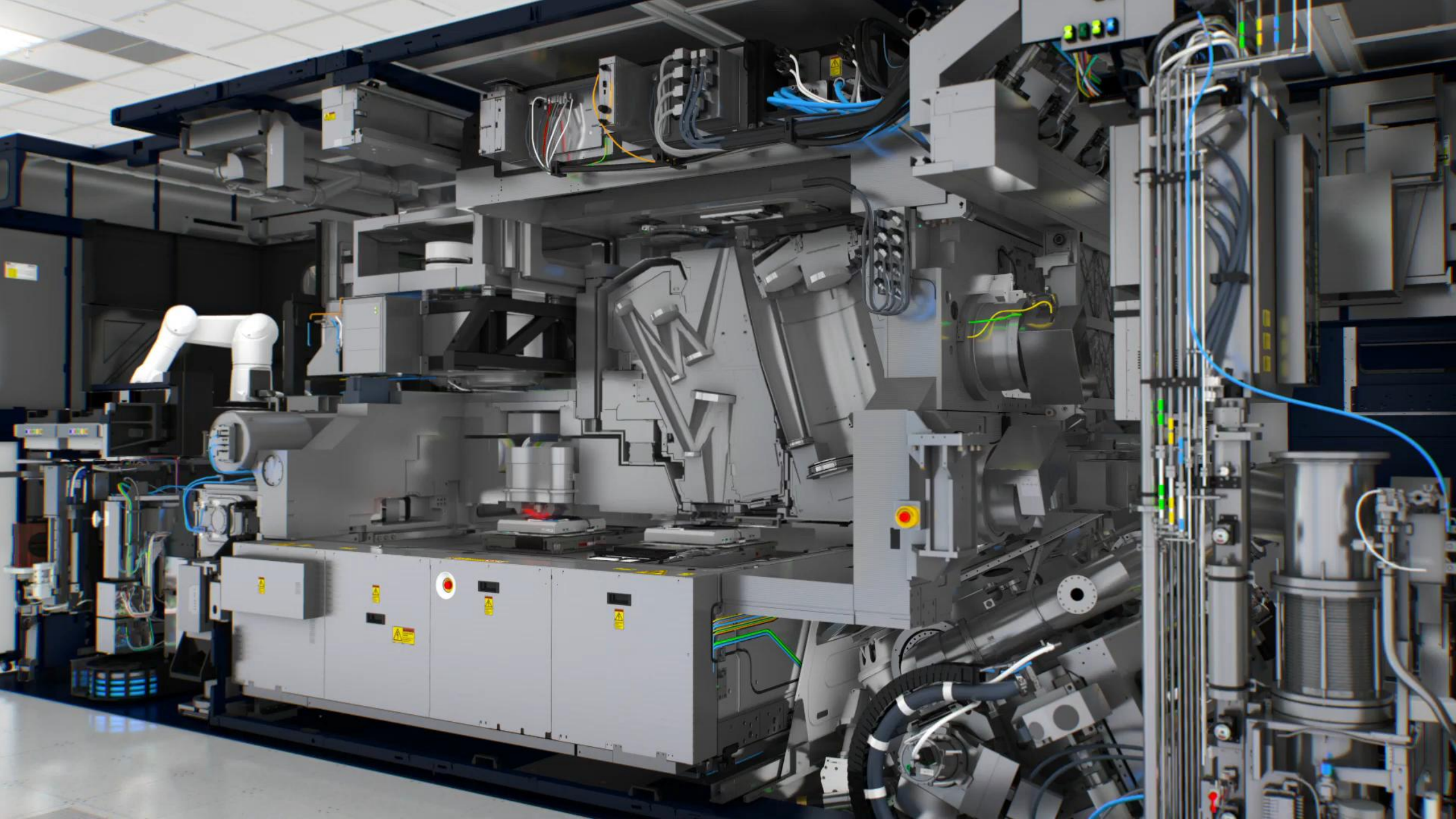
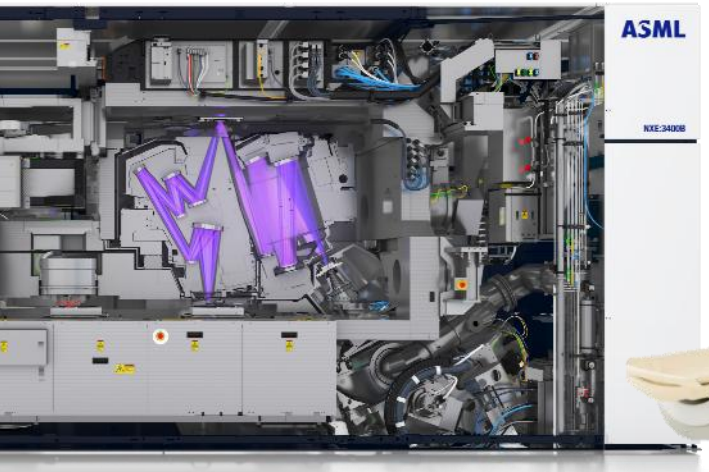
NXT
GEN
hightech
Data Spaces
Matthijs Punter
European Robotics Forum 2025
TNO innovation for life
sc sn smart connected supplier network
DATA SPACES SUPPORT CENTRE
PLIADES

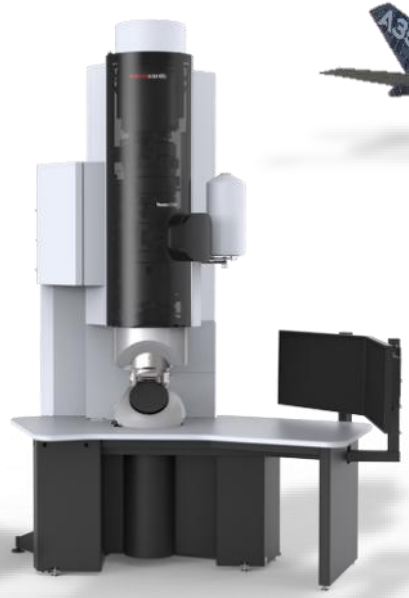


High-mix, high-complexity, low-volume



Semiconductor equipment

Healthcare

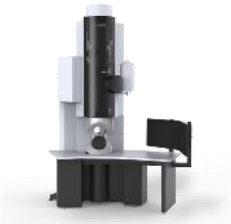


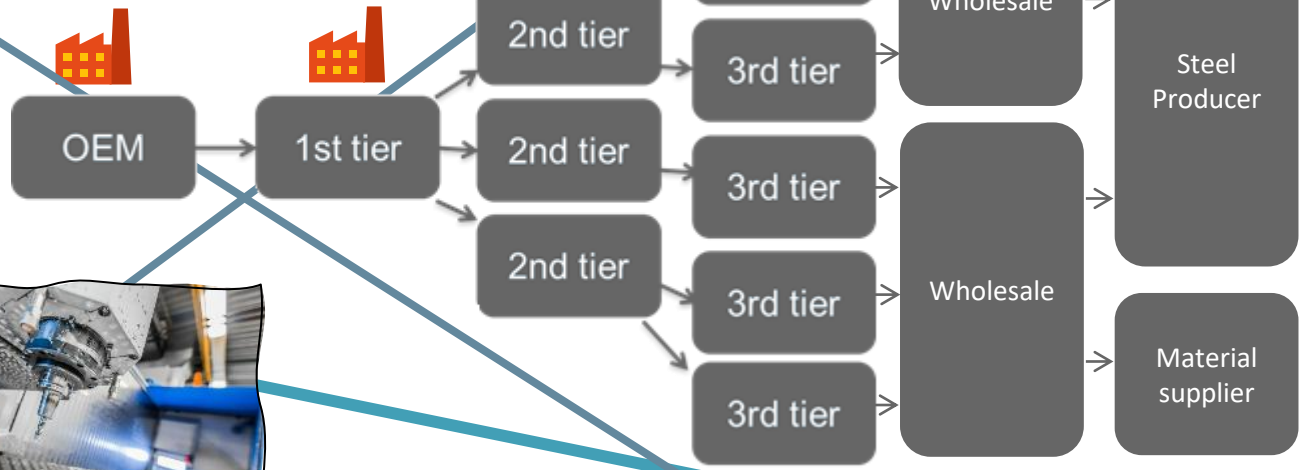
Scientific instrumentation

…. many other areas

High-complexity, high-mix, low-volume requires a **smart & connected network** of suppliers and OEMs

smart connected supplier network



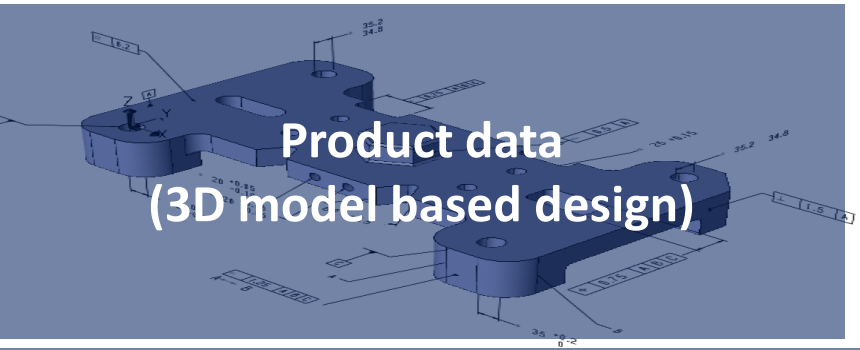


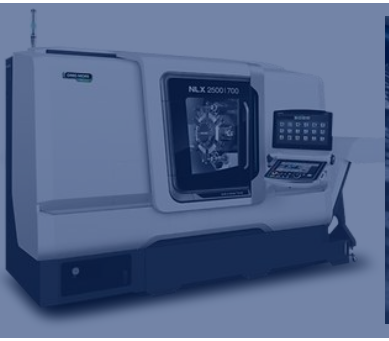
Smart Connected Supplier Network
= controlled data sharing at large

supply chain resiliency services
purchasing & e-invoicing
logistics collaboration

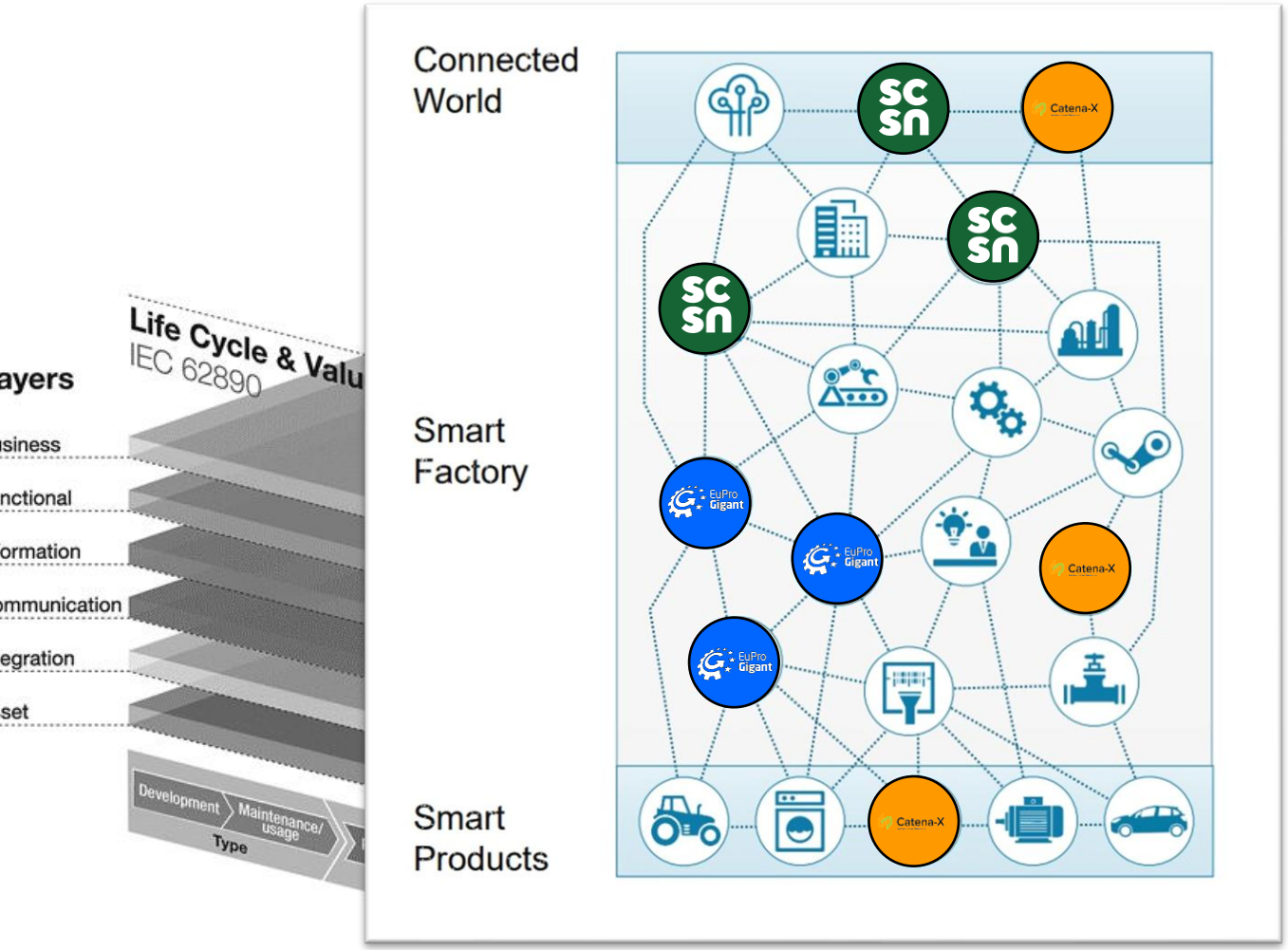
network of OEMs, 1st, 2nd & 3rd tier manufacturing companies

extended product lifecycle management
maintenance
collaborative engineering

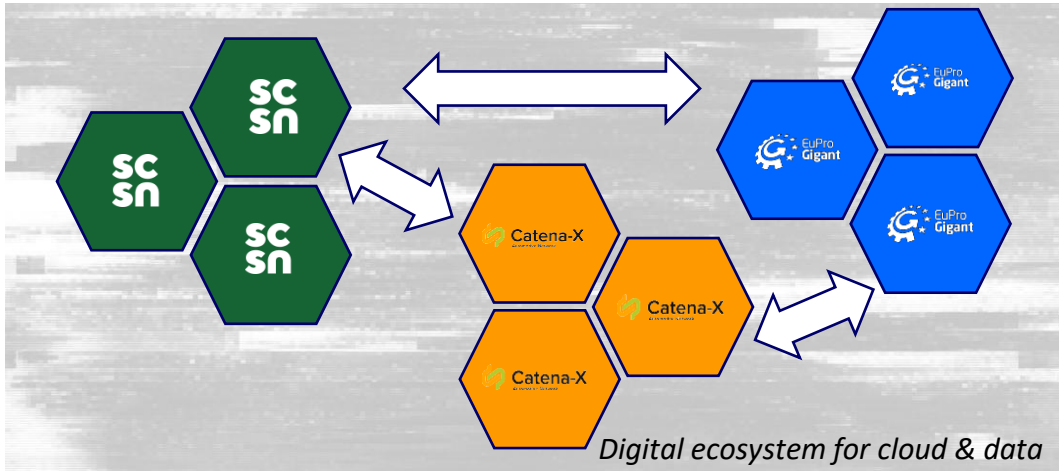




Building a shareable digital twin of everything



Source: Reference Architecture Model Industry 4.0

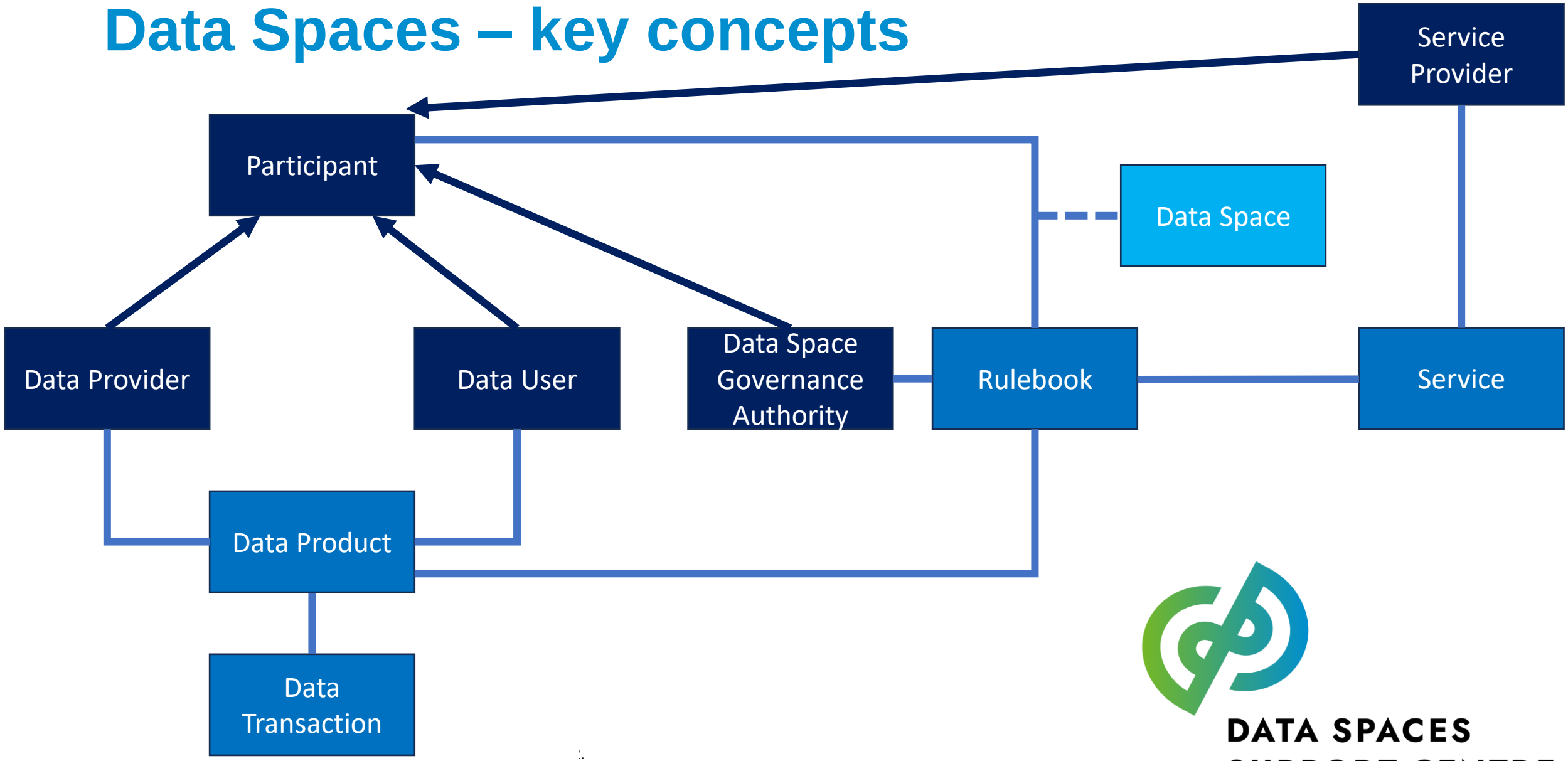


Digital ecosystem for cloud & data

- A machine or organisational level **connector** or **participant agent** allows for the controlled sharing of data with others:
  - Manage identities & attestations
  - Publish data & -services
  - Negotiate and enforce access & usage policies

- The network needs to arrange **interoperability,** the **findability** of data, as well as **trust**

Data Spaces – key concepts



DATA SPACES SUPPORT CENTRE

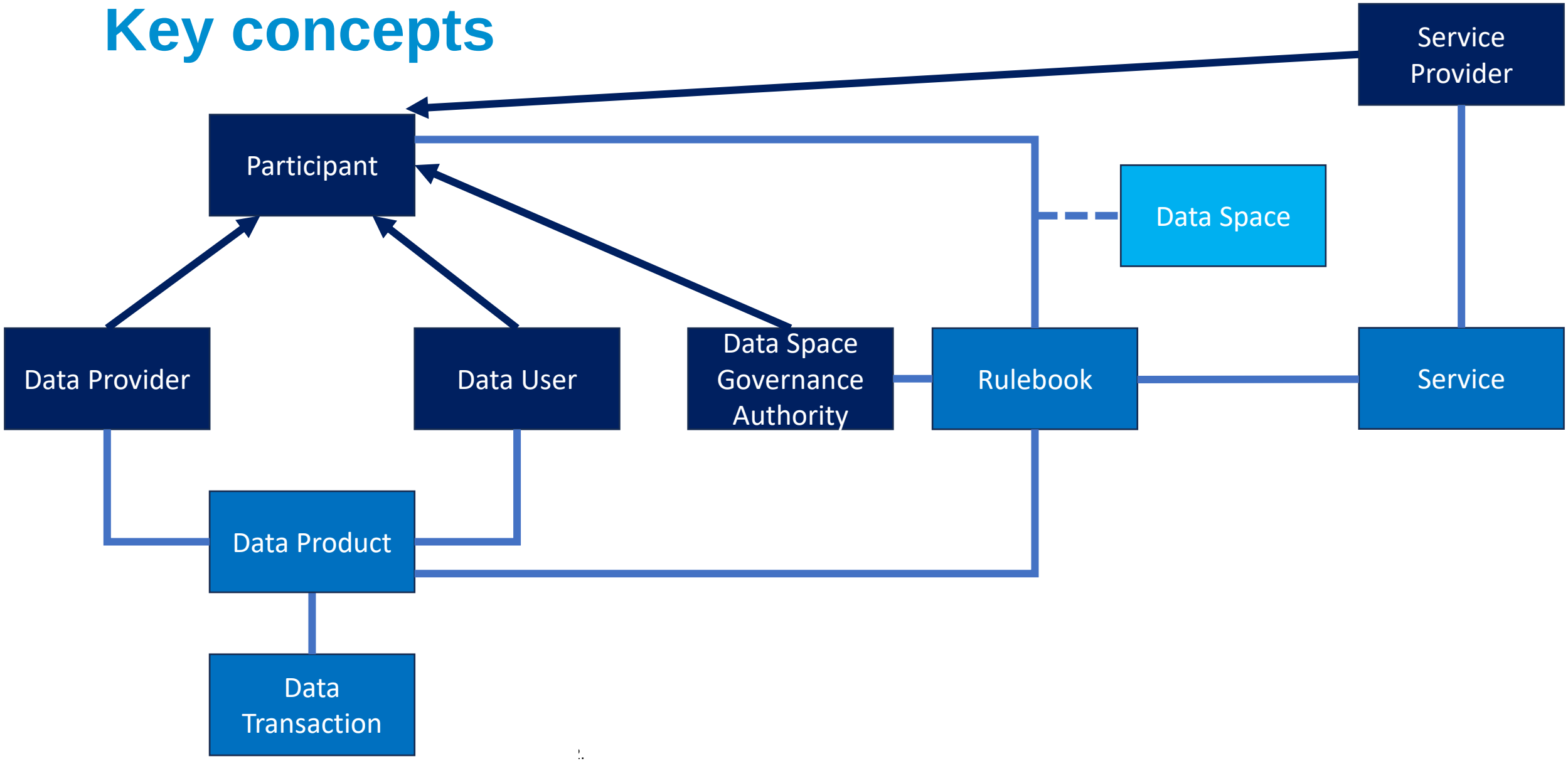
How is this arranged in SCSN?

Smart Connected Supplier Network today

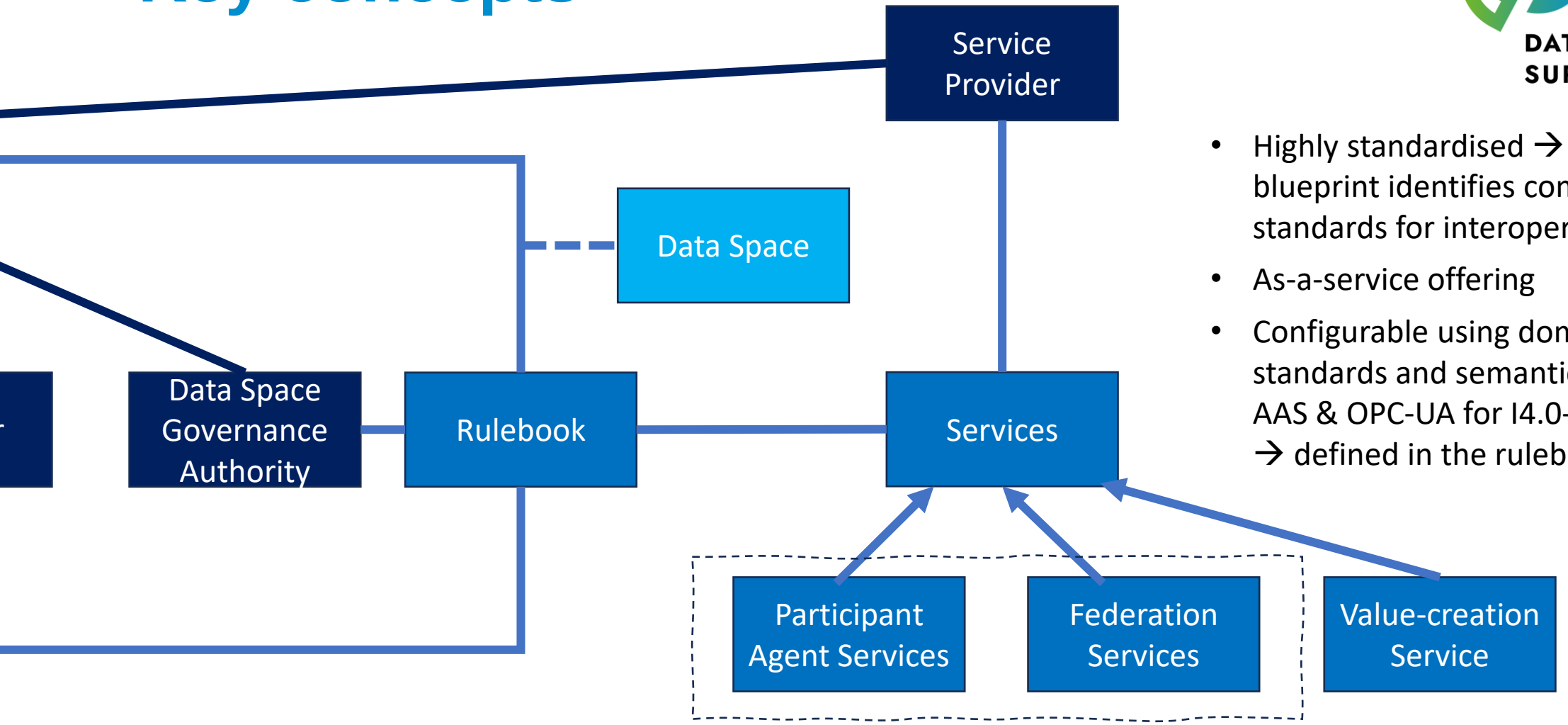
- 400+ manufacturing companies in an operational data space
- 10+ service providers for providing data space connectivity
- 1 independent foundation to manage the rulebook

- “Connect once, communicate with everyone in the supply network”
- “Data sovereignty: you control the sharing of your data”

Key concepts



Key concepts



- Highly standardised → DSSC blueprint identifies common standards for interoperability
- As-a-service offering
- Configurable using domain-specific standards and semantics (e.g. IDTA AAS & OPC-UA for I4.0-applications) → defined in the rulebook

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Funded by the European Union

What’s Nxt?

NXTGEN Smart Connected Supplier Network

- **Grow the network – focus on key supplier/customer-combinations**
- **Develop new services & manage the rulebook**
  digital product passports, model based design, manufacturing-as-a-service
- **Extend the required Data Space Infrastructure**
  To deal with new requirements (security, sovereignty, complexity, scale)
  In line with international developments (EU Data Strategy, Manufacturing-X)
  Cross-domain

Future Data Sharing Infrastructure

What are we talking about?

New Trust Services

- Identification of assets
- Validation of attestations

Digital Twin Registry

- Register of available digital twins
- Industrial Digital Twin Assocation (IDTA)

Advanced Access & Usage Policies

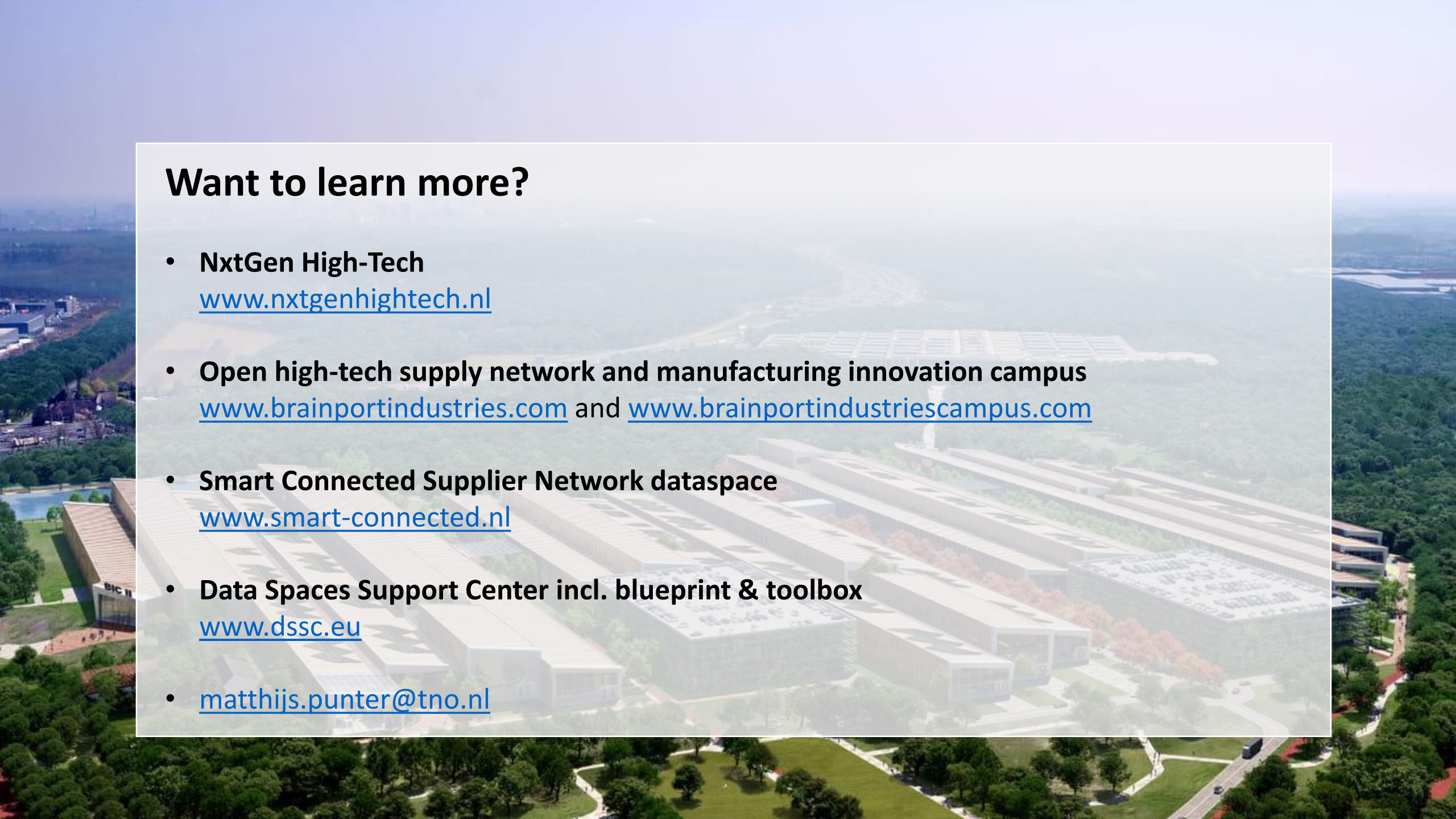
- Who is granted permission to access this data?

Provenance & Traceability Services

- Compliant registration of data
- Future validation & traceability

Vocabulary Hub & Models

- Digital Product Passport
- Equipment capabilities
- Carbon Footprint Reporting



Want to learn more?

- **NxtGen High-Tech**
  www.nxtgenhightech.nl
- **Open high-tech supply network and manufacturing innovation campus**
  www.brainportindustries.com and www.brainportindustriescampus.com
- **Smart Connected Supplier Network dataspace**
  www.smart-connected.nl
- **Data Spaces Support Center incl. blueprint & toolbox**
  www.dssc.eu
- matthijs.punter@tno.nl

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