



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

Data Spaces in the EU - Enabling Circular Economy

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CEO

FIWARE Foundation

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31 March – 7 April 2025 | Tokyo, Japan

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FIWARE – Powered by Community

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FIWARE vs FIWARE Foundation



Open source framework
that allow the management
of data from different
provenance and data
sharing across domains.

The use of FIWARE
components enables the
development of smart apps
and AI solutions.



Not-for-profit organization
to ensure that FIWARE Open
Source components are
aligned with standards.

As trusted organization, we
support the implementation
of collaborative Open Source
projects



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Why FIWARE

Curated Open Source components & reference architectures

Easily integrable components to build software platforms

Enables fast, cost-effective implementation of:

IoT-enabled smart solutions

Smart organizations

Supports Open Innovation Ecosystems (Data Spaces)

Providers can offer services to others

Organizations can integrate and consume external services

Community-Driven Standards Leadership

Contributes to the creation and evolution of open standards

Provides insights on integrating open standards

Ensures non-vendor locked, open standards & open source

Active Role in Global Initiatives

FIWARE Community and Foundation engage in standard-setting bodies:

W3C, ETSI, TM Forum, IDSA, Gaia-X



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FIWARE Community

9

FIWARE
Board of Directors

31

FIWARE Technical
Steering
Committee

5

Key Domains: AgriFood,
Cities, Energy, Industry,
Water



9000+

Developers using
FIWARE technologies



600+

Developers contributing
to FIWARE



46

FIWARE
iHubs



150+

Members'
Organizations



500+

Individual
Members



10+

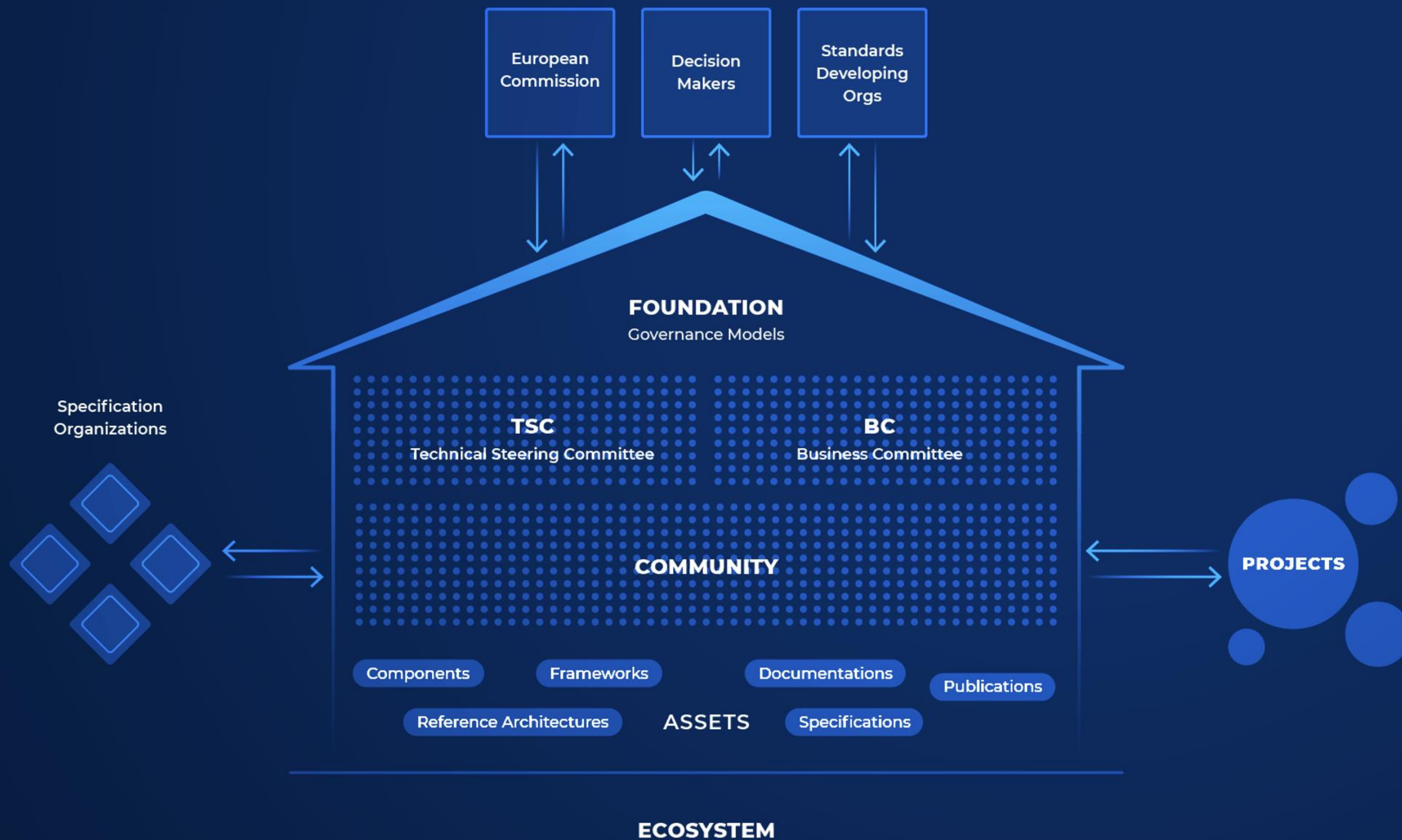
Global
Partnerships

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Data Spaces – Lets understand

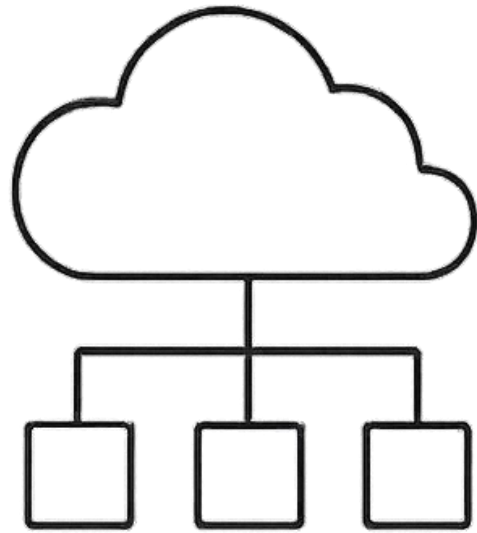
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Ecosystem of Interoperability built on agreed technology building blocks

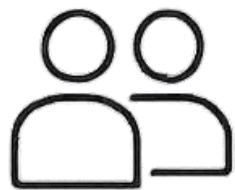


DATA EXCHANGE

Standard APIs and formats for integrating data services

TRUST & SOVEREIGNTY

Decentralized identity, verifiable access, and enforceable authorization policies



GOVERNANCE REQUIRED

Shared business, operational, and organizational agreements

Presence of a governance body for oversight



CROSS-DOMAIN APPLICABILITY

Data spaces support ecosystems beyond single sectors (e.g., smart cities)

Enables service exchange and co-creation of new data value chains across domains



More than just peer-to-peer data exchange – they are dynamic ecosystems

Involve:



Providers offering anything from datasets to complex service-based applications



Organizations extending their systems by consuming external services



End users directly accessing and using services

Support both machine-to-machine (M2M) and human-to-machine (H2M) interactions (B2B, B2C)

Require interoperability standards and governance rules for openness and dynamic participation



FIWARE's Contribution in Data Spaces



Data Spaces Business Alliance (DSBA)

Joint forces with BDVA, GAIA-X and IDSA in 2021
Technical Convergence v2.0: Minimum Viable Framework (MVF) enabling the creation of data spaces



Data Spaces Support Centre (DSSC)

Support action for coordination and support to the Common European Data Spaces

FIWARE leading the communication, standardization, data interoperability and value creation



FIWARE Data Space Connector

Bundle of components and services deployed at each data space participant to engage in a data space.

Evolution of concept from IDS RAM 4.0

DSBA-complaint



Circular Economy & Challenges

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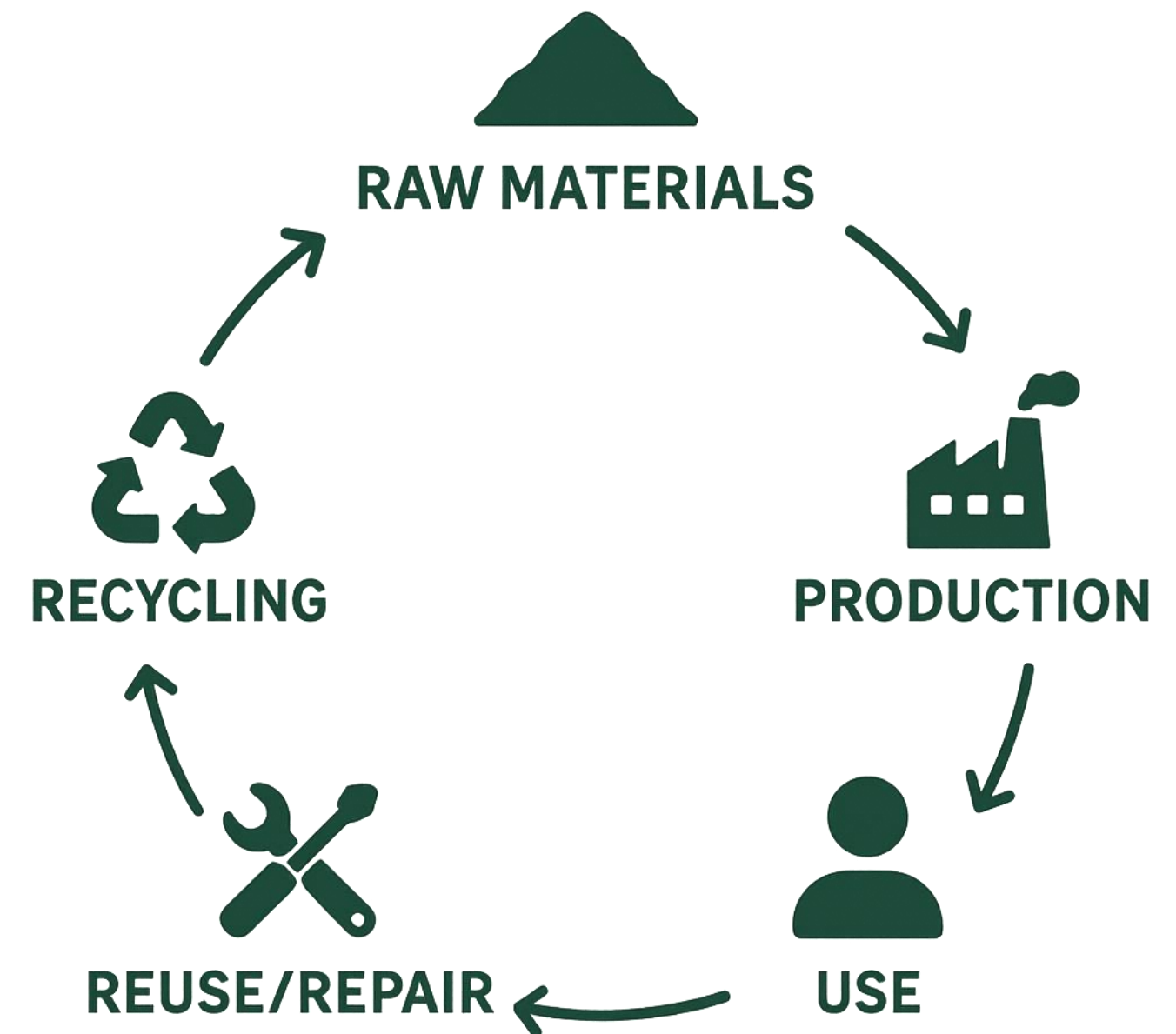
Circular Economy

Definition:

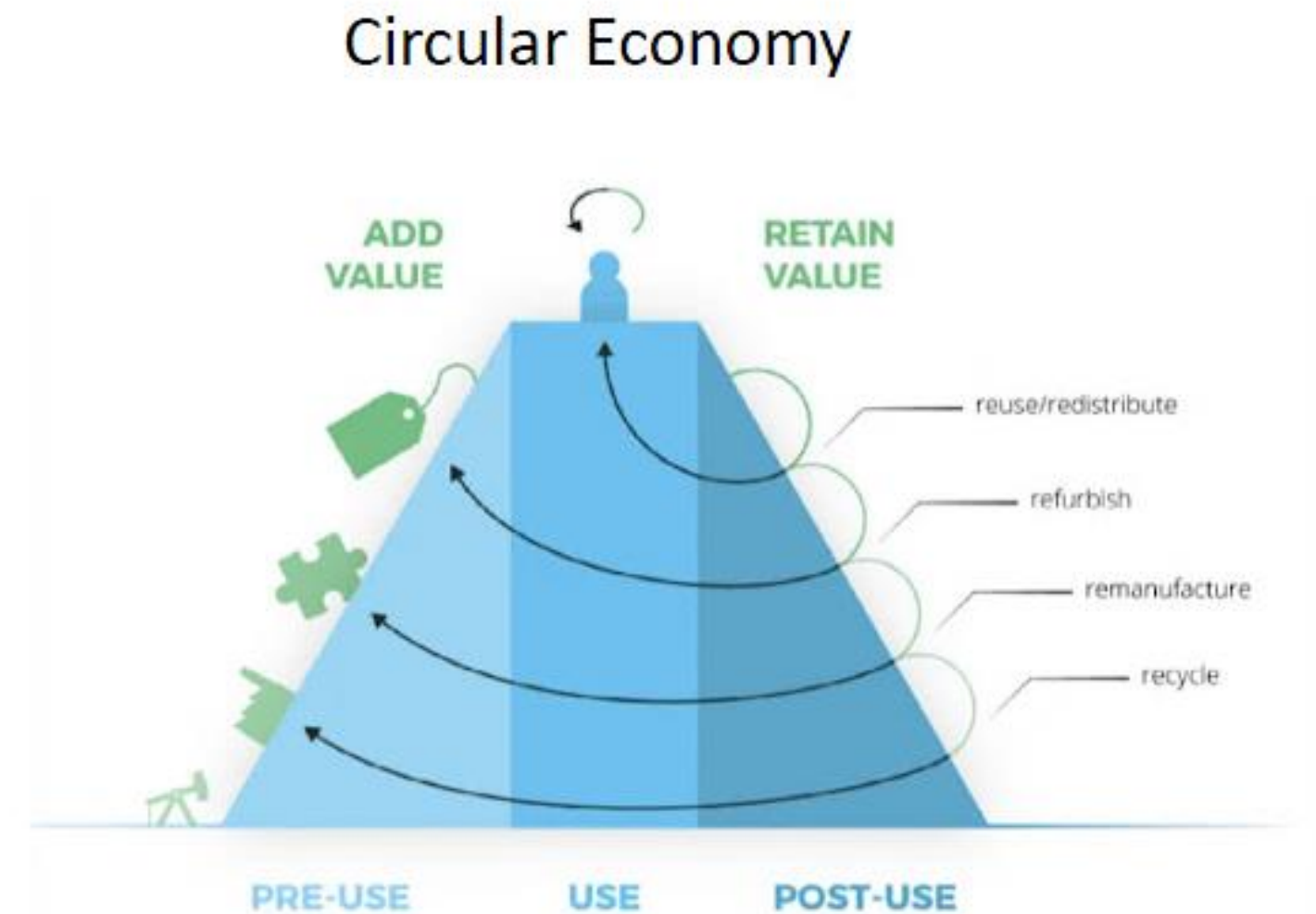
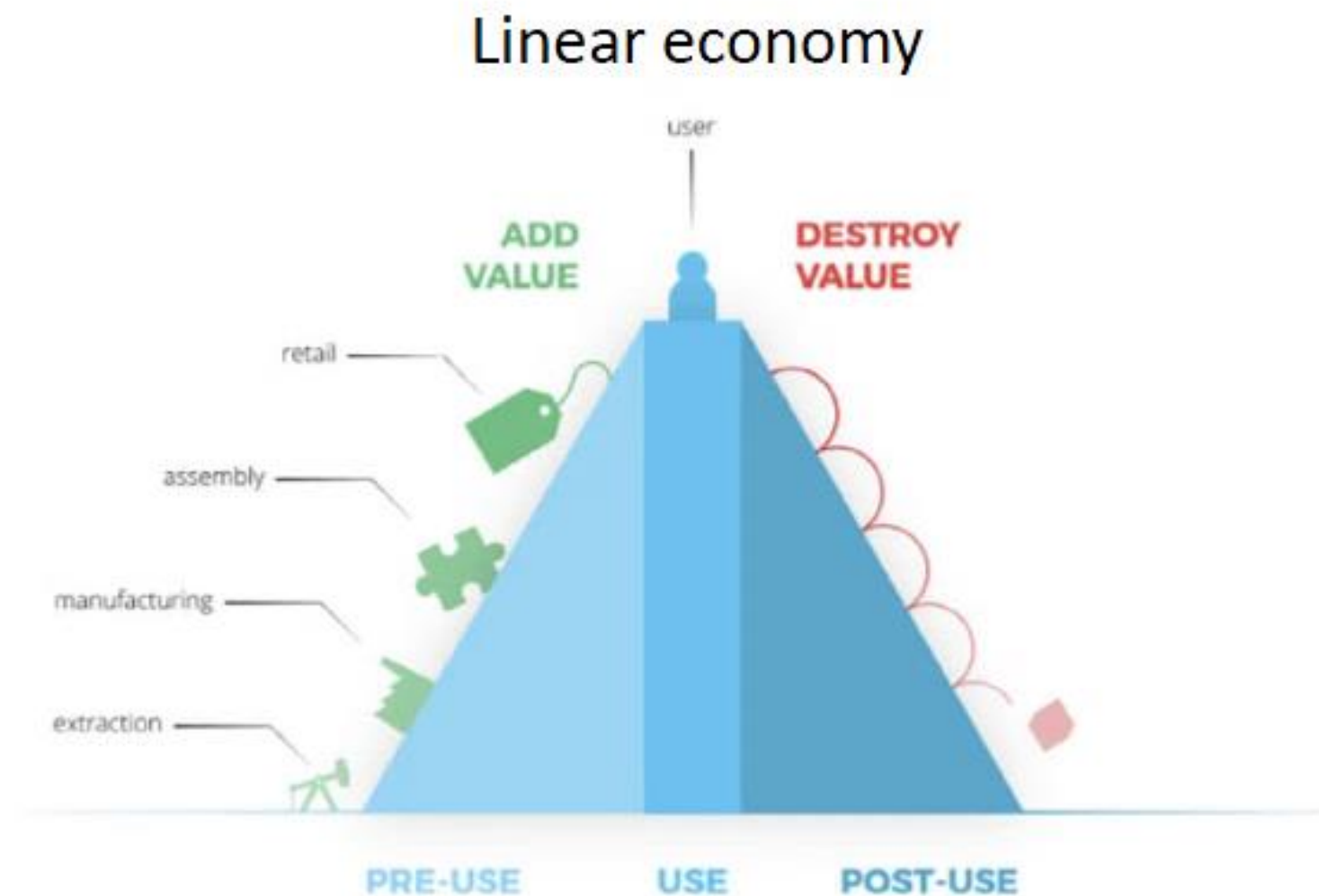
A system that keeps products, materials, and resources in use as long as possible by reusing, repairing, and recycling.

Goals:

- Reduce waste and pollution
- Maximize resource value
- Support sustainable economic growth



Achterberg, E., Hinfelaar, J., Bocken, N.M.P. 2016. Master circular business models with the Value Hill. White paper, September 2016



EU Circular Economy Framework

Circular Economy Action Plan (2020) under the European Green Deal

Focus Areas:

- Sustainable product design

- Digital Product Passport (DPP)

- Empowered consumers

- Key sectors: Electronics, Batteries, Textiles

Regulations Supporting Circularity:

- Ecodesign for Sustainable Products Regulation (ESPR)

- Waste Framework Directive

- Battery Regulation (2023)



Challenges

Technical Challenges

- Data Fragmentation

- Technology Integration

Cultural & Socio-Economic

- Collaboration Challenges

- Technological Accessibility

Legal & Policy

- Regulatory Variability

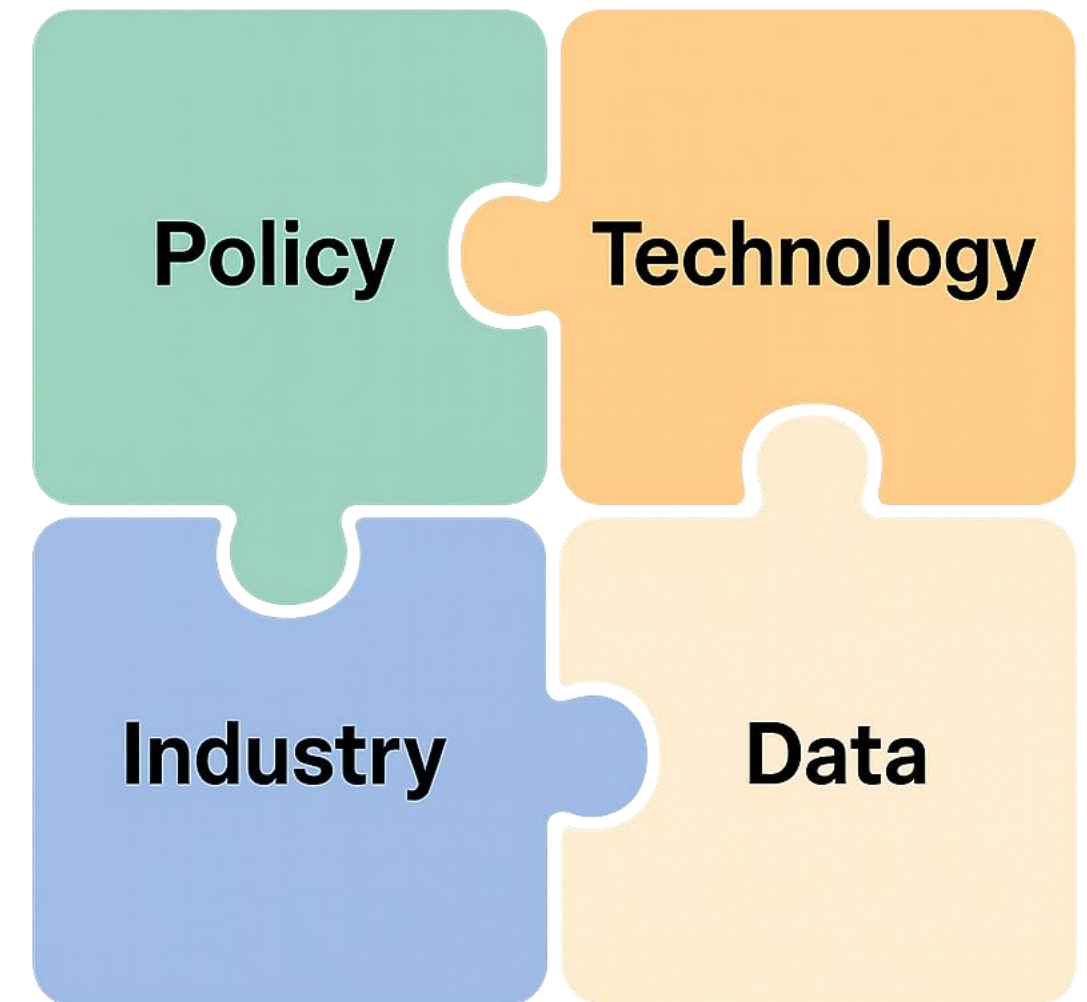
- Data Privacy & Security

Environmental & Adaptation

Climate Adaptability

- Lowering Carbon Footprint & Energy Use

- Material Waste & Inefficient Resource Usage



FIWARE's Contribution to Circular Economy

CIRCULOOS Project

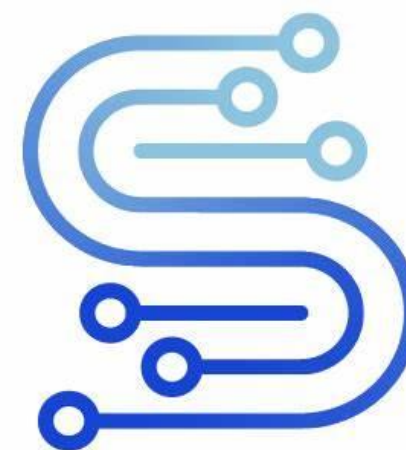
Supporting circular manufacturing with real-time data orchestration, traceability, and sustainability analytics

Battery Pass Initiative

Contributing to the Digital Product Passport architecture to track lifecycle and compliance data for EV batteries

Smart Data Models

Providing semantic standards for circular assets (e.g., waste, energy, manufacturing) via Open Source models



Data Spaces Enabling Circular Economy

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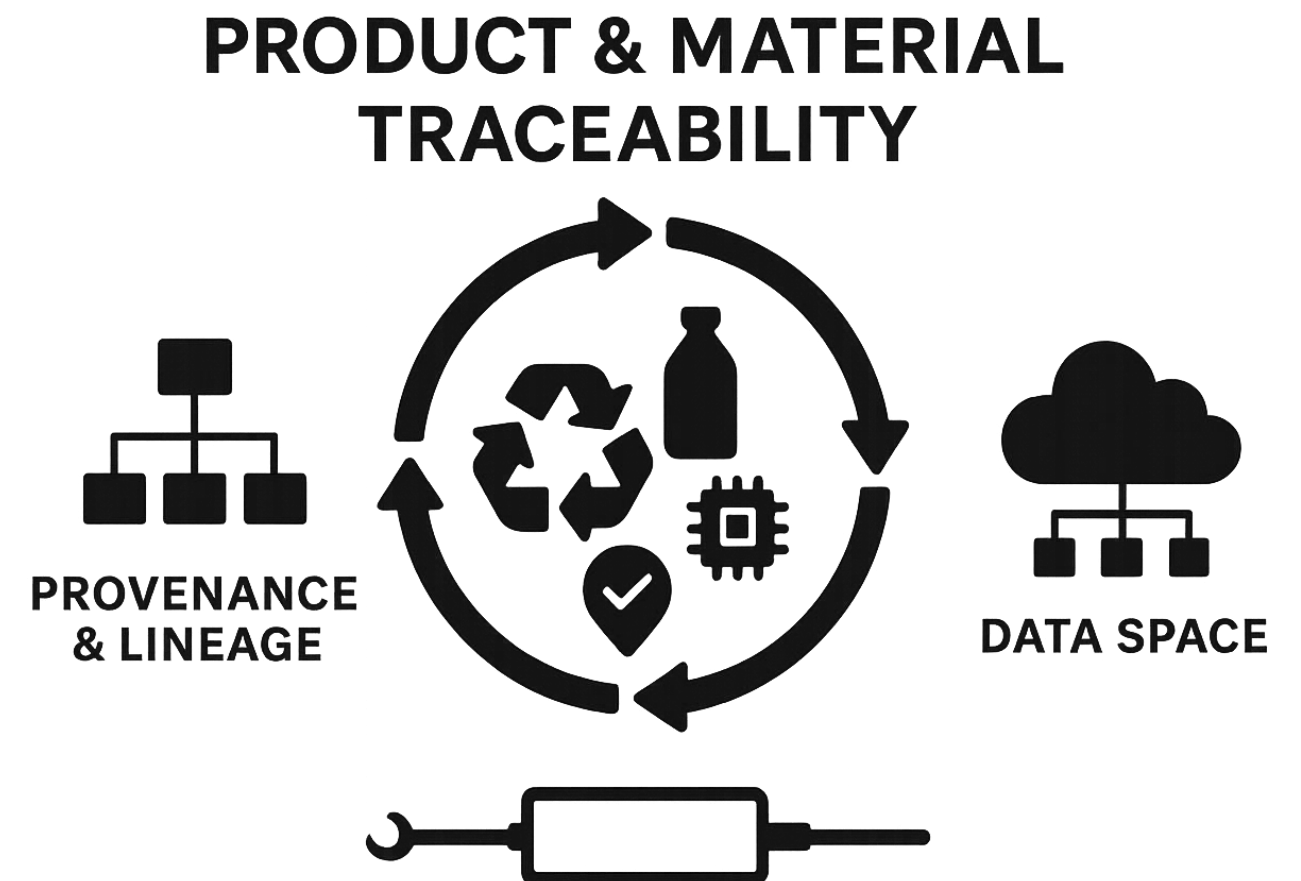
Product & Material Traceability

What it does

- Tracks materials, components, and products across their full lifecycle
- Supports better decisions for reuse, recycling, and remanufacturing
- Facilitates compliance with regulations (e.g., DPP)
- Includes Provenance & Lineage – knowing origin and transformation steps

How Data Spaces help

- Provide shared, trusted infrastructure for lifecycle data exchange
- Enable decentralized logging of provenance and traceability using verifiable credentials
- Ensure access control and auditability across actors and borders



Enabling Data-Driven Circular Business Models

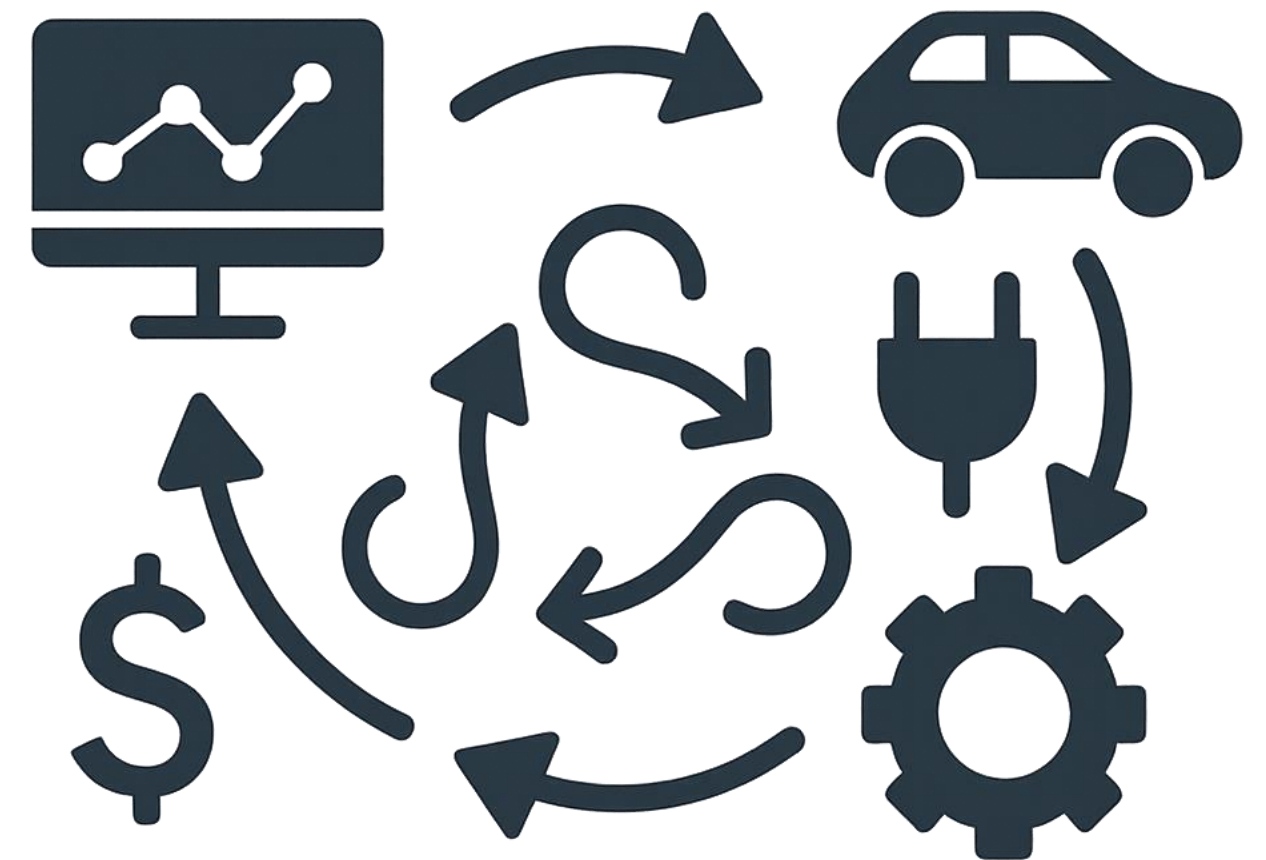
What it does

- Shares product condition and usage data across stakeholders
- Powers leasing, refurbishment, resale, and “product-as-a-service” models
- Optimizes energy, materials, and inventory flows

How Data Spaces help

- Allow real-time, standards-based data sharing between parties
- Preserve data sovereignty—each actor controls their data policies
- Support plug-and-play integration via APIs and connectors

ENABLING DATA-DRIVEN CIRCULAR BUSINESS MODELS



Trusted Data Exchange Between Stakeholders

What it does

- Ensures secure collaboration between manufacturers, recyclers, and logistics providers
- Builds trust using verifiable credentials and digital identities
- Protects sensitive information

How Data Spaces help

- Enforce identity, consent, and access controls across the ecosystem
- Usage of open standards for digital trust and interoperability
- Provide a legal and technical trust framework

TRUSTED DATA EXCHANGE BETWEEN STAKEHOLDERS



Lifecycle Impact Assessment

What it does

Calculates environmental and economic impacts across the product lifecycle

Informs sustainable procurement, eco-design, and certification

How Data Spaces help

Enable data aggregation across supply chains for KPI analysis

Allow semi-automated LCA calculations by providing secure data access

Connect to external datasets like emissions, energy, and material databases

LIFECYCLE IMPACT ASSESSMENT



Metadata Standardization and Discovery

What it does

Uses common vocabularies and APIs to make circular assets and services discoverable

Enables matchmaking between data providers and consumers (e.g., marketplaces)

How Data Spaces help

Use semantic standards (e.g., NGS-LD, DCAT, Smart Data Models)

Provide catalogues and metadata brokers at connector and ecosystem levels

Support dynamic data onboarding and discoverability

METADATA STANDARDIZATION AND DISCOVERY



Conclusion

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Data Spaces are Foundational for Circular Economy

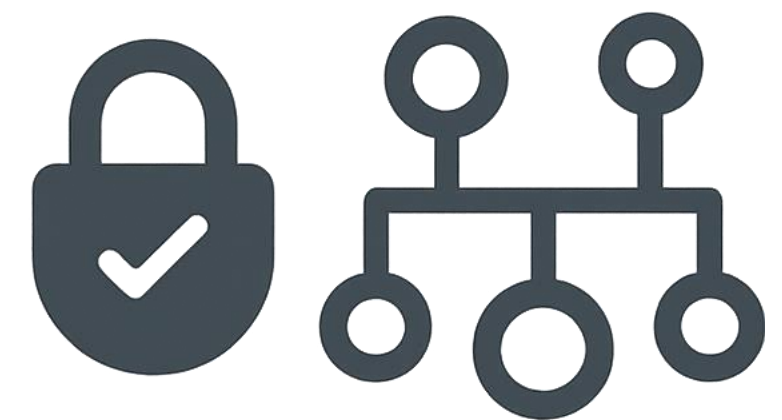
Data Spaces are the foundation for scalable circular economy ecosystems

Trust, interoperability, and data sovereignty are critical enablers — not afterthoughts

FIWARE empowers stakeholders with open, standard-based building blocks to innovate responsibly

Cross-border collaboration, like EU–Japan partnerships, is vital to achieving shared sustainability goals

Let's shape the future with trusted, interoperable, and inclusive data ecosystems



FIWARE



FIWARE
Global
Summit

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PART OF

Smart Cities
Morocco Roadshow
2025

Shaping Sustainable, Innovative and Secure Smart Cities

22-23 May, 2025

Rabat Smart City, Morocco

#FIWARESummit25



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THANK YOU FOR YOUR ATTENTION!



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