

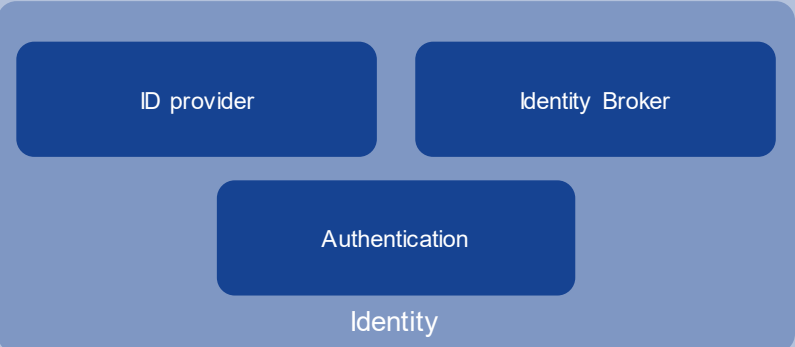
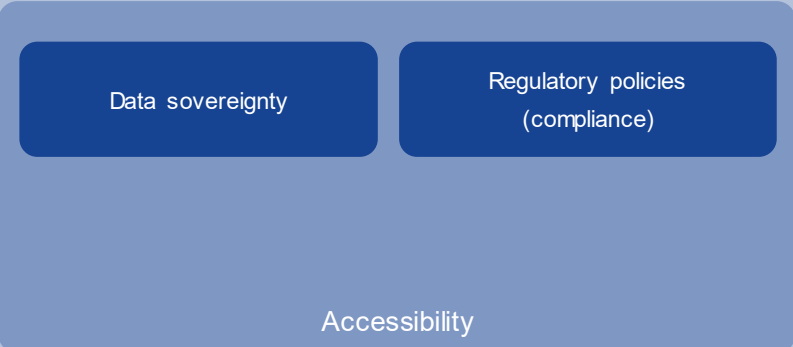
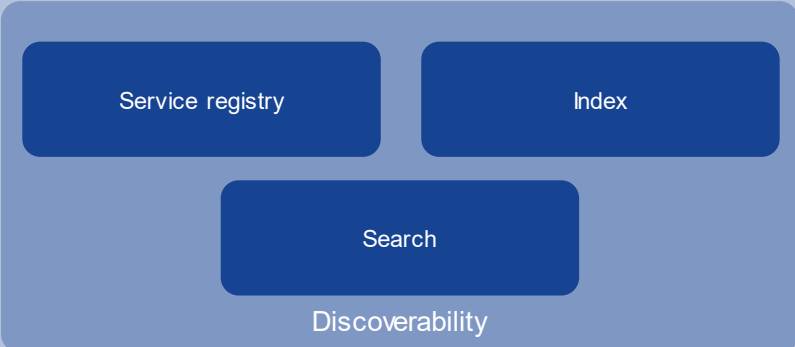
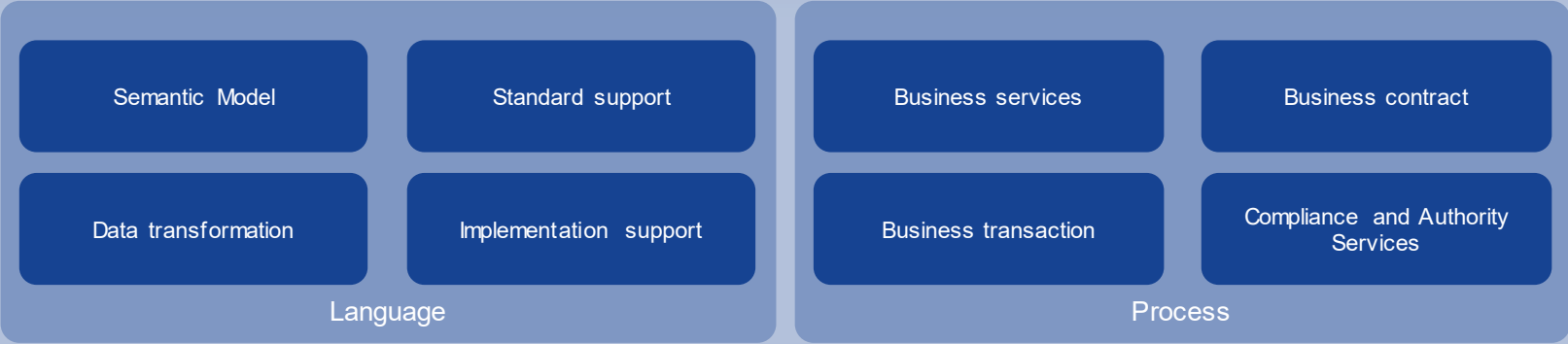


**FEDeRATED**  
**Internet of**  
**Logistics:**  
**An Imminent**  
**Reality**



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

# DTLF – SG2 – Corridor Freight Information System



Data sharing solutions  
(minimal requirements like PKI-certificates, non-repudiation (logging/audit trail), REST APIs with OAUTH2.0 identity tokens, etc.)

# Living Lab 11 – Internet of Logistics

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Connecting all transport & logistics companies via the internet.



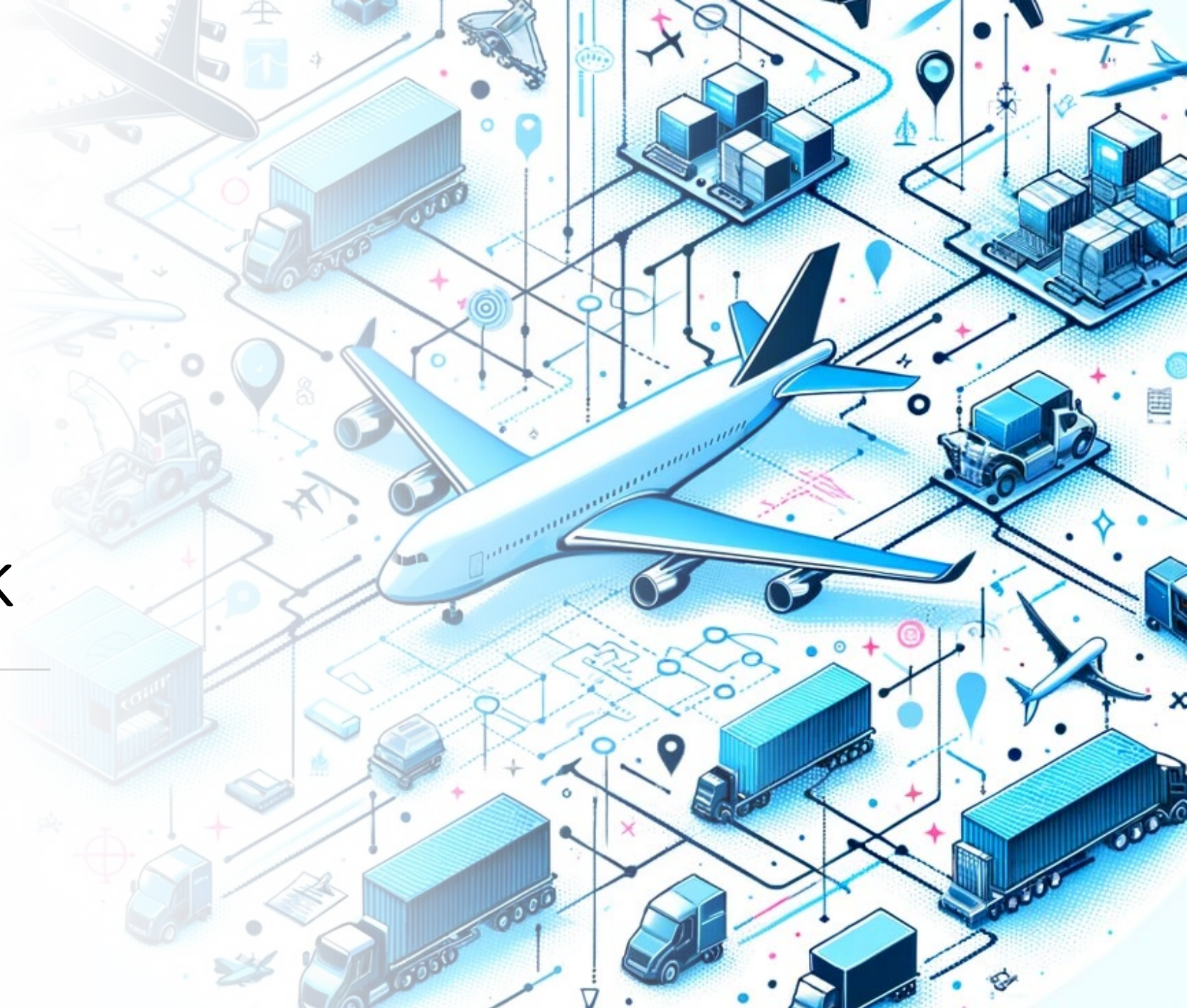
Develop data and connectivity protocol  
**ONE Record**





# Scaling nodes into a global network

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# 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

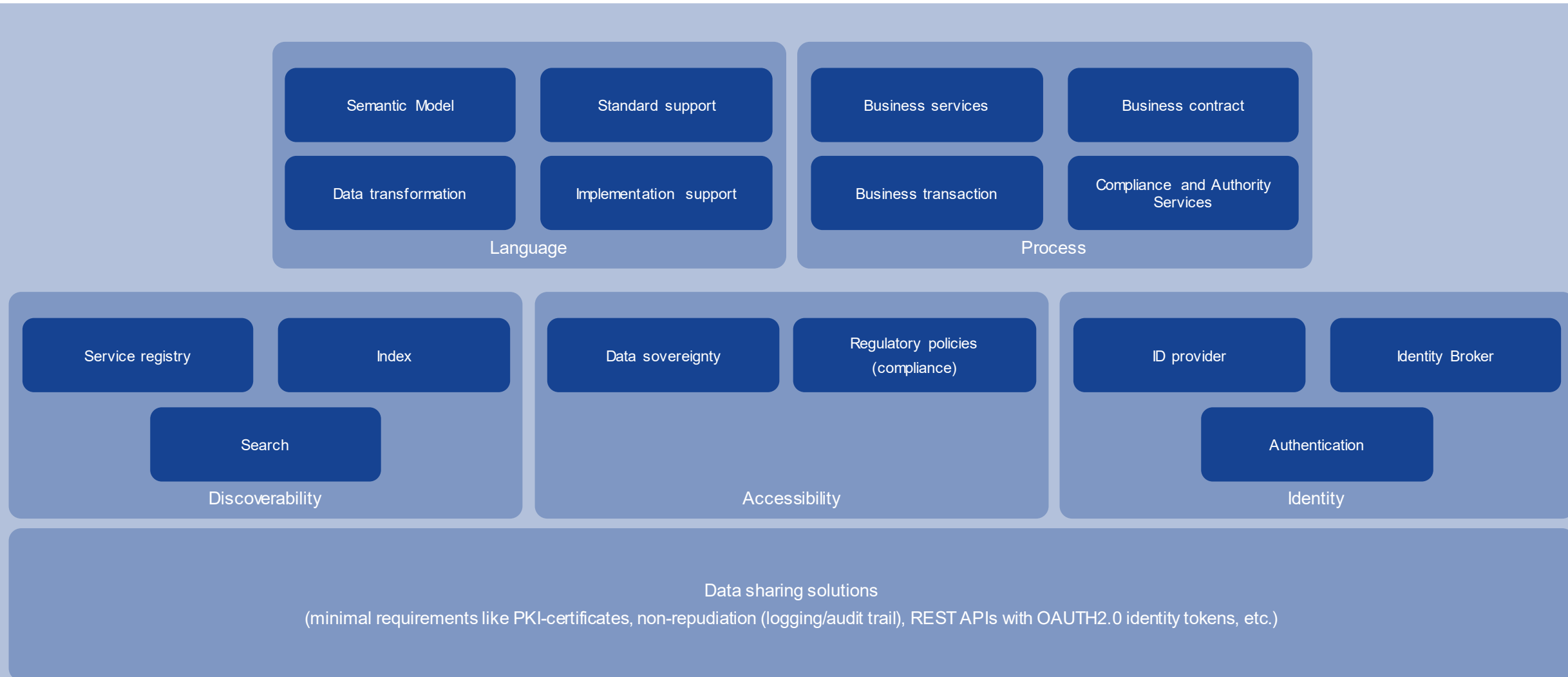
---

## **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

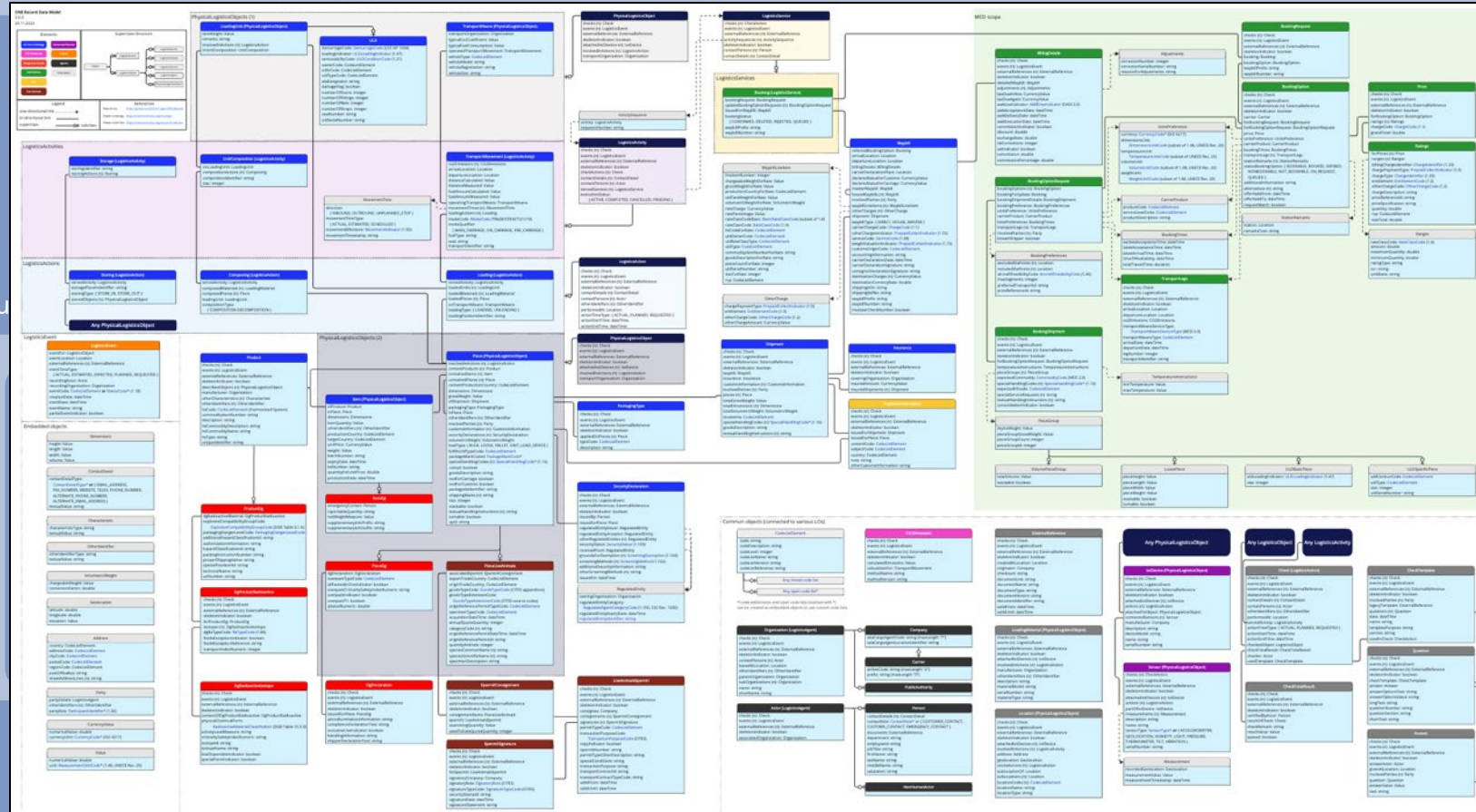
Language

Service registry

Index

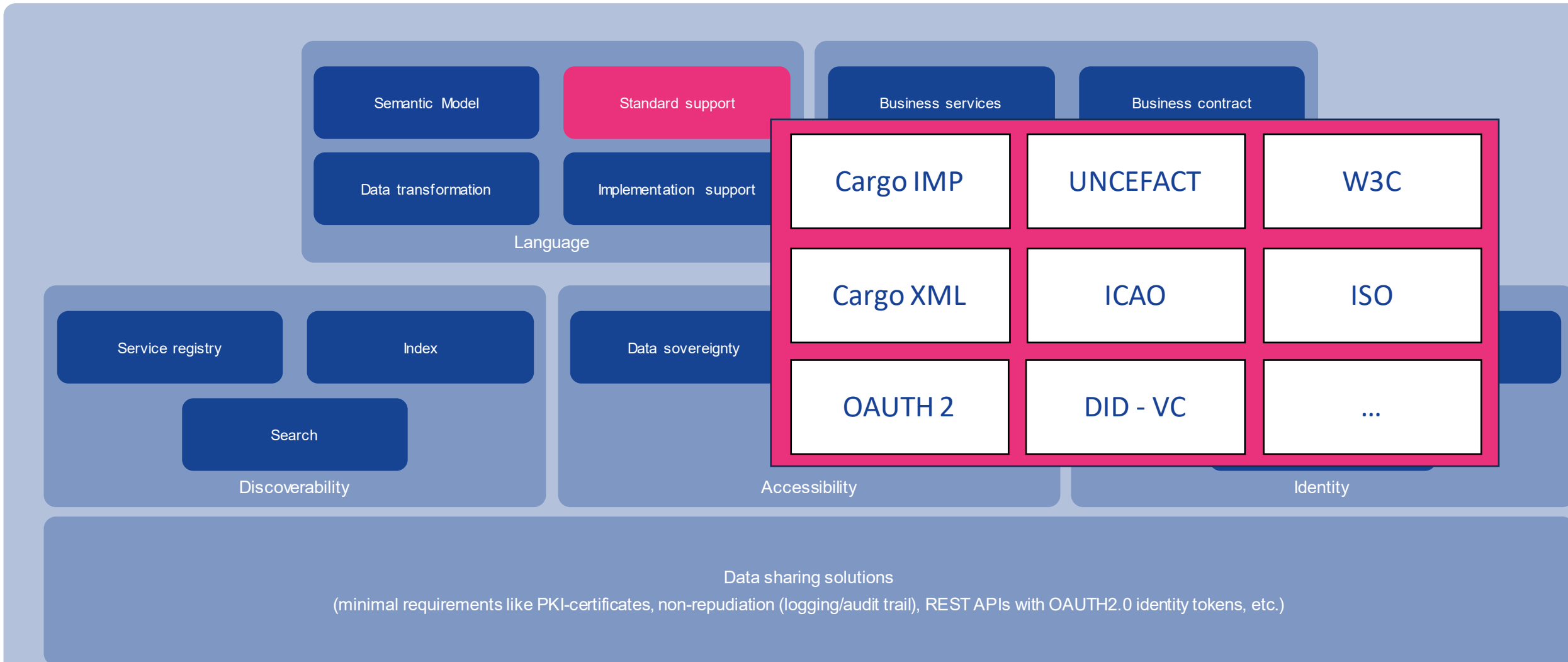
Search

Discoverability

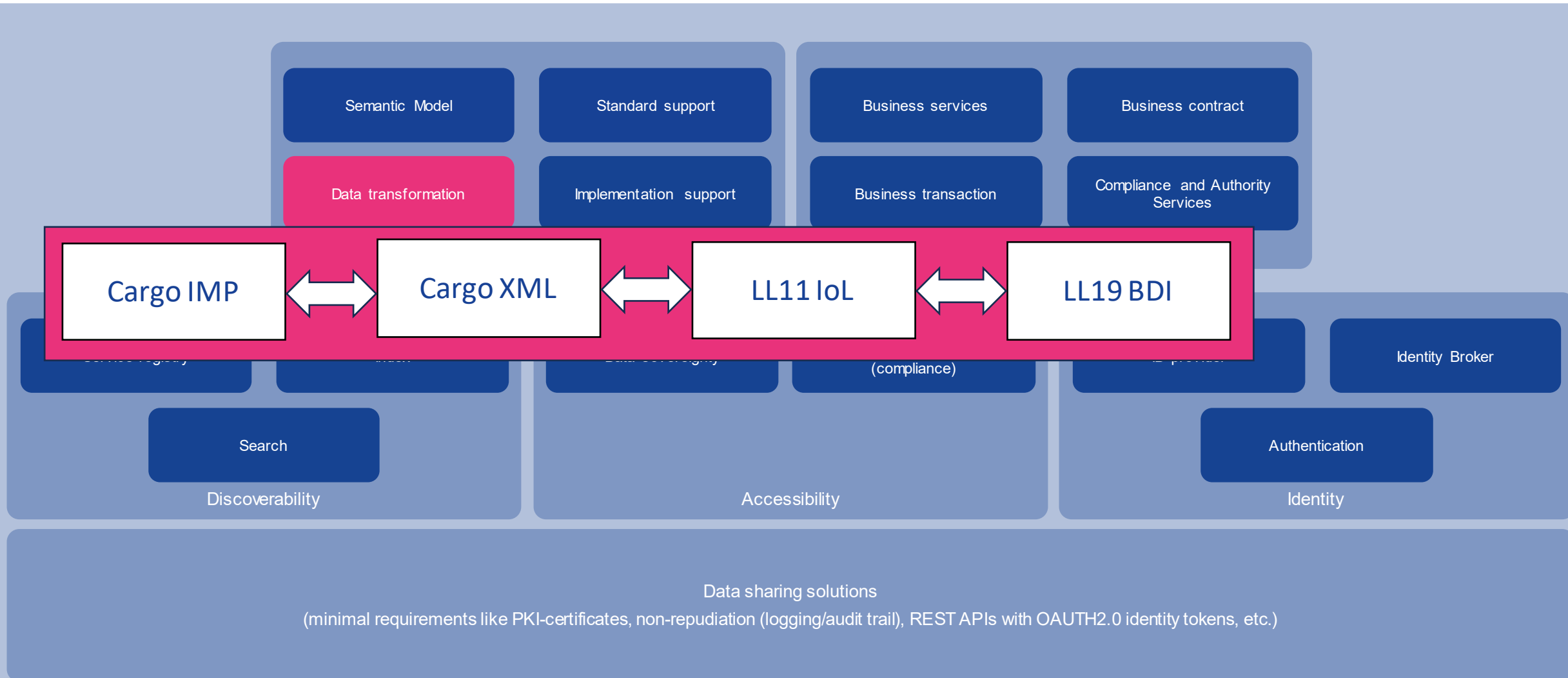


(minimal requirements like PKI-certificates, non-repudiation (logging/audit trail), REST APIs with OAuth 2.0 identity tokens, etc.)

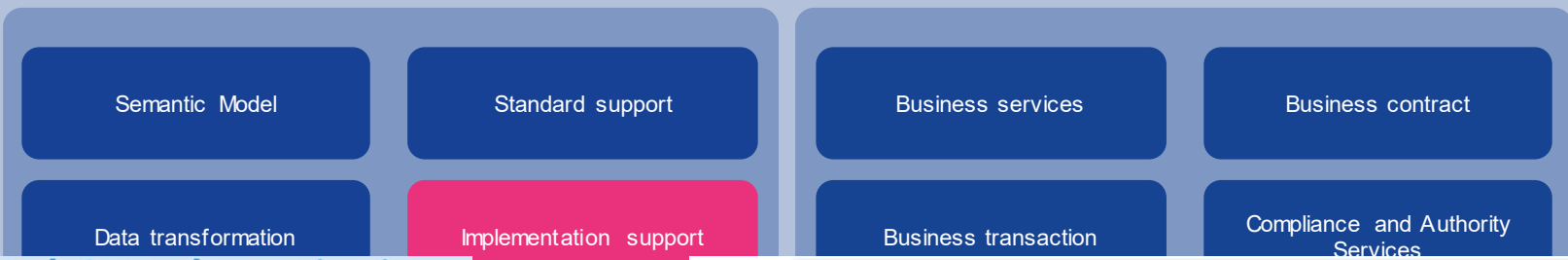
# ONE Record – aligned with standards



# ONE Record – back and forward compatible



# ONE Record – innovative tools

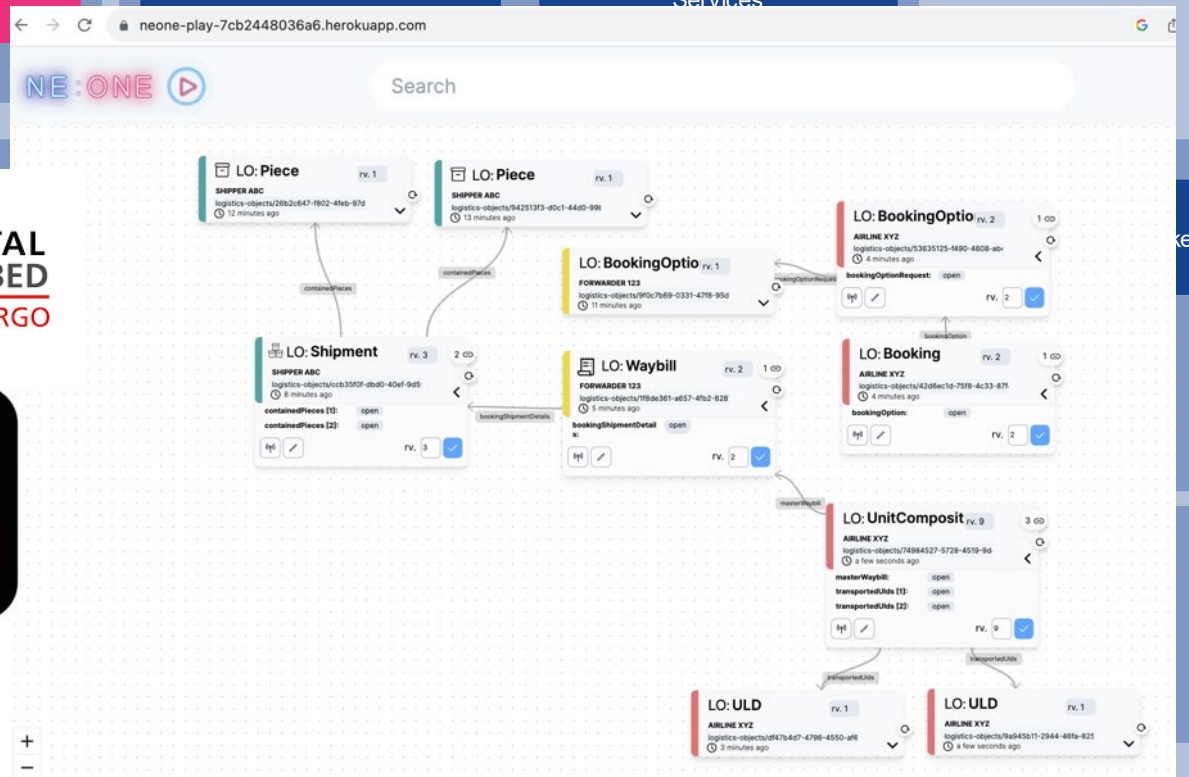


## Revolutionising modern data exchange in air freight

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, the Working Group Digital Air Cargo accomplished a significant milestone in digitising and streamlining operations within the air cargo industry.



Open Source  
ONE Record  
server



# ONE Record – service directory

Semantic Model

Standard support

Business services

Business contract

Data transformation

Service registry

Index

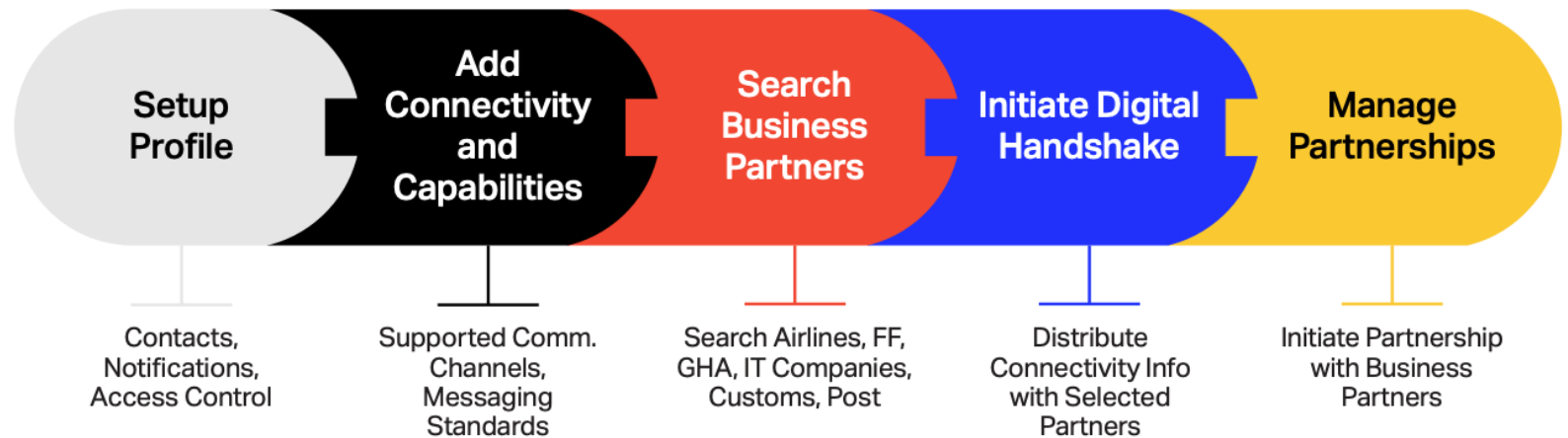
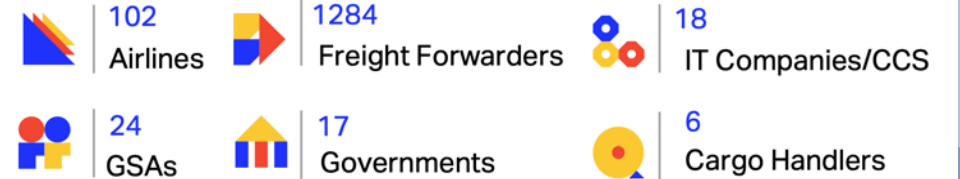
Search

Discoverability

(minimal requirements)



## 4000+ Connections in EPIC



# ONE Record – API directory

Semantic Model

Data transformation

Lat

Service registry

Index

Search

Discoverability

(minimal requirements like

The screenshot shows the IATA Developer Hub website at [api.developer.iata.org/hub](https://api.developer.iata.org/hub). The page features a search bar at the top with the text "Search for APIs". Below the search bar, there are navigation links: "Create Team", "Add Your API", "Provider Manual", "Log In", and "Sign Up". The main content area is divided into two sections: "Open Air Certified APIs" and "Digital Identity".

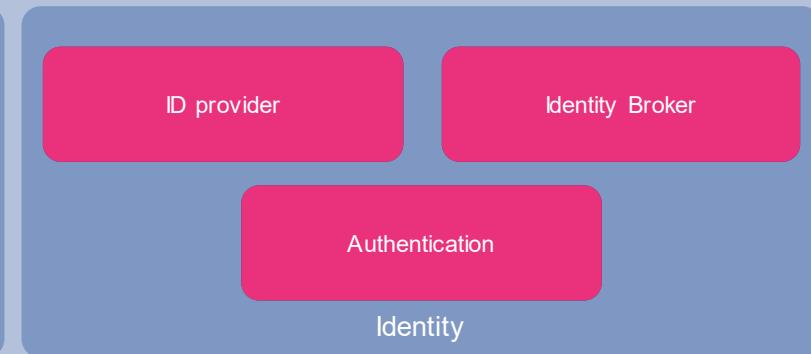
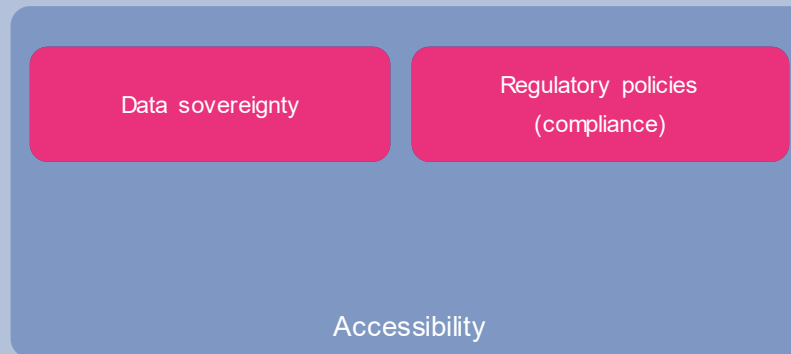
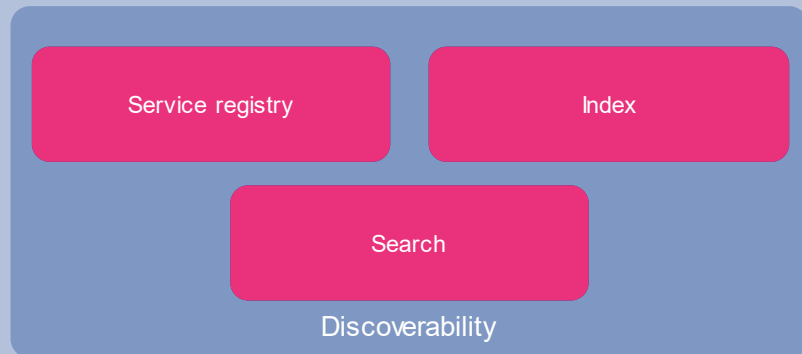
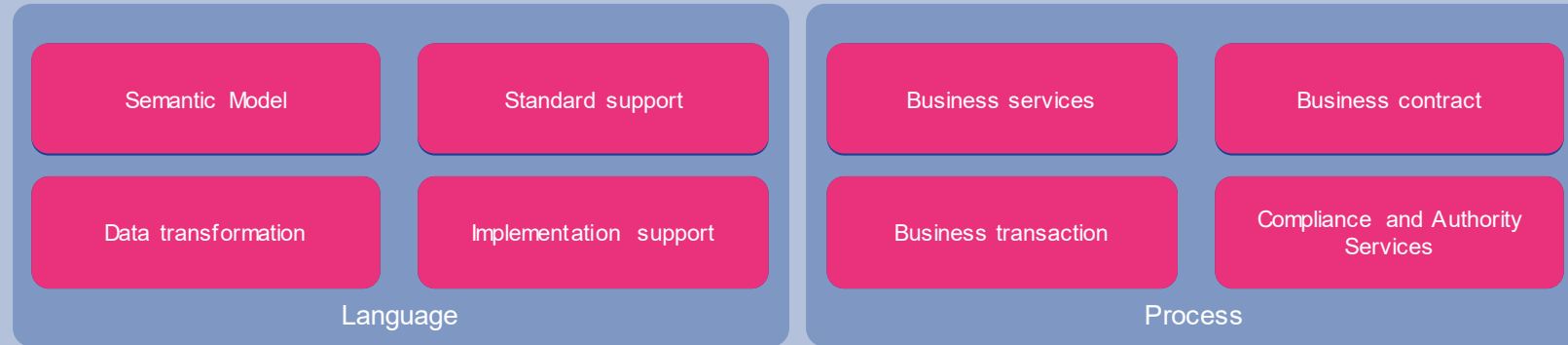
**Open Air Certified APIs**  
IATA Certification to promote adoption of open API standards across the Airline Industry, under IATA Open API program

- IATA - Open API Program**  
IATA's Open API Program serves as an enabler for
- Architecture and Technology Strategy Board**
- Customer Flight Info**  
Retrieve the status of a specific flight on a given date or list flights departing from or arriving
- Flight Status**  
Providing real time flight information

**Digital Identity**  
APIs supporting the adoption of digital identity ecosystems in the airline industry

- Digital Identity for Distribution**  
Digital identity for distribution supports aviation's move toward
- Revocation List Service**  
IATA Verifiable Credential revocation list API - Production
- Preprod Revocation List Service**  
IATA Verifiable Credential revocation list API - Pre Production
- Verifiable Credentials Issuance API**  
This is an API to allow issuance of Verifiable Credentials

# ONE Record – the standard



Data sharing solutions  
(minimal requirements like PKI-certificates, non-repudiation (logging/audit trail), REST APIs with OAUTH2.0 identity tokens, etc.)



# DIGITAL TESTBED

---

## AIR CARGO



Harald Sieke



**DIGITAL  
TESTBED**  
AIR CARGO

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.



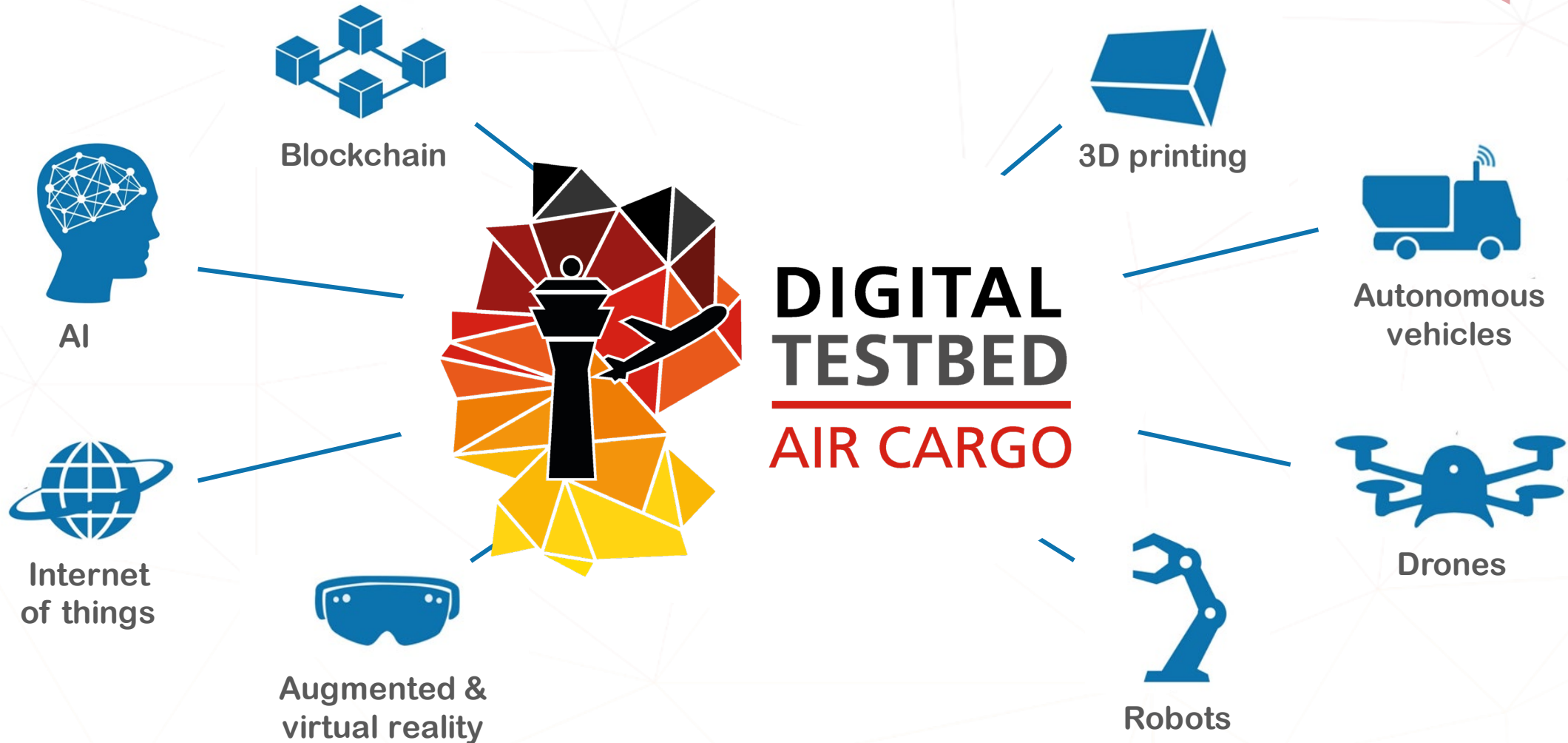
**DIGITAL  
TESTBED**  
AIR CARGO

Sponsored by



Federal Ministry  
for Digital  
and Transport

# Digitization in Air Cargo



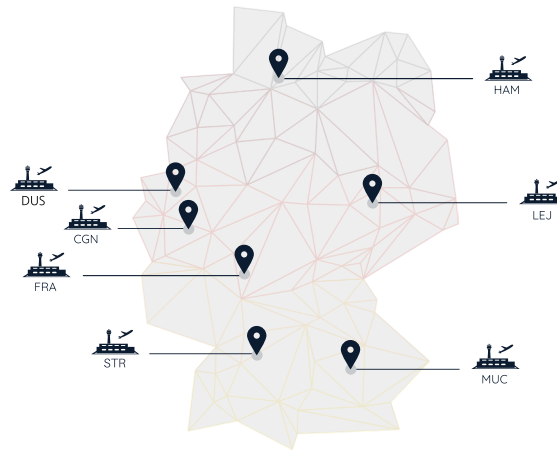
# Consortium



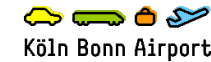
## 2 Research Institutions



## 7 Test Sites



## 9 Industry Partners



Subcontracting Partners:



# » Digital Testbed Air Cargo «

## Testbed – Sub Projects



Data Platform  
& Digital  
Avatar



Predictive  
Analytics



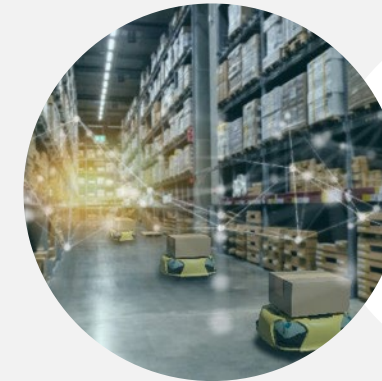
Autonomous  
Outdoor  
Transports



Smart  
Pouch



Digital Site  
Logistics



Autonomous  
Warehouse  
Handling

# » Digital Testbed Air Cargo «

## Testbed – Sub Projects





v1.1\*

\*Nov.2023



"ONE Record out of the box"


ONE RecordAPI v2.0.0

ONE Record data model v3.0.0


✓

✓


Efficiency Features:




Data Browser



Smart Caching



Performance Monitoring



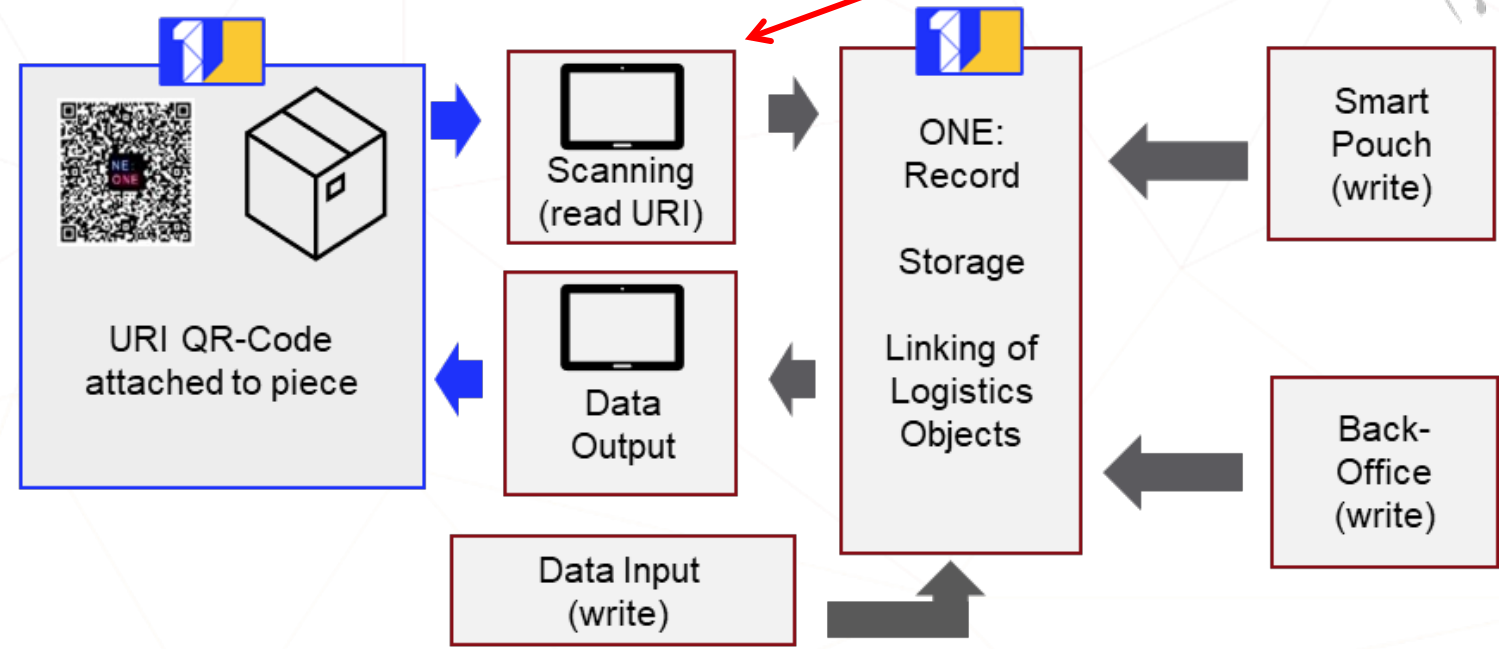
REST Inhouse API



# NE: ONE Tag



## NE: One Tag Functionality:



Trucking Info: <https://dtac-tp2-backend.apps.sle.mil.fra.hofier.de/api/v1/bs-shipper-corp/piece0000>

Forwarder	Trucking Company	Driver	Passport/ID	Truck ID
DTAC Shipping	Sovereign Speed Trucking	Mr. Tomislav Trucker	DE C50815Z	HH AB 5660

Shipment Info

SPX Status	Customs	Handl. Instructions	Marking	Final Destinat.
secured	Cleared	EAW:CSL.SLY.GEN	Colle-Nr: 306939001	SFO

No. of Pieces	Tot. Gross Weight	Charg. Weight	Volume
4	78 kg	70 kg	0.35 m³

ID	Dimension	Volume	Weight	Charg. Weight
...piece0000	35 cm*37 cm*60 cm	0.08 m³	16.3 kg	15.5 kg

TAG

# Scaling FEDeRATED

---

or

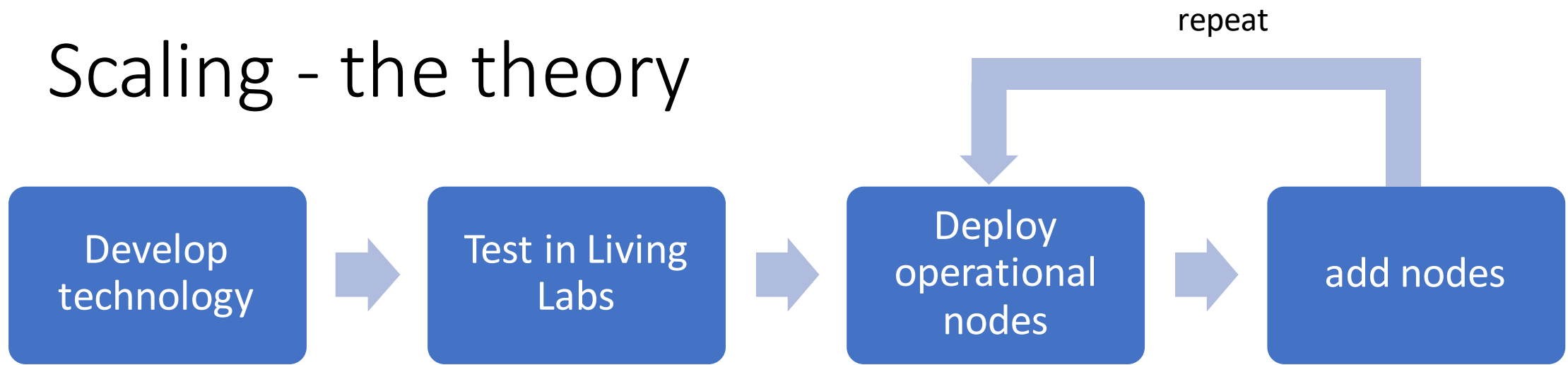
“ How to get more than a million European transport enterprises and their public administrations in a single federated network? ”



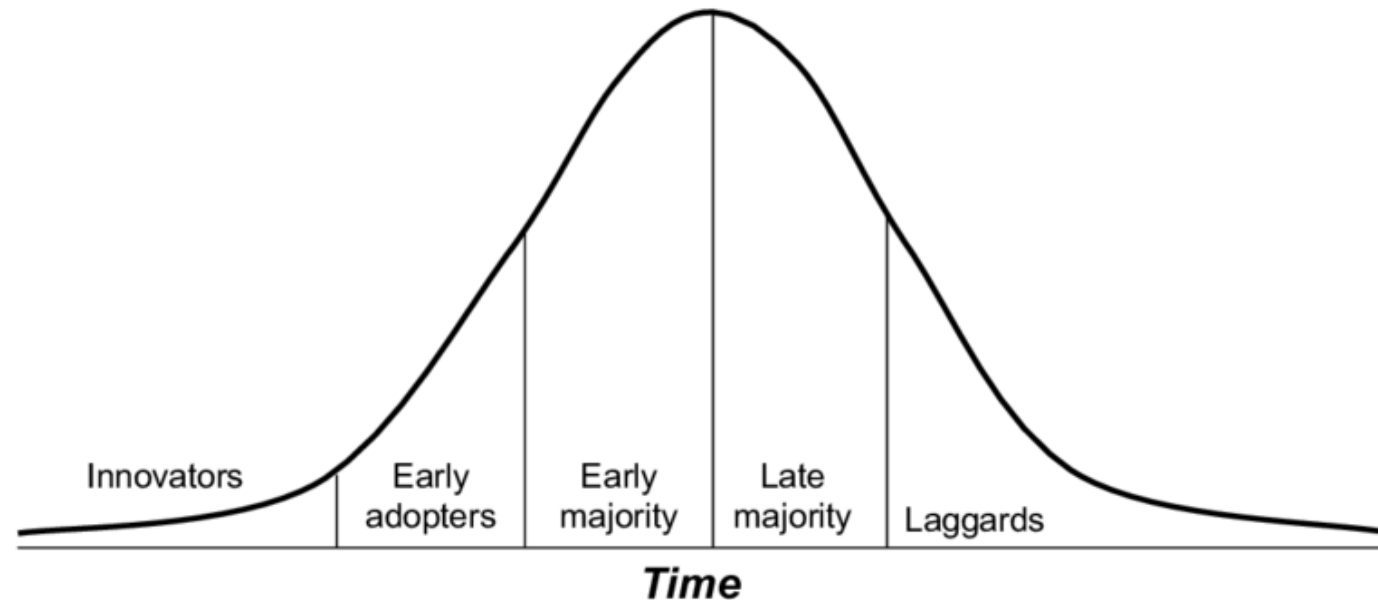
**FEDeRATED to  
infinity and beyond**



# Scaling - the theory



## Adoption/Innovation Curve



# Scaling – in practice

innovators



Develop technology

Test in Living Labs

Deploy operational nodes

add nodes

# Scaling – in practice

innovators +  
early adopters



innovators



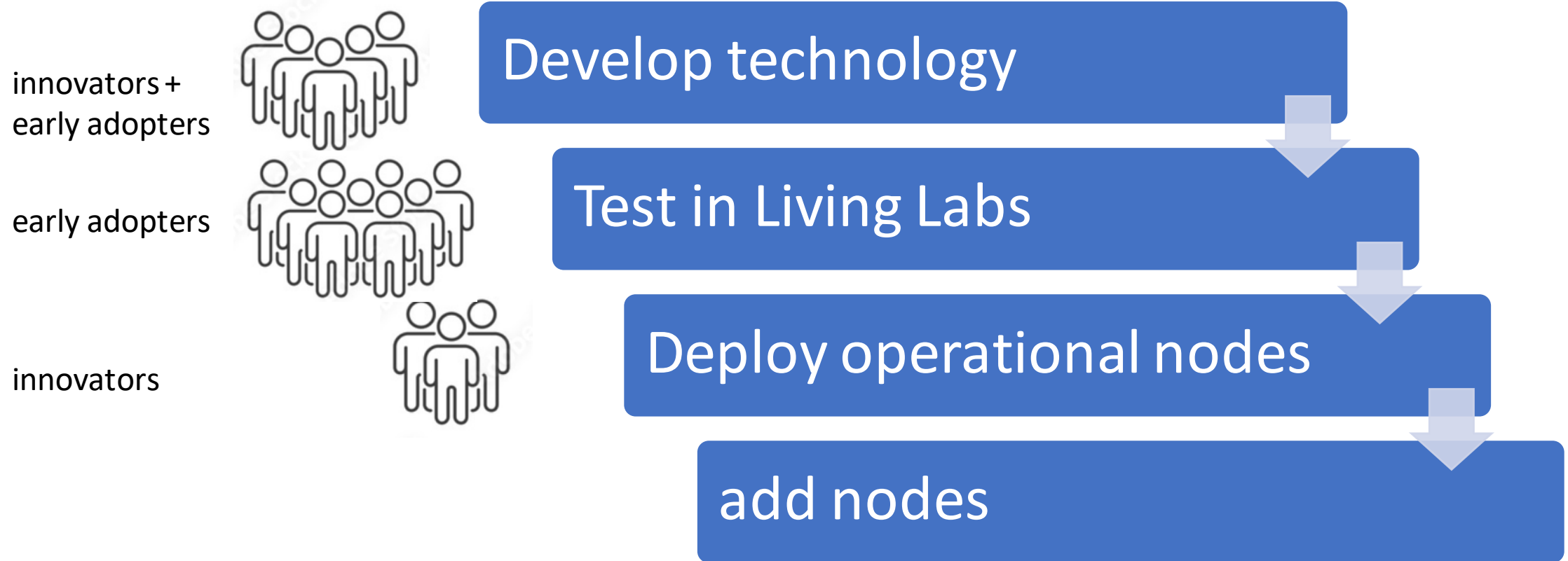
Develop technology

Test in Living Labs

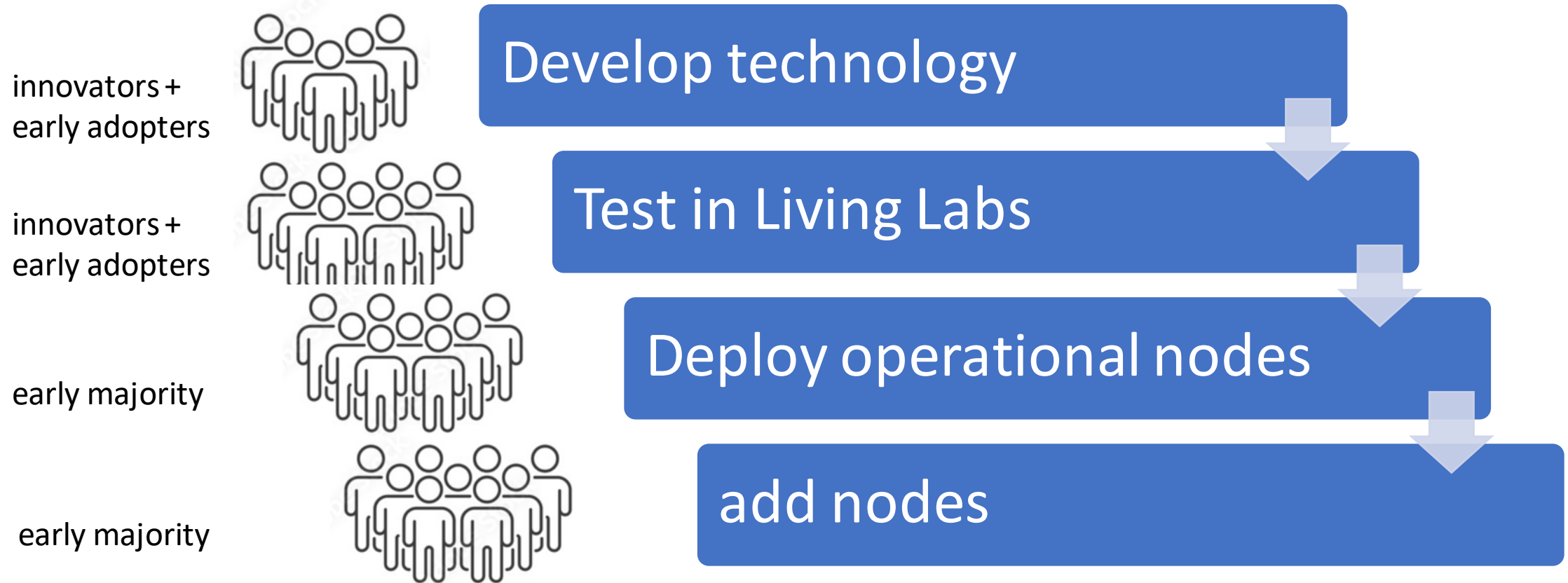
Deploy operational nodes

add nodes

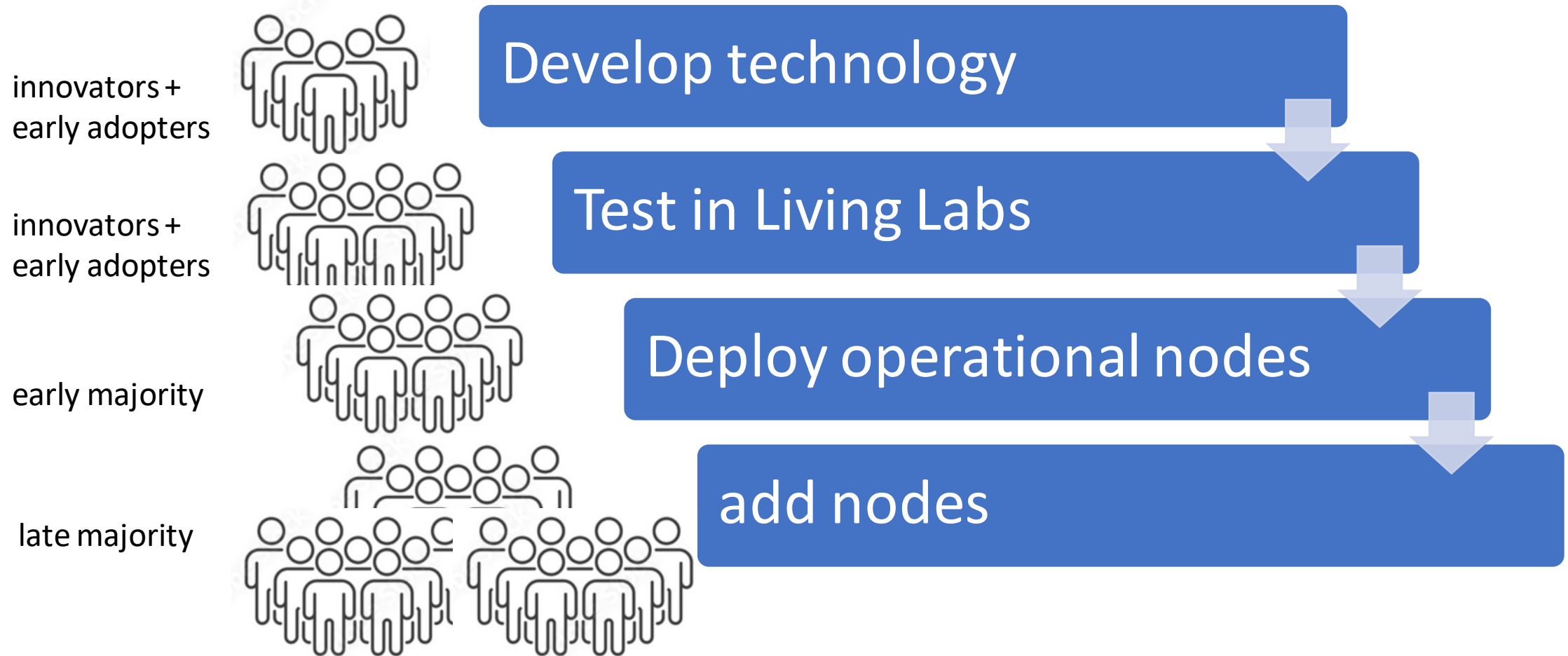
# Scaling – in practice



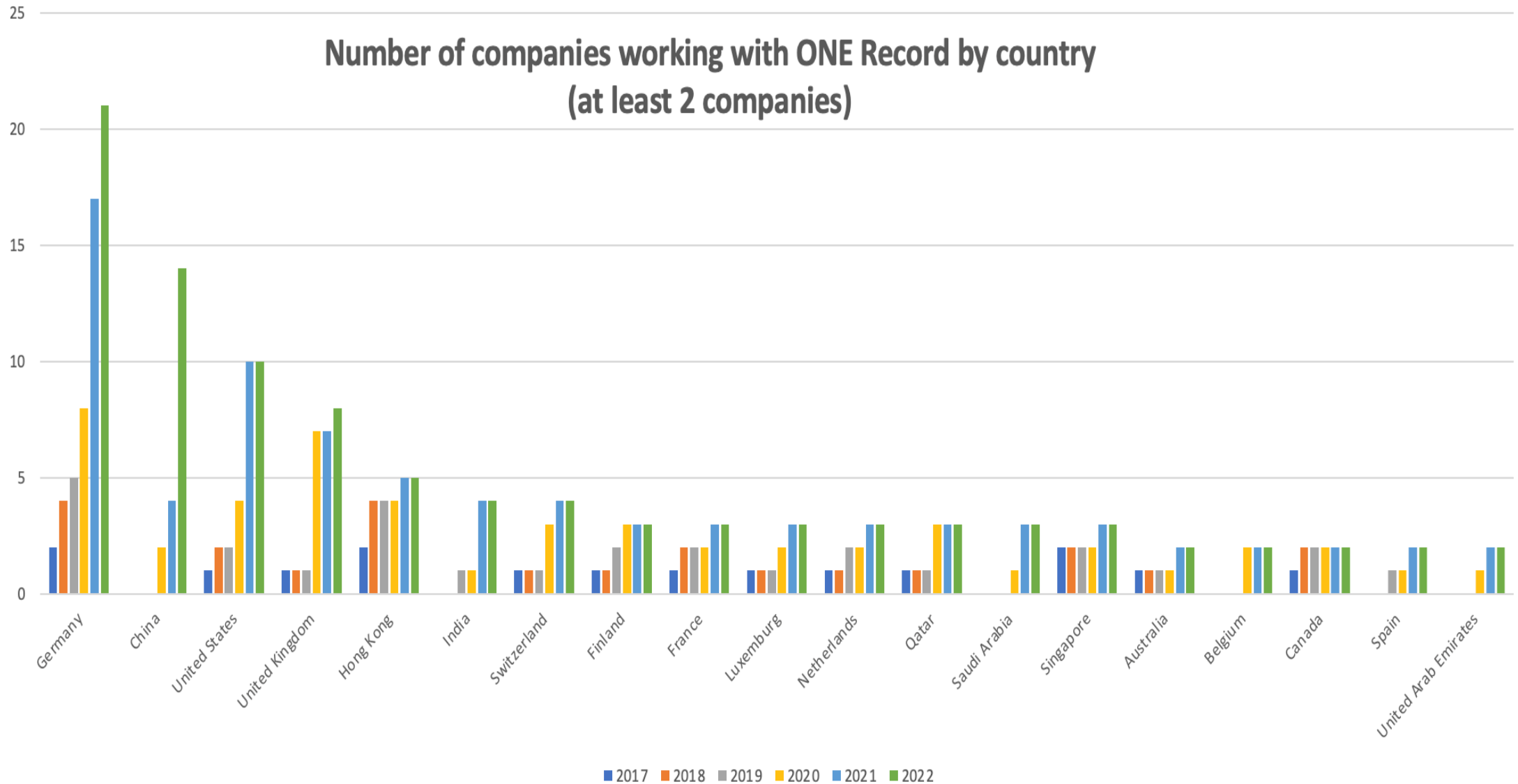
# Scaling – in practice



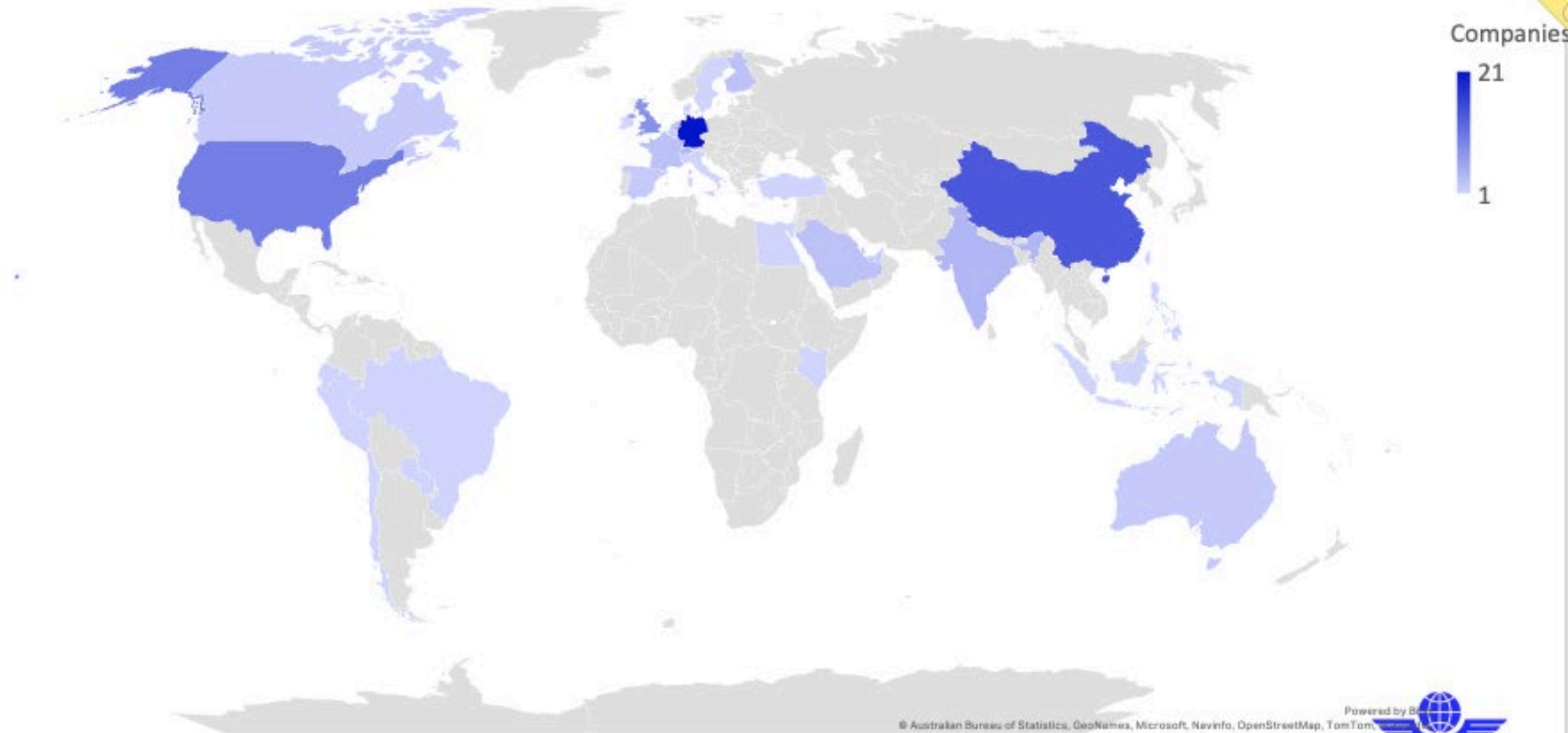
# Scaling – in practice



# ONE Record global deployment



# ONE Record global deployment





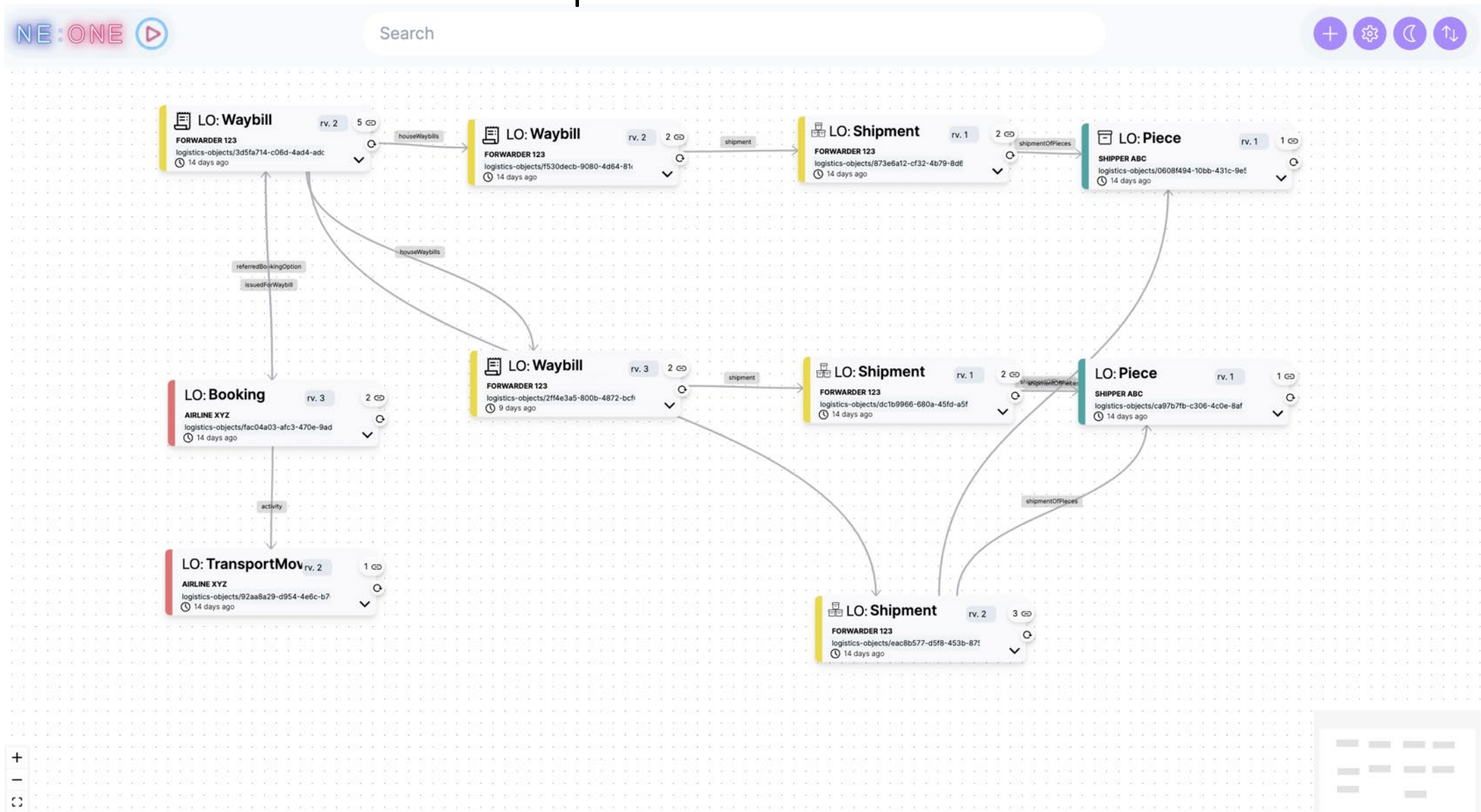
# ONE Record European deployment



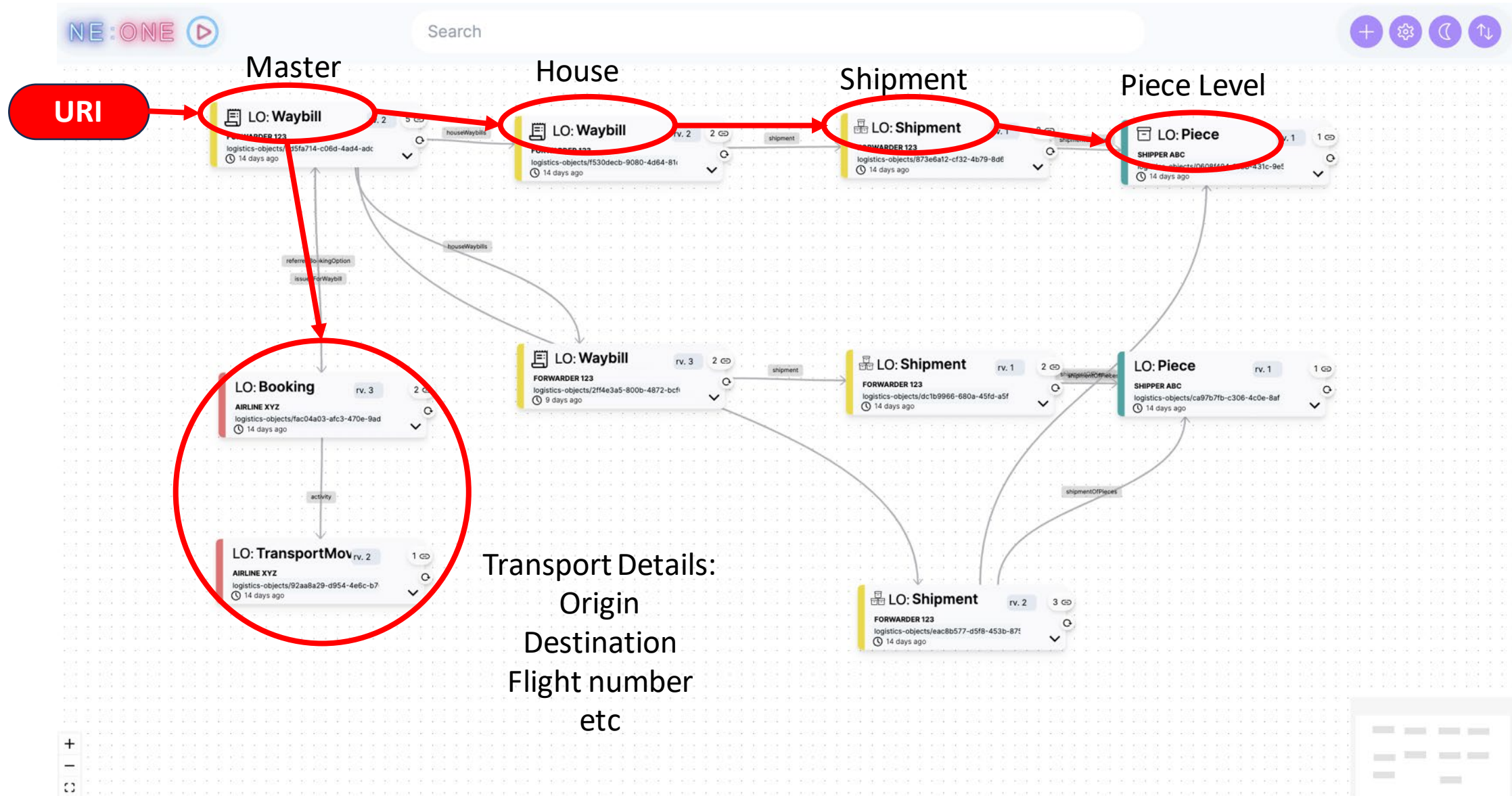
# ONE Record European deployment



# ONE Record → linked data space



# ONE Record – into the linked data space



# From URI to Customs Applications: LL11 → LL19

Master Waybill

URI

**CRIS** | Douane Belastingdienst

### Zending

MAWB:	999 - 53729071
HAWB:	53729073
Modaliteit:	Lucht
Bezoeknummer:	ABC123
Verzendhaven:	HKG
Laadplaats:	Hong Kong
Aankomstlocatie:	AMS
Aankomstdatum:	2023-09-06T14:10:00Z

### Verzender

Naam:	SHIPPER Company
Adres:	Jumbo Bay, 12h-2
Postcode:	CN12345
Plaats:	Hong Kong
Land:	Hong Kong
EORI nummer:	1234

### Ontvanger

Naam:	Fun Imports NL
Adres:	Jacobus Ahrendlaan 1
Postcode:	2132 LP
Plaats:	Hoofddorp
Land:	Netherlands
EORI nummer:	4321

### LO: Piece

rv. 1

SHIPPER ABC  
logistics-objects/ca97b7fb-c306-4c0e-8af  
🕒 14 days ago

coload: true  
containedItems: open  
goodsDescription: Pallet of iPhones  
handlingInstructions:  
→ serviceDescription: Valuable Cargo  
→ serviceType: SPH  
→ serviceTypeCode: VAL  
upid: FF-284724-0

rv. 1

### LO: Production

manufacturer  
logistics-objects/873e6a12-cf32-4b  
🕒 14 days ago

### LO: Documents

manufacturer  
logistics-objects/873e6a12-cf32-4b  
🕒 14 days ago

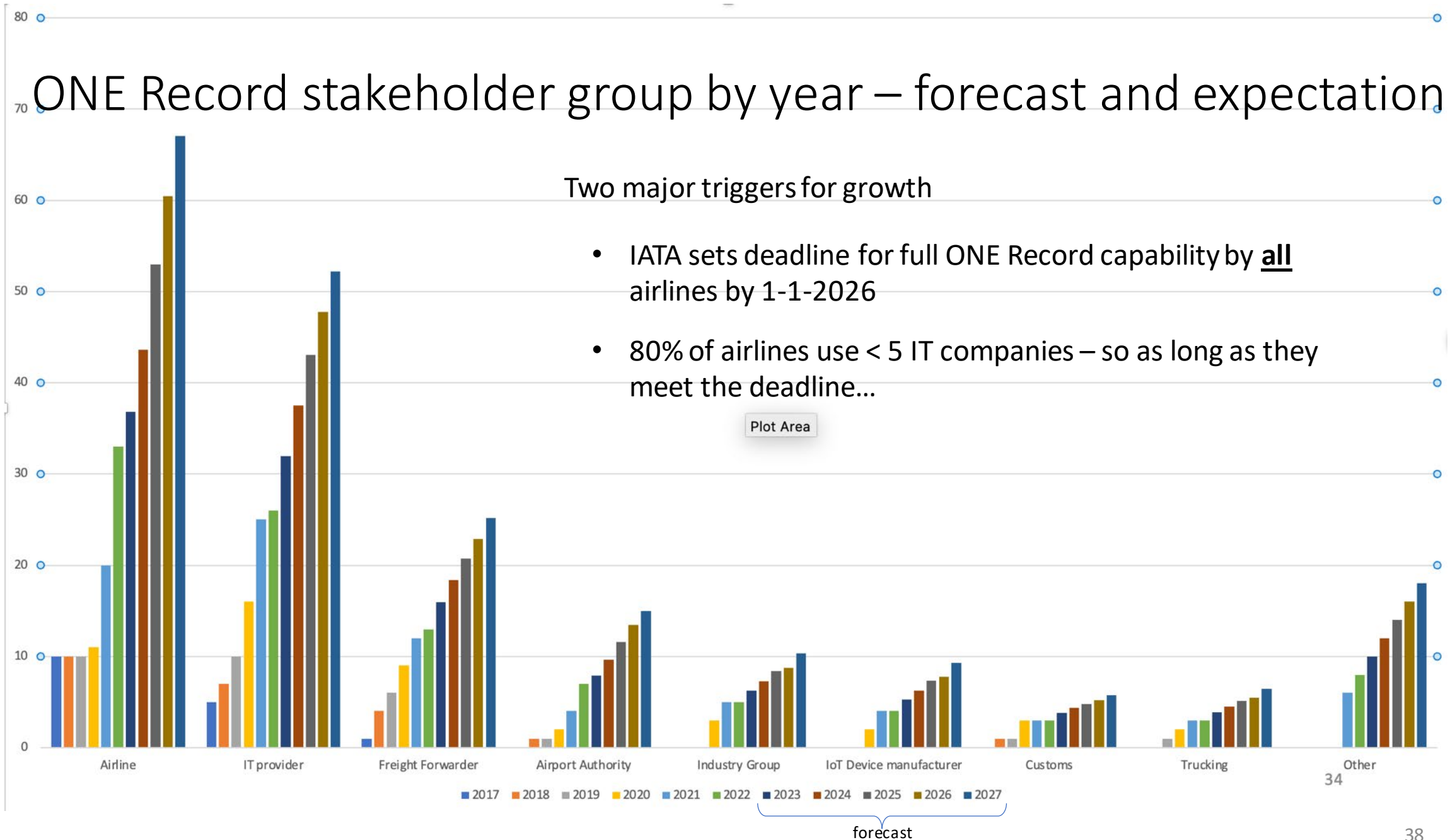
### LO: Licenses

Ministry  
logistics-objects/873e6a12-cf32-4b  
🕒 14 days ago

# 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...



# 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





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



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Facility of the European Union