November 2025

Report on the 6th IOFDS meeting

Introduction:

The International Open Forum on Data Society (IOFDS) is a global, multi-stakeholder forum promoting international collaboration on trusted data exchange and interoperability of data spaces. The 6th IOFDS was held in Tokyo as part of Data Spaces Week 2025[1], organized alongside CEATEC and the Asia Open Data Partnership (AODP).

The meeting brought together a total of more than 190 participants[2] from government, industry, and academia, including representatives from IDSA, Gaia-X, DSA, RRI, CEN-CENELEC and IEEE SA. Over the three days, participants discussed policies, architectures, and implementations for federated and sovereign data ecosystems.

It should be noted that the IOFDS Open Round Table held on 17 October within the CEATEC event is not included in this meeting record.

Key Highlights:

- Welcome Addresses (8 reports)
  Welcome messages from eight Japanese institutions—the University of Tokyo, Digital Agency, MIC, METI, IPA, RRI, DPFJ, and JDTF—emphasized Japan's leadership in digital governance, AI–data integration, and the launch of the Japan Digital Ecosystem Partnership (JDEP) as a foundation for national and international data collaboration. METI introduced the Ouranos Ecosystem initiative as a key framework to realize DFFT and interoperability with global data spaces such as Catena-X.
- Status Reports (21 reports)
  Reports from Japan, Europe, and other international partners presented progress in AI–data convergence, the development of trust and interoperability frameworks such as eIDAS, GBizID, and the Gaia-X Trust Framework, European standards development in the context of the EU Trusted Data Framework, and ecosystem initiatives including Manufacturing-X, Catena-X, Decade-X, and the Ouranos Ecosystem. These updates demonstrated increasing global alignment toward federated, interoperable, and trustworthy data infrastructures supporting secure and responsible data exchange across sectors and regions.
- Sponsor Sessions (5 presentations)
  Sponsor presentations by Fujitsu, NTT DATA, SoftBank, SambaNova, and EverySense introduced recent industry initiatives on data spaces, trust, and digital infrastructure, highlighting the role of private-sector innovation in advancing interoperable and reliable data ecosystems.
- Motions
  The forum also adopted a motion to propose a new IEEE standard, "Data Space Discovery Protocol for the Data Trading System (DTS) Operator," marking IOFDS's first joint standardization initiative. Officer elections confirmed Hiroshi Mano as Chair and Isamu Yamada as Secretary, with the next IOFDS planned to be held in Luxembourg.

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[1] Data Spaces Week

[2] The figure of "over 190 participants" represents the cumulative total over the three meeting days, including attendees from joint sessions with the AODP events held during Data Spaces Week 2025.

Table of Contents

1 Day 1 Tuesday, 14 October

1.1 Attendees

53 (In-person: 36, online: 17)

1.2 Call for the meeting to order

Hiroshi Mano, the chair of IOFDS, opened the meeting and reminded participants of the disclosure policy: all meeting content, statements, presentations, and materials shall be disclosed to the participant mailing list, except where limited disclosure is agreed upon by the participants under exceptional circumstances.

1.2.1 Approval of Agenda

The chair presented the agenda (document “2.8a, Excel” available on OneDrive).
Motion: To approve the agenda as presented.
Moved by: Christoph Mertens
Seconded by: Kohtaro Asai
Decision: Approved by unanimous consent.

1.2.2 Approval of Previous Minutes

The Chair requested approval of the minutes of the previous meeting.
Motion: To approve the minutes of the previous meeting.
Moved by: Isamu Yamada
Seconded by: Didier Navez
Decision: Approved by unanimous consent.

1.2.3 Opening Remarks

The Chair Mano introduced himself as Chair of IOFDS and provided a summary of IOFDS’s history and recent activities using the chair slide. He expressed appreciation to all participants for attending in Tokyo and encouraged active engagement throughout the week.

1.3 Welcome Messages

1.3.1 Noboru Koshizuka, The University of Tokyo

Noboru Koshizuka, Professor of The University of Tokyo / Chair of Data Society Alliance / IDSA Japan Hub Coordinator, welcomed participants to IOFDS 2025, held in Makuhari City as part of Data Society Week 2025 and CEATEC 2025.
He expressed gratitude to the hosts—DSA, The University of Tokyo, AODP, IDSA, IEEE SA Data Trading System WG, and IOFDS—and to sponsors including Fuji Software, NTT Data Group, Huawei Japan, Fujitsu, Omron, ABEJA, Sabanova Systems, and PwC Consulting.

He then highlighted three major developments in Japan’s data space landscape:

- **Public-Private Leadership Framework (JDEP)**
  The Japan Digital Ecosystem Partnership (JDEP) was established to coordinate government and industry leadership in developing national data ecosystems.
- **Integration of AI and Data Spaces (“AI Spaces”)**

The Cross-IPF Consortium was launched to explore convergence between AI and data spaces. Its inaugural meeting in October gathered about 300 participants from academia, industry, and government, including SoftBank, NEC, Fujitsu, NEXCO East, and AIST.

- **Growing Industry-Driven Initiatives**
  Industry players such as NTT DOCOMO Mobility, NEXCO East, Omron, and several startups are leading practical implementations of data spaces. The University of Tokyo is collaborating with NEXCO East and Cross-IPF on related design studies.

Koshizuka concluded by thanking participants and sponsors, expressing optimism for the progress of Japan's data ecosystem, and humorously demonstrating the use of a small commemorative gift provided to attendees.

1.3.2 Suguru Yamada, Digital Agency

Suguru Yamada, Director of the Data Strategy Division, Strategy and Organization Group, Digital Agency, delivered a welcome message using the presentation materials "D1_1415_WM2_IOFDS_welcoming_message_DigitalAgency(FINAL).pdf".
He outlined the Digital Agency's mission and structure, established in September 2021 as a central command tower under the Prime Minister to advance Japan's digital transformation. The agency promotes an inclusive digital society through coordination across ministries and sectors.

He emphasized that with the rapid expansion of generative AI, data utilization now determines industrial competitiveness. However, inter-organizational data cooperation remains limited, and the agency aims to build a foundational framework to address this challenge.
He referred to the FY2025 Priority Plan for Realizing a Digital Society, under which the Information-technology Promotion Agency (IPA) is jointly supervised by METI and the Digital Agency, strengthening public–private collaboration on data strategies and standardization.

As a key initiative, he introduced the Japan Digital Ecosystem Partnership, established in June 2025 based on a Keidanren proposal. The partnership—co-chaired by the Digital Agency and Keidanren—brings together public bodies (Digital Agency, IPA, METI, MIC) and private organizations (Keidanren, DSA, DPFJ, JDTF, RRI) to accelerate data coordination and ecosystem formation. The partnership's three core activities are:

1. Use case creation for data spaces in high-demand areas such as the environment.
2. Standardization and international cooperation, ensuring global interoperability.
3. Trust framework development for reliable domestic and cross-border data sharing.

Finally, using the data-driven society strategy matrix from the presentation, Yamada explained the collaborative structure among public, semi-public, and industrial sectors.
The Digital Agency leads application and infrastructure development in public domains, establishes shared rules and platforms in semi-public fields, and supports private-sector innovation and interoperability in industrial sectors.

He concluded by encouraging participants to refer to the Digital Agency's English annual report for further details on its digital and data initiatives.

1.3.3 Yuji NAKAMURA, Ministry of Internal Affairs and Communications (MIC)

Yuji Nakamura, Director of the ICT Policies Division at the Ministry of Internal Affairs and Communications (MIC), delivered a welcome address using the presentation "D1_1425_WM3_welcome message MIC Nakamura.pdf".
He began by congratulating the organizers of Data Spaces Week 2025 and welcoming participants. He noted that Japan established the Japan Digital Ecosystem Partnership (JDEP) in June 2025 to foster data collaboration across public and private sectors, and that the MIC will continue to support this effort in cooperation with other ministries and industry partners.

Nakamura outlined three main pillars of MIC's initiatives toward a data-driven society:

1. Establishing a Trust Infrastructure – In response to increasing electronic data transactions and fraud (such as tampering and sender spoofing), MIC has developed accreditation systems for "trust services" including timestamps and e-seals.
   - A government certification framework for trusted timestamp providers was launched in 2021, and six organizations have been certified as of September 2025.
   - The e-seal accreditation system, formally introduced in March 2025, verifies the issuer and integrity of electronic documents, and will be operational within FY2025.
2. Promoting International Standardization and Global Cooperation – To strengthen Japan's presence in the global ICT market, MIC is advancing standardization and intellectual property activities in collaboration with partners such as ITU and IEEE. Projects include support for international data transaction markets aligned with Japan's "Data Free Flow with Trust (DFFT)" vision, and the training of young professionals to lead standardization efforts in industry and academia.
3. Revitalizing Local Communities – MIC promotes Regional DX to address issues such as labor shortages and aging populations by leveraging digital technologies. Initiatives include:
   - Municipal DX – digitizing administrative services, advancing My Number Card use, and data-driven governance.
   - Regional Society DX – case examples such as remote fisheries monitoring in Kagawa, AI tourism analytics in Gifu, and local 5G-based autonomous buses in Gunma.

Nakamura stressed that establishing trust, ensuring global interoperability, and revitalizing local economies through digital transformation are key to achieving a truly data-driven society. He closed by reaffirming MIC's commitment to collaboration with domestic and international partners in pursuing these goals.

1.3.4 Gaku Moriya, Ministry of Economy, Trade and Industry (METI)

Gaku Moriya, Director, Digital Economy Division, Ministry of Economy, Trade and Industry (METI), delivered his welcome message online using the document "D1_1445_WM4_Ouranos Ecosystem (Data Spaces Week).pdf" and explained Japan's latest initiatives on data sharing and interoperability through the Ouranos Ecosystem Initiative, a key measure to realize Data Free Flow with Trust (DFFT) proposed by former Prime Minister Abe in 2019.

He outlined that the Ouranos Ecosystem, launched by METI, promotes interconnection of multiple data systems across sectors and borders through a use-case-driven approach, focusing on developing common standards (including the Ouranos Ecosystem Dataspaces Reference Architecture Model – ODS-RAM), reusable open-source systems, and institutional frameworks for trusted data exchange.

As a practical achievement, the Automotive and Battery Traceability Center (ABtC) was established in 2024, and interoperability with Europe's Catena-X was verified through a proof of concept completed in March 2025. He also introduced the ODS-RAM Whitepaper by METI and IPA, describing a hybrid service model that balances data sovereignty and scalability.

He noted the creation of the Japan Digital Ecosystem Partnership (JDEP) in June 2025 and the certification of several Ouranos Ecosystem projects in fields such as battery traceability, electricity data, and circular material management. He concluded by highlighting related sessions during Data Spaces Week 2025 at CEATEC, expressing his hope for further international collaboration toward interoperable data ecosystems.

1.3.5 Kenji Hiramoto, IPA

Kenji Hiramoto (IPA, Digital Infrastructure Center) delivered a Welcome Message using the document "D1_1520_WM4+_251014 IPA Data related activities.pdf." He presented an update on Japan's data infrastructure, AI governance, and legal technology activities.

- Organizational Overview
  IPA's Digital Infrastructure Center (DISC) supports national initiatives including the Japan Digital Ecosystem Partnership (JDEP) and the Japan AI Safety Institute (AISI), in collaboration with the Digital Agency and METI.
- GIF and Data Space Activities
  He outlined Government Interoperability Framework (GIF) efforts such as trust frameworks (DFFT), reference data models, metadata, and governance. The ODS-RAM team is advancing work on AI, cloud-edge integration, and data management.
- Human Resource Development
  IPA will introduce a new Data Management Certification Examination and expand data literacy topics in the IT Passport program to strengthen human resource capacity in data fields.
- LegalTech and Software-Defined Society
  LegalTech was presented as a foundation for agile legislation and legal interoperability. Model-based simulation methods are being used to design and verify legal rules. LegalTech also supports data spaces through machine-readable policies for governance, licensing, and compliance.
- Engineering for Legislation and Cross-Border Issues
  Hiramoto emphasized the need for engineering approaches to legislation, including agile governance and rule modeling. He highlighted legal interoperability as essential for efficient cross-border data exchange and reducing compliance burdens.

1.3.6 Naoto Kikuchi, Digital Policy Forum Japan (DPFJ)

Naoto Kikuchi, Project Professor at Keio University and Vice Chair of the Digital Policy Forum Japan (DPFJ), delivered his welcome message using the document

"D1_1535_WM5_2510_DPFJ 菊池先生資料_EN.pdf" and explained Japan's ongoing discussions toward establishing new legal frameworks for data circulation and trust services.

He introduced DPFJ as an expert consortium of over 100 members from academia, industry, and government, which provides policy recommendations to the Japanese Diet and related ministries. DPFJ has recently proposed legislative updates for the AI Bill and for a broader Data Circulation Promotion Act to ensure balanced regulation and promotion of AI and data utilization.

Kikuchi explained that Japan's existing Electronic Signature Act (2000) has seen limited updates over 25 years, leaving key trust services—such as timestamps and e-delivery—without full legal basis. DPFJ therefore proposes creating a new Trust Services Act and revising the Basic Act on the Advancement of Public and Private Sector Data Utilization, as shown in the presentation document.

He outlined a three-layer model for data infrastructure:

- Trust Service Layer – covering electronic signatures, e-seals, timestamps, and e-delivery.
- Data Linkage Layer – ensuring standardized interoperability between trust services; and
- Application Service Layer – enabling cross-domain data integration and AI-to-AI cooperation.

Guided by the principle of Data Free Flow with Trust (DFFT), Kikuchi emphasized three policy goals: fair access to data, maximizing social and economic value, and enabling free and reliable global data flow. He concluded that revising Japan's legal framework is essential to support AI-era data ecosystems, promote international interoperability of data spaces, and balance data protection with utilization in alignment with global standards.

1.3.7 Kazuo Nakashima, RRI

Kazuo Nakashima, General Manager of the Industrial IoT Division at the Robot Revolution & Industrial IoT Initiative (RRI), delivered his welcome message using the document "D1_1550_WM6_RRI_Kazuo_Nakashima.pdf" and extended greetings on behalf of Japan's manufacturing community.

He introduced RRI, established in 2015 under Japan's New Robot Strategy, as an organization promoting manufacturing transformation and international standardization through robotics and industrial IoT. He noted that RRI collaborates with partners such as CESMII (U.S.) and Plattform Industrie 4.0 (Germany) and recently co-published a discussion paper on Industrial Sustainability in October 2025, analyzing challenges and opportunities in global manufacturing.

Nakashima highlighted key insights from the study:

- Global productivity has remained flat despite technological advances, due to complex systems and a lack of interoperability among industrial data environments.
- Rising energy costs—as shown by comparative data from METI—pose major challenges for manufacturers and underscore the need for international harmonization of data frameworks.
- Within factories, human–machine interaction (HMI) remains limited, as many operational data points are still not formalized; formalizing these data can expand industrial and social applications, including collaborative robots, education, and digital product passports.

In his closing remarks, Mr. Nakashima presented RRI's welcome message to Data Spaces Week 2025, emphasizing that:

- Manufacturing is a global activity, and interoperable data ecosystems are vital for innovation and growth.
- While regional diversity must be respected, global discussions on interoperability should be encouraged.
- RRI expects Data Spaces Week to serve as a platform to share ideas and identify future collaborative actions.
- RRI will continue its efforts in developing manufacturing data spaces with both domestic and international partners.

1.3.8 Koichi AKAISHI, Japan Digital Trust Forum (JDTF)

Koichi Akaishi, Chairperson of the Japan Digital Trust Forum (JDTF), delivered his video message using prepared remarks and expressed his appreciation for the opportunity to speak at the International Open Forum on Data Society (IOFDS).

He described the current state of cyberspace as a rapidly changing environment — "a huge jungle" — where large-scale cybercrime, misinformation, and exponential increases in cyberattacks have made trust and safety urgent priorities. At the same time, with the advancement of digital twins and generative AI, billions of AI agents are emerging, creating both opportunities and serious risks.

Akaishi emphasized that a global trust framework is now indispensable to ensure safe and reliable data exchange in cyberspace. He reviewed international trends:

- Europe is focusing on European Data Spaces and rulemaking.
- the United States is promoting private-sector-led data ecosystems.
- China and India are developing state-driven models.
- while Japan remains behind in digital competitiveness due to insufficient mechanisms for reliable data distribution.

He explained that JDTF is addressing these gaps by promoting a Digital Trust Platform for Japan, including:

- use and expansion of the national ID (My Number) and corporate ID systems,
- development of a trust framework for AI agents,
- and design of certification systems for public digital platform operators.

These initiatives are intended to support the creation of trusted data spaces in sectors such as carbon footprint management, circular economy, healthcare, mobility, and finance. JDTF also plays an important role in the Japan Digital Ecosystem Partnership (JDEP), established in June 2025, working together with the Digital Agency, METI, MIC, Keidanren, and other organizations.

Finally, Akaishi reaffirmed Japan's commitment to advancing the global vision of Data Free Flow with Trust (DFFT), calling for international cooperation, mutual recognition, and harmonization to build a safe and responsible global data ecosystem.

1.4 Status Reports

1.4.1 Marco Schuldt, BMWE

Marco Schuldt delivered his status report using the document "D1_1615_SR1_PRESENTATION_Schuldt_IOFDS.pdf" and provided an overview of Germany's current policy direction and initiatives on data ecosystems, Industry 4.0, and industrial AI.

He began by noting the 10-year anniversary of Japan–Germany collaboration in Industry 4.0, highlighting milestones such as the RAMI 4.0 architecture, OPC UA, Asset Administration Shell, and the emergence of data-space initiatives like Catena-X, Manufacturing-X, and Factory-X.
He explained that Germany's approach is based on open-source, federated data ecosystems that enable interoperability across industries. The government has launched a major public funding program of €145 million (total €300 million) supporting cross-sectoral R&D and transfer projects under the Manufacturing-X framework—including Aerospace-X, Robot-X, Semiconductor-X, Health-Track-X, and Chem-X.

He emphasized the need to standardize and simplify digital collaboration among companies, aiming for "ecosystems that are easy to use." A systemic "influence–build–run–scale" model has been adopted as a foundation for interoperable data ecosystems.

Key cross-sectoral use cases were identified, including the Digital Product Passport, CO_2 balancing, Circular Economy, Collaborative Engineering, Condition Monitoring, and Modular Production.
Looking ahead, Germany plans to:
- Build interoperable data ecosystems (2025),
- Run cross-sector operations (2026), and
- Scale them to additional industries (2027).

Outlook: Industrial AI and European Strategy
Schuldt stressed that AI and data ecosystems are foundational technologies for Europe's digital competitiveness. To address fragmentation and lack of state-of-the-art AI, the EU is developing a Next Generation AI Continuum (IPCEI-AI) combining sovereign cloud-edge infrastructures with open and sector-specific AI models.

He described a three-tier model for systemic AI development:
- Basic foundation models,
- Sector-specific AI models, and
- Company-specific AI applications—linked through continuous learning and governed by open-source and common rules.

The upcoming "8ra Cloud-Edge Continuum" initiative will provide a multi-provider infrastructure ensuring interoperability, scalability, and energy-efficient cloud-edge operations across Europe. It aims to create a resilient backbone for industrial AI and future digital services such as autonomous driving, smart cities, and industrial metaverse applications.

In closing, Schuldt underlined that strategic independence and sovereign infrastructures are essential to Europe's competitiveness and that open collaboration with international partners—including Japan—will be key to building a trustworthy, globally connected data ecosystem.

Q & A Session
Masaru Dobashi) How semantic data management and governance would be integrated into the German data-ecosystem approach, and How to balance detailed standardization with flexibility for SMEs.
Schuldt) He explained that the project is industry-driven and technology-agnostic, with government serving as a moderator for technological and semantic alignment across sectors. He stressed the need for systemic data curation and moderated decision-making to avoid complexity and ensure maintainability. He also noted that Europe must coordinate existing initiatives to prevent redundant development across 27 member states.

Dobashi) He further asked about the relationship between Germany's cloud initiatives and the EU SIMPL project.
Schuldt) He replied that SIMPL is a European Commission procurement project linked to Gaia-X and could be sustained under the 8ra umbrella, ensuring alignment and governance across data-space technologies.

Douglas Ramsey (Smart Manufacturing Institute, U.S.): He questioned Europe's preparedness for quantum computing threats and post-quantum security.
Schuldt) He acknowledged the issue, confirming that Europe sees quantum technology as a long-term enabler but prioritizes trusted, sustainable infrastructures and fair international competition. He emphasized that future frameworks must ensure security, accessibility, and reliability for all participants, particularly SMEs.

1.4.2 Ingo Sawilla, TRUMPF

Ingo Sawilla (TRUMPF) delivered a Status Report on Data Governance, using the document "D1_1625_SR2_Report_on_Datagovernance 2025-10-13.pdf." He presented recent progress and insights from the German and Manufacturing-X (MX) communities on data governance.

- Background and Development
  Data governance has become essential for successful AI and data exchange. The Factory-X Task Force on Data Governance, initially established to build common understanding across companies, identified major interoperability and data-quality challenges. Following its completion, the work was expanded into a new Manufacturing-X Topic Group on Data Governance, reflecting its relevance across sectors such as automotive, aerospace, and healthcare.
- Integration and Compliance
  The new topic group was integrated with the Platform Industrie 4.0 Workgroup Law, to align with EU-level regulatory requirements including the EU Data Act and the AI Governance Act. This collaboration aims to help companies implement compliant data-governance frameworks efficiently and share practical approaches to legal compliance.
- Concept of Data Governance
  Sawilla emphasized that data governance is more than data management involves roles, responsibilities, standards, and processes that define data's value and sovereignty. A shared understanding of these aspects supports interoperability and collaboration across industries.
- International Collaboration

He stressed the importance of global dialogue and best-practice sharing on interpreting and implementing data-related acts. A community of practitioners is being built to exchange knowledge and reduce compliance costs through peer learning

- Industrial and Shop-Floor Challenges
  Current industrial standards, such as traditional automation models, lack integration of modern data management and AI concepts. An update to ANSI/ISA-95 (IEC 62264-1 Mod) in 2025 is expected to address this gap
- Future Outlook
  Data governance is seen as an enabler of business intelligence and societal empowerment. Manufacturing X is considering establishing an International Manufacturing-X Data Governance Community to foster global cooperation and common standards in this field.

2 Day 2 Wednesday, 15 October

2.1 Attendees

81 (In-person: 57, online: 24) including AODP Dialog participants.

2.2 Call to order

Hiroshi Mano opened the session, confirming the agenda and schedule for the day. He noted that all status reports would be completed by 11:20 a.m. before the IPA presentation at CEATEC, and that the session would adjourn at 6:00 p.m. followed by a social event at 7:00 p.m.
As there were no objections, the agenda was approved, and the meeting proceeded to the status reports.

2.3 Status Reports

2.3.1 Noboru Koshizuka, University Tokyo

Noboru Koshizuka, Professor of the University of Tokyo, reported on recent activities related to data space research and development at the University of Tokyo, including international collaboration, testbed expansion, and education programs.

He explained that the University of Tokyo's international testbed for data space technologies, established last year, has been significantly expanded. Two new testbeds have been launched:
(1) a Cross-IPF Testbed in collaboration with several companies to integrate AI and data spaces, and
(2) a factory–data space integration project involving Omron Corporation and NTT Group, which introduces a compact data flow controller ("small box") enabling factories to connect directly to data spaces. New partners such as Okinawa Open Laboratory and GATE Institute (Bulgaria) have joined the testbed ecosystem, and a Memorandum of Understanding (MOU) with GATE is scheduled for signing in December.

He also introduced the publication of an academic paper, co-authored with NTT DATA, proposing a High-Level Data Space Architecture Model. The model defines three core components—stakeholders, data exchange mechanisms, and social mechanisms—and aims to provide a common conceptual framework for interoperability among diverse data spaces, referred to as a "multiverse" model.

Koshizuka reported that the University of Tokyo is developing a Data Space Education and Training Program in cooperation with IPA (Information-technology Promotion Agency, Japan). The program includes:

- a half-day lecture in December,
- a one-day lecture and experiment course in January, and
- a practical training session using real equipment (e.g., Omron/NTT hardware) in February. In parallel, multiple business idea workshops on data space utilization were held between February and September with active participation from 20–30 members each.

He further discussed ongoing research on AI and data space integration based on connector-based distributed architecture, enabling AI agents to securely access and cooperate within data spaces. This work seeks to establish a trusted, sovereign, and ethical AI–data ecosystem platform (Cross-IPF platform).
He additionally mentioned several application domains, including:

- a disaster data platform with new recommendations for data standardization and operational rules,
- a mobility data space initiative linking multiple mobility data providers in a federated manner, and
- the NEXCO East highway data space, which utilizes road infrastructure data to support autonomous driving and secondary data use.

2.3.2 Ryu Ichikawa, NTT Data

Ryu Ichikawa (NTT DATA Japan) presented a Status Report on the Japan Mobility Data Space (JMDS) using "D2_1000_SR04_Japan_Mobility_Data_Space.pdf." He explained that JMDS, developed under the SIP Program, aims to build a smart mobility platform connecting people, cities, and data sectors toward a society with zero accidents and no mobility gaps.

JMDS consists of three layers:

1. Data Federation Platform – integrates dispersed mobility data through open APIs,
2. Digital Sandbox – enables secure data processing and simulation,
3. Community Layer – supports collaboration and best-practice sharing via Generative AI.

The platform also provides services such as a Marketplace/Contracting system and the Shared Service for Mobility (SSM), helping municipalities and startups implement data-based projects efficiently. JMDS has achieved about 50% reduction in data preparation workload, accelerating evidence-based policymaking. As of August 2025, it includes over 13,000 datasets and more than 50 participating organizations from public and private sectors

Use cases include:

- Sakai City – redesign of regional transport and establishment of mobility hubs,
- Yokohama City – identification of high-risk intersections for safety improvements,
- Chichibu and Sumoto Cities – optimization of tourist mobility and local transport balance

According to the roadmap, field validation and data expansion will continue through FY2026, with a permanent management structure in FY2027 and full-scale social implementation from FY2028.

Q&A Session

Q (Hiroshi Mano): Is JMDS operated under the SIP Program, and will it connect with the new SIP-Ex framework?
A (Ryu Ichikawa): Yes, JMDS is part of SIP and will be integrated with SIP-Ex, expected to launch in December.
Q (Dr. Gopal Tadepalli): How will interconnected data spaces like Japan's and India's be managed?
A (Ryu Ichikawa): JMDS currently uses only Japanese datasets, but international data integration is welcome and technically supported.
Q (Hiroshi Mano): Is the Chennai Metro project at the construction or operational stage?
A (Dr. Gopal Tadepalli): Operational—we are currently using the system.

2.3.3 Hseush Wenway, AODP

Wenwey Hseush presented a Status Report on "AI & Data Sharing", using the document "D2_1020_SR05_Hseush Wenway_Brief talkAI & Data Sharing.pdf." He introduced the concept of actionable AI, which enables applications to make informed, real-time decisions using grounding data—local, contextual, and real-time information—alongside traditional training data.

He proposed an AI Readiness Criteria Framework covering three areas:

1. Service Infrastructure – decentralized and sustainable data-sharing ecosystem, supporting zero-copy exchange, ownership control, and interoperability.
2. AI-Ready Data Quality – ensuring timeliness, completeness, validity, and accessibility.
3. Application Framework – open, standardized interfaces (e.g., OpenRAG) to connect generative AI and data ecosystems.

He emphasized that as AI evolves, agents will become major data consumers, requiring reliable FAIR-compliant infrastructure and standardized protocols to ensure findable, accessible, interoperable, and reusable data.

Q&A Session

Q (Prof. Noboru Koshizuka): What is the difference between actionable AI and AI agents? Also, how can we achieve symmetry between AI and data—since data has IDs and metadata, but AI does not?
A (W. Hseush): Actionable AI responds to current and situational data rather than static knowledge. AI and data ecosystems will converge, requiring metadata and identity for AI systems and reward-based, sustainable data exchange protocols where data providers are compensated per use.

Q (Representative from Vietnam Think Tank / AODP): How can the AI Readiness Framework align with national AI strategies and governance structures?
A (W. Hseush): Data ecosystems should grow organically from small communities to national and global levels, following FAIR principles to ensure interoperability and inclusiveness while respecting data sovereignty and privacy.

2.3.4 Didier Navez, Dawex

Didier Navez (Dawex) presented a Status Report on "Data Spaces Use Cases in Action", using the document "D2_1040_SR06_IOFDS - Oct 15 2025 - Dawex update.pdf." He provided an overview of Dawex's global activities and insights from ongoing European data space projects, highlighting their strategic significance and cross-sector deployment

Dawex, celebrating its 10th anniversary, operates as a leader in data exchange solutions ensuring trust, security, traceability, and regulatory compliance across more than 15 industry sectors including manufacturing, energy, construction, mobility, and media. Navez introduced Dawex's three main implementation models:

1. Corporate Data Hubs – enabling internal data circulation (e.g., Bouygues Group, TF1) to foster digital transformation;
2. Data Marketplaces – commercializing data products ("data as a business"), as seen in Mobivia's Afteriize and Kanematsu's JDEX;
3. Industry Data Spaces – multi-stakeholder ecosystems that exchange data for operational or sustainability goals.

He presented several operational data space examples, among them:

- DECADE-X [3](Aeronautics & Defence) – 30 organizations and 10,000 suppliers collaborating to improve production efficiency and traceability, aligned with Gaia-X and EU regulatory frameworks
- Hub One DataTrust (Airport Ecosystem) – operational since 2023, interconnecting over 60 organizations for airport operations optimization.
- Valeo Manufacturing Data Space – real-time energy and carbon data collection from 178 sites in 28 countries, supporting CSR and carbon neutrality by 2050.
- Digital TER-X (Construction) – European initiative to build a green, interoperable construction data space targeting 40,000 tons of CO_2 savings annually

He concluded by describing mediaGen, a new AI-driven initiative for trusted news data exchange led by AFP and partners, addressing challenges such as intellectual property protection, fight against disinformation, and fair remuneration of content providers. The system links AI toolboxes for text, photo, and video to data exchange infrastructures, ensuring trust, traceability, and compliance with GDPR, the Data Governance Act, the Data Act, and the AI Act.

Q&A Session

Q (Masaru Dobashi): Among the many projects, which do you consider most financially feasible?

A (Didier Navez): There are two main cases. Private-sector initiatives—like those led by corporations—usually secure top-management backing and embed viable business models from the start. Public–private or EU-funded projects, however, often focus first on innovation and feasibility; financial sustainability tends to be considered too late. His recommendation was to integrate financial sustainability discussions from the project outset, ensuring that the business model becomes part of early deliverables to avoid projects failing after funding ends.

2.3.5 Didier Navez, CEN-CENELEC JTC25

Didier Navez presented a standardization update using "D2_1100_SR07_IOFDS - Oct 15 2025 - Cen Cenelec JTC25 update.pdf." He reported that the CEN-CENELEC JTC 25 work on a Harmonized European Standard (hEN) for Trusted Data Transactions—mandated under the EU Data Act, Article 33—is advancing on schedule. (Milestone flow and hEN linkage shown on slides 2–3; Article 33 essentials on slide 7; ZA1 mapping table on slide 8.)

[3] Building a Sovereign Digital Ecosystem for Aerospace & Defence

- Scope & structure: JTC 25 WG2 (Data Spaces) is drafting three parts:
  1. Terms, Concepts & Mechanisms (Part 1 draft finalized),
  2. Trustworthiness Requirements (public inquiry next; content outline on slides 10–12),
  3. Interoperability Requirements (ongoing). Adoption deadlines span June 2026–May 2027.
- Regulatory alignment: The standard will operationalize Article 33 (datasets/metadata descriptions, formats/vocabularies, technical means description to access data and for automation, as well as the means to enable interoperability of tools to automate the execution of data-sharing agreements). Conformity to the hEN creates a "presumption of conformity" to the regulation.
- Ecosystem & liaisons: The CEN Workshop (CWA) that fed JTC 25 aligned key players (EC, IDSA, FIWARE, Gaia-X, Fraunhofer, TNO, BDVA, Airbus, EDF, Microsoft, etc.; slide 4). Active liaisons span IDSA, BDVA, GAIA-X and others (slides 13–14).

Q&A Session
Q (Taka Matsutsuka): (1) How does this relate to Gaia-X (trust framework)? (2) Plans to extend beyond Europe—e.g., ISO?
A (Didier Navez): (1) Gaia-X has been an active participant from the start; its deliverables inform JTC 25's conceptual scope and trust framework. (2) While driven by the EU Data Act, concepts are generic; coordination with ISO is underway, including joint sessions and potential alignment/inputs for broader international standardization.

2.3.6 Klaus Ottradovetz, ATOS

Klaus Ottradovetz (ATOS) presented a Status Report on the "Data Ecosystem Landscape," using "D2_1300_SR08_Ottradovetz_Data_Ecosystem_Landscape.pdf." He focused on how to align regional and domain data spaces for international interoperability and scalable operations.

- Vision & challenge
  He outlined the International Manufacturing-X vision—global use cases enabled by a shared foundation—and noted that data spaces must mirror real-world complexity (governmental, regulatory, commercial, legal, and technical relations), not just technology.
- Common foundational framework
  To connect cross-industry use cases (e.g., DPP/PCF), participants need agreement on a shared technological base layer, a basic data-transaction protocol, and governance spanning legal, regulatory, contractual, architectural, and domain standards.
- Operationalization: base layer & shared services
  The base layer comprises dataspace protocols, trust frameworks, identity/authorization (e.g., SSI, eIDAS, gBizID), and domain standards (e.g., AAS/IDTA, OPC UA)—implemented with standards bodies (ISO/IEC/IEEE), web de-facto standards (W3C/IETF), and OSS communities (Eclipse EDC, BaSyx, Tractus-X, Gaia-X components).
- Roles & scaling model (I-B-R-S)
  He proposed clarifying responsibilities across Influence, Build, Run, Scale to move from concepts and OSS building blocks to certified operating companies, hubs, and industry adoption.
- Multilateral agreement across phases
  Using Manufacturing as an example, he stressed a common core plus regional/domain extensions, decentralized operations, and user/operator enablement to reach thousands of participants, including SMEs.
- Landscape & initiatives

He positioned IMX Council, national programs, and operational data spaces (e.g., Catena-X / Cofinity-X) alongside associations (e.g., IDSA, Gaia-X) that share best practices and drive standards (dataspace protocol, concept, trust framework).

- Showcase: federated trust
  A joint IMXC demo (SPS/Hannover Messe) illustrated decentralized Trust Service Providers per country validating provider identity, compliance, and endpoints across use cases (Edge Management, Battery Passport, PCF/TCF), grounded in AAS and OPC UA.

2.3.7 Ulich Ahle, Gaia-X

Ulrich Ahle (CEO, Gaia-X) presented a Gaia-X status update using "D2_1320_SR09_Ahle_Gaia-X_Status_v2.pdf." He outlined how the Gaia-X Trust Framework enables trusted, decentralized digital ecosystems and supports interoperable data spaces at global scale. (Founded by 11 FR + 11 DE orgs; now 260+ members worldwide.

- Core deliverables & operations
  The Trust Framework consists of the Compliance Document (labels L1–L3), Technical Compatibility Specs (architecture, data exchange, identity/credentials, ontology, labeling), a Technical Compatibility Kit, and Gaia-X Digital Clearing Houses (GXDCH) for conformance and verification. All are open source and used in the endorsement programme for projects and data spaces.
- Extension mechanism (global & sectoral)
  A geographical/domain extension model lets regions replace EU-specific parts with local legislation and trust services, and lets verticals add domain policies ("bring your own rules") while keeping a technology- and rules-agnostic core. Implemented with verifiable credentials (VCs) and labels in the "Danube" (3.0) release.
- Federated trust for cross-ecosystem use cases (IMXC)
  For DPP 4.0 / Edge Management, decentralized Trust Service Providers (TSPs) validate identities, standard compliance (labels), and endpoints; validations are stored as VCs in wallets and surfaced via a Trusted Catalogue. The Meta-Registry publishes Ecosystem Trust Profiles/Scopes so ecosystems accept each other's credentials.
- Hubs, projects, and pilots
  Hubs connect local ecosystems globally (Japan, Korea, USA; 19 across Europe). Endorsed projects include multiple Lighthouse Data Spaces; Community-X is evolving a FIWARE-based municipal platform into a Gaia-X / FIWARE / IDSA-compliant data space for Smart City, Energy, Mobility (Etteln, DE).
- Capacity building & events
  The Gaia-X Academy (Open edX) offers 21+ courses; Evangelist Programme is growing; the Gaia-X Summit 2025 will be held 20–21 Nov, Porto ("Digital Ecosystems in Action").

2.3.8 Christoph Mertens, IDSA

Christoph Mertens, Head of Adoption at the International Data Spaces Association (IDSA), delivered a status report titled "Data Spaces and the Way Forward", using the document "D2_1340_SR10_2025-10-15_IDSA Updates for IOFDS Data Spaces Week Tokyo_Christoph Mertens.pdf".

He reviewed IDSA's current activities, achievements, and its role in shaping globally interoperable data spaces.

- Overview and Achievements

IDSA's foundation and reach: Since 2016, IDSA has provided the core framework for trusted data spaces — combining technical and business practice guidance to support the global data economy and AI applications. The association now connects 200+ data spaces across 20 sectors and continues to deliver specifications toward international standards such as the Dataspace Protocol (ISO/IEC 20151)

- Core Principles
  Mertens emphasized 10 key principles of trusted data sharing, forming the IDSA Manifesto. They include autonomy and responsibility of data owners, equality of participants, peer-to-peer data exchange, open and infrastructure-agnostic standards, and verification of contract adherence ("act in good faith, but verify")
- Data Space Architecture and Governance
  Data spaces operate as federated and decentralized ecosystems, where data remains with the owner and interoperability is achieved through trusted participants, connectors, and governance authorities. The governance framework sets policies, semantics, and protocols, while data space connectors implement the Dataspace Protocol (DSP) to enable controlled, sovereign data sharing
- Global Interoperability
  Mertens drew an analogy with GSM in telecoms, calling for a "global soft infrastructure" for data spaces built on common standards but adaptable to national regulations. The layers include Trust Anchors, Core Services, and Data Usage, implemented through cross-domain initiatives like Catena-X, Manufacturing-X, SCSN, and others
- Adoption and Market Readiness
  Citing the Gartner Hype Cycle for Manufacturing 2025, Mertens noted that Manufacturing Data Spaces are at the "innovation trigger" stage, expecting to reach maturity within 2–5 years depending on organizational readiness and business cases. He stressed the need to accelerate adoption through clearer value demonstration and cross-sector collaboration.
- IDSA Assets and Practical Tools
  IDSA bridges theory to practice via assets such as the Reference Architecture Model, Rulebook, Certification Scheme, Dataspace Protocol, and Data Spaces Radar, together forming a comprehensive ecosystem for standardization and implementation
- Business in Data Spaces
  Current initiatives include studies and publications on business models and economic impact of data spaces:
  - The 2024 Business in Data Spaces report and a 2026 follow-up study in preparation.
  - Panels with OECD at DSS'25 in Warsaw.
  - Joint studies in Japan (technical interconnection analysis and business-model diversity).
  - Collaboration with Brazil (IDSA Hub) and Austria on cost-benefit analysis and applied offerings
- The Future of Data Spaces
  Data spaces are now emerging independently by sector and country, but the IDSA community's goal is to ensure global interoperability and secure data exchange through unified standards like ISO/IEC 20151 and the Dataspace Protocol

Q&A Summary

Q (Gopal, Anna University): Difference between "constraint" and "restricted trade practice" in manufacturing data spaces.
A (Mertens): Constraints relate to policies and usage control, defining how a company restricts or governs the use of its shared data; enforcement ensures data sovereignty.

2.3.9 Dominik Rohrmus, LNI4.0 / Siemens

Dominik Rohrmus reported on the Manufacturing-X Port (MX-Port) concept and the IMXC multinational showcase, using “D2_1400_SR11_Rohrmus-MX-Port+IMXCshowcase.pdf,” and reported the following:

He addressed the current challenges to industrial data space adoption, noting that while technology and standards have matured, the market uptake remains limited due to insufficient alignment between technical interoperability and business purpose. He emphasized that trust, governance, and scalable operation models remain key for success.

He explained that the MX-Port architecture defines a common framework for data exchange and interoperability between IT and OT systems. It includes layered functions such as discovery, access control, data conversion, and adapter integration, enabling both supply-chain-oriented and production-oriented data spaces to work together seamlessly. He noted that collaboration with Japanese initiatives—particularly the “Ouranos” model—will help align the MX-Port structure with global standards under IEC and IEEE frameworks.

He further highlighted the IMXC multinational showcase, demonstrating practical use cases such as Digital Product Passport (DPP) and Edge Management, as well as a Federated Trust framework enabling cross-border verification of digital identities and credentials. These implementations illustrate how decentralized trust services can ensure regulatory compliance while supporting global industrial AI and data exchange.

He concluded that cooperation among global partners—from large enterprises to SMEs—is proving that the market is beginning to adopt these concepts. The IMXC community will continue to refine shared standards and terminology to accelerate interoperability and standardization efforts.

2.3.10 Hiroshi Mano, DSA

Hiroshi Mano, Secretary General of the Data Society Alliance (DSA) and Chair of the IEEE Data Trading System Working Group, delivered his status report using the document “D2_1420_SR12_Hiroshi_Mano_DSA_Status_Report_202510.pdf”. He also presented a video message introducing the DSA’s Data-EX initiative and the concept of interoperable data spaces.

He explained that Japan, unlike Europe with its Data Governance Act and eIDAS framework, still lacks legal assurance for trust services such as timestamps and e-delivery. Together with the Digital Policy Forum Japan (DPFJ) and the Japan Digital Trust Forum (JDTF), DSA continues to propose policies to establish a national framework for trusted data governance.

The video outlined data spaces as decentralized ecosystems where participants securely exchange data through standardized connectors under a shared governance framework. Mano reported on DSA’s cooperation with the University of Tokyo and IPA to promote the Open Data Spaces Reference Architecture Model (ODS-RAM) as a foundation for international interoperability. He also presented results from DSA’s pilot data trading system using data usage rights, where datasets are traded via tokenized rights—similar to a stock exchange—to manage ownership, access, and secondary use.

He introduced DSA's collaboration with domestic data marketplaces combining public and private datasets and announced an upcoming demonstration workshop for the "data usage right certification" system.

In standardization, he noted the publication of IEEE 3800-2024, the approval of P3800.1, and DSA's receipt of the Emerging Technology Award 2025. The group continues its work with international SDOs through the IEEE DTS Working Group.

Finally, he introduced SIP-EX, a government-funded project to link public and private research data through a shared catalog platform supporting both open and contract-based data transactions. An English version will be released for international participation.
Mano concluded by emphasizing DSA's ongoing efforts to advance trusted and interoperable data ecosystems through policy advocacy, experimentation, and standardization.

2.3.11 T V Gopal, Formerly Anna University

Dr. Gopal presented a report titled "Contextualization in Data Spaces", using "D2_1500_SR13_Gopal_Contextualization in Data Spaces.pdf." He shared progress made following the Data Spaces Week 2025 held at Anna University, emphasizing the need to integrate contextual understanding within data-space architectures and AI systems.

He began by introducing a recent initiative in India that demonstrated the power of contextualized open data — an AI-powered chatbot that analyzes the performance of members of parliament using curated legislative data. This example illustrated how context determines the value and relevance of data, a principle that extends directly to data-space governance and interoperability.

He explained that, although large amounts of data can be shared and retrieved, meaningful interpretation requires contextualization — understanding the environment, purpose, and relationships behind data. He noted that current computational models often strip away this context to achieve standardization, leading to "context-free" data usage. He argued that the future of data spaces lies in reintroducing structured context through agentic AI systems capable of reasoning, adapting, and cooperating based on the environment in which they operate.

Drawing from his earlier research on adaptive multi-agent systems, he described how intelligent agents can coordinate through communication, cooperation, and organization to achieve shared goals. Each agent (such as demand, supply, or broker agents) operates autonomously while maintaining contextual awareness of its environment. He emphasized that contextualization supports governance, collaboration, and localization — helping systems reflect human reasoning rather than only data abstraction.

He also linked these ideas to industrial applications, such as the collaboration between India and Japan's data infrastructures (e.g., the JICA-supported metro rail projects), suggesting that interoperable data spaces across countries must preserve both technical and social context to function effectively.

In conclusion, Gopal highlighted that governance frameworks for data spaces must explicitly include contextualization alongside data assurance, platform standards, and sharing controls. He cautioned that while contextual data can enhance understanding and decision-making, it also raises new challenges for privacy, bias, and security. To address these, he proposed advancing agentic, collaborative AI models that integrate context dynamically, ensuring data spaces remain both interoperable and meaningful for real-world use.

3 Day 3 Thursday, 16 October

3.1 Attendees

58 (In-person: 47, online: 11) including AODP Webinar participants.

3.2 Call to order

Chair Hiroshi Mano opened the final-day meeting, confirming the agenda: member status reports, discussion on a joint SDO proposal, and a sponsor presentation. He noted upcoming officer elections and planning for future meetings. After confirming a minor agenda change, the meeting began with status reports.

3.3 Status Reports

3.3.1 Takafumi Ochiai, Atsumi & Sakai

Takafumi Ochiai, Atsumi&Sakai, gave an online presentation on Japan's latest policies for data and artificial intelligence (AI). He explained that the government is developing a new Data-Driven Society Plan to address demographic and industrial challenges, positioning data as both a resource and an asset essential for AI development and value creation.

Japan is formulating new regulations similar to the EU's Data Act and Data Governance Act to promote trusted data sharing beyond traditional privacy laws. Key initiatives include establishing a national authentication framework for corporations and individuals (linked with My Number), promoting modular public IT architectures, and creating incentives for data sharing across sectors such as finance, healthcare, green transformation, and digital public goods.

He noted upcoming revisions to the Personal Information Protection Act, which will introduce stronger enforcement and selective exemptions for research and innovation. A new framework for healthcare data is planned by 2026–2027, aligned with the European Health Data Space.

He also highlighted the government's integrated strategy linking data infrastructure, energy systems, and semiconductor policy. The new AI Act establishes an agile governance framework and supports Japan's goal of becoming an "AI-friendly nation." He emphasized Japan's human-centered, trustworthy approach to AI, reinforced by the AI Safety Institute and international cooperation through the Hiroshima AI Process.

He concluded that Japan aims to build a trusted, innovation-driven digital society through harmonized governance and international collaboration.

3.3.2 Naama Avni-Kadosh, WBCSD

Avni-Kadosh, WBCSD, introduced the WBCSD, a global network of over 250 major corporations promoting sustainability as a driver of competitiveness using "D3_1000_SR15_差し替え_PACT Intro_Naama.pdf". She presented the Partnership for Carbon Transparency (PACT), which develops a global standard for calculating and exchanging product-level carbon footprint (PCF) data to enable accurate and comparable Scope 3 emissions reporting.

PACT focuses on three pillars: harmonized accounting methodology, interoperable technical standards, and cross-industry collaboration. Over 50 corporations and 40+ solution providers are already engaged, with more than 2,500 companies exchanging PCF data worldwide. She noted Japan's leadership through Fujitsu's pilot project involving 60 suppliers to improve accuracy and collaboration toward net-zero goals.

With new regulations such as the EU CBAM, PACT is creating a "bridge" linking carbon data with trade compliance, supporting companies in meeting future reporting requirements.

Q&A:
Q (Ogura): Technical or policy changes can affect emissions, sometimes beyond manufacturers' control. Are such downstream impacts, like shortened product lifecycles, being addressed in Europe?
A (Avni-Kadosh): Downstream Scope 3 emissions are indeed difficult to manage, but WBCSD is launching an Emission Reduction Accelerator (ERA) to view entire product value chains collaboratively, identifying common hotspots and shared solutions.
Q (Xiaomi An): Could PACT collaborate with ISO TC46/SC11 on records management standards (ISO 15489, 30301) to ensure traceable and reliable primary data throughout the product life cycle?
A (Avni-Kadosh): That is an excellent proposal. I will share this with our technical team for further discussion. Collaboration on such standards would strengthen PACT's ecosystem.

3.3.3 Kazuo Nakashima, RRI

Kazuo Nakashima, RRI, reported on "Toward a Manufacturing Dataspace in Japan," using the material "D3_1020_SR16_Toward_Manufacturing_Dataspace_in_Japan.pdf."

He introduced RRI's mission—advancing manufacturing transformation and international standardization via robotics and industrial IoT—and summarized recent activities. Internationally, RRI engaged with the International Manufacturing-X Council (IM-X) and IEC SyC Smart Manufacturing (Japan hosts the mirror committee for the "Dataspace for Smart Manufacturing"). Domestically, he highlighted the launch of the Japan Digital Ecosystem Partnership (JDEP) in June 2025 and the joint announcement designating Open Data Spaces (ODS) as Japan's common technical concept for dataspaces (IPA, DSA, RRI, and The University of Tokyo).

He outlined RRI's Manufacturing Data Space Action Group (TF1–TF4: common understanding, use cases, engineering innovation/data models, and communication). Use-case work spans ESG/PCF data sharing, product traceability, circular-economy collaboration, and resilience; resulting requirements include interoperability, legal alignment, international interconnectivity/certification, and in-house data infrastructure.

He concluded that, amid CE pressures and labor constraints, user readiness is as critical as system design; RRI will continue standardization and multi-stakeholder collaboration toward an innovative, data-driven manufacturing ecosystem.

Q&A:
Q (Dominik): Expressed appreciation for trusted and effective collaboration.
A (Nakashima): Thanked him and reaffirmed continued cooperation on global manufacturing dataspaces.

3.3.4 Masaru Dobashi, NTT Data

Masaru Dobashi, NTT DATA, reported on "A Proposal for Data Space High-Level Architecture Model (DS-HLAM)," using the material "D3_1040_SR17_DS-HighLevelArchitectureModel_MasaruDobashi.pdf."
He explained that the DS-HLAM is a new theoretical and technical framework designed to describe and compare diverse data collaboration and data space models in a unified way. The model, developed jointly with the University of Tokyo, provides a scientific language and mathematical foundation to express the essential components and operations of data spaces.

The architecture defines five core components—organizations, data provision mechanisms, data units, social mechanisms, and rules—and separates stable infrastructures (social mechanisms) from dynamic governance elements (rules) to ensure flexibility while maintaining stability. It also introduces four data service methods (provide, modify, stop, use data) and three governance methods (provide, modify, stop rules), establishing a formal representation for operational consistency and data sovereignty.

Using state automata and mathematical formulations, the model describes data space transactions, interoperability conditions, and lifecycle management. It also distinguishes vertical consistency (linking abstract and concrete models) and horizontal consistency (mutual recognition across regions) as mechanisms to bridge different architectures.

Preliminary case studies, including the Ouranos Ecosystem, IDS RAM, and Catena-X experiments, demonstrate the model's ability to represent diverse frameworks within one structure. Mr. Dobashi noted that this is an initial proposal published on arXiv and invited feedback to refine and validate it further through collaboration and empirical studies.

Q&A:
Q (Hiroshi Mano): Asked how the model relates to existing standards such as IEEE P3800.1 and emphasized the need for interoperability without limiting implementations.
A (Dobashi): Agreed that DS-HLAM complements existing frameworks and aims to support standardization discussions by providing a rigorous, implementation-neutral foundation for global data space architecture.

3.3.5 Seonhi Ro, LNI 4.0

Dr.-Ing. Seonhi Ro from LNI 4.0 presented "Manufacturing-X and Factory-X in Action" using the document "D3_1100_SR18_2025-09-29_LNI40_FX-Plattform_XR_v02.pdf" and conducted a live demonstration with extended-reality (XR) glasses.

She introduced Factory-X, part of the broader International Manufacturing-X (IM-X) initiative, which connects cross-sector projects such as Catena-X, Aero-X, and HealthTrack-X under a shared regulatory and technical foundation to enhance resilience, sustainability, and competitiveness across manufacturing ecosystems.

Seonhi Ro explained the 11 Factory-X use cases, including integrated tool chains and collaborative engineering, modular production, condition monitoring, energy and carbon-footprint management, and circular-economy services. These cases are aligned across the full product life cycle—from design and production to operation and service.

To make complex technologies more accessible, LNI 4.0 developed an Extended Reality (XR) platform, blending metaverse immersion, 3D interaction, and user creativity. Participants can explore data-space use cases through immersive storytelling and haptic interaction guided by a virtual host named “Colette.”

During the demonstration, attendees experienced how XR enables realistic visualization and interaction with virtual factory components, such as assembling and testing a conveyor-belt system through simulated engineering tasks. The immersive approach helps users understand data-exchange mechanisms, process synchronization, and virtual commissioning within the Factory-X framework.

Seonhi Ro emphasized that XR provides emotional storytelling, stronger memory retention, and a practical medium for global collaboration—making industrial data-space concepts intuitive and engaging. She invited participants to experience the XR demonstration firsthand during the session break.

3.3.6 Taka Matsutsuka, Fujitsu Research

Taka Matsutsuka, Senior Research Director at Fujitsu Research, delivered his report using the document “D3_1120_SR19_20251016-IOFDS_Trust.pdf” and presented Fujitsu’s ongoing work on trust interoperability across regions and jurisdictions.

He explained that, unlike centralized cloud models, decentralized data spaces require mechanisms for verifying participants and establishing mutual recognition of trust across different legal systems. Based on this challenge, Fujitsu launched the Global Trust Framework Initiative at Data Spaces Week 2024 and demonstrated its first cross-regional interoperability trial at Hannover Messe 2025. The next demonstrations are planned for SPS 2025 and Hannover Messe 2026.

He highlighted Japan’s GBizID system, operated by the Digital Agency, as a reliable corporate authentication infrastructure. Fujitsu is testing its integration with European eIDAS frameworks to enable mutual verification between regions.

He also referred to ongoing collaboration through NTT’s Data Linkage Hub and alignment with the Japan Digital Ecosystem Partnership (JDEP). Looking ahead, Fujitsu aims to extend this work toward AI federation, combining trust mechanisms for data and AI ecosystems.
He concluded that achieving global data collaboration depends on building mutual trust and interoperability among jurisdictions through coordinated technical and policy efforts.

3.3.7 Xiaomi An, Remin Univ. China

Xiaomi An (Project Leader of ISO/IEC 25005 Series) delivered a progress report using the document "D3_1300_SR20_ISO IEC 25005 Series standards on data use in smart cities_ 2025-10-03.pdf."

She summarized the activities of ISO/IEC JTC 1/WG 11, which has held 42 meetings since 2020 and two international seminars in 2021 and 2024. The working group is developing a three-part standard on data use in smart cities:

- Part 1 – Framework: defines five core dimensions of data use — availability, quality assurance, ease of use, security, and data-enabled innovation — to ensure that data serve as strategic assets for city-wide digital transformation.
- Part 2 – Use Case Analysis and Common Considerations: compiles 23 use cases from six countries (Australia, Canada, China, Japan, Korea, U.S.) and extracts shared principles for effective, secure, and human-centric data utilization.
- Part 3 – Measurement, Evaluation and Reporting: establishes 28 sub-indicators across the five dimensions to evaluate and improve data use performance in smart-city operations.

She noted that Part 1 is entering the FDIS stage, Part 2 is in publication, and Part 3 is moving to a second CD ballot. Future work includes Part 4, addressing AI-related data-use cases, and Part 5, on ESG-related aspects, to be discussed under the newly formed ISO/IEC JTC 4 structure.

Q & A Session
Q(Masaru Dobashi): asked about the meaning of data quality assurance.
A(Xiaomi An): explained that it refers to ensuring the completeness, authenticity, reliability, timeliness, accuracy, consistency, and traceability of data, making them useful and trustworthy for smart-city applications. She added that data security and privacy are embedded throughout the process, supporting responsible and intelligent data use.

3.3.8 Nikolaos Saklampanakis, Fujitsu/ Catena-X

Nikolaos Saklampanakis (CX APJ Internationalization Lead, Fujitsu) delivered a status report using the document "D3_1320_SR21_Catena-X.pdf." He introduced Catena-X as the first globally trusted and collaborative data ecosystem for the automotive industry, built on four architectural principles:

1. Trusted digital identities;
2. Interoperability through open-source standards;
3. Data self-sovereignty via decentralized protocols; and
4. Industry-driven governance ensuring transparency and fairness.

Catena-X supports applications in sustainability (e.g., CO_2 footprint, Battery Pass), resilient supply chains, and quality/PLM management, developed collaboratively with industrial and political partners under an open-source framework.

Saklampanakis described the creation of regional hubs that act as local "embassies" for Catena-X to coordinate with regional industries and represent local interests. Hubs are active across Europe and North America (AIAG), while China launched a new hub in 2025 following a tri-lateral MoU among CAAM, VDA, and Catena-X, leading to a local pilot project involving about 25 Chinese companies. Collaboration with Japan currently proceeds through partnerships with IPA and JAMA rather than a formal hub.

He also introduced the new Global Activation and Market Steering Board (GAMS), expanding governance to include regional, technical, and industry representatives to ensure balanced decision-making across jurisdictions.

In closing, Saklampanakis presented the Catena-X and Ouranos interoperability initiative, launched by IPA and Catena-X in April 2024, with a PoC completed in January 2025. The proof-of-concept confirmed successful technical data exchange between Catena-X and Ouranos through aligned APIs, adapters, and account management mechanisms, forming the basis for continued roadmap alignment and future joint work.

Q & A
Q (Hiroshi Mano): asked about reconciling Catena-X's decentralized architecture with Ouranos's centralized design.
A (Saklampanakis): replied that the first-phase PoC intentionally focused on technical feasibility, postponing legal and organizational aspects to later phases once Ouranos's architecture stabilizes. He emphasized that deeper policy alignment will be addressed in upcoming collaboration rounds.

3.4 Discussion topic: Joint Proposal for SDO

Chair Hiroshi Mano presented a proposal for a new standardization project titled "**Data Space Discovery Protocol for the Data Trading System (DTS) Operator.**" He explained the background and rationale:

- The purpose is to create a machine-readable protocol that allows participants and intermediaries to discover and connect to autonomous data spaces without violating their sovereignty.
- The proposed standard would complement existing frameworks (e.g., IDSA protocol, Gaia-X Clearing House, ISO/IEC 20151, NIST, W3C, etc.), rather than duplicate them.
- The work is intended to start under IEEE SA through a Project Authorization Request (PAR) to be submitted to NesCom, but other SDOs such as IEC, ISO/IEC JTC 1, or JSA remain optional routes.
- The proposal envisions defining a minimal discovery protocol and extending its scope later, potentially evolving toward a data intermediary model beyond DTS.

Motion:
"Move to approve creating PAR of the Standard of Data Space Discovery Protocol for the DTS operator and submit to IEEE SA NesCom as an IOFDS joint project."
Moved: Xiaomi An
Seconded: Taka Matsutsuka
Voting Result:
Yes: 12 (Fujitsu, RRI, University of Tokyo, NTT Data, Mitsubishi Electric, DSA, IPA, Xiaomi, ATOS, EverySense, Ogura, IBM)
No: 0
Abstain: 1 (Dawex)

Outcome:
The motion was approved by majority consent.
The IOFDS will prepare and submit the PAR document to IEEE SA NesCom as a joint project proposal representing IOFDS collaboration.

Next Steps (noted by Chair):

- Draft and circulate the PAR to the Alignment Task Force mailing list.
- Begin preparation of a conformance program and certification scheme for future implementation and branding (similar to Wi-Fi Alliance models).
- Continue discussion on a notary or trust assurance function in Japan for validating data integrity and provider credibility.

3.5 Sponsors' presentations

3.5.1 Taka Matsutsuka, Fujitsu Research

Taka Matsutsuka gave a presentation using D3_1530_SP1_20251016-IOFDS_AI.pdf, introducing Fujitsu's vision of evolving data spaces into AI spaces to enable trusted and collaborative AI beyond data sharing.
He explained three focus areas:

1. Data Federation – Federated learning across organizations with trust and security.
2. AI + Organizational Data – Secure inter-company data use for fine-tuning and RAG.
3. AI Agent Collaboration – Future cooperation among AI agents.

Examples included joint R&D on Trusted Federated Learning with Fraunhofer ISST, the Catena-X LLM Support Kit for interoperable LLMs, and COCN activities toward an AI agent platform. He also referred to the white paper "AI for Data Spaces" and ongoing work on cross-border trust interoperability.
He concluded that Fujitsu's "AI Spaces" aim to enhance productivity, resilience, and competitiveness through secure data-AI collaboration.

Q&A:
Q (Dobashi, NTT Data): asked about the paper title.
A (Taka Matsutsuka): confirmed it is "Data Spaces for AI."

3.5.2 Masaru Dobashi &Miki Kanno, NTT DATA Group Corporation

Using D3_1540_SP2_入れ替え 2_SponserSession_Transforming_DataCollaborationwithNTTDATA'sX-Curia_20251015_v3.pdf, Masaru Dobashi and Miki Kanno presented NTT DATA's vision for transforming inter-company and cross-industry collaboration through the new service "X-Curia," which provides comprehensive end-to-end support for building and operating data spaces.

Dobashi introduced the broader concept of integrating data spaces and AI spaces as coordinators for business and society, evolving toward a "Wisdom Space" where data, AI, and human knowledge interact to drive social innovation. He emphasized the importance of data as the foundation for this evolution and noted NTT DATA's contributions to global and national initiatives, including the Ouranos Ecosystem, DATA-EX, and the University of Tokyo Testbed for international interoperability.

Kanno then detailed the structure and goals of X-Curia, launched in July 2025. The service supports enterprises from consulting to implementation, focusing on data sovereignty and high confidentiality, and aims for future global expansion. She outlined three core concepts for inter-company data collaboration:

1. Enablement Service – Rapidly establishing data spaces for industries and corporate groups.
2. Trusted Data Sharing Service – Enabling existing systems to share data securely across multiple data spaces.
3. Federated Governance Service – Providing cross-cutting trust and governance functions to interconnect data spaces.

Use cases included:

- Japan Mobility Data Space (JMDS): A project with MaaS Tech Japan in Sumoto City enabling smart mobility services using AI and shared data.
- Energy Data Space: A new demonstration with NEXTEMS, Waseda University, and REDER for cross-sector energy data collaboration.
- GBizID Demonstration: Joint verification with Denso, ABC, and the University of Tokyo on trust-based authentication for inter-industry data exchange.

They concluded that NTT DATA seeks to build an ecosystem of data spaces that enhances trust, efficiency, and innovation, ultimately creating new business opportunities and societal value.

3.5.3 Takeshi Fukuchi, SoftBank Corp.

Using D3_1550_SP3_DSW 登壇資料_福地さん e.pdf, Takeshi Fukuchi gave his presentation in Japanese, with Mr. Hiroshi Mano providing an English interpretation. He introduced SoftBank's vision for building next-generation digital social infrastructure that integrates AI, data spaces, and ultra-distributed computing.

Fukuchi explained that SoftBank aims to go beyond its traditional telecommunications business to create a new digital infrastructure supporting data sovereignty, cross-industry collaboration, and regional innovation. The company's activities focus on industry–academia partnerships, national R&D projects, and data ecosystem development.

He outlined the concept of xIPF (cross-Intelligent Platform Framework) — a multi-layered platform that combines:

- Ultra-Distributed Computing Infrastructure, enabling high-performance, decentralized processing; and
- AI×DataSpace, connecting various domains such as energy, logistics, mobility, supply chains, and smart cities to create new digital services.

SoftBank's goal is to realize a "next-generation digital society" through this architecture, fostering collaboration among diverse stakeholders and advancing socially acceptable digital implementations.

Q&A:

Q (Dobashi): asked how existing SoftBank services could align with this structure.
A (Fukuchi): responded that the concept envisions a collaborative infrastructure on which various organizations can deploy their own services — an open, extensible approach to joint innovation.

3.5.4 Masahiko Nakano, SambaNova

Using D3_1600_SP4_251014_Data Spaces Week 2025_dist.pdf, Mr. Nakano introduced SambaNova's efforts to advance sovereign AI through a next-generation, energy-efficient inference platform.

He explained that SambaNova, founded in 2017 by Stanford AI pioneers, provides a fully integrated GenAI platform combining custom hardware and managed inference services. The company's RDU (Reconfigurable Dataflow Unit) architecture, built on 5nm technology, supports trillion-parameter models with exceptional performance and energy efficiency.

Nakano showed that SambaNova's systems achieve 10× faster throughput and up to 550× higher energy efficiency than GPUs, enabling deployment in standard air-cooled data centers without costly upgrades.

He also presented SambaManaged, a turnkey solution that allows enterprises and governments to deploy AI within weeks, featuring low-power operation and clear cost benefits. The platform supports white-label inference services, helping organizations launch their own sovereign AI solutions.

Nakano concluded that SambaNova's technology accelerates the realization of national AI infrastructure by providing scalable, efficient, and sustainable AI deployment.

3.5.5 Hiroshi Mano, EverySense Japan Inc.

Using D3_1630_SP5_HiroshiMano_20250929_EverySensePro.pdf, Mano introduced EverySensePro, a data trading platform designed to support the realization of a data-driven society through fair and efficient data exchange.

He explained the company's mission, "Data Harvesting for a Better World," which focuses on connecting data providers and users with neutrality and transparency, promoting new forms of data discovery, and addressing data quality and valuation challenges in society.

EverySensePro currently involves about 80 participating companies and over 230 registered datasets, covering diverse sectors such as academic research, healthcare, real estate, and public administration. A visual distribution map (page 6 of the presentation) illustrated market diversity and price variations, with the highest-priced dataset being the "National Housing Asset Data" provided by MS&AD InterRisk Research Institute.

He also showcased the Kyoto Data Marketplace, a collaboration combining open public data with private datasets via EverySensePro, enabling local governments and companies to share and trade data under user-defined access conditions.

He further explained the Data Trading Market with Usage Rights, developed under the DATA-EX framework, where data can be traded similarly to securities. The system includes intermediaries, custodians, and clearing houses to manage transactions securely and transparently. Results from a book-building proof-of-concept demonstrated successful bidding and valuation of datasets, confirming market feasibility.

He concluded that EverySensePro aims to provide a foundation for a trusted and transparent data economy, facilitating both open and commercial data circulation to advance data-driven innovation in Japan.

3.6 Officer Election

In accordance with the IOFDS Policy and Procedure, officer elections were conducted for the next term. Hiroshi Mano, serving as the acting chair, called for nominations for both Chair and Secretary positions.

Isamu Yamada was nominated and elected as Secretary, and Hiroshi Mano was nominated and elected as Chair. Both officers will serve until the end of the next IOFDS in-person meeting. See the results in "D1-D4_IOFDS_Chair_slide_20251014r3.pdf"

3.7 Future Venue

In accordance with the IOFDS Policy and Procedure, the forum confirmed that in-person meetings should be held at least once every six months, with the venue and organizer decided by mutual agreement among members.

Masaru Dobashi proposed holding the next IOFDS meeting in Luxembourg, supported by his colleagues based there. The proposal was well received, and no objections were raised. The detailed arrangements for the next meeting will be coordinated by Dobashi's organization.

3.8 New Business

None

3.9 Closing remarks

At the conclusion of the meeting, Chair Hiroshi Mano expressed appreciation to all participants for their contributions throughout the session. He noted that the day's official business had been completed, including officer elections and discussion of the future venue, and he thanked members for their active participation before closing the meeting.

Acknowledgments and Editor's Note
Isamu Yamada of the Data Society Alliance (DSA), serving as the secretariat of the International Open Forum on Data Society (IOFDS), compiled this report based on the speaker's presentations and discussions, including participants. Each speaker has made efforts to review the content. We thank all contributors for their valuable input and cooperation.