

Open APIs
for Open
Minds

FIWARE: Making Data Spaces Happen

Juanjo Hierro

FIWARE Technical Steering Committee chairman

juanjose.hierro@gmail.com

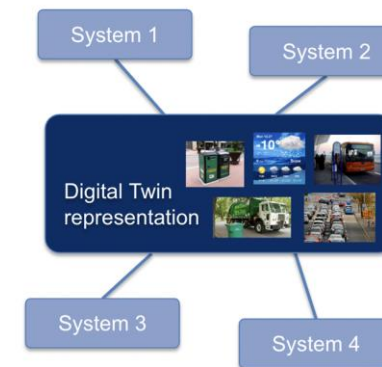


About FIWARE

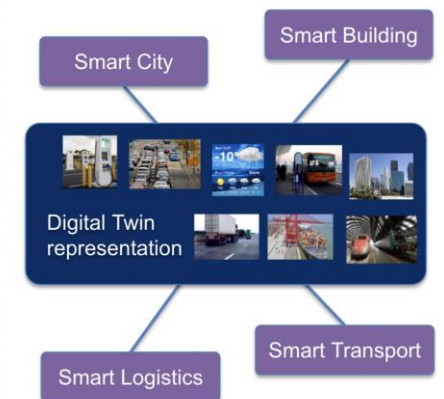
- FIWARE brings a curated catalogue of open source components which can be picked and easily integrated together to build software platforms easing a fast and cheap implementation of:
 - IoT-enabled smart solutions (smart products)
 - smart organizations
- FIWARE comprises components solving how smart solution providers and smart organizations can be participants of open innovation-driven ecosystems (=> data spaces) where:
 - they can offer services to other parties
 - they can integrate and consume services from other parties
- Definition of FIWARE has implied:
 - contributing to creation or evolution of open standards
 - solving how open standards can be integrated
- Members of the FIWARE Community and the FIWARE Foundation actively participate in relevant bodies and projects, trying to drive or influence direction of specs based on implementation experience: W3C, ETSI, TM Forum, IDSA, Gaia-X, ...



Integrating systems and sharing data within organizations



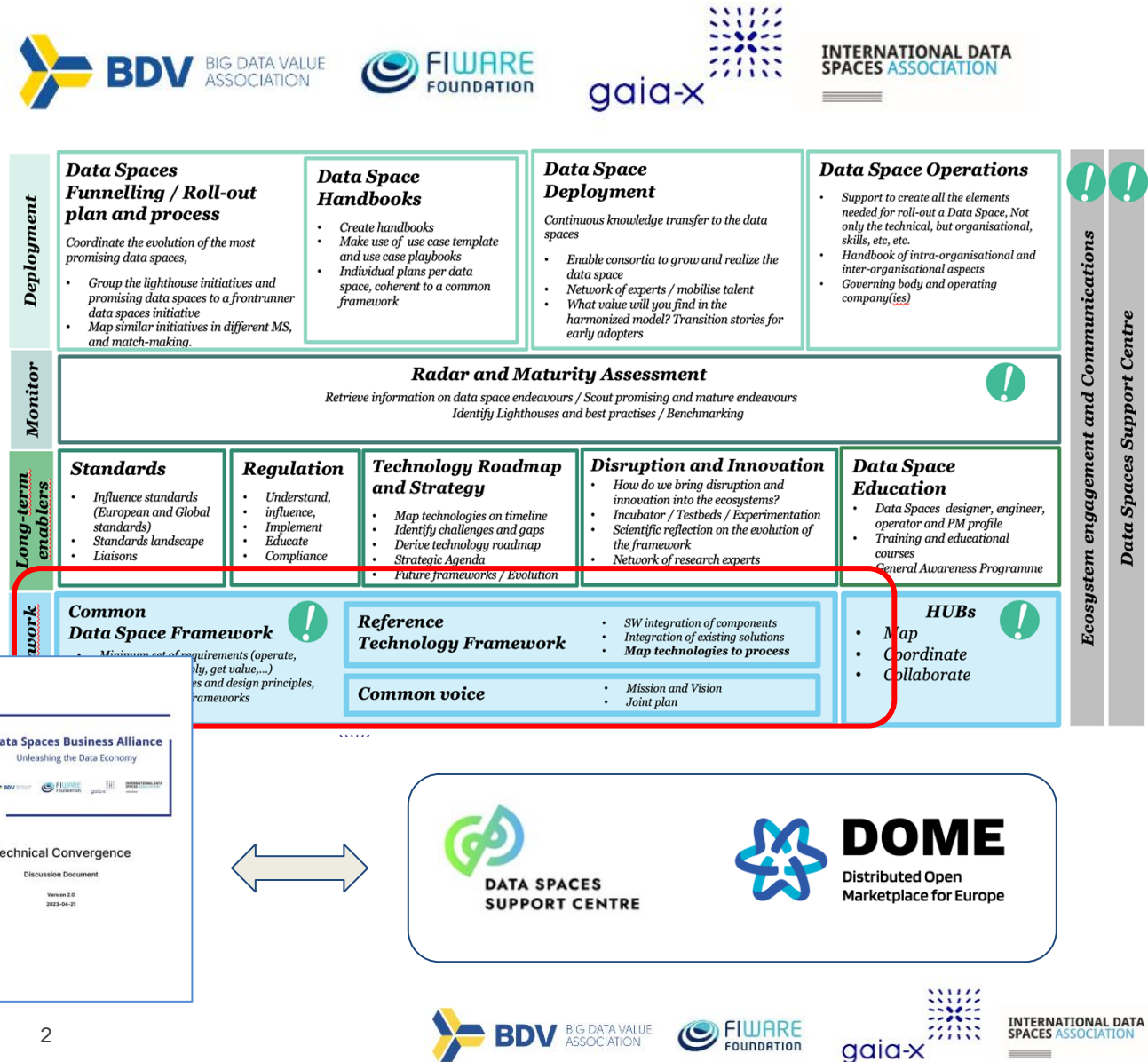
Integrating systems and sharing data across organizations (data spaces)



Data Spaces Business Alliance (DSBA): joining forces

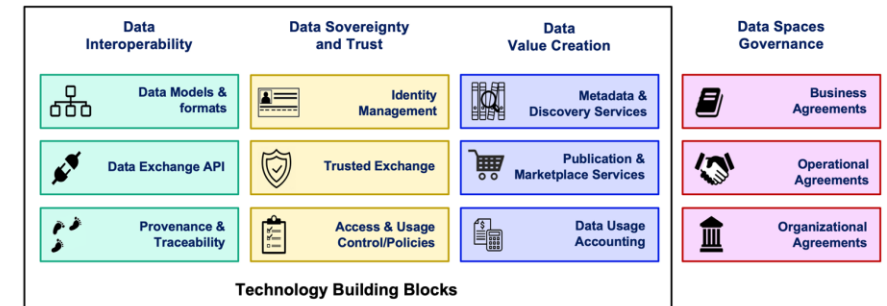
BDVA, FIWARE, GAIA-X and IDSA launched the **Data Spaces Business Alliance (DSBA)** to accelerate Business Transformation in the Data Economy (Sep 23rd, 2021)

- **One voice and a common framework** to make interoperable Data Spaces happen;
- Together, **the Alliance's founding organisations represent 1,000+ leading key industry players**;
- With its combined **cross-industry expertise, resources and know-how**, the Alliance drives awareness and rely on **more than 100 Hubs** for dissemination
- **Technical Convergence discussions** towards common reference technology framework for creation of Data Spaces:
 - Agile approach based on delivery of subsequent versions of a Minimum Viable Framework (MVF) specification where we do not only identify standards and target components but how to integrate them
 - Once alignment on relevant topics within several of the ongoing workstreams is achieved, the publication of a new version of the DSBA Technology Convergence document will be published to incentivize development of compliant implementations



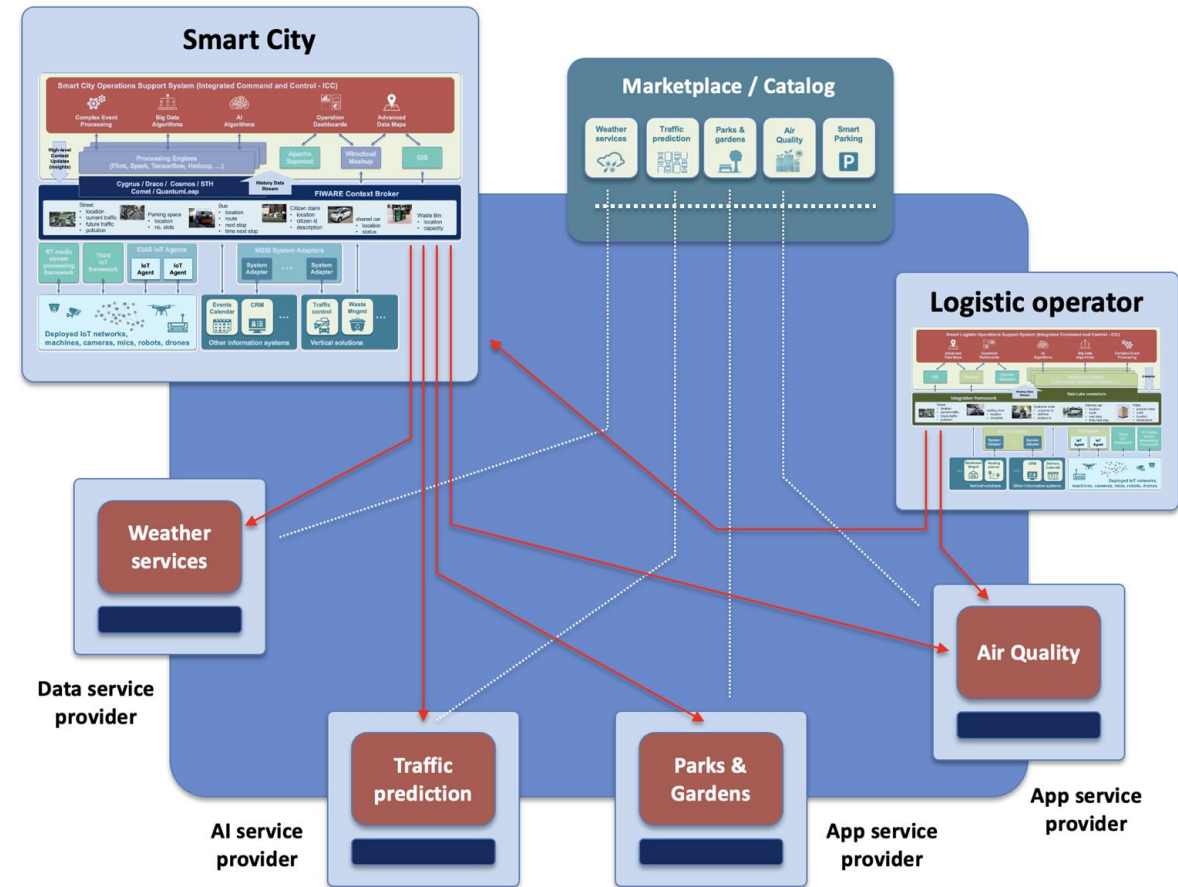
What is a data space? FIWARE Vision

- A data space can be defined as an **ecosystem** where participants adopt **agreed technology building blocks** for:
 - **Data Interoperability:** participants invoke/integrate data services from others using agreed APIs (protocols and data formats)
 - **Trust and Sovereignty on Data:** trust of parties accessing data services can be verified, digital identity can be managed in a decentralized manner (each organization managing its own users) and there is a common approach how authorization policies can be defined and enforced
 - **Data Value Creation:** Publication and Discovery of data services offerings as well as negotiation of contracts follow common standards
- A data space also requires **agreed governance:** definition of a number of business, operational and organizational agreements every participant adhere to, plus the existence of a governance body
- Many of these **building blocks (technology, governance) can be defined to work for multiple application domains** → data spaces are not only valuable for building an ecosystem around providers of organizations in a given application domain (e.g., smart cities) but an ecosystem where organizations can offer services each other and together develop new data value chains



Position statement

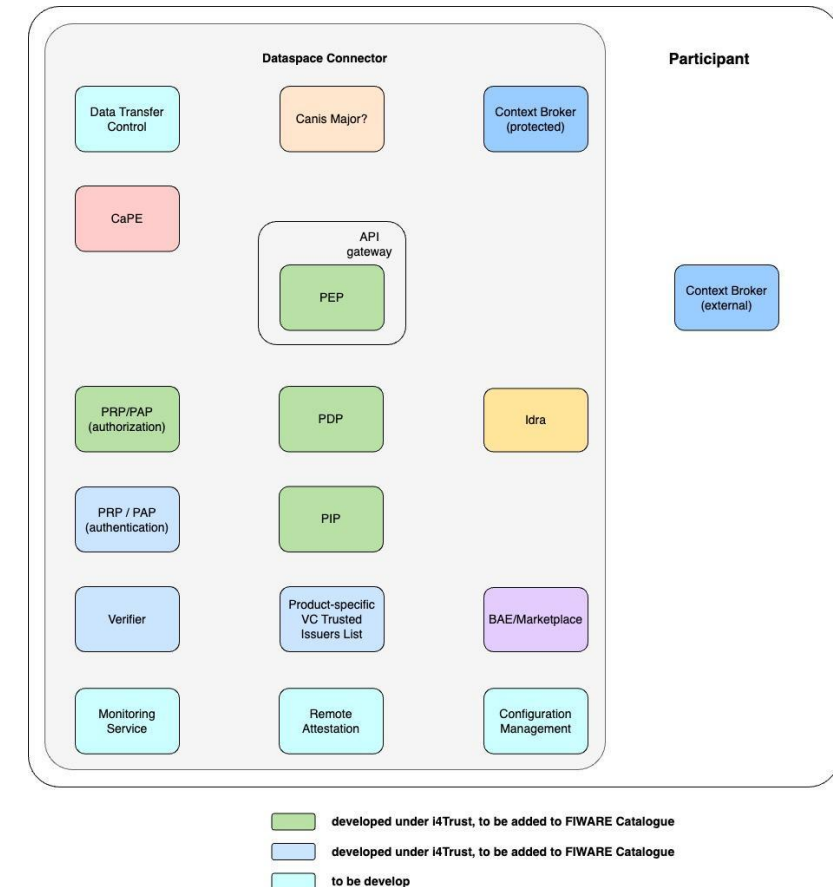
- Data Spaces are not just about peer-to-peer exchange of data / datasets / files !!
- Data Spaces are more about enabling organizations to:
 - seamlessly extend their map of systems by integrating systems from third parties: App providers (including AI services providers), Data Service providers, other organizations
 - easily become system providers (so other organizations can seamlessly integrate their data services)
- Of course, each system offers a collection of:
 - data services (services for accessing data)
 - data processing services (which receive, process and generate data)
- That is why we say data is central in Data Spaces !!



FIWARE Data Space Connector: enabling DSBA-compliant data spaces

- The FIWARE Data Space Connector comprises a number of software components already aligning with DSBA TC recommendations:
 - Context Broker technology for Data Exchange/Transfer
 - Trust and Identity Management components implementing W3C DID + VC/VP standards and SIOPv2/OIDC4VP protocols, and the interface to trust services implementing extended EBSI APIs (Trusted Issuers Registry) like in the case of Gaia-X Digital Clearing Houses (GXDCHs)
 - Authorization Management components enforcing policies specified in ODRL
 - Components implementing TM Forum APIs for contract negotiation (BAE marketplace components may be configured on top to contract via portal)
- Coming soon (end of 2024):
 - Support to IDS Transfer Process Dataspace Protocol
 - DCAT-compliant data resources catalog for discovery, supporting IDS Catalog Dataspace Protocol
- For future releases, following modules will be incorporated:
 - Personal Data Consent Management modules.
 - Logging and remote attestation modules
- The FIWARE Data Space Connector is the best aligned with DSBA recommendations and compatible with DOME available in the market

<https://github.com/FIWARE/data-space-connector>



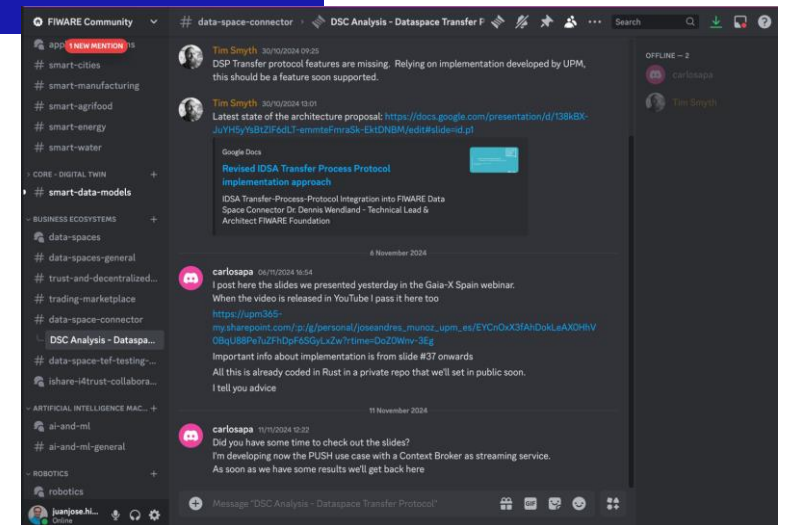
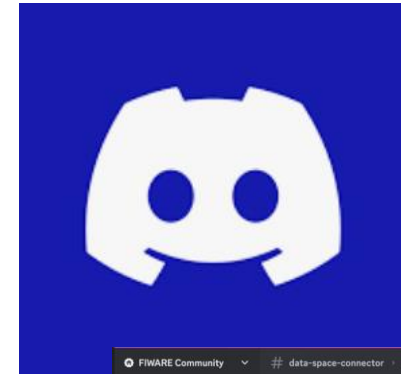
FIWARE Data Space Connector as a Service

- We shall bring means for making it easier for SMEs to be able to share and consume data services, dealing with contract and monetization aspects, without the need to deploy and operate data space connectors
- This can be achieved by means of implementing the concept of “Data Space Connector as a Service” product which provides:
 - a FIWARE Context Broker for managing/safeguard data
 - tools enabling SMEs to connect their data systems to the Context Broker for the publication or consumption of data
 - a FIWARE Data Space Connector managing access to the FIWARE Context Broker (therefore to the data it manages/safeguards)
 - tools enabling SMEs to pick and deploy certified applications from a catalogue that will process data available on the Context Broker
 - tools making it easier for SMEs to configure the authorization policies (including terms and conditions as well as pricing) to be enforced by the FIWARE Data Space Connector
- Faubourg Numérique FIWARE iHub is leading development of the concept of FIWARE Data Space Connector as a Service testing facility that DIHs can use



Wish to follow or join us?

- The Data Space WG was created under the umbrella of FIWARE TSC activities to follow up on all activities related to development of FIWARE Data Space components
- The WG meets regularly on a weekly basis - wish to join us? just contact us
- A FIWARE Community on Discord has been configured (still in testing mode) for enabling instant exchange and discussion with the experts - don't hesitate to join us on Discord channels linked to data spaces:
 - [#data-space-connector](#)
 - [#trust-and-decentralized-iam](#)
- Check-out [series of webinars on FIWARE Data Space components](#) available on the FIWARE channel on YouTube



Summary

- Vision and design principles are important but we need to perform a successful transfer to the market ... starting now!
- FIWARE has a good track record in moving from vision to execution, making things happen!
- We shall not re-invent the wheel: leverage relevant open standards, open source frameworks compatible with EC regulations
- DSBA brings all relevant organizations joining forces: BDVA, FIWARE, Gaia-X, IDSA ... together !!
- The FIWARE Data Space Connector accelerates the creation of data spaces aligning with DSBA Technology Convergence recommendations and DOME
- The concept of FIWARE Data Space Connector as a Service, can facilitate participation of SMEs in data spaces



Sounds nice? - Contact us!

<http://fiware.org>

Follow @FIWARE on Twitter

Juanjo Hierro

FIWARE TSC chairman

juanjose.hierro@gmail.com

