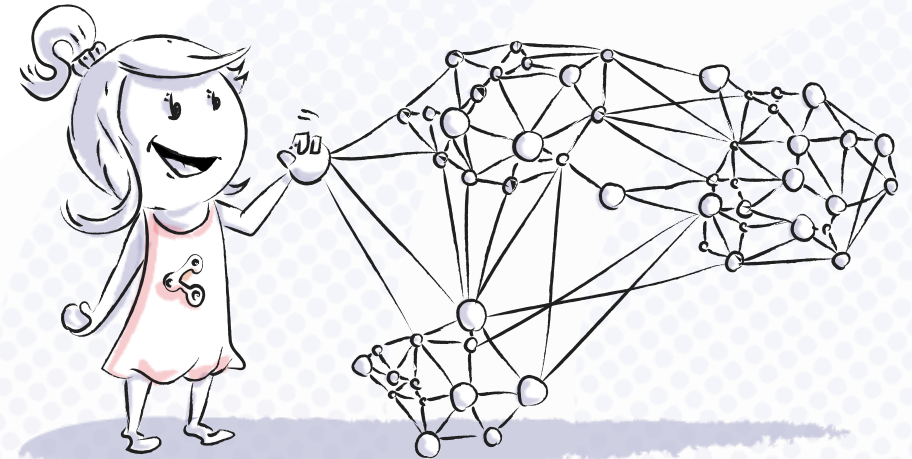


Leveraging the OpenAIRE Graph for Transparent and Responsible Research Assessment

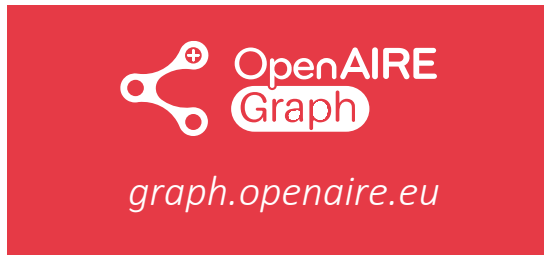
Maja Dolinar, Giulia Malaguarnera, Angeliki
Tzouganatou, Paolo Manghi, Thanasis Vergoulis ,
Leonidas Pispiringas

Objectives

- **Challenges in Current Research Assessment**
- **How the OpenAIRE Graph Addresses These Challenges**
 - aggregating metadata from a wide variety of research outputs, including publications, data, software, methods, patents, and more
 - offers a more **holistic view of research contributions**
- **Collaborative Efforts and Supporting Tools**
 - collaborates with initiatives like **OpenCitations** and **OpenAPC**
 - **OpenAIRE MONITOR** service further strengthens these efforts by providing dynamic visualizations and dashboards **to** track research impact, open science practices, and performance metrics in a transparent and equitable manner.
- **the Need for Inclusive Evaluation**



The OpenAIRE Graph: the basics



Scientific Knowledge Graph:

A collection of metadata describing **entities** of the research lifecycle and **relationships** among them

Open



Complete

De-duplicated

Transparent

Participatory

Decentralized

Trusted

Data sources contributing to the Graph



GitHub Applications Database
Supporting

Software Heritage
PRESERVING TECHNICAL KNOWLEDGE

elixir
bio.tools

... and more tools and software sources



frontiers

PLOS Springer

F1000
Faculty of 1000

... and more publishers



CORDIS
Information Service

NSF

DFG
Deutsche Forschungsgemeinschaft

... and more European and international funders



unpaywall


OpenCitations

Microsoft

... and more research s



OpenAIRE
Graph



DataCite

re3data.org
REGISTRY OF RESEARCH DATA REPOSITORIES

ROR

ORCID
... and more registries

Crossref

OpenDOAR

FAIRsharing.org
standards, databases, policies



LA Referencia
Red de repositorios de acceso abierto a la ciencia

SciELO

DOAJ
DIRECTORY OF OPEN ACCESS JOURNALS

... and more aggregators



Cornell University Library

arXiv.org

RePEc

PubMed

HAL
archives-ouvertes.fr

zenodo
Research. Shared.

... and more thematic and institutional repositories



DARIAH-EU

elixir

EPOS
EUROPEAN PLATE OBSERVING SYSTEM

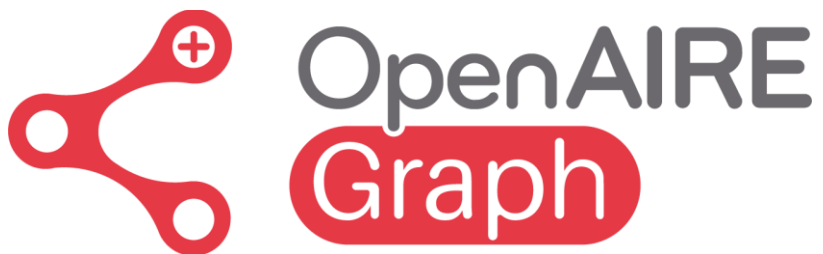
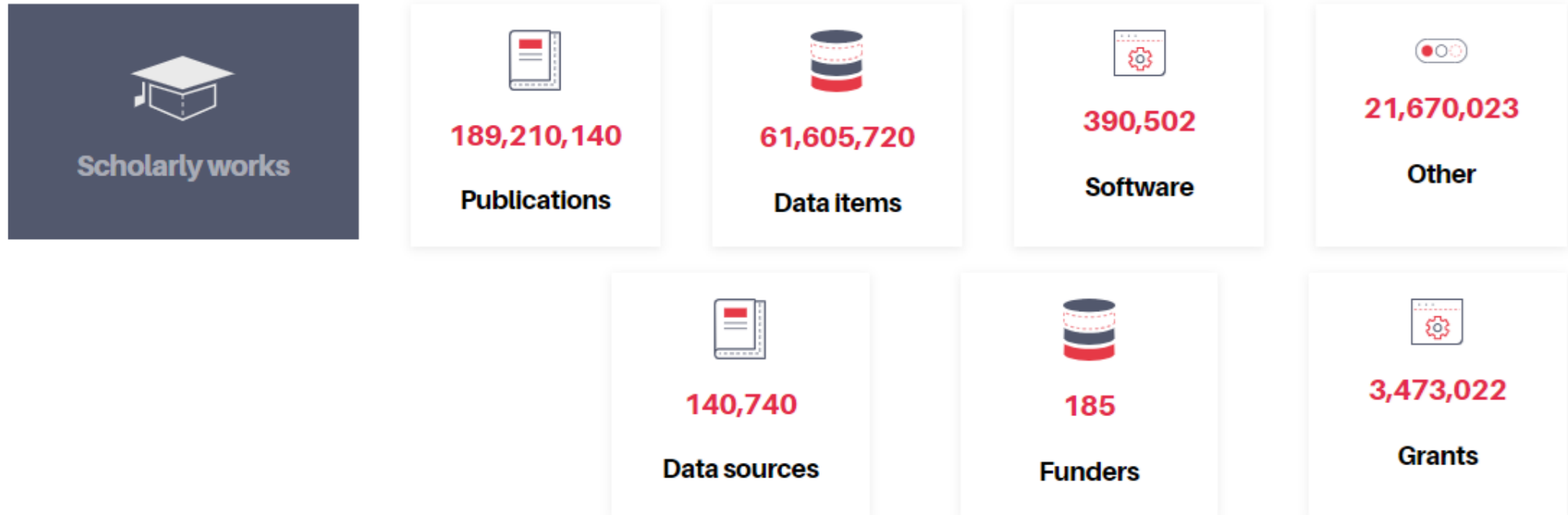
EOSC-Life

ECRIN
EUROPEAN CLINICAL RESEARCH INFRASTRUCTURE NETWORK

egi

... and more infra and RI sources

OpenAIRE Graph in numbers (Sept, 2024)



Data Backbone: The OpenAIRE Graph



A Scientific Knowledge Graph (SKG)

Timely and comprehensive coverage of research products beyond publications

Near monthly updates



Precision, depth & processing

Rigorous **cleaning**, **deduplication**, and **enrichment** for optimal accuracy

Full-text mining of links: Research results to projects, author affiliations, and classifications (FoS, SDG)

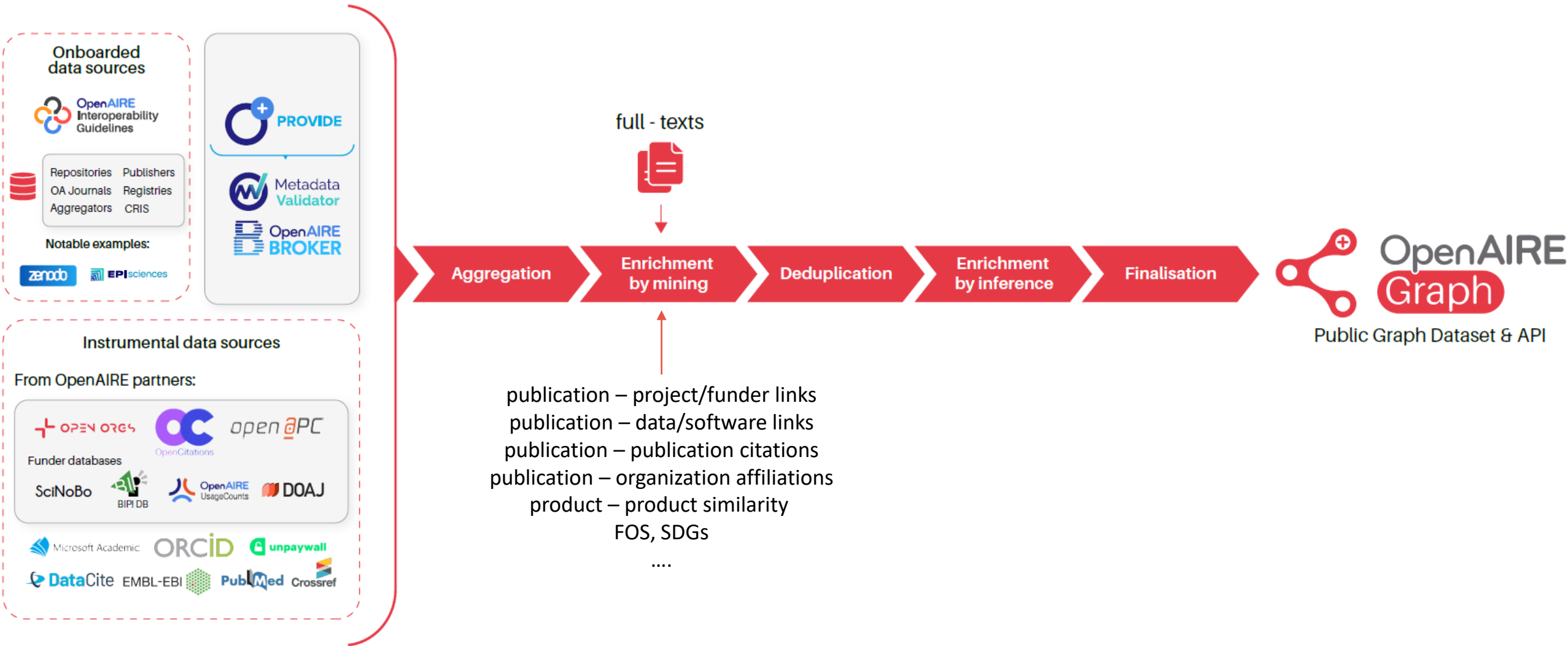


Robustness & openness

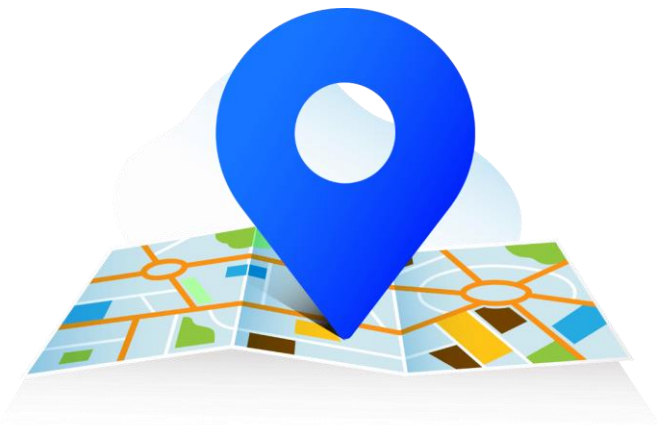
Professional infrastructure: maintenance, load balancing, backups, overseen by the OpenAIRE technology centre (ICM)

Open data, **Open Source** & **transparent methodologies**

Graph in a national setting



Enhancing Research Assessment with OpenAIRE Graph



Tracking open research

Reproducibility and transparency require tracking of all outcomes of **science** and related “context”



Discovering open research

Discovery of **reproducible science** outcomes must find new ways, driven by “scientific intentions” that go beyond the “find articles related to a research topic”



Monitoring (open) research

Monitoring quality, impact, and **openness** of science should be a transparent, reproducible process for all, inclusive of research “context”

Data model features



Embeds indicators such as APCs (from OpenAPC), COUNTER metrics (from OpenAIRE UsageCounts), popularity (from BIP!), and citations (COCI)

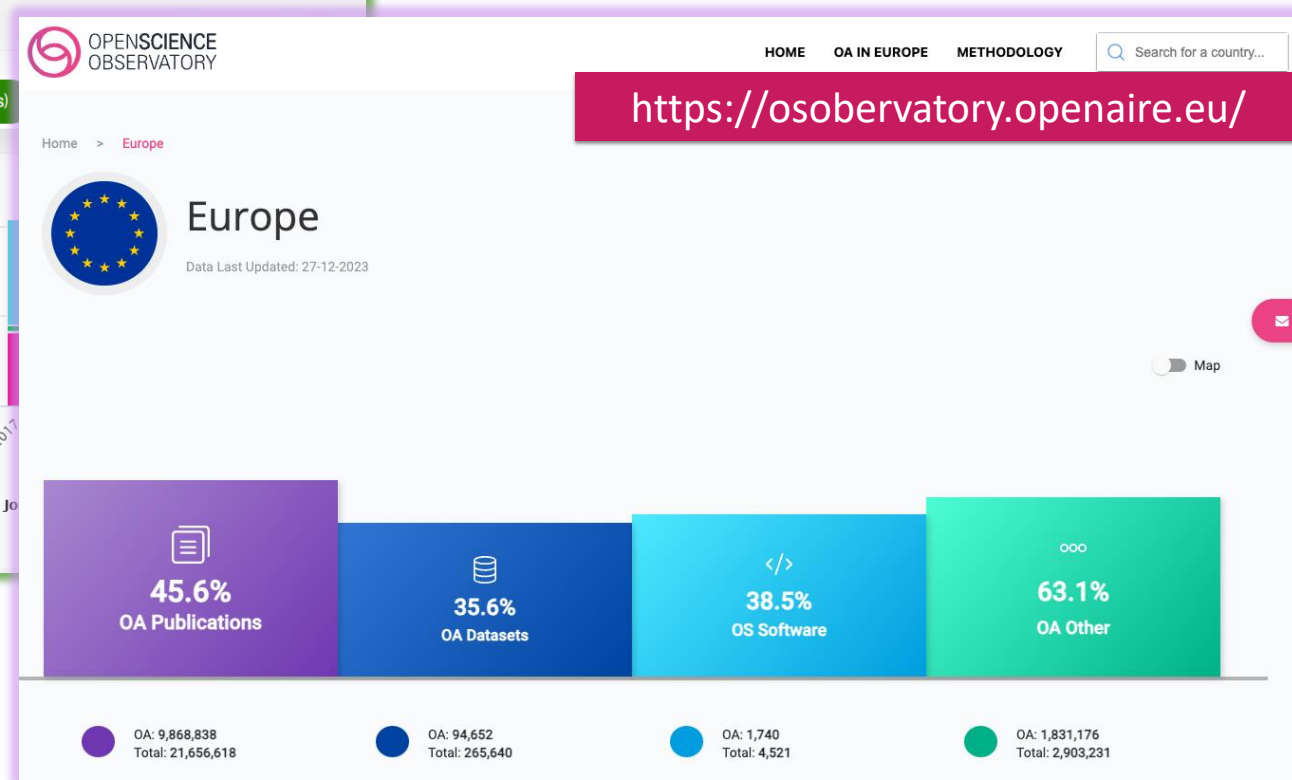
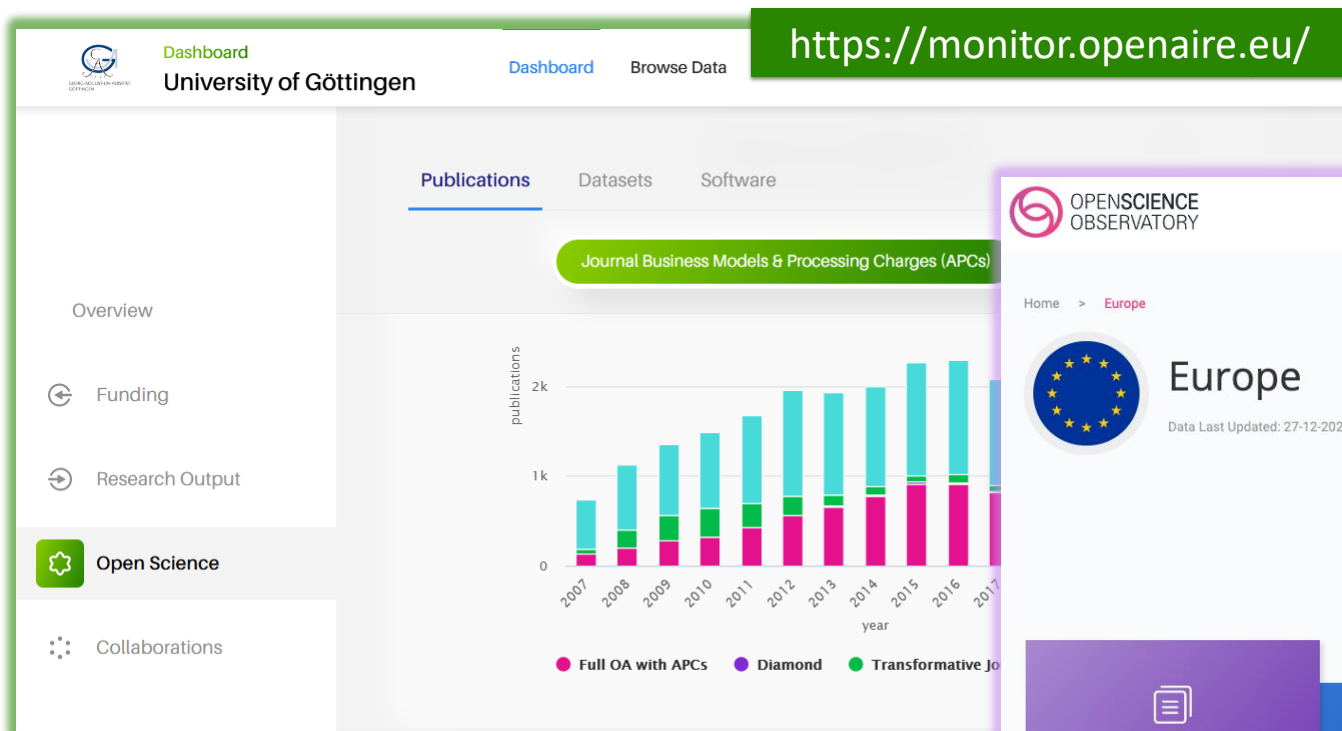


Persistent identifiers include today DOI, ArXiv, PubMed, Handles for *publications*; DOI, accession numbers, handles for *research data*; DOI, handles, and software heritage IDs for *research software* (the data model can flexibly include any PID schema!)

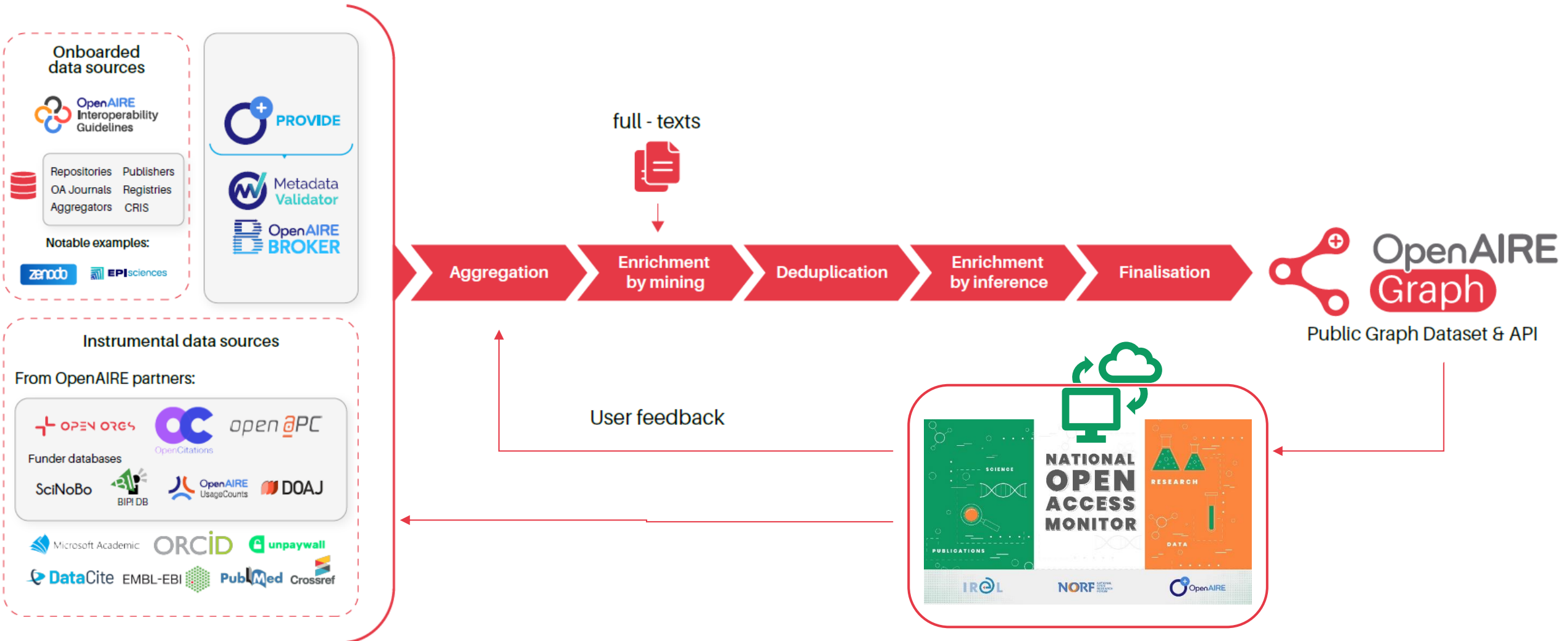


Keeps stable identifiers using a combination of stateless identifiers and internal status

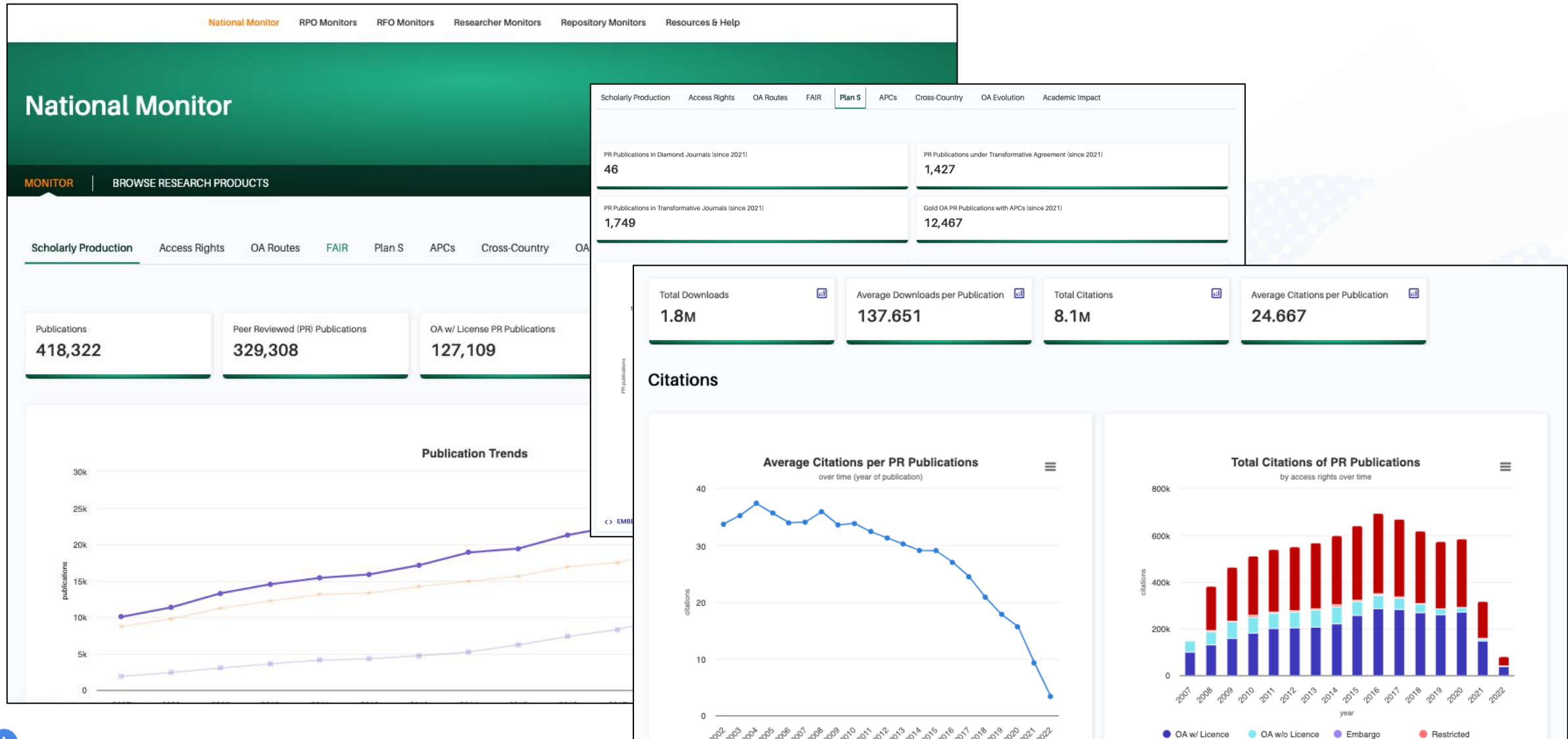
OpenAIRE MONITOR service: A Key Tool for Research Assessment



The Irish OS monitor tender



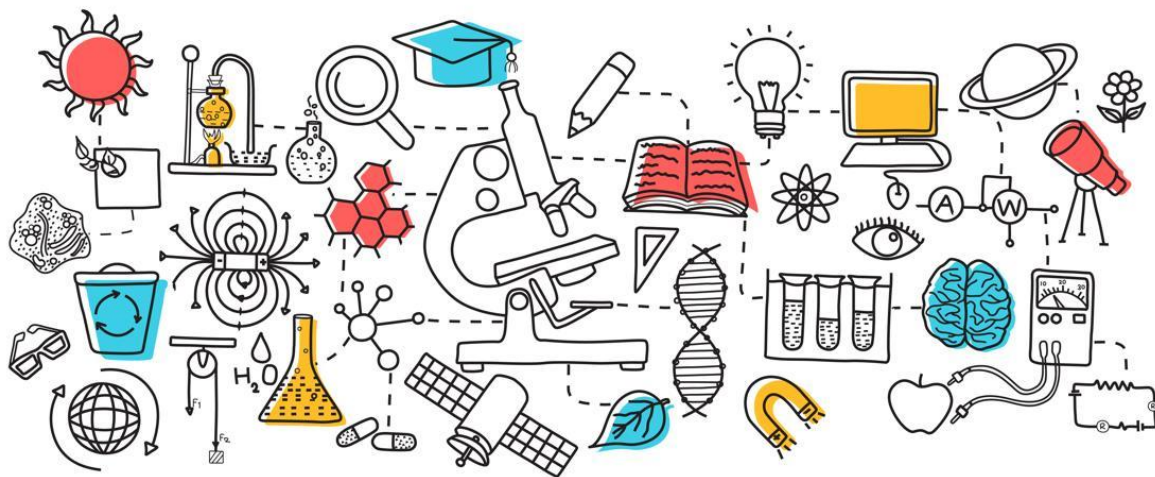
The Irish OS monitor tender



Qualitative and Quantitative Indicators in MONITOR

- A **holistic approach** to research evaluation integrates both **qualitative and quantitative indicators**, offering a comprehensive view of research impact

Fields of Science

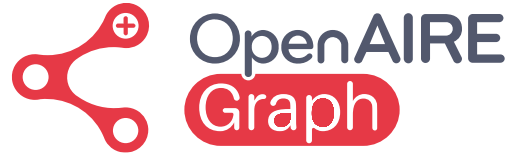


SUSTAINABLE DEVELOPMENT GOALS



Supporting Research Assessment Reforms

- Supporting global research assessment reforms
 - OpenAIRE supports the goals of **CoARA**, **DORA**, and the **Barcelona Declaration** by promoting **open, transparent, and fair research assessment**
 - advocate for **moving beyond traditional bibliometrics** like impact factor and h-index, in favor of a more inclusive and **diverse evaluation** of research outputs
- Participation in key working groups
 - involvement in the **Working Group on Open Infrastructures for Responsible Research Assessment**
 - establishing open infrastructures to support **responsible research assessment**, ensuring that evaluation practices are **transparent, equitable**, and aligned with global standards for **Open Science** and **research integrity**



A PATH FORWARD: TRANSPARENT, COLLABORATIVE, EQUITABLE RESEARCH ASSESSMENT

Where is it used?

Scientific Discovery

The Graph is used in the **OpenAIRE EXPLORE** service, enabling users to efficiently search and navigate through an research ecosystem.

EOSC EU Node

acts as the primary resource supporting the exploration and

Research Communities

EOSC EU Node (EOSC Portal).

Next Step: LLMs

Bibliometrics

Used for research evaluation in replacement of proprietary databases such as **Web of Science** or **Scopus**, with several benefits, including openness and transparency, embedded citation metrics and indicators, access to information beyond publications such as data and software, and the ability to easily integrate your own databases. Get a glimpse in **OpenAIRE MONITOR**.

Ongoing : APIs

Open Science Monitoring

The Graph maintains data related to monitoring Open Access and Open Science policies. It is currently used in services such as the **Open Science Observatory**, the **EOSC Observatory**, and the **Irish National OA Monitor**. Also check **OpenAIRE MONITOR** to view out of the box indicators for organisations.

Ongoing: Country Monitors

Take home message



The OpenAIRE Graph is the largest Open Science SKG

Broader coverage of publications, research data, and research software, together with links between them



The OpenAIRE Graph is open

Accessible via APIs and datasets in Zenodo under CC-BY



The OpenAIRE Graph is transparent

We document the process of generation and track provenance of individual bits of information



The OpenAIRE Graph is a public good

The Graph a public infrastructure (like highways), operated by OpenAIRE AMKE, a no-profit company based on membership participation



The OpenAIRE Graph is participatory

We welcome and enable data contributions from communities, service providers, organizations, and researchers

Thank you for your attention!