Report on the 4th IOFDS meeting

Introduction

The 4th IOFDS meeting, held as part of Data Spaces Week 2024[1], took place over two days at the University of Tokyo with hybrid online participation on October 10-11, 2024. It brought together participants from international organizations, academia, and industries to discuss key developments in data spaces, interoperability frameworks, and cross-border collaboration. This document provides a report on the 4th IOFDS meeting.

1 Day1 Thursday, October 10
1.1 Attendees
Day 1 participants: 130 (on site: 88, virtual: 42)

1.2 Summary of day1
Day 1 of the 4th IOFDS meeting included 5 keynote presentations and speeches from:
- Shinichi Urakawa (Skyage Inc., OEPC, RIKKYO University)
- Inder Gopal (CEO, India Urban Data Exchange)
- Chi-Ming Peng (Founder of AODP)
- Keisuke Murakami (Digital Agency, Japan)
- Marco Schuldt (BMWK – German Federal Ministry for Economic Affairs and Climate Action)

In addition, 8 status reports were provided by:
- Ulrich Ahle (Gaia-X)
- Lars Nagel (IDSA)
- Chandra Challagonda (FIWARE)
- Didier Navez (Dawex)
- Sebastian Schneider (DMG MORI)
- Klaus Ottradovetz (Eviden), Ingo Sawilla (TRUMPF), and Dominik Rohrmus (LNI 4.0)
- Florian Mohr (Catena-X)
- Sven Löffler (T-Systems)

The meeting concluded with MoU signing ceremony between LNI 4.0 and DSA.

1.3 Opening Remarks & Self-Introductions
1.3.1 Hiroshi Mano (Data Society Alliance)
Using the document 00_IOFD_Opening_20241010.pdf, Hiroshi Mano conducted the meeting, covering key agenda items, officer elections, and policy motions.

Call to Order:

Mano called the meeting to order, emphasizing transparency. He noted that meeting materials and statements would be shared with the mailing list, except in cases where participants agree to limit disclosure.

Motion to Elect Officers (Chair, Vice Chair, Secretary):
Motion to elect the meeting officers as:
  Chair: Hiroshi Mano

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[1] https://webpark5033.sakura.ne.jp/dsw2024/

Vice Chair: Lars Nagel
Secretary: Isamu Yamada
Moved: Matsutsuka
Seconded: Christoph
Result: Approved by unanimous consent

Motion to Approve the Meeting Agenda:
Motion to approve the meeting agenda

1. Call for meeting order

    • Background of IOFDS

2. Elect officers (Chair, Secretary)

3. Policy and procedure of meeting

    • Approve meeting Agenda

    • Approve proposed P&P

    • Motion: Membership Definition

    • Motion: Logo usage policy

4. In-Person Program

    • [The Fourth International Open Forum on Data Society (IOFDS) | Data Spaces Week 2024](#)

5. Summary

6. Future meeting plan

7. New businesses

8. Adjourn

Moved: Masaru Dobashi
Seconded: Kohtaro Asai
Result: Approved by unanimous consent

Motion to Approve Membership Definition:
Move to approve the definition of "member" of IOFDS as follows,

• A member is an individual or entity that applies to and joins the IOFDS mailing list.

• To become a member of IOFDS, individuals or entities must first submit a request to the IOFDS administration office through the official IOFDS web page.

• Every entity member is required to provide their own logo, which will be displayed on the official IOFDS website, as a way to promote their affiliation with the organization.

• The members shall also provide a status report on activity related to data space technology, operation, and relevant actions at the IOFDS meeting.

• (Result of Alignment Taskforce: approved by unanimous consent)

Moved: Christoph
Seconded: Matsutsuka
Result: Approved by unanimous consent

Motion to Approve IOFDS Logo Usage Policy:

Move to approve the policy about IOFDS logo as follows,

- The IOFDS logo is a registered trademark in Japan by DSA.
- All IOFDS members have the right to use the IOFDS logo on their own HP, Business cards, and promotion materials.
- Every member shall report the use of the IOFDS logo to the IOFDS mailing list as soon as they start using it.
- Please add this logo to your relevant materials, such as the website, brochures, and others.
- Please announce with "A member of IOFDS" when you can introduce yourself or your organization.
- (Result of Alignment Taskforce: approved by unanimous consent)

Moved: Xiaomi An
Seconded: Lars Nagel
Result: Approved by unanimous consent

He also provided background on the International Open Forum on Data Society (IOFDS). The IOFDS began as a **Roundtable meeting** in February 2023, where participants agreed to continue convening for at least six months. In April 2023, the initiative was formally proposed as a discussion body at the **G7 Digital Technology Ministerial Meeting**. At the July 2023 meeting, the Roundtable meeting was renamed the **International Open Forum on Data Society (IOFDS)** to reflect the clearer focus of its activities. In February 2024, the decision was made to hold monthly Task Force meetings and proceed with the development of the official **IOFDS website**. Since adopting the IOFDS name, the forum has fostered ongoing collaboration through its Task Force meetings and various activities, advancing discussions on **interoperability technologies and standards** between **dataspaces across countries**.

1.3.2 Noboru Koshizuka (The University of Tokyo/Data Society Alliance)

Noboru Koshizuka introduced the 4th IOFDS meeting, held as part of Data Spaces Week. The objectives were to provide updates on initiatives in Japan, Europe, and other Asian countries, and present reports from international organizations. He acknowledged over 60 remote participants and expressed gratitude to the sponsors: SoftBank, NTT Data, PwC Consulting, Fujitsu, Huawei, Japan Data Exchange, and Mitsubishi Electric.

1.3.3 Masanari Yashiro(Ministry of Internal Affairs and Communications, Japan）

Masanari Yashiro emphasized the importance of hosting this forum in Japan, considering the challenges of population decline, an aging society, and decreasing productivity. He highlighted the potential of digital technologies, particularly 5G, AI, and cross-sector data platforms, to address these issues. Key focus areas included:

- System Integration and Collaboration
- Data Privacy and Security
- Agile Development

He stressed the importance of collaboration across government, industry, and academia to develop innovative solutions for societal challenges.

1.4 Keynotes

1.4.1 "OE(Ouranos Ecosystem) & OEPC Overview"　Shinichi Urakawa,　Skyage Inc. CEO, OEPC(Ouranos Ecosystem Promotion Center) Director, RIKKYO Univ. Graduate School of AI Visiting Professor

Using the document 01 SHinichi_Urakawa_OEPC & Ouranos Overview 20241010 （S_Urakawa）.pdf, Shinichi Urakawa introduced the Ouranos Ecosystem and the **Ouranos Ecosystem Promotion Center (OEPC)**, highlighting their role in promoting cross-industry collaboration. The Ouranos Ecosystem was originally established to address battery traceability requirements, driven by **EU Battery Regulation** compliance. The project aims to reduce the **carbon footprint (CFP),** mitigate **procurement risks**, and increase **reusability,** ensuring resilience during supply chain disruptions.

Urakawa emphasized the importance of data connectivity between the Ouranos Ecosystem and **Catena-X**, aiming to establish interoperability through a shared data linkage platform. This integration supports smooth cross-company collaboration by linking distinct industrial platforms while enhancing international competitiveness.

A key component of the initiative is the involvement of multiple stakeholders, including KEIDANREN, METI, IPA, and private companies, to promote digital transformation (DX). The OEPC plays a critical role in organizing working groups (WGs) that address themes such as transportation, circular economy, and human resource management. Urakawa stressed the need for a robust industry promotion system to ensure the gradual launch of the Ouranos platform, supported by both government agencies and private companies.

Urakawa discussed the challenges in data platform integration, noting that Japan's data space already contains multiple systems with varying architectures. Integrating these systems presents significant challenges, but the Ouranos Ecosystem aims to tackle them by focusing on interoperability through standardized APIs and connectors.

The presentation also covered a logistics use case, developed in collaboration with the **Transportation Digital Business Conference (TDBC)**. The case involves centralizing vehicle data management via API hubs to improve transportation efficiency across industries. The **Ouranos platform** aims to **enhance real-time management of vehicle operations**, improving delivery routes and emergency vehicle coordination.

Urakawa concluded by outlining two primary objectives for the ecosystem: (1) promoting inter-system collaboration to support business transactions, and (2) enabling data collaboration across industries by leveraging existing data sets.

Q&A Session

Q: Does the Ouranos Ecosystem provide certification functions?

A: The Ouranos Ecosystem acts as a hub, with certification and authentication managed by companies or government entities like METI.

Q: Who will manage the certification process, and what structure will it follow?

A: The certification process is under discussion with METI and other relevant bodies. The aim is to establish a few key certification hubs, integrating government and corporate efforts.

1.4.2 "How Data Spaces are Improving Lives of Indian Citizens" Inder Gopal (CEO, India Urban Data Exchange (IUDX))

Inder Gopal presented using the document 02 IOFDS Tokyo event- How Data Spaces are Improving Lives of Indian Citizens.pdf.   He introduced the audience to the Centre of Data for Public Good, explaining the role of **data spaces** in improving citizens' lives across India. He emphasized the importance of creating technical frameworks that facilitate secure and efficient data exchange between various entities. Gopal illustrated how data spaces act as **intermediaries**, ensuring smooth interaction between **data providers** and **data consumers** while maintaining strict control over access and privacy.

Gopal described several key projects. One of the flagship initiatives is the **India Urban Data Exchange (IUDX)**, which supports smart city operations across **52 Indian cities**. This platform collects and processes data from a variety of sensors, such as air quality monitors, transportation networks, and garbage management systems, to streamline city services. For example, in Varanasi, the use of smart bins and optimized garbage collection routes has reduced costs by 30%.

He also discussed the **Agricultural Data Exchange** deployed in the state of Telangana. This platform consolidates soil records, irrigation maps, and climate data to help farmers access credit more easily. Gopal explained that many farmers struggle to secure loans due to insufficient documentation, but the data exchange enables financial institutions to assess crop yields, irrigation patterns, and local conditions to support lending decisions. So far, the system has successfully helped over **5,000 farmers** secure loans.

Gopal further outlined the role of **geospatial data** in public benefits management and explained the collaboration with the Survey of India to ensure standardized data models. He stressed the importance of using open-source software to promote innovation, with all code and documentation freely available under the Apache 2 license.

A core part of the presentation focused on **privacy and security frameworks**. Gopal described how the platform implements differential privacy to protect sensitive data from reverse engineering. **Federated learning** is employed to train AI models across distributed datasets without centralizing personal data, ensuring that individual privacy is not compromised. Additionally, consent-based access controls regulate how data is shared among stakeholders.

Gopal concluded by emphasizing the **modular and open-source** nature of the platform, which allows components to be reused across different sectors. While most of the current efforts have targeted the public sector, he expressed interest in extending the system's capabilities to private sector applications, such as manufacturing data spaces.

Q&A Session

Q: Are there open guidelines or documents available for the project?

A: Gopal confirmed that all resources, including code and documentation, are publicly accessible on the project's website (iudx.org.in). He invited participants to explore the GitHub repository and reach out for additional support if needed.

Q: How does the project compare with other global initiatives like Gaia-X and IDSA?

A: Gopal acknowledged that IUDX evolved in parallel with other initiatives, focusing more on execution than direct collaboration. However, the project aligns with FIWARE standards, contributing to the smart data models' project. He expressed openness to further collaboration with other ecosystems in the future.

Q: How reusable are the platform components across different use cases?

A: Gopal emphasized the modular nature of the platform, explaining that components are designed as building blocks to be reused across sectors. He noted that while the platform has primarily served public sector needs, it is also well-suited for private sector applications. The system's modularity allows organizations to customize and integrate components as needed.

1.4.3 "From Open data to Open Government" Chi-Ming PENG （Founder of Asia Open Data Partnership Honored Chair of Organization for Data-driven Application (ODA))

Using the document 03 Speech-20241009 From open data to open government by ChiMing PengV3.pdf, Chi-Ming Peng presented his journey from advocating open data to promoting open government, reflecting on his transition from the private sector to a ministerial role. He emphasized the **importance of data-driven governance** and shared how his experience in data ecosystems shaped his policies as a government official.

Peng began by highlighting the challenges and successes of **open data initiatives in Taiwan**. Early efforts focused on encouraging the government to release more data and establishing international partnerships. These efforts evolved into climate governance, where data became essential for monitoring environmental issues and driving policy decisions. As part of his role, Peng organized webinars and collaborative initiatives to engage with the global community on environmental challenges.

He explained that open government in Taiwan means not only releasing data but also maintaining transparency. For example, Peng opened 80-90% of his ministerial schedule to the public. While this increased visibility led to both positive and negative media coverage, he maintained that public trust relies on transparency.

Peng discussed the role of AI and data in modern governance, noting that AI applications require access to high-quality data. His team adopted AI tools such as speech recognition for meetings and ChatGPT to assist with administrative tasks. He stressed the importance of data sharing platforms and how Taiwan aims to transition from using individual Excel sheets toward a centralized data system accessible by the public.

A significant portion of the presentation focused on green growth and carbon pricing. Taiwan's strategy aligns with Japan's concept of green growth, which integrates economic development and sustainability. Peng mentioned the challenge of setting appropriate carbon fees that balance environmental goals with business needs. He cited discussions with NGOs and private enterprises, which often led to conflicts between environmental objectives and financial interests. His team is developing investment mechanisms like venture capital-backed green growth funds to incentivize sustainable practices across industries.

Peng also addressed the challenges in waste management, noting the declining interest in labor-intensive jobs like waste collection. His ministry is working on solutions, such as using UAVs with LIDAR to monitor waste volumes and exploring circular economy models that repurpose waste into new resources.

He concluded by emphasizing the role of collaborative governance between the government and the private sector. Peng called for cross-border cooperation on environmental issues, expressing hope that events like this would foster new partnerships. He welcomed

collaborations with Taiwanese companies, especially those focused on climate change and green innovation, underscoring that saving the Earth requires collective effort.

Q&A Session

Q: Does Taiwan have a law similar to the Right to Information Act?

A: Peng stated that while Taiwan lacks an open data law, information protection and privacy regulations are very strict. Citizens have the right to withhold data sharing, even for anonymized data. He expressed his desire for more open data laws to enable better use of AI and high-value datasets.

Q: How does the government manage the monetization of public data?

A: Peng explained that monetization remains a challenge, with no clear regulations governing the pricing or access to government-held data. He mentioned his previous experience with the Weather Company, where government data was provided for free, but he suggested that stable data services might require clearer pricing mechanisms. Peng proposed the creation of sandbox environments to promote innovation and foster partnerships with the private sector.

1.5 Status Reports 1
1.5.1 "Status Report of GAIA-X" Ulrich Ahle (CEO, Gaia-X Association)

Ulrich Ahle provided an overview of Gaia-X's progress using 04 20241010_IOFDS_Gaia-X_Status_v2.pdf . He emphasized Gaia-X's mission to foster **decentralized, trusted digital ecosystems** through interoperable data spaces, facilitating seamless interaction between data providers and consumers. Ahle highlighted the shift from earlier one-to-one exchanges to many-to-many data spaces, reducing the effort required for participants to connect.

Gaia-X's **global engagement** extends beyond Europe, aligning with national standards in regions like Japan. A significant step is the deployment of the **Gaia-X Digital Clearing House in Japan**, in collaboration with NTT DATA and the University of Tokyo, demonstrating cross-border interoperability.

Gaia-X's framework emphasizes compliance through modular documents, adaptable to regional laws. Ahle outlined four layers of interoperability—technical, semantic, organizational, and legal—facilitating secure and efficient interactions. The use of participant wallets and verifiable credentials, aligned with the upcoming EUDI regulation, ensures automated compliance and identity management.

He concluded by inviting participation in the Gaia-X Academy and the upcoming **Gaia-X Summit 2024** in Helsinki, aimed at fostering collaboration across international data spaces.

Q&A Session

Q: How does Gaia-X address compliance with non-European regulations?

A: Gaia-X's compliance framework is modular and adaptable, allowing collaboration with regional partners to create custom compliance rules outside Europe.

Q: What role do trust anchors play?

A: Trust anchors authenticate participants, manage certificates, and ensure compliance, establishing the foundation of trust in data spaces.

Q: How does Gaia-X differ from traditional platforms?

A: Gaia-X emphasizes decentralized governance and automated interoperability, enabling dynamic many-to-many interactions across ecosystems with minimal overhead.

1.6 Keynote Speech
1.6.1 Keisuke Murakami Digital Agency, Japan

Keisuke Murakami presented using the document 05 Digital_Murakami 241009 IOFDS_r.pdf, discussing the role of data spaces in **supply chain optimization** and **digital transformation** within Japan. He highlighted the progress and challenges faced in Japan's digital landscape, emphasizing the importance of data spaces in streamlining supply chain management and inter-enterprise collaboration.

Murakami illustrated how traditional supply chains rely on manual decision-making—with production, logistics, and sales decisions being made separately. He contrasted this with the future potential of data-driven ecosystems, where real-time data from sales and manufacturing is shared seamlessly across borders, allowing automated decision-making. For example, data from retail operations could guide manufacturing in real-time to optimize production based on market demand, minimizing waste and inefficiencies.

He emphasized that while individual companies in Japan, such as convenience store chains like 7-Eleven, have already adopted internal data-driven supply chains, inter-company and cross-border data spaces are still underdeveloped. He shared that Japan aims to expand data collaboration not just domestically but also across ASEAN countries, India, and Africa to support the global operations of Japanese industries like Suzuki. This will require secure data exchanges across regions, helping companies manage markets and logistics efficiently.

Murakami also discussed two key data exchange models being explored in Japan:
1. **Connector-Based Data Spaces:** Following models like IDSA and Gaia-X, this approach allows different systems to exchange data securely through connectors.
2. **Blockchain-Based Platforms:** The **Ouranos model** uses **smart contracts** on a blockchain to regulate data flow and ensure only certified participants can contribute data. Although promising, he acknowledged the security challenges with blockchain-based data exchanges and the need for government oversight to certify and monitor these platforms.

Q&A Session
Q: How does Japan plan to measure the effectiveness of data spaces in the future?
A: Murakami responded that the Japanese government is prioritizing **two types of data exchange technologies**—connector-based and blockchain-based platforms. The decision on which approach to expand will depend on future use cases and market needs. The government aims to balance security and usability by selecting the most appropriate technology based on practical experience and performance.

Q: What are the next steps for promoting data spaces internationally?
A: Murakami emphasized that Japan is focusing not only on domestic implementation but also on international cooperation. He highlighted ongoing discussions with ASEAN countries and the importance of cross-border data collaboration to ensure Japan's industries remain competitive globally. He invited stakeholders to participate in further discussions and collaborations to shape future data governance frameworks.

1.7   Status Reports 2

1.7.1 "Status Report of IDSA" Lars Nagel (CEO, International Data Spaces Association (IDSA))

Using the document 06 Lars_Nagel_IDSA, IOFDS, Tokyo, 10.10.2024.pdf, Lars Nagel provided an overview of IDSA's progress and its contributions to developing global data spaces. He outlined IDSA's mission to create a global framework of standards for data spaces, emphasizing the need for interoperability across industries, countries, and legal frameworks to unlock economic and societal value.

Nagel stressed the importance of fostering **open-source solutions and knowledge sharing** to build a vibrant data economy. Recent initiatives include the **IDSA Rulebook**, which offers a design and governance scheme for data spaces that is technology-agnostic. He explained that the rulebook outlines the roles and responsibilities within a data space to ensure consistent governance and interoperability across platforms, such as Gaia-X and Catena-X.

Nagel emphasized IDSA's focus on dynamic, federated data spaces capable of facilitating real-time data exchange and contract negotiation through automated systems. He introduced the **Data Space Protocol (DSP)**, comparing it to the HTTP protocol for the internet, highlighting its role in standardizing data exchange mechanisms across industries and geographies.

He also discussed IDSA's engagement with international bodies to promote the **ISO 20151** standard on **data space concepts and characteristics**. Collaborative efforts with organizations like Gaia-X aim to provide trust frameworks and identity management solutions for secure data exchange, with testbeds available at the University of Tokyo and other locations.

Q&A Session

Q: Can you provide examples of rule sets for data spaces?

A: Nagel clarified that IDSA does not prescribe specific rules; rather, the framework offers templates for data space governance and self-description. Each data space defines its rules based on use cases, with frameworks like Gaia-X playing a role in establishing common standards. For example, rules may differ significantly between open smart city data spaces and highly secure industrial data spaces.

Q: How can IDSA encourage co-creation of the rulebook with other associations?

A: Nagel invited broader participation in IDSA's Rulebook working group, proposing that associations such as Data Society Alliance (DSA) contribute to shaping the framework. He expressed openness to rebranding the rulebook for regional use, suggesting the possibility of white-labeling it as a DSA-specific rulebook in Japan.

Q: Will IDSA's Rulebook accommodate different regional or sector-specific needs?

A: Nagel confirmed that IDSA aims to maintain a core set of fundamental principles for all data spaces, with flexibility to adapt governance for diverse scenarios. This modular approach ensures alignment with various standards while enabling local customization where needed.

1.7.2 "Status Reports of FIWARE" Chandra Challagonda (CEO, FIWARE Foundation)

Using the document 07 FIWARE Status on Data Spaces - IOFDS 2024 - Chandra Challagonda.pdf, Chandra Challagonda presented an overview of the FIWARE Foundation's

contributions to developing global data spaces and digital ecosystems. FIWARE is a nonprofit organization that connects industry, academia, and SMEs to promote open-source technologies for smart cities and digital spaces. Its platform provides standards-based frameworks that enable secure data exchange and interoperability, fostering innovation through community collaboration.

Chandra highlighted FIWARE's active involvement in the **Data Spaces Business Alliance (DSBA)**, working alongside IDSA and Gaia-X. FIWARE has contributed to creating the **Data Space Support Centre** by providing technical frameworks, governance models, and tools for trusted data transactions and interoperable ecosystems. The foundation is engaged in European data initiatives such as the mobility and manufacturing data spaces.

A key part of the presentation focused on **FIWARE's smart data models**, with over 1,200 models available across multiple domains, including smart cities and energy. These models, developed in collaboration with partners like **IUDX and Open Agile Smart Cities**, are open-licensed to ensure broad adoption and contributions from the global community.

FIWARE also provides a data interoperability layer powered by components such as the **Orion Context Broker**, enabling real-time data sharing. The organization aligns with global standards, including the **Data Space Protocol (DSP)**, ensuring seamless interaction between data platforms and spaces. FIWARE's innovation hubs (**iHubs**) play a critical role in offering training and technical support for data space projects, with expansion efforts ongoing, particularly in agriculture and climate sectors across Africa.

1.7.3 "Status Report of Dawex" Didier Navez (Dawex)

Using the document 08 Dawex Update - IOFDS meeting 10 October 2024.pdf, Didier Navez presented an overview of Dawex's role in supporting organizations in developing **data ecosystems powered by Dawex data exchange technology**. Over the past decade, Dawex has specialized in building solutions that enable trusted, secure, and compliant data exchanges across organizations and industries. Their Data Exchange solution empowers organizations to create industry data spaces, data marketplaces, and corporate data hubs, facilitating data sharing, monetization, and accelerating operational efficiency.

Navez highlighted that Dawex's solution supports **open standards and is cloud-agnostic**, ensuring seamless integration with third-party applications. The company is also actively contributing to the works conducted on data exchange, data ecosystems and trusted data transactions at European and global level, for example with Gaia-X and IDSA.

He explained the rising importance of **trusted data transactions** as **global supply chains** grow more fragmented, making secure data sharing between multiple parties essential. He noted that technologies like AI and digital twins require high-quality, traceable data to foster trusted exchanges and function effectively. Additionally, compliance with new data regulations—such as the **Data Governance Act (DGA)** and the **Data Act**—is a growing priority. Dawex's solutions help organizations be in compliance with these regulations. Dawex technology also implements the **Gaia-X de facto standard** as well as using the **Eclipse Data Space components**.

Leveraging Dawex technology for industry-specific data exchanges in areas like airports, media, manufacturing, Navez also showcased examples such as Afteriize, the Mobivia data marketplace for automotive & mobility services and the Japan Data Exchange (JDEX), tailored for Japan's regulatory environment. Dawex technology powers these platforms,

enabling data commercialization and the creation of data spaces for organizations and communities like industry associations and municipalities.

Q&A Session

Q: Why is trusted data transaction positioned prominently in the platform's framework?

A: Navez explained that trusted data transactions are essential when data is exchanged between parties without an established relationship. As data moves beyond internal systems into external ecosystems, ensuring traceability, observability and security becomes more critical. The level of trust required increases with the complexity and diversity of the participants.

Q: How does Dawex's solution accommodate different business models?

A: Navez emphasized that Dawex's solution offers flexibility through configurable business models, such as Corporate Data Hubs, Industry Data Spaces and Data Marketplaces, and with various licensing options. It can support multiple strategies, including data monetization and collaborative data spaces, tailored to meet the specific needs of each customer.

1.7.4 "International Manufacturing-X Council" Sebastian Schneider (R&D Head of Processes, DMG MORI Manufacturing USA)

Using the document 09_ Dominik_Rohrmus_20241010_Overview_MX_IMX_Schneider.pdf, Sebastian Schneider provided an overview of the **IM-X (International Manufacturing X)** initiative, a global effort to coordinate data spaces and manufacturing ecosystems across regions and industries. Schneider emphasized the importance of collaboration, standardization, and interoperability to optimize supply chains and achieve digital transformation.

Schneider introduced DMG MORI, highlighting its global presence, including R&D and production sites in Japan, Europe, the USA, and China. He stressed that global companies like DMG MORI need standardized solutions to avoid redundant development efforts and to ensure consistent performance across all sites and industries.

The **IM-X** initiative aims to develop a shared framework for data spaces, enabling better data coordination and fostering international collaboration. Schneider explained that the initiative focuses on key priorities such as **supply chain resilience**, **sustainability, and competitiveness**. He emphasized the growing importance of predictive data analysis to manage supply chain disruptions effectively and ensure sustainable production by tracking product carbon footprints.

The presentation also covered the importance of harmonizing existing initiatives across regions, such as Gaia-X, RRI in Japan, and Industry 4.0 in Europe. Schneider argued that rather than creating new initiatives, it is essential to orchestrate and connect existing efforts. He outlined the importance of defining international standards, including those related to **OPC-UA** and **asset administration shells (AAS)**, to achieve seamless interoperability.

Finally, Schneider shared the strategic roadmap for IM-X, consisting of four phases:
1. Influence – Engage stakeholders and align interests.
2. Build – Develop and deploy new data spaces.
3. Operate – Launch and manage operational systems, such as Catena-X.
4. Scale – Expand solutions across industries and regions.

Q&A Session

Q: How does resilience relate to trust in the context of data spaces?

A: Schneider explained that resilience in this context refers primarily to supply chain resilience, ensuring smooth operations even during disruptions. Another speaker added that predictive data analysis enhances resilience by enabling companies to anticipate delivery schedules, thus reducing stress and building trust through accurate planning.

Q: How can Japanese companies engage with the International Manufacturing X initiative?

A: Schneider mentioned that Japanese companies can join the initiative in two ways: by participating in working groups focused on specific topics, such as the digital product passport, and by contributing to testbed projects that explore and develop new technologies within the M-X framework.

1.8 Status Reports 3

1.8.1 "Status Report on Industrial Data Space projects Manufacturing-X and Factory-X (overview and use cases)" Dominik Rohrmus (LNI Labs Network Industrie 4.0), Ingo Sawilla (TRUMPF), Klaus Ottradovetz (Distinguished Expert Digital Ecosystems, Eviden International Germany GmbH)

Using the document 10 Dominik_Rohrmus_Industrial Dataspace MX and FX.pdf, Klaus Ottradovetz, Ingo Sawilla, and Dominik Rohrmus presented an overview of the **International Manufacturing-X (IMX)** and **Factory-X** initiatives. These initiatives aim to develop global data spaces and promote collaborative manufacturing ecosystems that support innovation, interoperability, and sustainability across industries and regions.

Klaus explained that the **IMX** initiative focuses on integrating different **data platforms globally**, connecting regions like Japan, Europe, and North America. A key priority is establishing a federated trust framework, allowing regions and organizations to interoperate without uniform technologies. Klaus emphasized that the goal is to align existing initiatives, like Gaia-X, without duplicating efforts. Collaborative governance plays a critical role in managing standards, ensuring alignment between industry associations, and supporting effective data sharing.

Ingo discussed TRUMPF's work within **Factory-X**, which emphasizes autonomous production and remote operations through digital twins and predictive AI. He highlighted the challenge of managing complex, cross-border machine operations, stressing the need for **scalable remote monitoring**. TRUMPF's vision involves "**everything as a service**" models, enabling customers to access equipment through subscription-based services rather than ownership, which improves efficiency and flexibility.

Dominik focused on the importance of international standards and **digital product passports (DPP)**. These passports will help track components throughout their lifecycle, supporting **recyclability** and **carbon footprint reduction**. Dominik emphasized that interoperability is essential for global compliance, especially since Siemens operates in 193 countries. He highlighted the **role of ODRL (Open Digital Rights Language)** in regulating data exchange and ensuring the **right data is shared** among trusted partners.

Q&A Session

Q: How do you address the challenge of interoperability across diverse platforms?

A: Klaus explained that interoperability relies on governance frameworks and agreed standards. **IMX** leverages protocols like the Data Space Protocol to ensure compatibility while respecting regional technological differences.

Q: What is the key to scaling remote operations in smart factories?

A: Ingo emphasized the importance of **predictive maintenance and remote monitoring**. Establishing **trust through verifiable credentials** allows manufacturers to expand remote operations while maintaining customer confidence.

Q: How do IMX and Factory-X contribute to sustainability goals?

A: Dominik outlined the role of **digital product passports** in tracking materials and reducing carbon footprints. These passports align with global sustainability regulations and ensure data spaces contribute to environmental goals while supporting efficient operations.

1.8.2 "Catena-X: A mission for Interoperability" Florian Mohr (Innovation Leader - Data Space Technologies, Fujitsu)

Using the document 11 Florian_Mohr_2024_10_10_Catena-X_IOFDS.pdf, Florian Mohr provided an update on Catena-X, a framework designed to enable secure, decentralized data sharing across the automotive industry. The system emphasizes **data sovereignty**, ensuring that **participants retain control over their data and exchange** it directly **under freedom of contract**. Unlike centralized platforms, Catena-X facilitates direct exchanges without storing operational data centrally.

Florian discussed Catena-X's evolution from a German-funded consortium to an international association to promote global collaboration. However, achieving **interoperability with other ecosystems**, such as **Ouranos in Japan**, remains a challenge due to **differences in governance frameworks and trust models**. Florian stressed the need for long-term solutions to ensure sustainable collaboration.

He also introduced the **Tractus-X** open-source initiative, inviting stakeholders to participate in developing reusable tools and applications for Catena-X. **Digital product passports (DPPs)** were highlighted as a key component in supporting **circular economy initiatives**, tracking product lifecycles to enhance sustainability.

Q&A Session

Q: How can interoperability between Catena-X and other ecosystems, such as Ouranos, be achieved?

A: Florian explained that interoperability requires alignment on data models, semantics, governance frameworks, and processes. Proof of concept (PoC) with Ouranos showed that adapters can enable short-term data exchange, but **they are not a viable long-term solution**. Florian emphasized the need to develop more robust and sustainable interoperability frameworks.

Q: Is it possible to delete data within Catena-X to meet compliance requirements?

A: Florian confirmed that data deletion is supported to meet regulatory needs. However, some data sets must be retained for up to 20 years under European laws. **Catena-X ensures a record of data deletions** to balance compliance with data control.

Q: Could the adapter solution used in the PoC with Ouranos be extended to other initiatives, such as Factory-X?

A: Florian acknowledged that while **adapters work for pilot projects**, they are **not scalable for long-term operations**. The goal is to develop **interoperability solutions** that avoid dependency on multiple adapters, **ensuring long-term efficiency and sustainability.**

Q: What are the limitations of data exchange between Catena-X and Ouranos?
A: Florian noted a reciprocity issue—while Ouranos can provide data to Catena-X, the **reverse exchange is currently not supported**. This limitation highlights the need for closer alignment of trust frameworks to enable full data exchange between ecosystems in the future.

1.8.3 "Data sharing is crossing borders – get onboarded" Sven Löffler (T-Systems International GmbH)

Using the document 12 Sven_Loeffler_2024-10-10_IOFD_Tokyo_T_Systems_SvenLöffler.pdf, Sven Löffler discussed T-Systems' work in enabling trusted data spaces and fostering global interoperability. He highlighted the company's goal of making data exchange as seamless as a telephone call, with clear roles for infrastructure, trust anchors, and directories to facilitate data sharing across industries.

Sven introduced the **Living Lab initiative**[23], a collaborative project between T-Systems, NTT Communications, and the University of Tokyo. This initiative provides a **sandbox environment** for developing and testing data space applications. Designed to support rapid development, the Living Lab allows participants to prototype and deploy use cases within just a few days. The lab also focuses on real-world interoperability solutions, helping to align European frameworks such as Gaia-X and IDSA with Japan's regional platforms

Sven emphasized the **importance of trust anchors**, which play a critical role in verifying participants and governing access within federated data spaces. T-Systems and NTT are working together to establish a **global trust anchor pilot project**, addressing the challenge of building cross-border trust frameworks that comply with local regulations and practices.

The presentation also highlighted how network effects drive value within data spaces. As multiple industries interconnect, unexpected synergies emerge, fostering new business opportunities that extend beyond individual ecosystems. T-Systems' open-source approach ensures cloud-agnostic deployment, promoting flexibility and adaptability across regions.

Q&A Session
Q: How do trust anchors facilitate interoperability in data spaces?
A: Löffler explained that **trust anchors verify participants and issue digital signatures**, ensuring that only authorized entities can access data spaces. This is **essential for maintaining trust and security in federated ecosystems**. T-Systems and NTT are piloting a global trust anchor model to address challenges related to regional compliance.

Q: Which industries can benefit from the **Living Lab initiative**?
A: Löffler stated that while the initiative initially focused on mobility and telecommunications, it is designed to support any industry. **The goal is to quickly develop applications within three days**, providing a fast, iterative environment for testing and experimentation.

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[2] https://dih.telekom.com/en/t-systems-and-ntt-communications-partnership-connecting-dataspaces-globally-with-a-test-environment-for-dataspaces-in-japan

[3] https://convergedigest.com/t-systems-and-ntt-comm-launch-dataspace-sandbox/

1.9   Keynote

1.9.1 "Industrial Data Ecosystems" Marco Schuldt (BMWK/Lead Industrie 4.0 and data ecosystems, Federal Ministry for Economic Affairs and Climate Action, Germany)

Marco Schuldt provided insights into the importance of **cross-border cooperation** between **Germany and Japan** to accelerate digital transformation and strengthen global competitiveness. He stressed that modern industries require interoperable data ecosystems to support **data sovereignty**, **scalable AI solutions**, and sustainable supply chains.

Marco highlighted Germany's efforts through initiatives such as Catena-X, Manufacturing-X, and Factory-X, which aim to create collaborative data spaces. These ecosystems focus on enabling seamless data exchange between enterprises and fostering innovation through shared information. He emphasized the similarities between Germany and Japan, particularly in the role of small and mid-sized enterprises (often called hidden champions) in driving industrial innovation.

He also discussed the alignment between GDPR principles in Europe and Japan's data governance frameworks, ensuring there are no legal barriers to cooperation between the two regions. Marco urged both countries to prioritize investments in cross-border initiatives and quickly identify projects where data spaces can enhance innovation and operational efficiency.

1.10   MoU Signing Ceremony

Dominik Rohrmus, representing LNI 4.0 e.V, and Noriaki Okui, representing Data Society Alliance (DSA), formally signed the Memorandum of Understanding (MoU).

2   Day2 Friday, October 11

2.1   Attendees

Day 2 participants: 70 (on site: 44, virtual: 26).

2.2   Summary of IOFDS

Day 2 included 10 status reports from:
- Hiroshi Mano (Data Society Alliance)
- Takafumi Ochiai (Atsumi & Sakai)
- Noboru Koshizuka (The University of Tokyo / SIP3 Sub Program Director)
- Maiko Meguro (Digital Agency)
- Kenji Hiramoto (Information-technology Promotion Agency, Japan)
- Taka Matsutsuka (Fujitsu)
- Xiaomi An (Renmin University of China)
- Hiroshi Mano (IEEE SA P3800)
- T V Gopal (Anna University)
- Didier Navez (DAWEX)

Day 2 also featured 3 technology lectures from:

- Hiroshi Mano (EverySense Japan)
- Susumu Koseki (Mitsubishi Electric Corporation)
- Yuki Nobekawa (Japan Data Exchange, JDX)

The participants discussed key topics, outlined action items, and made decisions for the next IOFDS meeting. For detailed action items, refer to Section 2.7.

2.3   Opening Remarks
2.3.1 Hiroshi Mano (Data Society Alliance)
Hiroshi Mano opened the second day of the IOFDS meeting by welcoming participants and summarizing the agenda for the day. He highlighted that the morning session would feature status reports from the Japanese side, followed by technical presentations from sponsors. The day would continue with a standardization session to provide updates on the latest activities in standards development.

Mano noted that the session would conclude with a discussion on the action plan under IOFDS, including future meeting schedules and ways to build consensus.

2.3.2 Noboru Koshizuka (The University of Tokyo/Data Society Alliance)
Noboru Koshizuka followed with a brief greeting, encouraging participants to enjoy the second day of discussions and presentations.

2.4   Status Reports 4

2.4.1 "Status Report of DATA-EX" Hiroshi Mano (General Secretary, Data Society Alliance (DSA))
Using the file 13_mano_AODP_IDSA_DSA_DATA-EX_20241009.pdf, Hiroshi Mano presented three key topics: **DSA and DATA-EX (Slides 4-21)**, **Data Trading with Usage Rights (Slides 32-42),** and **Open Data x Private Data x AI (Slides 48-53)**, as follows:

Mano began by introducing **DSA and DATA-EX**, describing DATA-EX as a federated data collaboration platform. He explained that DATA-EX provides essential components, such as the CADDE connector and IdP, which enable organizations to build their own data spaces. DATA-EX itself does not collect, store, or process data; instead, it offers tools for advertising datasets, facilitating mutual authentication, managing data transfers, and ensuring provenance. Mano highlighted the role of a trust infrastructure, supported by third-party services, to secure collaboration and trading. He also described the use of testbeds at the University of Tokyo, allowing participants to explore these components in a research-oriented environment.

Next, Mano discussed **Data Trading with Usage Rights,** emphasizing the difference between data ownership and physical property ownership. He introduced the concept of **data usage rights securities**, which define and limit the usage rights of datasets through verifiable vouchers. Mano explained two trading methods: direct trading, where data is exchanged directly between providers and receivers, and market trading, which involves intermediaries such as data brokers and custodians, operating similarly to a stock exchange. He highlighted a successful proof of concept (PoC) where a bank's dataset was traded, showcasing the economic value of datasets through market transactions.

Finally, Mano covered the topic of **Open Data x Private Data x AI**. He used the **Kyoto Data Marketplace** as a case study, demonstrating the integration of open and private data with AI.

He explained that AI can be leveraged not merely to search for data but to solve specific problems by identifying the most relevant datasets. As a practical example, he described how AI was used to propose a flood prevention plan by analyzing available data from the Kyoto Data Marketplace, highlighting the effectiveness of combining open and private data with AI-driven insights.

Q&A Session

Q: Are you consider utilizing W3C's **ODRL** (Open Digital Rights Language) for data usage management?

A: Mano acknowledged W3C's contribution to metadata and terminology standards but emphasized that DATA-EX focuses on ensuring secure usage rights through verifiable mechanisms. He explained that brokers and marketplaces exchange data using digital signatures at every step to maintain traceability and trust. Mano stressed the importance of using vouchers and secure data-handling processes to protect data usage rights, rather than relying solely on frameworks like ODRL.

2.4.2 "Japan's Digital Frontier: Data and AI Policy for Era of Innovation" Takafumi Ochiai (Head of Policy Research Institute and Senior Partner, Atsumi & Sakai)

Using the document 14 Japan's Digital Frontier: Data and AI Policy for the Era of Innovation 20241011.pdf, Takafumi Ochiai provided insights into Japan's evolving policies on data and AI. He emphasized Japan's efforts to promote interoperable data sharing frameworks across sectors such as healthcare, education, and mobility, supported by government-led base registries to streamline data exchange.

Ochiai also discussed ongoing **regulatory reform** aimed at enabling **generative AI adoption**, with involvement from the Cabinet Office and the Digital Agency. Additionally, he highlighted Japan's international efforts, including mutual adequacy agreements with the EU and UK, ensuring cross-border data flows remain compliant with privacy regulations. Japan's role in the **Hiroshima AI process** also contributes to the development of ethical guidelines for responsible AI use.

He explained that Japan currently follows a voluntary approach to AI regulation, encouraging companies to self-regulate. However, risk-based regulation is being considered for certain advanced AI systems. Ochiai indicated that the government committee on AI regulations, established earlier this year, continues to explore the potential for unified AI governance.

Regarding copyright and AI, Ochiai outlined Japan's broad copyright exemptions for machine learning, while noting that discussions are ongoing to align these policies with international standards.

Q&A Session

Q: How does Japan ensure compliance with AI-related policies, and what happens in cases of violations?

A: Ochiai explained that Japan currently does not have specific legislation or certification requirements for AI compliance. Instead, companies are expected to voluntarily regulate themselves by developing internal AI policies. The government monitors these efforts and is considering future regulations to address any gaps. However, no formal decision has been made yet on enacting legislation.

2.4.3 "Status Report of Japan Mobility Data Space (JMDS)" Noboru Koshizuka (Professor, The University of Tokyo / SIP3 Sub Program Director)

Using the document 15 Oct11_IOFDS_JMDS_Koshizuka.v2.pdf, Noboru Koshizuka introduced the **Japan Mobility Data Space (JMDS)**, emphasizing how data spaces can address challenges in Japan's complex transportation system. He noted that Japan's transportation sector, primarily operated by private companies, presents difficulties in terms of data sharing and integration across modes such as trains, buses, and taxis.

Koshizuka explained that the traditional approach of open data does not fully suit Japan's needs since private operators are reluctant to make data publicly accessible. Instead, JMDS aims to balance data sovereignty with interoperability by providing a data marketplace where both open and paid data can be exchanged securely. Key components of JMDS include a data catalog and model licenses that define usage rights.

He also highlighted testbeds within JMDS, which offer members of the SIP (Strategic Innovation Promotion) project an environment to experiment with data-sharing solutions. Although some open data is publicly available on the platform, most datasets are accessible exclusively to project participants.

Koshizuka concluded by stressing that the shift towards **Smart Mobility 2.0**—focusing on well-being, sustainability, and small-scale mobility—requires new solutions for multi-modal transport coordination. The goal is to transition from economic efficiency to inclusive and sustainable mobility.

Q&A Session

Q: How does JMDS address data sovereignty and what technology supports the protection of data rights?

A: Koshizuka explained that the focus is less on technical enforcement and more on establishing agreements among stakeholders. He noted that since public transportation data is generally accessible, the priority is not data protection but ensuring that monetary value is distributed. Technology plays a secondary role, while governance mechanisms are more critical.

2.4.4 "Operationalisation of DFFT" Maiko Meguro (Director, Digital Agency)

Using the document 16 Maiko Meguro Recent Updates for Public.pdf, Maiko Meguro provided insights into Japan's initiatives and strategies related to **Data Free Flow with Trust (DFFT)**. She discussed the efforts to establish **interoperable cross-border data frameworks** while **maintaining trust and data sovereignty**. Meguro emphasized the Takasaki Declaration, which promotes public-private partnerships as essential for bridging governance gaps and implementing data governance structures effectively.

She highlighted that the Japanese government is focusing on data security technologies to complement traditional cybersecurity measures. This includes working with ASEAN and other international organizations on capacity building and governance frameworks for cross-border data flows. A key challenge is aligning diverse national laws while ensuring that data usage practices remain transparent and secure.

She also mentioned Japan's ongoing work with OECD committees to enhance international cooperation and create practical governance solutions for new challenges such as **AI and economic security**. Future efforts will focus on sensitive data management, including

genomic data, and developing modernized regulatory frameworks to support cross-sector cooperation.

Q&A Session

Q: If data is decentralized and no longer stored at a single point, why is there still so much focus on privacy?

A: Meguro acknowledged that this is a complex issue discussed across different government ministries in Japan. She noted that data security is essential for building trust, which forms the foundation of Data Free Flow with Trust (DFFT). Even though data may be decentralized, ensuring trust beyond security remains a critical focus for cross-border data exchanges.

Q: What is the status of international collaboration under DFFT, particularly with OECD and G7 initiatives?

A: Meguro explained that the G7 ministerial meeting on DFFT was coordinated by the Digital Agency, Ministry of Economy, and Ministry of Information. Due to the distributed responsibilities, aligning efforts across these ministries has been challenging. Since joining the Digital Agency, she has been reviewing previous projects to ensure consistency. Meguro emphasized the importance of expert networks to align strategies and effectively support international collaboration through frameworks such as OECD and G7, with a focus on Agile Governance.

Comment from Gopal:

Gopal argued that information is inherently physical and must serve a clear purpose. Data stored for long periods, whether 10, 15, or 20 years, should not exist without meaning. He stressed the importance of defining usage rights and using data intentionally, not just for storage. Gopal also emphasized that governments must address both physical sovereignty and governance sovereignty to ensure accountability in data management.

2.4.5 "Approaches to Data Infrastructure at IPA" Kenji Hiramoto (Director General of Digital Infrastructure, Information-technology Promotion Agency, Japan (IPA))

Using the document 17 241011IPA Data related activities.pdf, Kenji Hiramoto provided an overview of IPA's initiatives in data governance, AI, and data infrastructure. He began by explaining the broad scope of IPA's work, which spans data infrastructure, software engineering, data spaces, and AI innovation. Hiramoto highlighted that IPA operates under METI but will also come under the Digital Agency next year.

He introduced **Japan's Digital Governance Code 3.0**, a framework aimed at improving digital literacy and readiness across organizations. The IPA provides assessments and certification programs, offering financial support, tax incentives, and human resource training to certified companies, with a focus on supporting small and medium-sized enterprises (SMEs).

Hiramoto discussed **data quality and governance standards**, mentioning multiple ISO frameworks, including **ISO 25012, ISO 8000, and ISO 5259** (for AI and machine learning). He noted that existing frameworks are complex, with too many checkpoints, making it challenging for companies to adopt them. As a solution, IPA is working on **Data Quality Framework 2.0**, aiming to simplify the process while supporting emerging standards.

He also emphasized the importance of **semantic interoperability across countries**, citing challenges with aligning population registration data models between Japan, Europe, and the US. IPA is working on guidelines to address issues like naming conventions and data translation challenges, especially for Japanese companies that operate only in Japanese.

Hiramoto concluded by discussing the **importance of AI infrastructure**, noting that IPA is actively working on projects to support AI-driven applications. He invited participants to attend Tech Japan, an upcoming event showcasing AI and data-related initiatives, where IPA will feature prominently.

Q&A Session
Q: How does IPA ensure the longevity and relevance of data over time?
A: Hiramoto acknowledged that maintaining the relevance of data over time is a challenge, and IPA is just beginning to explore this issue. He agreed that long-term data management requires careful planning and consideration.

2.4.6 "Status Report of Interoperability Project in IOFDS" Taka Matsutsuka (Fujitsu)

Using the document 18 Taka_Matsutsuka_20241011-IOFDS Fujitsu r2.pdf, Taka Matsutsuka provided an analysis of trust frameworks and interoperability challenges within international data spaces. He explained that while data spaces have emerged in Europe and Japan, ensuring trust and **seamless data exchange across borders remains a critical challenge.**

Matsutsuka highlighted the results of a fit-gap analysis that identified six essential components for building trust: participants, devices, datasets, data catalogs, contracts, and logs. Among these, establishing participant trust across different systems, such as Catena-X and DATA-EX, poses the most significant challenge.

He outlined a three-step approach to resolving these issues:
1. First Step: Develop interoperability frameworks between Japanese and European data spaces (e.g., between Catena-X and DATA-EX).
2. Second Step: Enable communication across multiple data spaces (e.g., connecting Ouranos and Catena-X).
3. Final Step: Align laws and regulations, which will require policy-level engagement.

Matsutsuka announced plans to establish a working group within the University of Tokyo's testbed to further explore these interoperability challenges and develop demonstrable solutions.

Comment from Ulrich Ahle (Gaia-X):

Ulrich Ahle expressed appreciation for Matsutsuka's analysis and proposals. He highlighted a key issue with the current Eclipse Data Space Connector, noting that it requires separate connectors for each participant in Japan, which poses a scalability challenge. Ahle shared that there is openness from Catena-X and other partners to explore improvements to the connector.

He also emphasized that starting with trust frameworks and building a **collaborative working group within IOFDS is the right direction**. Ahle proposed demonstrating a real use case at the **Hannover Industry Fair 2025**, potentially involving LNI and Dominik Rohrmus. He cited an example of an ongoing cross-border use case between Europe and the US that

tracks the carbon footprint of individualized products in a global supply chain, suggesting that a similar use case could be developed for the Japan-Europe collaboration.

Matsutsuka thanked Ahle for the insightful comment, expressing enthusiasm for future collaboration.

2.5   Technology Lectures

2.5.1 Hiroshi Mano (CEO, EverySense Japan,K.K.)

Hiroshi Mano provided a demonstration related to Slide 52 of the file 13_mano_AODP_IDSA_DSA_DATA-EX_20241009.pdf. He showcased the **Kyoto Data Marketplace**, which features over 1,014 datasets and offers both proprietary and open data for trading, negotiation, and exchange.

Mano explained that while users can search datasets using keywords, this method can be inefficient. He demonstrated how AI-powered tools like ChatGPT streamline data discovery by generating solutions, such as a three-day Kyoto travel plan, based on user needs rather than predefined keywords.

The platform offers datasets at various prices. Some require negotiation for customized subsets (e.g., Tokyo-specific data), managed via chat windows with recorded history. Others, like datasets from Kameoka City, are free and available for direct download.

Mano also likened the marketplace's trading system to a stock exchange, where data usage rights securities are issued in limited quantities to ensure exclusivity. These securities are secured with hash values and digital signatures for traceability, and users can propose prices and quantities, fostering transparent and dynamic market operations.

Q&A Session
Q: Are there only static data sets available, or is dynamic data accessible through APIs?
A: Mano responded that the marketplace primarily provides static datasets, although APIs are available. Initially, the platform supported real-time IoT data transactions. However, due to the complexity of securing such transactions, they shifted to static datasets. In cases where real-time data is involved, token-based exchanges are used, with monthly reconciliation to protect both buyers and sellers.

Q: The dataset you showed seemed quite expensive. Has it ever been sold?
A: Mano explained that dataset prices vary depending on size and coverage. Some datasets are costly due to the extensive records and wide coverage they offer, while others may be free or discounted for academic use, depending on the provider's policies.

Q: How do you manage the quality of datasets?
A: Mano emphasized that data quality is evaluated based on the specifications provided by the data provider. Quality assurance ensures the dataset matches predefined standards, such as accuracy or update frequency. If a buyer finds that the dataset does not meet the declared specifications, the marketplace operator mediates between the buyer and provider to resolve the issue fairly.

2.5.2 "Approaches to Data Infrastructureat IPA" Susumu Koseki (Mitsubishi Electric Corporation)

Using the document 20 Susumu_Koseki_IOFDS_lecture_Mitsubishi Electric.pdf, Susumu Koseki introduced Mitsubishi Electric's **Serendie digital platform**. He described the company's goal of transforming the world through "serendipity"—the creation of new value by integrating diverse data sources. Koseki began with an overview of Mitsubishi Electric's business areas, which include infrastructure systems, industrial mobility, life solutions, semiconductors, and defense technologies.

Koseki outlined the "Psychological Engineering" approach, which consolidates data from multiple devices, systems, and services. This data is analyzed to identify customer needs or latent issues, enabling Mitsubishi to create new value through improved systems and solutions. The platform's ultimate goal is to extend these innovations to society and customers, solving social challenges.

The **Serendie platform** itself is a blend of data analytics and API integration, allowing Mitsubishi to connect data from sources like power systems, elevators, air conditioners, and home products. The platform not only leverages internal data but also seeks to collaborate with external partners, enhancing its solutions through shared data.

2.5.3 "Practical use cases of data marketplace in Japan" Yuki Nobekawa (Chief Operating Officer, Japan Data Exchange Inc.)

Using the document 21_Yuki_Nobekawa_2024-10-11_Practical use case of data marketplace in Japan.pdf, Yuki Nobekawa provided an overview of the Japan Data Exchange (JDX) platform, focusing on its structure, key partners, and practical applications. He explained that JDX operates as an open community, supported by three core partners:

Nobekawa emphasized that JDX offers private, closed environments to enable secure data exchanges without public exposure, addressing the needs of industries handling sensitive data. This feature supports government strategies to maintain global competitiveness by facilitating confidential R&D and operational data sharing.

He also shared updates since the Paris meeting in February. Some industries initially tried building custom platforms from scratch but found the cost and ROI unsustainable. As a result, they adopted JDX's data market infrastructure, which offers more efficient, ready-made solutions for secure data exchanges.

The focus of these closed environments is not just on data sales but also on creating customer success through value-added transactions. Nobekawa explained that JDX and Kanematsu are actively helping participants activate and manage these environments, maximizing the value derived from their data.

2.6 Status Reports 5

2.6.1 "Introduction to ISO/IEC CD TR 25005-2 Information technology — Data use in smart cities Part 2: Use case analysis and common considerations" Xiaomi An (Professor, Renmin University of China)

Xiaomi An provided an overview of the ongoing work within the ISO/IEC JTC1 Working Group on Smart Cities, focusing on Part 2 of the data usage framework for smart cities. She

emphasized the challenges identified in **data governance for smart cities**, including data availability, usability, and security. Xiaomi explained that the working group's objective is to establish a framework for effective data usage that supports intelligent decision-making, innovation, and governance.

The presentation highlighted the evolution of the Task Force on Data Use, which began in 2020 and evolved into Ad Hoc Group 14, holding over 30 meetings and multiple international workshops to date. The group has developed a three-part framework:
1. Part 1: Digital Use Framework for Smart Cities.
2. Part 2: Use Case Analysis and Common Considerations (focus of the presentation).
3. Part 3: Measurement, Evaluation, and Reporting Indicators.

Xiaomi discussed the five core concerns shaping the framework:
1. Data availability – Ensuring data is accessible when needed.
2. Data quality governance – Managing the accuracy and reliability of data.
3. Interoperability – Enabling systems to share and use data seamlessly.
4. Data security and privacy – Protecting data from misuse.
5. Data-driven innovation – Using data to drive smart governance and predictive actions.

The group collected 23 use cases from six countries (China, Japan, the US, Korea, and Canada) to conduct a detailed use case analysis. The results were mapped across five dimensions: application scenarios, stakeholders, data types, challenges, and solutions. These use cases provided valuable insights into common considerations for data use in smart cities, with the findings serving as the foundation for Part 2 of the framework.

Q&A Session

Q: How many use cases are you planning to collect for each stakeholder type?

A: Xiaomi responded that the group issued three global calls for contributions last year and collected 23 use cases. She clarified that this number is not exhaustive but provides a sufficient starting point to justify the framework's general principles and methodologies.

Q: Are the 23 use cases sufficient to meet the completion criteria?

A: Xiaomi acknowledged that the 23 use cases are not fully comprehensive, but they serve as a useful reference for validating the framework and identifying common considerations.

2.6.2 "Status Report of IEEE P3800 WG" Hiroshi Mano (Chair, IEEE SA P3800)

Referring to Slides 22-31 of the document 13_mano_AODP_IDSA_DSA_DATA-EX_20241009.pdf, Hiroshi Mano presented an overview of the IEEE P3800 Data Trading System. He described it as a standard for setting up domain-independent data trading systems that enable multilateral data exchanges under unified architecture.

Mano explained that P3800 offers high-level definitions for stakeholders, reference models, and trading processes but leaves implementation methods open to allow flexibility across industries. Operators can manage multiple trading systems—such as healthcare or regional markets—within the same framework. The system enables data exchange between providers and users, using **data usage rights securities** to ensure accountability, exclusivity, and traceability. Trusted Third Parties (TTPs) validate transactions, though specific implementations are not mandated. The standard emphasizes transparency, fairness, neutrality, and compliance, leaving details like access control and authentication to the discretion of system operators.

Q&A Session

Q: What credentials are required for data providers and users?

A: Mano explained that authentication policies depend on the operator of each trading system. Some systems might require high-level credentials (e.g., social security numbers), while others may use simpler methods such as multi-factor authentication with mobile numbers. The IEEE P3800 standard does not prescribe specific authentication methods but refers to general frameworks like NIST SP800-63.

2.6.3 "Information Ecosphere and Sovereignty" T V Gopal (Professor, Anna University)

Using the document 24 Information Ecosphere and Sovereignty.pdf, Gopal Tadepalli provided an in-depth exploration of information, sovereignty, and governance. A key idea in his presentation was the distinction between **data and capta**. He explained that **capta** refers to data that has been intentionally captured and structured, emphasizing that it is not raw but contextualized information, reflecting choices and interpretations made by those collecting it. This concept underscores the subjective nature of data selection and the importance of governance frameworks in data systems.

Gopal stressed that data governance must align with social complexities, advocating for a shift toward digital sovereignty. He noted that 50% of governance involves technical aspects, while the other 50% focuses on policy and societal needs. He argued that open data and digital governance must serve human purposes, ensuring that technology is a means to enhance governance, not an end in itself.

He discussed the evolving nature of five types of sovereignty, including:

- **Internal and external sovereignty** – Addressing the distinctions between domestic and foreign governance.
- **Popular sovereignty** – Reflecting the de facto acceptance of governance decisions by the people.

Gopal emphasized that technology transcends national borders, challenging the traditional notion of sovereignty. He concluded by underscoring the importance of collaboration to develop frameworks that align with the convergence of technology, policy, and society.

Q&A Session

Q: Could you elaborate on the types of sovereignty mentioned, particularly popular sovereignty?

A: Gopal explained that popular sovereignty refers to the de facto acceptance of governance decisions by the people. He used the example of internal and external affairs ministries to demonstrate how technology bridges these governance spaces. Gopal emphasized that technology creates a shared space between internal and external sovereignty and must be integrated into governance frameworks to prevent disputes from escalating into legal conflicts. He concluded by highlighting the role of digital sovereignty in guiding effective governance frameworks.

2.6.4 "Status Report of Trusted Data Transaction" Didier Navez (Dawex, representing Trusted Data Transaction)

Using the document 25 Update CEN Workshop TDT - IOFDS meeting 11 October 2024.pdf, Didier Navez provided an overview of the ongoing CEN Workshop on **Trusted**

Data Transaction (TDT), explaining its significance in shaping pre-standardization efforts. This workshop, initiated by Dawex, the Fraunhofer Institute, and TNO, aims to establish a framework for trusted data transactions to support interoperability and trust in European data spaces.

Workshop Structure and Progress

Navez described the workshop as divided into two key parts:

Part 1: Started mid-2023, focused on establishing **standard terminology and concepts**. Over 150 comments were received and processed during the public review, resulting in modifications to the draft. During a 15-month process, workshop participants, coming from the associative, corporate and institutional world, collectively created, agreed upon and signed a first CWA on Trusted Data Transaction (CEN Workshop Agreement - Part 1) https://www.cencenelec.eu/news-and-events/news/2024/eninthespotlight/2024-07-26-trusted-data-transaction

Part 2: Ongoing, aimed at defining the **key characteristics of trust** and the **criteria to measure it**, with completion expected in early 2025. Additional participants, including Airbus, Prometheus-X, and EDF, recently joined this effort.

The workshop's objective is to prepare for the creation of a harmonized European standard on trusted data transaction. This standard, aligned with Article 33 of the EU Data Act, emphasizes the importance of trust and interoperability in data exchange mechanisms and services.

Next Steps and JTC 25 Integration

Navez highlighted the launch of **CEN/CENELEC Joint Technical Committee (JTC) 25** in September 2024. This committee will incorporate the findings from the TDT workshop into Working Group 2, focused on trusted data transactions. He emphasized the importance of avoiding duplication across related initiatives, inviting participants to contribute existing frameworks and insights to enhance alignment efforts.

The December 2024 JTC 25 meeting will include elections for working group conveners, with the goal of demonstrating real-world use cases at the **Hannover Messe in April 2025**.

Q&A Session

Q: How will the TDT workshop align with other data governance efforts, particularly ISO/IEC JTC 1 initiatives?

A: Navez acknowledged the importance of alignment with other standard bodies such as ISO/IEC JTC 1 and expressed an openness to developing liaisons and collaborations with these organizations to ensure consistent governance frameworks.

Q: How will the standard address record-keeping requirements for transactions, particularly under the EU Data Act?

A: Navez explained that JTC 25 Working Group 2 is actively discussing these aspects, including record-keeping and audit trails, to align with regulatory requirements. He invited further suggestions for collaboration from participants.

2.7   General Discussion

The summary is provided on the last two pages of the document
00_IOFD_Opening_20241010.pdf

2.7.1 Action Items
(1) Report on the 4th IOFDS meeting
- Prepare and publish the annual report of IOFDS on the website by December 2024.
- The framework for the document will be discussed at the next Task Force meeting.
- Members are requested to submit their activity reports and relevant topics for inclusion.

(2) Share the opportunity to trial a cross-over trustworthy framework and its relevant information on the TF mailing list.

(3) Call for local host nominations for the 5ᵗʰ IOFDS meeting.

2.7.2 Discussions
(1) Importance of Trust Anchors
- Establishing a trust framework is essential, and Japan needs a compatible trust anchor with other regions.
- A proposal to develop a testbed to ensure interoperability between data spaces was discussed. Target: Present the testbed at the Data Spaces Symposium in **March 2025 (Warsaw, Poland)**.

(2) Formation of Task Forces and Collaboration
- A Task Force will be formed to implement the testbed with participation from Japan, Europe (e.g., Catena-X), and academic institutions.
- The goal is to coordinate activities to align with the March 2025 timeline.

(3) Development of Connectors and Standards
- A single specification for connectors was proposed to ensure interoperability, with multiple implementations aligned to the specification.
- Contributions from Japanese and Indian organizations were invited under the Eclipse Foundation framework.

(4) International Standardization and Collaboration with SDOs
- IOFDS, while not an SDO, can submit proposals to SDOs.
- Collaboration with ISO, IEC, IEEE, and regional organizations (e.g., CEN/CENELEC) was discussed.

2.7.3 Next IOFDS meeting
- The next IOFDS meeting is tentatively planned around the Data Spaces Symposium in March 2025 (Warsaw, Poland).
- A call for local host nominations has been issued, with India mentioned as a potential host location.

2.8 Event Wrap-up and Closing Remarks

The meeting adjourned at approximately 16:30 on October 11, 2024.