures"

- Builds on THOR (which in turn built on ODIN)
- Started 1 December 2017
- www.project-freya.eu



The PID Forum

all categories | Categories | Latest | Top

Category	Topics
General Topics that don't need a category, or don't fit into any other existing category.	3
PID Graph Discussion of the PID Graph and all related activities.	8
PID Best Practices A category to bring together information (papers, guidelines etc) and ideas on PID best practices for different communities and disciplines.	6
PID News & Blogs Share interesting PID news & blogs here	13
PID-related events Category to share any PID-related events that might be of interest to the community e.g. conferences, webinars, workshops and more!	17
PIDapalooza Discussion topics and practical announcements related to PIDapalooza	16
Knowledge Hub This category contains basic information for those new to Persistent Identifiers created by the FREYA Project. This section will continue to be updated. Getting Started with PIDs PIDs for Librarians and Repository Managers PIDs for Funders and Policy Makers PIDs for Researchers	10

Latest		
Welcome to the PID Forum!	0	Jun 7
The PIDapalooza 2020 call for proposals is open! PIDapalooza	0	7d
Monitoring PID resolving Questions	2	7d
Registration open: FREYA Ambassador Webinar - 24 September 10:30am CET FREYA Ambassadors Chat Room	0	10d
ORCID for instruments Questions	2	12d
How will you use the PID Graph? FREYA Ambassadors Chat Room	3	14d
Crossref survey and annual meeting PID-related events	0	19d
Assigning PIDs to All The Things User Stories	0	21d
You're invited to Crossref LIVE19: The strategic one PID-related events	0	23d

PIDForum.org

Guides for Researchers

How can identifiers improve the dissemination of your research outputs?

Connect all your research products with your person identifier

WHAT IS A PERSON IDENTIFIER?

HOW IT WORKS

BENEFITS

MORE INFORMATION

What is a person identifier?

You are probably familiar with persistent identifiers like the DOI (digital object identifier) for publications and datasets. A persistent identifier or PID is a long-lasting reference to a resource - a person (you!), a place (your organisation), or a thing (your publications, data sets, software, etc). Whatever resource it refers to, the primary purpose of the PID is to provide the information required to reliably identify, verify and locate it. A PID may be connected to a set of metadata describing an item rather than to the item itself.

Support

RESOURCES

Open Science Primers

Guides

Factsheets

Use cases

Links

- https://www.pidforum.org/
- https://www.project-freya.eu/en/resources/project-output
- https://support.datacite.org/
- https://orcid.org/organizations
- https://www.fairsfair.eu/
- https://www.openaire.eu/support

How to promote PIDs in YOUR organisation

Name ways to promote PIDs

10 minutes

Choose the 3 most impactful

10 minutes

Report back

10 minutes

Presentations and Mentimeter

How to design messages for your communities?

Objections?

Mentimeter 5 minutes

Solutions!

15 minutes

Elevator pitch

1 minute per group

3 things I will do when I get back

5 minutes

Thank you!