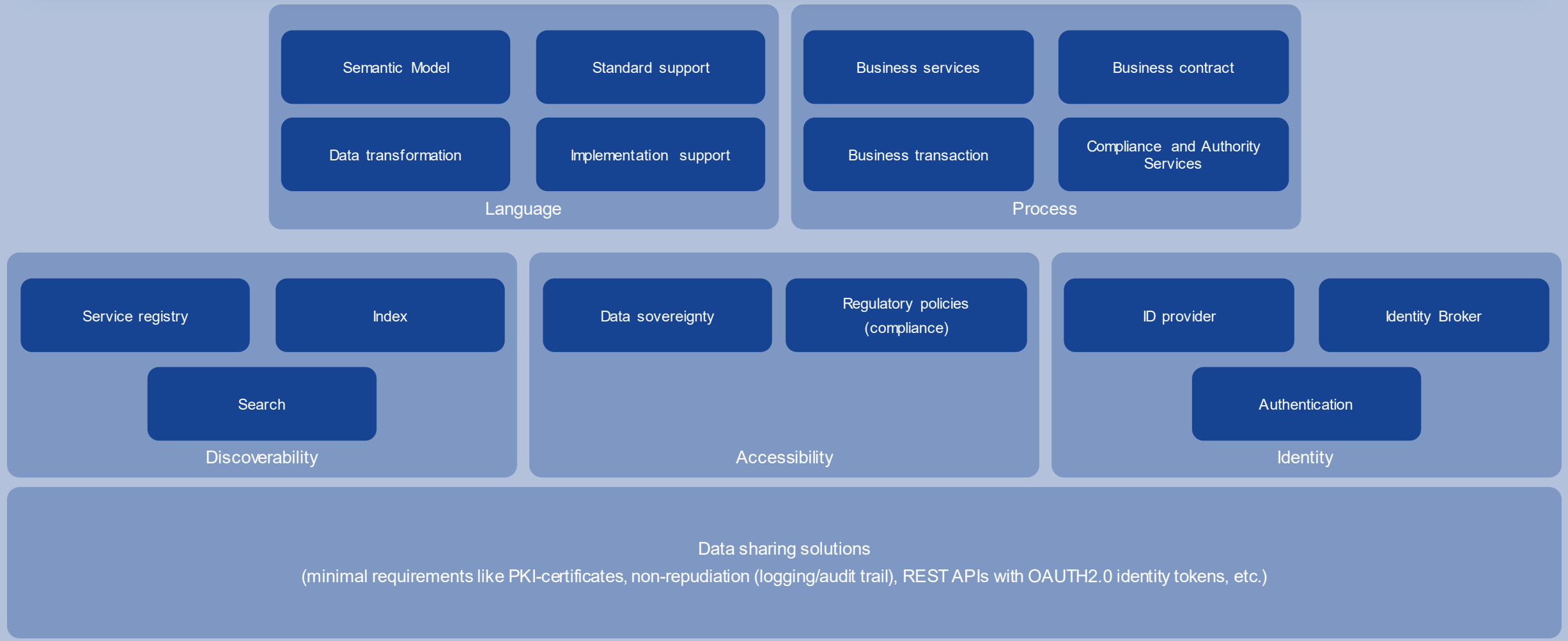
FEDeRATED Internet of Logistics: **An Imminent Reality**

Co-financed by the Connecting Europe Facility of the European Union

DTLF – SG2 – Corridor Freight Information System

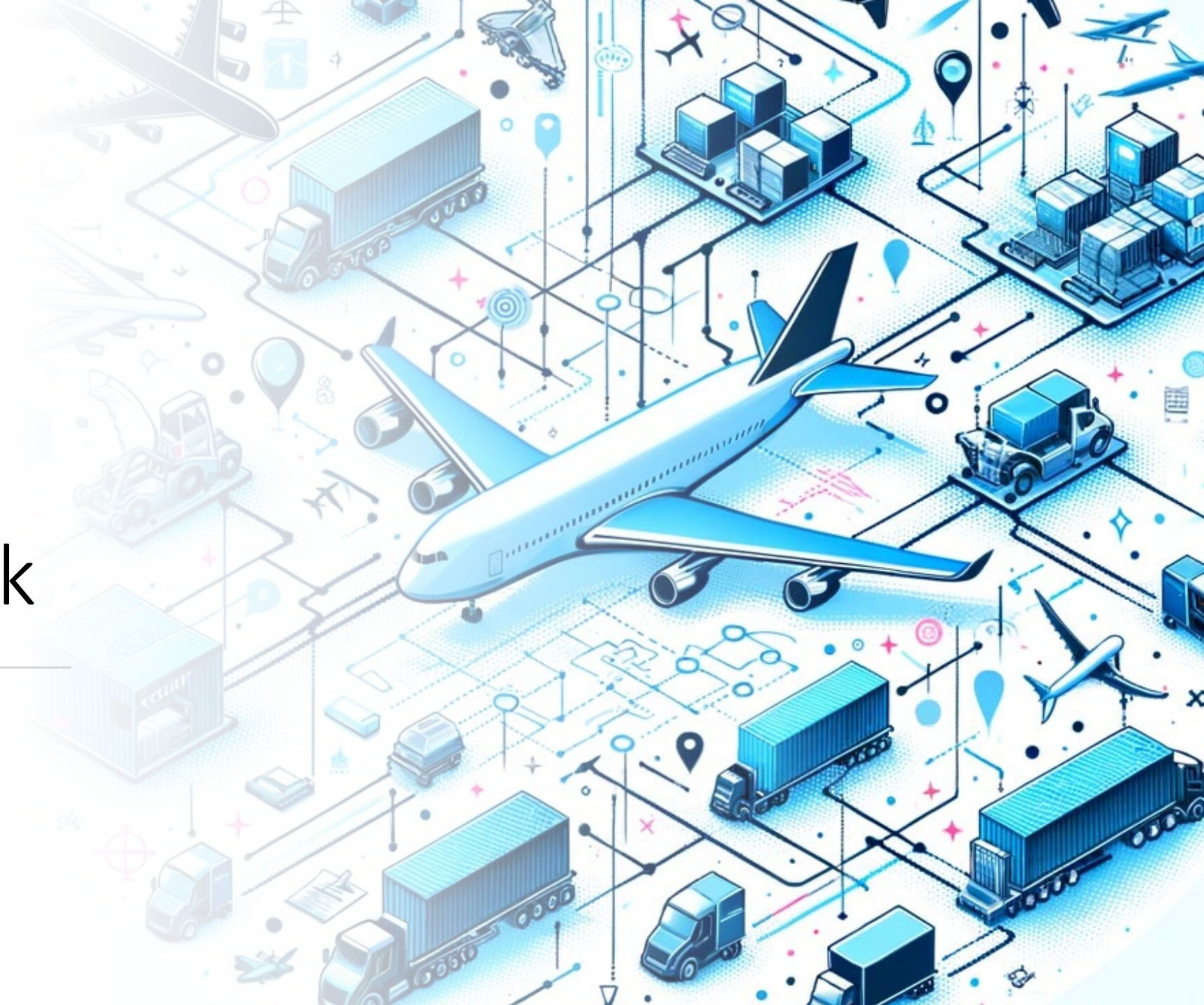


Living Lab 11 – Internet of Logistics

Connecting all transport & logistics companies via the internet.

Develop data and connectivity protocol **ONE Record**

Scaling nodes into a global network



It’s always about people … and some work

- 200+ partners: airlines, forwarders, customs, trucking, ground handling, airports, IT solution providers,…
- 100+ Subject Matter and IT experts
- 100’000+ hours of dedicated time spent

And financing:

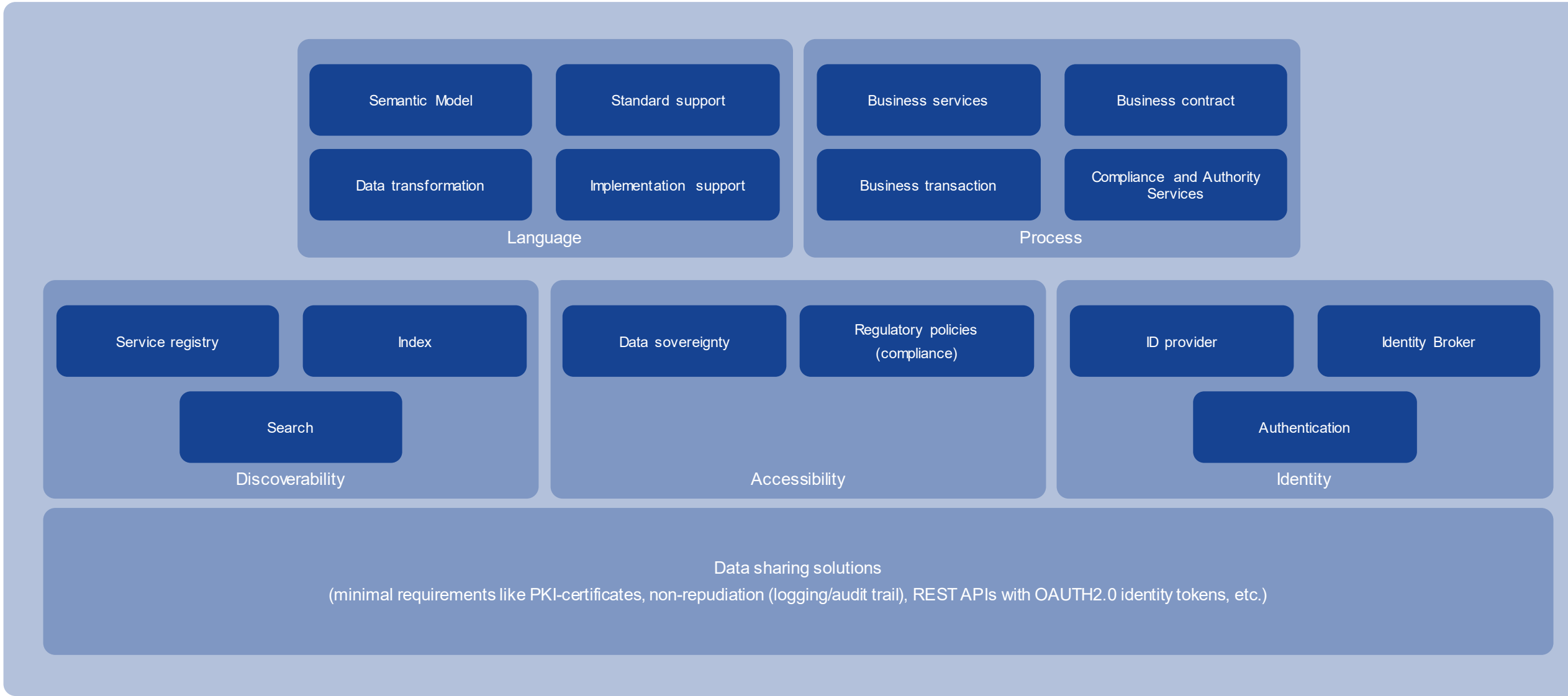
“for every Euro spent by CEF, on Living Lab 11, there was a 20 Euro return”

Lufthansa – driving ONE Record forward

Dr Jan Wilhelm Breithaupt

- Vice President Global Fulfillment Management

DTLF → FEDeRATED & ONE Record



ONE Record – a lower ontology of air cargo

Semantic Model

Data transformation

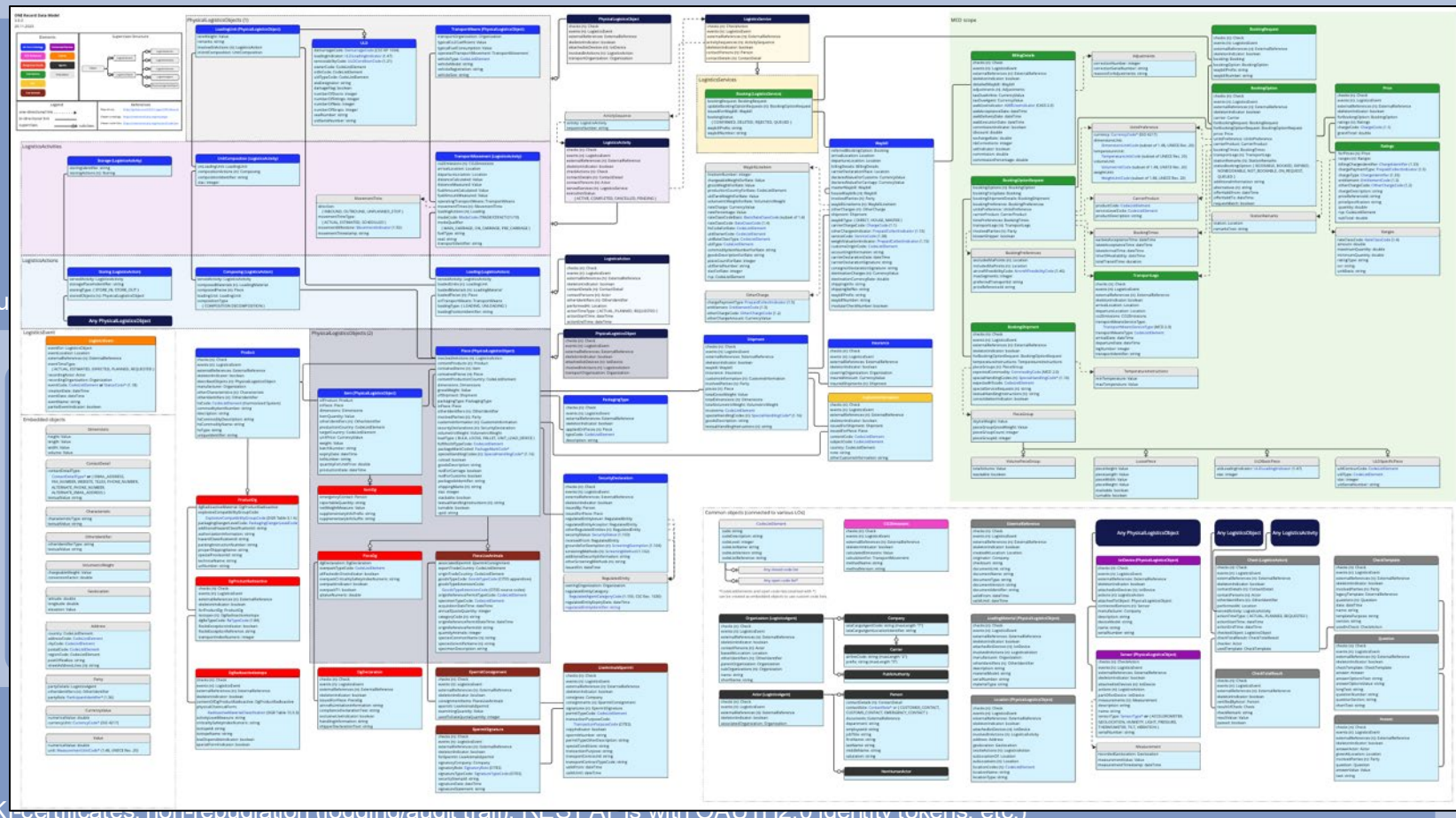
Langu

Service registry

Index

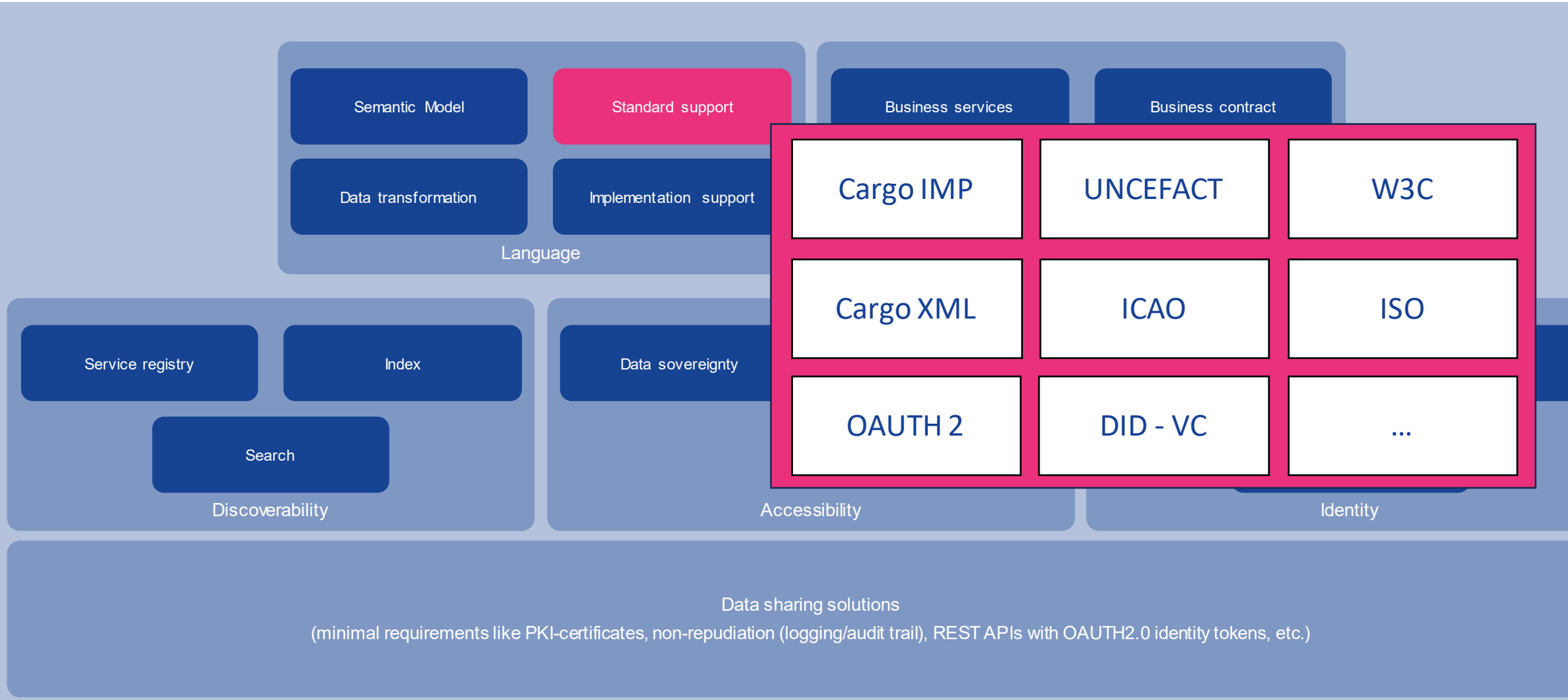
Search

Discoverability

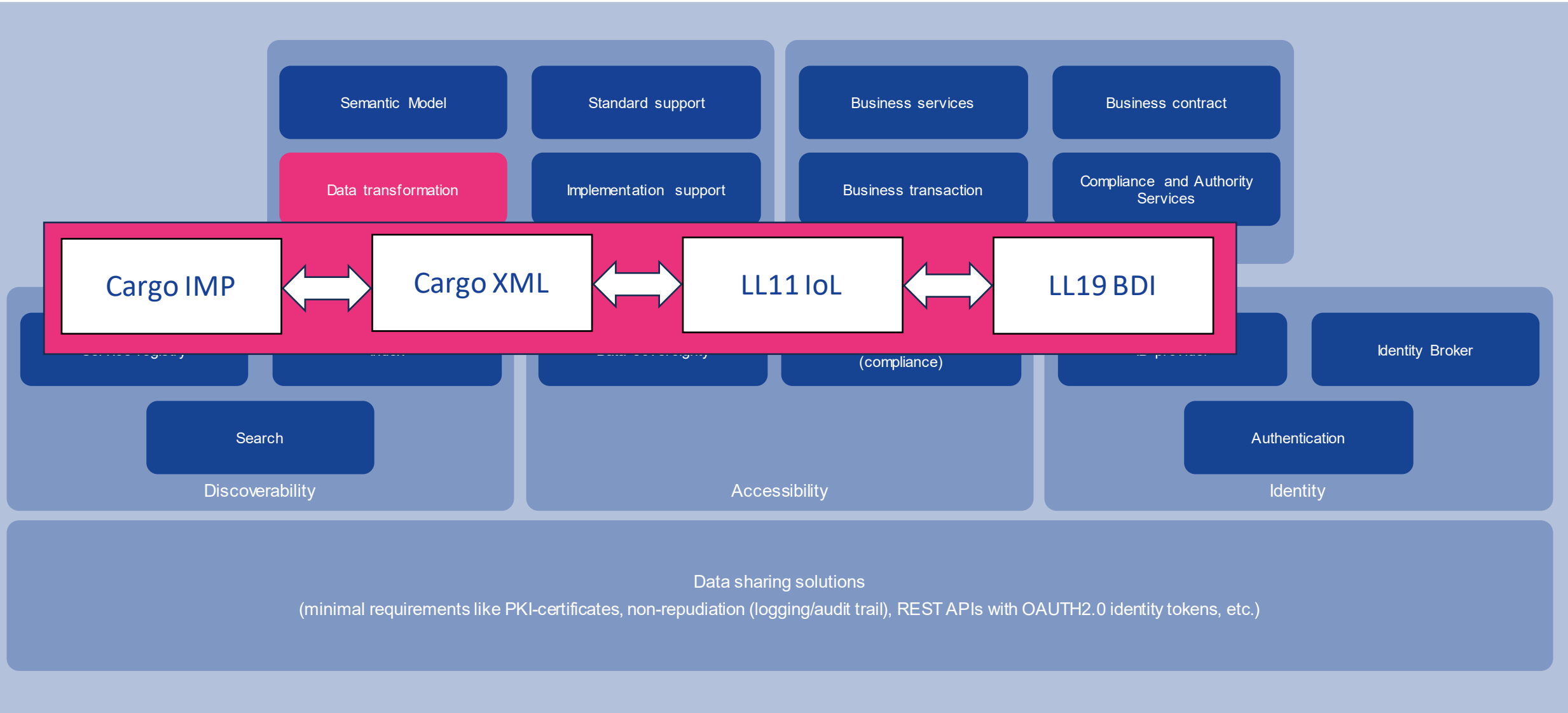


(minimal requirements like PKI-certificates, non-repudiation (logging/audit trail), REST API is with OAUTH2.0 identity tokens, etc.)

ONE Record – aligned with standards



ONE Record – back and forward compatible



ONE Record – innovative tools

Semantic Model

Standard support

Business services

Business contract

Data transformation

Implementation support

Business transaction

Compliance and Authority Services

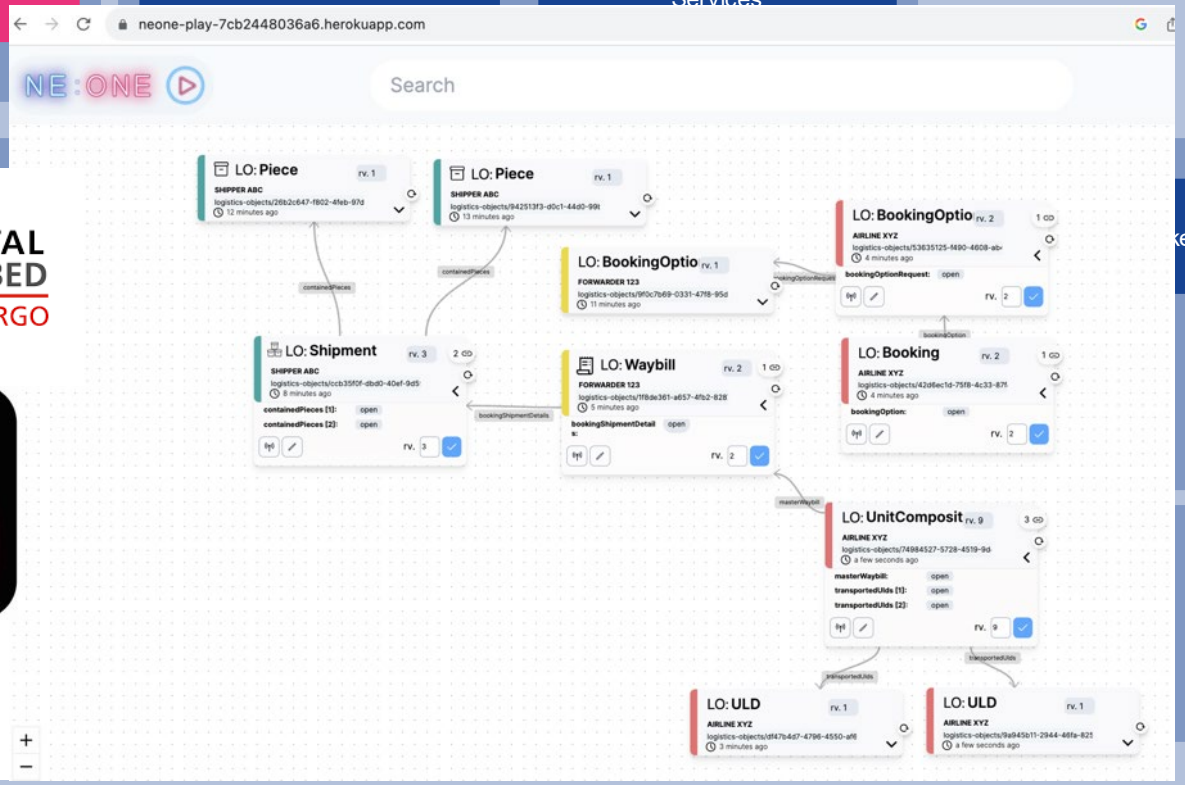
Revolutionising modern data exchange in air freight

At the ONE Record Hackathon in Seeheim on 23rd June 2023, our partner the Fraunhofer Institute for Material Flow and Logistics IML, introduced NE:ONE, an innovative open source ONE record server software for cargo community. Following the publication of NE:ONE in the Open Logistics Foundation Repository, th Working Group Digital Air Cargo accomplished a significant milestone in digitising and streamlining op within the air cargo industry.

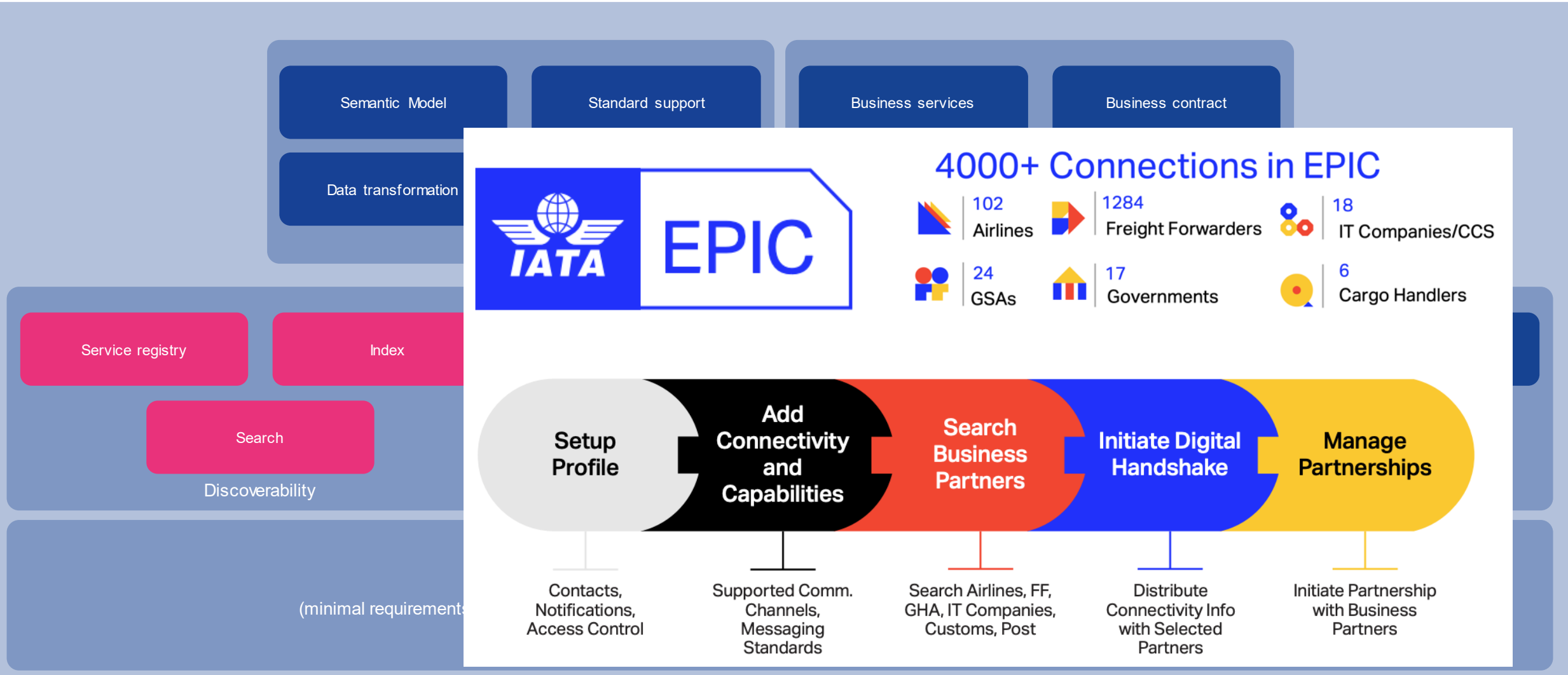
DIGITAL TESTBED AIR CARGO

NE:ONE

Open Source ONE Record server



ONE Record – service directory



ONE Record – API directory

Semantic Model

Data transformation

La

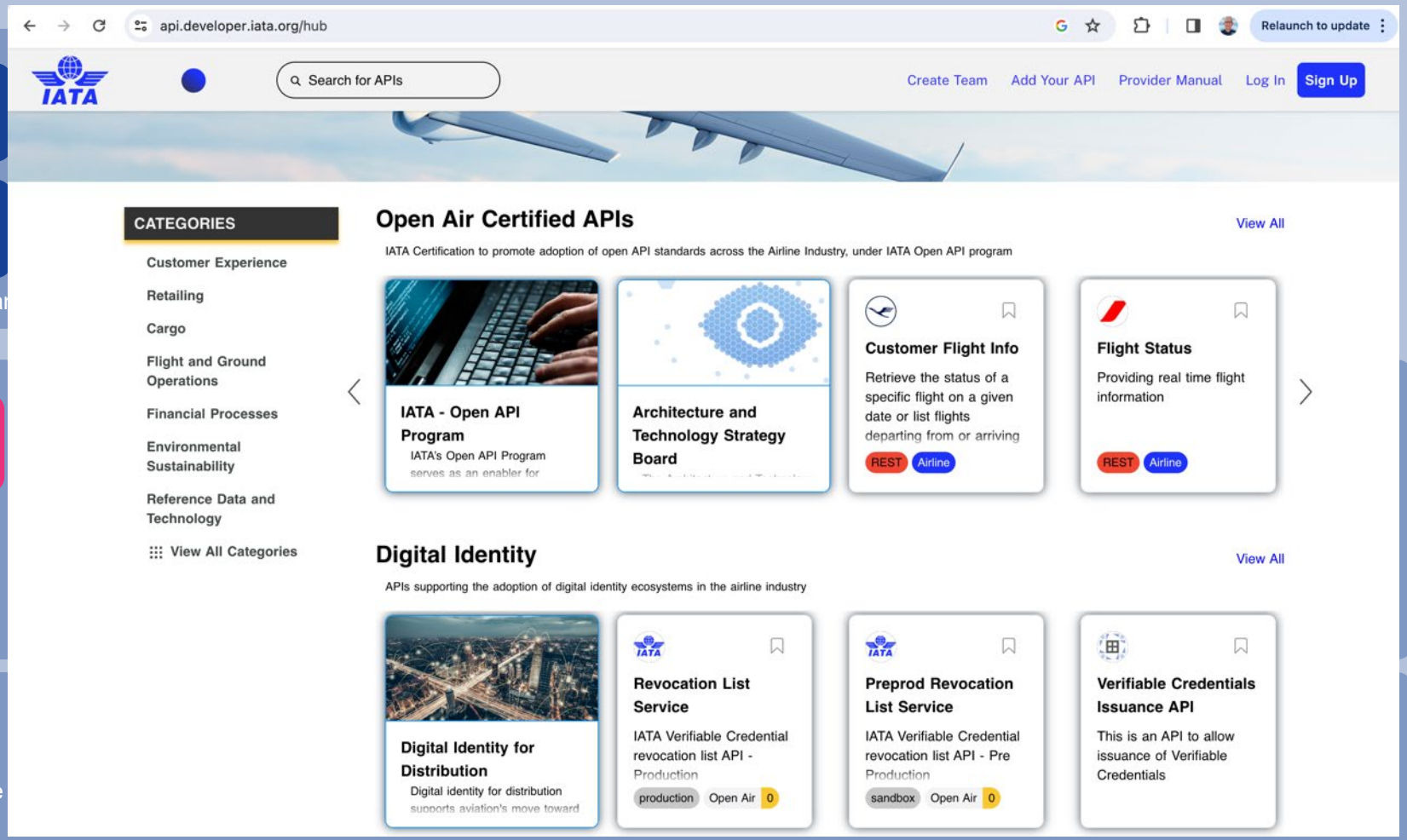
Service registry

Index

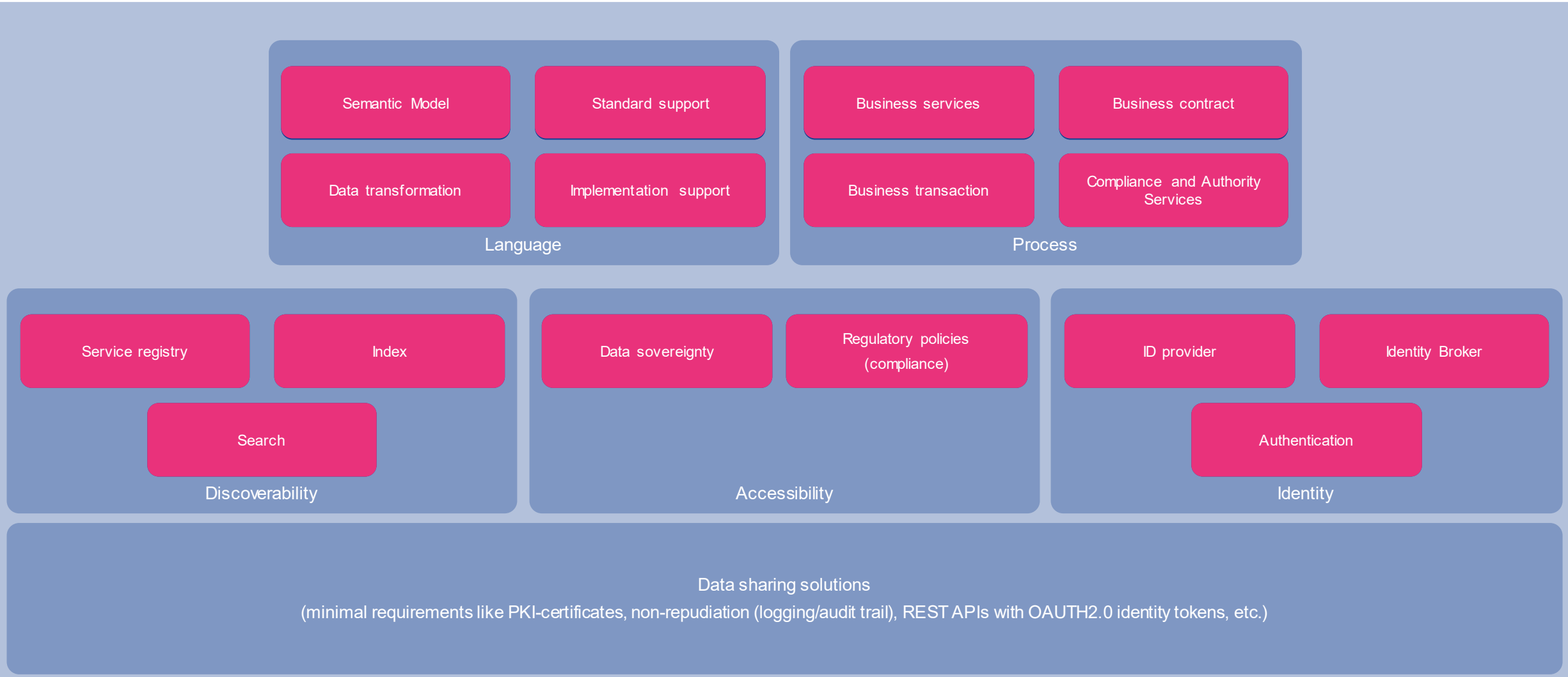
Search

Discoverability

(minimal requirements like



ONE Record – the standard



DIGITAL TESTBED AIR CARGO

Harald Sieke

Sponsored by Federal Ministry for Digital and Transport

Our Destination:

>>

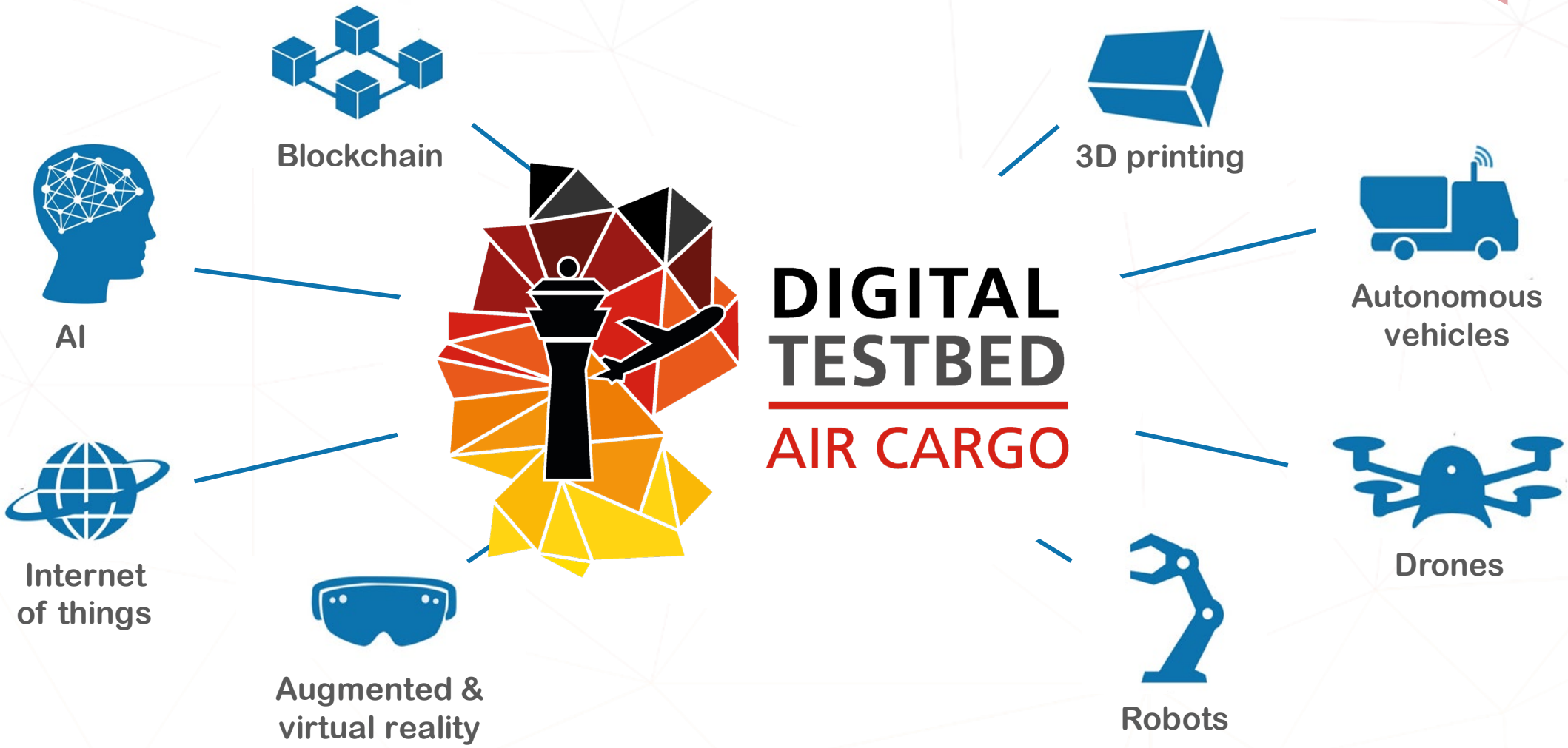
Develop and demonstrate digital connected solutions that are accepted by airports and stakeholders alike - to enable more efficient air cargo handling.

<<

DIGITAL TESTBED AIR CARGO

Sponsored by
Federal Ministry for Digital and Transport

Digitization in Air Cargo



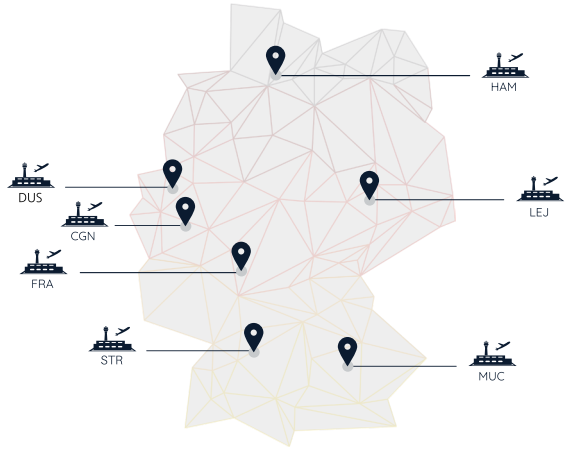
Consortium

2 Research Institutions

Fraunhofer IML

Frankfurt University of Applied Sciences

7 Test Sites



9 Industry Partners

Lufthansa Cargo

Fraport

Leipzig-Halle Airport

Sovereign

CHI Cargo Handling International

LUG aircargo handling

DB Schenker

Cargogate Munich Airport

Köln Bonn Airport

Subcontracting Partners:

Stuttgart Airport

ISO Software Systeme – Trust in IT-Engineers

SimPlan

Düsseldorf Airport Cargo DUS

AURRIGO

» Digital Testbed Air Cargo «

Testbed – Sub Projects

Data Platform & Digital Avatar

Predictive Analytics

Autonomous Outdoor Transports

Smart Pouch

Digital Site Logistics

Autonomous Warehouse Handling

Bildquellen: *Datendrehscheibe:* https://lu-web.de/redaktion/news/daten-drehscheibe/,
Autonome Outdoor Transporte: https://www.tld-group.com/news/tld-easymile-announce-partnership-develop-tracteasy-first-autonomous-baggage-tractor,
Stock.adobe.com: Funtap, knssr, Blue Planet Studio, Monopoly919, Destina

» Digital Testbed Air Cargo «

Testbed – Sub Projects

Bildquellen: *Datendrehscheibe:* https://lu-web.de/redaktion/news/daten-drehscheibe/,
Autonome Outdoor Transporte: https://www.tld-group.com/news/tld-easymile-announce-partnership-develop-tracteasy-first-autonomous-baggage-tractor,
Stock.adobe.com: Funtap, knssr, Blue Planet Studio, Monopoly919, Destina

v1.1*

*Nov.2023

"ONE Record out of the box"

ONE Record API v2.0.0 ✓

ONE Record data model v3.0.0 ✓

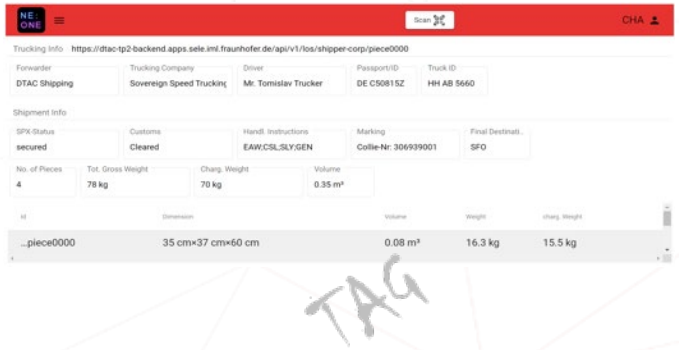
Efficiency Features:

- Data Browser
- Smart Caching
- Performance Monitoring
- REST Inhouse API

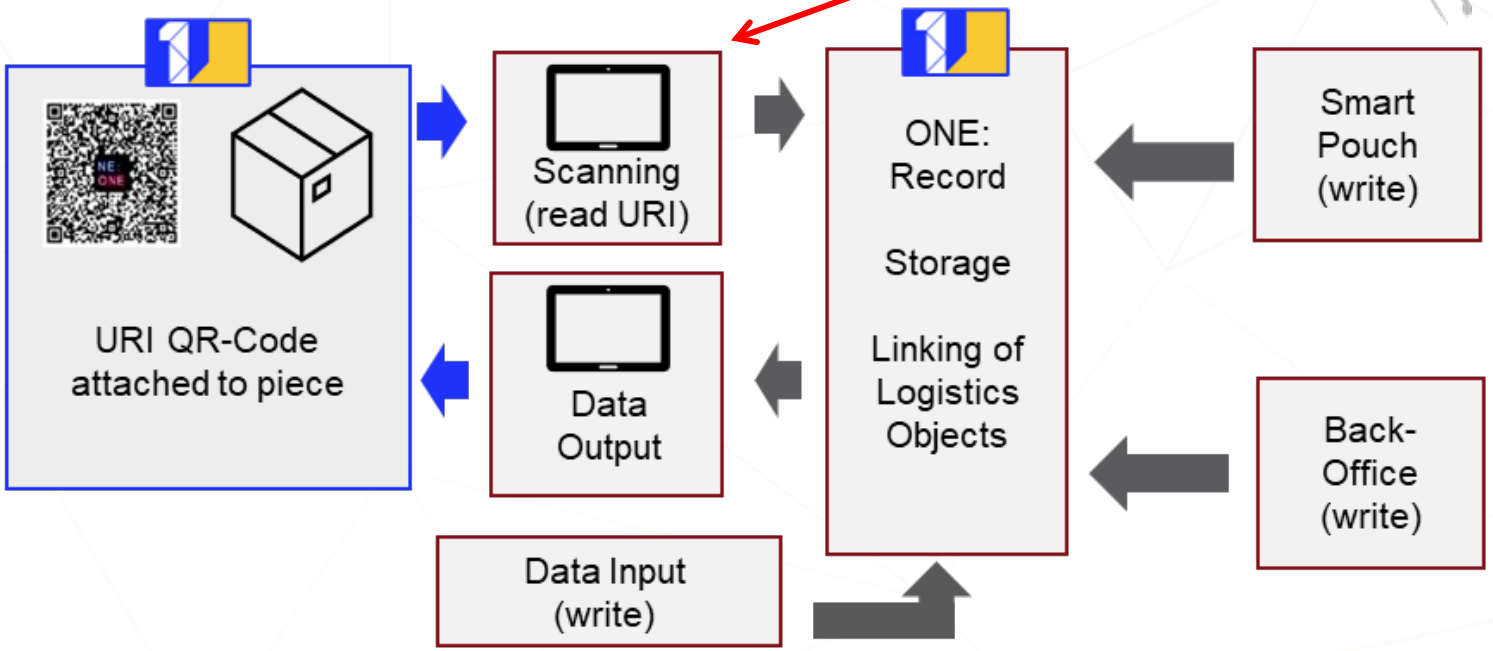
Image api: Flaticon.com

DIGITAL TESTBED AIR CARGO
Sponsored by Federal Ministry for Digital and Transport

NE: ONE Tag



NE: One Tag Functionality:

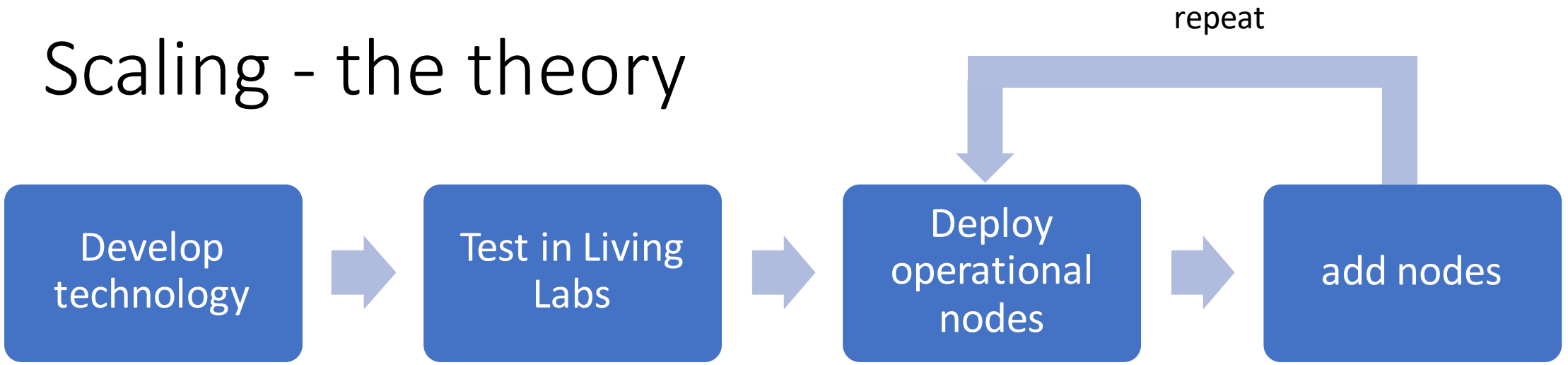


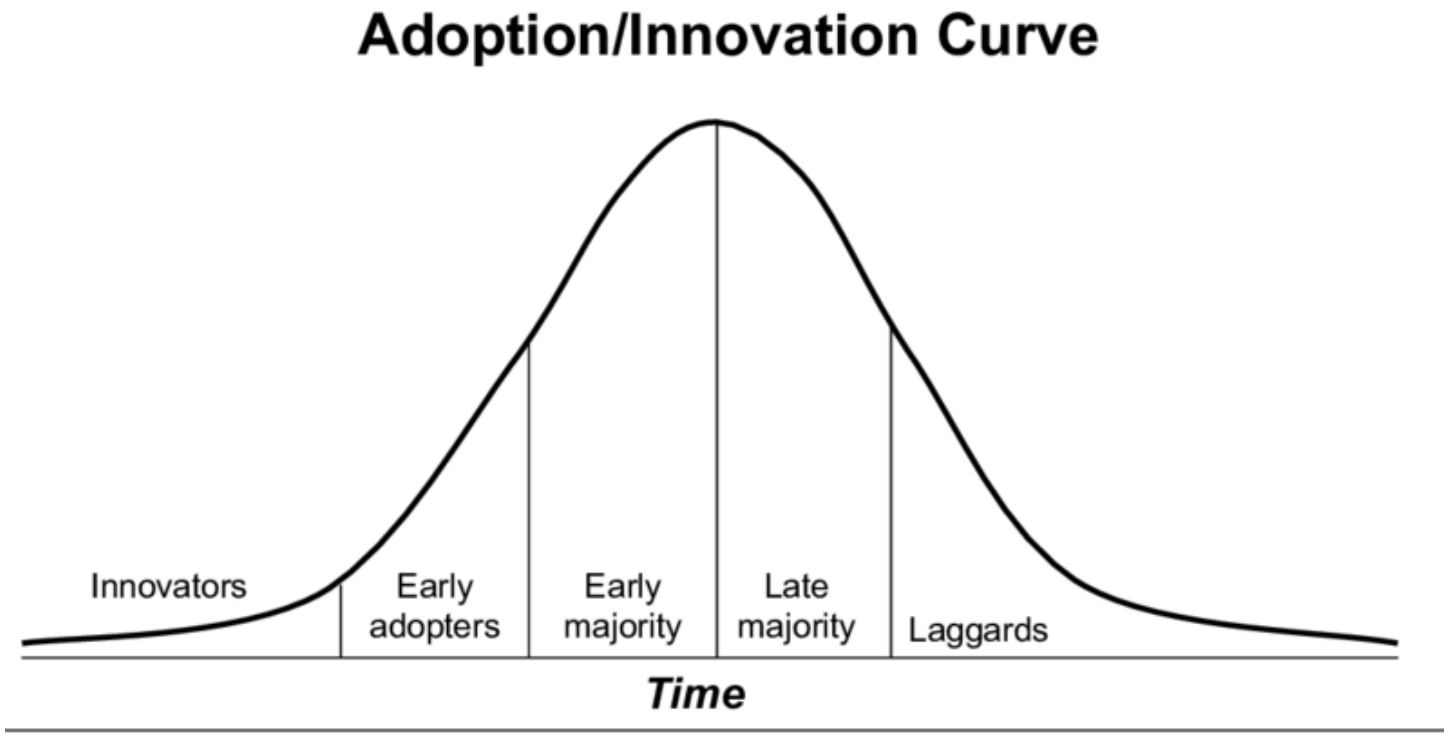
Scaling FEDeRATED

or

“ How to get more than a million European transport enterprises and their public administrations in a single federated network? ”

Scaling - the theory





Scaling – in practice

innovators

Develop technology

Test in Living Labs

Deploy operational nodes

add nodes

Scaling – in practice

innovators +
early adopters

innovators

Develop technology

Test in Living Labs

Deploy operational nodes

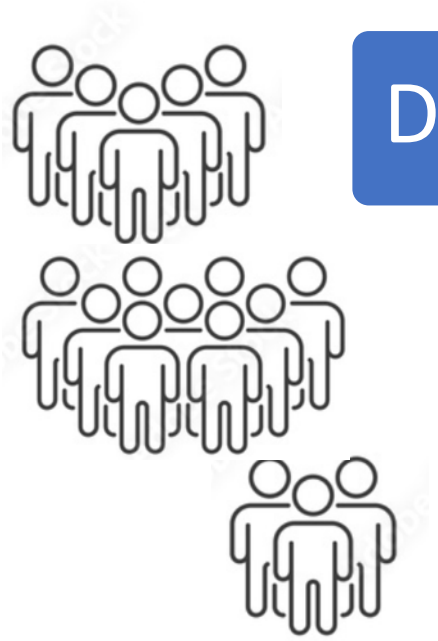
add nodes

Scaling – in practice

innovators + early adopters

early adopters

innovators



Develop technology

Test in Living Labs

Deploy operational nodes

add nodes

Scaling – in practice

innovators + early adopters

innovators + early adopters

early majority

early majority

Develop technology

Test in Living Labs

Deploy operational nodes

add nodes

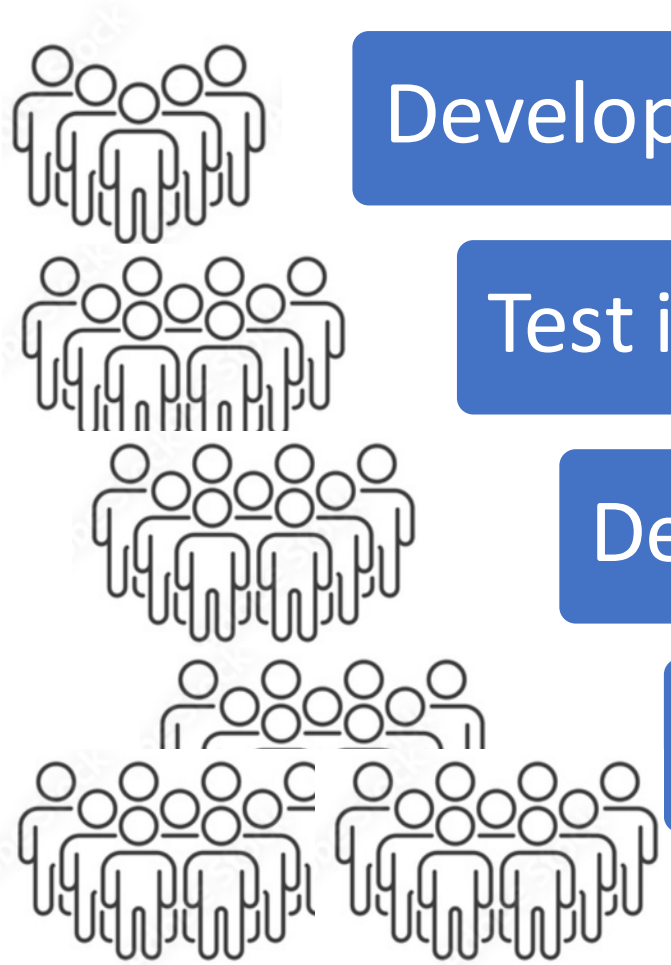
Scaling – in practice

innovators + early adopters

innovators + early adopters

early majority

late majority



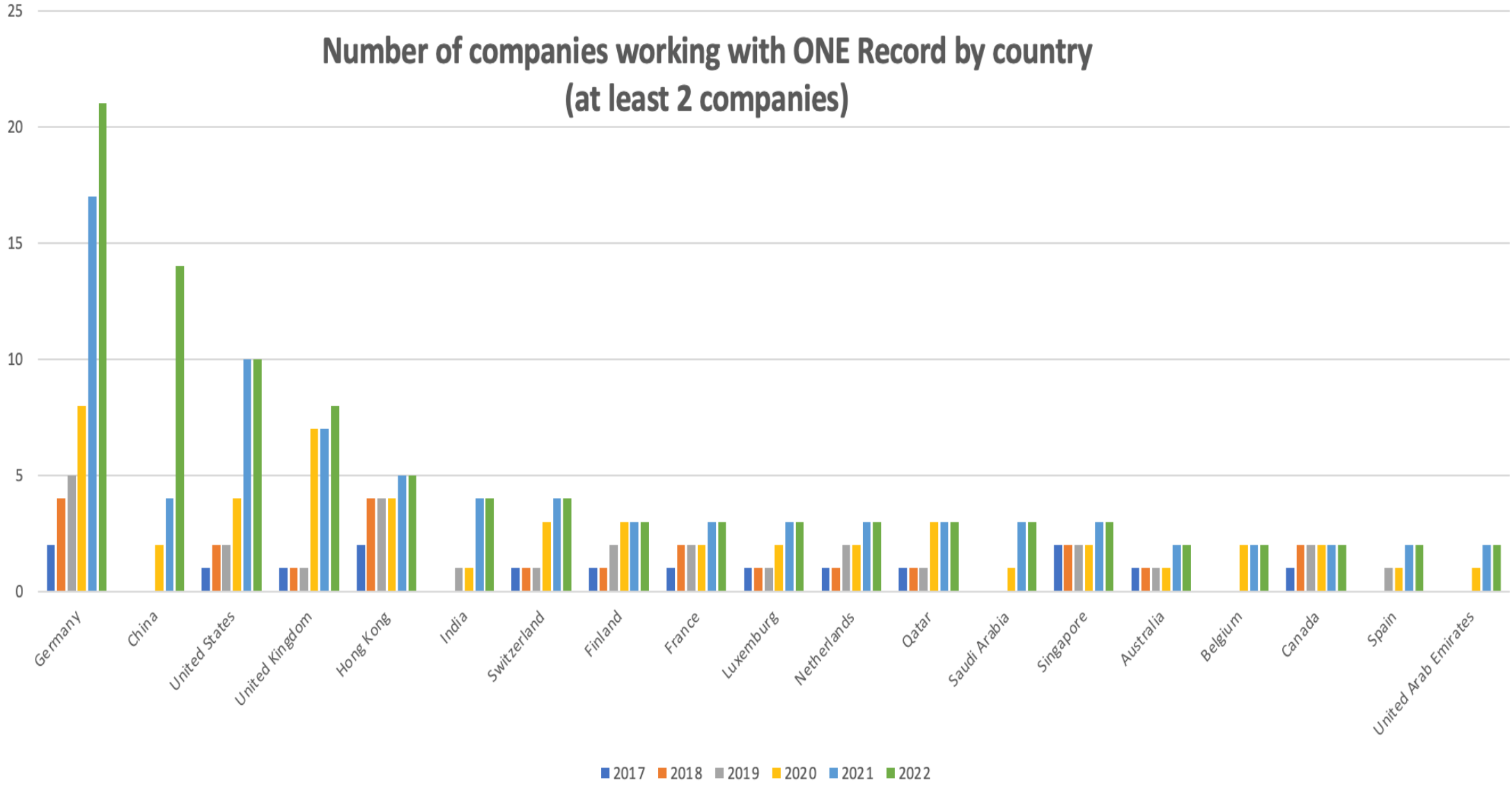
Develop technology

Test in Living Labs

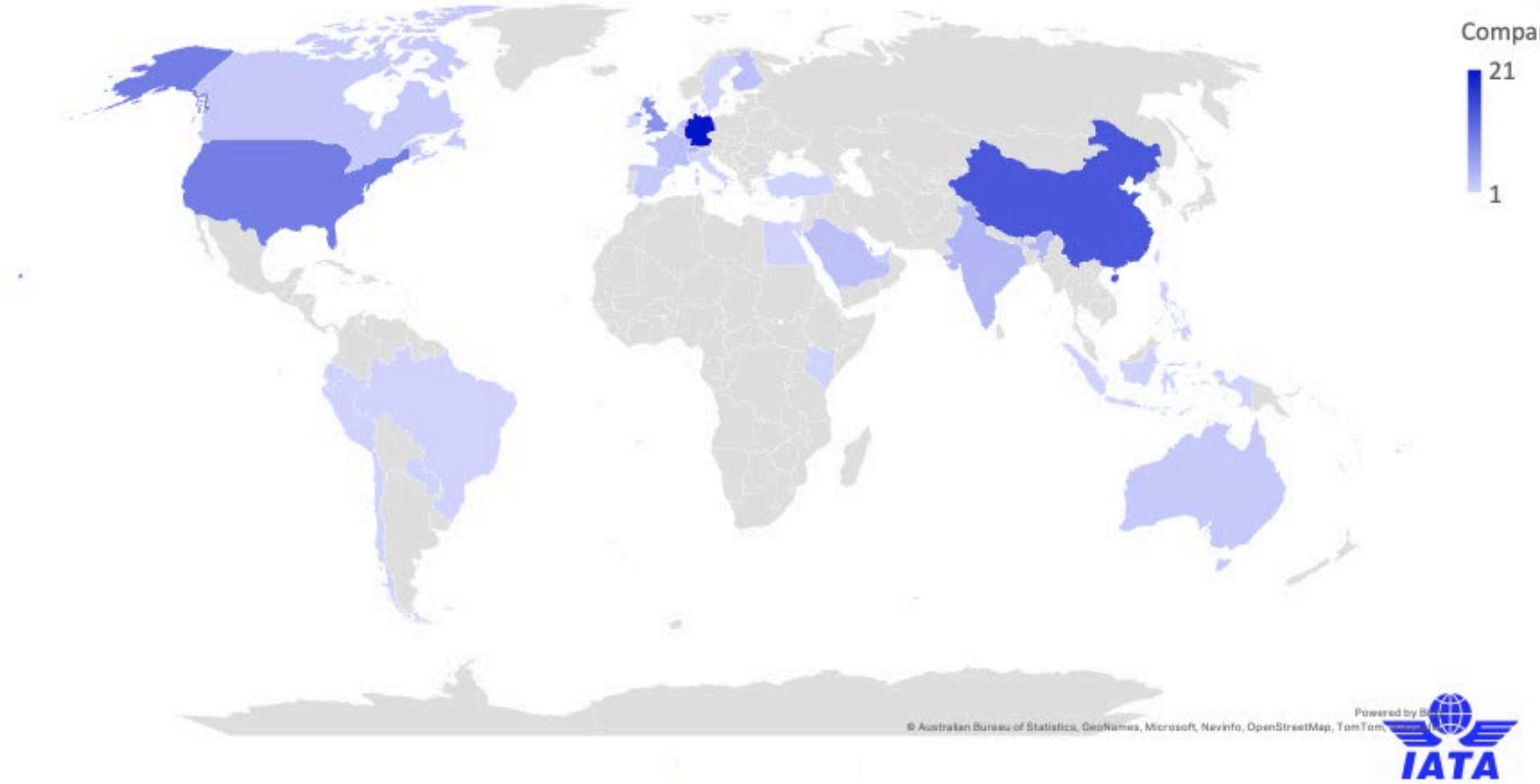
Deploy operational nodes

add nodes

ONE Record global deployment



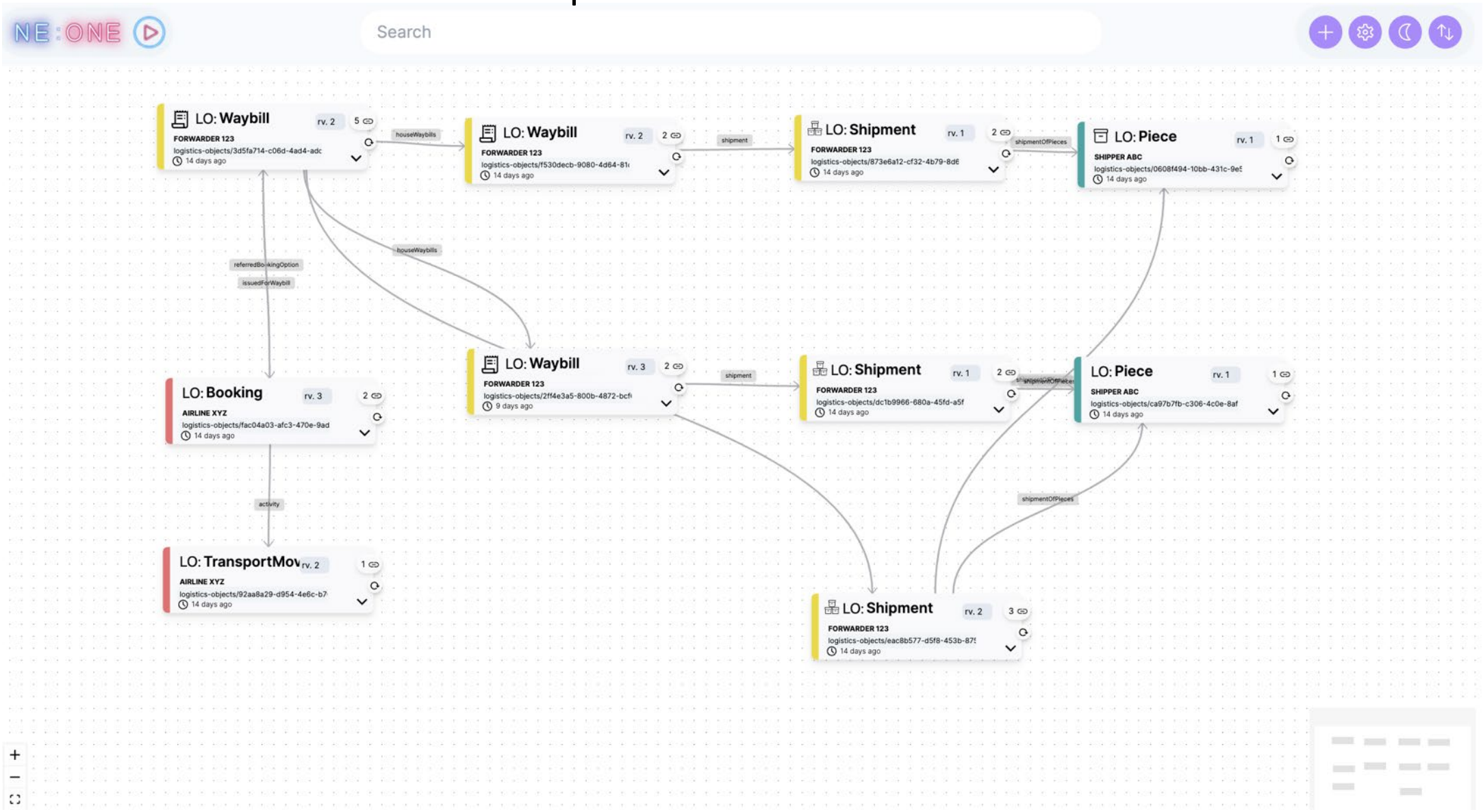
ONE Record global deployment



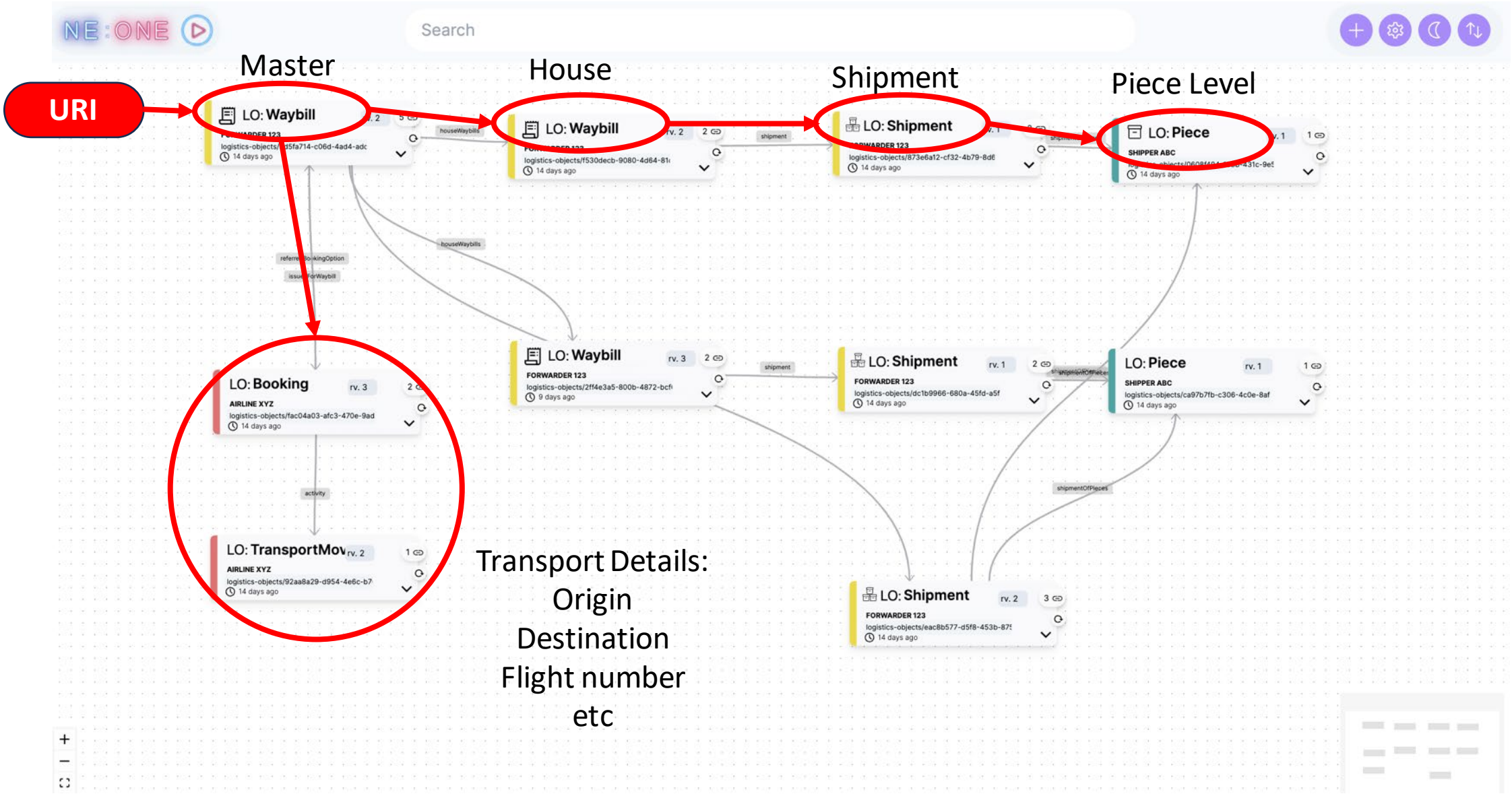
ONE Record European deployment

ONE Record European deployment

ONE Record → linked data space



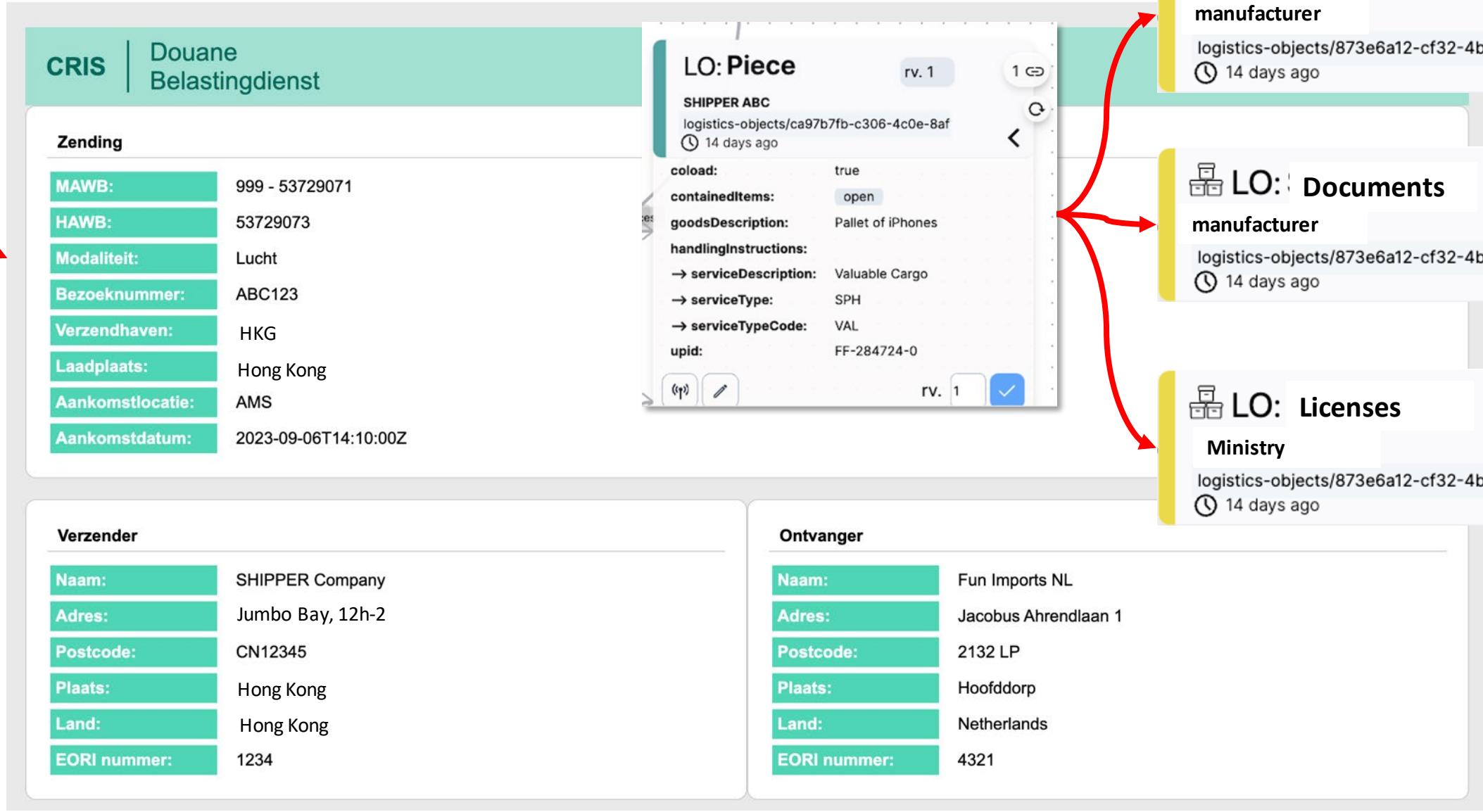
ONE Record – into the linked data space



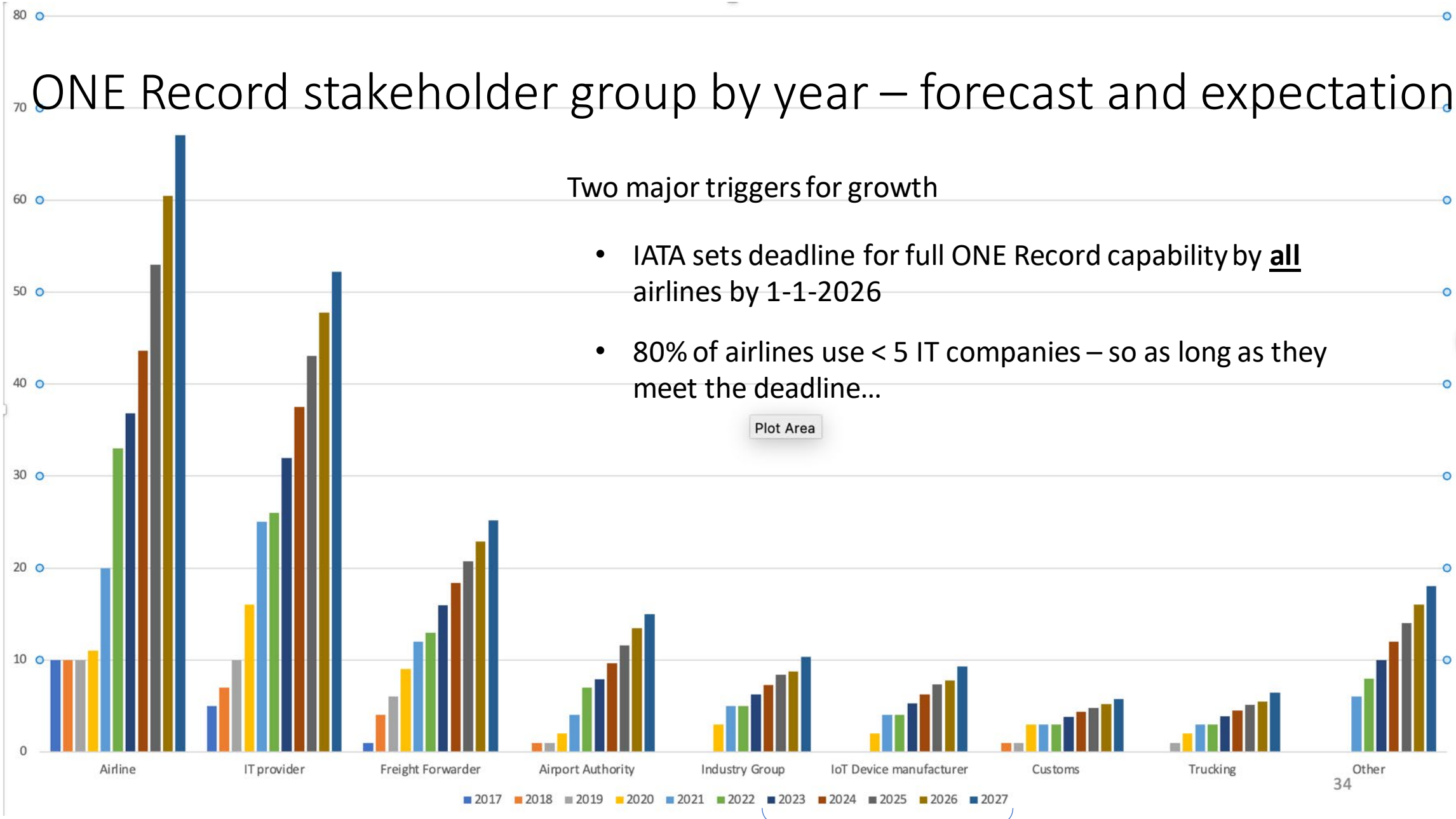
From URI to Customs Applications: LL11 → LL19

Master Waybill

URI



ONE Record stakeholder group by year – forecast and expectation



Two major triggers for growth

- IATA sets deadline for full ONE Record capability by **all** airlines by 1-1-2026
- 80% of airlines use < 5 IT companies – so as long as they meet the deadline…

Plot Area

34

Recommended prioritization

- Digitalization before interoperability
  - Private and public operators need to cross the digital barriers with the technologies of the day. We need to ensure that those technologies facilitate interoperability – this requires leadership
- Stakeholders before architecture
  - Stakeholder engagement is more involved than architecture. Stakeholders – supported by experts - should drive architecture, market testing and deployment.
- Stakeholders lead communities, communities make Europe
  - Innovators and early adopters need to focus on community involvement, small at first, majority to follow

Recommendations to DTLF

- Digitalization before interoperability
  - Monitor digital maturity in transport & logistic sector
  - Ensure adequate digital infrastructure
  - Ensure digital skill sets, including safe use of AI
- Stakeholders before architecture
  - Focus on communication of purpose, technologies, use cases and economical returns
  - Enhance DTLF membership with observers, consider national chapters
  - Consider broader scope to cover other or all areas of digitalization
- Stakeholders lead communities, communities make Europe
  - Prioritize DTLF members and CEF recipients based on community representation, public & private, commercial & non-profit
  - Reconsider voluntary nature of leading DTLF stakeholders and formalize their involvement

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