State-of-the-art Sustainability Reporting

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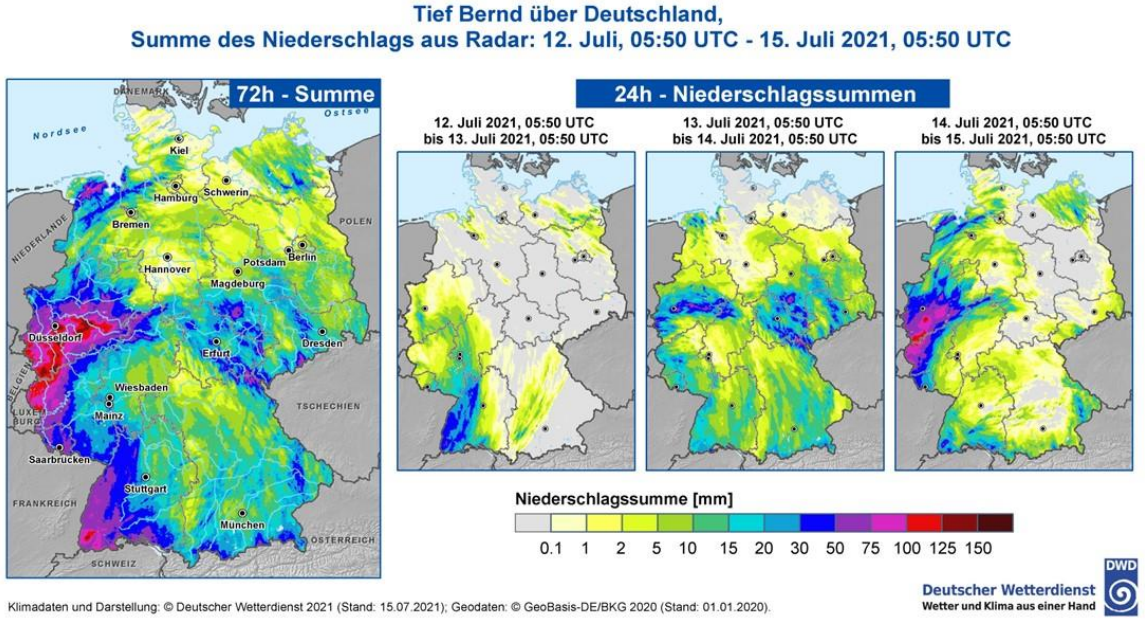
ATB Bremen

- ATB Institute for Applied Systems Technology Bremen GmbH
  - Non-profit research organisation, founded by local Government and Daimler AG in 1991
  - Current shareholders are Bremen University & local industry
    - OAS AG – digital weighing systems
    - OHB AG – building satellites & related services
    - Atlas Elektronik – Marine Systems
  - Focus on Applied Research & System Development
  - Active in EU-funded projects and direct research with diverse partners related to AI, Big Data, Data Spaces and IoT
  - Key business domains:
    - Agri-Food chain
    - Automotive
    - Manufacturing
    - Robotics

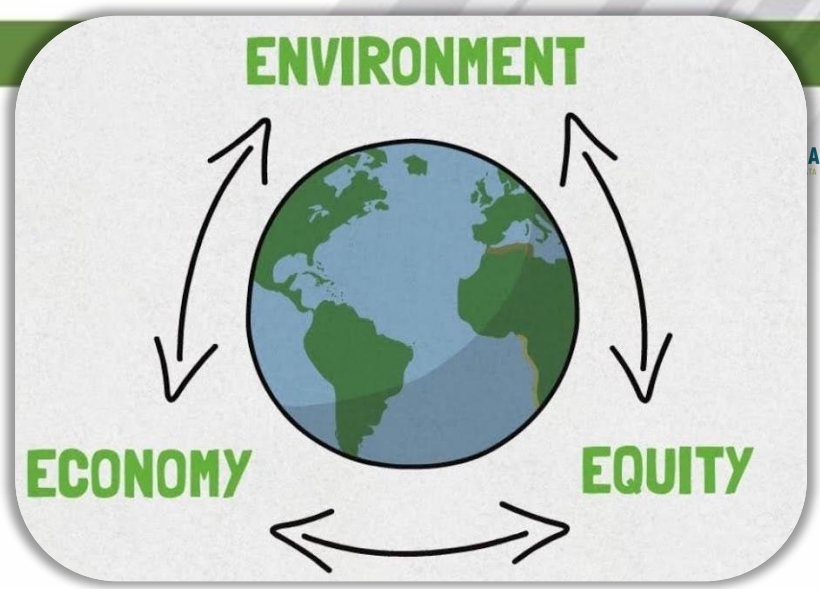
Sustainability

What is the motivation to talk about sustainability?

Climate Change?!



Sustainability



- What do we mean when talking about sustainability?
  - Environmental Sustainability
    - Sustainable agriculture (e.g. avoiding harmful chemicals, preserving soil health).
  - Social Sustainability
    - Fair and equitable treatment for all people
  - Economic Sustainability
    - Economy that supports long-term growth without negative impact on social and environmental systems.

Motivation for organisations to change!?

Sustainability Reporting

- Reporting imposes diverse efforts and costs
- A collaborative effort along the chain is required

Sustainability Reporting

Key Regulations

- EU Non-Financial Reporting Directive (NFRD) → Disclose non-financial information, related to environmental, social, and governance issues (large companies & finance).
- Corporate Sustainability Reporting Directive (CSRD) → Disclose detailed information about sustainability impacts, risks, and governance practices.
- Corporate Sustainability Due Diligence Directive (CSDDD) → Conduct due diligence on entire supply chains to identify & address potential or actual adverse human rights & environmental impacts.
- Packaging and Packaging Waste Regulation (PPWR) → New regulations about reusable packaging as well as exceptions for certain type of organisations

Rather to encourage organisations:

- United Nations Sustainable Development Goals (SDGs)
- ISO 26000 – Social Responsibility
- ISO 14001 – Environmental Management Systems

Sustainability Reporting

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Changes

New proposal 02/25: only companies >1,000 employees and either revenue greater than €50 million net turnover or a balance sheet above €25 million, exempting an estimated 80% of companies from reporting.

Delay by a year for large companies to 07/28; full due diligence only at the level of direct business partners, unless adverse impacts, reducing frequency from annual to 5 years. Voluntary Sustainability Standard for SMEs (VSME) based limit on information that can be requested from small companies, removing the obligation to terminate the business relationship as a last resort measure.

Exception for enterprises smaller than 5 employees – exempting ca. 60% from the obligation to use reusable packaging

Sustainability Reporting

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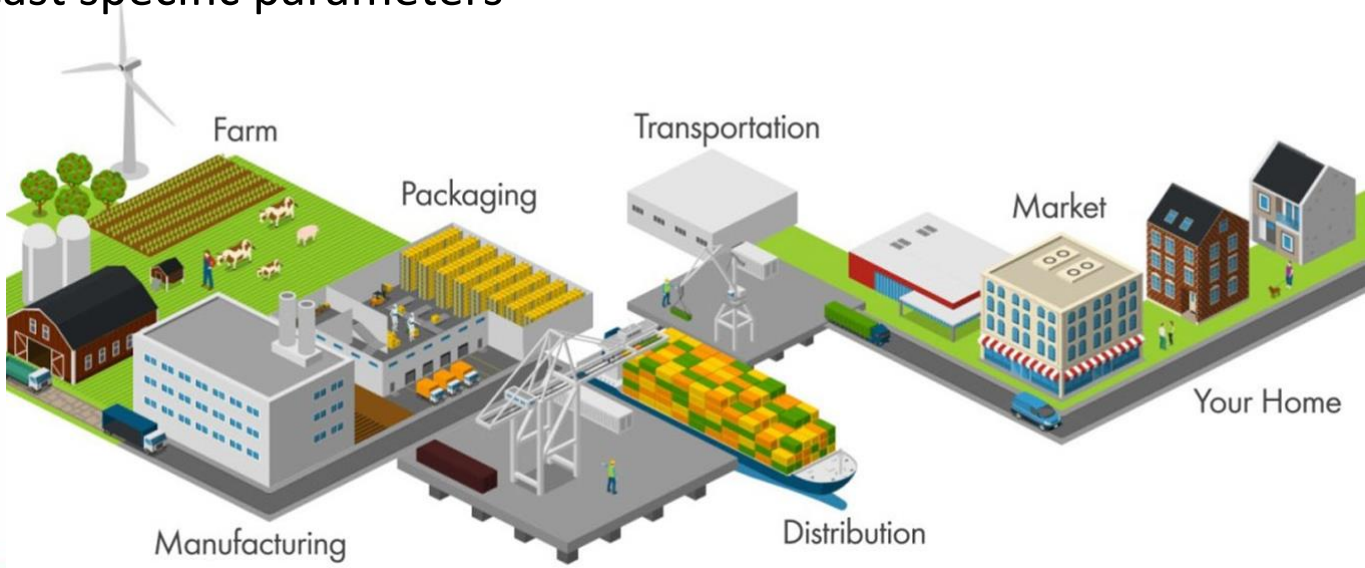
vs.

Intrinsic Motivation

- Doing good & talking about it / Sales & Marketing –> Organisation's public image
- Increasing efficiency of existing processes –> an example is a reduced energy consumption
- Avoiding waste and related costs for disposal
- Reducing costs for CO^2 certificates
- Reducing capital commitment costs
- Replacing resources with equivalent alternatives, but less environmental impact –> bio economy
- LCAs to offer product passports

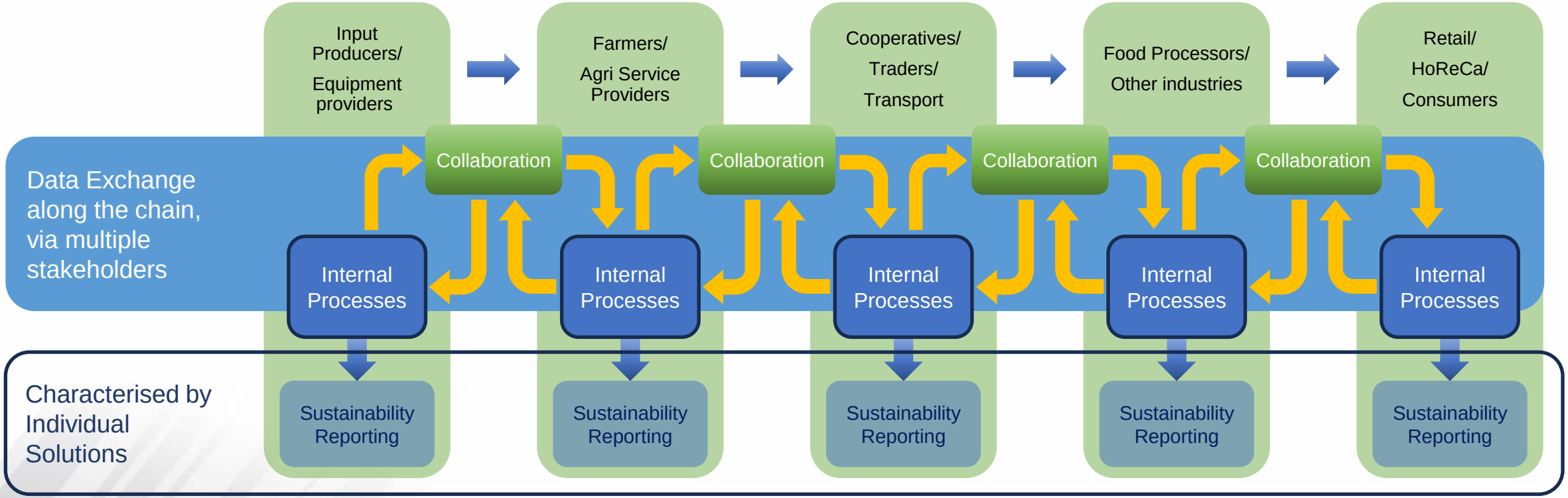
Future of Data Sharing

- Any sustainability reporting as well as many analysis, innovation or improvement efforts **require data from partners in the chain**
- Vice versa, those partners will also request related data
- Data offers potential to realise **decision support** on the farm as well as for transport and optimising shelf life
- Helping food processors with **data about input materials**
- Data could enable **AI-based applications** to forecast specific parameters
- Potential to **use diverse data sources**, combining in-situ/IoT data, machinery telemetry, drones, Earth Observation Data



Fields for Collaboration!?

- Data exchange in the supply chain, along the exchange of goods & services
- The Food System represents networks that add significant complexity for data exchange

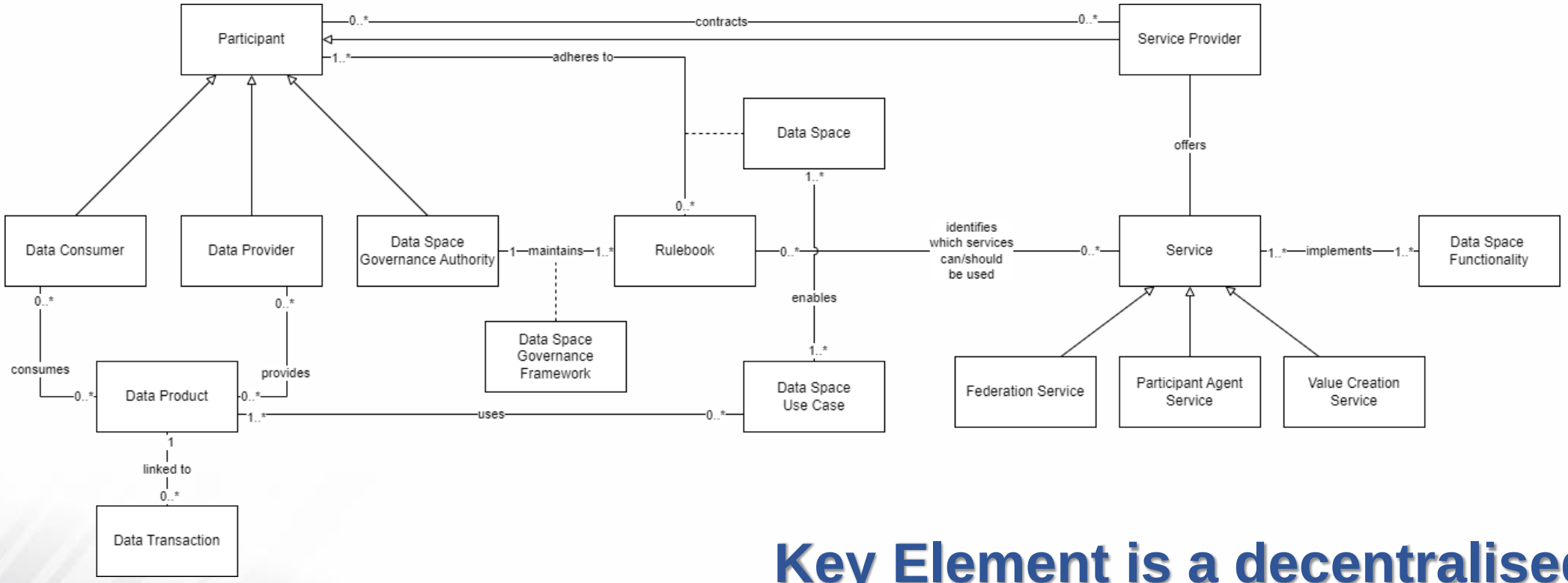


Challenges of Data Sharing

- General challenge of **data models** – Standards versus reuse of available data models (www.smartdatamodels.org)
- Challenge of **consent management** – authorise specific services to use my data.
- Prerequisite is to **manage user access**, specifically in large organisations and in collaboration of large stakeholder networks.
  - Data Spaces are a key enabler to facilitate this challenge
  - Initiatives to establish a neutral entity that will provide services of a Data Space Governance Authority – towards a Common European Data Space.
  - Open-Source Software development to realise a “Data Space Connector”

Key Concepts related to Data Spaces

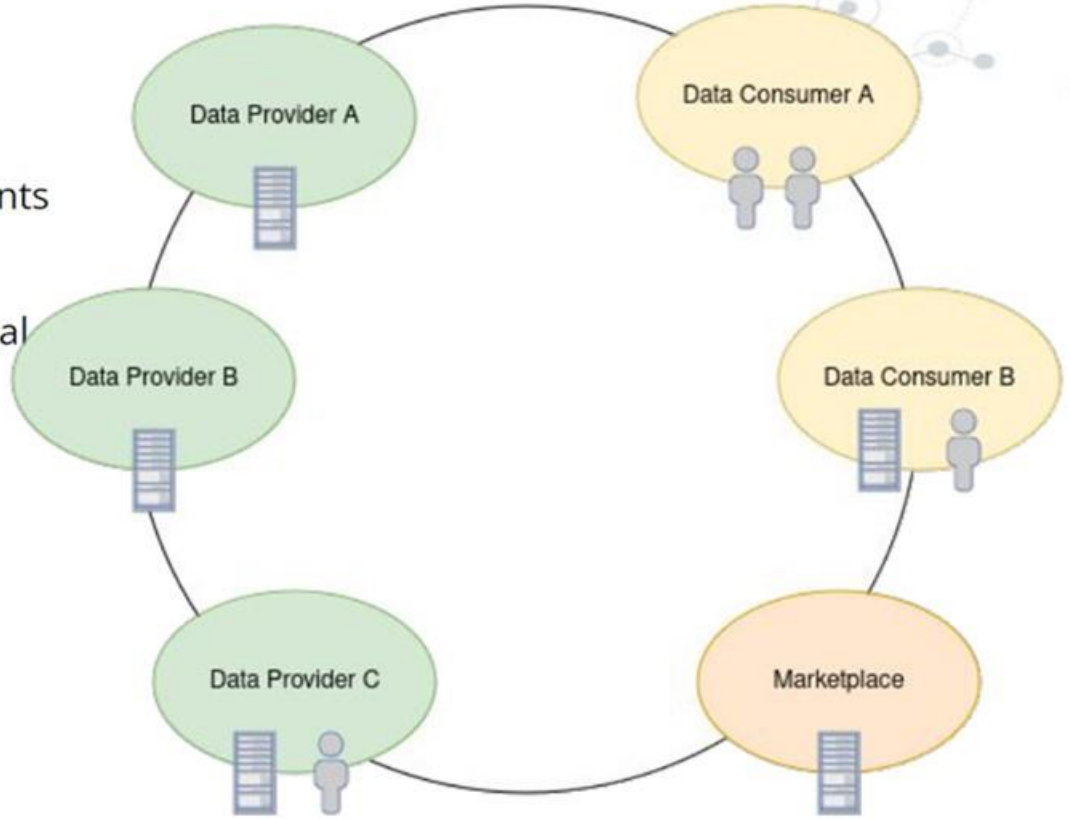
- Overview of Key Concepts



Key Element is a decentralised Identity and Access Management

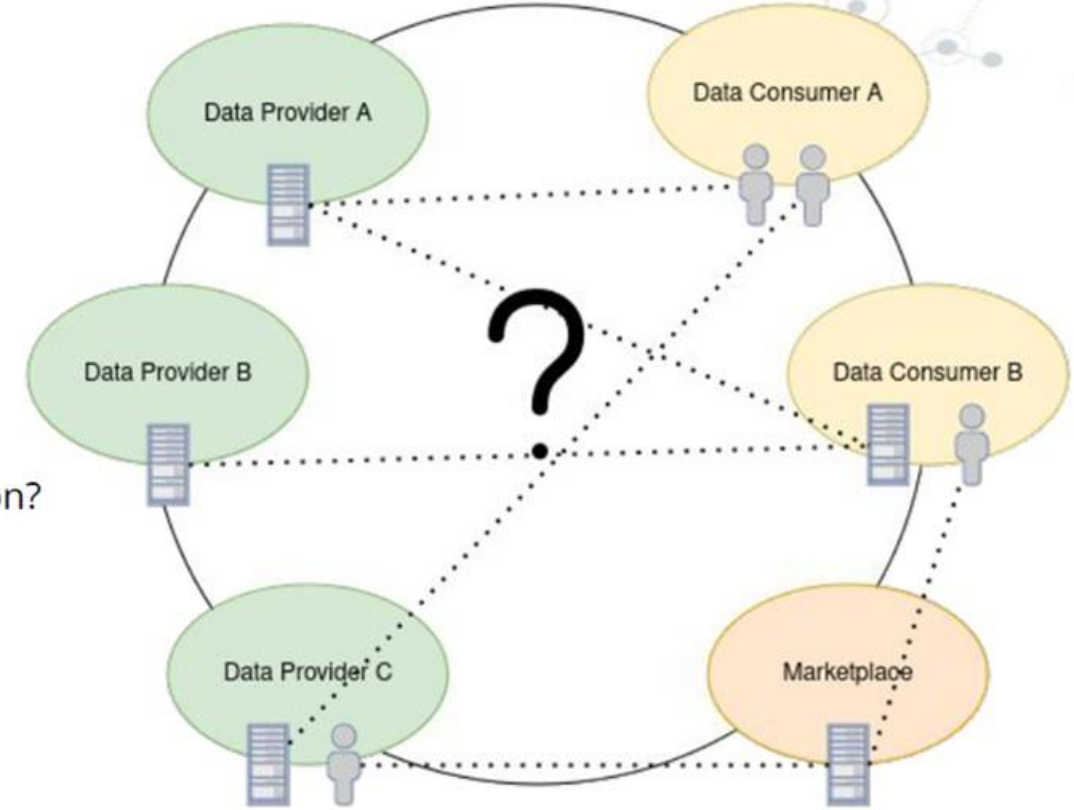
Why?

- A Data Spaces consists of different participants in various roles
- The participating organizations have technical and human actors, connecting each other
- No connection beside the Data Spaces between the participants
- No knowledge about each others actors(human or technical)



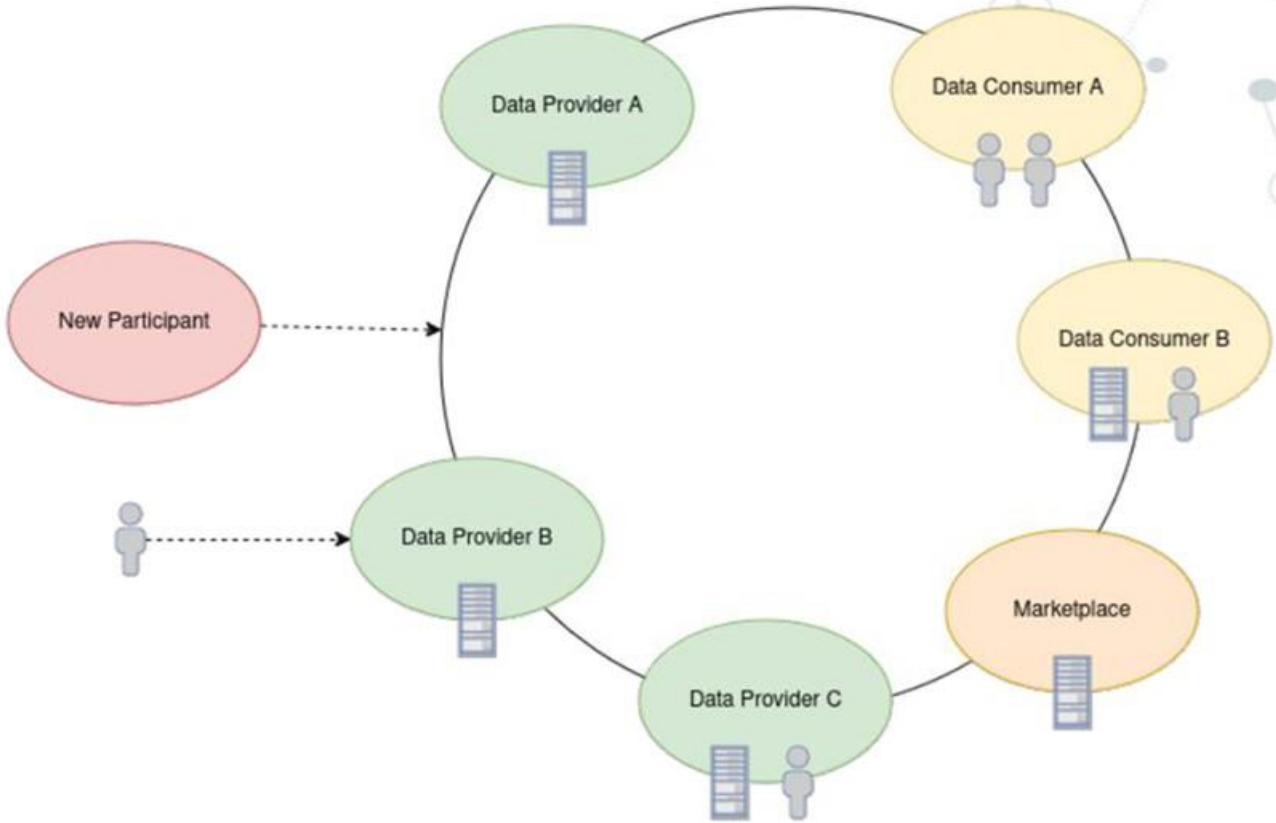
Why?

- How to identify actors?
- How to authorize their actions?
- How to connect them with their organization?



Why?

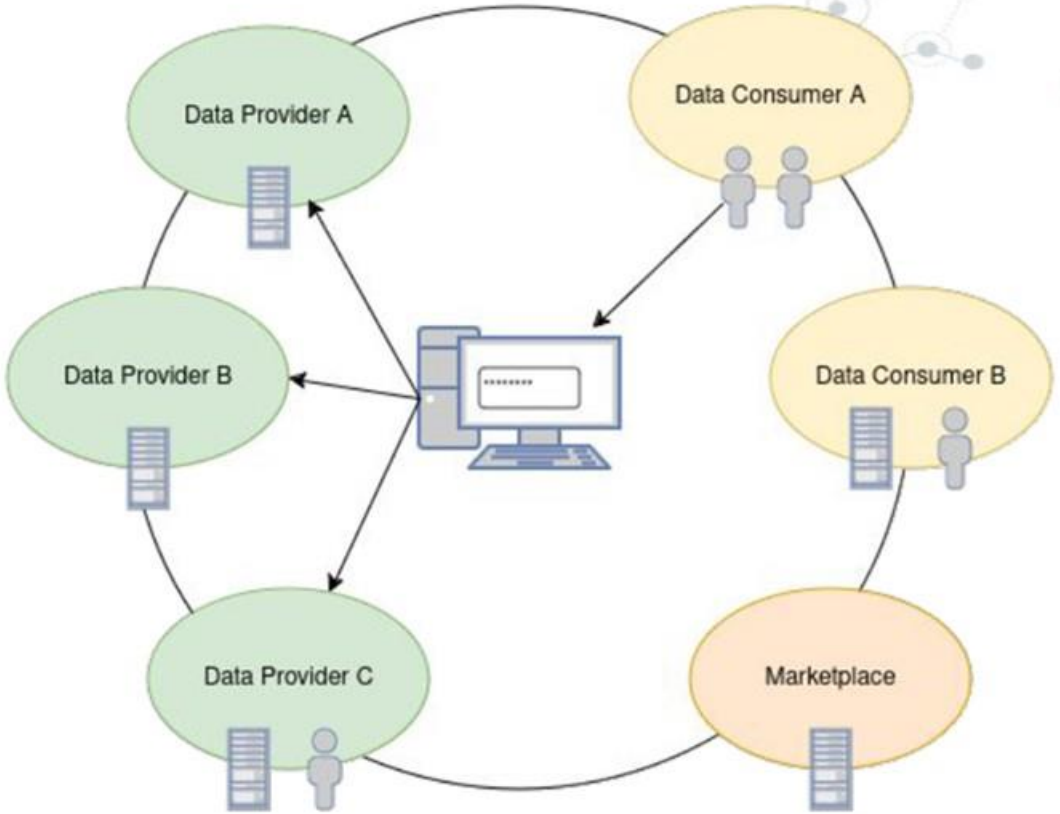
- New participant joining the Data Space requires a new trust-relationship
- New actor joins one of the participants, needs to be recognized



Why?

Central Login:

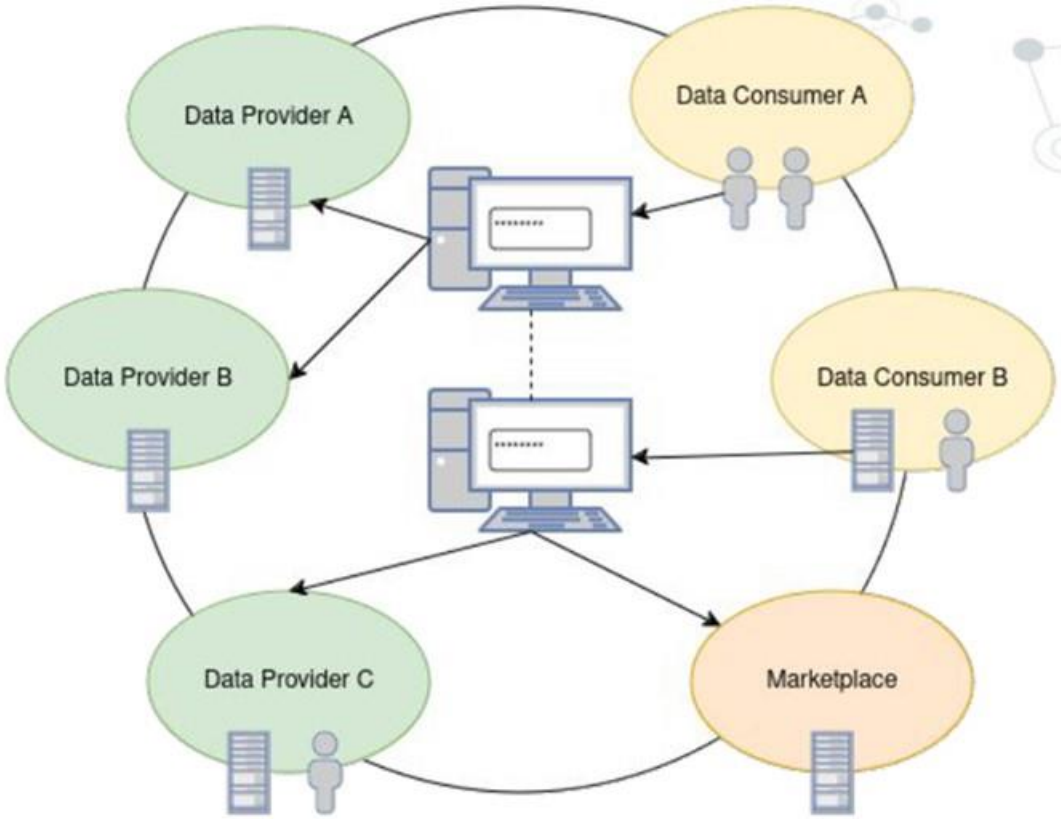
- Easy to use, but all the power at one single entity
- powerful (user) data sink



Why?

Federated Identity:

- Less reliance on a central IDP
- still reliance on “central” providers
- increasing number of providers -> increased complexity

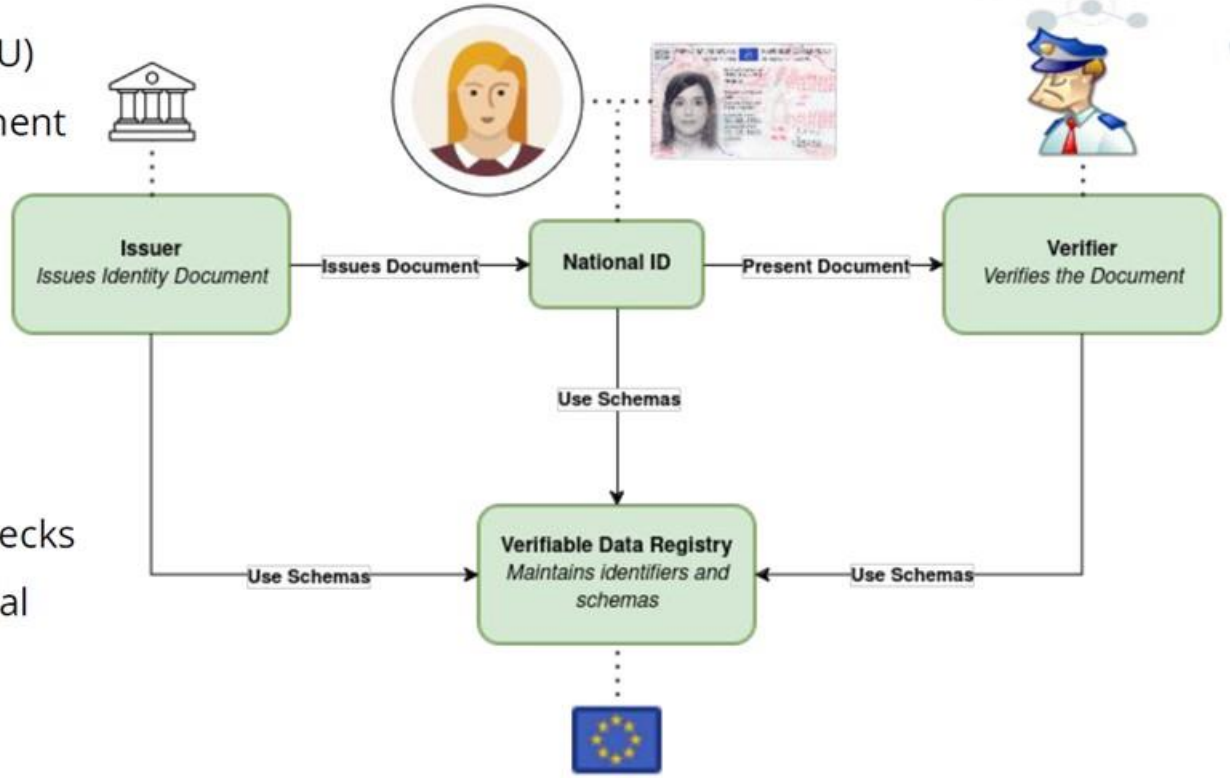


Decentralized Identity

- Copy the good things of the physical world
- Augment it with digital powers
- Preserve the required properties
- Adapt to current legal frameworks, but stay prepared for the future

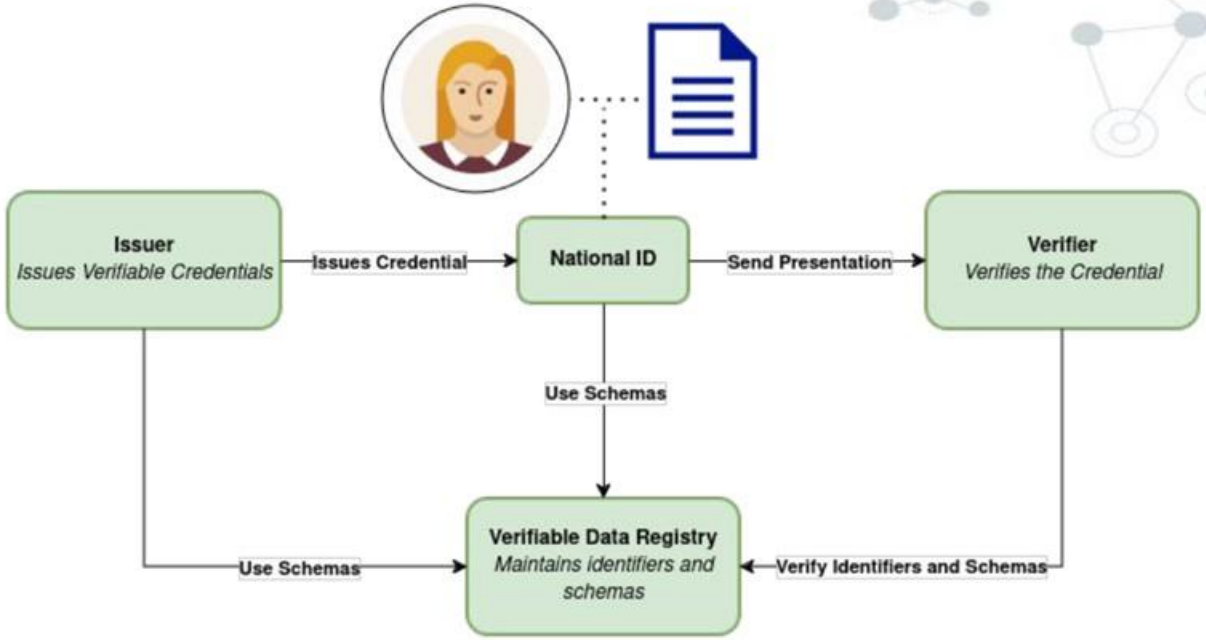
Authentication in the Real World

- Government registered at registry(EU)
- National ID is issued by the government to a citizen
- Follows commonly agreed schemas(defined by the EU)
- Is presented to an authority for authentication
- Verifies authenticity features and checks that its a registered Schema("National ID") and from a registered issuer



W3C Verifiable Credentials

- Issuer is registered at the Verifiable Data Registry
- Issuer issues Credential to the holder
- Holder presents the credential to the verifier
- Verifier verifies the signature, schema and checks that issuer and schema are registered at the Registry



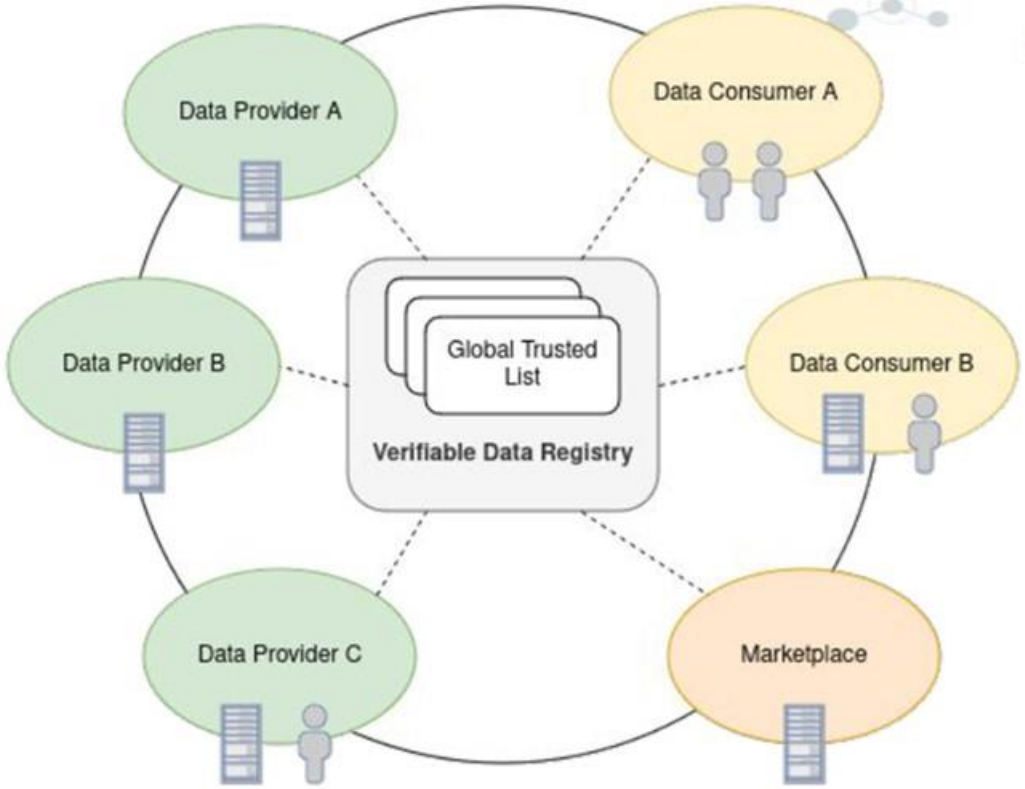
Decentralized Identifiers

Decentralized Identifiers(DIDs) are a new type of identifier that enables verifiable, self-sovereign digital identities without relying on a central authority, allowing individual to control their own identities and associated data securely and independent.

- Specified by W3C - Decentralized Identifiers
- Defines the syntax of an identifier
- Allows the controller of the identity to prove control without requiring permission from anyone else
- DIDs are URIs associated with a document allowing trustable interaction. The document can contain:
  - cryptographic material
  - verification methods
  - services to prove control

Decentralized IAM in the FIWARE DSC

- Participants are registered in one/multiple Global Trusted Lists
- each participant can access the trusted list and check for registered participants
- additional Trusted Lists can be used, in order to incorporate public trust providers



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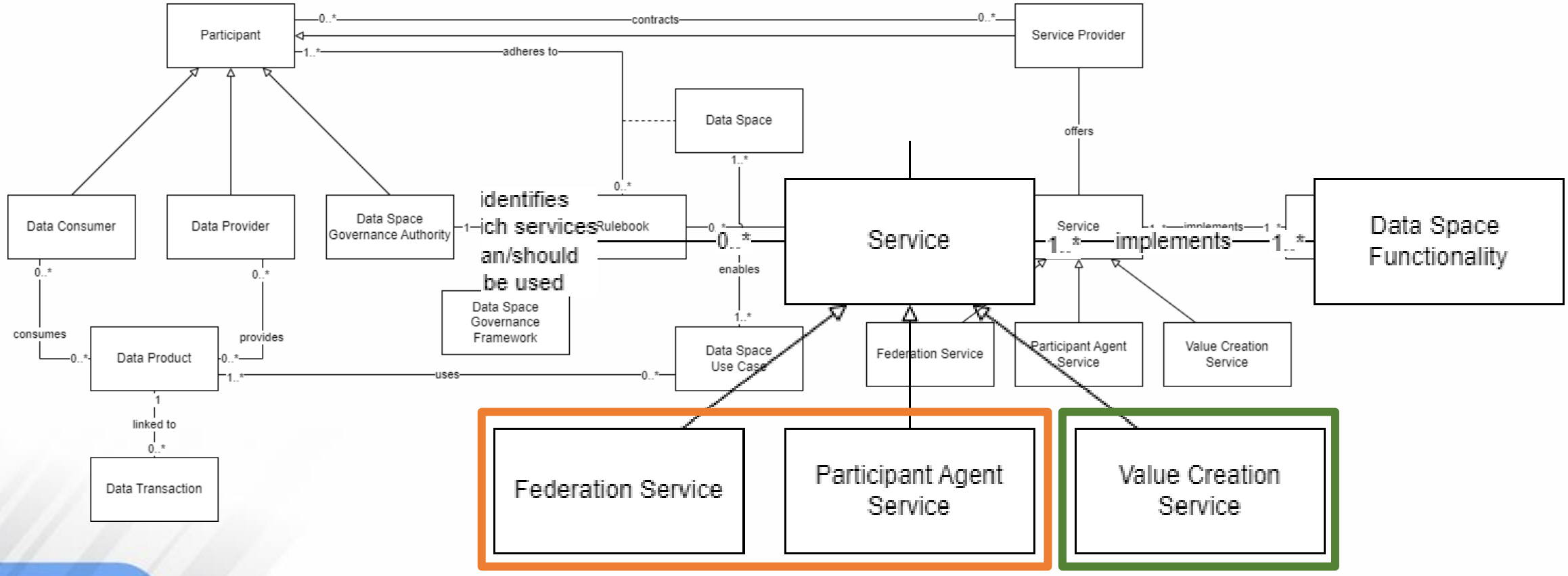

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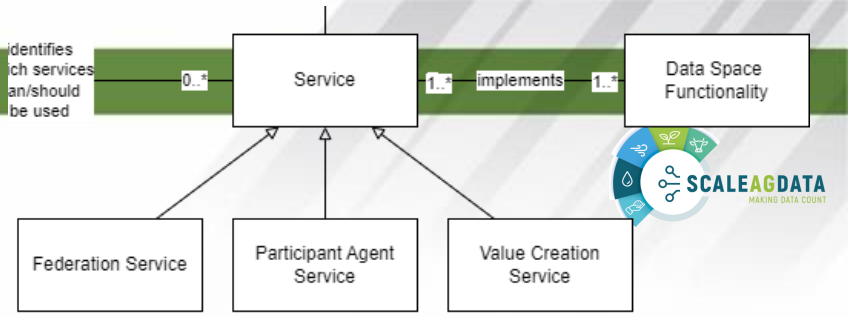


- Federation Service vs. Participant Agent Service

- **Participant Agent Service**
  Services required for individual participants to join a data space, like:
  - storing and exchanging a verifiable credential
  - sharing which data is made available and publishing it in a catalogue
  - specifying and enforcing access and usage policies
  - integrating with actual data sources or data processing services

- **Federation Service**
  Services facilitating interplay of participants for all kinds of data sharing, like:
  - issuing verifiable credentials to participants of a data space, indicating that they're a participant in the data space, confirming an identity or complying with a specific policy
  - providing a shared catalogue of available participants and data products in the data space
  - providing policy information that participants can use to assess whether someone can be granted access (e.g. personal consent)
  - providing services for provenance and observability

Collaboration with the FIWARE Open-Source Initiative

- The FIWARE Data Space Connector
  - Integrated suite of components
  - Implementing Technical Convergence recommendations of the Data Space Business Alliance
  - Every organization participating in a data space deploys a connector to the data space

- Enabling a Decentralized Approach
  - End-user accounts of external organisations are and need not to be known in the own systems.
  - Verifiable credentials allow to verify the access rights.

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

Potential next Steps

- Clarify your motivation and that of other stakeholders
- Decide on the relevance of sharing sustainability-related data
- Design the optimal setting for user and data management
- Define your strategy concerning a centralised or decentralised approach
- Agree on trusted entities

Envisaged Collaboration, aiming at:

- Reduce/share costs
- Speed up implementation
- Align data models
- Share data along the chain
- Enable realisation of value-added services not possible before, due to missing data

Conclusions

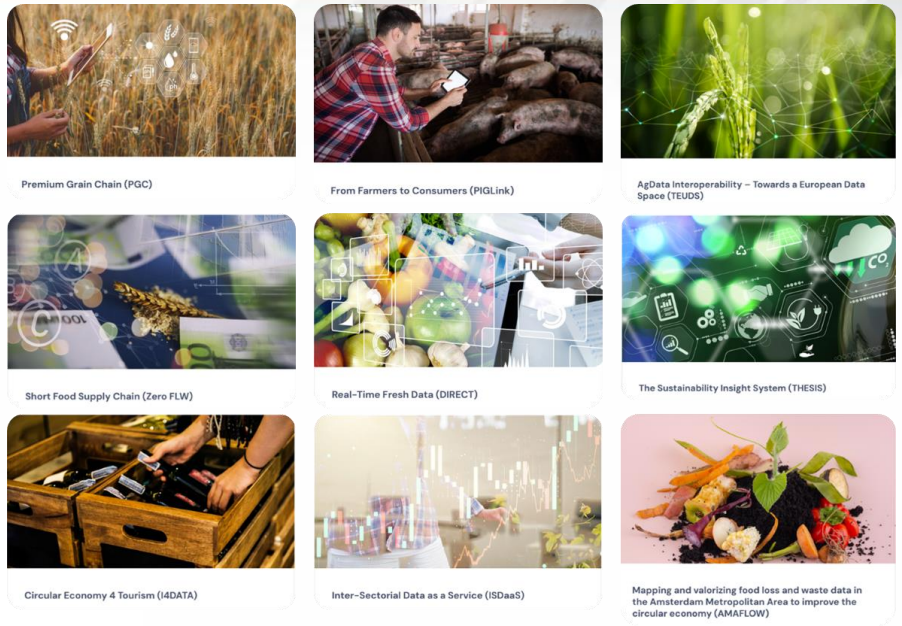
- The pressure to implement the CSRD or CSDDD is reduced and possibly removed for certain stakeholders
- It needs to be clarified if sustainability is only relevant in case regulations demand it
- Strategy required to share data along the chain
- A decentralised Identity and Access Management as key enabler to manage user access
- Data Spaces are offering an opportunity to facilitate data exchange between organisations
- Current initiatives and Open-Source developments are offering enablers to facilitate implementation

Thank You!

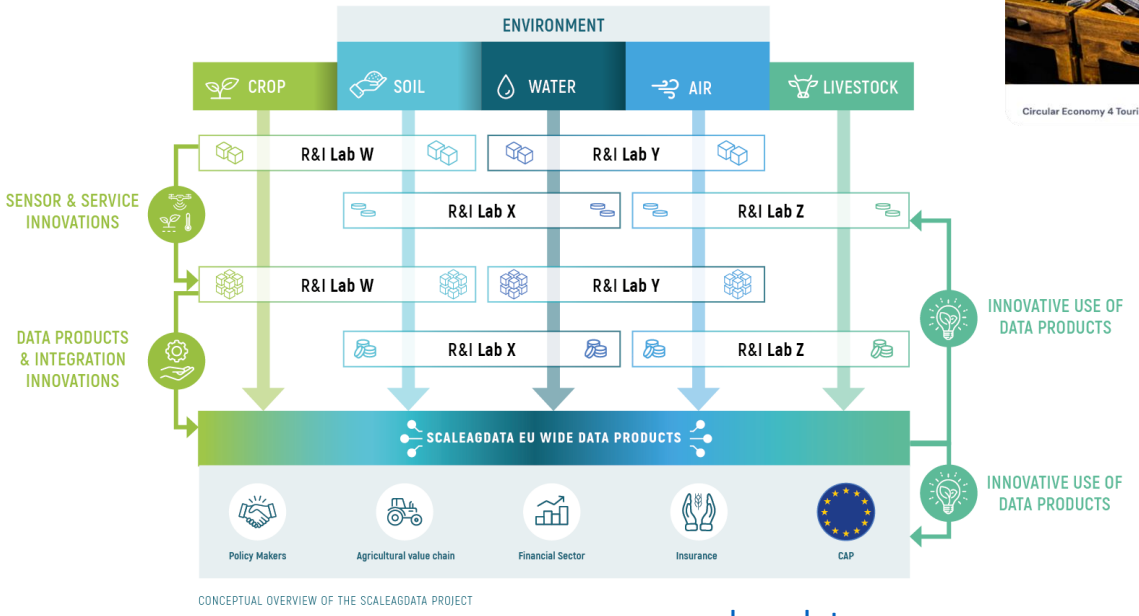
www.atb-bremen.de

www.fiware.org

smartdatamodels.org



data4food2030.eu



CONCEPTUAL OVERVIEW OF THE SCALEAGDATA PROJECT

scaleagdata.eu

SCALEAGDATA
MAKING DATA COUNT