

## Introduction to the Minitrack on Platform Ecosystems in Production and Logistics: Technologies, Business Models, and Data-Driven Artifacts

Hendrik van der Valk  
TU Dortmund University  
[hendrik.van-der-valk@tu-dortmund.de](mailto:hendrik.van-der-valk@tu-dortmund.de)

Estelle Duparc  
TU Dortmund University  
[estelle.duparc@tu-dortmund.de](mailto:estelle.duparc@tu-dortmund.de)

Michael Schmidt  
Fraunhofer IML  
[michael.b.schmidt@iml.fraunhofer.de](mailto:michael.b.schmidt@iml.fraunhofer.de)

Carina Culotta  
Fraunhofer IML  
[carina.culotta@iml.fraunhofer.de](mailto:carina.culotta@iml.fraunhofer.de)

### 1. Introduction

The B2B sector is considered a lucrative market for establishing profitable platforms (European Commission, 2020). However, only a few industrial companies are estimated to have adopted an effective platform strategy (Siebel, 2020). Nevertheless, the digitization of production and logistics systems is in full swing. Using novel technologies and approaches could lower the entry barriers for industrial companies to participate in the platform economy, spur digitization, enhance transparency, and foster trust (Steffen et al., 2022).

The challenges of platform ecosystems and their data-driven artifacts include questions about the processes for data analysis and system optimization, the underlying concepts and architectures, data sharing and interoperability frameworks, as well as data sovereignty and data governance strategies.

A particular emphasis of this minitrack was the inclusion of novel technologies and approaches to facilitate digital business models or applications and foster the growth of sustainable and prosperous B2B platform ecosystems. Hence, this minitrack aimed at research on innovative progress in the field of digitization regarding logistics and production systems.

Both logistics and production systems are crucial sectors to establishing thriving ecosystems. Therefore, a focus was on

- Service systems and platform concepts in production and logistics
- Business models for platform ecosystems and data-driven artifacts
- The strategic use of open-source in production and logistics
- Architectures for data-driven artifacts
- Data acquisition, preparation, and storage techniques

- Design principles & procedure models for the industrial usage
- Realizations of synchronization between the real world and digital world
- Use-case-based empirical studies
- Innovative data models
- Integration of connecting secure data spaces using standardized infrastructure
- The use of novel technologies in industrial platform ecosystems

The track received five submissions. Unfortunately, three contributions were rejected, while the other two submissions were accepted. This results in an acceptance rate of 40%. One accepted contribution was handled by the track chairs of the track ‘Internet and the Digital Economy’. Both accepted submissions offer novel insights into platform ecosystems.

The first accepted paper, ‘Touching Space: Distributed Ledger Technology for Tracking and Tracing Certificates’ by Pascal Moriggl, Petra Maria Aspiron, Bettina Schneider, and Christopher Scherb, examines the usage of distributed ledger technologies to assess the state of space-vehicle components (Moriggl et al., 2023). Space vehicles’ components and equipment have to meet different regulatory requirements. Each component must be certified and sustainably traceable at all times. To collect, manage and route certifications for components, parts, and materials that go into space products, space engineers, have expressed the need for an interoperable system. Currently, the European space industry lacks a unified approach, which poses a challenge for product development companies. The paper reports on research on an open-source, secure, fast, and distributed ledger technology (DLT) based solution that fits into any IT environment and is well adapted to the needs of manufacturing companies in the space sector. The results show that a blockchain-based solution based on ‘Hyperledger Fabric’ combined with

the InterPlanetary File System is viable. The results can guide other researchers and practitioners to consider DLTs when changing their certification management paradigm with suppliers, customers, and auditors.

The second accepted paper, ‘Federal Platform Ecosystems to Counter Monopolists’ by Alex Rotgang, Estelle Duparc, Barbara Steffen, Steffen Hoevel, Julia Mayer, and Wibke Stodolka describes a value-based vision for the logistics industry (Rotgang et al., 2023). Unfortunately, most platforms fail. Nevertheless, a few monopolists have the potential to completely transform industries and their competitive dynamics. These monopolies, however, often collide with European values, e.g., democracy and freedom, that aim to protect today’s variety of companies and offers. The paper aims to protect European values and companies’ competitiveness against potential monopolists. The authors suggest founding and governing federal platform ecosystems following the ‘swarm intelligence’ principle, where many small(er) organizations collaboratively compete against monopolists. While this is currently still a new and untested concept, the authors selected a use case to make it more tangible and adaptable, the Logistics Broker (LB) – which is envisioned to become the center-piece of the German logistics industry’s federal platform ecosystem. Through conducting a workshop study, the context, role, and stakeholders were analyzed, and an agenda for future research was proposed.

Both accepted papers highly contribute to our understanding of platform ecosystems in production and logistics. They cover both aspects of industrial usage of platform-driven ecosystems and provide in-depth analyses.

As this track was offered for the first time, the submissions broke ground for an exciting and fast-developing topic. In the coming years, logistics and production systems will face massive pressure to transform and adapt, leading to a plethora of research questions and innovative papers on platform ecosystems in production and logistics. Hence, we look forward to adjusting this track and re-offering it for next year’s edition of HICSS.

## References

European Commission. (2020). Advanced Technologies for Industry - B2B Platforms. Monitoring B2B Industrial Digital Platforms in Europe. <https://ati.ec.europa.eu/reports/eu-reports/monitoring-b2b-industrial-digital-platforms-europe>

Moriggl, P., Asprion, P. M., Schneider, B., & Scherb, C. (2023). Touching Space: Distributed Ledger

Technology for Tracking and Tracing Certificates. In Proceedings of the 56th Hawaii International Conference on System Sciences.

Rotgang, A., Duparc, E., Steffen, B., Hoevel, S., Mayer, J., & Stodolka, W. (2023). Federal Platform Ecosystems to Counter Monopolists: A Value-Based Vision for the Logistics Industry. In Proceedings of the 56th Hawaii International Conference on System Sciences.

Siebel, T. (2020). Kaum Umsatz mit digitalen Plattformen im Maschinenbau. Springerprofessional.De. <https://www.springerprofessional.de/en/industrie-4-0/internet-der-dinge/kaum-umsatz-mit-digitalen-plattformen-im-maschinenbau/18411616>

Steffen, B., Möller, F., & Nowak, L. (2022). Transformer(s) of the Logistics Industry - Enabling Logistics Companies to Excel with Digital Platforms. In T. Bui (Ed.), Proceedings of the Annual Hawaii International Conference on System Sciences, Proceedings of the 55th Hawaii International Conference on System Sciences. Hawaii International Conference on System Sciences. <https://doi.org/10.24251/HICSS.2022.064>