



EU-JAPAN DIGITAL WEEK 2025



31 MARCH – 7 APRIL, 2025



TOKYO, JAPAN

THE EU-JAPAN DIGITAL WEEK IS ORGANISED AS PART OF THE EU-JAPAN DIGITAL PARTNERSHIP



Toward Global Dataspaces

越塚 登 / KOSHIZUKA, Noboru

The University of Tokyo / Data Society Alliance

IDSA Japan Hub Coordinator (IDSA Ambassador)



Noboru Koshizuka

越塚 登

Professor, The University of Tokyo
Chair, Data Society Alliance
IDSA Japan Hub Coordinator (IDSA Ambassador)

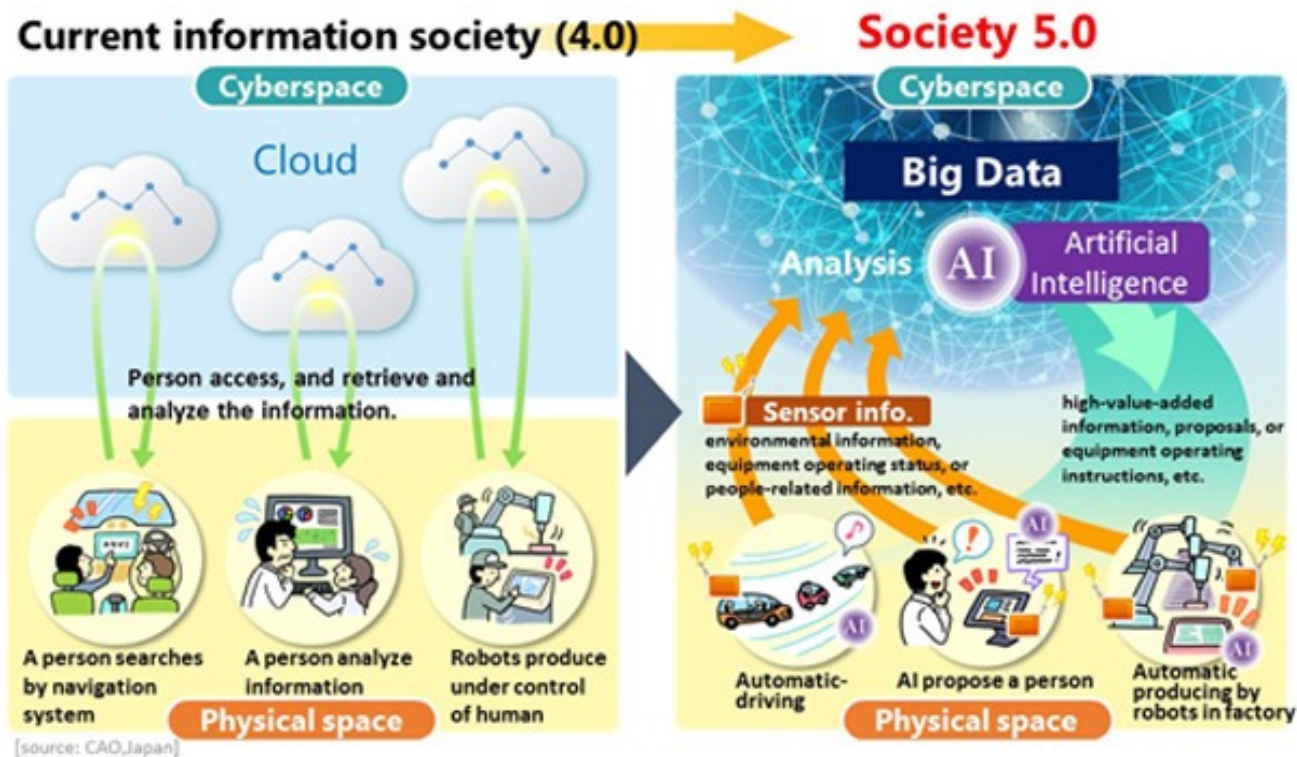
Director-General, Smart City Social Implementation Consortium
Chair, Green x Digital Consortium, JEITA
Chair, Weather x Business Consortium
Member, National Strategy Special Zone Advisory Council, Cabinet Office
Member, Digital Society Initiative Committee, Digital Agency
Member, Communications and Information Technology Council, MIC
etc.

PART 1

Society 5.0 and Dataspaces

Society 5.0 = Japan's Vision of Future Digitalized Society

Cyber-Physical World



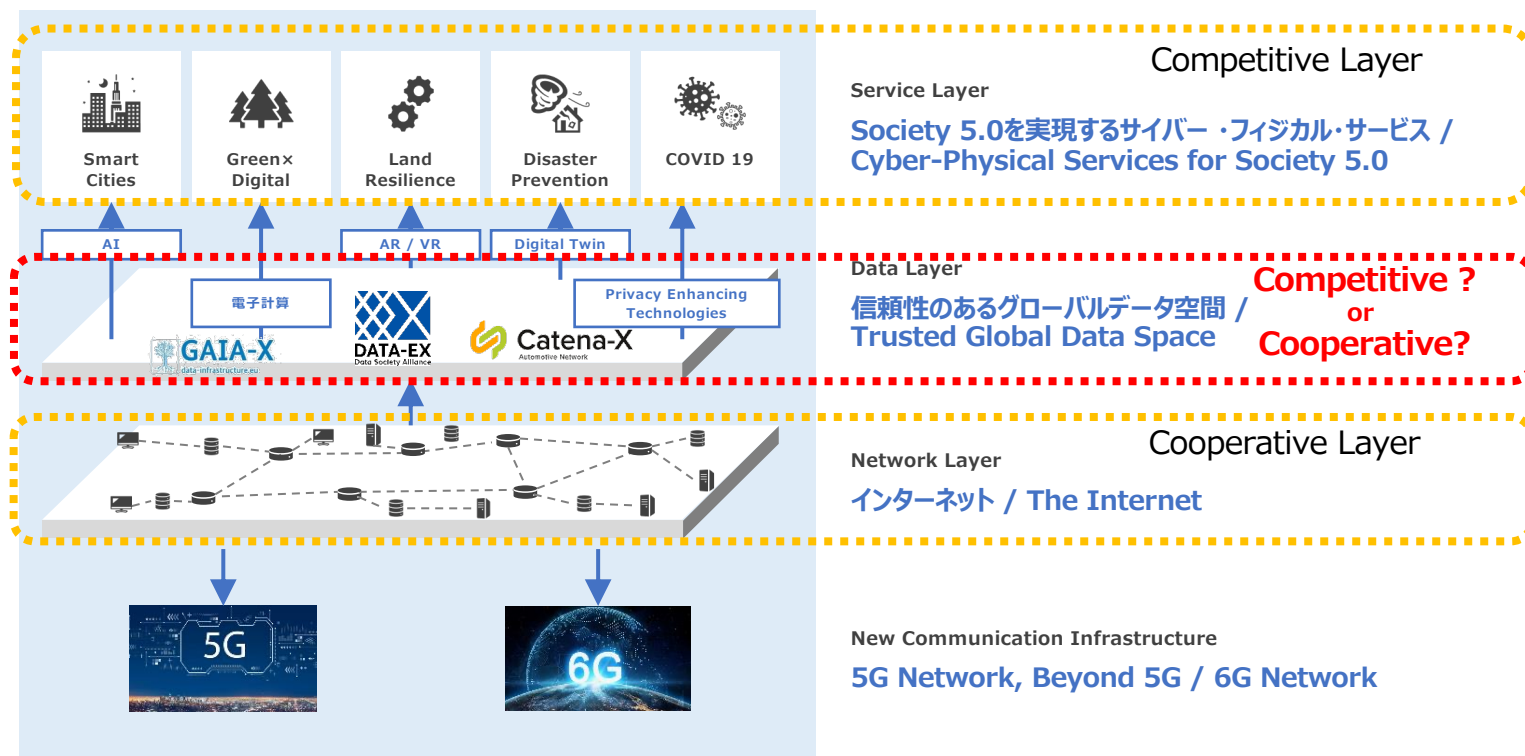
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"Data Space": Next Generation Cyber-Infrastructure in the era of Society 5.0



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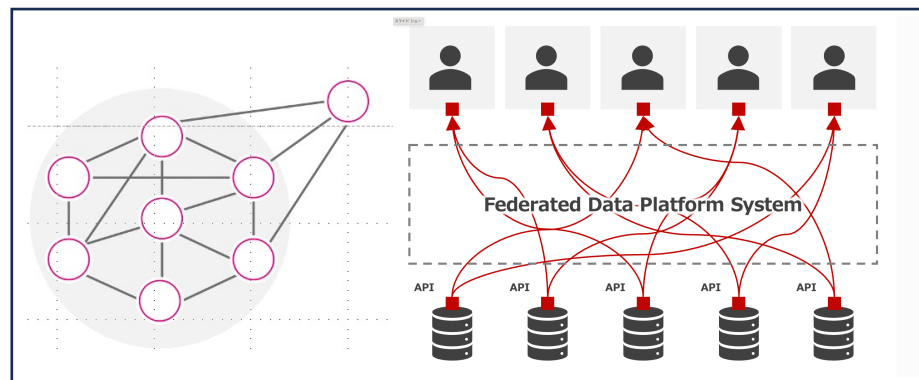
What is“Data Spaces” ?

■ A mechanism to realize the vision of...

- ▶ data sharing/distribution
- ▶ data-driven economy
- ▶ governance rules.

■ A mechanism of...

- ▶ digital technology
- ▶ organizations



■ Important concepts

- ▶ Data sovereignty
 - ◆ Data holders can control their data by themselves.
- ▶ Trust/Reliability
 - ◆ Authenticity of data providers and data users is guaranteed.
- ▶ Governance rules
 - ◆ Control the flow/usage of data in compliance with local laws
- ▶ Federated architecture
 - ◆ not centralized
 - ◆ data are not collected into one place
- ▶ Equality
 - ◆ Everyone can join with simple technologies.
- ▶ Openness
 - ◆ Everyone can join from anywhere in the world.
- ▶ Interoperability
 - ◆ Disclose data silos

PART 2

My Dataspaces Initiatives



2-1 DSA/DATA-EX

DATA-EX/DSA (Data Society Alliance)

<https://data-society-alliance.org/>

一般社団法人データ社会推進協議会
DATA-EX
 Amount of Data Created Daily (2024)
 explodingtopics.com/.../data-generated-per-d...

Language JP 会員ログイン 入会案内

「DATA-EX」とは トピックス DSAについて 委員会活動 活動ライブラリー お問合せ 検索

HOME > 「DATA-EX」とは

「DATA-EX」とは

DATA-EXとは、データ連携に係る既存の取組が協調した「連邦型の分野を超えたデータ連携」を目指すプラットフォームです。

この取り組みでは、[SIP分野間データ連携基盤事業](#)で開発したデータカタログ検索機能など分野間データ連携基盤技術（コネクタ）に加え、原本性保証・品質評価などの共通機能、データ管理機能、統計、解析、可視化などのデータ利用機能などの機能開発を行います。

DATA-EXは、国内のデータ連携のハブとなるとともに、GAIA-X等の国際的なデータ連携基盤との相互運用を見据え、海外の主要団体とも議論を重ね、社会実装を進めるものです。




■ DATA-EX

- ▶ DATA-EX is the collective name for the efforts of the Data Society Alliance (DSA) to realize cross-domain data exchange.
- ▶ The DATA-EX cross-domain data exchange platform (hereinafter referred to as "DATA-EX"), which is at the core of these efforts, is a technical and social platform that enables the discovery and use of data across fields.

■ Vision

- ▶ “World of Data-Driven Innovation”

■ Mission

- ▶ Establish Data Driven Society with democracy of innovation
- ▶ Develop data-distribution infrastructure for the world
- ▶ Accelerate social implementation with Technology and Service development
- ▶ Collaboration and Contribution to the World

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Organization of Data Society Alliance (DSA)

A Members



B Members



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International Collaboration of DSA



MoU with FIWARE Foundation



MoU with IDSA



MoU with GAIA-X



Conclusion of Collaboration Agreement with The International Data Spaces e. V. (IDSA)
We agree on international cooperation for international standards to realize a data society.

Data Society Alliance.org
Noriaki Okui

On October 10, 2021, the Data Society Association (DSA) signed a collaboration agreement with The International Data Spaces, e. V. (IDSA), a leader in promoting standards for data collaboration in Europe.

In this way, both organizations will contribute to creating and developing a data society that will ensure reliable data sharing by all stakeholders under their sovereignty to realize a growing data economy.



MoU with Manufacturing-X



MoU with Organization for Data-driven Application (ODA), Taiwan



MoU with Institution of Information Industry (III), Taiwan



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2-2 The University of Tokyo

**ITDT: International Testbed of Dataspace
Technologies**

IDSA Japan Hub Inauguration Ceremony, 2023



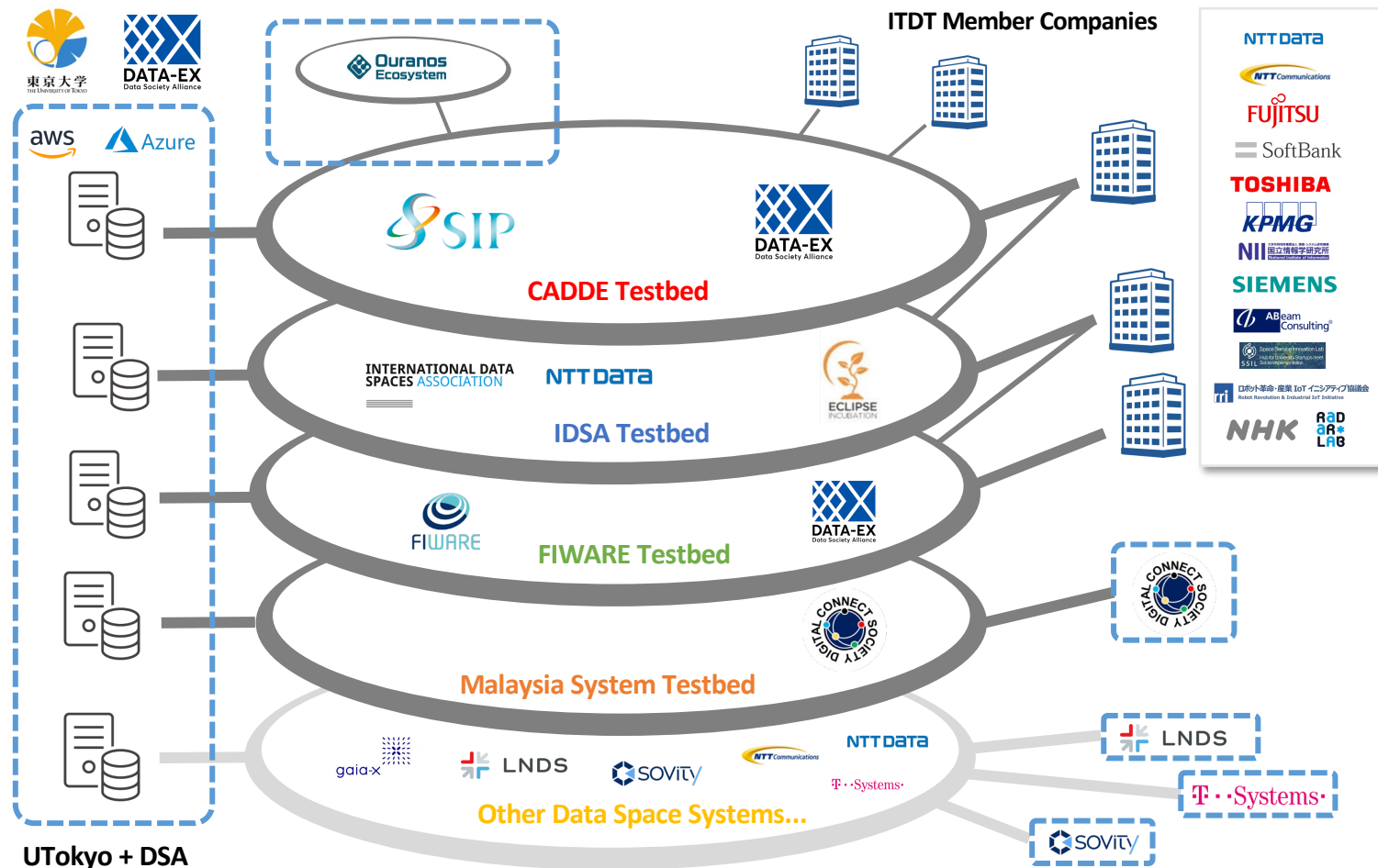
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International Testbed of Dataspaces Technology, The University of Tokyo



New International Collaboration by IDS Japan Hub



IDS Japan Hub

University of Tokyo, International Testbed Members





2-3 International Collaboration

Data Spaces Week 2024 (Oct. 7~11, 2024, UTokyo, Japan)



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International Open Forum on Data Society

<https://iofds.org/>





International Open Forum on Data Society

The International Open Forum on Data Society is a group of people who share the same values and contribute to the creation of global standards and solutions which help to transform the digital world.

Members of IOFDS

INTERNATIONAL DATA SPACES ASSOCIATION	BDV BIG DATA VALUE ASSOCIATION	FIWARE FOUNDATION	gaia-x
DAWEX	DATA-EX Data Society Alliance	DLR	Atsumi & Sakai
東京大学 The University of Tokyo	SIEMENS	NTT DATA	MITSUBISHI ELECTRIC Changes for the Better
IPA	EverySense Information Harvesting	Robot Revolution & Industrial IoT Initiative	FUJITSU
LNI4.0	C to E Consultancy Services	docomo business	KENAMATS

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International Open Forum on Data Society <https://iofds.org/>



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Japan-Luxembourg Collaboration (June 11~13, 2024)

NTT DATA



LNDS



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Collaboration on Data Space between Japan and Switzerland



Workshops

- ▶ Purpose: In cooperation with the Koshizuka Lab. of U Tokyo and the Swiss Federal Government (スイス連邦政府) (Directorate of International Law, Swiss Embassy to Japan and Federal Chancellery), this workshop will be held to discuss the possibility of collaboration on Data Space area between Japan and Switzerland, such as joint research and demonstrations. The workshops will introduce the data space initiatives in Japan and Switzerland and discuss possibility of collaboration between the two countries.
- ▶ Plan
 - ◆ Session 1: Data Space Initiatives in Japan (August 23)
 - ◆ Session 2: Data Space Initiatives in Switzerland (September)
 - ◆ Session 3: Proposals and discussion on areas of collaboration (September / October)

1st Session of the Workshop Series

- ▶ Date and Time Friday August 23, 18:00-20:00 JST / 11:00-13:00 CEST
- ▶ Venue Online (zoom)
- ▶ Program
 - ◆ Data Space Initiatives in Japan (Prof. Noboru Koshizuka, The University of Tokyo)
 - ◆ International Testbed of Dataspaces Technology (Prof. Hirotsugu Seike, The University of Tokyo)



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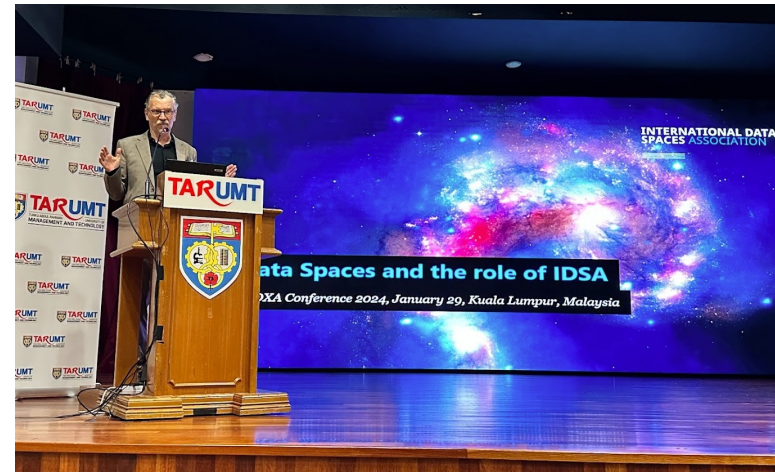
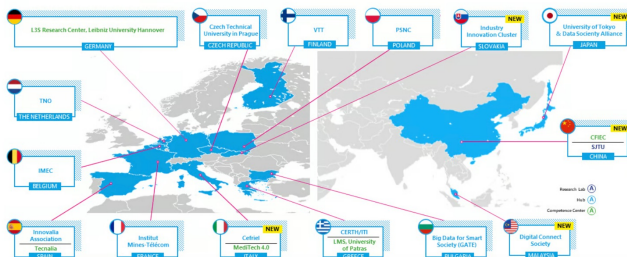
Collaboration with IDSA Malaysia Hub (Jan. 29, 2024)



Unlocking the Future: International Data Spaces Association (IDSA) Hub Malaysia Inauguration

IDSA Hubs, Competence Centers & Labs

Our partners are building momentum across Europe and around the world



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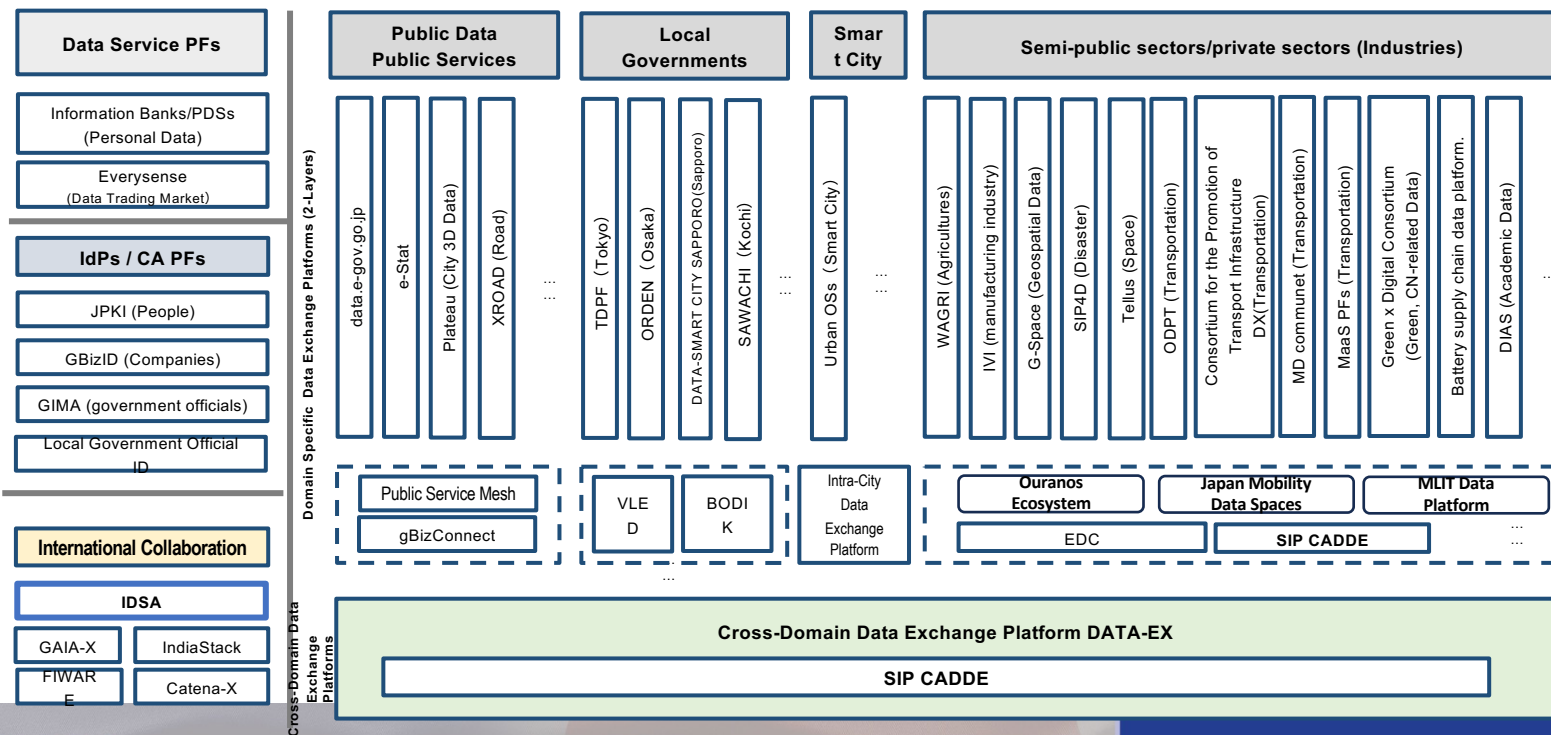


PART 3

New Dataspace Initiatives in Japan

Overall Status of Data Platform Initiatives in Japan

Prepared on the basis of the 4th (in 2022) Data Strategy Promotion WG document and other documents



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Automotive and Battery Traceability Center

<https://abtc.or.jp/en>



Automotive and Battery
Traceability Center



Automotive and Battery
Traceability Center

About Services Cc

Boosting industry-wide competitiveness
through safe and secure data integration



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Automotive and Battery Traceability Center
Association, Inc. (ABTC)

Chairperson **Fujiwara Teruyosh**

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Japan Mobility Data Space: JMDS

<https://mobility-data-space.jp/>



The screenshot shows the homepage of the Japan Mobility Data Space (JMDS). At the top, there is a navigation bar with links: お知らせ (Notice), JMDSとは (What is JMDS), データカタログ (Data Catalog), SIPとは (What is SIP), ご挨拶 (Greeting), and お問い合わせ (Contact Us). A language selector shows 'JA' (Japanese). The main heading is 'Japan Mobility Data Space' with a subtitle '産官学による日本初のスマートモビリティプラットフォーム' (Japan's first smart mobility platform by industry, government, and academia). Below this, it says 'Japan Mobility Data Space プロジェクト始動' (Japan Mobility Data Space Project Launch). A date notice at the bottom left states '2024.6.21 データカタログサイトメンテナンスのお知らせ' (Notice of data catalog site maintenance on 2024.6.21). A button '一覧を見る' (View list) is visible. The 'ABOUT US' section at the bottom describes the platform as a place to collect and utilize various mobility and traffic information to support the creation of mobility innovation in Japan.

すべての移動を、より良く、もっとやさしく。

Japan Mobility Data Space

産官学による日本初の
スマートモビリティプラットフォーム
Japan Mobility Data Space
プロジェクト始動

2024.6.21 データカタログサイトメンテナンスのお知らせ

一覧を見る

ABOUT US

様々な移動・交通情報を集約、活用可能に。
日本のモビリティイノベーションの創出を支援。

Japan Mobility Data Space (JMDS) は、

ご挨拶

この取り組みは、自律分散型データ連携基盤（データスペース）を通じて、都市や地域のモビリティに革新的なアプローチをもたらし、持続可能な社会の実現に向けて重要な役割を果たすものです。私たちはこのデータスペースを通じ、モビリティデータの流通にとどまらず、コミュニティ形成のための重要なツールとして社会実装を目指し、産官学連携を通じて、持続可能なモビリティの未来を築いていきます。この取り組みが持つ意義を共有し、未来の持続可能なモビリティ社会の実現に向けて、一層の協力を心から願っております。



越塚登（こしづかのぼる）

東京大学 大学院情報学環・教授

1994年、東京大学大学院 理学系研究科 情報科学専攻 博士課程修了、博士（理学）。東工大助手、東大助教・准教授を経て、2009年より現職。一般社団法人データ社会推進協議会会長、一般社団法人スマートシティ社会実装コンソーシアム理事長、JEITA Green x Digitalコンソーシアム座長、気象ビジネス推進コンソーシアム会長など、さまざまな領域の研究に携わっている。コンピュータサイエンスを中心に、近年はIoTやデータスペース、スマートシティなどの研究・開発・社会実装に取り組んでいる。

Noboru Koshizuka

Professor, Interfaculty Initiative in Information Studies, The University of Tokyo
Ph. D. in 1994 from the Department of Information Science, Graduate School of Science, the University of Tokyo.

After working as an assistant at Tokyo Institute of Technology and as an associate professor at the University of Tokyo, he assumed his current position in 2009. He is involved in various areas of research, including Chair of Data Society Alliance, Chair of Smart City Social Implementation Consortium, Chair of JEITA Green x Digital Consortium, and Chair of Weather x Business Consortium. With a focus on computer science, in recent years he has been involved in research, development and social implementation of IoT, data spaces and smart cities.

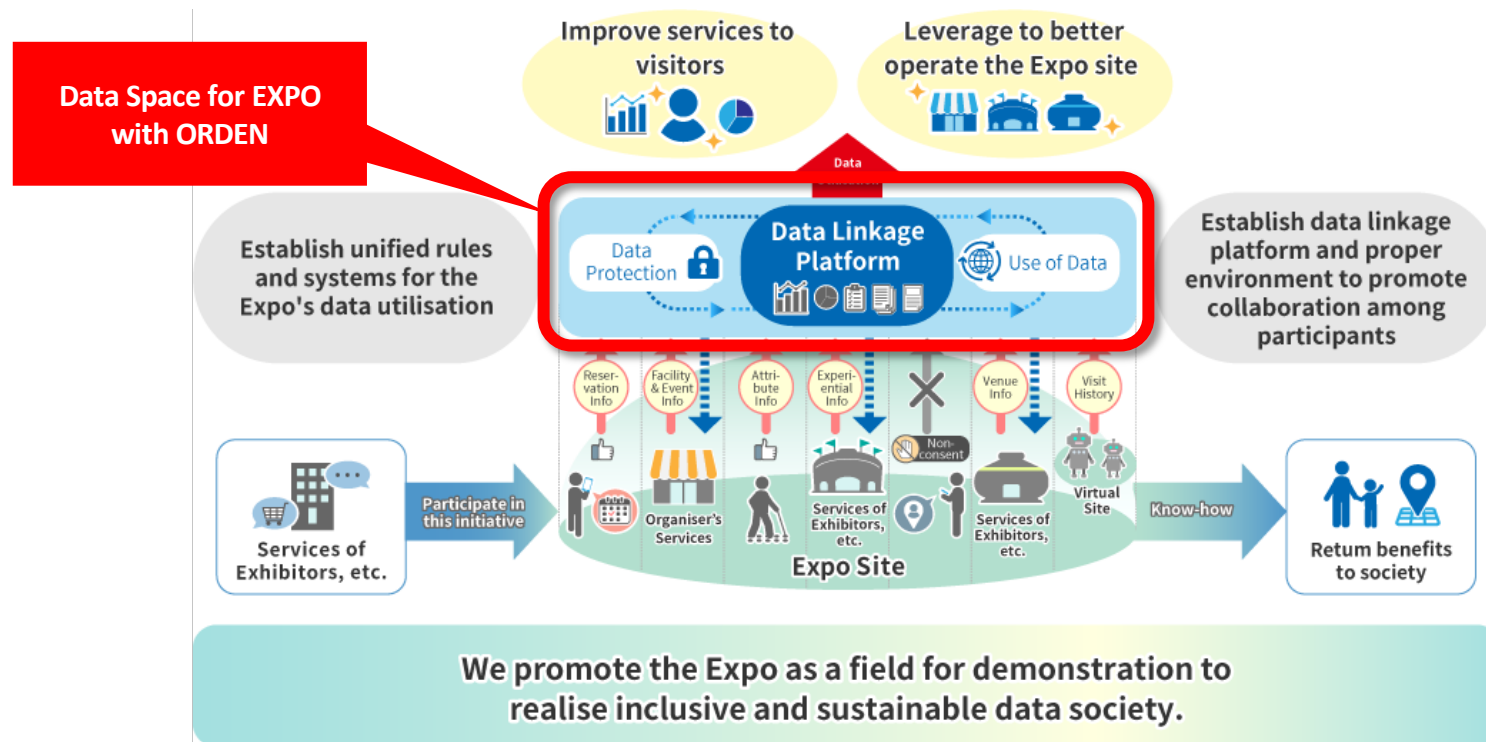
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Data Utilisation Initiatives in Expo 2025 Osaka



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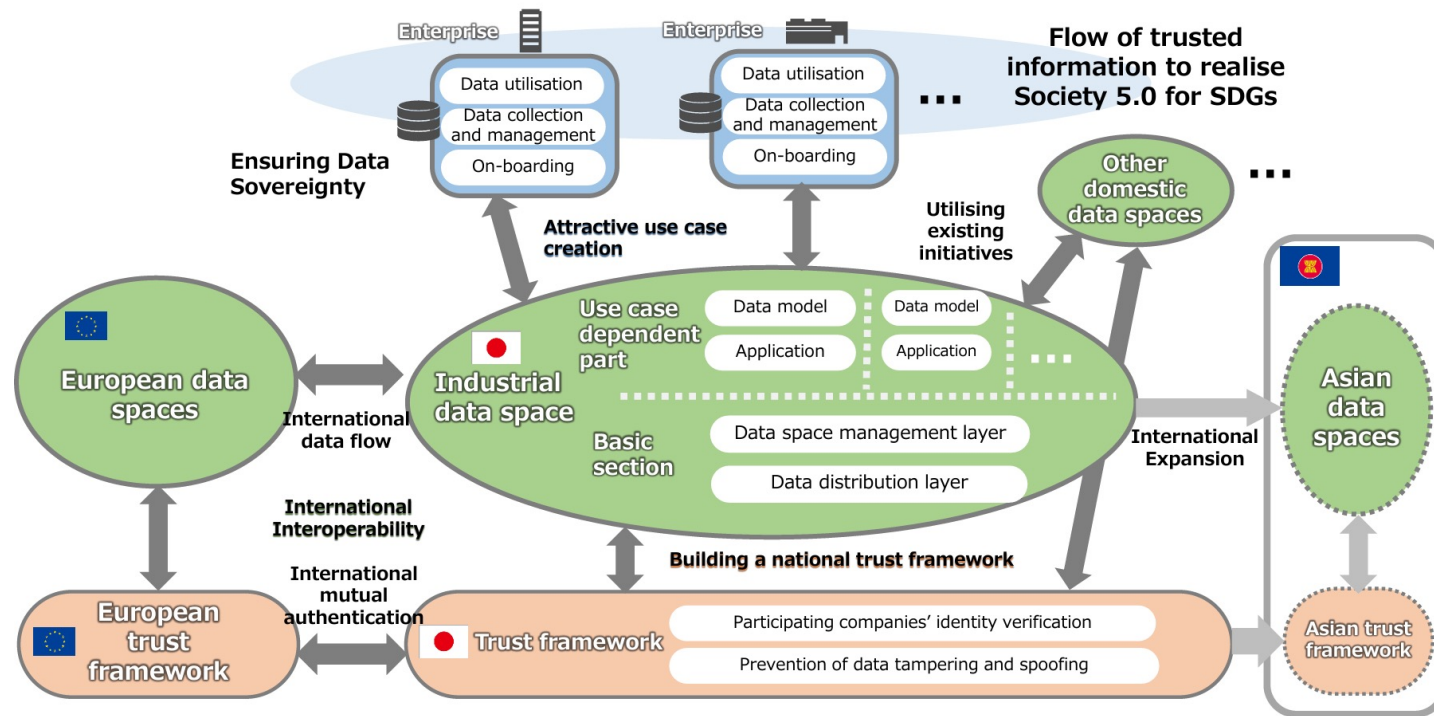
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"Towards the Construction of Industrial Data Spaces"

https://www.keidanren.or.jp/en/policy/2024/073_outline.pdf

Keidanren
Policy & Action



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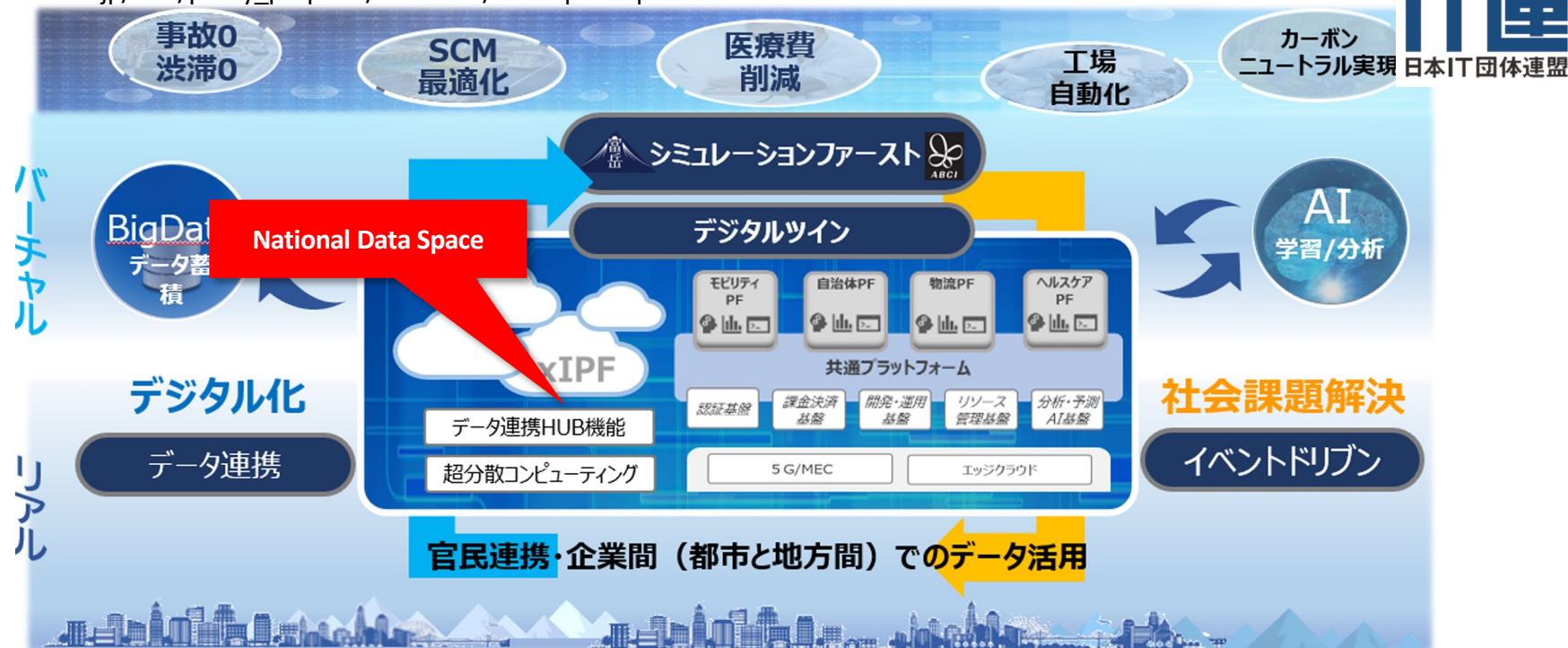
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“National Data Spaces” by Information Technology Federation of Japan

https://itrenmei.jp/files/policy_proposal/2023ver2/2023update.pdf



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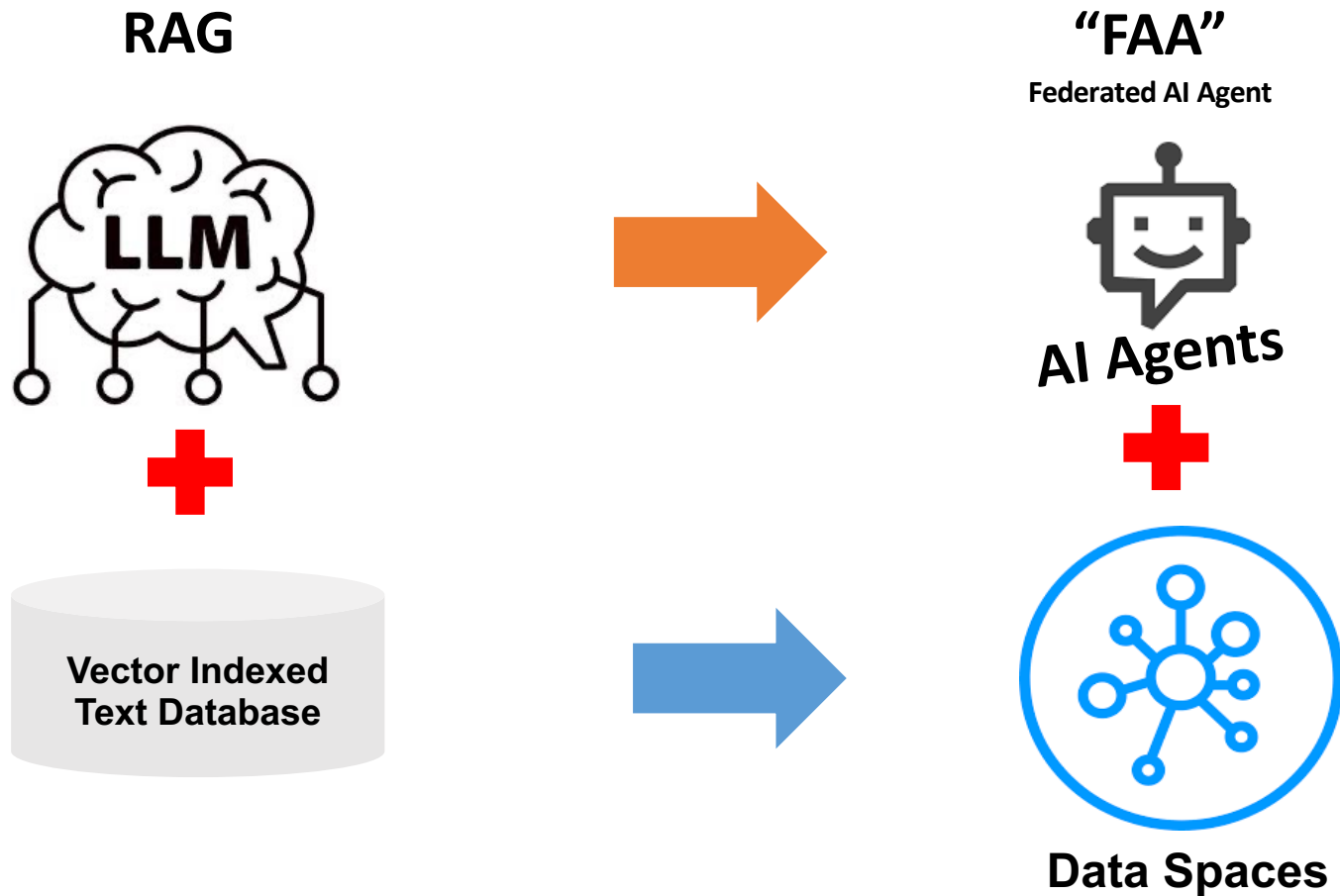


PART 4

F-RAG: AI + Dataspace

Study Trial at Koshizuka-Lab. U-Tokyo

“Federated AI Agent” [Koshizuka-lab, 2025]



What we can do with F-RAG (1)

Complex queries by Natural Languages...Enhancing findability of data

“Find the data for the calculation of CO2 emission of Product XDW1029381 ?”



Green Product Dataspace

“When does next bus arrive at this bus stop?”



Mobility Dataspace

Complex question What are the name and budget of the departments with average instructor salary greater than the overall average?

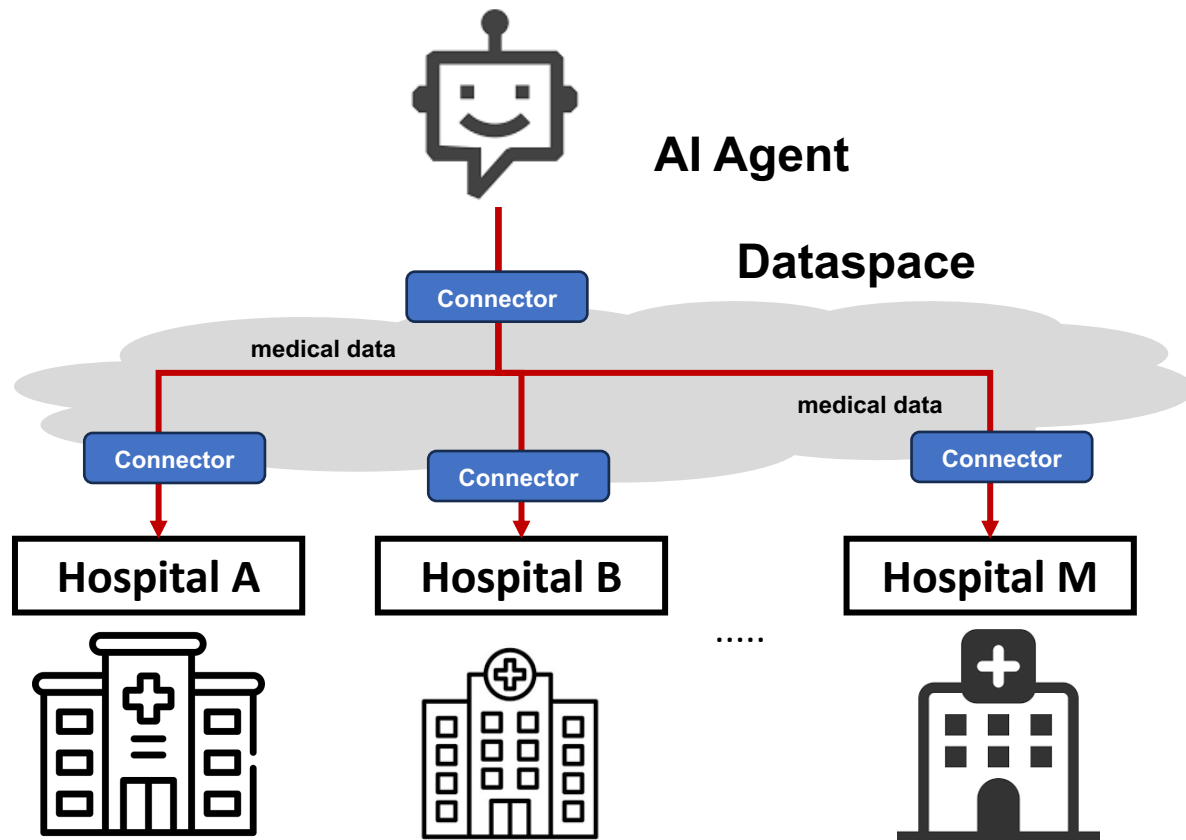
Searching data by investigating the contents of data



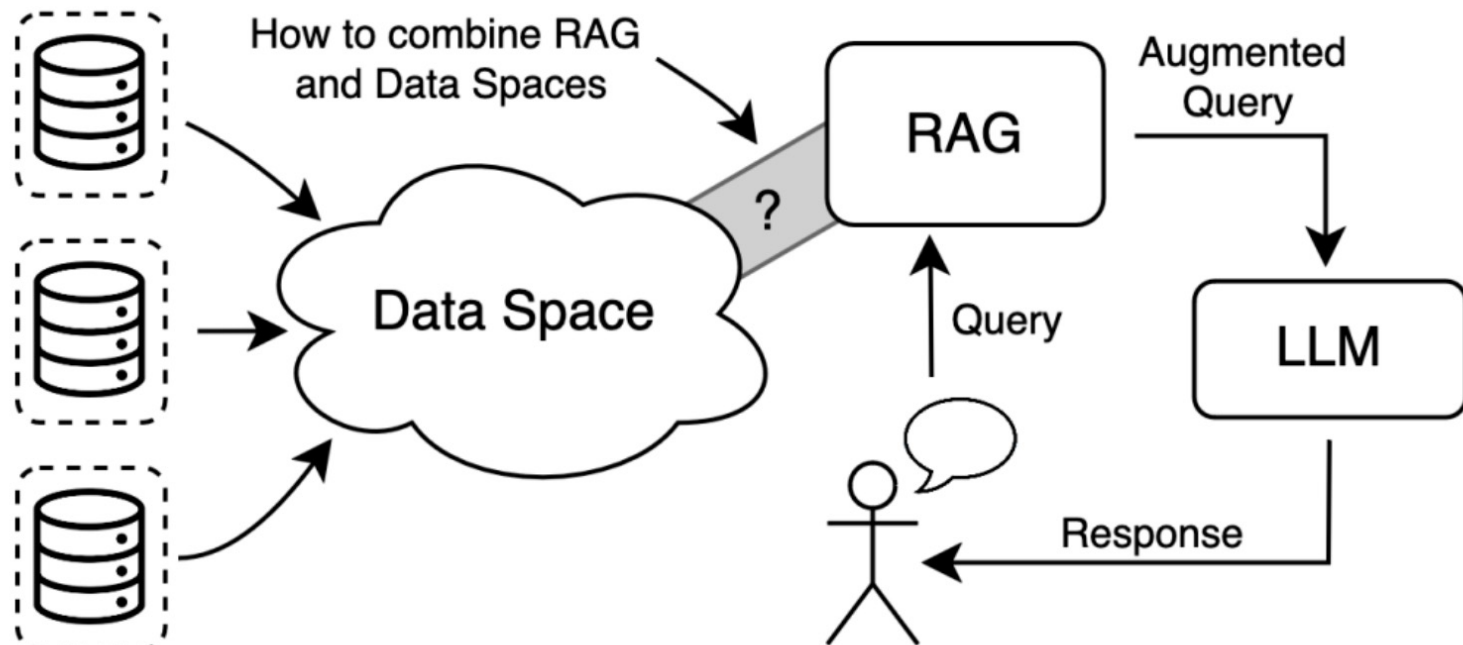
Private Dataspace of ERP

What we can do with F-RAG (2)

RAG/Fine Tuning with Multiple Collaborative Data Sources

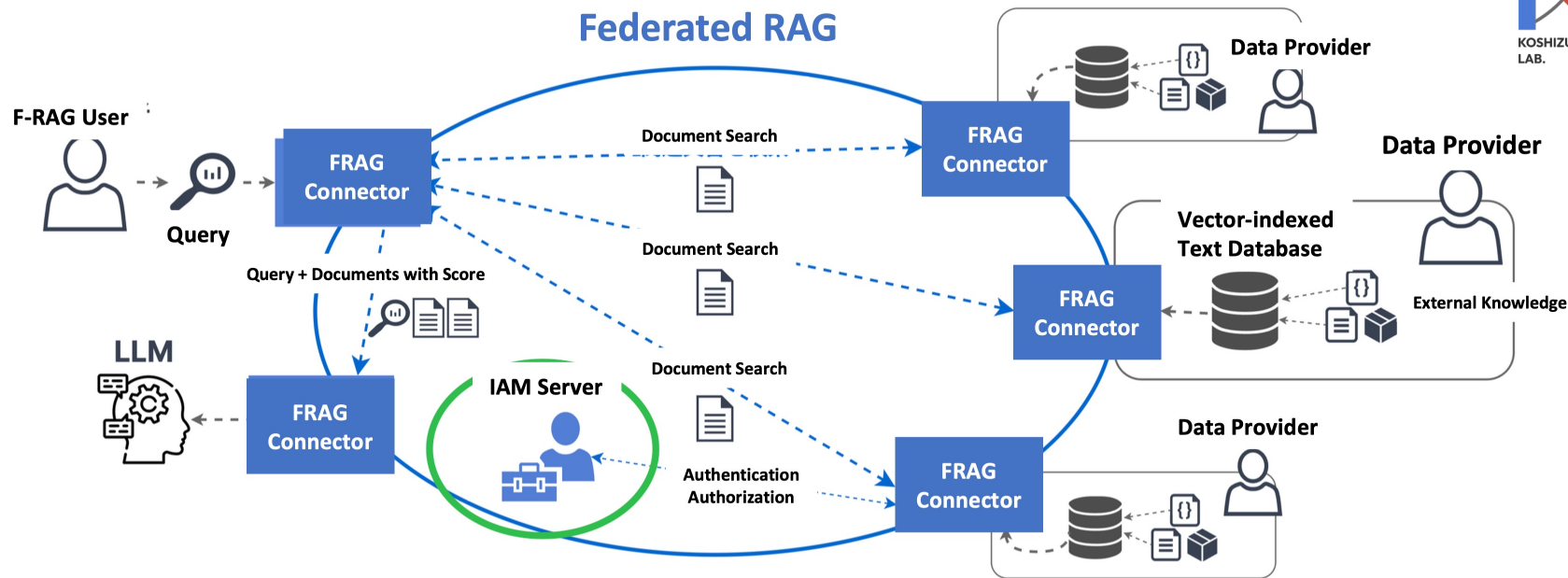


DS-RAG [Hermsen et al., 2024]





F-RAG (Federated RAG) [Matsunaga, 2024]



F-RAG Architecture

Benefits of “Dataspaces plus AI”

■ Dataspace is useful for AI (LLM)

- ▶ In Learning Phase
 - ◆ Learning from data sets from multiple collaborative organizations
- ▶ In Inferencing Phase
 - ◆ Inferencing with Databases (eg. **F-RAG**)
 - ◆ Dynamic Learning with Databases (eg. **F-RAG**)
 - ◆ Dealing with **Real-time** Information

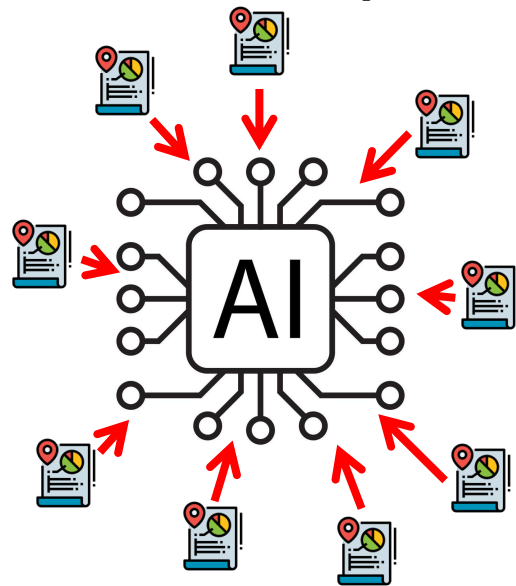
...

■ AI (LLM) is useful for Dataspace

- ▶ Enhancing findability of data
 - ◆ eg. **Data catalog** with LLM provide us natural language interfaces for searching data

...

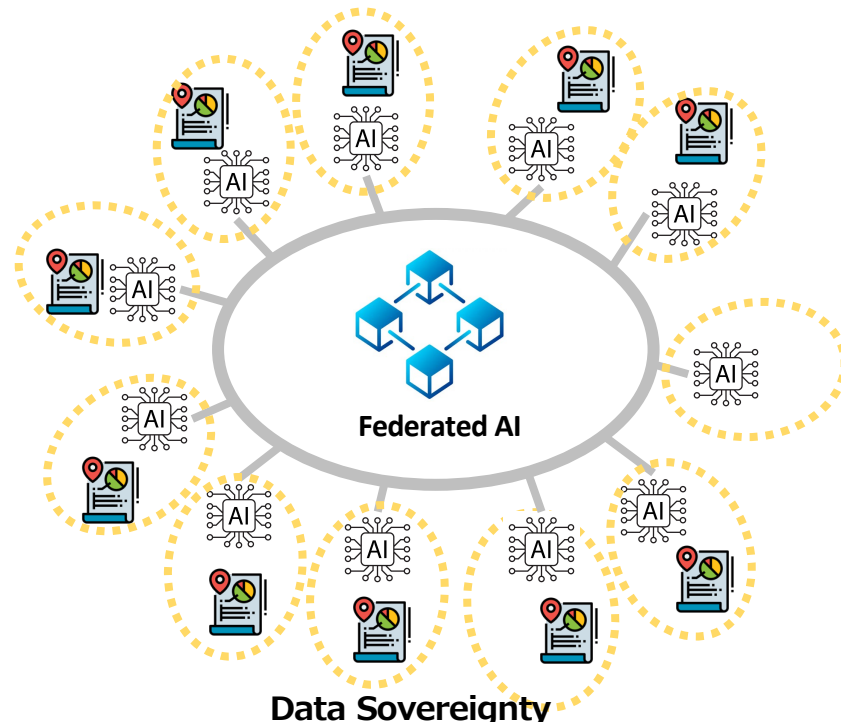
Future: From Data Spaces into “AI Spaces” [Koshizuka-lab, 2024]



Data Monopolization
Data Hegemony

Big General AI

VS.



Data Sovereignty
AI Space

Message

“**AI** is the most important stakeholder
of **dataspaces**.”

THANK YOU FOR YOUR ATTENTION!



Noboru Koshizuka / 越塚 登

noboru@koshizuka-lab.org



The EU-Japan Digital Week is an initiative under the EU-Japan Digital Partnership and is supported by the following projects and organisations

