EUT+ and OpenAIRE – Advancing Open Science and Research Information and Collaboration

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Abstract

The European University of Technology Plus (EUT+) is a pioneering alliance of nine technological universities working to enhance research collaboration, transparency, and openness across European higher education. Faced with the challenge of building a collaborative platform for the alliance's repositories with limited resources, EUT+ leveraged a strategic partnership with OpenAIRE to develop the EUT+ CONNECT Gateway—a customized, interoperable platform designed to unify research outputs and promote cross-institutional collaboration and Open Science practices.

This paper presents a case study of how a university alliance, EUT+, pooled resources and expertise across institutions, enabling the rapid deployment of an open research infrastructure while overcoming financial and technical barriers. It highlights how OpenAIRE services support university alliances in fostering Open Science practices by ensuring interoperability among repositories and enabling research tracking through indicators on collaboration, open access, FAIR principles, and research impact.

The discussion also addresses interoperability challenges encountered while integrating various institutional repositories into a unified platform. By examining EUT+'s experience, readers will gain insights into best practices for building sustainable, secure, and standards-compliant digital research infrastructures that support Open Science and European higher education alliances. This case study is relevant for academic leaders, research managers, librarians, and IT professionals involved in developing Open Research policies, managing digital repositories, and ensuring data security in collaborative environments.

1   Introduction

The European University of Technology Plus (EUT+), an alliance of nine technological universities, has successfully built an open and interoperable research infrastructure through strategic collaboration with OpenAIRE. EUT+ adopted OpenAIRE CONNECT as part of its strategy to unify research outputs across multiple institutions in a gateway. By integrating diverse research contributions into a single, searchable platform, this initiative demonstrates the power of international collaboration in fostering open, transparent, and accessible research. Through shared resources and expertise, the alliance overcame financial and technical constraints, paving the way for a scalable and sustainable Open Science strategy.

This case study highlights the challenges and opportunities of coordinating a European University Alliance, where diverse research infrastructures, policies, and technical frameworks must be aligned. It examines how standardization and interoperability are critical for enabling seamless collaboration while ensuring effective governance and long-term sustainability. A key focus of this study is the role of Open Science in promoting research transparency, particularly by leveraging the OpenAIRE Graph and OpenAIRE CONNECT to provide access to an open infrastructure for scholarly communication. This allows institutions and researchers to conduct in-depth research discovery through APIs or directly via the MONITOR dashboard for research assessment purposes.

The case study also explores the technical challenges of interoperability, detailing how EUT+ integrated institutional repositories with OpenAIRE services while ensuring data security and compliance. Additionally, it examines the importance of sustainable IT standards and open-source solutions in enabling seamless collaboration and safeguarding research data. By presenting this case, we provide practical insights for academic leaders, research managers, IT professionals, and librarians. As European higher education institutions work to strengthen research collaboration and align with Open Science mandates, the lessons learned from EUT+ will offer valuable guidance for shaping future digital research strategies and infrastructure development.

2   The University Alliances

2.1   The state of art

European University Alliances (Commission, 2025) are transformative initiatives launched under the European Education Area, supported by the European Commission through Erasmus+. These alliances foster cooperation between higher education institutions across Europe, breaking down barriers and creating a more interconnected academic environment. Their core objective is to enhance mobility, facilitate cross-border research collaborations, and develop joint educational programs that equip students with future-ready skills. By establishing inter-university campuses, these alliances provide students, academics, and researchers with the ability to work seamlessly across institutions, promoting shared learning experiences and innovative teaching methodologies.

One of the main advantages of university alliances is the introduction of flexible curricula that allow students to personalize their academic paths. This often leads to joint degrees or European Degrees (Commission, Commission presents a blueprint for a European degree, 2024), offering graduates credentials that are recognized across multiple countries. These alliances also aim to integrate new digital learning tools, making higher education more accessible and adaptable to modern demands. However, despite their potential, European University Alliances face significant challenges. Many stakeholders, including researchers and administrative staff, are still unfamiliar with the objectives and benefits of these collaborations. Additionally, managing research data across institutions requires sophisticated digital infrastructures that are not always available or aligned with institutional needs.

Sustaining long-term collaboration across diverse institutions also necessitates strong governance structures and commitment from all parties involved. Nonetheless, these alliances represent a major step towards the modernization and unification of European higher education, enabling students and researchers to thrive in a dynamic and interconnected academic landscape.

2.2   The EUT+

The European University of Technology (EUt+) is a pioneering university alliance that brings together multiple European institutions with a shared vision: to create a human-centered approach to technology that addresses contemporary global challenges (European University of Technology, n.d.). Technology is a powerful tool for societal progress, but its development must be guided by ethical considerations and human values. EUt+ seeks to redefine technological education by ensuring that future engineers and researchers are not only skilled in technical expertise but also understand the societal and environmental implications of their work.

EUt+ is driven by the belief that technology should serve humanity rather than operate independently of human needs. This perspective is deeply embedded in its educational and research programs, which emphasize interdisciplinary learning by integrating social sciences, humanities, and ethics into engineering curricula. Unlike traditional technological universities that focus solely on technical proficiency, EUt+ prepares students to become responsible professionals who can navigate the complexities of modern society. Furthermore, EUt+ actively promotes multilingualism and cross-cultural exchange, encouraging students to develop international competencies that enhance their global career prospects.

A key strength of EUt+ is its commitment to inclusivity and sustainability. Recognizing that higher education must be accessible to all, the alliance prioritizes equity and diversity, ensuring that students from different backgrounds have the opportunity to succeed. Additionally, EUt+ emphasizes sustainability in both its curriculum and institutional policies, striving to align technological advancements with environmental responsibility. The alliance's research initiatives focus on addressing urgent global issues such as climate change, digital transformation, and ethical innovation, ensuring that technological progress benefits society as a whole.

By fostering strong connections between academia, industry, and policymakers, EUt+ bridges the gap between education and employment. Its collaborative approach to research and innovation allows students to engage in real-world projects, equipping them with practical skills that align with labor market demands. Ultimately, EUt+ is shaping a new model for European higher education—one that is inclusive, sustainable, and fundamentally focused on the human dimension of technology. As it continues to evolve, the alliance is set to become a leading example of how universities can work together to build a better and more interconnected future for Europe.

2.3   Challenges Faced by EUt+ in Building an Open Scholarly Gateway

Despite its ambitious vision, EUt+ faced considerable challenges in implementing open science practices and establishing a unified institutional repository (OpenAIRE-EUT+, 2024). A major obstacle was the limited availability of financial and technical resources across its member universities. While some institutions had made significant progress in open research initiatives, others were still in the early stages, making it difficult to establish a cohesive strategy for open scholarships. The diversity of institutional frameworks, technological infrastructures, and policies across the alliance further complicated the process of developing a centralized repository that would be accessible and beneficial to all members.

To address these challenges, EUt+ initiated a collaborative effort involving librarians, researchers, and administrative staff to assess the state of open research within the alliance. Through extensive consultations, it became evident that a sustainable and cost-effective solution was required. Building a

repository from scratch was quickly ruled out due to resource constraints, and hosted solutions presented financial limitations.

Faced with these challenges, EUt+ required a cost-effective, scalable, and interoperable solution to streamline research management, ensure compliance with Open Science policies, and enhance the visibility and accessibility of research outputs. OpenAIRE CONNECT was selected for its alignment with the alliance's need for flexibility, automated workflows, and ability to integrate with existing research infrastructures.

In addition to technical and financial constraints, EUT+ encountered significant challenges in aligning institutional policies, infrastructures, and governance models across the nine member universities. These included differences in metadata standards, language and cultural barriers, and institutional readiness for Open Science. To overcome these, EUT+ established a multi-stakeholder task force composed of librarians, research managers, and IT professionals. The task force coordinated via regular virtual meetings, co-created shared documentation, and jointly developed repository policies that may lead to a CRIS among the University Alliance members.

3   Solution: Adoption of OpenAIRE CONNECT

3.1   Introduction to OpenAIRE CONNECT

OpenAIRE CONNECT is a platform-as-a-service used by research communities to configure and manage portals for aggregating and disseminating research output, fostering the adoption of Open Science practices (Bardi, 2025). The platform promotes interoperability, visibility, and accessibility of scientific research, aligning with FAIR (Findable, Accessible, Interoperable, and Reusable) principles and European Open Science mandates.

The contents provided by the owners of gateways, referred to as Research Communities, include publications, data, software, and other research products such as metadata on projects, patents, theses, and data management plans, which are updated every month. OpenAIRE CONNECT offers customizable tools to support research discoverability and facilitate collaboration across infrastructures. Through automated data integration, research output linking, and real-time analytics, the platform supports the implementation of a scalable infrastructure that can adapt to the evolving needs of the research community.

As a key component of the OpenAIRE infrastructure, CONNECT enables research communities to build personalized gateways that serve as virtual hubs for their research outputs. It supports Open Science compliance by providing an intuitive interface for depositing outputs, linking them to relevant funding sources, and ensuring their visibility in global repositories. Through seamless integration with the OpenAIRE Graph, CONNECT allows for automated updates, metadata enrichment, and cross-referencing of research outputs across a wide network of repositories, publishers, and infrastructures. This integration ensures that data remains current, structured, and interoperable, contributing to a more transparent and accessible research ecosystem.

3.2   The OpenAIRE Graph and Its Connection to CONNECT

The OpenAIRE Graph is core component of the OpenAIRE infrastructure, providing the backbone for data aggregation, enrichment, and linkage across diverse research domains (OpenAIRE, 2024). It

functions as a large, interconnected network of research metadata, providing a structured representation of scientific outputs. Metadata is collected from repositories, publishers, and research infrastructures, and is harmonized into a unified framework to support discoverability and interoperability.

OpenAIRE CONNECT gateways are directly linked to the OpenAIRE Graph, which enables regular updates to research outputs and provides access to discovery tools. These tools allow filtering by thematic area, funding source, affiliation, and keyword. In addition, metadata records are enriched using automated text mining techniques to extract contextual details such as funding acknowledgments, affiliations, and project links. This contributes to a more structured and informative representation of the research ecosystem within each CONNECT Gateway.

3.3   How to Build a CONNECT Gateway

Building a CONNECT Gateway involves a structured process that ensures alignment with community-specific research needs while maintaining compliance with Open Science principles. The first phase, **initialization**, begins with the integration of the gateway into the OpenAIRE Graph, which is one of the largest interconnected research data networks globally. The OpenAIRE Graph aggregates and refines metadata from over 2,000 trusted sources, including repositories, journals, research systems, and platforms such as Crossref, DOAJ, DOAB, ORCID, and DataCite. This foundational layer enables the CONNECT Gateway to function as a dynamic and continuously updated research portal, linking datasets, publications, and software outputs to their respective funders, institutions, and research projects. Automated processes, such as AI-driven text mining and metadata validation, ensure that the research outputs collected through CONNECT are both accurate and enriched with essential contextual information.

The second phase, **customization**, allows research communities to tailor their CONNECT Gateway to reflect their specific focus areas, institutional identity, and user requirements. Through an advanced administrative dashboard, community curators can define relevance criteria by selecting specific disciplines, keywords, organizational affiliations, and funding sources to filter research outputs that align with their objectives. The customization process also extends to the visual identity of the portal, enabling institutions to incorporate their logos, color schemes, and navigation structures to provide a seamless user experience. Additionally, CONNECT supports the creation of dedicated pages for Open Science policies, best practices, and news updates, transforming each gateway into an educational and outreach platform for researchers.

Beyond aesthetics and content curation, CONNECT also provides external plugin integration capabilities, allowing communities to extend the functionality of their gateway. By embedding analytical tools, visualization plugins, and domain-specific software, institutions can enhance their research tracking and reporting mechanisms. The integration of Zenodo within CONNECT further ensures long-term archiving of research products, maintaining accessibility and compliance with Open Science mandates.

3.4   Methodology: Implementing OpenAIRE CONNECT in EUt+

The implementation of OpenAIRE CONNECT within EUt+ followed a structured, multi-phase approach, ensuring alignment with institutional goals and Open Science principles. Before implementation, EUt+ conducted a comprehensive assessment to identify the key requirements for a unified research repository. The process involved surveying researchers and librarians to determine challenges in data management, identifying interoperability needs between existing institutional repositories, and defining essential functionalities such as automated data aggregation, user-friendly interfaces, and Open Science compliance. Additionally, EUt+ set governance and sustainability plans to maintain long-term adoption and ensure the repository remained an effective resource.

One of the primary advantages of OpenAIRE CONNECT was its flexibility in customization. EUt+ worked closely with OpenAIRE to develop a branded CONNECT Gateway, tailored to its institutional and research needs (EUT+, 2023). This customization process involved designing an intuitive web interface that aligned with EUt+ branding, configuring automated research output collection from existing repositories, integrating metadata standards to improve discoverability, and implementing multilingual features to accommodate the diverse EUt+ community. The customization of the CONNECT Gateway allowed EUt+ to create a unified platform that would serve as a reliable and comprehensive research repository for all alliance members.

To ensure adherence to FAIR principles, EUt+ researchers were trained to deposit and categorize research outputs, including publications, datasets, and software, using standardized metadata. By linking research outputs to funding sources, transparency was enhanced, while OpenAIRE's built-in tools provided data validation and quality control. A special integration with Zenodo enabled direct deposits and ensured long-term preservation of research products. These measures not only facilitated Open Science compliance but also reinforced EUt+'s commitment to making research more accessible and reusable.

In order to promote widespread adoption, EUt+ engaged in an extensive stakeholder outreach strategy. Workshops and training sessions were conducted for researchers, administrators, and librarians, equipping them with the necessary knowledge and skills to utilize OpenAIRE CONNECT effectively. Step-by-step tutorials were created to guide users through the process of uploading, managing, and tracking research outputs. Awareness campaigns were launched to highlight the benefits of Open Science and the role of OpenAIRE CONNECT in advancing research visibility and collaboration. Through these initiatives, EUt+ ensured that the transition to OpenAIRE CONNECT was intuitive, well-supported, and embraced by the research community.

A defining feature of OpenAIRE CONNECT is its real-time analytics and impact tracking tools, which EUt+ leveraged to monitor research dissemination across institutional repositories. The platform allowed EUt+ to assess funding diversity and track compliance with Open Science policies while evaluating research impact through visual analytics and bibliometric indicators. Regular assessments enabled EUt+ to optimize workflows, address technical challenges, and enhance researcher engagement, ensuring the continued success of the initiative.

3.5   Preliminary Outcomes and Future Assessment

Since its launch, the EUT+ CONNECT Gateway has successfully aggregated over 131,200 publications, 470 research datasets, 71 software items, and over 7,800 additional research products from nine institutional data sources. This illustrates the scale and diversity of research outputs now made accessible through the alliance's unified infrastructure. To assess the gateway's impact more thoroughly, we plan to launch a satisfaction and usability survey targeting researchers and librarians in mid-2025. This will be complemented by tracking engagement metrics, such as download counts, Citation rates, and usage statistics, which will inform future endeavors: development, training priorities, and policy recommendations for broader Open Science uptake.

4   Conclusion

The integration of EUt+ resources into OpenAIRE CONNECT has supported a more structured and interoperable approach to research management across the alliance. This collaboration has contributed to increased visibility and accessibility of research outputs, as well as improved coordination of repository practices among the nine partner institutions. By implementing a federated infrastructure

based on shared metadata standards and automated workflows, EUt+ was able to address pre-existing fragmentation and ensure alignment with European Open Science mandates. The adoption of OpenAIRE CONNECT also enabled a more systematic approach to repository governance, facilitating the harmonization of policies and technical practices across different institutional contexts.

The availability of real-time analytics through OpenAIRE services has provided EUt+ with independent data on repository performance, funding coverage, and Open Access compliance. These indicators have informed local policy development and contributed to evidence-based decision-making across the alliance. The infrastructure has also supported broader participation in FAIR-aligned practices by simplifying the deposit and tracking of diverse research outputs. In parallel, capacity-building activities—including training sessions and technical support—have played a critical role in supporting institutional engagement. These efforts have increased awareness of Open Science principles and encouraged more active participation in open and responsible research dissemination.

The collaboration between EUt+ and OpenAIRE CONNECT offers a practical example of how digital research infrastructures can be implemented in a multi-institutional and transnational setting. While the current deployment addressed initial challenges related to system interoperability, cost efficiency, and metadata curation, long-term sustainability will depend on continuous governance, community engagement, and responsiveness to policy evolution. EUt+ is currently exploring the expansion of its Gateway functionalities, including the integration of additional repositories, multilingual features, and monitoring dashboards tailored to institutional KPIs. The alliance also aims to share its lessons learned with other university networks pursuing similar goals. As such, this case study underscores the importance of coordinated technical and organizational strategies in enabling Open Science implementation at scale, and highlights the value of shared infrastructures in fostering transparency, collaboration, and equitable access to research.

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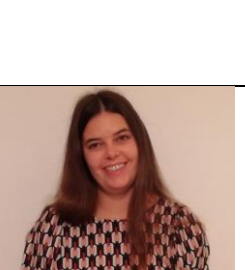
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7 Author biographies

	Giulia Malaguarnera, PhD, works as "Outreach and Engagement Officer" at OpenAIRE AMKE, specializing in user engagement and co-creation activities to promote Open Science practices. She also contributes in the CoARA WG "Towards Open Infrastructures for Responsible Research Assessment" and in GraspOS, a projects related to federate Open Infrastructures for Research Assessment.
	Maja Dolinar is a User Engagement & EOSC Liaison at OpenAIRE, where she specializes in community engagement within the European Open Science Cloud (EOSC) ecosystem. With a focus on fostering collaboration and advancing OpenAIRE's mission, she leads user engagement initiatives, represents OpenAIRE in EOSC fora, co-leads the OpenAIRE Working Group on EOSC, and liaises with international organizations to build strategic partnerships. As a passionate advocate for Open Science, Maja possesses extensive expertise in the curation, management, and preservation of research data, particularly in the social sciences and humanities, with a particular focus on the European research data landscape. Her deep passion lies in fostering collaboration, innovation and knowledge sharing across the European research landscape.
	Alessia Bardi is a researcher at the Institute of Information Science and Technologies of the Italian National Research Council (ISTI-CNR). She is the Service Manager of OpenAIRE CONNECT, supporting Research Community and Infrastructures to build a research gateway for search and browse research outputs. She completed her PhD in Information Engineering at the Engineering Ph.D. School "Leonardo da Vinci" of the University of Pisa in 2016. She has been involved in several EC funded projects for the realisation and operation of aggregative data infrastructures for research communities in the Humanities and Studies of the past (e.g. HOPE - Heritage of the People's Europe, PARTHENOS, Ariadne+) and in support of Open Access and Open Science (e.g. OpenAIRE, OpenUP). Her research interests include service-oriented architectures, data and metadata interoperability and data infrastructures for e-science and scholarly communication.

Frances Madden is the Assistant Head of Library Services: Research Services at TU Dublin. She is one of the main curators of the OpenAIRE CONNECT Gateway for EUT+. She is also the National Open Research Fund project, Scoir, which focuses on secondary rights, copyright, Open Access, and institutional rights retention. Before joining TU Dublin, she served as Technical Relationship and Project Manager for the Legal Deposit Libraries at the British Library. Her research interests include Open Access, Open Research, Rights Retention, and Copyright.