Leveraging Data Spaces for European Innovation

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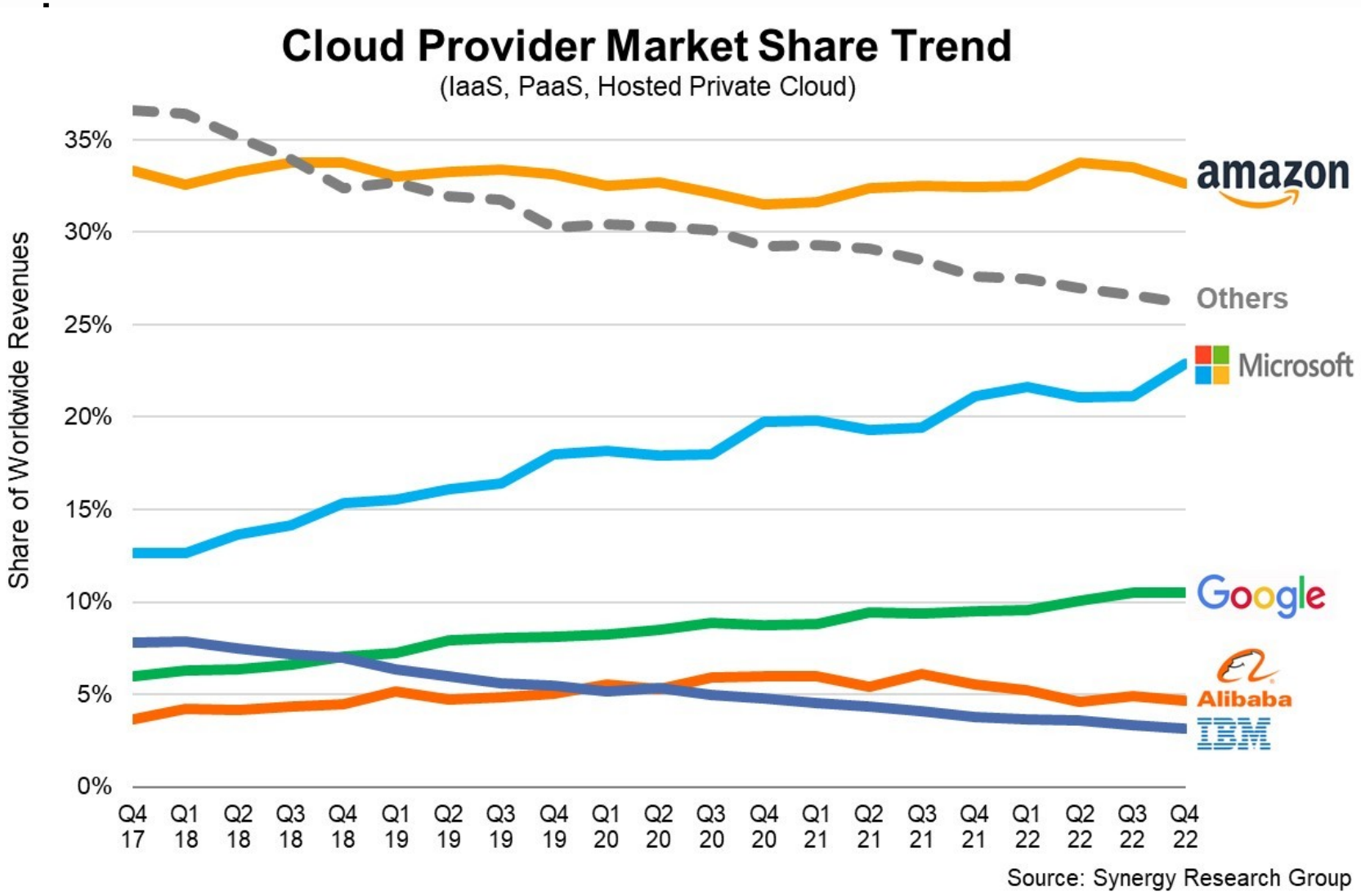
A Europe fit for the digital age

- “The Commission is determined to make this Europe's “Digital Decade”. Europe must now strengthen its digital sovereignty and set standards, rather than following those of others – with a clear focus on data, technology, and infrastructure.”
  - European Commission statement
- Key issue is data sovereignty

Cloud provider market share

- The top 5 cloud service providers are non-European compa



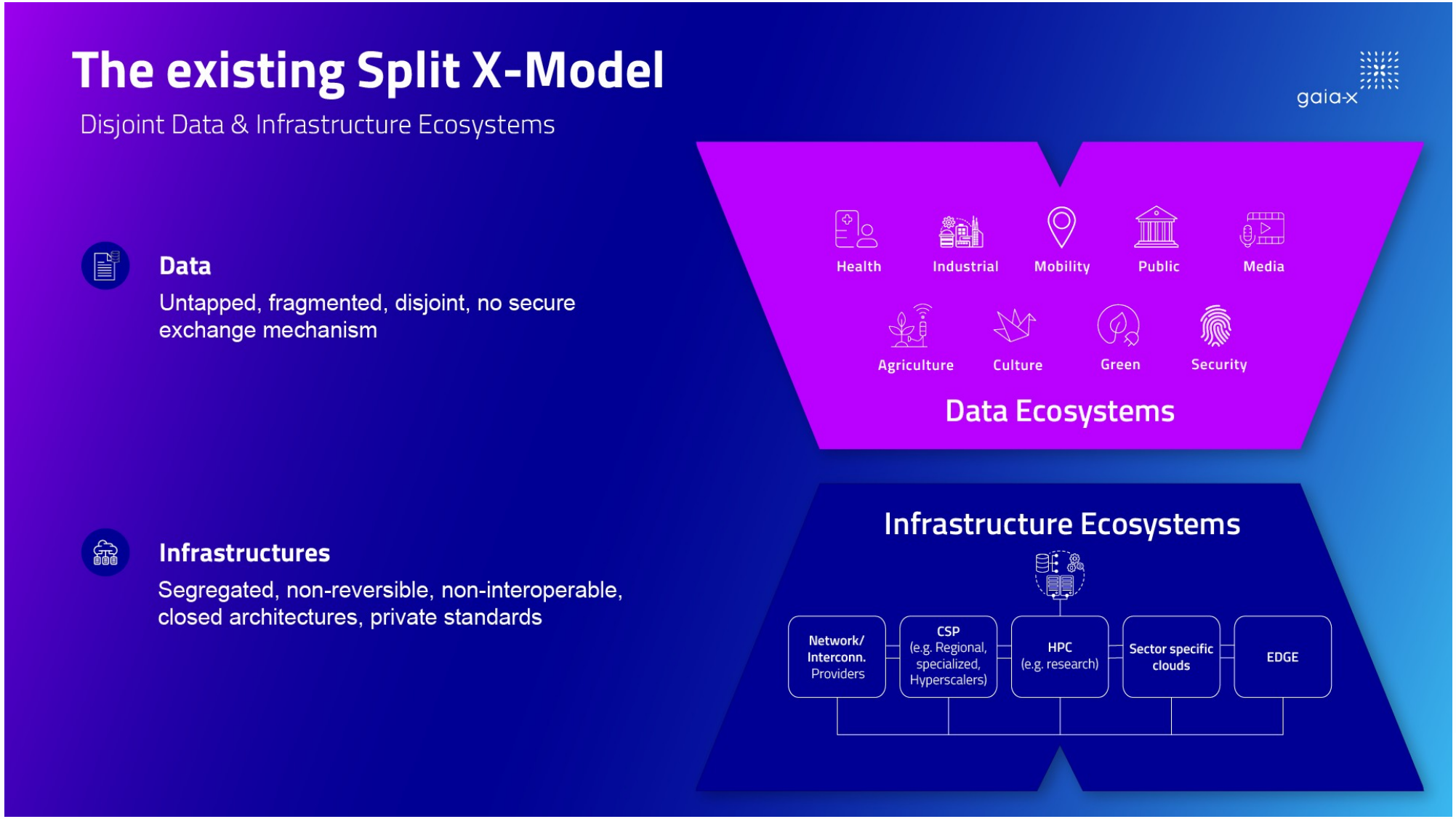
Issues regarding data and platforms

- An outage with Amazon's web infrastructure left smart-home enthusiasts unable to use basic household items – BBC
  - This also impacted consumer in Europe
- Two "white hat hackers" discovered that crashed Tesla vehicles sent to salvage contain unencrypted personal data, including information from drivers' paired mobile devices – Communications of the ACM
  - Tesla also retrieves data from cars sold in Europe
- US cloud providers dominate European markets
- Many others…

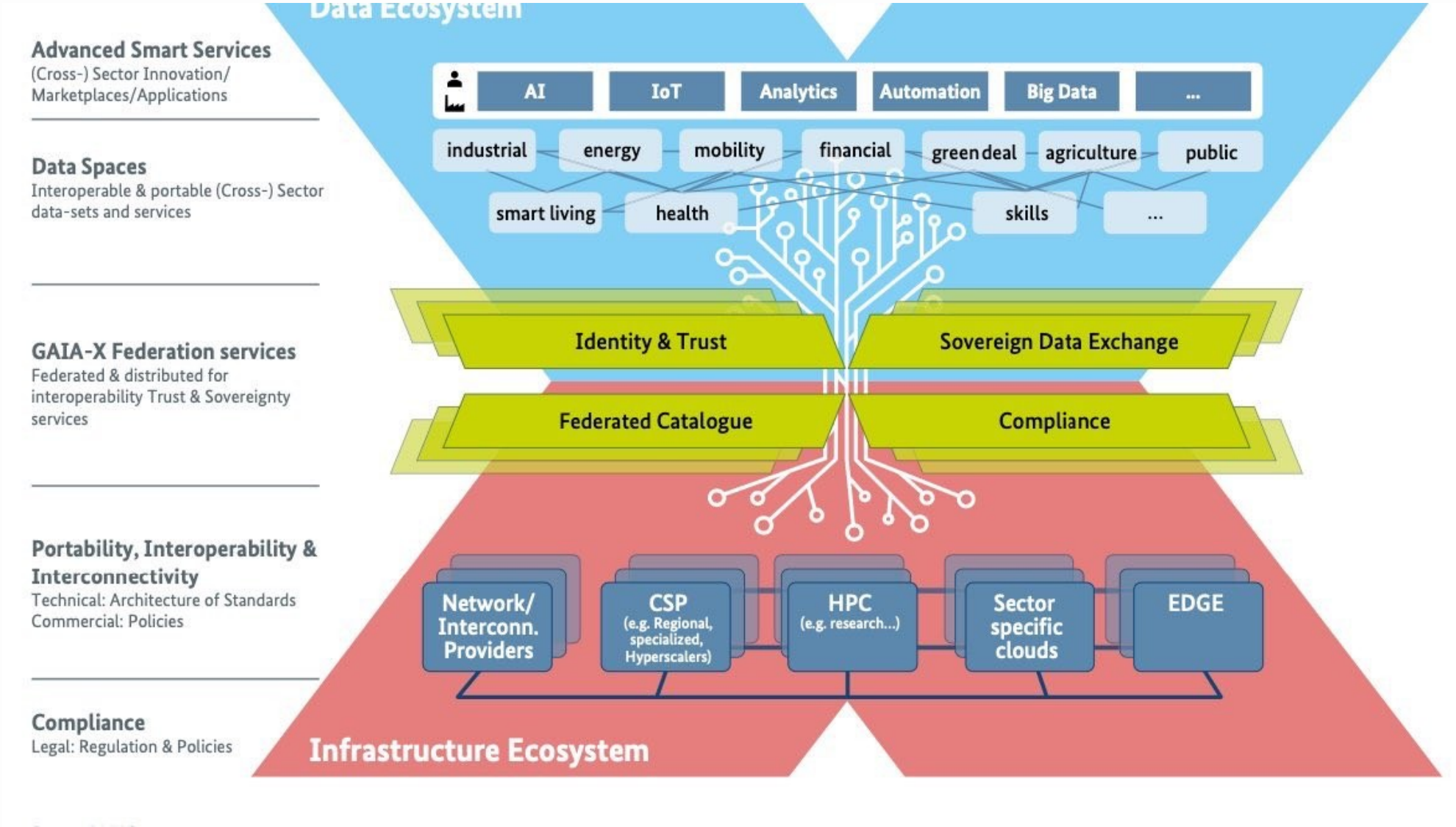
EU State of the Union Address 2020

- On personalized data - business to consumer - Europe has been too slow and is now dependent on others. This cannot happen with industrial data…
- We have to give our companies, SMEs, start-ups and researchers the opportunity to draw on their full potential. And industrial data is worth its weight in gold when it comes to developing new products and services
- But the reality is that 80% of industrial data is still collected and never used…
- A real data economy, on the other hand, would be a powerful engine for innovation and new jobs. And this is why we need to secure this data for Europe and make it widely accessible. We need common data spaces - for example, in the energy or healthcare sectors. This will support innovation ecosystems in which universities, companies and researchers can access and collaborate on data
- And it is why we will build a European cloud as part of NextGenerationEU **- based on GaiaX**

Gaia-X problem case



Overview of Gaia-X architecture



Source: German Federal Ministry for Economic Affairs and Energy (BMWi)

Gaia-X FAIR principles

- **Findable**
- **Accessible**
- **Interoperable**
- **Reusable**

- Gaia-X creates a fair, competitive environment, a level playing field, by enabling a new generation of cloud and data services, putting the transparency and the control of data at the centre, regardless of the underlying technology stack. In this way, fair market competition can be achieved.
- In this way, Gaia-X makes services, like AI services, meaningful, in the sense that they are reliably available

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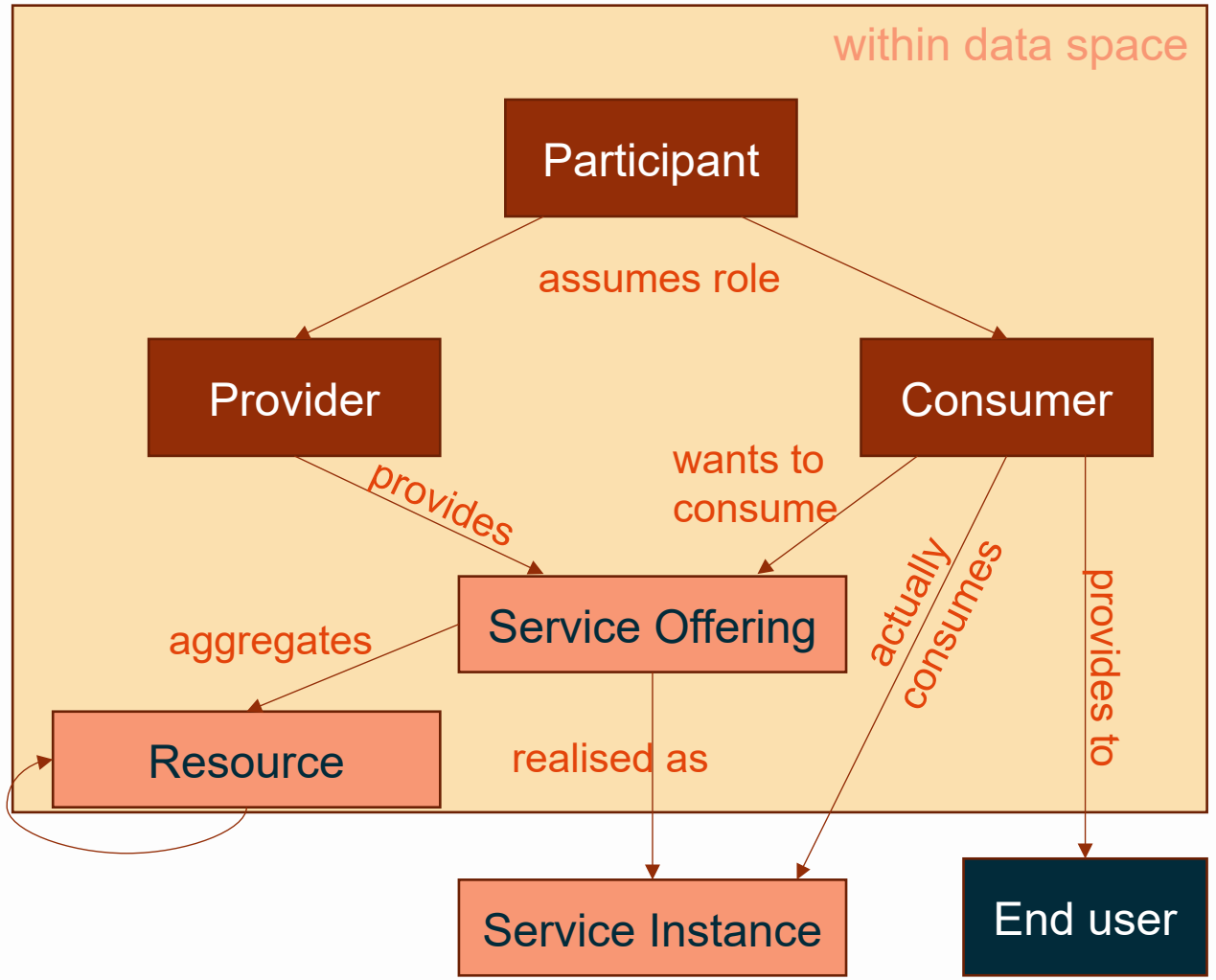
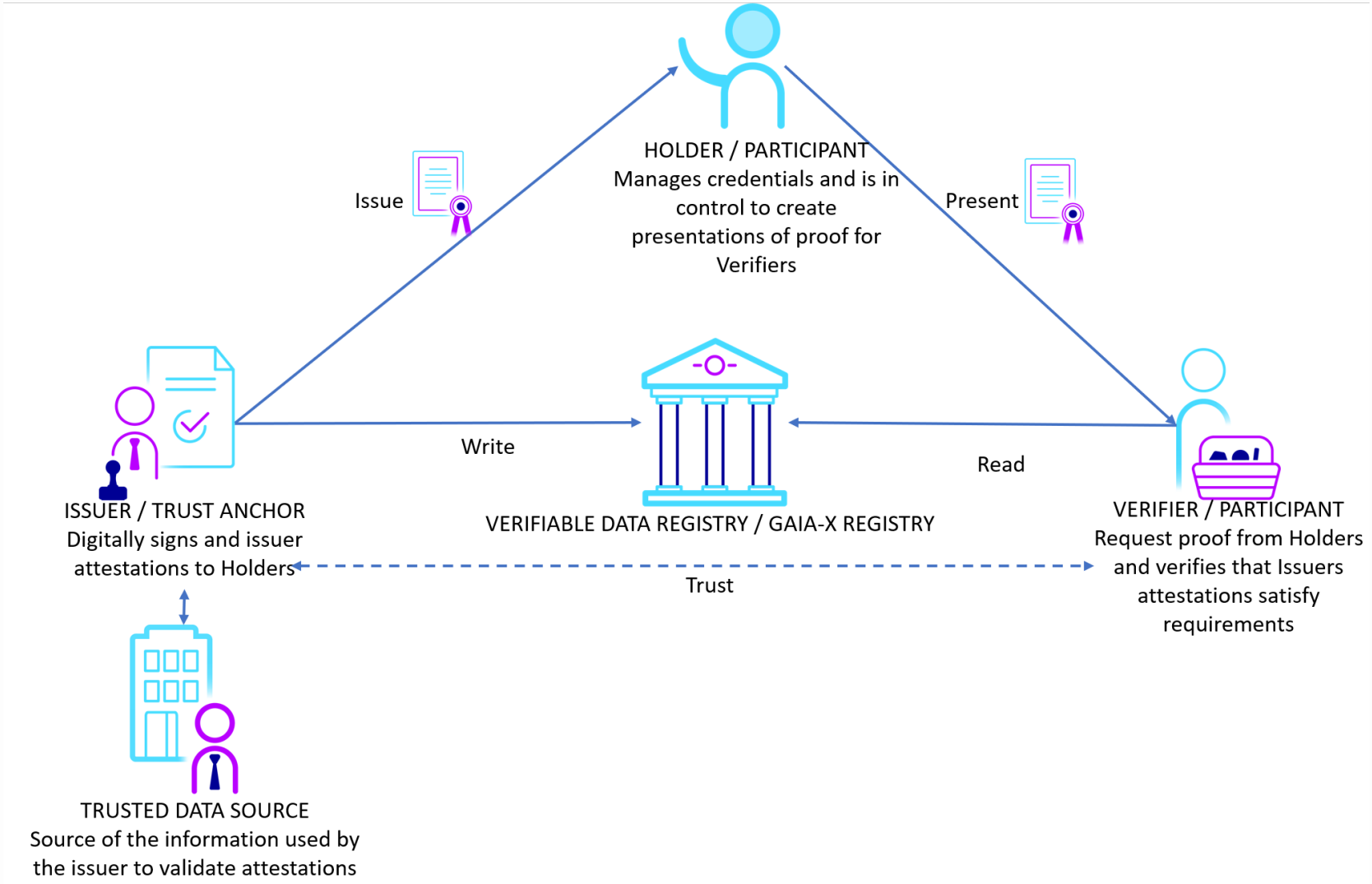
Gaia-X focus on services



Source: Christoph Lange, Fraunhofer FIT

Enforcing trust - Verifiable Credentials Model

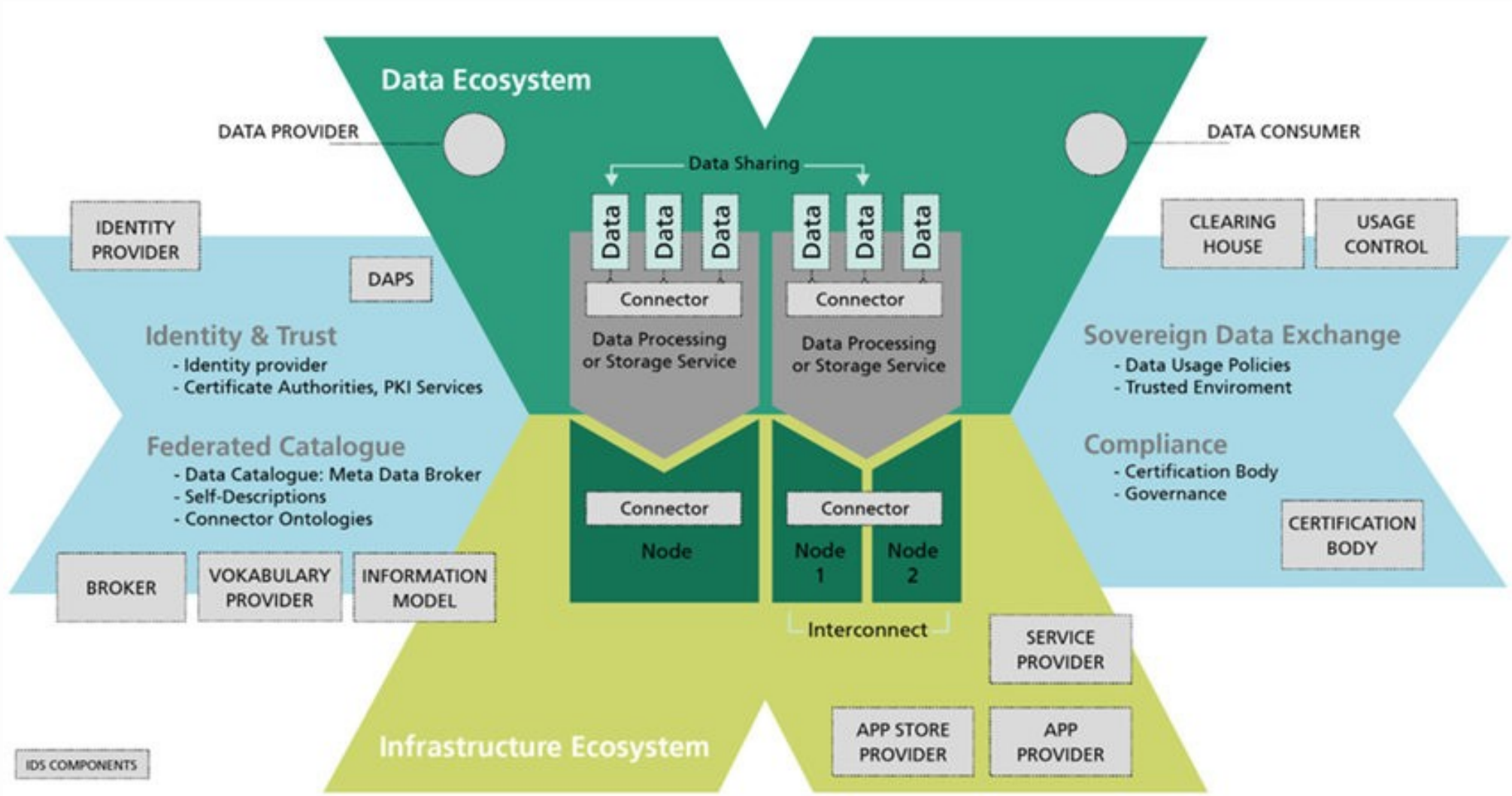


Source: Gaia-X

Gaia-X Digital Clearing House

- The Gaia-X Framework describes functional specifications, technical requirements, and SW assets necessary to be Gaia-X compliant
- GXDCH are a network of execution nodes running the compliance components of Gaia-X
- Having many GXDCH execution nodes ensures Gaia-X compliance services are distributed and decentralised
- The GXDCH is a necessary element to operationalize Gaia-X in the market

Mapping of IDS Components into the GAIA-X Architecture



Source: GAIA-X and IDS, Position Paper, IDSA, January 2021

Boosting Research for a Smart and Carbon Neutral Built Environment with Digital Twins – **SmartWins**

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