

GAIA-X:

EU'S MOST IMPORTANT ASPIRATION
IN A GENERATION



THE SOUND IS OFF UNTIL
THE CONFERENCE
STARTS AT 4PM

12 OCTOBER 2020

MEDIA PARTNER



WELCOME WORDS

YVES REDING
CCEL

OPENING SPEECH

FRANZ FAYOT
MINISTER
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GAIA-X, A FEDERATED DATA INFRASTRUCTURE FOR EUROPE

ANDREAS WEISS
EUROCLOUD
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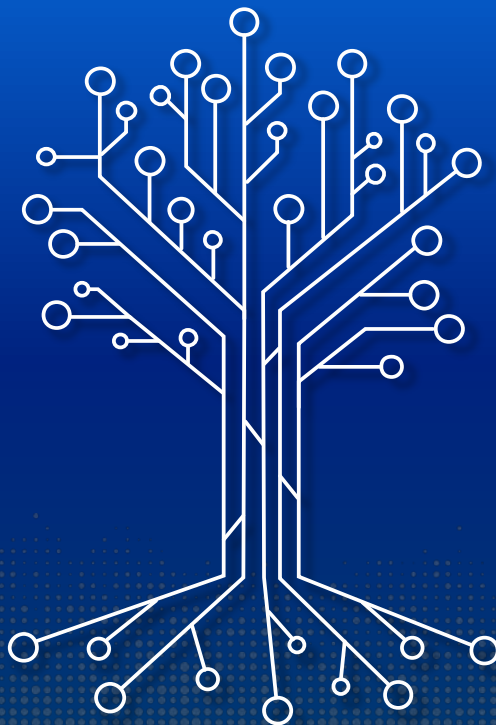
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GAIA-X

GAIA-X

A federated European data infrastructure



Agenda

01 Introduction

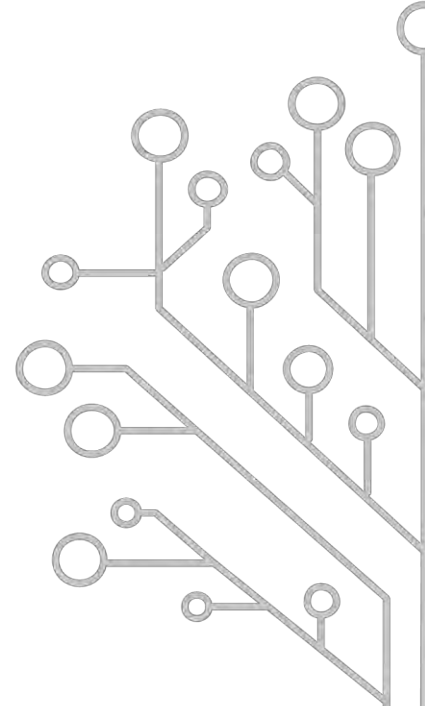
02 The user perspective: Use Cases and requirements

03 The provider perspective: Technological view

04 GAIA-X Foundation

05 Outlook

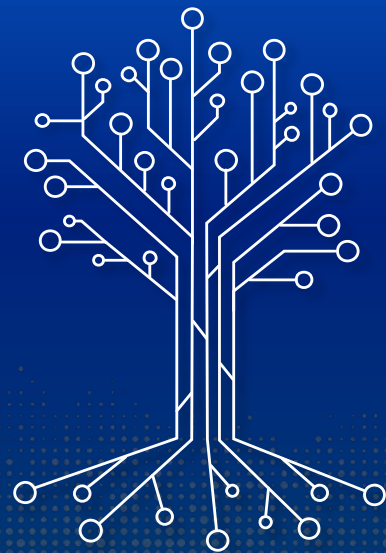
06 Further information, participation and contact



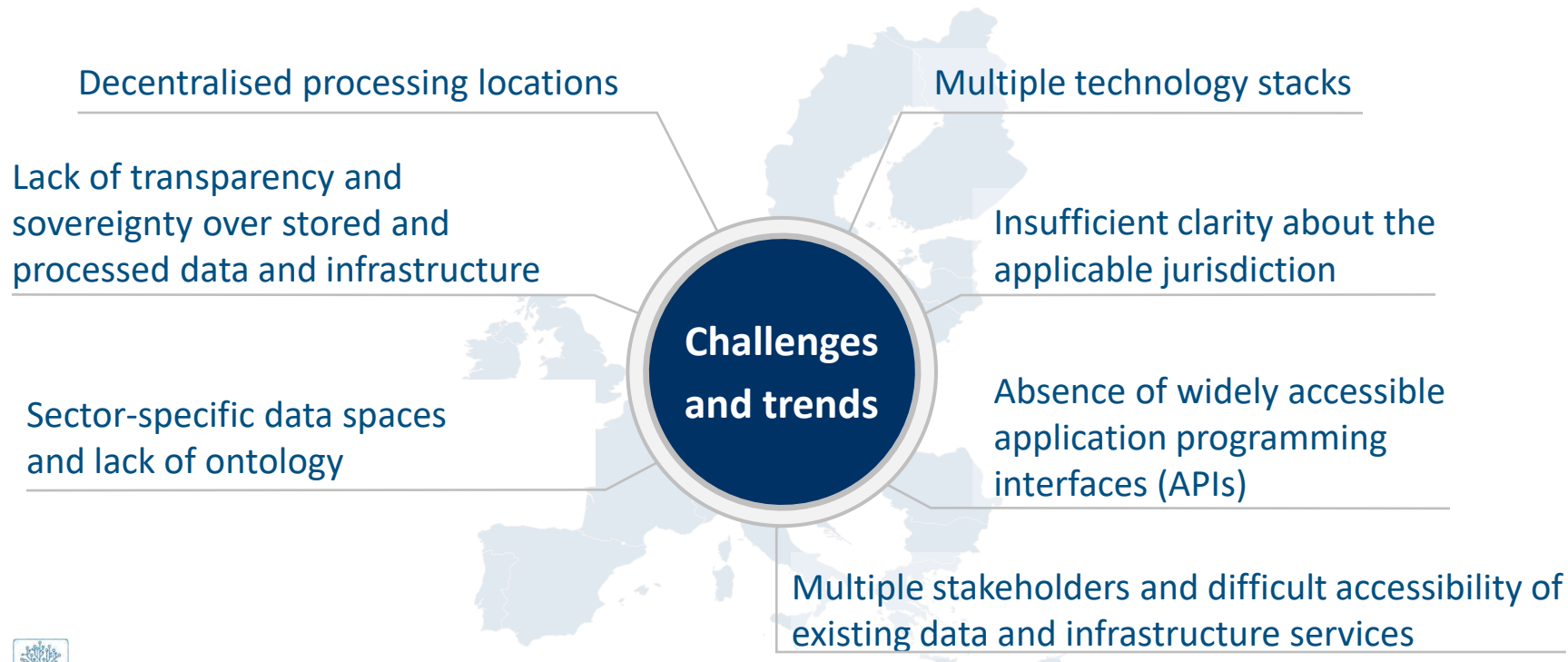


GAIA-X

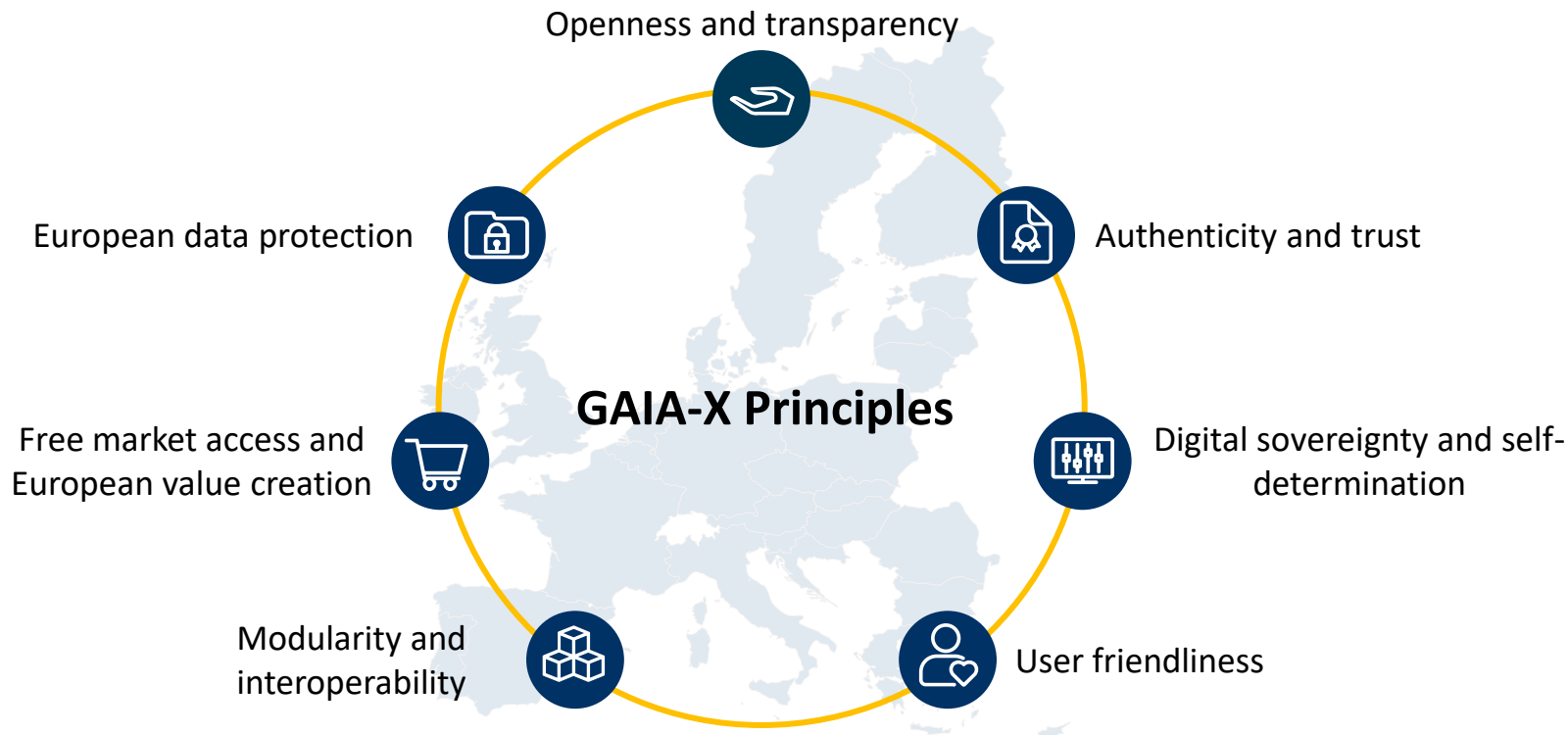
Introduction



GAIA-X is motivated by challenges to the European digital economy



GAIA-X follows principles based on European values



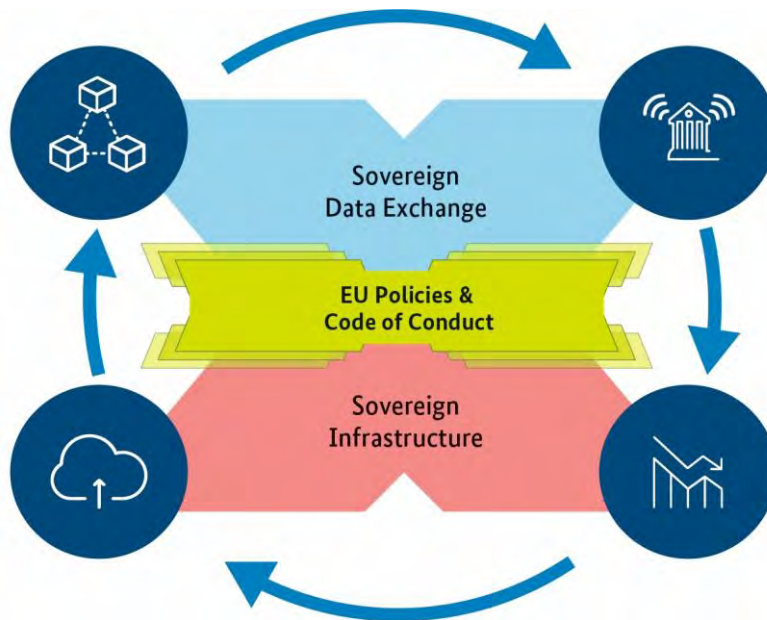
GAIA-X aims at building a trusted, sovereign digital infrastructure for Europe

Creation of digital infrastructures and an ecosystem for innovation

Trusted environment between partners and interoperable links between smart service applications and infrastructure services.

Increasing transparency and attractiveness of digital services

Reduce barriers to compliant service usage; enable the development of new services and products.



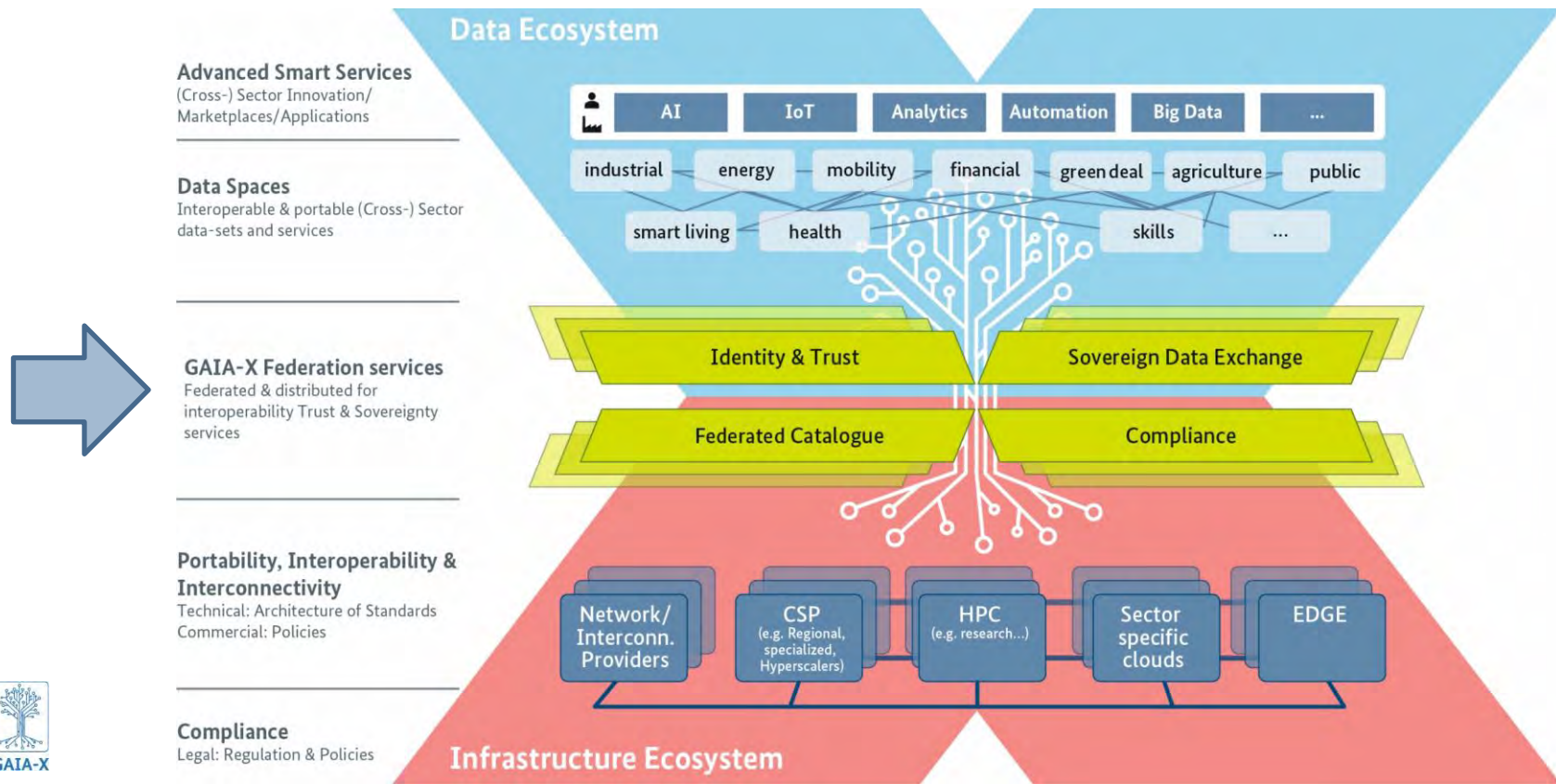
Data sovereignty

Strengthen the digital sovereignty of business, science, government and society.

Reduction of dependencies

Reduce private and business consumers' dependency of single providers; control over location and regulatory environment of stored data; reduce sector-specific dependencies.

Overview: GAIA-X provides a user-friendly and homogenous ecosystem of services and data



GAIA-X is a genuinely European project



European Data Strategy

- GAIA-X is mentioned explicitly in the European Data Strategy and proactively addresses key issues including security, quality of service, data protection and portability as well as energy efficiency.
- Exchange between GAIA-X and the European Commission to identify synergies between GAIA-X and initiatives and programmes such as the European Cloud Federation, CEF 2 and Digital Europe.



Franco-German Cooperation

- GAIA-X has been developed as a Franco-German cooperation of relevant ministries and participating companies.



Further Member States

- Various other Member States have been involved in the development of GAIA-X, the aim is now to further europeanise the project.

A strong alliance of companies and organizations has joined GAIA-X



500+ participants from **ca. 300** companies and organisations



3 out of 4 organisations are private companies, **about half** of which are SMEs*



Organisations from different industries, such as Mobility, Energy, Manufacturing, Finance etc.



Large Companies



SMEs



Start-Ups



Universities



R&D



Associations



Public Sector

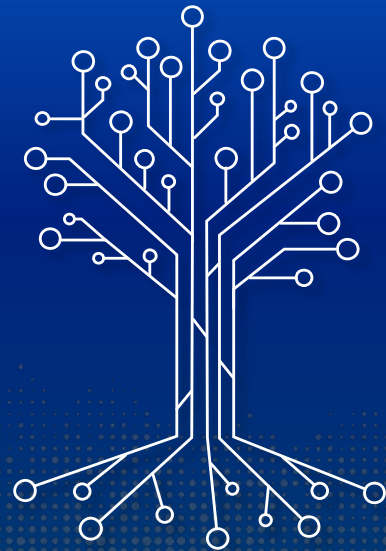




GAIA-X

The user perspective

Use cases & requirements



The goal is to activate and represent the user side in order to develop GAIA-X

Identify suitable use cases –
from both a qualitative and a
quantitative perspective

Analyse and evaluate the
requirements of use cases from
different domains to develop
Data Space Demonstrators

Initiate further measures for
the development of GAIA-X

Define and validate cross-domain
requirements

Define and validate domain-specific
requirements



The analysis of use cases has provided valuable insights

The path
from
use cases
to GAIA-X

1

Use cases from different domains **face the same challenges**.

2

Based on the consolidation of use cases, we can **identify common cross-domain requirements**, which are **shared by all domains**.

3

Additional requirements may be described depending on the domain and use case.

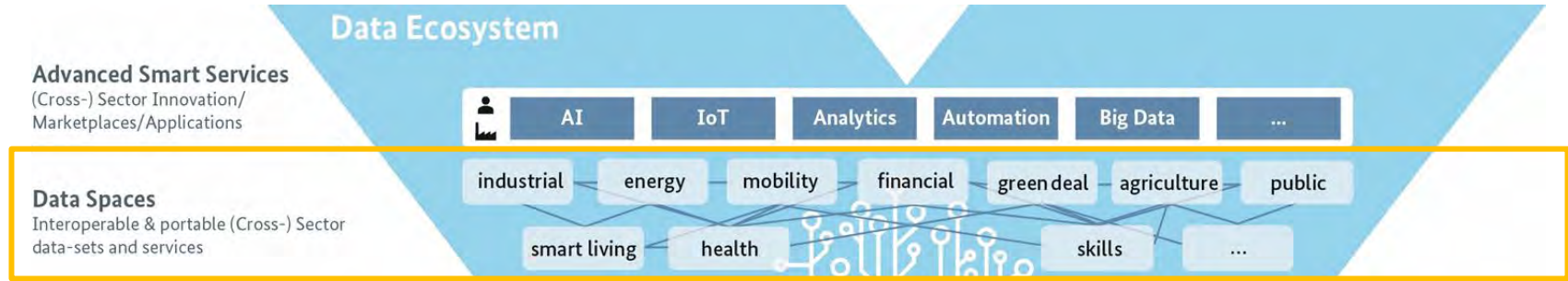
4

Through the synthesis of the use cases we will develop Data Space demonstrators, which **represent the requirements of users and domains**.

5

We will continue to develop GAIA-X into a **shared solution** and an **enabler within and across domains**.

User requirements are at the core of the development of GAIA-X



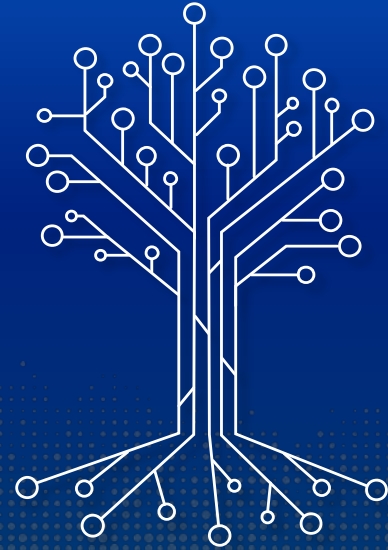
- In order to facilitate value creation based on digital services and mechanisms, we need **an architecture in the form of an underlying framework common to all domains.**
- GAIA-X allows the emergence of **Advanced Smart Services** such as **AI, Analytics or Big Data** and fosters **innovation in the GAIA-X Ecosystem.**
- GAIA-X offers ontologies for interoperability and API within and across sector specific **data spaces** according to the EU data strategy.
- It promotes the opportunity to collaborate in **data-driven horizontal and vertical value chains.**
- As a result, it encourages the emergence of **sustainable business and innovation ecosystems** for the next generation of digital infrastructure.



GAIA-X

The provider perspective

Technological view



GAIA-X aligns various providers in an infrastructure ecosystem

- GAIA-X creates an infrastructure ecosystem by establishing **portability** and **interoperability** between **network and interconnection providers**, **Cloud Solution Providers (CSP)**, **High Performance Computing (HPC)**, **sector-specific clouds** and **edge systems**.
- Mechanisms are developed to **find, combine and connect services** from participating providers in order to enable a **user-friendly infrastructure ecosystem**.
- GAIA-X **supports distributed use cases**, spanning from on-premise set-ups, cloud hosted infrastructure through to facility to edge cases.
- GAIA-X has to address the **complete technical stack**, including infrastructure and existing network/ interconnection requirements (Architecture of Standards) of distributed use cases.

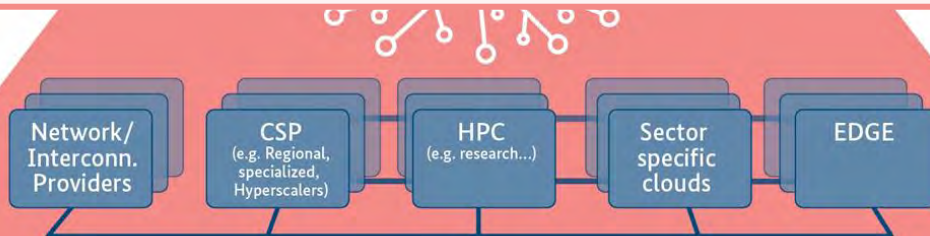
Portability, Interoperability & Interconnectivity

Technical: Architecture of Standards
Commercial: Policies

Compliance

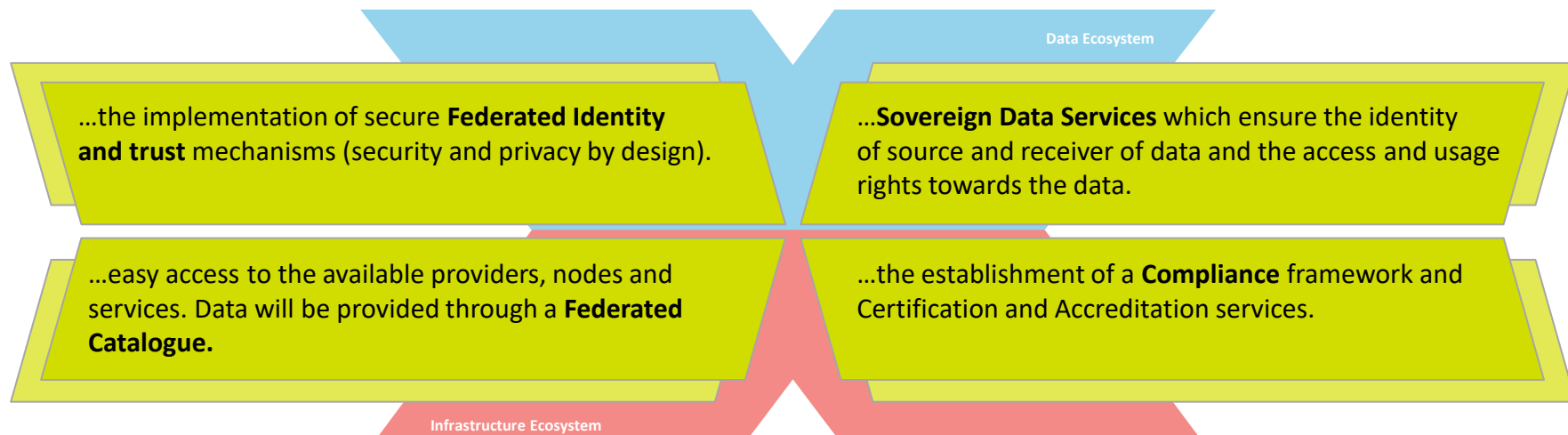
Legal: Regulation & Policies

Infrastructure Ecosystem



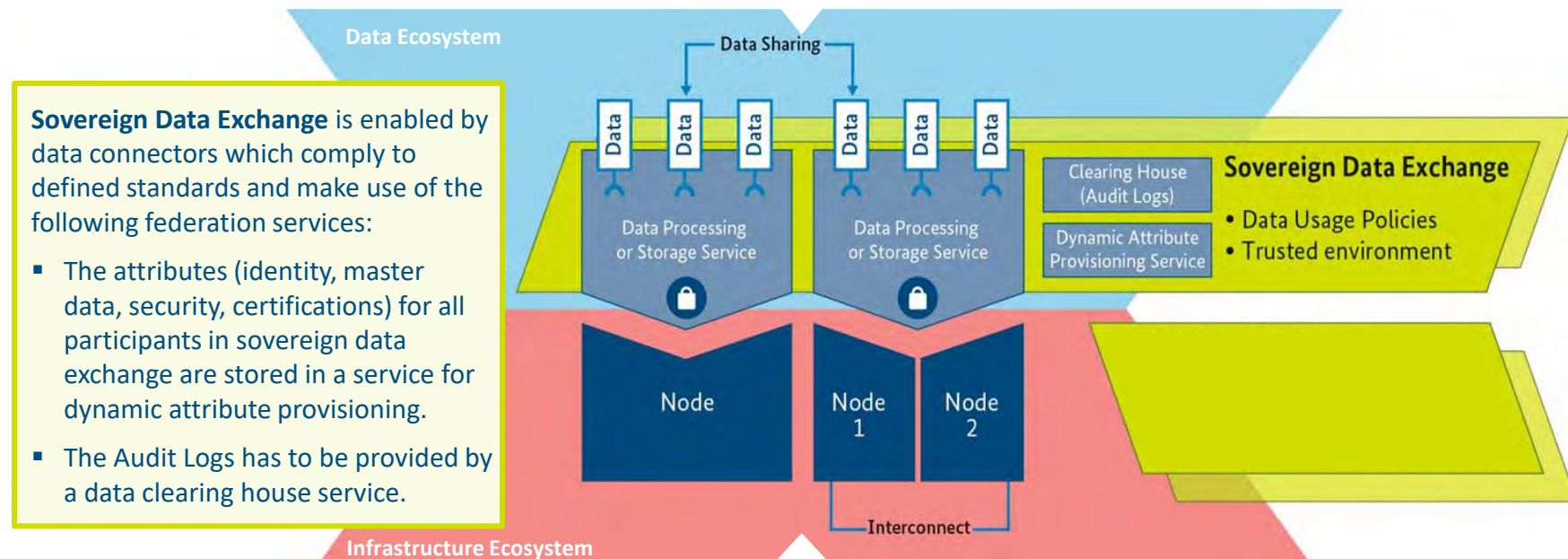
GAIA-X Federated Services are at the core of the technical infrastructure

The technical implementation of these Federation Services focuses on...



GAIA-X identifies the minimum technical requirements and services necessary to operate **the Federated GAIA-X Ecosystem**. The development of these services will follow the principles of **Security-by-Design** and also include the concept of **Privacy-by-Design**.

Sovereign Data Exchange allows participants to exercise data usage controls

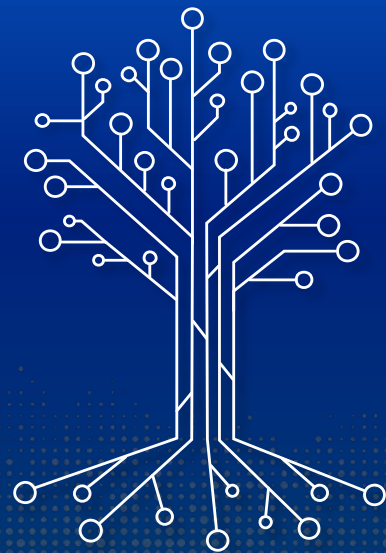


The Federation Services include **Sovereign Data Exchange** Services which allow each Infrastructure Ecosystem Participant to exercise data usage controls when exchanging data without the need to create individual agreements and technological solutions with each party.



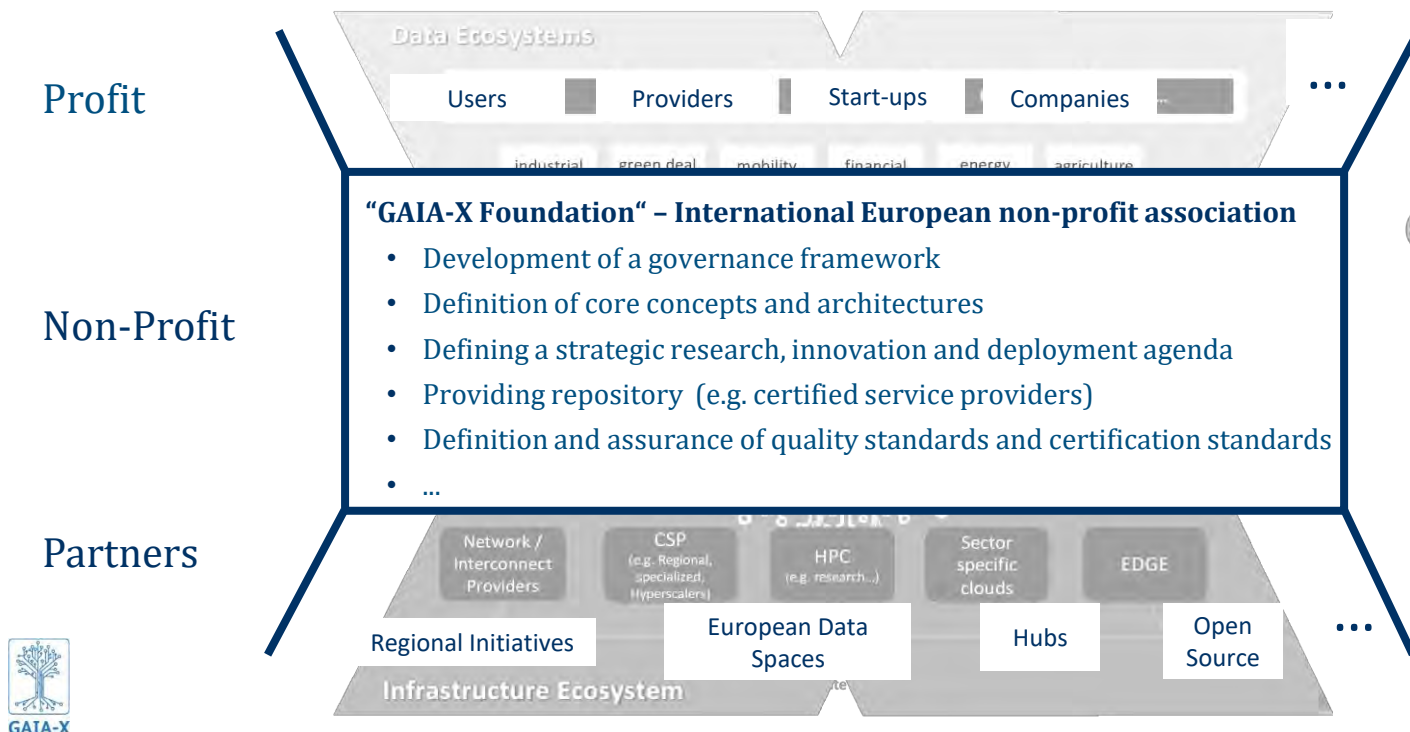
GAIA-X

GAIA-X Foundation



The “GAIA-X Foundation” will carry out key tasks in the build-up and operation of GAIA-X

Design principles and ecosystem:



Interested parties are invited to shape the “GAIA-X Foundation”



Further information about GAIA-X is available on our website



Information

- Descriptions of the mission, project structure and workstreams
- Overview and download of publications



Blog

- Publication of blog posts on news, developments, discussions and comments on events and articles



Use cases

- Overview of the current use cases
- Individual one pager with further descriptions and information on each use case



Glossary

- The glossary is intended to list and explain important terms used in the GAIA X context



FAQ

- The FAQ list offers a collection of frequently asked questions and answers about the project and GAIA- X

www.data-infrastructure.eu

Apply to GAIA-X

European and international companies and organizations are invited to participate actively in GAIA-X through an **association membership**, a **participation in the community** or **in the regional hubs**.

Become an Association member - Contact: aisbl@data-infrastructure.eu

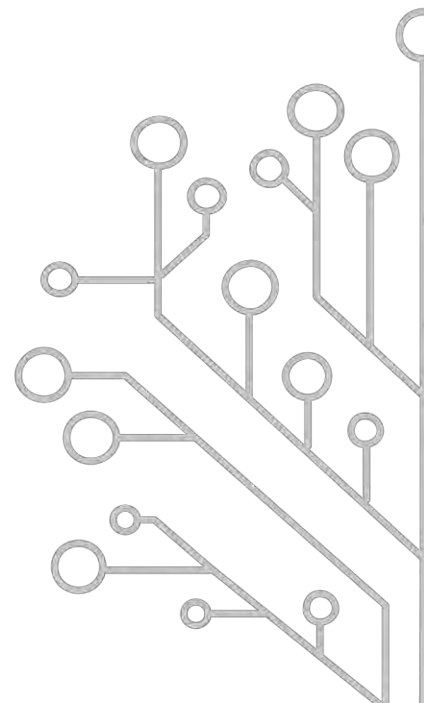
Become a Community member - Contact: contact@data-infrastructure.eu

Become a Regional GAIA-X Hubs member- Contact: contact@data-infrastructure.eu

Publications:

All Publications can be found [here](#).

- [GAIA-X: A Pitch Towards Europe](#)
- [GAIA-X: Technical Architecture](#)
- [GAIA-X: Policy Rules and Architecture of Standards](#)
- [GAIA-X: Driver of digital innovation in Europe](#)



Overview

Objectives & Principles

Project GAIA-X



Franco-German Position Paper



GAIA-X: The European project kicks off the next phase



GAIA-X: Policy Rules and Architecture of Standards



Workstream 1 – User Ecosystems & Requirements

GAIA-X: A Pitch Towards Europe



Use Cases: GAIA-X from the user perspective



Workstream 2 – Technical Implementation

GAIA-X: Driver of digital innovation in Europe



GAIA-X: Technical Architecture



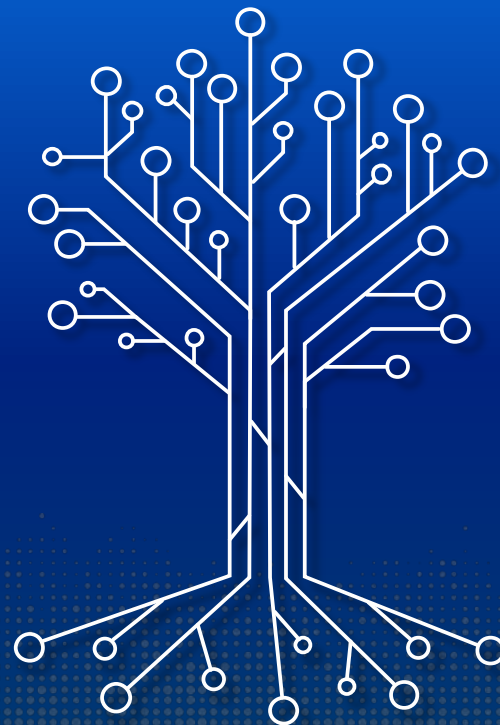
Available at:
data-infrastructure.eu



GAIA-X

General questions:

GAIA-X@vditz.de



OPPORTUNITIES AND CHALLENGES OF THE DATA ECONOMY

FEDERICO MILANI
EUROPEAN COMMISSION

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A European Strategy for Data

Federico Milani

Data policy & innovation

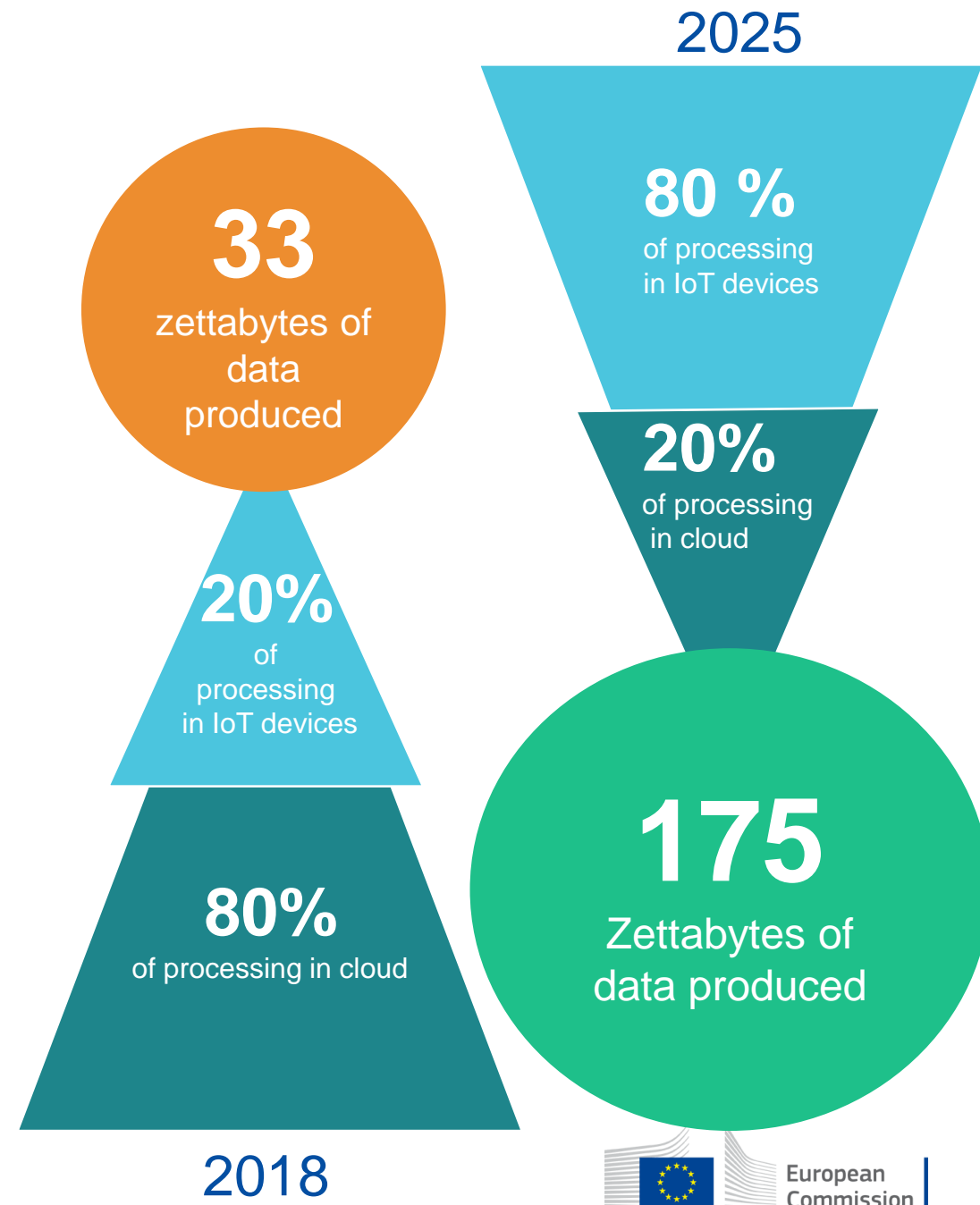


“I want European businesses and our many SMEs to access high quality data and create value for Europeans – including by developing Artificial Intelligence applications.”

*Thierry Breton,
Commissioner for the Internal Market*

Europe has everything to play for


- Data can transform all sectors of the economy and is crucial for AI
- Personal and non-personal data can be a source of innovation for new products and services
- Data can contribute to tackle societal challenges such as climate change, health, mobility, etc.
- Data can make our lives and work easier and better




MIT January-February 2020 Survey (1000 companies)

MIT Technology Review Insights

Produced in partnership with

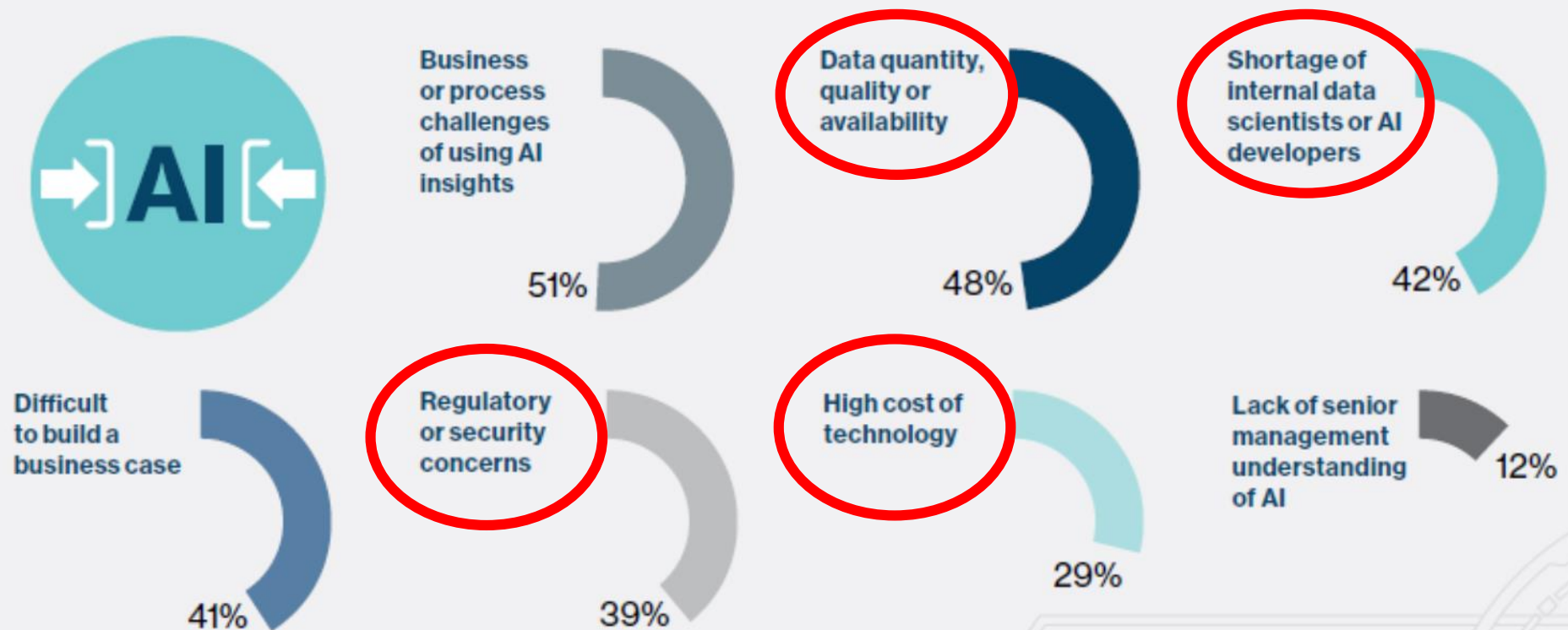
Gold partner  GENESYS

Silver partner  PHILIPS

Promise, reality, and a future of data sharing

The global AI agenda

Figure 5: What are the greatest constraints to your company's use of AI? (% of respondents)



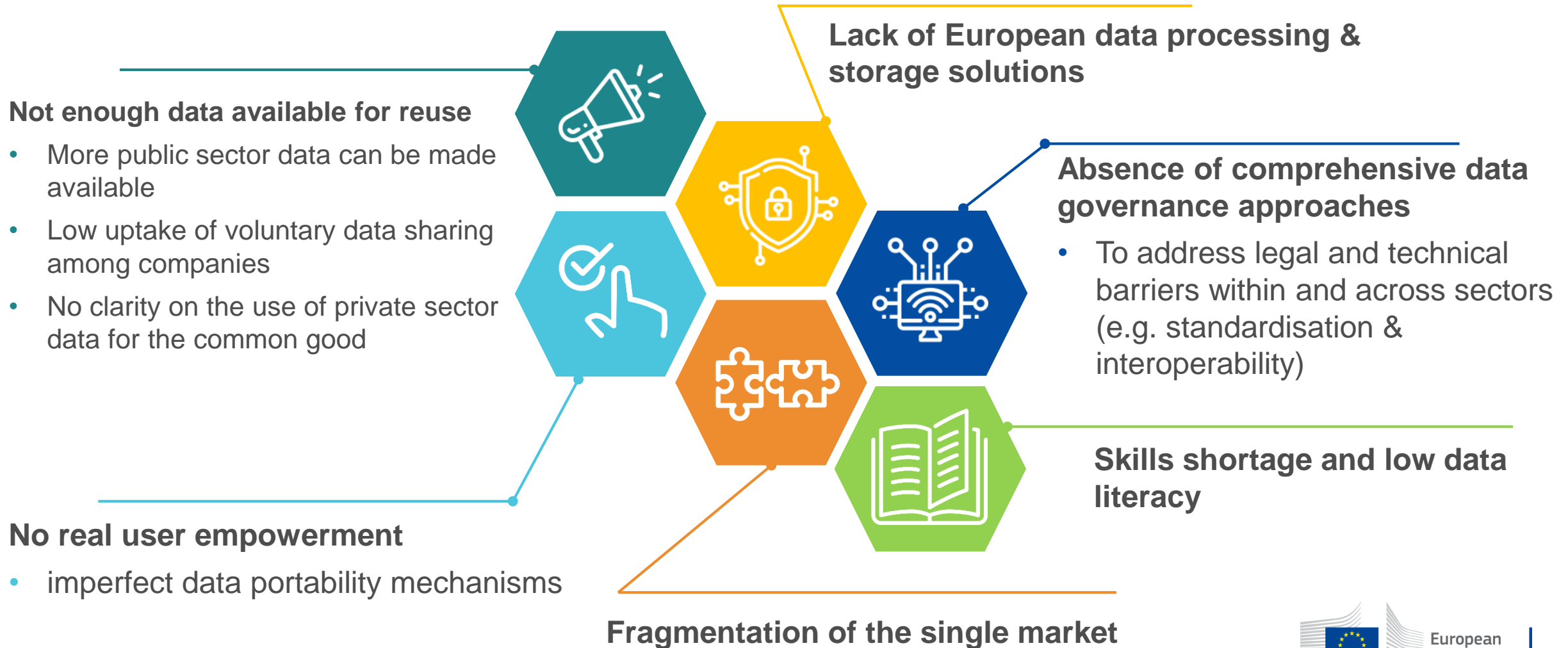
Source: MIT Technology Review Insights survey, 2020

European Strategy for Data

A common European data space, a single market for data



What are the problems?



Deploying the strategy through 4 Pillars



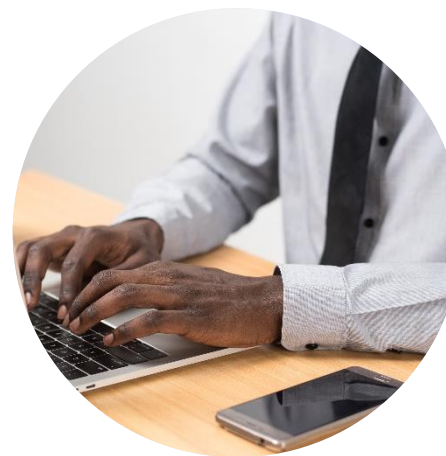
A cross-sectoral governance framework for data access and use

including a legislative framework for the governance of European data spaces and other cross- sectoral measures for data access and use



Enablers

Total investments of € 4-6 billion in a High Impact Project on European data spaces and federated cloud infrastructures



Competences

Empowering individuals, investing in digital skills & data literacy and in dedicated capacity building for SMEs.



Rollout of common European data spaces

in crucial economic sectors and domains of public interest, looking at data governance and practical arrangements.

International Aspects

Common European data spaces



Health



Industrial &
Manufacturing



Agriculture



Finance



Mobility



Green Deal



Energy



Public
Administration



Skills

Personal
data spaces

High Value
Datasets
from public
sector

- Driven by stakeholders
- Rich pool of data of varying degree of openness
- Sectoral data governance (contracts, licenses, access rights, usage rights)
- Technical tools for data pooling and sharing

Technical infrastructure for data spaces



**Cloud Infrastructure &
Services**

**Edge Infrastructure &
Services**

**High-Performance
Computing**

**AI Testing and
Experimentation
Facilities**



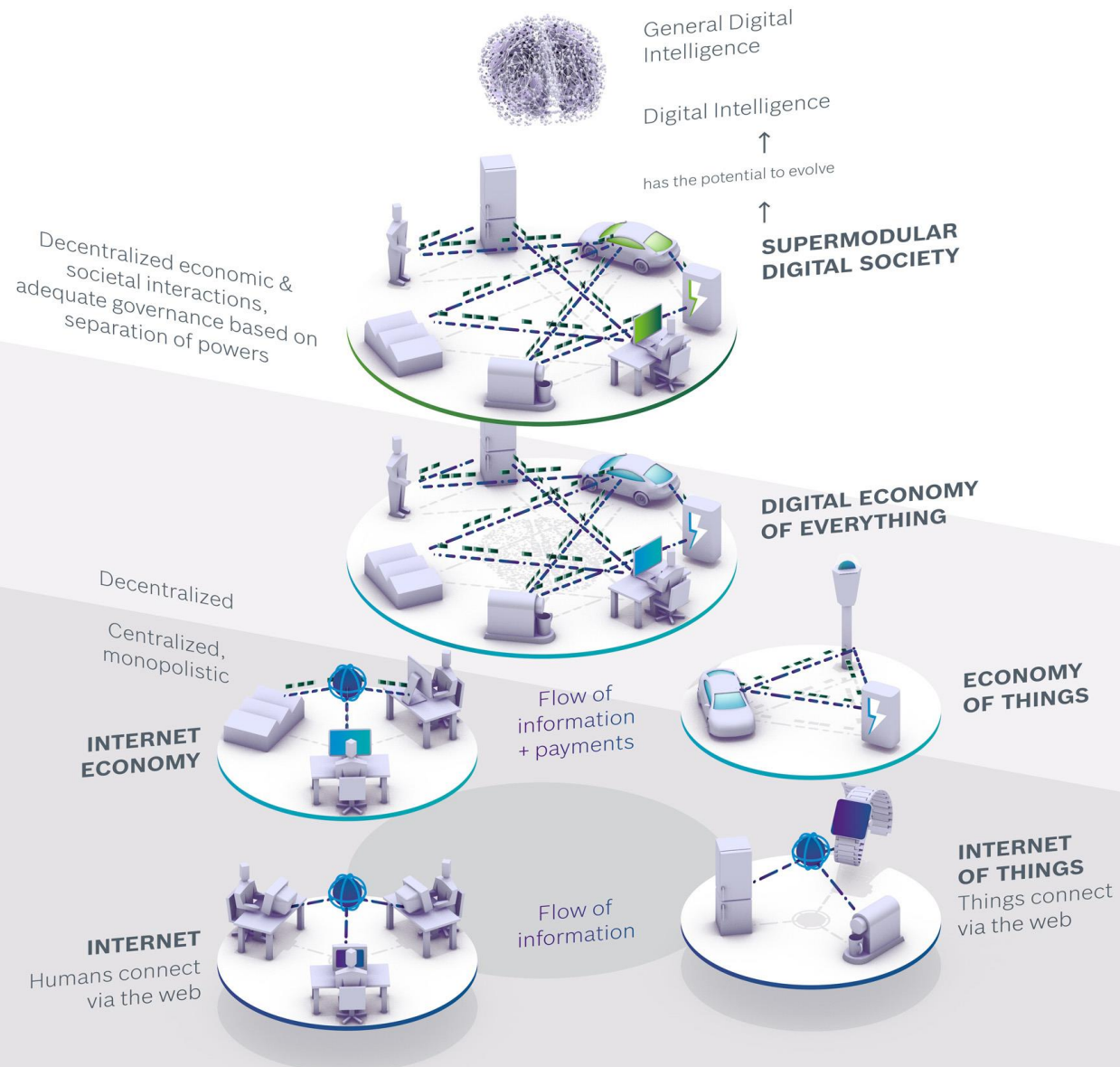
Thank you for your attention!



ECONOMY OF THINGS : GAIA-X ENABLES NEW BUSINESS

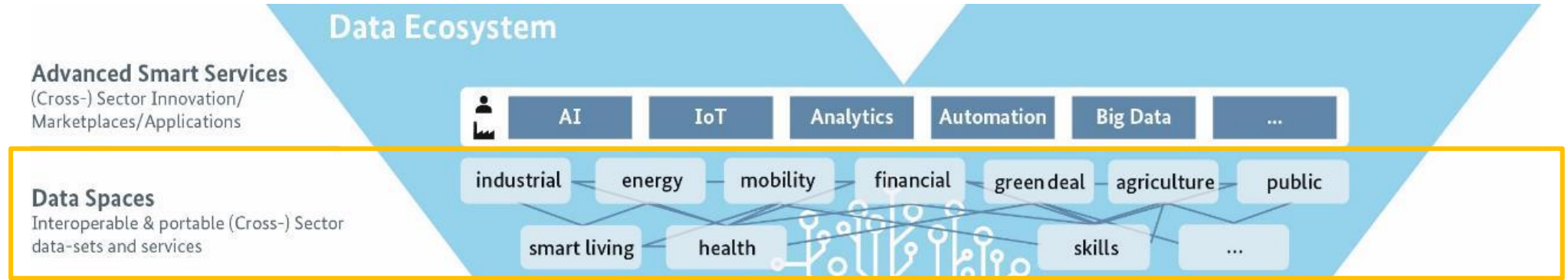
**NIK SCHARMANN
ROBERT BOSCH GMBH**

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GAIA-X Use-Case Requirements

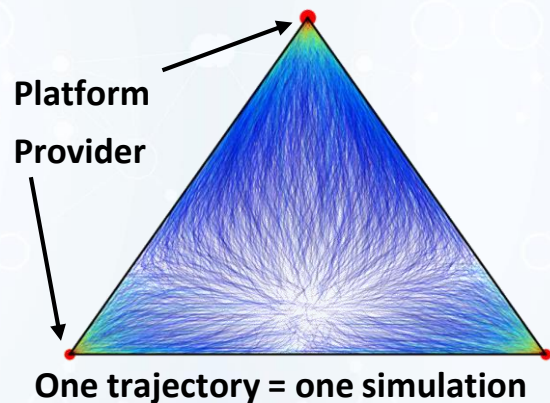
User requirements are at the core of the development of GAIA-X



- B2B-business relies on **trust** and a partnership along the value chains
- In a B2B-Data Economy a **trustworthy Data infrastructure** is required
- **GAIA-X** provides the such a **trustworthy infrastructure** to share and enrich data
- GAIA-X offers ontologies for interoperability and API within and across sector specific **data spaces** according to the EU data strategy.
- It promotes the opportunity to collaborate in **data-driven horizontal and vertical value chains**.
- As a result, it encourages the emergence of **sustainable business and innovation ecosystems** for the next generation of digital infrastructure.

Platform Monopolies

- ▶ Game theoretic simulations show that platform monopolies arise naturally



1000 simulation runs

3 Platform providers, 1000 users total

Users optimize greedily every time step

Result: Always one dominating platform

Not dependent on starting conditions!

Platforms provide value to users, but the platform owner profits most





Basic network effects

- ▶ For a fully connected network of n users, $\frac{n(n-1)}{2}$ unique connections are available
- ▶ The value of the network is scaling with n of users, different models for the order:
 - ▶ $O(n \log n)$ (Odlyzko-Tilly: valuable connections per user are limited)
 - ▶ $O(n^2)$ (Metcalfe: every connection has the same value)
 - ▶ $O(2^n)$ (Reed: value scales with number of possible sub-networks)
- ▶ The absolute value for two networks with the same topology can differ vastly

Interaction value drives network value

Everybody wants to own the platform

plus

Nobody wants to be locked in on other platforms

results in

Small platforms without benefits of scaling networks

A new concept to break this deadlock

The Economy of Things

To break the deadlock a trilemma is solved using decentralized computing, incentive design and the idea of the cooperative



A logically centralized trusted infrastructure..

- > Immutable ledger
- > Privacy-preserving computation



... realized on a decentralized peer-to-peer network..

- > No single proprietary owner
- > No proprietary control points
- > Cooperative Governance

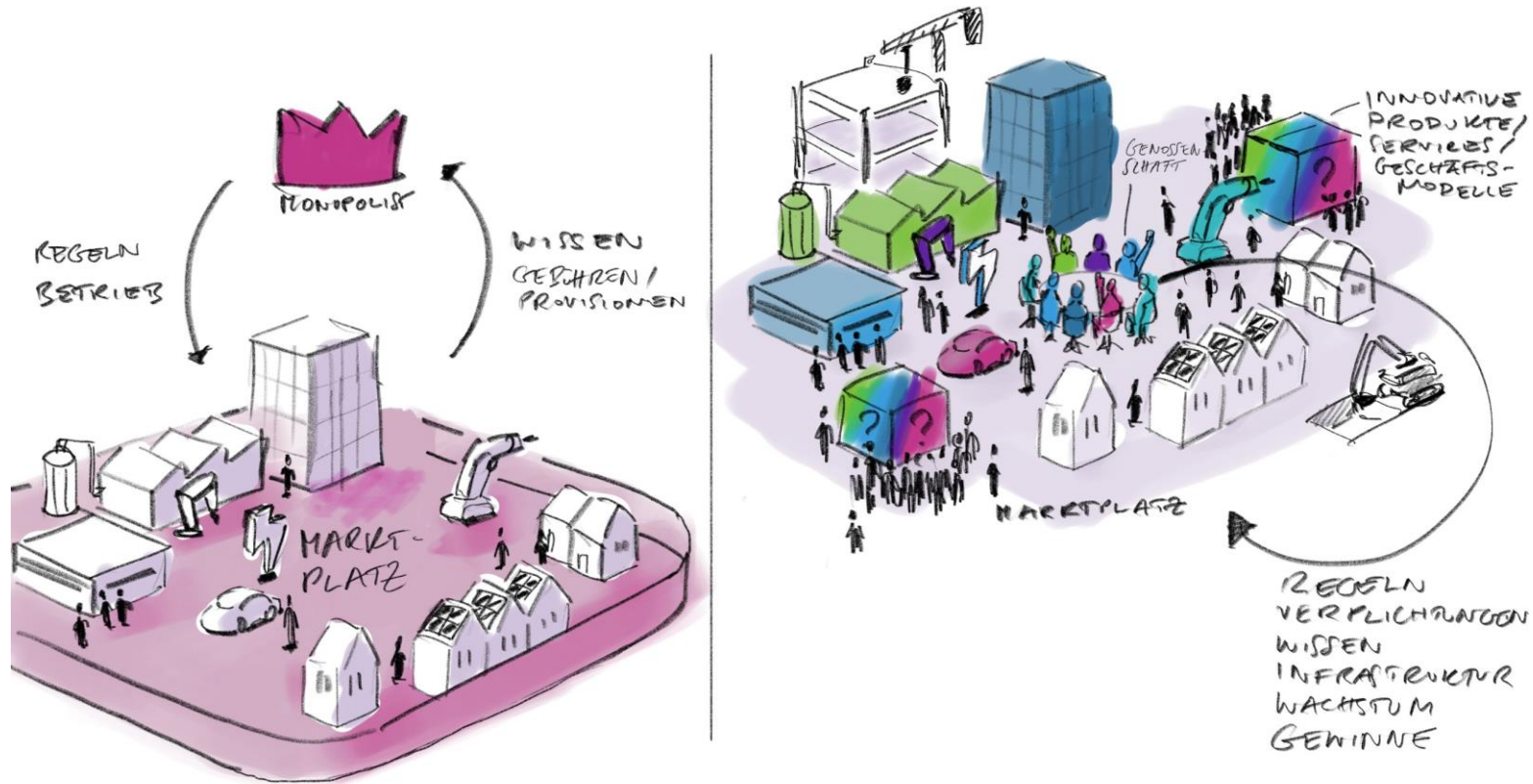
...with powerful incentives for stakeholders to match the entrepreneurial spirit of privately owned companies.



Economy of Things

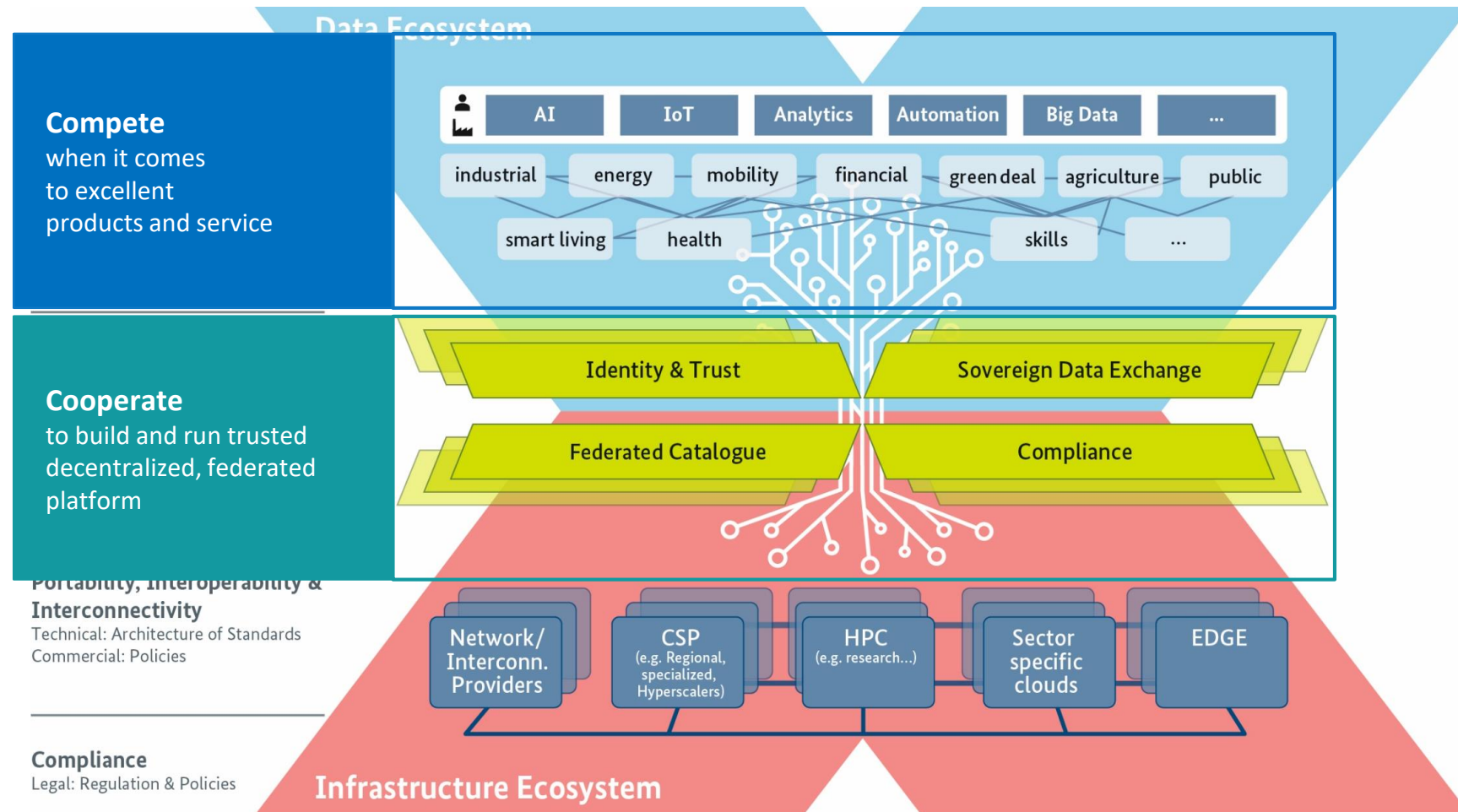
- > Entities directly work together without a proprietary intermediary
- > The value of the network is fairly distributed among contributors

Economy of Things brings cooperatives into the digital age

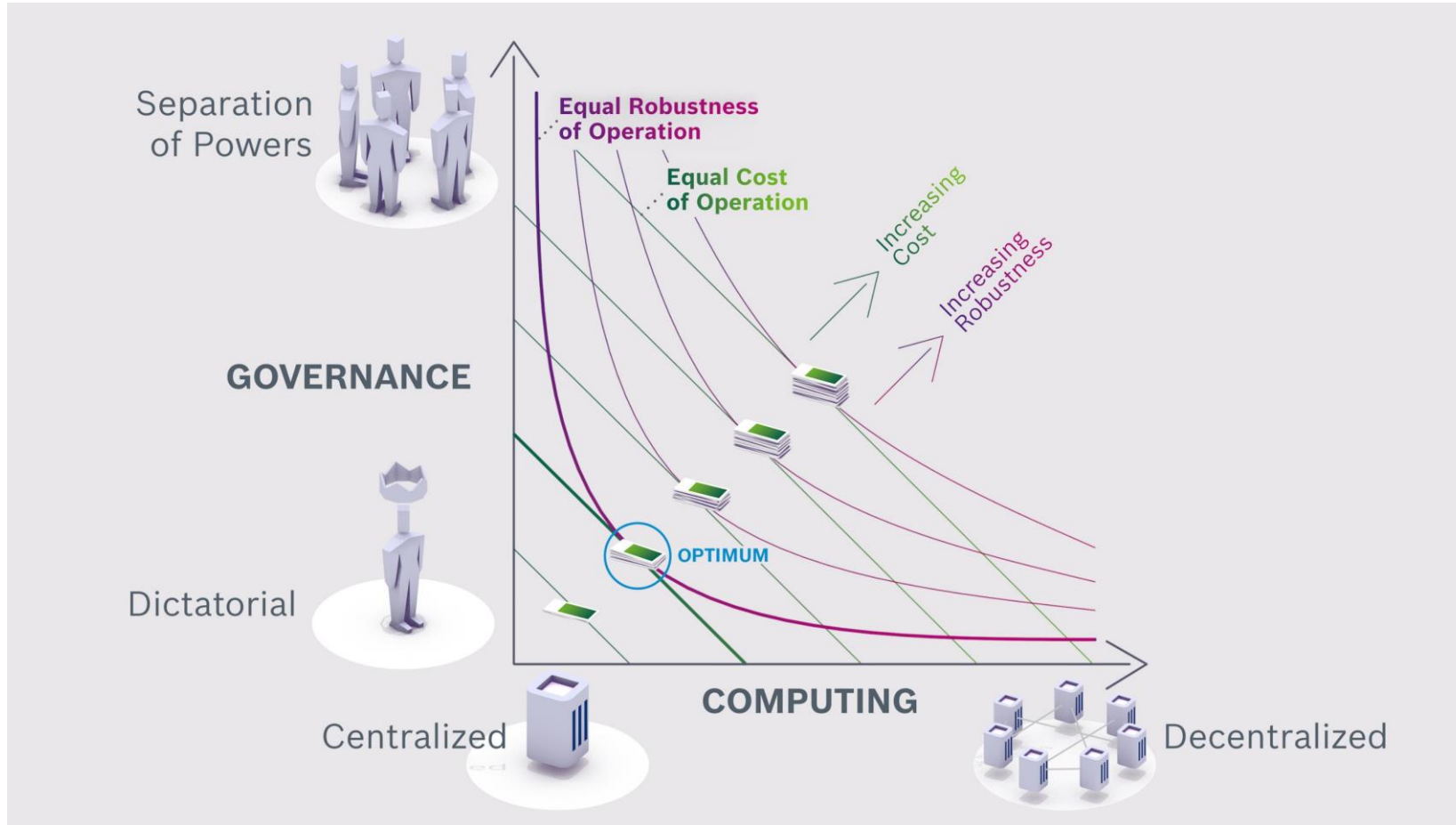


Economy of Things is committed to “Coopetition” – the interaction of “Collaboration” and “Competition” i.e. cooperating with all stakeholders in the development and operation of digital platforms and marketplaces, but competing for specific products and services on these platforms.

GAIA-X is also a co-opetitive ecosystem



Efficient digital economies strike need to strike a balance between decentralized computing and governance



WHAT TO DO WITH GAIA-X?

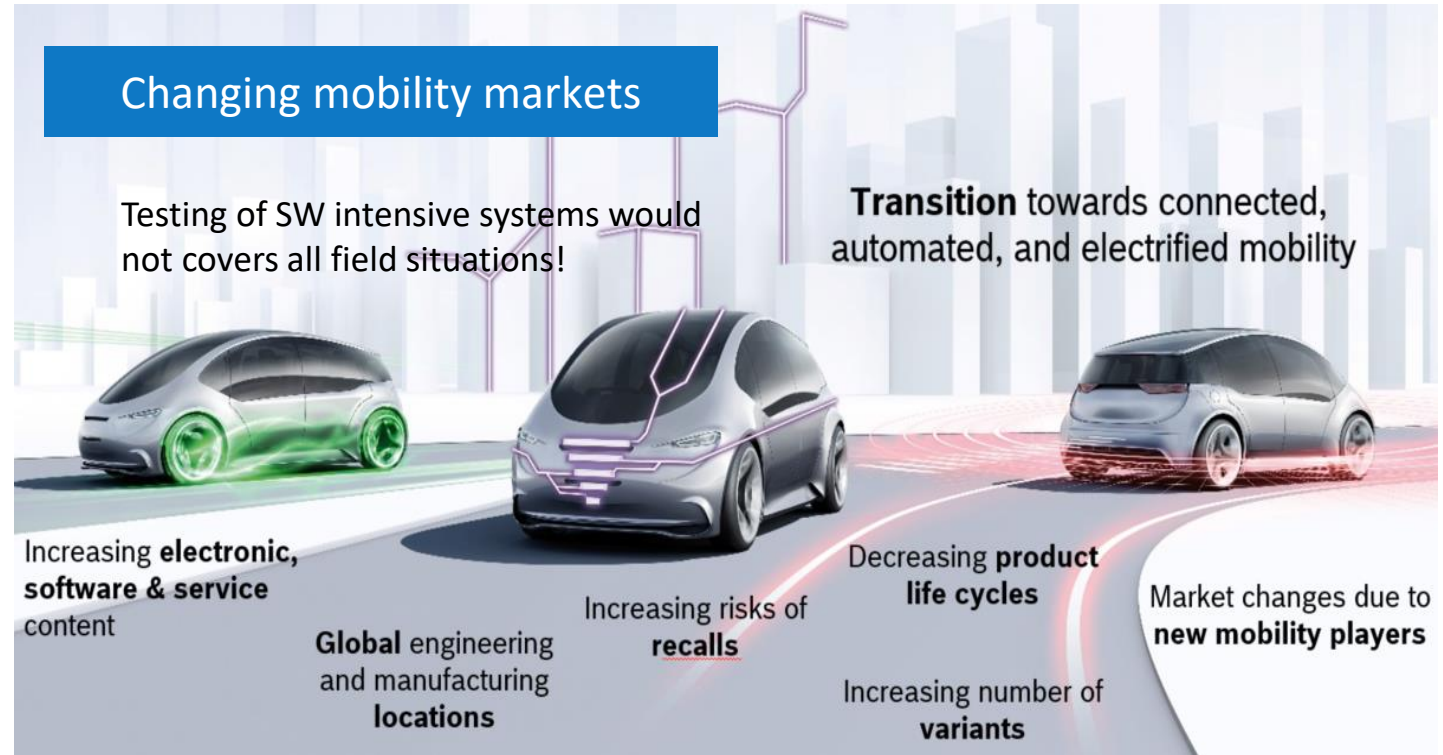
Challenges for the automotive players

Achieve customer enthusiasm in the face of added complexity

New approach needed!

**Collaboration
between Market
Players**

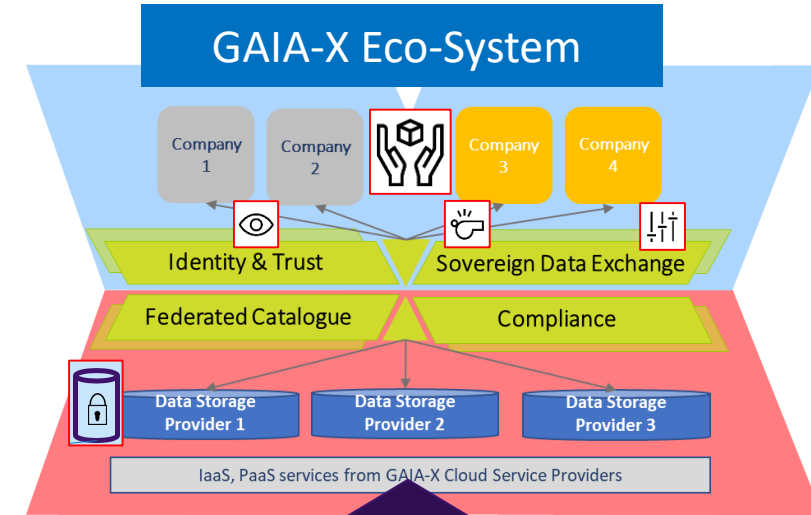
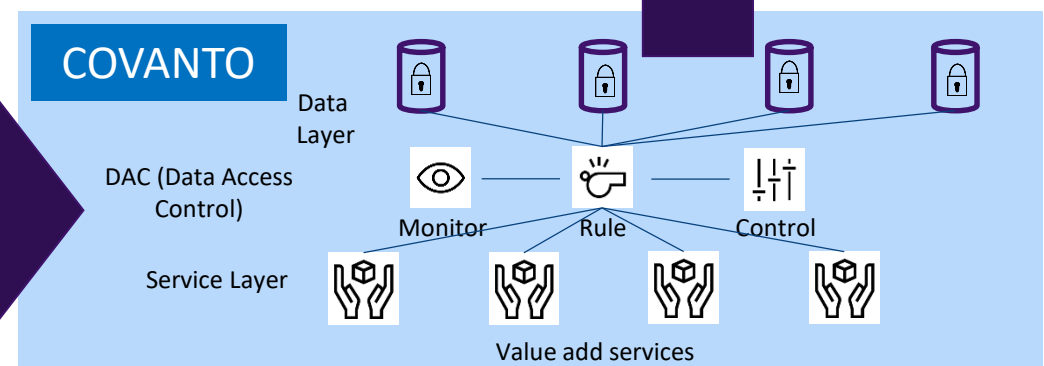
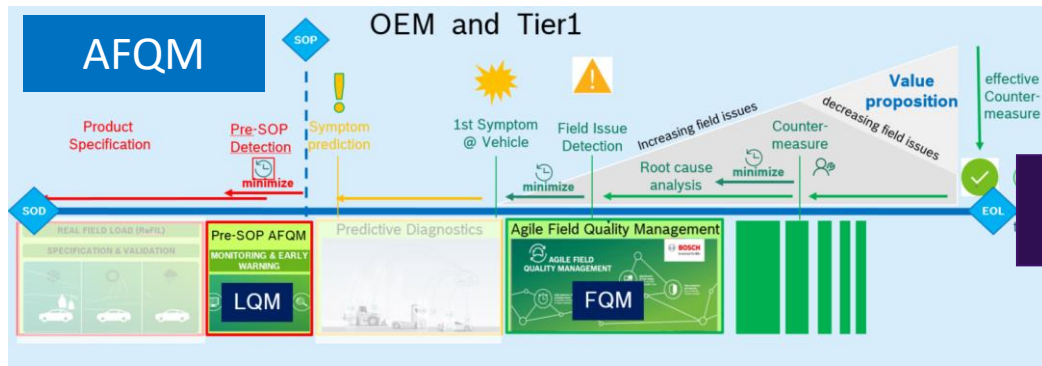
based on data.



GAIA-X

Scaling Bosch data driven business in GAIA-X

- **Up to 20%** reduction of external failure costs due to faster corrective actions
- **80%** improved efficiency on returned parts analysis, enabling more focus on outstanding root cause analysis tasks
- **Aligned VDA/AQI concept** for data based business



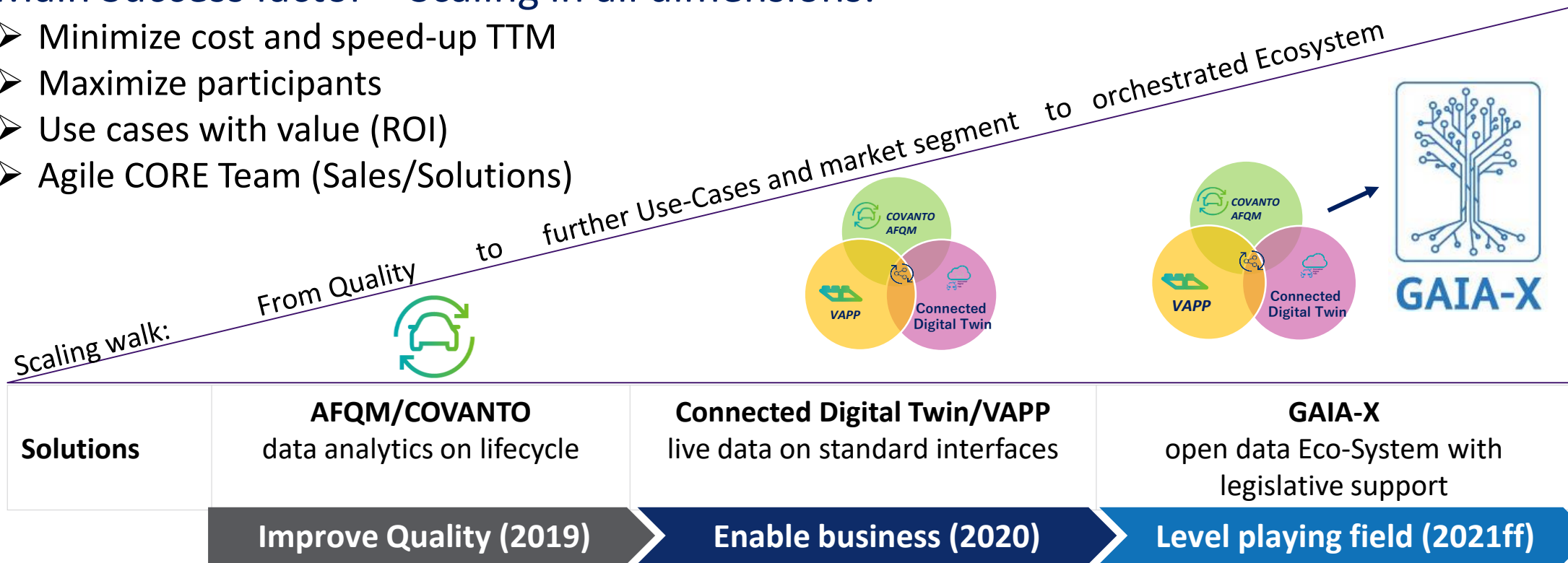
COVANTO as a blueprint to boost data based business in GAIA-X ecosystem

GAIA-X

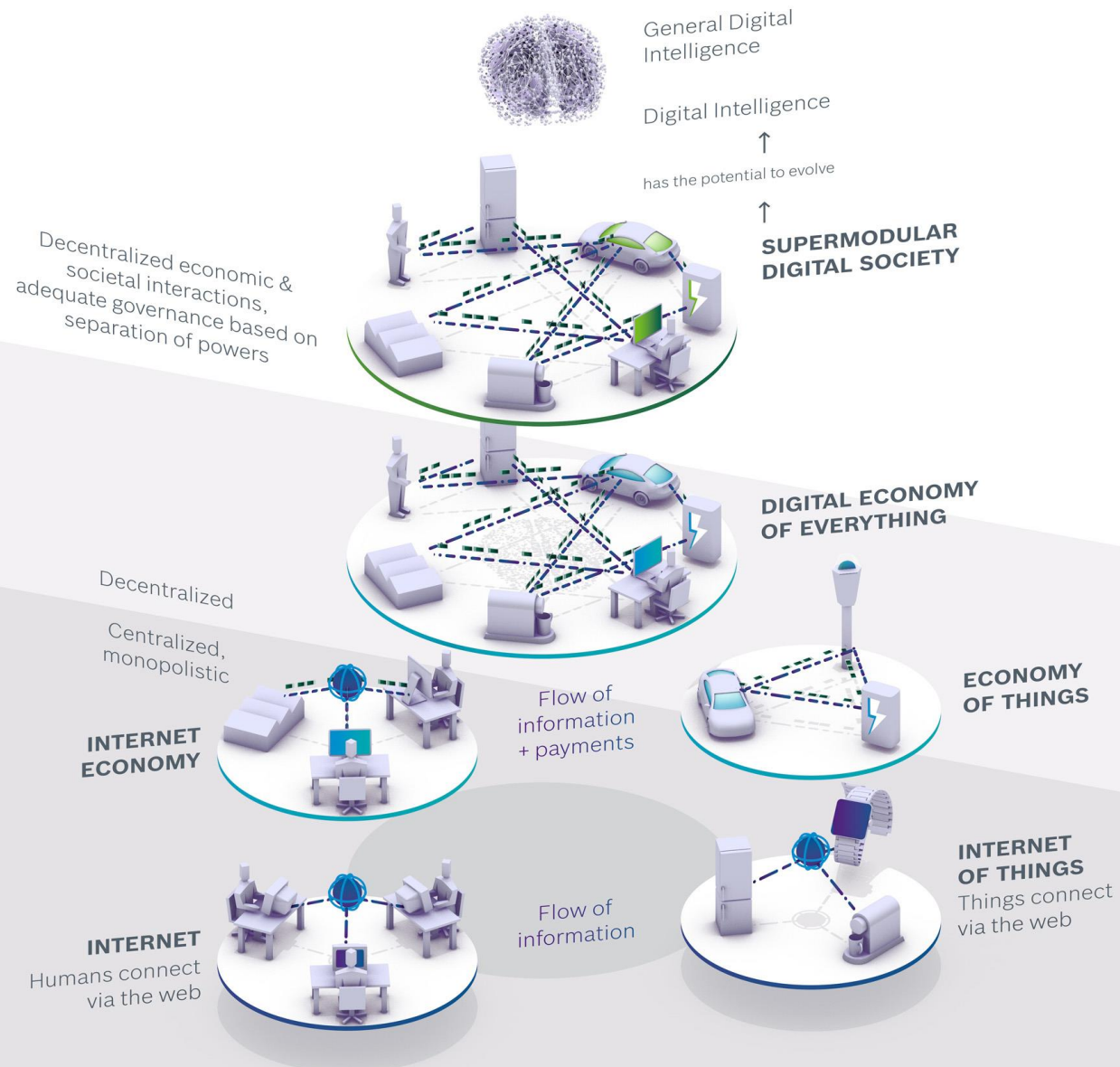
Solutions and Outlook

Main Success factor – Scaling in all dimensions:

- Minimize cost and speed-up TTM
- Maximize participants
- Use cases with value (ROI)
- Agile CORE Team (Sales/Solutions)



1st Strong AFQM business case kickoffs network effect on GAIA-X ecosystem



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University of Oxford

ROUND TABLE DISCUSSION

MODERATION:
CHARLOTTE BOUTELIER
HEAD OF MARKETING
FARVEST

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CONCLUSION & CLOSING WORDS

YVES REDING
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**THANK YOU FOR
YOUR ATTENTION**



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MEDIA PARTNER

