

ERCIM



NEWS

Special theme:

Advancing Open Science

Federated Infrastructures
and Trustworthy
Ecosystems

Editorial Information

ERCIM News is the magazine of ERCIM. Published quarterly, it reports on joint actions of the ERCIM partners, and aims to reflect the contribution made by ERCIM to the European Community in Information Technology and Applied Mathematics. Through short articles and news items, it provides a forum for the exchange of information between the institutes and also with the wider scientific community. This issue has a circulation of about 2,000 printed copies and is also available online at <https://ercim-news.ercim.eu>.

ERCIM News is published by ERCIM EEIG
BP 93, F-06902 Sophia Antipolis Cedex, France
+33 4 9238 5010, contact@ercim.eu
Director: Dominique Hazaël-Massieux,
ISSN 0926-4981

Contributions

Contributions should be submitted to the local editor of your country

Copyright notice

All authors, as identified in each article, retain copyright of their work. ERCIM News is licensed under a Creative Commons Attribution 4.0 International License (CC-BY).

Advertising

For current advertising rates and conditions, see <https://ercim-news.ercim.eu/> or contact peter.kunz@ercim.eu

ERCIM News online edition

<https://ercim-news.ercim.eu>

Subscription

Subscribe to ERCIM News by sending an email to en-subscriptions@ercim.eu

Editorial Board:

Central editor: Peter Kunz, ERCIM office (peter.kunz@ercim.eu)

Special Theme guest editors:

- Leonardo Candela (CNR-ISTI)
- Roberto Di Cosmo (Inria and University Paris Cité)

Local Editors:

- Ferran Argelaguet, Inria, France (ferran.argelaguet@inria.fr)
- Andras Benczur, SZTAKI, Hungary (benczur@info.ilab.sztaki.hu)
- José Borbinha, Univ. of Technology Lisboa, Portugal (jlb@ist.utl.pt)
- Monica Divitini, NTNU, Norway (divitini@ntnu.no)
- Marie-Claire Fogue, ERCIM/W3C (mcf@w3.org)
- Lida Harami, ICS-FORTH, Greece (lida@ics.forth.gr)
- Athanasios Kalogeras, ISI, Greece (kalogeras@isi.gr)
- Georgia Kapitsaki, Univ. of Cyprus, Cyprus (gkapi@cs.ucy.ac.cy)
- Annette Kik, CWI, The Netherlands (Annette.Kik@cwi.nl)
- Alexander Nouak, Fraunhofer-Gesellschaft, Germany (alexander.nouak@iuk.fraunhofer.de)
- Laura Panizo, University of Malaga (laurapanizo@uma.es)
- Erwin Schoitsch, AIT, Austria (erwin.schoitsch@ait.ac.at)
- Thomas Tamisier, LIST, Luxembourg (thomas.tamisier@list.lu)
- Maurice ter Beek, CNR-ISTI, Italy (maurice.terbeek@isti.cnr.it)

Contents

JOINT ERCIM ACTIONS

- 4 Message from the President
- 5 ERCIM “Alain Bensoussan” Fellowship Programme

SPECIAL THEME

Introduction to the Special Theme:

- 6 Advancing Open Science: Federated Infrastructures and Trustworthy Ecosystems
by the guest editors Leonardo Candela (CNR-ISTI) and Roberto Di Cosmo (Inria and University Paris Cité)

Research assessment and scholarly representation

- 8 The OpenAIRE Graph: Enabling Open Research Intelligence Using Open Data
by Paolo Manghi (CNR-ISTI)
- 9 Rethinking Researcher Profiles in the Research Assessment Transition Era: The OpenAIRE Approach
by Stefania Amodeo and Zenia Xenou (OpenAIRE AMKE)
- 10 BibTexViz: Visualizing Research Productivity with Open Science Data
by Jose-Miguel Horcas (ITIS Software, Universidad de Málaga)

- 12 A 360° View of Open Science in Europe – Indicators, Narratives, and AI-enhanced Policy Intelligence
by Tereza Szybisty (OpenAIRE Amke)

From FAIR data to AI-ready workflows

- 14 From Data to Knowledge: Open Pipelines for Collaborative Production Research
by Leon Gorissen and Philipp Brauner (RWTH Aachen University) Germany)

- 16 Scalable Platforms for Reusing Research Infrastructure Data in Open Science
by Magdalena Brus (EGI Foundation), Ville Tenhunen (EGI Foundation), Gergely Sipos (EGI Foundation), on behalf of the RI-SCALE consortium

- 17 MOEBA-BIO: An Open and Extensible Framework for Evolutionary Biclustering in Biomedicine**
by Adrián Segura Ortiz, José García-Nieto (ITIS Software, University of Málaga) and Laetitia Jourdan (CRISTAL Laboratory, University of Lille)

Semantic foundations and knowledge graph infrastructures

- 19 Reinforcing Open Science in Biodiversity through Semantic Knowledge Graphs**
by Yannis Marketakis, Eleni Tsouloucha, Athina Kritsotaki, and Yannis Tzitzikas (FORTH-ICS)

- 21 Unlocking Machine-Composability with the EOSC Interoperability Framework Registry**
by Alessia Bardi (CNR-ISTI, OpenAIRE AMKE), Konstantina Galouni (ARC) and Paolo Manghi (CNR-ISTI, OpenAIRE AMKE)

Governance, skills, sovereignty, and ethical foundations

- 22 Human-Centered Threat Modeling in Web Standardization at W3C**
by Simone Onofri (W3C) and Giovanni Corti (FBK)

- 24 Co-Creation as Infrastructure for Open Science Data Spaces**
by Rita Stampfl (University of Applied Sciences Burgenland), Silke Palkovits-Rauter (University of Applied Sciences Burgenland)

- 25 Services for Open Science Education and Skills Development: Beyond Technical Training**
by Katharina Flicker (TU Wien, SBA), Ilire Hasani-Mavriqi (TU Graz), Dimitri Prandner (JKU)

- 27 Shaping the Czech National Infrastructure for Research Data through Community Consensus**
by Martin Dvořák, Pavlína Špringerová and Matej Antol (Masaryk University)

- 29 Creative Commons Licences in the Age of AI: Challenges and Opportunities**
by Daniel Spichtinger (Ludwig Boltzmann Gesellschaft/University of Vienna/independent researcher)

- 30 LICORICE: Deploying Privacy-Enhancing Technologies for Europe's Digital Sovereignty**
by Diana E. Jimenez-Bejarano (Dialog), Stephan Krenn (AIT Austrian Institute of Technology), Antonio Kung (Dialog), and Angel Palomares Perez (Advanced Computing SL)

Operational experiences with federated science gateways

- 32 The EOSC EU Node: An Evolving Gateway to Open Science in Europe**
by Alane Brunschweiler, Maja Dolinar and Fay Meimaraki (OpenAIRE AMKE)

- 33 The EOSC Core Innovation Sandbox: A Launchpad for Europe's Open Science Federation**
by Federico Drago (EGI Foundation) and Nicola Fiore (EGI Foundation)

- 35 EOSC Data Commons: Building Europe's Next-Generation Research Data Infrastructure**
by Enol Fernández, Ilaria Fava and Xavier Salazar (EGI Foundation)

- 36 ENVRI-Hub: A Science Gateway for Open Environmental Research**
by Federico Drago (EGI Foundation), Delphine Dobler (Euro-ARGO ERIC) and Ulrich Bundke (Forschungszentrum Jülich / IAGOS AISBL)

- 38 D4Science: An Enabling Infrastructure for Open Science**
by Massimiliano Assante, Luca Frosini, Francesco Mangiacrapa, and Pasquale Pagano (CNR-ISTI)

- 39 Supporting Open Science in Virtual Research Environments: The DAVE Experience**
by Andrea Dell'Amico, Alfredo Oliviero, Giancarlo Panichi, Biagio Peccerillo (CNR-ISTI) and Marco Procaccini (CNR-IGG)

ANNOUNCEMENTS

- 41 HORIZON Europe: ERCIM Project Support Services**
- 41 Summer School on Informatics Education Research**
- 42 Dagstuhl Seminars and Perspectives Workshops**
- 42 INESC TEC International Visiting Researcher Programme 2026**
- 43 EUCNC 6G Summit**

NEXT ISSUE

ERCIM News 145, July 2026
Special theme:
E-values — Statistical Testing for the 21st Century

The OpenAIRE Graph: Enabling Open Research Intelligence Using Open Data

by Paolo Manghi (CNR-ISTI)

The OpenAIRE Graph provides an open, community-governed data infrastructure for research intelligence, enabling transparent and auditable use of scholarly data beyond proprietary systems.

The global research ecosystem is calling for a structural transition from proprietary, opaque systems for research intelligence to open, community-governed infrastructures. At the centre of this shift is the need to reclaim how scholarly data is collected, connected, and used to inform research evaluation and policy. The OpenAIRE Graph addresses this challenge by providing a large-scale, openly accessible scholarly knowledge graph that treats publications, data, and software as first-class research outputs. As a community-governed infrastructure, it establishes a transparent and auditable foundation for Open Research Intelligence.



The Lock-in of Proprietary Research Intelligence

The global research community is currently trapped in a costly and paradoxical model where public funds fuel scientific discovery while simultaneously sustaining the multi-billion-euro “drain” of commercial vendors who control a large portion of the scholarly record. Access to scientific articles, books, and critical bibliographic metadata databases, such as Scopus and Web of Science, is provided through expensive subscriptions characterized by restrictive reuse constraints and a lack of transparency. Because research intelligence, institutional evaluations, and national comparisons are grounded in these proprietary databases, the scientific community is forced to rely on “black boxes” that unilaterally decide what is measured, how it is measured, and what remains visible. These platforms use data that cannot be fully audited and methods that cannot be challenged, often driven by commercial priorities rather than the public interest. It is a profound paradox that while public funds invest in research as a “public good”, scientific reviews and the critical indicators used to assess its quality and monitor its impact are provided by closed, toll-gated proprietary systems.

The OpenAIRE Graph

In this reforming scenario, the OpenAIRE Graph [L1] has emerged and matured as a fully-fledged solution to ensure a safe and incremental transition from a closed-data to an open-data scholarly communication ecosystem. Funders, countries, and institutions are adopting it for a shift to Open Research Intelligence, researchers for research on bibliometrics and sci-

ence of science, and companies for commercial purposes. Its main features can be summarised as:

Global Coverage and Open Data

The OpenAIRE Graph provides a 360-degree view of the research lifecycle, embracing the diversity raised by Open Science, hence treating research data and software as first-class citizens alongside traditional articles and scientific literature at large. The Graph consists of a collection of bibliographic metadata about research outcomes, connected by semantic relationships, including citations from publications to data and software, and data-to-data links, affiliations, participation to projects, etc. To ensure open access coverage and high-quality data, the Graph aggregates metadata and relationships from over 2,100 direct metadata sources (155,000 counting indirect data sources via aggregators), including Crossref, DataCite, ROR, ORCID, PubMed, ArXiv, and thousands of repositories, CRIS systems, and OA publishers. Aggregated metadata flows through a data wrangling workflow involving data harmonisation, AI methods inference, full-text mining, and deduplication [1]. As of the latest statistics (March 2026), the OpenAIRE Graph counts ~345Mi research products (~215Mi publications, ~95Mi research datasets, ~800K research software, 33Mi other products), 368 funders, ~450K organizations, 4 Mi grants and over 7 billion relationships. The collection is accessible via open APIs and data dumps [L3].

A Community-Governed Pillar of Open Research Intelligence

Unlike commercial and non-commercial counterparts, the OpenAIRE Graph is operated by OpenAIRE AMKE [L2], a non-profit, membership-based organization established to ensure that research intelligence is sustained and steered as a public infrastructure by its members. OpenAIRE counts 53 members across 36 countries, supported by a network of experts active since 2009 whose global reach extends through collaborations in Latin America, Canada, Japan, Korea, and China. The Graph is co-designed, co-developed, and co-operated by its members, ensuring that the technical roadmap, design decisions, and sustainability are driven by community demands, ethical and political choices rather than profit motives. By treating research intelligence as infrastructure rather than a service, OpenAIRE provides a stable foundation that connects diverse research ecosystems without the risk of commercial lock-in.

Enabling Next-Generation Open Research Intelligence

As of today, the OpenAIRE Graph serve open, auditable data, as input to a rich catalogue of Research Intelligence services for policymakers and researchers [L3]. Examples are services for research discovery (OpenAIRE EXPLORE and CONNECT), for monitoring Open Science and research impact (OpenAIRE MONITOR and EOSC OSObservatory, see article by T. Szybisty in this issue on page 12), and for managing Open Science CoARA-oriented research profiles (ResearchFolio, see following article by S. Amodeo).

Conclusion

The OpenAIRE Graph leverages a shift from “intelligence as a service” (outsourced design, no transparency, no service operation) to “intelligence as infrastructure” (co-design, data transparency, service operation). Its adoption in real-case applications is a concrete example of how, by investing in a community-governed, open-data fabric and services, institutions

and ministries can move away from opaque commercial representations and ensure that the values of Open Science become a durable part of the global research landscape.

Acknowledgments: The OpenAIRE Graph is the result of research and operational efforts from Michele Artini, Claudio Atzori, Miriam Baglioni, Alessia Bardi, Michele De Bonis, Sandro La Bruzzo, and Andrea Mannocci from CNR-ISTI; Giambattista Bloisi, Ioanna Grypari, Natalia Manola, Harry Dimitropoulos, Yannis Foufoulas, Myrto Kallipoliti, Antonis Lempesis, Leonidas Pispiringas, and Giacomo Trombi from OpenAIRE AMKE; and Marek Horst, Michal Politowski, and Sebastian Tymkow from University of Warsaw.

Links:

- [L1] <https://graph.openaire.eu>
- [L2] <https://www.openaire.eu>
- [L3] <https://catalogue.openaire.eu>

Reference:

- [1] P. Manghi, “Challenges in building scholarly knowledge graphs for research assessment in open science.” *Quantitative Science Studies* 5, 4 (2024): 991–1021. doi:10.1162/qss_a_00322.

Please contact:

Paolo Manghi, CNR-ISTI, Italy
paolo.manghi@isti.cnr.it

Rethinking Researcher Profiles in the Research Assessment Transition Era: The OpenAIRE Approach

by Stefania Amodeo and Zenia Xenou (OpenAIRE AMKE)

OpenAIRE introduces a new approach to researcher profiles, combining open data and narrative CVs to support responsible research assessment beyond traditional metrics.

Research assessment is undergoing a fundamental transformation. For many years, academic evaluation has heavily relied on traditional publication metrics based on journal articles, citation counts, and impact factors. This approach, however, fails to capture the full range of activities that define modern research, including software development, dataset curation,

student mentorship, community engagement, and interdisciplinary collaboration. As initiatives like the Coalition for Advancing Research Assessment (CoARA) and the Barcelona Declaration on Open Research Information gain momentum, the research community is increasingly calling for more comprehensive and transparent evaluation practices that rely on open systems rather than proprietary ones.

The OpenAIRE Graph provides the open and transparent data infrastructure underpinning these developments [1].

Until recently, individual researchers remained in the background of research assessment systems, appearing only as identifiers within research output metadata. This represented a significant gap in the implementation of responsible research assessment practices.

OpenAIRE has addressed this gap by integrating researcher identities as distinct entities within the OpenAIRE Graph. This enhancement will be included in the April 2026 Graph release. Researchers with ORCID profiles become first-class entities

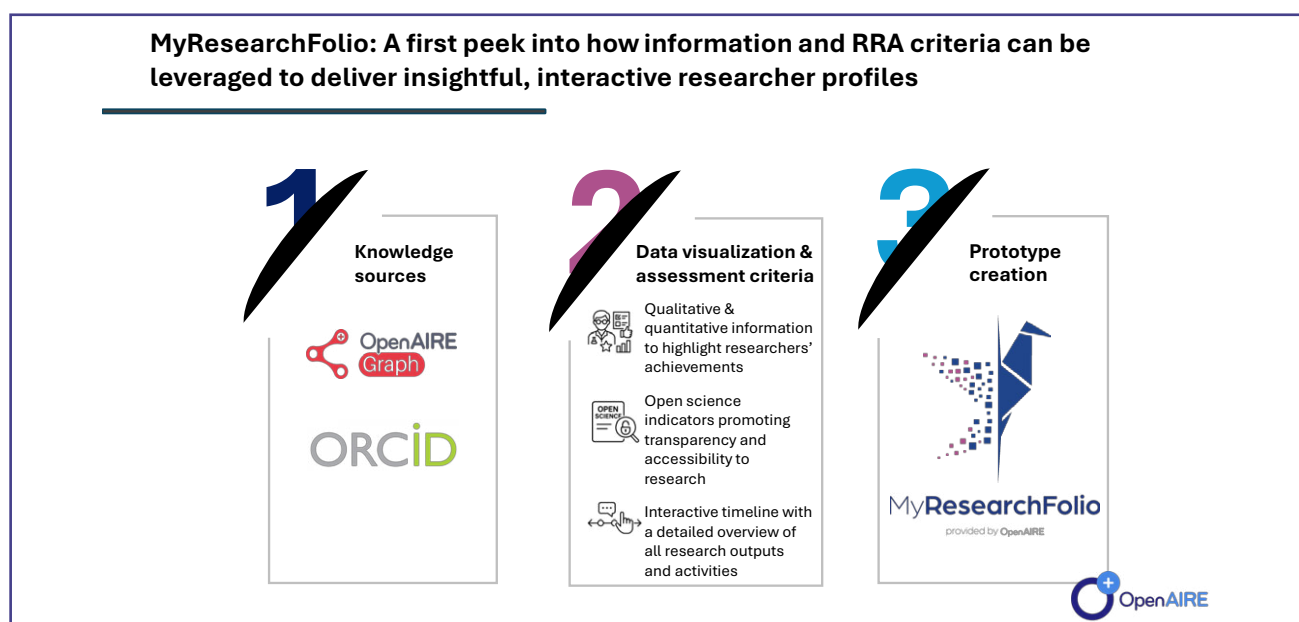


Figure 1: MyResearchFolio concept: researcher profiles are built on OpenAIRE Graph and ORCID data, combining qualitative and quantitative information with responsible research assessment (RRA) criteria, Open Science indicators, interactive visualizations, and a timeline of research outputs and activities.