

Annual Report 2025

Innovation through Smart Data Ecosystems.

Table of Contents

- 2 **Table of Contents**
- 3 **Preface**
- 4 **The Year in Numbers**
- 5 **Main Research Focus**
 - 6 Research Fields
 - 8 Application Areas
- 10 **Project Highlights**
- 15 **Collaboration with the Fraunhofer ISST**
- 16 **Selected Publications**
- 19 **Board of Trustees**
- 20 **Our Network and University Partnerships**
- 21 **Our Channels**

Preface

Dear Readers,

In 2025, data spaces celebrated a milestone anniversary: Ten years ago, on September 23, 2015, to be exact, the third high-level roundtable on the “Industrial Data Space” took place in Berlin. This was a milestone, as it was on that day that the Federal Ministry of Education and Research awarded Fraunhofer its first grant for an Industrial Data Space.

Data spaces subsequently shaped the next ten years of digitalization research at the Fraunhofer ISST. With their distributed data integration architecture, which includes standards for accessing and storing data and enables data sovereignty for data providers, they form the foundation for trustworthy data exchange within a community. The International Data Spaces Association (IDSA) spearheaded the concept; implementers have since adopted it in open-source software and are currently standardizing it. Many data-sharing initiatives, such as Catena-X for the automotive industry, already rely on this model—achieving great international success through the involvement of the Fraunhofer ISST in research and development efforts.

What remains to be done? Continued work is required on technologies for fair data exchange, development of governance models that can be automated and addressing the economic aspects of data sharing within ecosystems. In short, “Season 2 of Data Spaces” must be created. The vision is a complete digital representation of entire value creation systems, in which the next stage of data spaces can take effect: Smart Data Ecosystems combine ecosystem principles, digital twins, and AI into a new model of intelligent, data-driven value creation. While traditional data ecosystems enable the trusted exchange and shared use of data, the next generation focuses on their intelligent and increasingly autonomous use through artificial intelligence.

I look forward to building such “Smart Data Ecosystems” with our partners, customers, and networks, and with my outstanding team at the Fraunhofer ISST. Together, we will turn the vision into concrete solutions for innovation, competitiveness and self-determination in Europe.

Yours,



Prof. Dr.-Ing. Boris Otto
Director of the Fraunhofer ISST



Professor Boris Otto

as an industrial engineer and business IT specialist is the director of the Fraunhofer Institute for Software and Systems Engineering ISST and professor of Industrial Information Management at the Technische Universität Dortmund. His research and teaching focus on industrial data ecosystems, data spaces, and data management in industrial companies.

He is Vice Chairman of the Executive Board of Catena-X Automotive Network e. V., a member of the Executive Board of the Gaia-X European Association for Data and Cloud and of the International Data Spaces Association (IDSA), a member of the Supervisory Board of the European Health Data Alliance (EDHA), and coordinator of the EU Data Spaces Support Center (DSSC). As Chairman of the Executive Board of the Fraunhofer ICT Group, he is also a member of the presidential council of the Fraunhofer-Gesellschaft.

The Year in Numbers

Strong in research, diverse in its people and economically stable.

Annual Report 2025
Fraunhofer ISST

Table of Contents

Preface

The Year in Numbers

Main Research Focus

Project Highlights

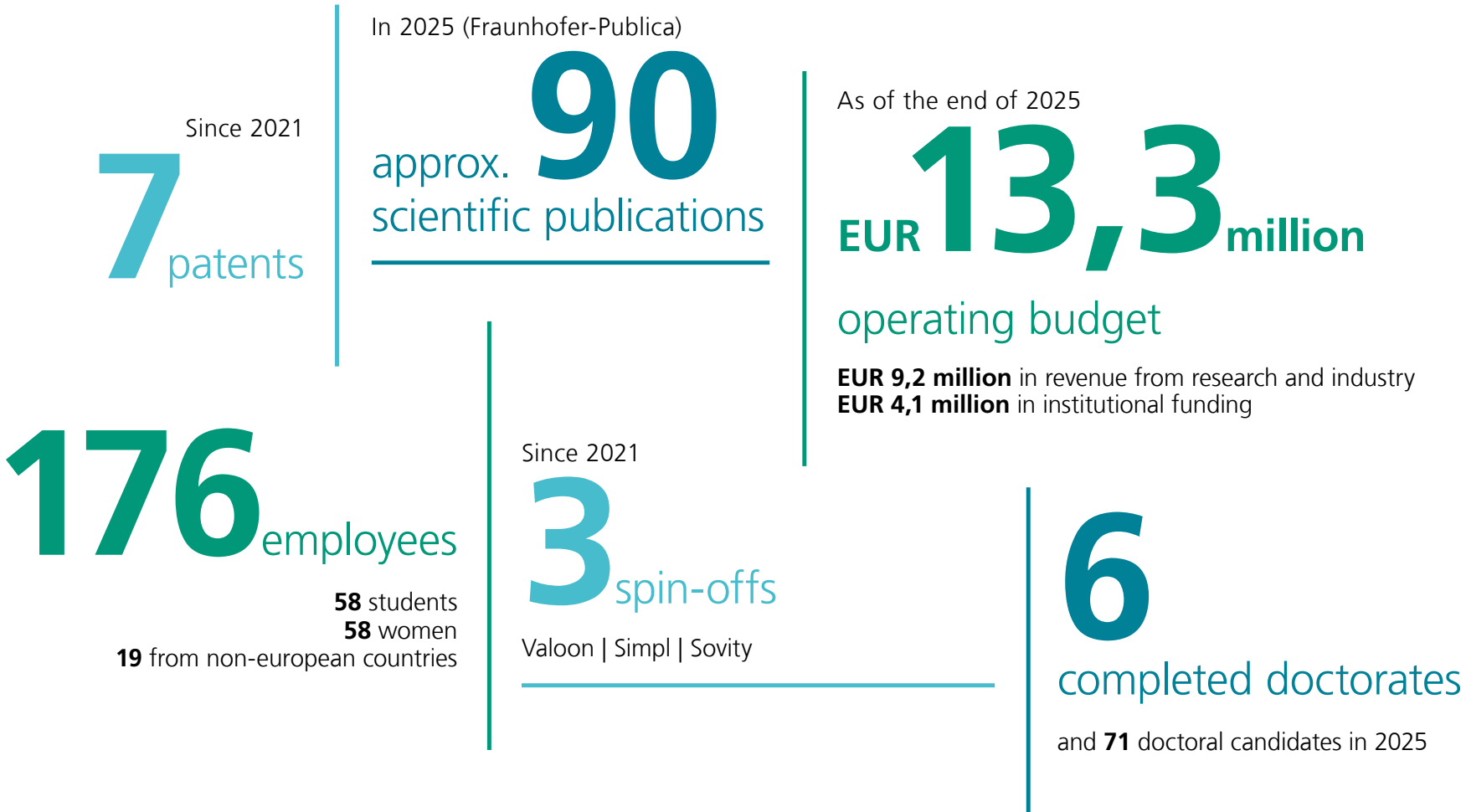
Collaboration with the
Fraunhofer ISST

Selected Publications

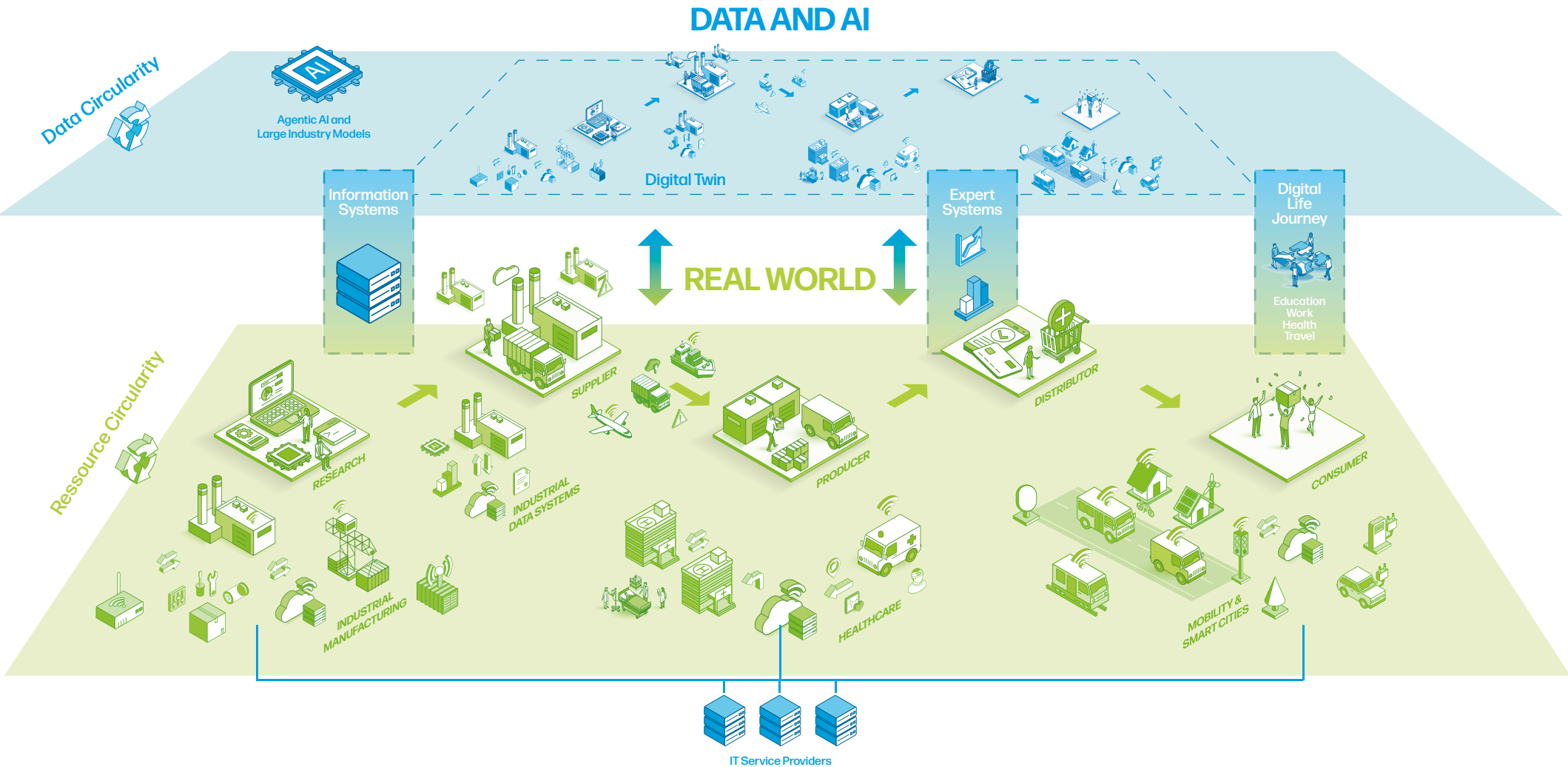
Board of Trustees

Our Networks and University
Partnerships

Our Channels



Main Research Focus



The Fraunhofer ISST develops technologies and services for Smart Data Ecosystems. It enables organizations to leverage data across organizational boundaries and realize new value creation potential.

Data is the foundation for innovation. To realize their potential, organizations must make data usable and process it intelligently. However, the key to innovation and value creation lies in their cross-organizational and cross-sectoral use. To this end, the

Fraunhofer ISST is researching Smart Data Ecosystems: interconnected data and value creation systems that enable the exchange and AI-assisted use of data. The insights gained are transformed into technologies, services and standards for practical use.

Annual Report 2025
Fraunhofer ISST

Table of Contents

Preface

The Year in Numbers

Main Research Focus

Research Fields
Application Areas

Project Highlights

Collaboration with the
Fraunhofer ISST

Selected Publications

Board of Trustees

Our Networks and University
Partnerships

Our Channels

Research Fields

Our research portfolio is divided into four areas of focus, which collectively establish the technological and organizational foundations for Smart Data Ecosystems. These areas of focus include governance and ecosystem issues, data and AI value chains, data-driven applications and services, and advanced cloud infrastructures.

Ecosystem

Governance and Value-Generation Mechanisms in Data Ecosystems

In this research field, the Fraunhofer ISST investigates how Smart Data Ecosystems emerge, how they can be organized and ultimately scaled. The focus lies on governance structures, economic mechanisms and interaction patterns that enable Smart Data Ecosystems, as well as the interaction of autonomous AI agents within data ecosystems. The research combines theoretical models and governance concepts with concrete system architectures and prototypical implementations, such as those based on Value Stream Mapping (VSM). The institute also investigates how data ecosystems function under real-world conditions, analyzes patterns and success factors of successful ecosystems and applies these insights to new application domains. These findings also feed into European data space and standardization initiatives, such as the Data Spaces Support Center.

Data & AI Value Chain

Data Management and AI Integration Along the Entire Value Chain

The quality of AI systems depends on the quality of the data on which they are based. In this research field, the Fraunhofer ISST examines the entire lifecycle of data and AI models—from data collection and preparation, through data sharing and management, to their use in autonomous systems. The focus is on digital twins, data sovereignty and data spaces, next-generation data management systems and data readiness as an essential organizational prerequisite for reliable AI. The institute supports companies, for example, in enhancing their organizational data readiness or in implementing specific use cases, for example, in the context of digital product passports, open-source software and systems and technologies like Innamark or EDC, and contributes these insights to standards and data room initiatives. Market analyses and contributions to international standards complement the research work at the intersection of data infrastructure and industrial AI.

Annual Report 2025
Fraunhofer ISST

Table of Contents

Preface

The Year in Numbers

Main Research Focus

Research Fields

Ecosystem

Data & AI Value Chain

Business Services & Apps

Cloud Foundation

Application Areas

Project Highlights

Collaboration with the
Fraunhofer ISST

Selected Publications

Board of Trustees

Our Networks and University
Partnerships

Our Channels

Research Fields

Annual Report 2025
Fraunhofer ISST

- Table of Contents
- Preface
- The Year in Numbers

Main Research Focus

Research Fields

- Ecosystem
- Data & AI Value Chain
- Business Services & Apps**
- Cloud Foundation**
- Application Areas

- Project Highlights
- Collaboration with the Fraunhofer ISST
- Selected Publications
- Board of Trustees
- Our Networks and University Partnerships
- Our Channels

Business Services & Apps

Data- and AI-based Applications and Business Models

Data ecosystems create value only through concrete applications. This research field develops domain-specific, data- and AI-based services, thereby paving the way for innovative business models built on Smart Data Ecosystems. Key topics include the Twin Transformation, the parallel digital and sustainable transformation of companies as well as data-driven value creation and service models. This leads to software solutions and platforms for various industries designed to optimize the flow of materials and information within value chains or to proactively detect health risks. Best-practice analyses and prototypical implementations support the transfer of these innovations into industrial practice. In doing so, this research field closely links technological development with business applicability.

Cloud Foundation

Sovereign Infrastructures for Distributed Data and AI Systems

Smart Data Ecosystems require a sovereign, scalable, and resilient infrastructure. In this research field, the Fraunhofer ISST is developing the technological foundation for federated cloud infrastructures, the edge-cloud continuum, and the orchestration of distributed cloud services. The focus is on requirements such as data sovereignty, interoperability, regulatory compliance, and low latency. To this end, the institute develops systems and technologies for distributed cloud environments, such as ARRC, and analyzes market and technology trends in the cloud sector. This enables organizations to flexibly operate data and applications across the edge, cloud, and data center—with full control over sovereignty, latency, and compliance.

Application Areas

The four research fields form the basis for five strategic application areas in which the Fraunhofer ISST condenses its research. Together with partners from industry, government, and society, scientific findings are tested under real-world conditions and translated into concrete solutions. The experience gained in this process is directly incorporated into the further development of our research, fostering a continuous exchange between research and practice.

Healthcare

Comprehensive Solutions for Healthcare Infrastructure

Making health data secure, interoperable, and usable across sectors is a key prerequisite for the medicine of the future. At the same time, European health care systems are under considerable pressure—due to demographic change, a shortage of skilled professionals, and fragmented data structures. To address this, the Fraunhofer ISST is pursuing the guiding principle of Closed-Loop Precision Medicine: a learning healthcare system in which clinical guidelines, individual patient histories, and real-world evidence are continuously integrated. Key research areas include interoperable health data spaces, patient-centered data protection architectures, and AI-supported applications with measurable benefits for patient care. This enables medical data to be securely exchanged between healthcare facilities and analyzed in real time to support data-driven diagnostic and treatment decisions.

Project Highlights

Mobility & Smart Cities

Innovation, Sustainability, and Climate Protection Through Connected Mobility and Smart Cities

Cities and mobility systems are facing fundamental transformations: Connected vehicles, infrastructure, and sensors continuously generate data, while at the same time the demand for sustainable and personalized mobility is growing. Data protection, interoperability, and European data sovereignty are becoming key prerequisites for data-driven urban systems. Our research at the Fraunhofer ISST integrates data from transportation, energy, the environment, and public administration into shared urban data ecosystems. The focus lies on trusted data spaces, digital twins of urban systems, and sovereign AI for heterogeneous IoT environments. This enables real-time analyses of traffic flows, dynamic adjustments of mobility services, and a data-driven control of urban infrastructure. At the same time, it lays the groundwork for autonomous and trustworthy decision-making processes in public spaces.

Project Highlights



Annual Report 2025
Fraunhofer ISST

Table of Contents

Preface

The Year in Numbers

Main Research Focus

Research Fields

Application Areas

Healthcare

Mobility & Smart Cities

IT Service Providers

Industrial Manufacturing

Industrial Data Systems

Project Highlights

Collaboration with the
Fraunhofer ISST

Selected Publications

Board of Trustees

Our Networks and University
Partnerships

Our Channels

Application Areas

IT Service Providers

Solutions for AI-(Edge-)Cloud Operations, Data Management, and Energy-Efficient Data Centers

IT service providers are under increasing pressure: Global dependencies on non-European cloud providers, rising demands for transparency and auditability, and new regulations such as the Digital Product Passport call for new technological solutions. The Fraunhofer ISST supports IT service providers in confidently operating distributed cloud and edge environments—for example, through AI-powered system monitoring (AIOps) for automated fault detection and resource management. In addition, the institute is developing platform solutions for the Digital Product Passport and conducting research on how AI systems can be operated in a transparent, auditable, and regulatory-compliant manner. This enables IT service providers to design their infrastructures to be more self-sufficient and resilient, systematically meet compliance requirements, and offer new data-driven services—such as the Digital Product Passport as a Service—to their customers.

Project Highlights

Industrial Manufacturing

Actionable Insights from Data for Manufacturing and Logistics Companies

Industry and logistics are under significant pressure for transformation: decarbonization, geopolitical risks, rising energy costs, and fragile supply chains require new data-driven operational and value-creation models. The Fraunhofer ISST develops solutions across the entire industrial value chain—from data governance and data quality to data spaces and digital twins, all the way to predictive analytics and AI-powered assistance systems. Production, quality, and logistics data can be analyzed across organizations to identify bottlenecks early on, manage supply chains more resiliently, and dynamically adapt production processes. At the same time, digital twins and AI-powered analytics enable predictive maintenance and more efficient use of resources. A particular focus is on interoperable and sovereign data infrastructures for industries such as automotive, mechanical engineering, aerospace, and transportation and logistics.

Project Highlights

Industrial Data Systems

Connected Data Infrastructures for Data-Driven Companies

Organizations of all sizes and across all industries face growing challenges in managing data: increasing data complexity, inadequate data quality, vendor lock-in, and mounting regulatory requirements. At the same time, interconnectivity within data ecosystems opens up new opportunities for value creation, but requires trust, interoperability, and sovereignty. The Fraunhofer ISST addresses these challenges with data management systems that enable end-to-end data governance and empower organizations to use and share data in a controlled manner, both internally and externally. The focus lies on governance and maturity models for cross-organizational data sharing, hybrid platform architectures with embedded trust mechanisms, and strategic approaches that translate the value of data into measurable business outcomes. This results in integrated data architectures that ensure data sovereignty and compliance and enable AI applications based on a solid data foundation.

Project Highlights

Project Highlights

The following project highlights provide examples of the research and transfer work conducted by the Fraunhofer ISST. They demonstrate how we work with our partners to translate scientific findings into practical applications across various fields. At the same time, they illustrate the diversity of our research and its contribution to the development of Smart Data Ecosystems.

Collaborative Project with Asklepios and EY

Health Data Hub for the Asklepios Clinics

Design and Proof of Concept for a Central Health Data Hub

Asklepios operates 70 clinics with highly decentralized data structures. Until now, there has been no common database for research and quality assurance. The Fraunhofer ISST developed the design and proof of concept for a central health data hub, including two specific use cases: care pathway modeling and resource forecasting. In doing so, clinical processes were standardized and modularized in accordance with the interoperability standards of the Hospital Future Act (German: Krankenhauszukunftsgesetz or KHZG). This enables Asklepios to manage quality assurance in a data-driven manner and lay the groundwork for AI-supported decision-making and medical research.

Healthcare Data & AI Value Chain

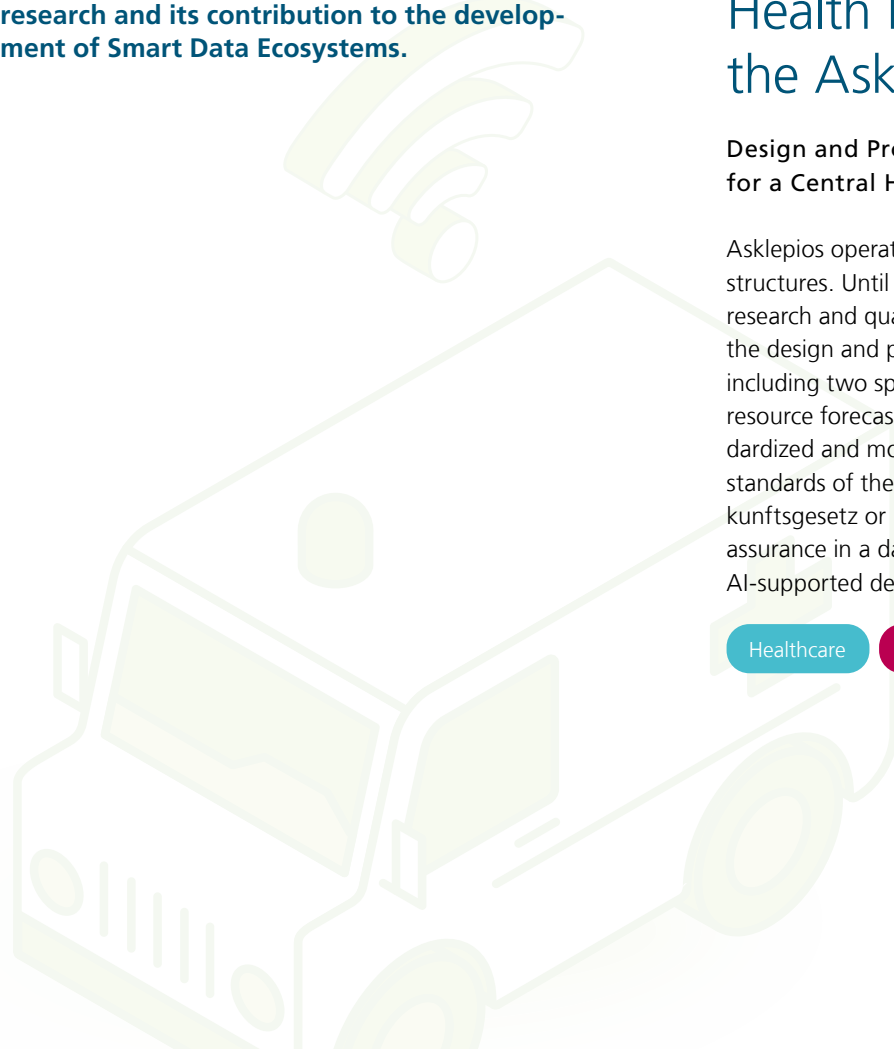
Joint Research Project within the Digital Health Factory Ruhr (DHFR), funded by the BMFTR

Platform4Health: Healthcare-platform for the Ruhr Region

Development of an AI-Powered Health Platform for Municipalities in the Ruhr Metropolitan Region

Cities in the Ruhr region face the challenge of making health services accessible in a low-threshold, multilingual, and target-group-specific manner. Existing information is often fragmented and reaches vulnerable population groups only to a limited extent. To address this, the Fraunhofer ISST is developing the technical platform architecture and AI-supported service modules for the Ruhr Health Platform. An initial project resulted in a concept and prototype for the city of Oberhausen, including an intelligent health chatbot that automatically retrieves verified information via a multi-agent architecture and delivers it in a personalized manner. In a follow-up project, the platform will be expanded to include the pilot municipalities of Oberhausen, Duisburg, Gelsenkirchen, and Bochum, and will be supplemented with LLM-based dialogue systems, hybrid recommendation logic, and a scalable no-code infrastructure. This will create a transferable digital infrastructure that enables municipalities to independently configure and provide health services.

Healthcare Business Services & Apps



Annual Report 2025
Fraunhofer ISST

Table of Contents

Preface

The Year in Numbers

Main Research Focus

Project Highlights

Collaboration with the
Fraunhofer ISST

Selected Publications

Board of Trustees

Our Networks and University
Partnerships

Our Channels

Project Highlights

Annual Report 2025
Fraunhofer ISST

- Table of Contents
- Preface
- The Year in Numbers
- Main Research Focus
- Project Highlights**
- Collaboration with the Fraunhofer ISST
- Selected Publications
- Board of Trustees
- Our Networks and University Partnerships
- Our Channels

Collaborative Project with GEA

Strategy for the Use of Open Source

Open Source as a Strategic Building Block for Digital Sovereignty and Innovation

Companies such as GEA, a globally operating plant engineering firm, are faced with the question of how they can strategically leverage open-source software without incurring uncontrolled dependencies or license risks. The Fraunhofer ISST analyzed the opportunities and risks of using Free and Open-Source Software (FOSS) at GEA and developed a customized open-source strategy, including a roadmap, prioritized measures, and key performance indicators for managing dependencies on proprietary solutions. This enables GEA to use open-source software in a targeted and compliance-compliant manner while simultaneously taking a structured approach to building its own community.

- Mobility & Smart Cities
- Data & AI Value Chain

EU Project

European Data Space for Mobility Data

Development of a Data Infrastructure for Cross-Border Data Exchange

The European mobility and logistics sector faces significant challenges when it comes to cross-border data exchange. Existing data infrastructures are fragmented, standards vary across countries and sectors, and there is a lack of uniform mechanisms for secure and efficient data sharing. The Fraunhofer ISST is supporting the establishment of a European data space for mobility data. As part of the project, existing interoperability gaps are being identified and addressed, and several cross-border use cases are being implemented.

- Mobility & Smart Cities
- Ecosystem

Project Highlights

Annual Report 2025
Fraunhofer ISST

- Table of Contents
- Preface
- The Year in Numbers
- Main Research Focus
- Project Highlights**
- Collaboration with the Fraunhofer ISST
- Selected Publications
- Board of Trustees
- Our Networks and University Partnerships
- Our Channels

Collaborative Project with T-Systems and Fraunhofer partners within the IPCEI-CIS

Energy-efficient Cloud and Edge Infrastructures

Development of a Resource-Efficient Orchestration Method

Growing data volumes and distributed IT landscapes are increasing the energy demands of digital infrastructures. In the project “IPCEI-CIS Sustainability-Focused Orchestration in the Edge Cloud Continuum”, the Fraunhofer ISST, together with T-Systems and other Fraunhofer partners, has developed methods for the energy-efficient orchestration of cloud and edge resources. To this end, the team developed, among other things, energy metrics, sustainable software and architectural concepts, and methods for intelligent resource management. These solutions enable a more efficient use of computing and energy resources and help companies reduce both operating costs and their environmental impact.

IT Service Providers Data & AI Value Chain

Collaborative Project with DB Schenker

Smart Search in Technical Knowledge Bases

Implementation of a RAG-based AI assistant

Large logistics companies such as DB Schenker manage extensive knowledge bases (e.g. technical manuals, process documentation, and operating instructions) that must be quickly and reliably accessible during day-to-day operations. The Fraunhofer ISST implemented an RAG-based AI assistant that retrieves and processes relevant information from these knowledge bases with precise contextual accuracy. A higher-level AI agent coordinates multiple specialized RAG assistants and reliably delegates queries to the appropriate service. As a result, DB Schenker reduces the time and cost involved in searching technical documents and minimizes errors caused by outdated or hard-to-find information.

IT Service Providers Data & AI Value Chain

Project Highlights

Annual Report 2025
Fraunhofer ISST

- Table of Contents
- Preface
- The Year in Numbers
- Main Research Focus
- Project Highlights**
- Collaboration with the Fraunhofer ISST
- Selected Publications
- Board of Trustees
- Our Networks and University Partnerships
- Our Channels

International Open Source Project

Eclipse Dataspace Working Group (EDWG)

Open Source Technologies for
Trusted Data Sharing

Cross-organizational data exchange requires vendor-neutral, interoperable software components. In 2023, the Fraunhofer ISST co-founded the Eclipse Dataspace Working Group, where it is driving the open-source development of common specifications and reference implementations. These include the Dataspace Protocol and the Decentralized Claims Protocol as open standards, as well as the Eclipse Dataspace Components as production-ready software components for trusted data transfer. This enables organizations to build data spaces without being locked into specific providers. The technology is already being used in production by Catena-X and other European data ecosystems.

- Industrial Data Systems
- Data & AI Value Chain

EU Project

Data Spaces Support Centre (DSSC)

Establishment and Operation of a
European Support Platform for Data Spaces

The European Data Strategy aims to establish cross-sector data spaces. However, companies and organizations need concrete support in setting up and operating such ecosystems. As part of the DSSC, the Fraunhofer ISST is developing and operating a European support platform that provides best practices, guidelines, and toolkits; promotes common building blocks and reference architectures; and connects initiatives from the mobility, healthcare, industrial, and other sectors. This provides organizations with the legal, organizational, and technical guidance they need to build data spaces in a targeted manner and integrate them into the European data ecosystem.

- Industrial Data Systems
- Ecosystem

Project Highlights

Annual Report 2025
Fraunhofer ISST

- Table of Contents
- Preface
- The Year in Numbers
- Main Research Focus
- Project Highlights**
- Collaboration with the Fraunhofer ISST
- Selected Publications
- Board of Trustees
- Our Networks and University Partnerships
- Our Channels

Collaborative Project with DKV & Toll4Europe

Automated Toll Calculation in Road Freight Transport

Telematics-Based Axle Count Detection and Data Transmission in Accordance with the EU Toll Legislation

Accurate toll calculation for road freight transport depends, for example, on the error-free detection of the number of axles on the tractor and trailer, as well as their respective emission classes—a process that is still frequently configured manually in the toll box today and is therefore prone to errors. To address this, the Fraunhofer ISST has developed a solution for automated axle count detection and standardized data transmission between the trailer and the toll box in the tractor unit. At the same time, a Europe-wide uniform standard is being developed for cross-industry use that meets the requirements of the new EU toll legislation. This enables freight forwarders to minimize sources of error in billing, reduce administrative burdens, and reliably ensure regulatory compliance.

Industrial Manufacturing Data & AI Value Chain

Workshop Series

The Future of Industrial Value Creation Systems

Future Workshop with twelve Industrial Companies and the Fraunhofer IAO

Industrial value creation systems are facing a profound transformation, driven in part by technological innovations, geopolitical shifts, and growing sustainability requirements. In a future-oriented workshop, the Fraunhofer ISST, together with the Fraunhofer IAO and twelve companies from the manufacturing industry, developed an industrial value creation system for the future and published the results in a joint report. It provides concrete areas of action for businesses and policymakers—ranging from uniform regulatory frameworks to circular business models and the coordination of data-driven value creation networks.

Industrial Manufacturing Data & AI Value Chain Ecosystem

Licensing Solution

Digital Watermarks for Text Data

Traceability and Protection of Trustworthy Content

Text data such as contracts, reports, emails, or AI-generated content is continuously created, edited, and shared in digital processes. Until now, there has been no reliable way to trace the origin, changes, and sharing of text. The Fraunhofer ISST, in collaboration with Innamark, has developed a method for invisibly and robustly marking text data using digital watermarks. This allows the origin and integrity of texts to be traced throughout their entire lifecycle without compromising the readability or usability of the content. The method is currently in the patenting process. This enables organizations to improve the transparency and traceability of text-based data while simultaneously strengthening data sovereignty over their content.

Industrial Manufacturing Data & AI Value Chain

Collaboration with the Fraunhofer ISST

Whether through strategic consulting, collaborative research projects, or prototype development: The Fraunhofer ISST works closely with its partners throughout the entire innovation process, translating data-driven ideas into real-world applications. Together, we develop scientifically grounded, application-oriented solutions designed for sustainable adoption and long-term use.

What Sets Us Apart as a Partner

Our collaboration is tailored to the specific issues and needs of our partners. To that end, we offer a variety of collaboration formats:

Independence

As a non-profit organization, the institute operates in an open-ended and solution-oriented manner.

Scientific Depth and Practical Orientation

Research questions are not only addressed conceptually, but developed all the way through to prototypical implementation.

Alignment with Standards and Regulation

Through participation in national and European standardization and regulatory bodies, partners are informed at an early stage about relevant developments.

Network and Ecosystem

The institute is involved in cross-industry initiatives and data spaces and facilitates access to relevant stakeholders and projects.

Forms of Collaboration

Our collaboration formats are tailored to specific issues and needs. We offer:

Analyses and Studies

Assessment of data potential, market and technology analyses, and the formulation of strategic recommendations for action.

Workshops and Consulting

Structuring of problem statements, development of data-based strategies and roadmaps—in collaboration with the relevant stakeholders within the company.

Research and Development Projects

Joint development and prototyping of solutions, either bilaterally or in publicly funded collaborative projects at the national and European levels.

Training and Knowledge Transfer

Teaching methodological and technological knowledge on current developments in the data economy, ranging from data spaces and AI to governance and regulation.

For inquiries or specific projects, please contact us.

Annual Report 2025
Fraunhofer ISST

Table of Contents

Preface

The Year in Numbers

Main Research Focus

Project Highlights

Collaboration with the
Fraunhofer ISST

Selected Publications

Board of Trustees

Our Networks and University
Partnerships

Our Channels

Selected Publications

Knowledge transfer is one of the key tasks of applied research at the Fraunhofer ISST. Our researchers regularly publish their work, for example, as part of their doctoral research, in scientific journals, trade magazines, conference proceedings, studies, and whitepapers.

All publications are listed on the [Fraunhofer ISST website](#).

[See all publications](#)



Report

The Future of Industrial Value Creation Systems in Transition

Highly complex, dynamic, and interconnected: Industrial value-creation systems are currently undergoing a profound transformation. This change is driven by technological innovations, geopolitical shifts, and societal demands for sustainability. But what consequences does this have for the industry of the future? The Fraunhofer ISST and Fraunhofer IAO explored this question together with representatives from twelve manufacturing companies in a future-oriented workshop. The result: Together, they identified four areas of action that will determine the success of tomorrow's industrial value creation.

[See report](#)

Selected Publications



Whitepaper

Data Management under European Regulations – Compliance Challenges and Solutions for Organizations

This whitepaper provides an overview of current and upcoming regulations in the European Union (EU) and Germany that will have a significant impact on data management, particularly for large and medium-sized companies. It provides recommendations on the use of data management approaches to facilitate compliance, including data strategies, data governance and metadata management. The following regulations are covered: Corporate Sustainability Reporting Directive, Artificial Intelligence Act, Data Act, Data Governance Act, Supply Chain Acts, Digital Product Passport, Intelligent Transport Systems (Mobility Data Act) and Open Data Directive.

[Download](#)



Whitepaper

Green IT – Resource-Efficient Cloud and Data Management in Germany

Data management and sustainability go hand in hand. This is because the IT industry’s rising energy demand and the resulting environmental footprint make Green IT a critical factor for sustainable development. The concepts of Green IT and Green Computing offer solutions that promise both environmental and economic benefits. Companies are increasingly turning to resource-efficient technologies and developing strategies to make their IT infrastructures more environmentally friendly—for example, through optimized data centers and the development of green software. And the market for green IT services will continue to grow. This whitepaper provides an overview of the opportunities and possibilities offered by Green IT. It highlights how companies can develop and implement their Green IT strategy and explores the potential for both resource efficiency and reducing their environmental footprint.

[Download](#)

Annual Report 2025
Fraunhofer ISST

Table of Contents

Preface

The Year in Numbers

Main Research Focus

Project Highlights

Collaboration with the
Fraunhofer ISST

Selected Publications

Board of Trustees

Our Networks and University
Partnerships

Our Channels

Selected Publications

Annual Report 2025

Fraunhofer ISST

Table of Contents

Preface

The Year in Numbers

Main Research Focus

Project Highlights

Collaboration with the
Fraunhofer ISST

Selected Publications

Board of Trustees

Our Networks and University
Partnerships

Our Channels

Selection of Scientific Publications

- Guggenberger, T. M., Schlueter Langdon, C., & Otto, B. (2025). *Data spaces as meta-organisations*. European Journal of Information Systems, 34(5), 822–842.
- Rust, Paul; Frings, Julian; Meister, Sven; Fehring, Leonard (2025). *Evaluation of a large language model to simplify discharge summaries and provide cardiological lifestyle recommendations*. Communications Medicine, 5 (1), art. no. 208.
- Opriel, Sebastian; Möller, Frederik; Strobel, Gero; Otto, Boris (2025). *Data Sovereignty in Inter-organizational Information Systems: Findings from Demand and Capacity Management in the Automotive Industry*. Business and Information Systems Engineering, 67 (6), pp. 833 - 853.
- Gieß, Anna; Hutterer, Andreas (2025). *The Future of Data Management: A Delimitation of Data Platforms, Data Spaces, Data Meshes, and Data Fabrics*. Information Systems and e-Business Management, 23 (4), pp. 971 - 997.
- Pampus, Julia; Heisel, Maritta (2025). *A Delimitation of Data Sovereignty From Privacy*. Empowering Digital Sovereignty: Balancing Privacy and Global Connectivity, pp. 1 - 24.
- Jahnke, Nils; Rohde, Marieke; Kraus, Tom (2025). *Edge Computing for Digital Sovereignty in the Data Economy*. New Digital Work II: Digital Sovereignty of Companies and Organizations, pp. 247 - 263.
- Steinert, Michael; Schleimer, Anna Maria; Altendeitering, Marcel; Hick, David (2025). *Designing Data Trustees: A Prototype in the Building Sector*. International Conference on Information Systems Security and Privacy, 1, pp. 157 - 166.
- Herrmann, Marc; Specht, Alexander; Sekerci, Abdurrahman; Obaidi, Martin; Ehl, Marco; Elsofi, Duaa Adel Ali; Großer, Katharina; Klünder, Jil; Jürjens, Jan; Schneider, Kurt (2025). *From missile warhead to smart fridge: Interviews with industry experts on tracing safety- and security-relevant artifacts*. Journal of Systems and Software, 230, art. no. 112551.
- Möller, Frederik; Legner, Christine; Strobel, Gero; Schoor-
mann, Thorsten; Cappiello, Cinzia; Loscio, Bernadette;
Otto, Boris (2025). *Data ecosystems in IS research: The road
so far, where we are now, and the road ahead*. Electronic Mar-
kets, 35 (1), art. no. 111.
- Sondermann, Martin; Bisgin, Pinar; Tschorn, Niklas; Bur-
mann, Anja; Friedrich, Christoph M. (2025). *Comparative
Analysis of CNN and Transformer Architectures with Heart
Cycle Normalization for Automated Phonocardiogram Classifi-
cation*. Proceedings of the Annual International Conference of
the IEEE Engineering in Medicine and Biology Society, EMBS.

Board of Trustees

Our board of trustees serves as an advisory body to the institute. Its members, who come from the business, scientific, political, and administrative sectors, support the institute's market-oriented research focus by contributing practical experience and expertise from their respective fields.

Our Current Members of the Board of Trustees

- Paul Schwefer, Fair Sourcing, Management Consultant, Industrial Advisor Private Equity, Chairman of the Board of Trustees
- Dr. Reinhold Achatz, IDSA, Chairman of the Board
- Dr. Maximilian Ahrens, Deutsche Telekom AG, Managing Director T-Digital
- Maro Bader, Roche Pharma AG, Excellence Lead Digital Transformation
- Jean-Baptiste Burtscher, Valeo GmbH, Group External Affairs and R&D Partnerships Director
- Prof. Dr. Svenja Falk, Accenture Research Europe GmbH, Managing Director
- Dr. Christiane Fricke, Ministry of Culture and Science of North Rhine-Westphalia, Head of the Group "Non-university Research Organizations, EU, International Affairs"
- Oliver Ganser, BMW Group AG, Vice President »Processes, Digitalization, Governance and Catena-X« in Purchasing and Supplier Network, Catena-X Automotive Network e. V. Industry Consortium, Chairman of the Board and Head
- Dr. Christoph Gröger, Robert Bosch GmbH, Chief Expert Data & AI
- Thomas Hahn, Siemens AG, Siemens Fellow
- Dr. Nicola Jentzsch, German Federal Bank, Lead Innovation and Digitalization
- Dr. Nari Kahle, heyconnect GmbH (part of FIEGE), Managing Director
- Fabian von Kuenheim, Kuenheim Familiaris GmbH, Managing Director
- Prof. Dr. Christine Legner, University of Lausanne, Head of Information Systems Department
- Dr. Henriette Litta, Open Knowledge Foundation Deutschland e. V., Managing Director
- Heike Niederau-Buck, Voith-Group GmbH & Co. KGaA, Chief Information Officer (CIO)
- Dr. Sebastian Ritz, Tvarit GmbH, Chief Operating Officer (COO)
- Michael Schmelmer, Boehringer Ingelheim AG & Co. KG, Vice Chairman of the Board of Managing Directors

Annual Report 2025
Fraunhofer ISST

Table of Contents

Preface

The Year in Numbers

Main Research Focus

Project Highlights

Collaboration with the
Fraunhofer ISST

Selected Publications

Board of Trustees

Our Networks and University
Partnerships

Our Channels

Our Network and University Partnerships

The research at the Fraunhofer ISST thrives on collaboration with the scientific community, industry, government, and the Fraunhofer-Gesellschaft. That is why we are actively involved in numerous networks, memberships, and university partnerships both nationally and internationally. These connections link us with leading partners, foster scientific exchange, and lay the groundwork for joint research and innovation projects as well as the transfer of scientific knowledge into practice.

Memberships

- Alumni der Informatik Dortmund e. V. (AIDO)
- Bitkom e. V.
- Catena-X, Automotive Network e. V.
- Eclipse Foundation
- EHDA e. V., European Health Data Alliance
- European Alliance for Industrial Data, Edge and Cloud
- FRIDA e.V. (Free Insurance Data Initiative)
- GAIA-X, European Association for Data and Cloud AISBL
- HL7 Benutzergruppe in Deutschland e. V.
- International Data Spaces Association
- MedEcon Ruhr e. V. (Network of the health care industry in the Ruhr)
- NeoNephos Foundation
- Sphin-X
- The Data Competence Center for Cities and Regions (DKSR)

Network within the Fraunhofer-Gesellschaft

- Fraunhofer ICT Group
- Digital Health Working Group in the Healthcare Key Market
- Fraunhofer Cloud Computing Alliance
- Fraunhofer Big Data and Artificial Intelligence Alliance
- Fraunhofer Cluster of Excellence Cognitive Internet Technologies
- Fraunhofer Academy

University Partnerships

- Prof. Dr.-Ing. Boris Otto, Professor for Industrial Information Management, TU Dortmund
- Prof. Dr.-Ing. Jan Cirullies, Professor of Business Administration (notably Supply Chain Management and Digital Logistics), Dortmund University of Applied Sciences
- Prof. Dr. Wolfgang Deiters, Professor for Health Technologies, Bochum University of Applied Sciences
- Prof. Dr. Falk Howar, Professor for Rigorous Software Engineering, TU Dortmund
- Prof. Dr. Christian Janiesch, Chair of Enterprise Computing, TU Dortmund
- Prof. Dr. Jan Jürjens, Institute for Software Technology, University of Koblenz
- Prof. Dr. rer. nat. Sven Meister, Professor for Health Informatics at the Faculty of Health, Witten/Herdecke University
- Prof. Dr.-Ing. Frederik Möller, Junior Professor for Business Informatics with focus on Data-Driven Enterprise, TU Braunschweig
- Prof. Dr. Jakob Rehof, Chair XIV for Software Engineering, TU Dortmund
- Prof. Dr.-Ing. Christian Schwede, Professor for Big Data Analytics, Bielefeld University of Applied Sciences

Our Channels

Annual Report 2025
Fraunhofer ISST

- Table of Contents
- Preface
- The Year in Numbers
- Main Research Focus
- Project Highlights
- Collaboration with the Fraunhofer ISST
- Selected Publications
- Board of Trustees
- Our Networks and University Partnerships
- Our Channels



Publications

The latest whitepapers, analyses, and studies on data-driven value creation potential for businesses and users—ranging from industry overviews to in-depth examinations of specific technological innovations.

[See publications](#)



Podcast

Experts from the Fraunhofer ISST discuss the potential of innovative approaches to data—from large industrial ecosystems to personalized healthcare.

[Go to podcast](#)



Video Series

Institute Director Prof. Dr.-Ing. Boris Otto provides context on current digitalization topics—concise, informative, and well-founded. He highlights how digitalization will change the world and the industry of tomorrow.

[Go to video series](#)

