



euro
CRIS

THE INTERNATIONAL ORGANISATION
FOR RESEARCH INFORMATION

Autumn 2025 Strategic Membership Meeting
Nov 25-27, 2025
İzmir, Türkiye

AI-CRIS Knowledge Hub: Driving Innovation in Research Information



Dr. Otmane Azeroual – University of Hagen, Germany

Agenda

1. Motivation and Necessity
2. Current Challenges in CRIS Systems
3. Vision of the AI-CRIS Knowledge Hub
4. Architecture and Core Components
5. Application Examples and Use Cases
6. Roadmap
7. Benefits for the euroCRIS Community
8. Ethics and Data Protection
9. Conclusion and Outlook

Motivation and Necessity

Why an AI-CRIS Knowledge Hub?

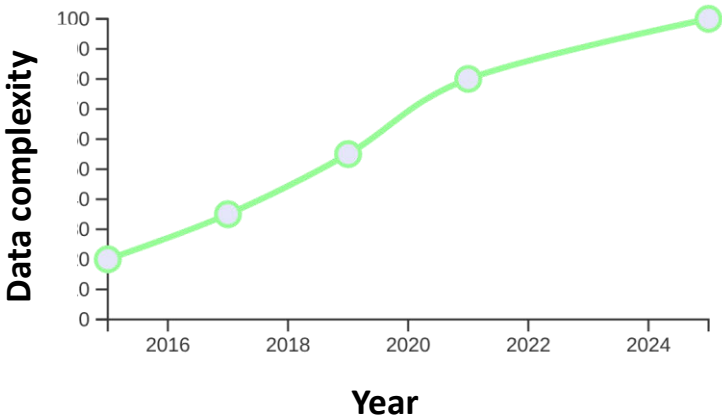
- 

Increasing Volume and Complexity of Research Information
Requires modern approaches for data processing and analysis
- 

Automation and Quality Assurance
Reducing manual interventions and improving data quality
- 

Enhanced Interoperability
Creating a shared AI-driven innovation space for CRIS

Research Data World 2025



“More efficient and transparent research processes through AI-powered systems.”

Current Challenges in CRIS Systems



Fragmented Data Landscape

Data is often distributed across different systems and formats, making integration and holistic overview difficult.

Data Integration



Manual Classification

The maintenance and categorization of research information often requires manual interventions, which can be time-consuming and error-prone.

Data Preparation



Missing Predictive Analytics

There are no functions to predict research trends or potential developments, which complicates strategic planning.

Strategy Development



Limited Use of Semantic Technologies

The possibilities for semantic linking and analysis of data are not sufficiently utilized, which limits interoperability.

Semantics



Varying Maturity Levels

Different institutions use CRIS systems with varying functionalities and development stages, which hinders collaboration.

Standardization



Shared Challenge

These challenges impair the efficiency and capabilities of CRIS systems and complicate international collaboration.

Need for Innovation

Vision of the AI-CRIS Knowledge Hub

"Creating a collaborative innovation ecosystem for CRIS systems through AI-powered solutions"



AI/ML-Based Data Analysis

In-depth analysis of research information to identify patterns and trends



Automated Classification

Automatic categorization and enrichment of research information



Knowledge Graph-Based Interoperability

Semantic linking and analysis of data for improved interoperability



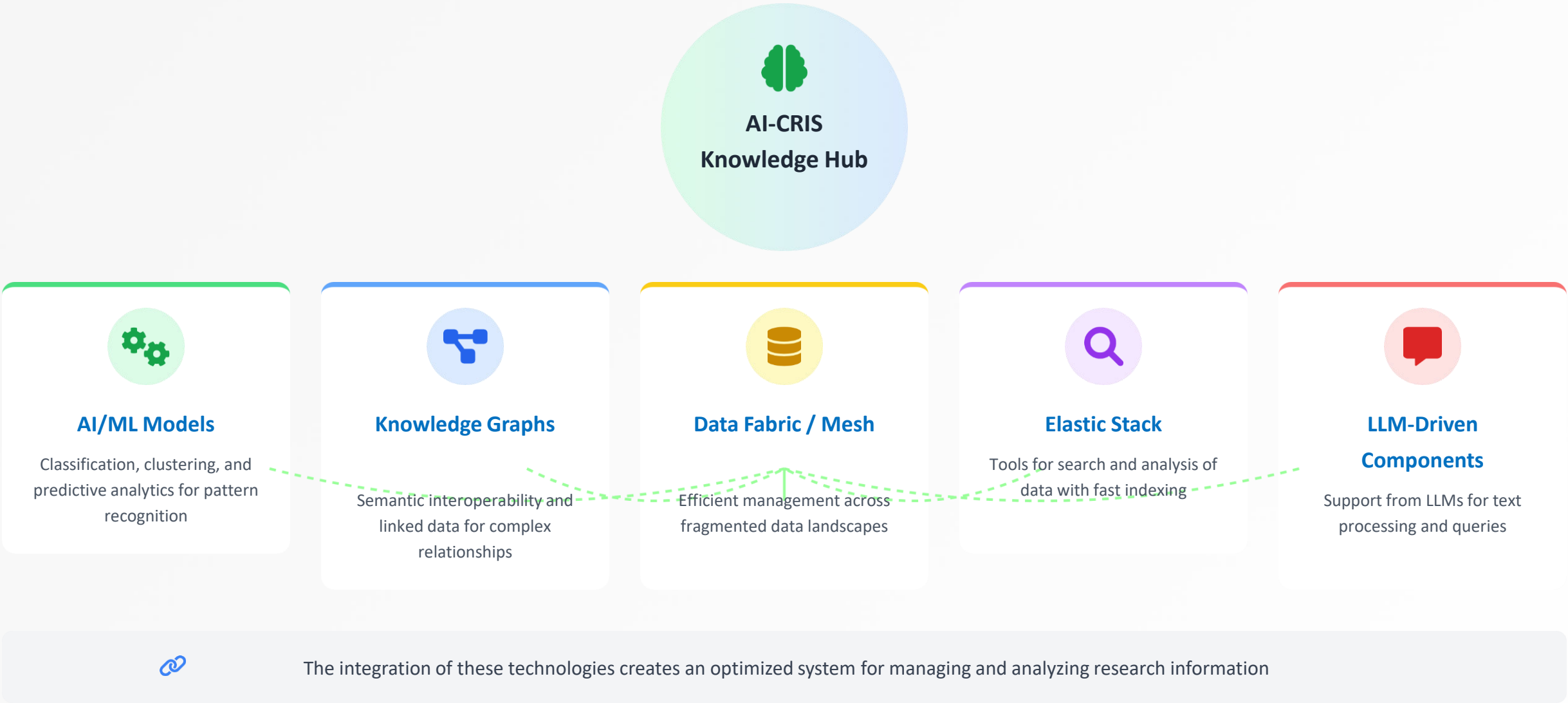
Trend Prediction

Predictive models for identifying future developments in research and publications



Promoting community-driven learning and tool sharing

Architecture and Core Components



Application Examples and Use Cases



Automated Subject Classification

AI models automatically classify publications to subject areas, reducing manual classification and increasing consistency.

✓ Preliminary results: 85% classification accuracy



Person Disambiguation

Algorithms create unique identities for researchers, even with name similarities or different spellings.

✓ Solves identity problems in research information



Anomaly Detection

The system identifies irregularities or errors in research information, contributing to improved data quality.

✓ Real-time automatic error detection



Trend Forecasting

Predictive models analyze historical data to forecast future trends in research and grant applications.

✓ Forecasting accuracy: 78% for 24-month trends



LLM-Based Support

LLMs assist with report creation, answer frequently asked questions, and support data quality.

✓ Reduces manual work by up to 40%

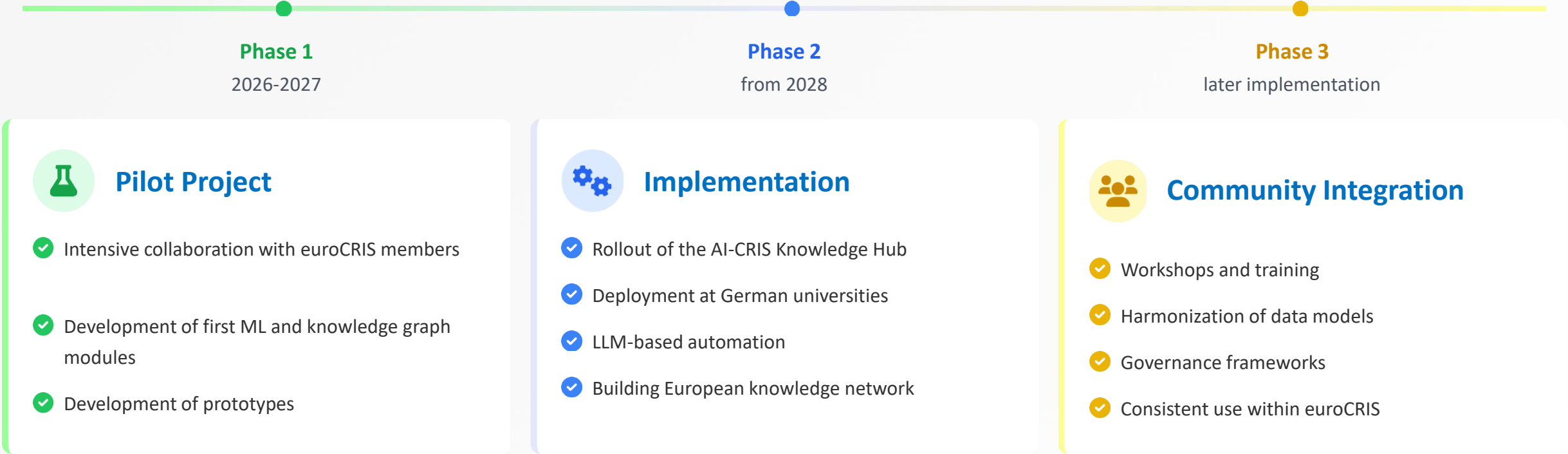
Overall Impact

These application cases significantly improve the efficiency and quality of research management and create a foundation for data-driven decisions.



AI-Powered Data Processing

Three-Phase Implementation Plan



Benefits for the euroCRIS Community



Joint Innovation

Promotion of collaborative development of new solutions and standards in the field of research management

 *Joint growth*



Scalable AI Tools

Providing scalable AI tools that all community members benefit from the latest technological advancements

 *Accessibility for all*



Improved Data Quality

Integration of AI and data science leads to higher quality and better traceability of research information

 *Transparency and Quality*



Cost Efficiency

Shared use of infrastructure reduces costs for individual institutions and promotes efficiency

 *Resource savings*



International Collaboration

Creating a platform for exchange and collaboration across national borders

 *Network Effects*



Shared Goal

The AI-CRIS Knowledge Hub strengthens the euroCRIS community through the exchange of knowledge, tools, and best practices

 *Common progress*

Ethics and Data Protection

Fundamental principles of the AI-CRIS Knowledge Hub for responsible handling of research information



Transparency

Clear documentation of AI models, data sources and decision processes for traceability



Fairness & Non-Discrimination

Ensuring that models do not exacerbate biases against individuals or research areas



Responsible AI Usage

Human decision-making (human-in-the-loop) in all critical processes



Data Minimization

Processing only the data that is absolutely necessary for CRIS functions



Transparent Governance

Joint guidelines for model usage, auditing and cross-data flow data structures



Data Protection & Compliance

GDPR-compliant workflows, role-based access and secure infrastructure

Conclusion and Outlook

Summary

The AI-CRIS Knowledge Hub is a crucial step toward modernizing the CRIS ecosystem, leveraging the potential of artificial intelligence and data science to foster sustainable innovation.

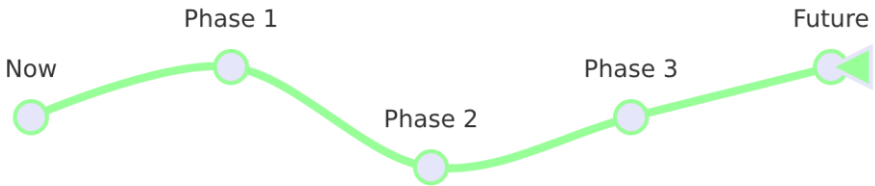
Key Benefits



- Improved interoperability and knowledge exchange
- Support for data-driven decisions
- Increased efficiency in research management

"The future of the CRIS ecosystem is collaborative, intelligent, and data-driven."

Outlook



Further development of
AI models



Community-driven
innovations

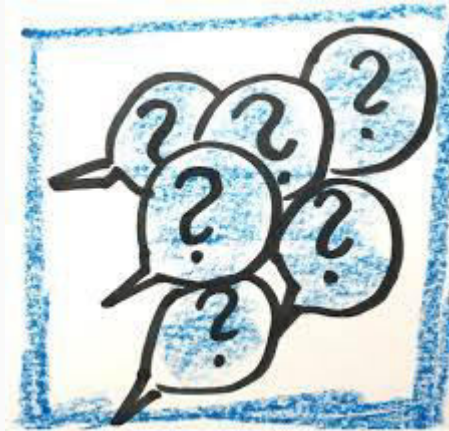


European integration

References

- (1) Azeroual, O., Fabre, R., Störl, U., & Qi, R. (2023). [Elastic Stack and GRAPHYP Knowledge Graph of Web Usage: A Win–Win Workflow for Semantic Interoperability in Decision Making](#). *Future Internet*, 2023, 15(6), 190.
- (2) Azeroual, O., Schöpfel, J., Störl, U., & Marušić, A. (2024). [Ethical aspects using AI in CRIS](#). *Procedia Computer Science*, 2024(249), 150-159.
- (3) Azeroual, O., & Schöpfel, J. (2024). [New Developments in Research Data Management - The Potential of AI](#). Editor(s): David Baker, Lucy Ellis, *Encyclopedia of Libraries, Librarianship, and Information Science (First Edition)*, Academic Press, pp. 206-211.
- (4) Azeroual, O., Fabre, R., & Störl, U. (2025). [Revolutionary synergy: The fusion of data mesh and data fabric for strategy analytics in GRAPHYP Knowledge Graph](#). In *International Joint Conference on Knowledge Discovery, Knowledge Engineering, and Knowledge Management*. Springer, Cham.
- (5) Azeroual, O., Nacheva, R., Nikiforova, A., & Störl, U. (2025). [A CRISP-DM and Predictive Analytics Framework for Enhanced Decision-Making in Research Information Management Systems](#). *Informatica*, 49(18).
- (6) Azeroual, O., Störl, U., Rothfritz, L., Schöpfel, J., Herb, U., & Borges, G. (2025). [Datenmanagement 4.0: Künstliche Intelligenz als Treiber für innovative Forschungsinformationssysteme](#). *Information–Wissenschaft & Praxis*, 76(1), 32-42.
- (7) Azeroual, O. (2025). [Empowering IT-Supported Research Management: Leveraging Data Science Methods for Informed Decisions](#). *3rd International Conference on Digitalization and Management Innovation (DMI2024)*, Beijing Wuzi University and Xiangnan University, Beijing, China.
- (8) Azeroual, O., & Störl, U. (2025). [A Decision Model for IT-Supported Research Management Based on Cutting-Edge Data Science Technologies](#). *3rd World Conference on Information Systems for Business Management (ISBM 2024)*, Bangkok, Thailand.
- (9) Azeroual, O. (2025). [AI4Knowledge: Shaping the Future of Research Data Systems](#). In *2025 International Conference on Artificial Intelligence, Computer, Data Sciences and Applications (ACDSA)* (pp. 1-7), IEEE.
- (10) Azeroual, O. (2025). [Streamlining Research Information Management with Large Language Models: Automation, Analysis, and User-Centric Solutions](#). In *10th International Conference on Big Data Analytics (ICBDA)*, Singapore, 2025, pp. 281-287, IEEE.

Thank you for your attention!



Contact

otmane.azeroual@fernuni-hagen.de

[+49 2331 987-4277](tel:+4923319874277)