

IoTWeek

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Data Spaces: Key Findings and Challenges

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GLOBAL VISION:

IoT TODAY AND BEYOND

IoTForum

Introduction – Data centric ecosystem

Data

From data to actionable knowledge for creating value

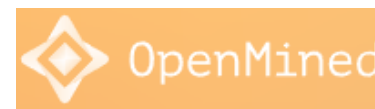
Connected Intelligence

From Cloud Native to AI Native
Decentralized intelligence

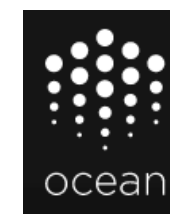
Fully automated Infrastructure

AI for networks and Networks for AI

Decentralized AI Platforms



ALGORITHMIA



Trustworthy DNA Ecosystems



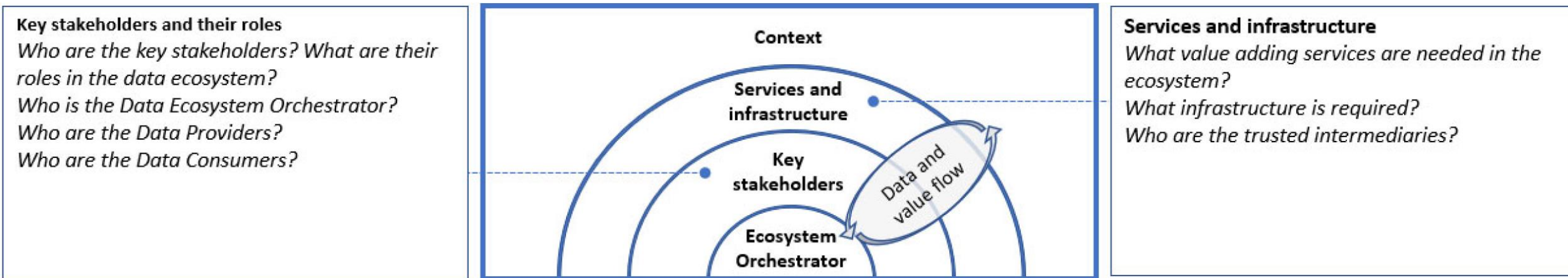
Key findings and challenges – 1

The Ecosystem of ecosystems

Technology ecosystems (e.g., 5G, Clouds, IoT, Big Data & AI, etc.)

Vertical domain specific ecosystems (e.g., industrial, health, energy, etc.)

Data spaces as ecosystem

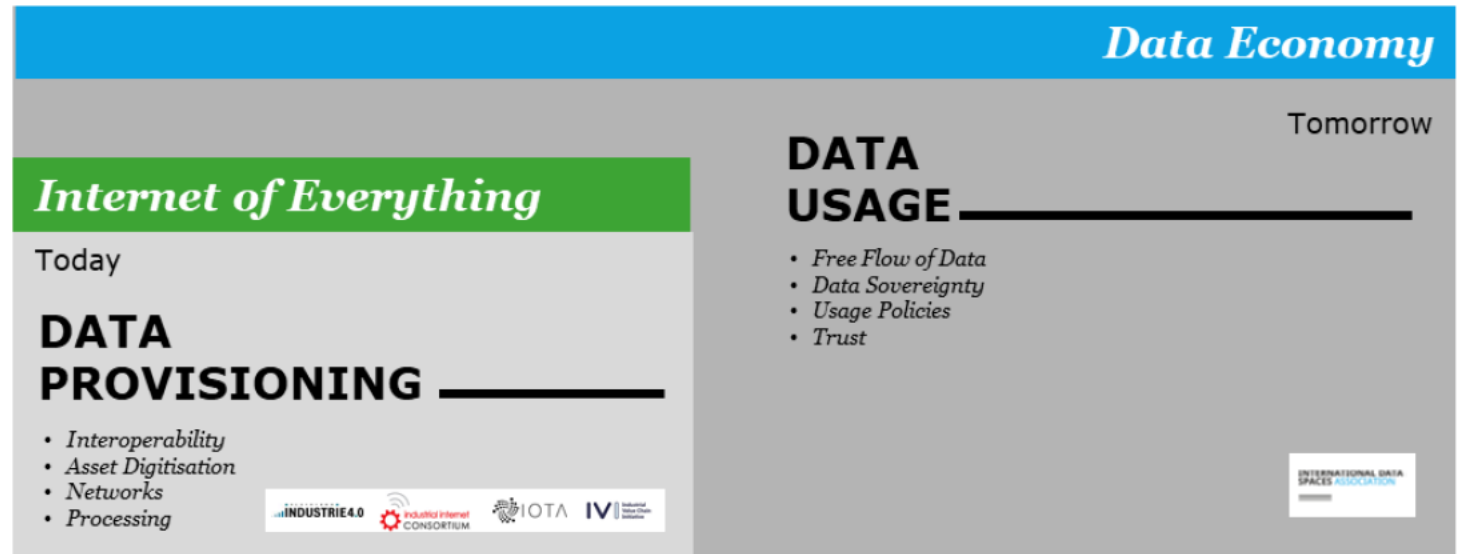


- **Scaling up – large scale virtual continuum (space-time)**

Key findings and challenges – 2

From data provisioning to data usage

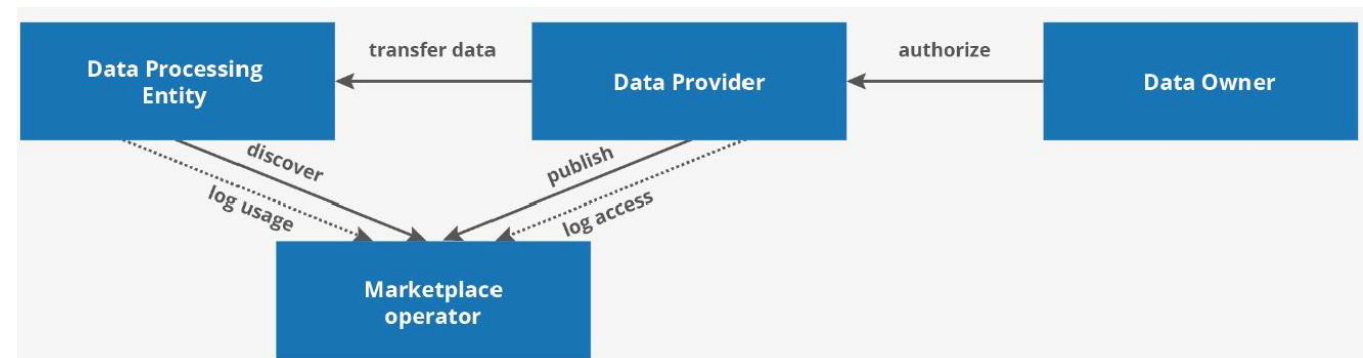
Usage control



From Connecting Devices
to **Creating Value**

• Business roles and interactions (Data-centric)

- User-driven approach
 - A user-friendly ecosystem
- Ownership
- Stakeholder management

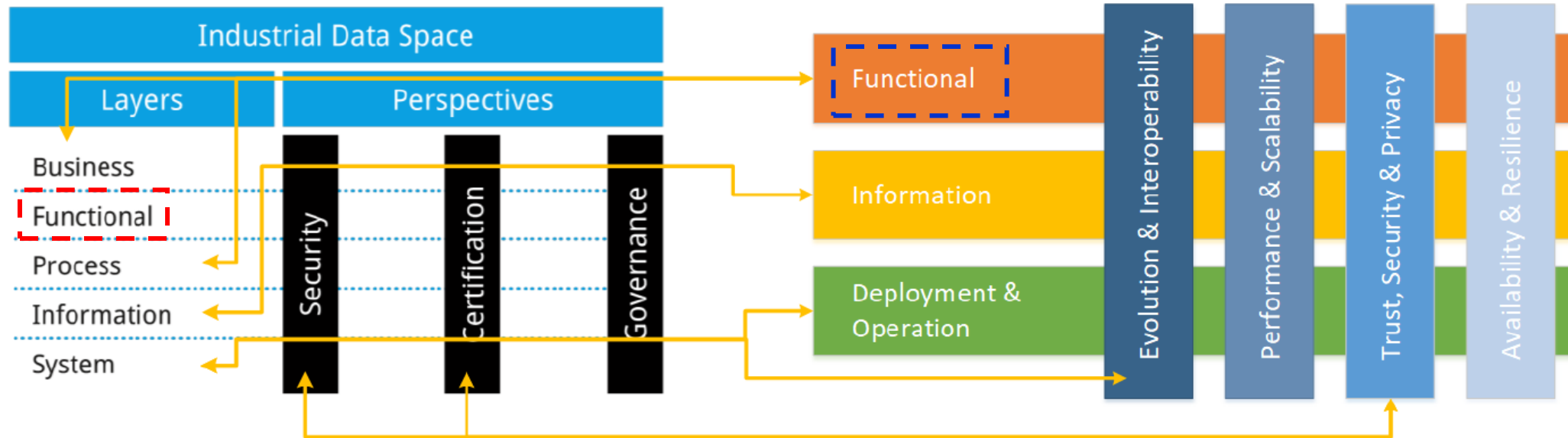
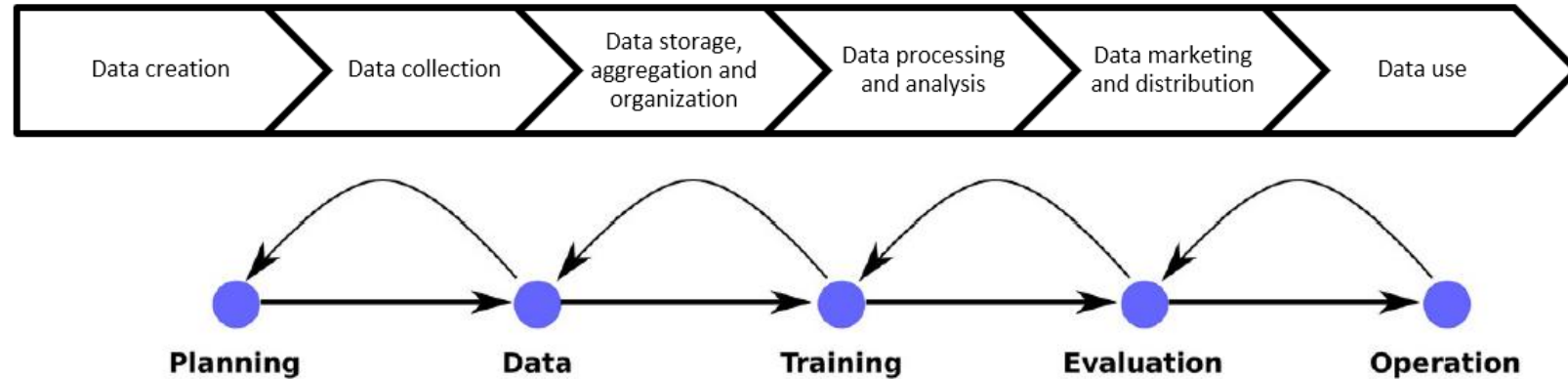


Key findings and challenges – 3

Data lifecycle

Data and value flow

Operations (OT)



Key findings and challenges – 4

A **common language** for Data Interoperability and Intelligence

Metadata as meaning and vocabulary package

Ontology as the foundation and capability of machine interpretation, inference, and logic

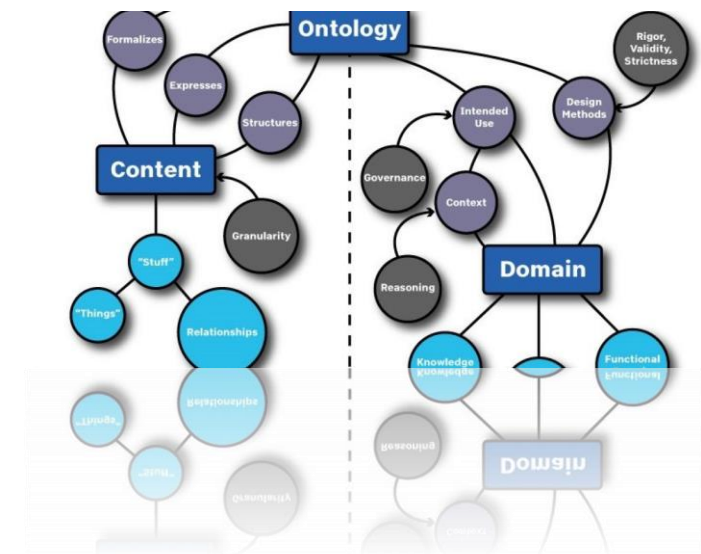
Semantics for better understanding

Key roles in **knowledge discovery and data federation for shared meaning**

GOUI: “Global Observatory for Urban Intelligence”

In June 2021, IEEE and ITU initiated a joint-collaboration to develop GOUI

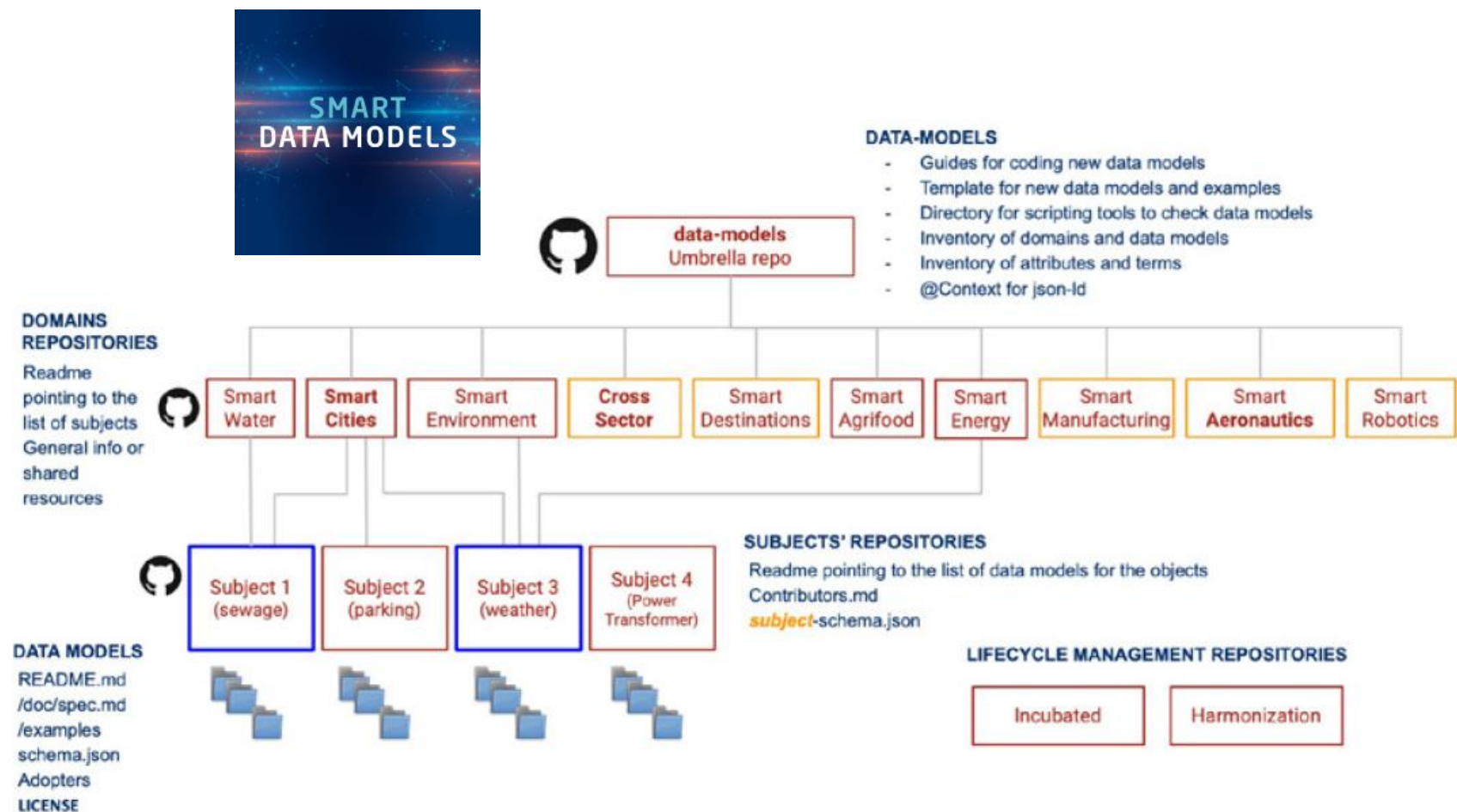
- Create a NEW Smart Cities **Ontology** as a common language
- Correlations via **semantics**
- **Digital Twins** - model cities to better understand them



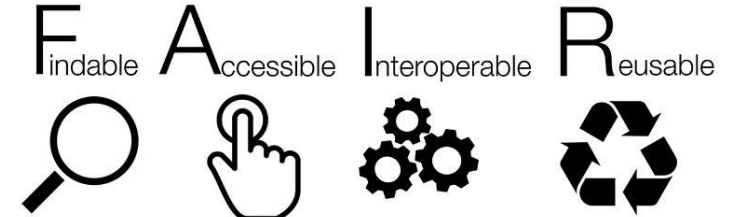
Key findings and challenges – 5

Common data models

Domain-agnostic
Represented in
formats compatible
with the API

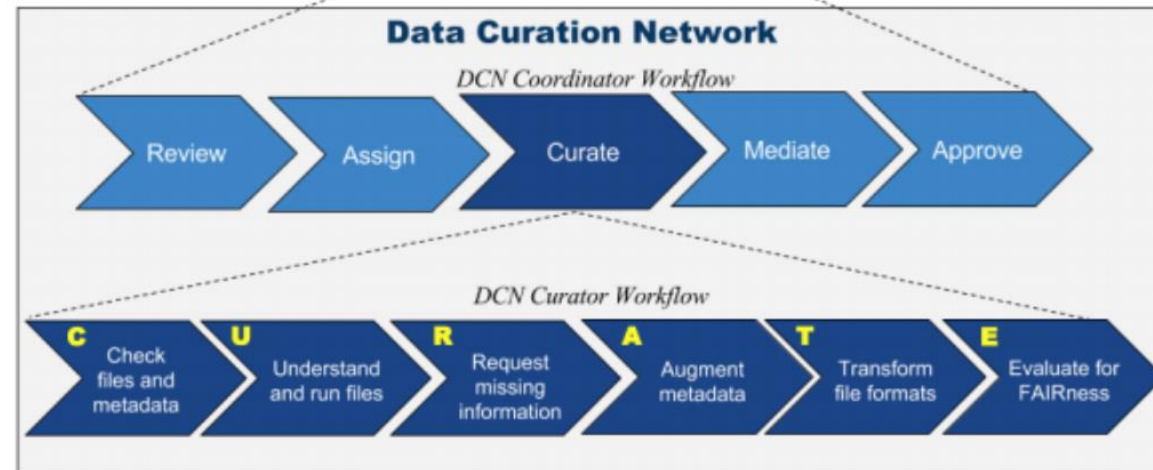
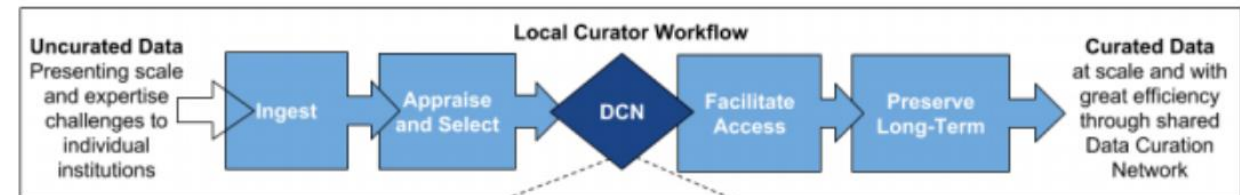
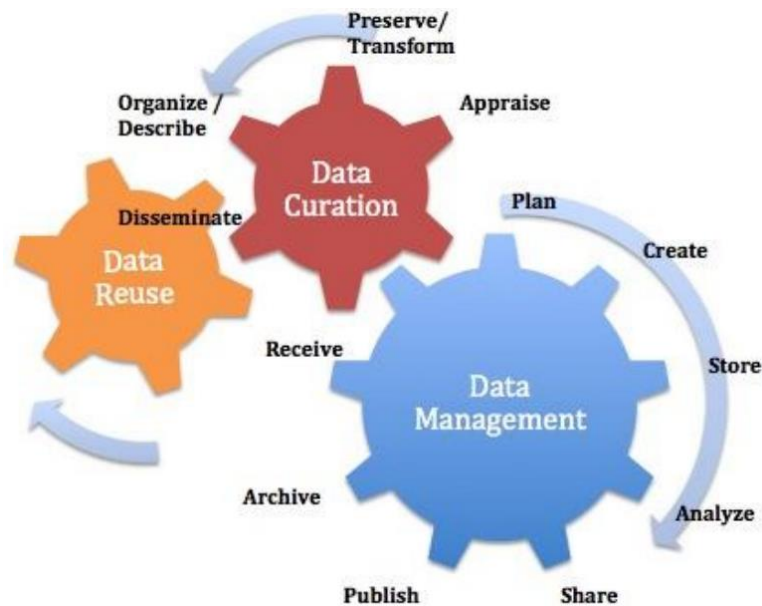


Key findings and challenges – 6



Data curation for maintaining the value of data

Data are organized, described, cleaned, enhanced and preserved for **public use**



The need for explanations
(Human + AI)

Key findings and challenges – 7

Trust in data sharing

- Consent to share
- Control of personal data
- Privacy (GDPR Compliance)
- Transparency
- Accessibility
- Fairness
- Accountability
- Security and data integrity

Risk management

- Federated security management
- Federated privacy management
- Federated assurance management

Utility vs. Privacy



(Source: Telefónica)

Key findings and challenges – 8

Governance

Rights and Responsibilities

What actions can be taken

By whom

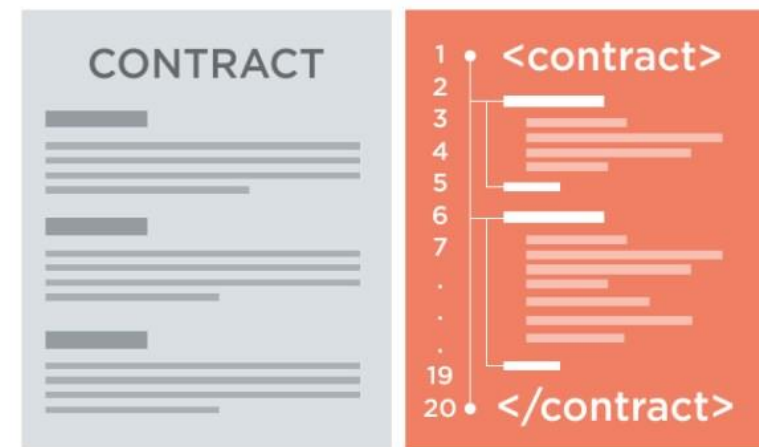
With what data

Compliance

Ethics

Key performance indicators (KPI)

Blockchain and smart contracts



MultiChain Governance

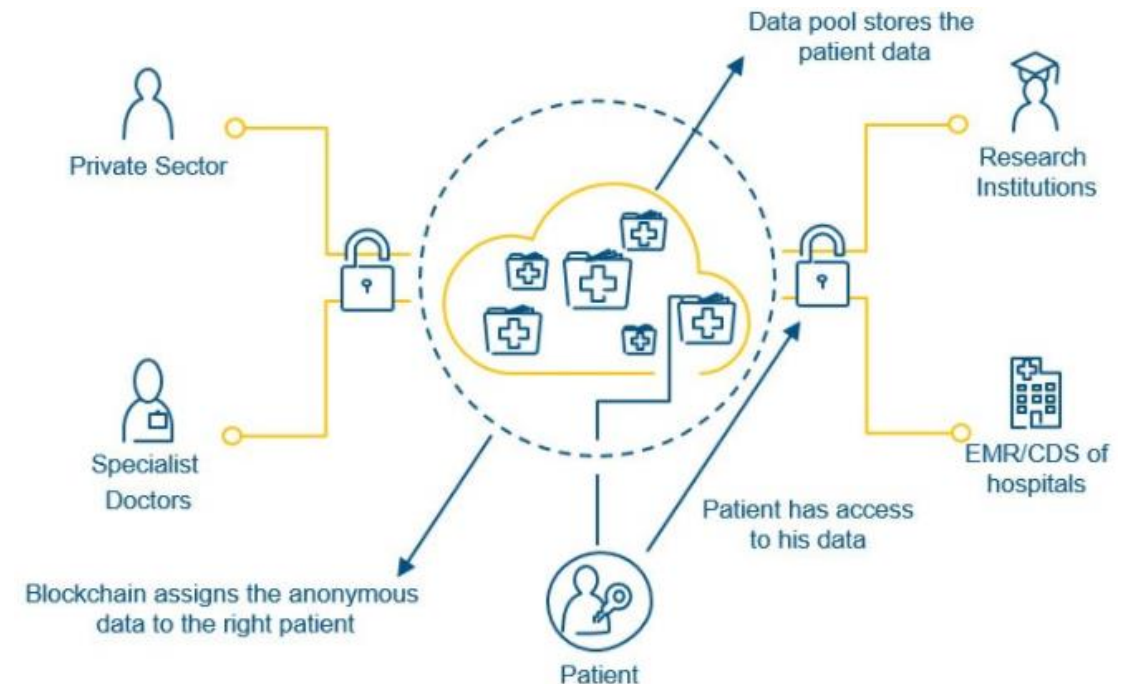
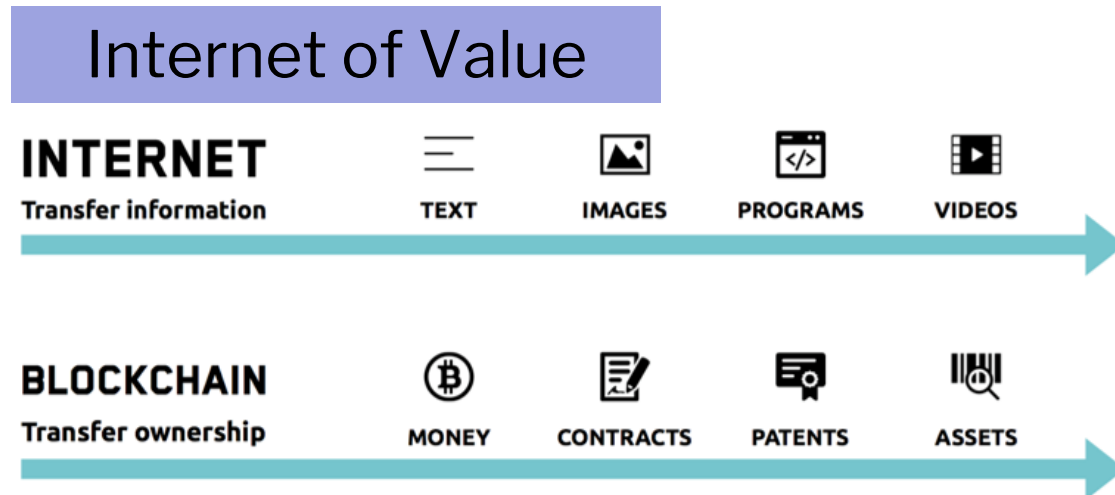
The blockchain as the "perfect code of law"

Key findings and challenges – 9

Decentralization

A decentralised architecture agreed upon by all relevant stakeholder groups with Blockchain

Blockchain enabled value creation

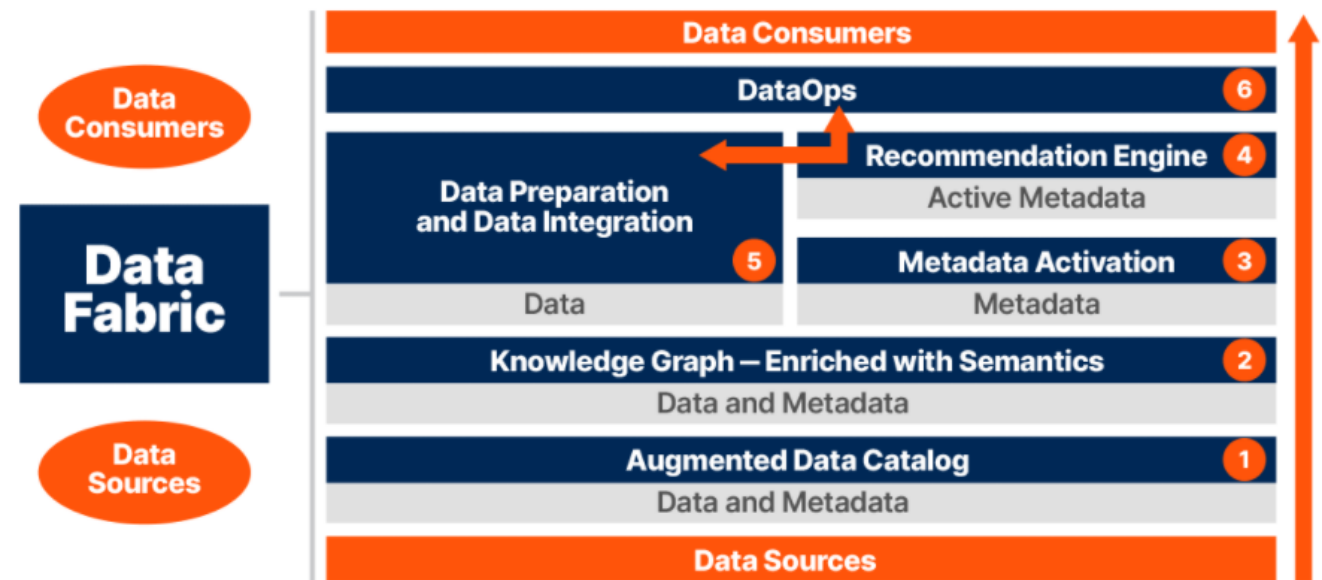
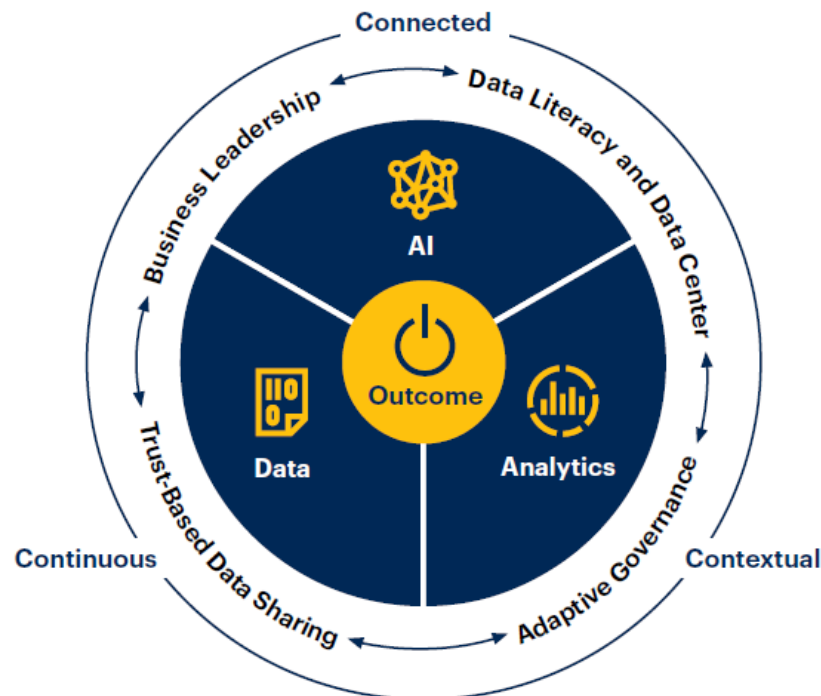


Framework of medical records in Europe

Key findings and challenges – 10

Data Fabric

An integrated data management platform that enables the full breadth of integrated data management capabilities including discovery, federated governance, curation, and orchestration.



Concluding remark

Data-centric approach

Trustworthy Decentralized
Data Ecosystems with AI

Linking between
Data and **AI**



**Connected
Intelligence**