

# Introduction to the Minitrack on Federated Industrial Platform Ecosystems: Technologies, Business Models, and Data-Driven Artifacts

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## Abstract

*Federated Industrial Platform Ecosystems include several different topics of high research interest. This minitrack allows reporting on novel insights and groundbreaking developments such as data spaces, digital sovereignty, or open-source adoption in industrial contexts.*

**Keywords:** Federated Platform Ecosystems, Data Spaces, Data Sovereignty, Open-Source Strategies

## 1. Introduction

Currently, we can witness great discourses on platform ecosystems in industrial contexts, both among scholars and practitioners. Numerous platform ecosystems have emerged in the last few years. They also provide a multitude of data-driven artifacts. These developments target industrial systems, e.g., manufacturing, logistics, or process organization. The application of open-source technologies and data-driven artifacts allows for lower entry barriers for stakeholders, especially small and medium-sized enterprises. Examples include blockchain technologies, digital twins, or data farming procedure models for analyzing and optimizing industrial systems (cf. Hunker et al., 2022, Große et al., 2024, van der Valk et al., 2024, Steffen et al., 2024).

Although there is ongoing research, many aspects remain yet to be explored. This particularly includes the adoption of corresponding strategies, the implementation of federated platforms, data spaces, and the operationalization of data-driven artifacts for industrial use.

The minitrack continues the research synthesis on federated platforms as it builds upon its predecessors

of the last HICSS minitracks (cf. van der Valk et al., 2023 and van der Valk et al., 2024). It was advanced to include novel and up-to-date research.

## 2. Federated Industrial Platform Ecosystems

This year's edition of the minitrack received multiple submissions for review. They range from questions of software adoption via knowledge graphs to data spaces. Unfortunately, not all submissions could be considered for acceptance. The track accepted three submissions after a thorough review by experts in the respective fields. The track chairs of the track 'Internet and the Digital Economy' handled the review process of one of the accepted papers to eliminate a potential conflict of interest. The three accepted submissions offer innovative insights into the several aspects of platform ecosystems.

The first accepted paper, 'Exploring Digital Transformation Opportunities of Data Spaces' by Hutterer and Krumay (2025), examines the influence of data spaces on digital transformation. The paper is motivated by several successful initiatives for data sharing, e.g., International Data Spaces or GAIA-X. Yet, the authors do not focus on the technical aspects of data spaces, as these are well-examined in other research projects. Only a few works concentrate on the non-technical opportunities data spaces deliver. The research is based on a multi-case study with over 50 cases analyzed. The authors identified five chances for data space-driven digital transformation within the work, i.e., federalization, justification, democratization, sovereignization, and servitization. Thus, the research enables scholars and practitioners

to make informed decisions for data-sharing initiatives that cross the organizations' borders.

The second paper, titled 'Strengthening Data Sovereignty Through Digital Watermarking in Data Spaces' by Hellmeier and Qarawlus (2025), also addresses aspects of data spaces. The authors are motivating approaches for achieving data sovereignty through data spaces. They apply digital watermarking as a fundamental concept for securing information and examine similarities between data sovereignty and digital watermarking. The latter is not yet coupled with data spaces, thus posing a novel challenge. Using a design science approach, the researchers combine digital watermarking and data spaces. They advance the Eclipse Data Space Connector by implementing a Policy Information Extension and a Watermark Embedding Extension. The former contains information on the data sharing conditions, offering a REST API for sharing the watermark with further stakeholders. The latter implements the watermark into the data set itself. The extensions are tested and evaluated within a test bed and offer an interoperable advance in practice using data spaces. This paper is nominated for the Best Paper award.

The third paper, 'Towards Overcoming the Barriers to Open-Source Software Adoption in Traditional Industries' by Duparc, Steffen, Stodolka, and van der Valk (2025), also shines a light on digital transformation but examines open-source software. While open source is common among software developers, companies rooted in the manufacturing or logistics sectors seldom use open source. Thus, they are missing out on many advantages. The research develops an action guide that enhances open-source applications in classic industrial systems. The results stem from a structured literature review and are enhanced with expert interviews. Lastly, the interview insights are analyzed, and barriers and potentials are outlined. Therefore, the research exposes the obstacles and reservations that industrial companies face. The action guide, however, enables practitioners to counter these obstacles and drive digital transformation within their ecosystems.

### 3. Conclusion

All accepted submissions drive the accumulation of knowledge on federated platforms. They range from non-technical, resp. socio-technical aspects of digital transformation and data spaces to concrete technical solutions. The in-depth analyses and design studies contribute to the scholarship but simultaneously enhance the toolbox for practitioners.

The track exists for the third year and successfully enhances the research on federated platforms. It shows

the significance of the topic for the community. Nevertheless, we aim to improve the minitrack further, and we look forward to offering a revised minitrack at next year's edition of HICSS.

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