# Initiatives to Scale Industrial Data Spaces in Japan

**November 10, 2026**

**RRI International Symposium: Session Day**

Robot Revolution & Industrial IoT Initiative (RRI)
WG1 Co-chair; AG4/TF2 Leader
Naohiko Irie (Hitachi, Ltd.)

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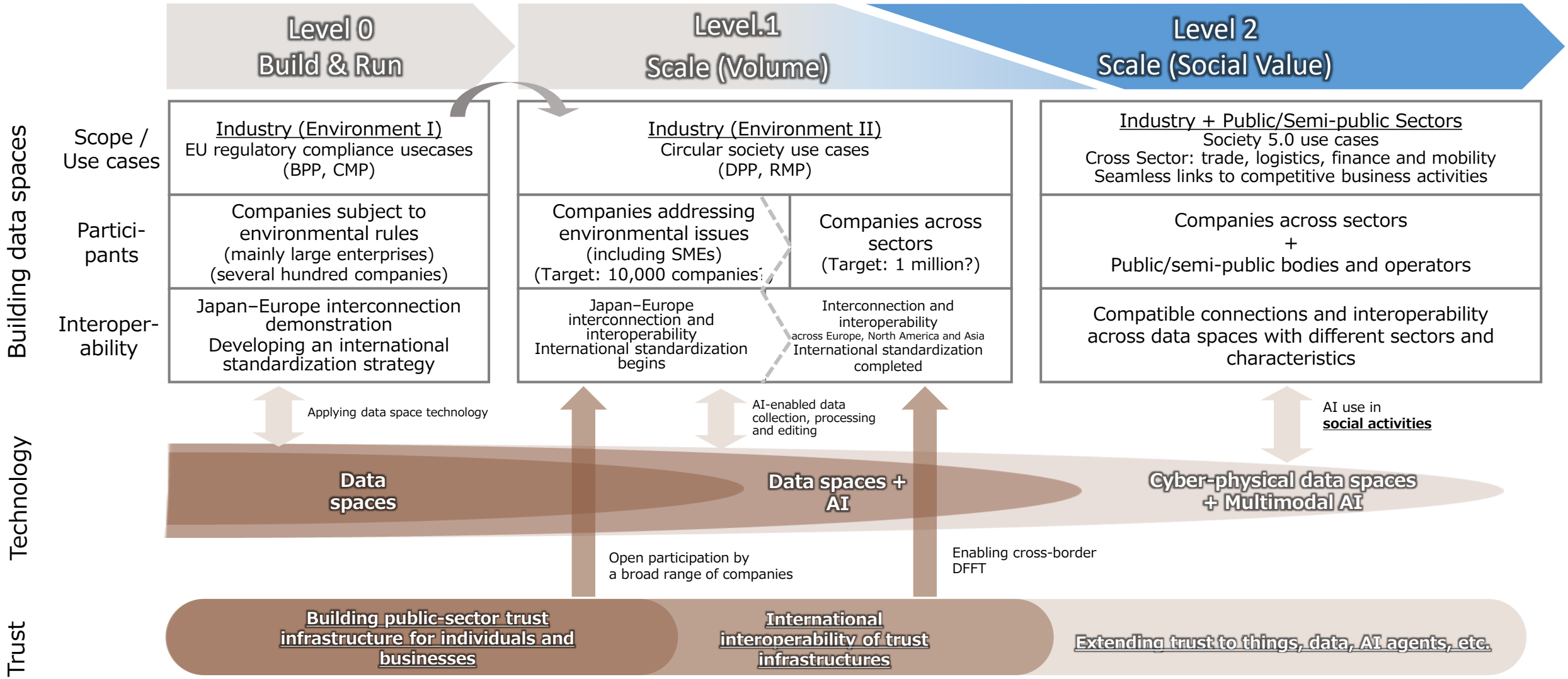
# Evolution of Industrial Data Spaces

| | 2011-2015 | 2016-2018 | 2019-2020 | 2021-2022 | FY2023 | FY2024 | FY2025 | FY2026 |
|---|---|---|---|---|---|---|---|---|
| **Europe** | **Industrie 4.0 launched**<br>'11 Concept first announced<br>'13 Plattform Industrie 4.0 established | **Data space concept established**<br>'16 IDS e.V. (later IDSA) founded<br>'17 IDS reference architecture released | **GAIA-X announced**<br>'19 Announced at Digital Summit (Dortmund)<br>'20 Technical architecture released | **Industry deployment begins (Catena-X)**<br>**'21 Catena-X** Automotive Network e.V. founded | **Commercialization phase**<br>• Cofinity-X established | **Factory-X launched**<br>• Manufacturing-X lighthouse project<br>• Linked to DPP/ESPR regulations | **Multi-layer ecosystem expansion**<br>• Data spaces expand across sectors, including Aerospace-X and Chem-X<br>• DPP (Digital Product Passport) integrates regulation and data sharing<br>• IDSA/IM-X advance international standardization of rules and architectures | |
| **Japan – Public** | | | **DFFT proposed**<br>• '19 Prime Minister Abe proposes DFFT at Davos<br>DFFT: Data Free Flow with Trust | **building support structures for DFFT**<br>• '21 Digital Agency established<br>• '22 METI DFFT study group report on cross-border data transfers | **Ouranos Ecosystem begins**<br>• Ouranos Ecosystem announced<br>• Development and demonstration begin under NEDO programs | **Ouranos Ecosystem commercialization**<br>**• Battery traceability service starts** (operated by ABtC)<br>• METI trust study group | **Architecture renewal and public-private framework**<br>• IPA/DADC releases ODS-RAM white paper<br>**• Japan Digital Ecosystem Partnership (JDEP) established** | **Alignment with national growth strategy**<br>• 17 strategic growth areas selected<br>**Policies and roadmaps for AI/semiconductors and digital/cybersecurity**<br>• GENIAC promotes AI development and AI readiness |
| **Japan – Private** | | | | | **RRI research and study**<br>• Research and assessment of EU and Catena-X trends<br>• Industrial data-sharing use cases examined<br>→ 2024 Monozukuri White Paper | **Keidanren proposals**<br>• Industrial Data Spaces Study Group launched<br>• First proposal: Toward Building Industrial Data Spaces | **From proposals to implementation**<br>• Second Keidanren proposal<br>• JEITA × JDEP joint session at CEATEC 2025<br>• Preparations for JEITA Digital Ecosystem Committee | **Practical steps toward scale**<br>• CMP consortium begins operations<br>**• JEITA Digital Ecosystem Committee established** |

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# JDEP: Overall Vision for Building Digital Ecosystems

JDEP Japan Digital Ecosystem Partnership




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# Why Scale Industrial Data Spaces?

## Company-level improvements alone can no longer sustain competitiveness

Environmental regulations, supply-chain disruptions and geopolitical risks are rapidly increasing **challenges that no single company** can solve.

CO2 reduction requires action across the entire supply chain, from procurement and production to logistics and sales, not just within a company's own factories.

JEITA INSIGHT | Japan Electronics and Information Technology Industries Association

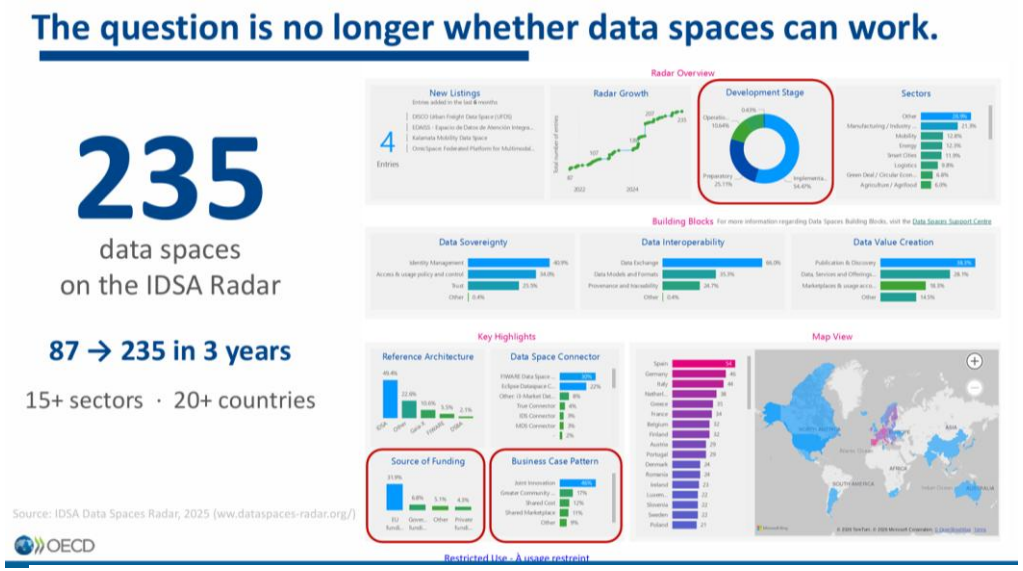
## The economics of specialization and connection: Increasing returns from symbiotic ecosystems

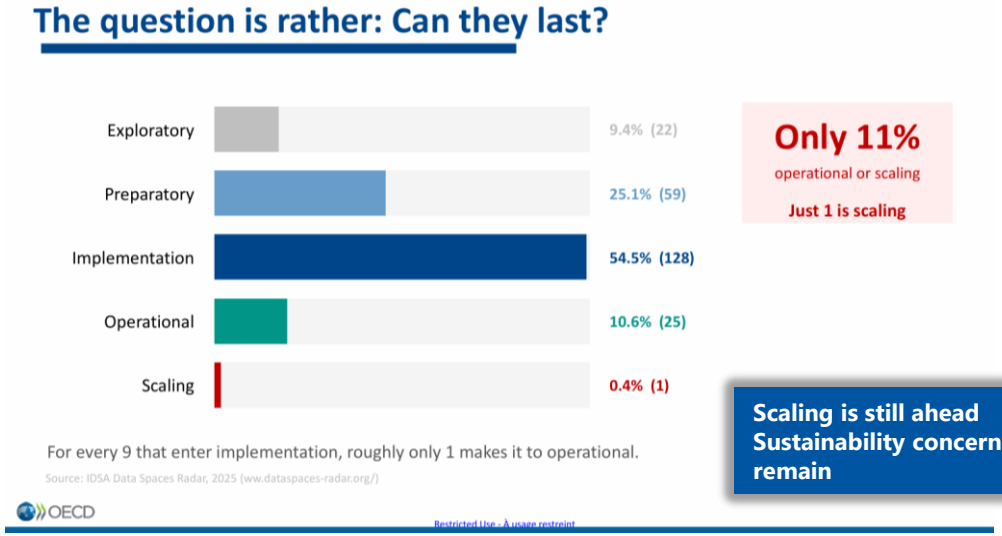
1. Leveraging national comparative advantages (special economic zones and taxation)
   → Substantially lower total costs
2. **Specialization** through division of labor (innovation)
   → Focus technology development on core areas
3. **Large-scale investment** across the ecosystem
   → Lower own investment as other firms invest
4. Symbiotic connections among participants
   → **Network effects**: driving innovation together

https://merc.e.u-tokyo.ac.jp/shintaku/lecture/strategy/lecture/11_OgawaOpen&Close.pdf

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# Industrial Data Spaces: Scaling Status and Challenges



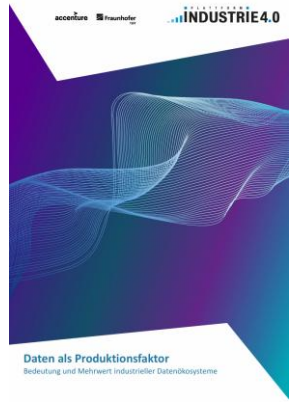




**Scaling is still ahead**
**Sustainability concerns remain**

[Data Spaces Symposium 2026 – Scaling cross-border data ecosystems .]

**Data as a Factor of Production**
**Significance and Added Value of Industrial Data Ecosystems**
Plattform Industrie 4.0 Report

https://www.plattform-i40.de/IP/Redaktion/DE/Downloads/Publikation/2026-pi40-daten-als-produktionsfaktor.html




## Technical and regulatory foundations exist, but economic potential remains underutilized

## Five barriers to scaling

1. Insufficient data quality and digital maturity among participants
2. Uncertain long-term operations, funding and governance
3. Concerns about one-sided dependency (lack of trust)
4. Unclear or delayed economic benefits, especially for SMEs
5. Competition from simpler alternatives, such as centralized platforms

## A value-sharing mechanism is essential

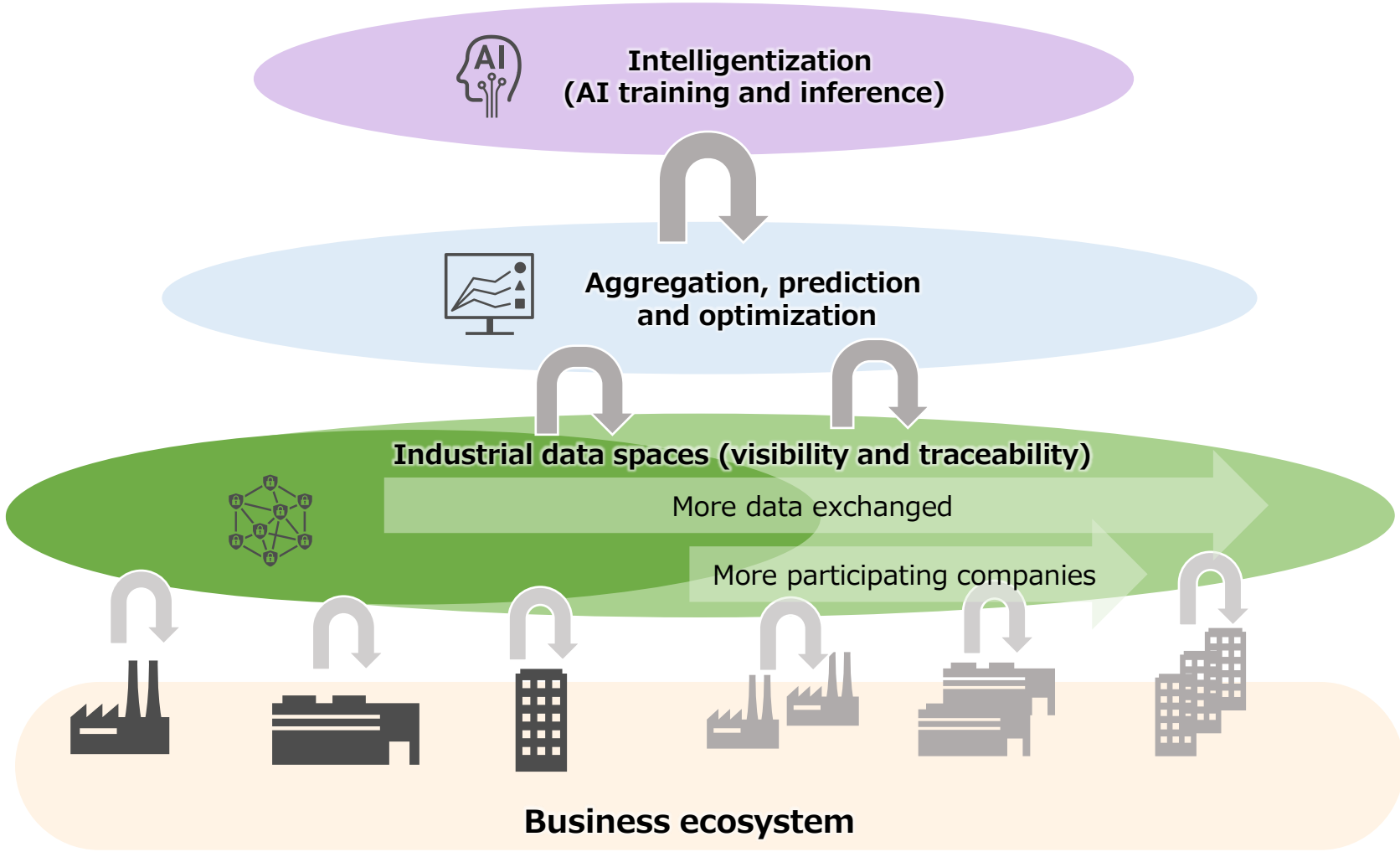
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# Industrial Data Spaces: Directions for Scaling

Industry-wide collective intelligence (e.g., sharing tacit knowledge)

Industry-wide DX (e.g., major incident response)

Operational efficiency within firms (e.g., environmental compliance)




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# Directions for Scaling Industrial Data Spaces (1)

## Traceability of Chemicals in Products

Oct. 2026–

CMP Consortium

CMP - Chemical and Circular Management Platform

## Battery CFP Traceability

May 2024–

Automotive and Battery Traceability Center

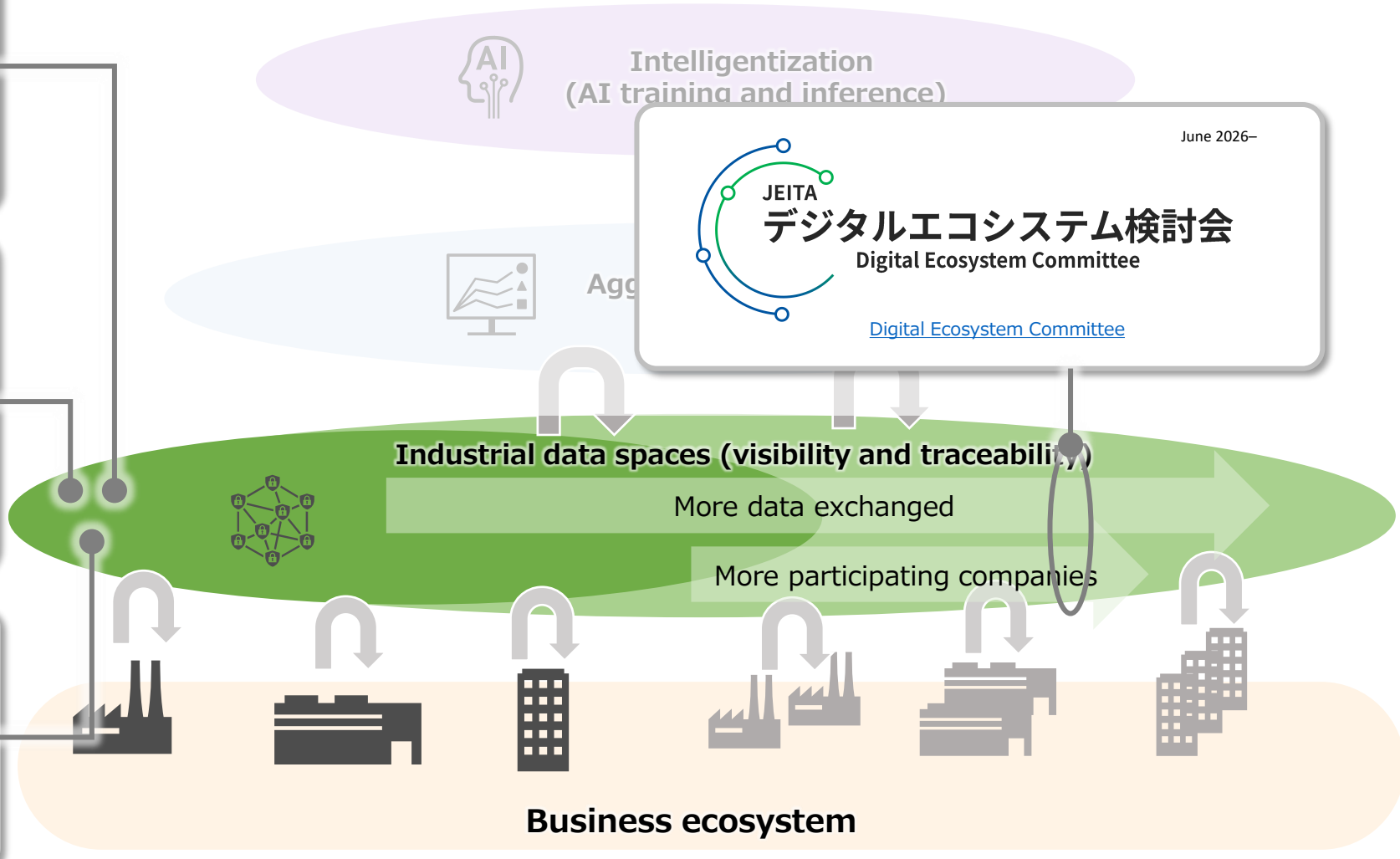
Automotive and Battery Traceability Center (ABtC)

## Distributed Data Management Technology Platform

Apr. 2026–

Open Data Spaces™

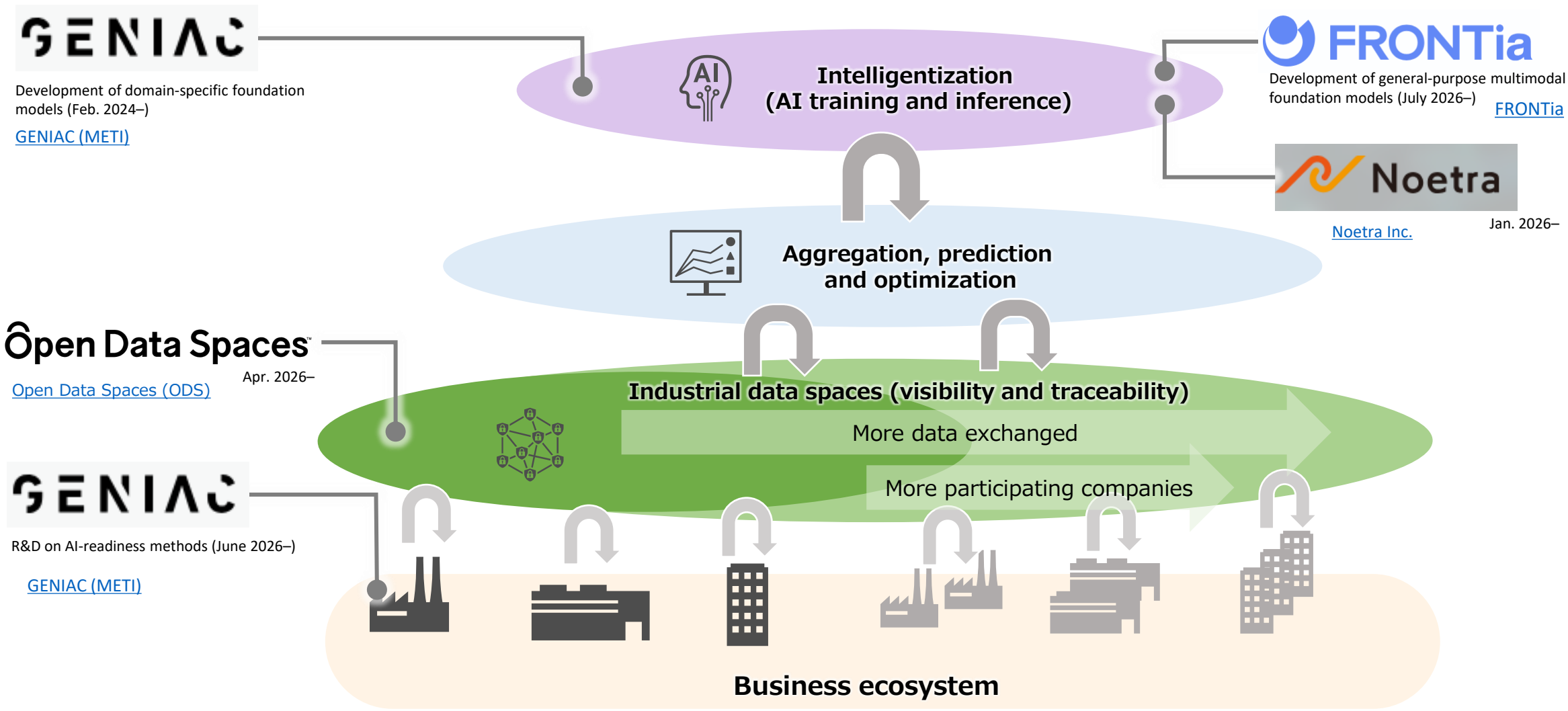
Open Data Spaces (ODS)




JEITA: Japan Electronics and Information Technology Industries Association

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# Directions for Scaling Industrial Data Spaces (2)




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# Scaling Industrial Data Spaces: (1) × (2)

| Data use | Low confidentiality | High confidentiality | Low confidentiality | High confidentiality |
|---|---|---|---|---|
| AI training and inference | Product Information AI | | Industrial AI (R&D, design, production, QA, maintenance) | |
| Aggregation, prediction and optimization | Industry CO2 emissions calculation and analysis<br>Product lifecycle optimization<br>Circular economy planning | Quality/vulnerability analysis and prediction<br>Cross-company design optimization | Supply-demand and logistics optimization<br>Supply-chain optimization for economic security | Cross-company capability search and trading (design, production) |
| Visibility and traceability | CO2 emissions traceability<br>CMP traceability<br>BPP/DPP compliance<br>Traceability for CE | Product quality traceability<br>Product vulnerability traceability | Cross-company resource sharing (logistics, renewable energy) | Bilateral capability verification and sharing |
| | Product data | | Business activity data | |

**Inter-company shared data**




Industrial Data Sharing Action Group Report 2025




Industrial Data Sharing Action Group Report 2023

BPP: Battery Passport, CFP: Carbon Footprint, DPP: Digital Product Passport, CMP: Chemical and circular Management Platform, CE: Circular Economy, SC: Supply Chain

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# Example: Business Activity Data × Optimization
# An Ecosystem for Freely Trading Company Capabilities

**Data ecosystem**

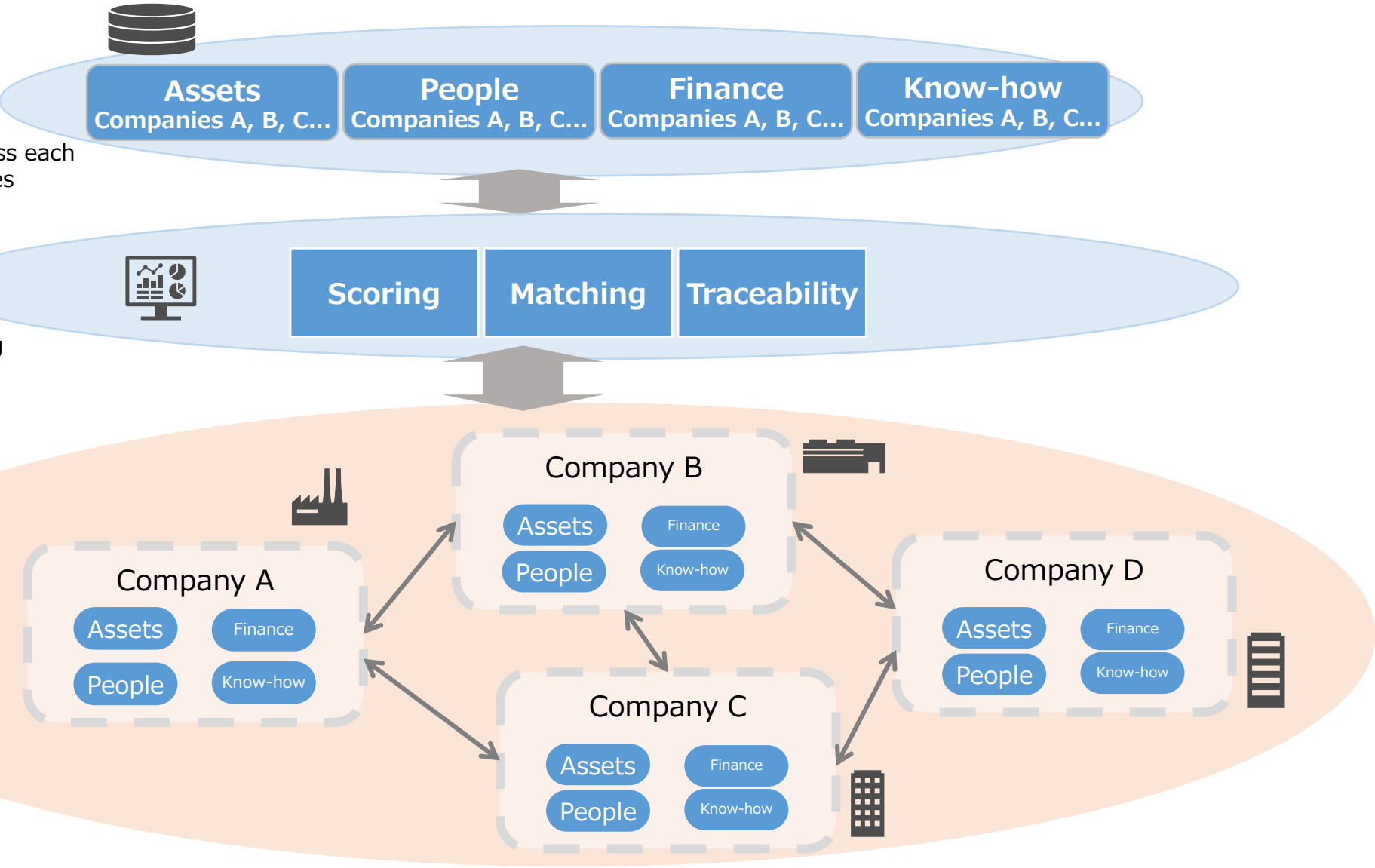
Data needed to assess each company's capabilities

**Digital ecosystem**

A digital platform enabling flexible capability trading

**Business ecosystem**

Assess each company by function; freer capability trading increases overall value, including for SMEs




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