



From Data – To AI: **The journey to impact continues**

02.12.2025

Organised By  **LNDS**
LUXEMBOURG NATIONAL DATA SERVICE



Lunch

Welcome back!



Agenda: Afternoon

13:00	Industry panel & Responsible AI & Human Rights
14:00	Coffee break
14:30	Mobility, Statistics, Public, Energy domain updates
15:30	Coffee break
16:00	Luxembourg AI Factory
17:00	Networking drinks
18:00	End of the Data Summit 2025

LUXEMBOURG AI FACTORY:

Bridging National and European AI Strategies

Moderator



Bert Verdonck
CEO
Luxembourg National
Data Service (LNDS)

Panelists



Arnaud Lambert
CEO
LuxProvide



Mario Grotz
CEO
Luxinnovation



Peter Hinssen
Serial Entrepreneur,
Best-selling Author,
London Business School
Lecturer



HOW TO LEVERAGE THE EUROHPC
NETWORK OF AI-OPTIMIZED
SUPERCOMPUTERS AND ASSOCIATED
AI FACTORIES TO STIMULATE
INNOVATION AND AI ADOPTION



Co-funded by
the European Union



Consortium - Partners



Computing power, AI in HPC expertise



Ecosystem building, connection & promotion,
assessment, support for funding, and project
management



Education, AI research, trustworthy and robustness
AI , research partnership



Technology transfer experience, vertical AI expertise,
EU network



Data processing, data requirement and regulatory
expertise

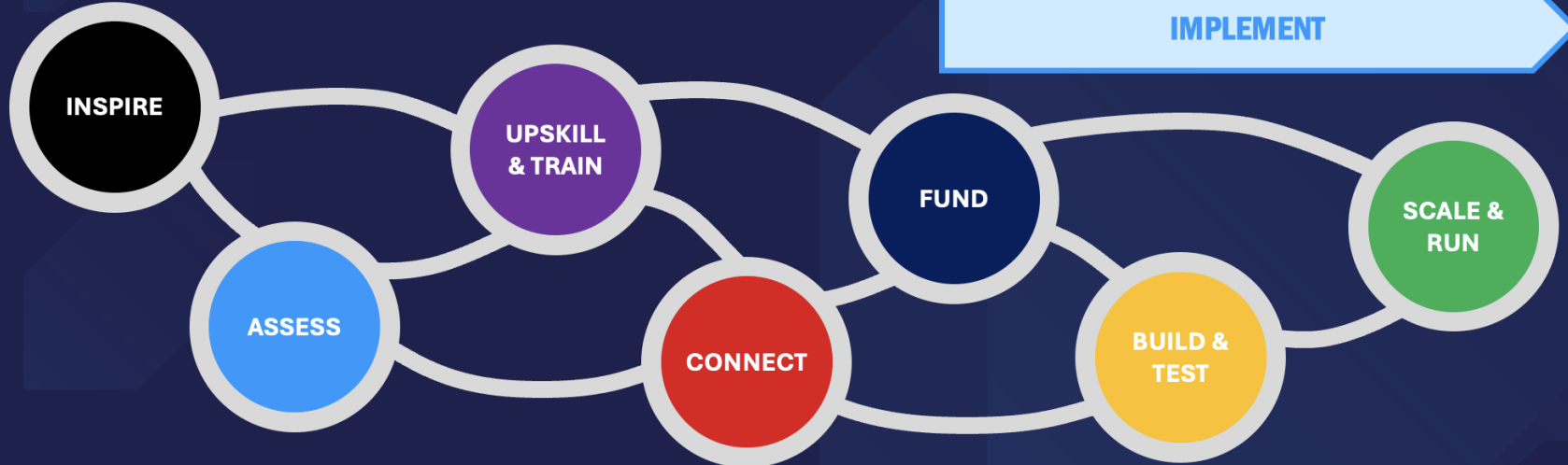
Accelerating Companies on their AI Journey

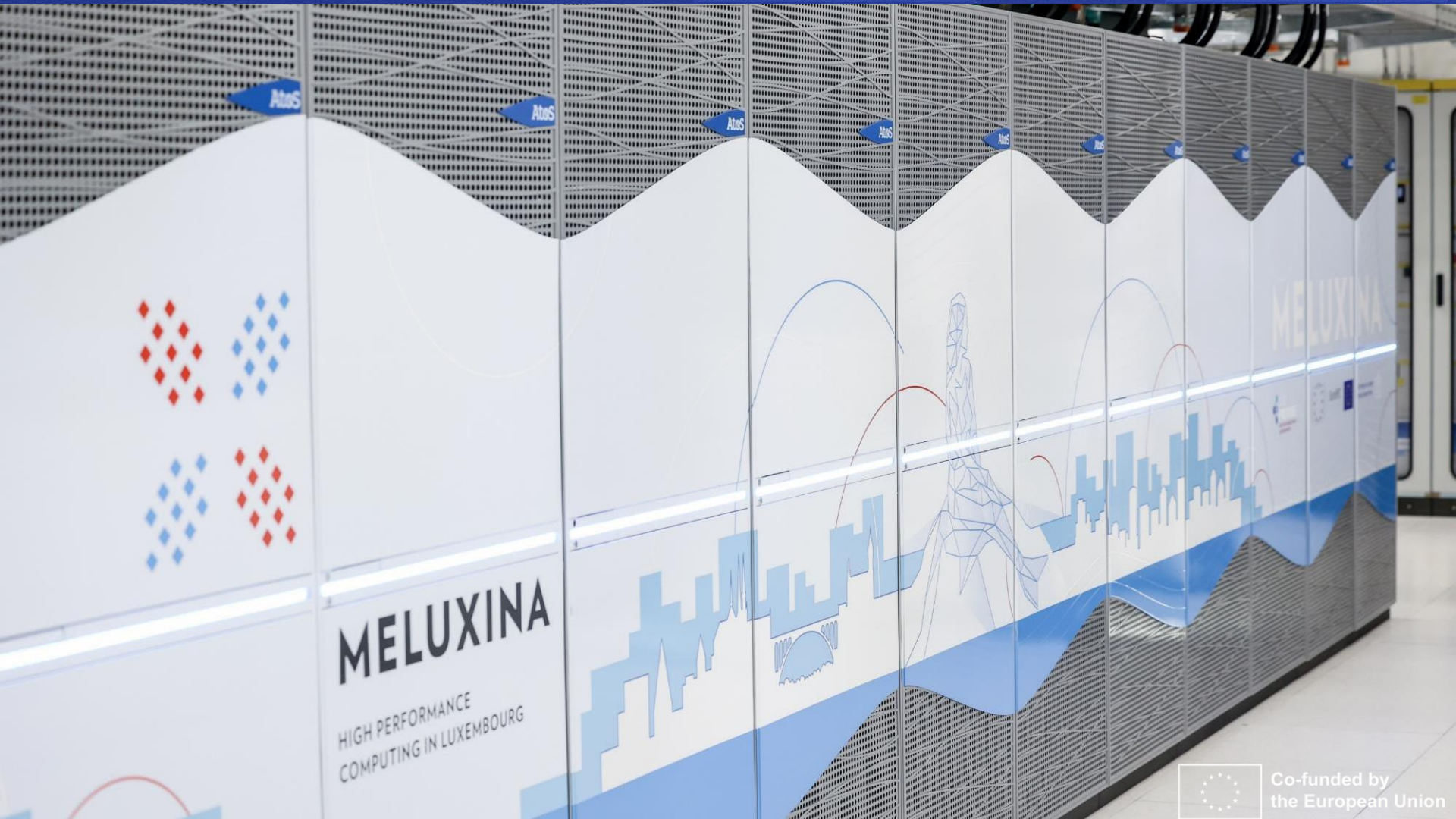
Service Catalogue

DISCOVER

GET READY

IMPLEMENT





MELUXINA
HIGH PERFORMANCE
COMPUTING IN LUXEMBOURG

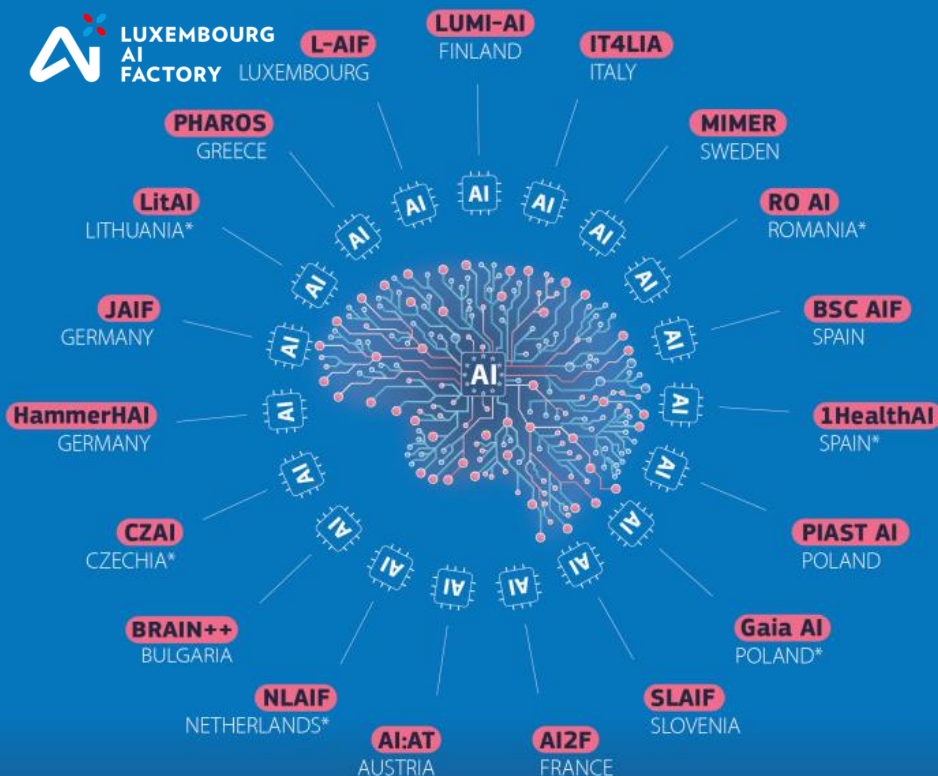


Co-funded by
the European Union



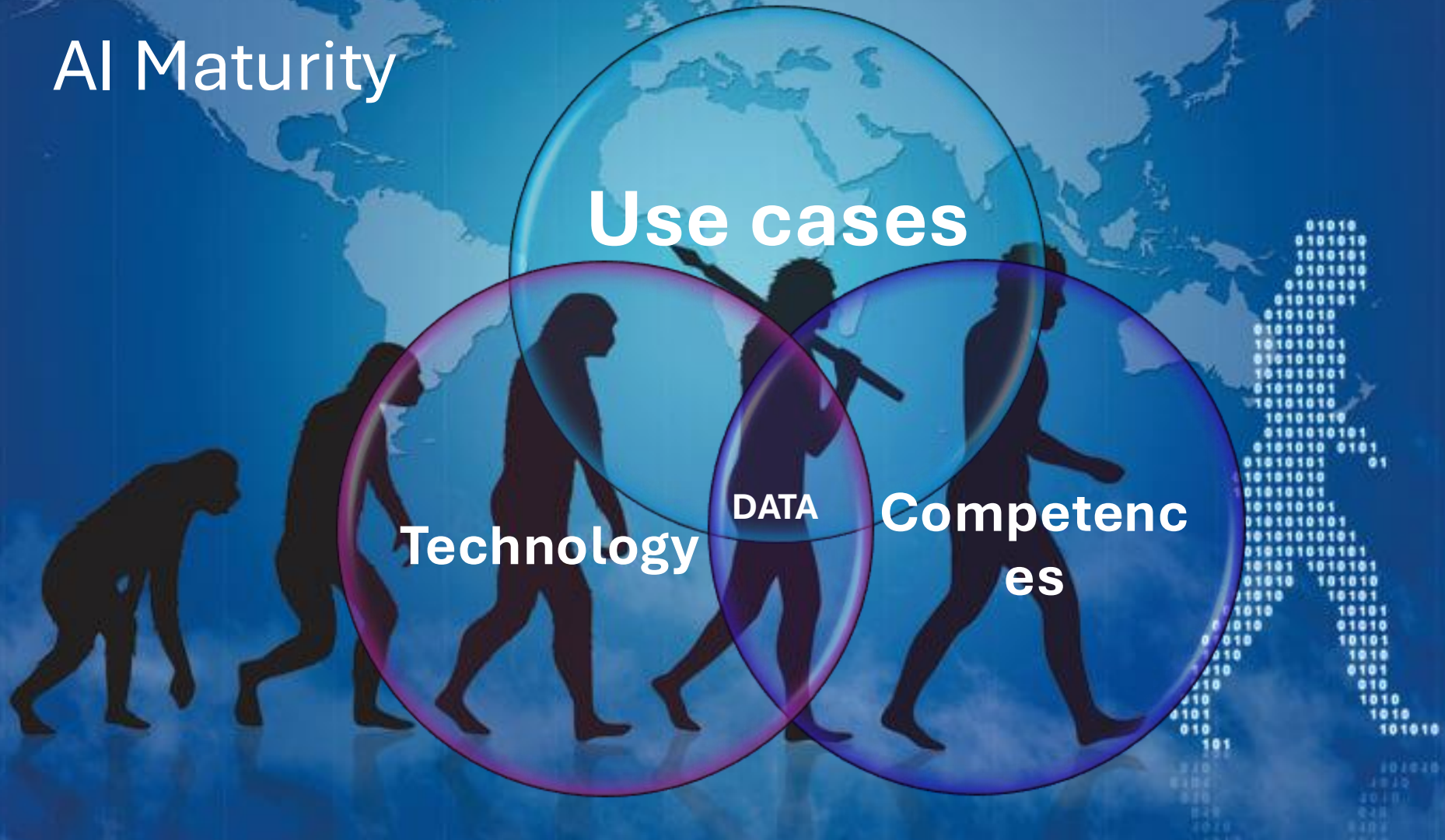
EuroHPC AI Factories

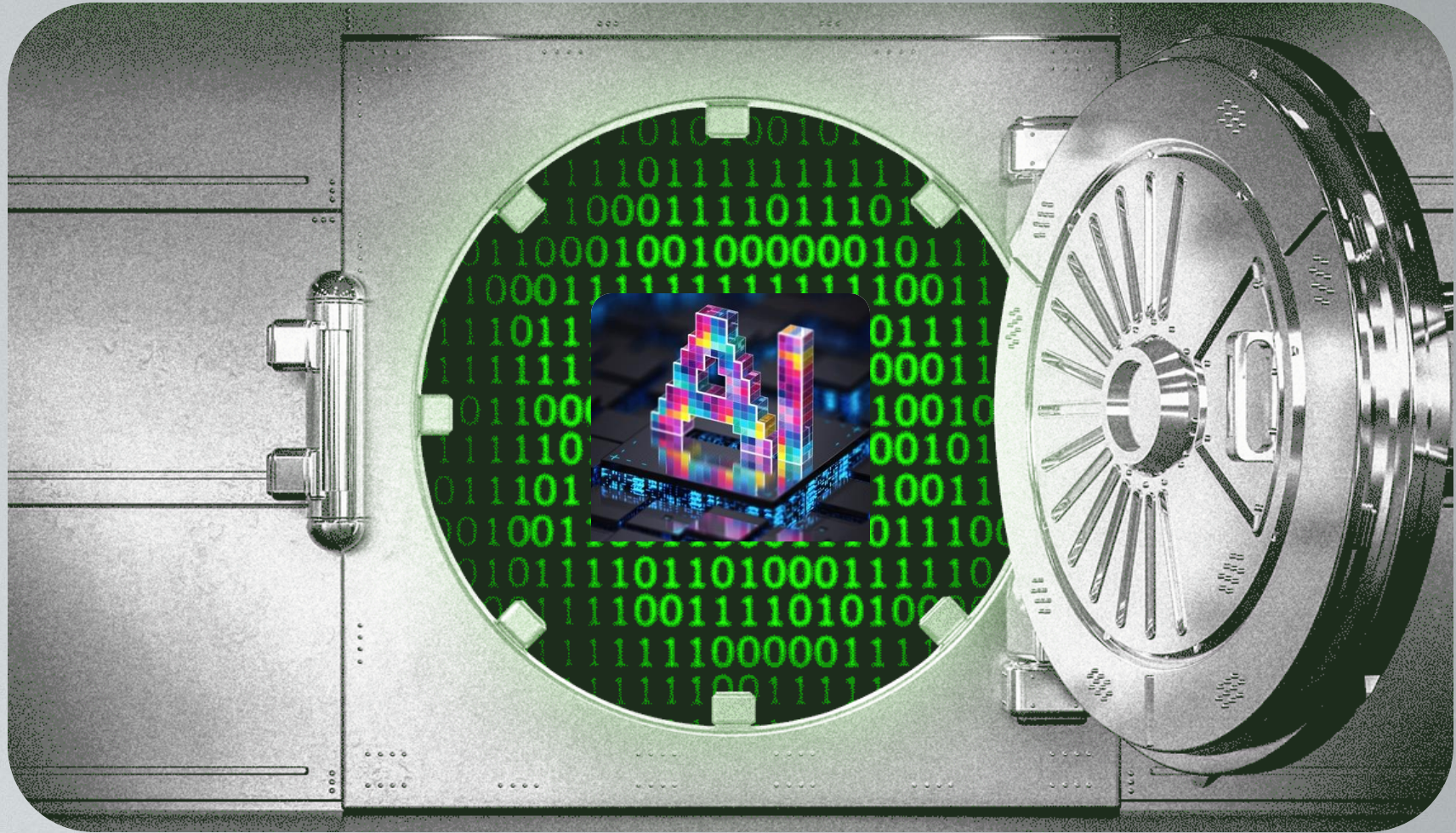
are ecosystems formed around supercomputers that will facilitate European startups, SMEs, and researchers, to develop AI as well as boost EU competitiveness and sustainable prosperity.



*Selected in October 2025

AI Maturity







RESPONSIBLE AI BY DESIGN:
Translating the 2023 OECD
Guidelines into everyday tech
practice

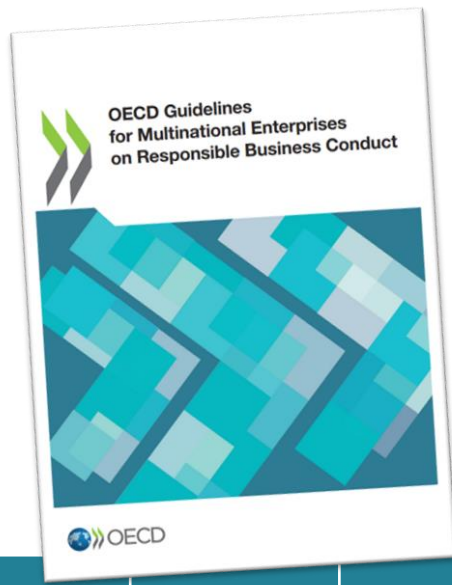
Başak Bağlayan

Expert on Responsible Business Conduct
Ministry of Economy, Luxembourg

Responsible AI by Design

TRANSLATING THE 2023 OECD GUIDELINES INTO EVERYDAY TECH PRACTICE

2 DECEMBER 2025, DATA SUMMIT LUXEMBOURG



Disclosure	Human Rights	Employment & Industrial Relations
Environment	Consumer Interests	Science, Technology and Innovation
Combating Bribery and Other Forms of Corruption	Taxation	Competition

- First adopted in 1976, updated 6 times (latest in 2023)
 - Most comprehensive international standard on RBC
 - Unique implementation mechanism: National Contact Points
 - Expectation of risk-based due diligence, aligned with other international RBC standards
-
- 2023 STI chapter: clarifies responsibilities for digital technologies and AI (use and misuse, data governance, digital security, children's rights)

Who is responsible in the AI value chain?

What is expected?

How does due diligence look in practice?

STI chapter: due diligence across the technology value chain

Create & enable AI	Design & build AI systems	Deploy & use AI
<ul style="list-style-type: none">• Data and model providers• Cloud, infrastructure, chip providers• Investors financing AI development	<ul style="list-style-type: none">• Developers and integrators of AI systems	<ul style="list-style-type: none">• Public authorities, banks, hospitals, platforms• Law firms, marketing agencies, start-ups

Who is responsible in the AI value chain?

What is expected? Risk-based due diligence for AI

How does due diligence look in practice?

- Map where AI activities can cause, contribute to, or be linked to adverse impacts on people and the planet.
- Act to prevent and mitigate those impacts, using leverage in the value chain

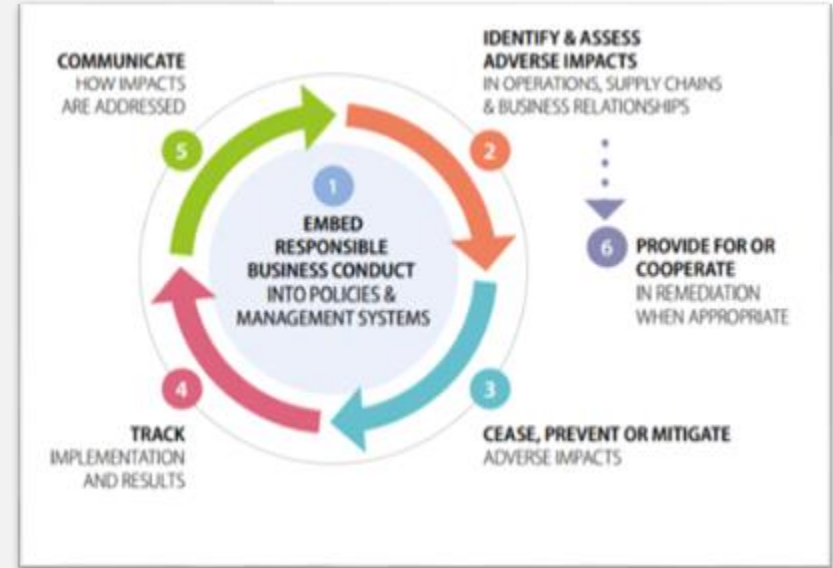
From ...	To ...
<i>Is it legal?</i>	Is it responsible?
<i>We just build it</i>	We are also responsible for use and misuse
<i>We fix it with a policy</i>	We fix it in the design
<i>Ethics is a side document</i>	Responsibility across the lifecycle

Who is responsible in the AI value chain?

What is expected?

How does due diligence look in practice?

- Identify & assess impacts
- Prevent & mitigate risks
- Track implementation & results
- Communicate how impacts are addressed
- Provide or cooperate in remediation



Thank you!

Başak Bağlayan

Luxembourg National Contact Point for Responsible Business Conduct, Ministry of the Economy

pcn@eco.etat.lu

OECD Due Diligence Guidance for Responsible AI – forthcoming (OECD)



DATA, AI, HUMAN RIGHTS, AND INTERNATIONAL LAW IN A CONTESTED WORLD

Luc Dockendorf

Ambassador for Cybersecurity and
Digitalisation
Ministry of Foreign and European Affairs,
Luxembourg



Coffee Break



Data in Motion:

Turning Complex Transport Data into Actionable Insights

Karthik Arumugam

Data Manager
Luxembourg's Ministry of Mobility and Public
Works (MMTP)



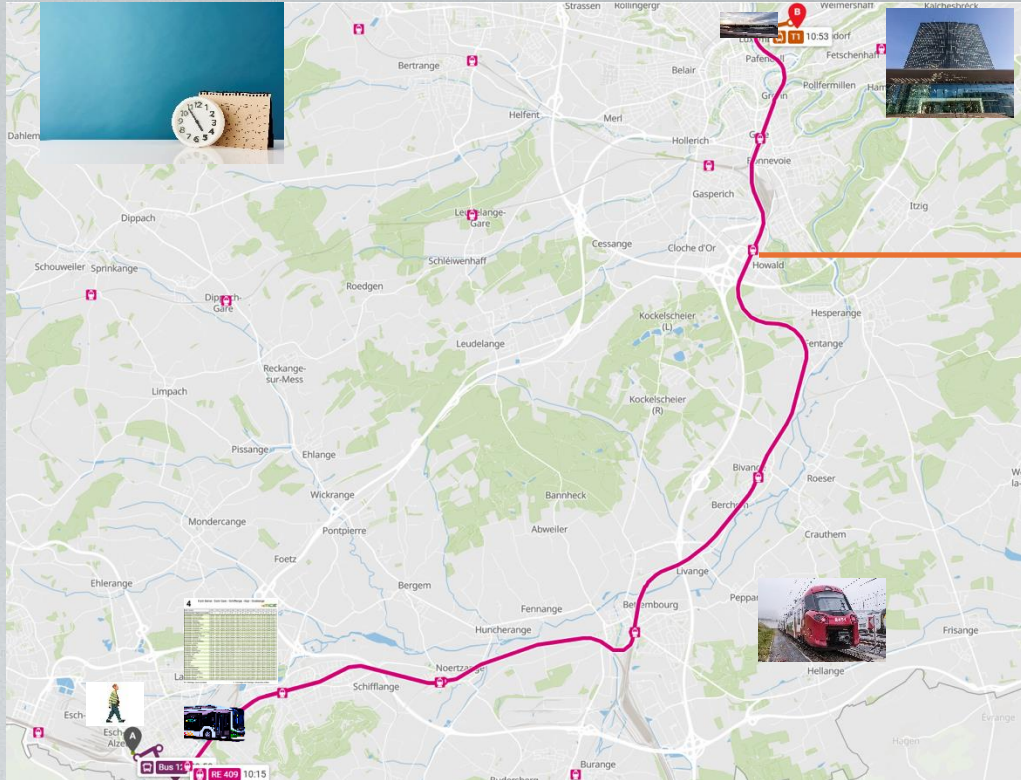
Data in Motion: Turning Complex Transport Data into Actionable Insights

Karthik Arumugam



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère de la Mobilité
et des Travaux publics

Passenger travel experience – preparing the travel on the big day



1) On the day of event passenger prepares his /her travel on the transport authority website or on app.

2) He /She gets:

- Time to leave the home
- Planned connection status
- Planned traffic status
- Arrival scheduled time at destination

3) With the results, passenger decides the home departure time with enough margin to travel peacefully.

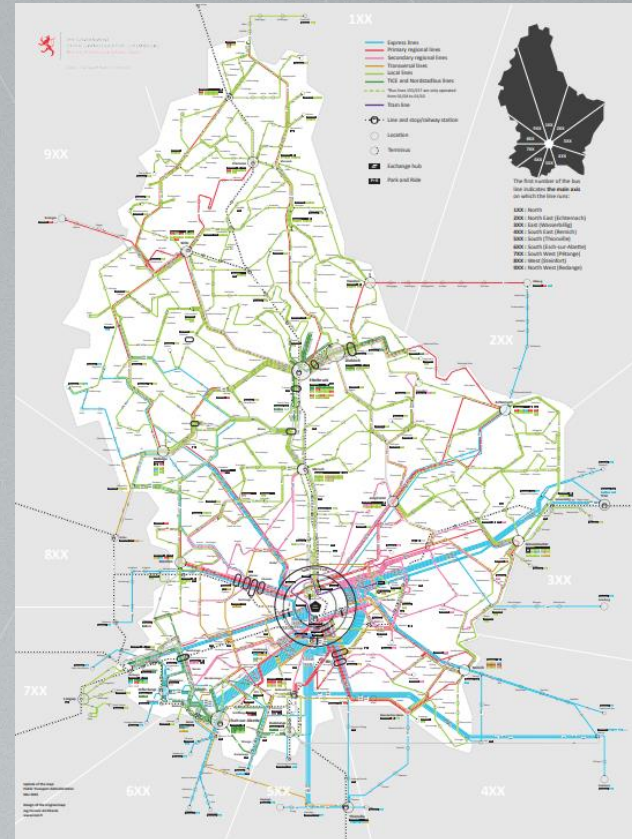
Thanks to



Behind Every Journey

But how do we, as mobility planners, create those schedules you rely on?

- **Time** - When do people travel?
 - Peak hours, off-peak patterns, seasonal variations
 - Service frequency, first/last departure times
- **Destination** - Where do people need to go?
 - Work centers, schools, hospitals, shopping areas
 - Connecting to other transport modes
- **Mode** - How will people get there?
 - Bus, train, tram, bike-share, walking
 - Capacity needed, vehicle types
- **Route Choice** - What's the best path?
 - Direct routes vs. connections
 - Stop locations, travel time, reliability
- **Demand** - How many people will use it?
 - Expected ridership, vehicle capacity planning



In order to create useful information services, we need to integrate data

-
- PLACES
- STOPS
- ACCESSIBILITY
- OPERATORS
- ROUTES
- TIMETABLES

```

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Why we need historical NeTEx data

- The question becomes: **how do we actually use this data to support better mobility planning?**

Mobility Planning: Helping decision makers understand what's working (and what's not) so they can make better choices about improving public transport.

- Planning for the future (but predictions aren't perfect)
- Balancing quick wins with long-term goals

Our Mission: Luxembourg's open data portal has ~2 terabytes of NeTEx files spanning 6+ years of scheduled timetable data. We want to unlock this archive to track how planned schedules evolve and find stable reference points* for mobility planning analysis.

*data stays mostly the same or close enough over time and serves as a foundation for building timetables (schedules)

From Problems to Solutions: Building the Data Pipeline

Too Detailed, Too Slow

NeTEx has everything... which means it takes forever to process and understand

Constant Changes

Regular updates and season changes mean we're always playing catch-up

Messy Data

Even good systems produce inconsistent formats, missing info, and layout surprises

Finding the Right Baseline

We need a stable reference timetable to compare against. Tried using day 1 after a schedule change – but timetables keep shifting for days or weeks after "launch"

OdM + LNDS Solution

Building a **robust data pipeline** that handles large volumes of NeTEx files automatically



What This Means

- Less manual work, more automation
- Faster turnaround for timetable updates
- Better data quality for planning decisions

What We Achieved: Turning Months into Minutes

- Automated NeTeX Processing Summary
- Input: 799 NeTeX files (2024–2025 for 14 bus lines, ~1 GB total)
- Historical Panel: 61.6 MB PARQUET file
- Processing Time: ~25 minutes total → ~2 NeTeX files per second
(Speed varies by file size, number of stops, journeys, and day types)
- Manual Validation Benchmark
- Manual review (matching journeys, stops, dayTypes, public codes): ~2 hours per file
- Estimated manual effort for 799 files: 2–3 hours × 799 = 1,600–2,400 hours

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4,
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Simplified input → output workflow

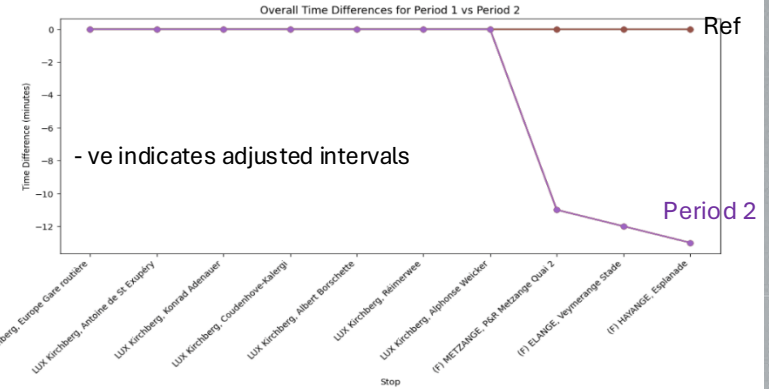
Outputs: Timetables + Analysis Report

Input: NeTEx

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Validation
(Dictionary)
+
Transformation
+
Analysis and
Reporting

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LUX Kirchberg, Konrad Adenauer	Period 1 sv Period 2	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
LUX Kirchberg, Coudenhove-Kalergi	Period 1 sv Period 2	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
LUX Kirchberg, Albert Borschette	Period 1 sv Period 2	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
LUX Kirchberg, Réimerwee	Period 1 sv Period 2	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
LUX Kirchberg, Alphonse Weicker	Period 1 sv Period 2	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
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Why This Matters for Mobility Planning

- **Understand Planning History:** See how schedules evolved, which strategies worked, and learn from past decisions
- **Identify Patterns & Trends:** Discover seasonal patterns, complexity management, and resource allocation trends
- **Validate Planning Approaches:** Test if planned network changes were maintained or reversed over time
- **Make Better Decisions:** Use historical evidence to guide future planning with confidence

The bigger picture: This isn't just about processing files faster. It's about answering the question: **"Are we planning better networks than we used to?"** Historical NeTEx data reveals planning competence, strategic priorities, and institutional learning – independent of operational performance.



SYNTHETIC DATA FOR OFFICIAL STATISTICS : Lessons from Luxembourg's Census

Claude Lamboray

Head of the Methods and Quality team of the
Datalab
The National Institute for Statistics and
Economic Studies (STATEC)

STATEC



Synthetic Data for Official Statistics: Lessons from Luxembourg's Census

- Claude Lamboray

- **Synthetic data means creating a new data set that:**
 - Mimics the properties of an initial data set
 - While preserving privacy
- **Explore the potentials of synthetic data generation for official statistics**
 - Most impactful use cases
 - Recommended methods
 - Available tools

- **Test the approach on data from the 2021 Luxembourg census**
- Focus on key demographic variables
 - Age, sex, economic status, education, occupation, industry, and language
- Integrate data validation rules
 - Validation rules to ensure coherent and unbiased data
- Take into account data characteristics
 - Ordinal scales and missing data

- Create Synthetic Data with Synthpop (R Package)
- Use decision trees (CART) to model patterns in real data
 - Good compromise between utility and privacy
 - Transparent and explainable method
 - Customize parameters to improve results
- **Follows best practices used by other National Statistical Institutes**

- Synthetic data preserves the statistical properties of the original data
 - Univariate distributions
 - Joint distributions
 - Multivariate analysis
- Privacy of synthetic data is ensured
 - No replication of unique records
 - Pre-processing of source data (e.g. pseudonymization, age grouping)

- **Synthetic data as one approach in the data protection toolkit**
 - Make synthetic data accessible
 - Develop governance processes as part of a broader data strategy
- **Extend approach to other types of data**
 - Longitudinal data
 - Nested data

STATEC

Institut national de la statistique
et des études économiques



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Statistiques.lu



FROM PAPER TO AI: Unlocking Legal Intelligence with AI

Moderator



Bert Verdonck
CEO
Luxembourg National
Data Service (LNDS)

Panelists



Dr. Romain Martin
Senior Government Advisor
Ministry of Research and
Higher Education,
Luxembourg



Patrick Houtsch
Director
Centre des Technologies
de l'Information de l'État
(CTIE)



INSIEME : Together Towards the Common European Energy Data Space

Prof. Dr. Olivier Hödl

Project Coordinator
INSIEME



INSIEME

TOGETHER TOWARDS THE COMMON
EUROPEAN ENERGY DATA SPACE



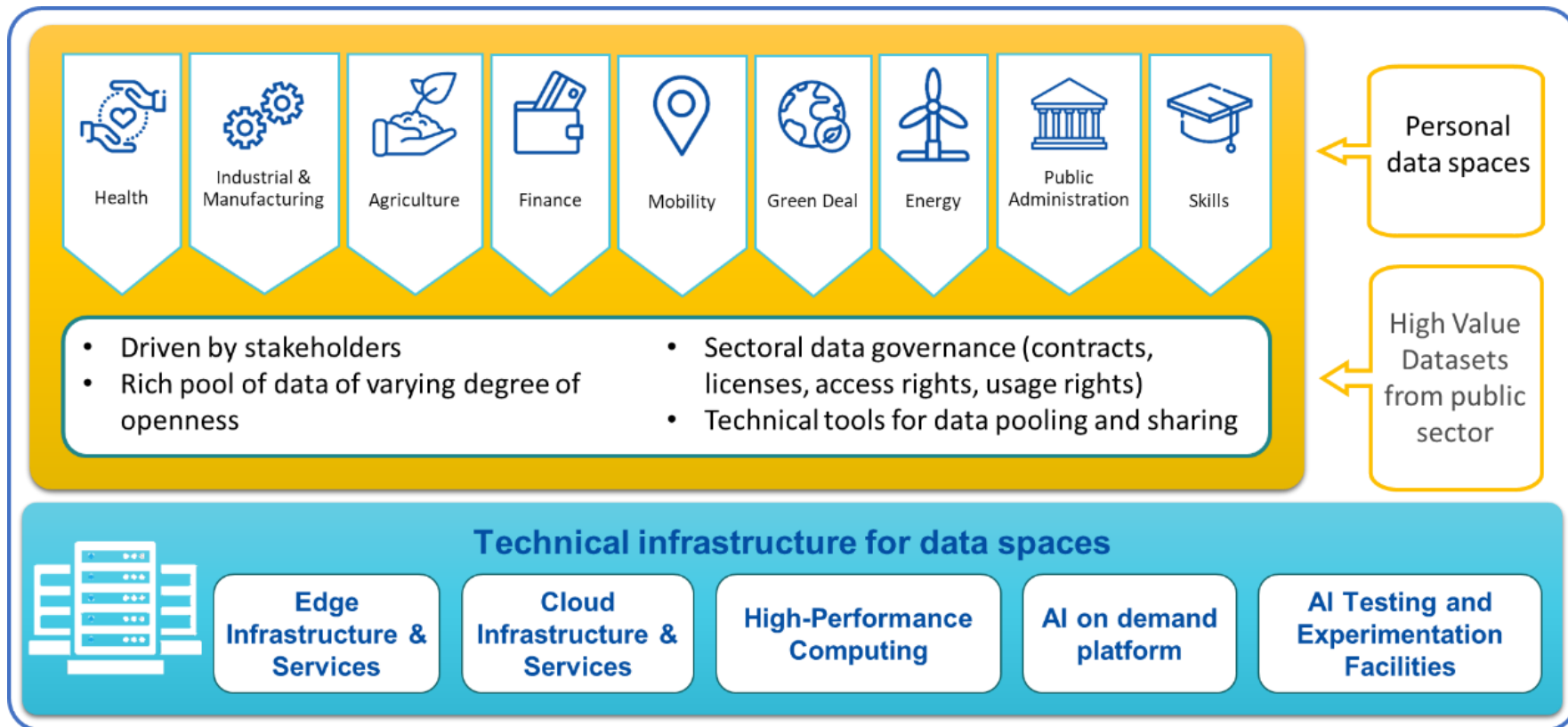
This work has been co-funded by the European Union's Digital Europe Programme under grant agreement No. 101194952.

Insights from a Data Space Project

- Prof. Dr. Oliver Hödl
- Project Coordinator

• Data Summit Luxembourg, 2nd December 2025

• COMMON EUROPEAN DATA SPACES



Source: <https://digital-strategy.ec.europa.eu/en/library/building-data-economy-brochure>

INSIEME = Together

Together instead of national nutshells

A Common European Energy Data Space (CEEDS) in full respect of the European principle of subsidiarity as a minimal invasive and slim federation service



INSIEME

TOGETHER TOWARDS THE COMMON
EUROPEAN ENERGY DATA SPACE



Data Space
“by the
Sector for
the Sector”



54 Partners
from 15 EU
Member
States



16 Mio. EUR
Budget
(8 Mio. EUR
Co-funding
from the
Digital



14
Deployments
in 16+
European
countries

Coordination:



UNIVERSITY
OF APPLIED SCIENCES
UPPER AUSTRIA

April 2025 – March 2028

Idea and Enterprise Architecture:



EntArc.eu
Enterprise Architecture

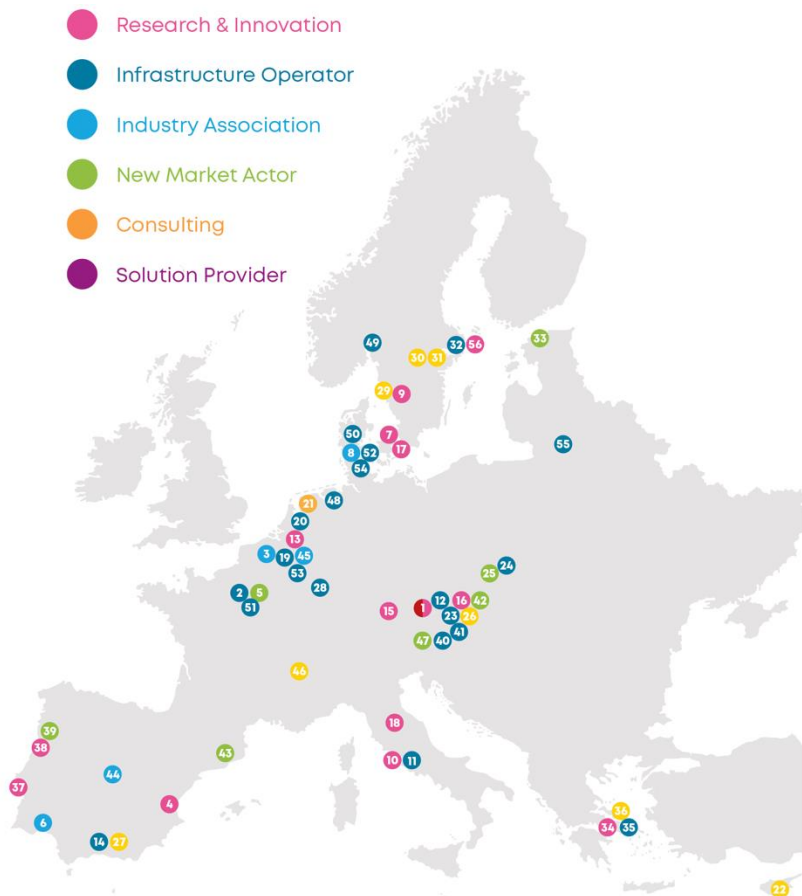


DIGITAL4GRIDS
DECARBONIZING ENERGY SYSTEMS

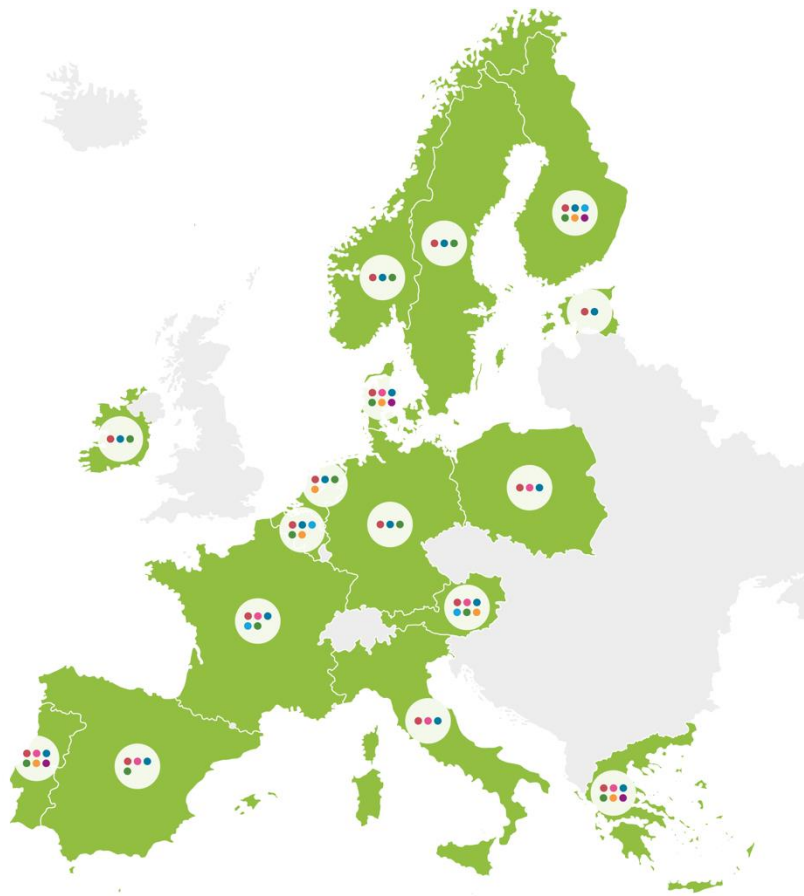
- EMERGED FROM THE MOST RELEVANT NATIONAL AND EU INITIATIVES



• THE CONSORTIUM



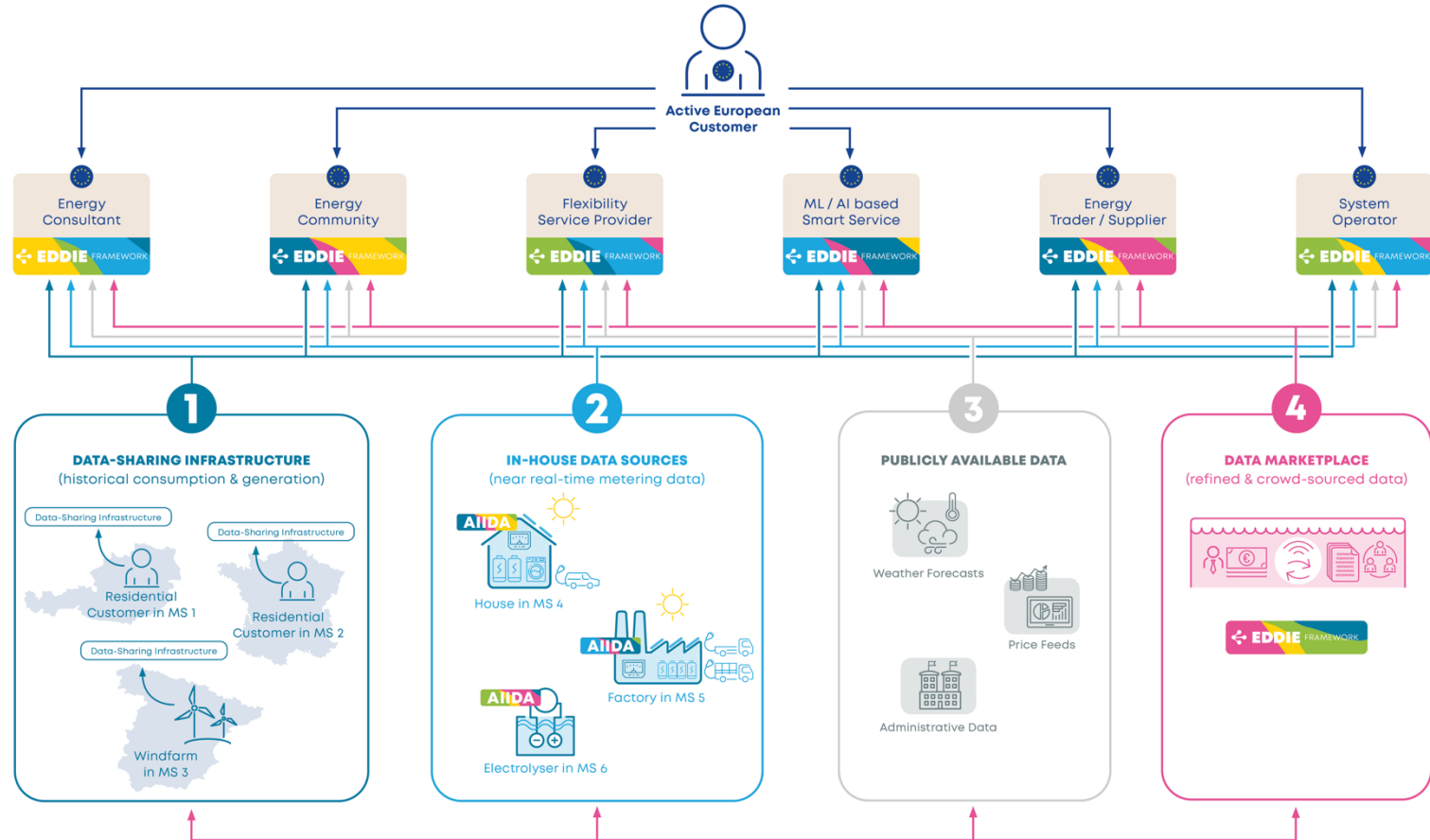
1	University of Applied Sciences Upper Austria (FH OÖ); FH OÖ FORSCHUNGS & ENTWICKLUNGS GMBH (FH OÖE)	29	VOLVO TECHNOLOGY AB
2	ENEDIS	30	STATISTISKA CENTRALBYRÅN
3	EUROPEAN RENEWABLE ENERGIES FEDERATION (EREF)	31	STATENS ENERGI MYNDIGHET
4	ETRA INVESTIGACION Y DESARROLLO SA	32	VATTENFALL ELDISTRIBUTION AB
5	DIGITAL4GRIDS	33	R8 Technologies OÜ
6	ENERCOUTIM - ASSOCIACAO EMPRESARIAL DE ENERGIA SOLAR DE ALCOUTIM	34	ETHNICON METSOVION POLYTECHNION
7	DANMARKS TEKNISKE UNIVERSITET	35	IRON ANONYMI ETAIKEIA ENERGEIAKON YPIRESION - HERON SOCIETE ANONYME ENERGY SERVICES
8	CENTER DANMARK DRIFT APS	36	ORGANISMOS TILEPKOINONION TIS ELLADOS OTE AE
9	RISE RESEARCH INSTITUTES OF SWEDEN AB	37	REN - REDE ELECTRICA NACIONAL SA
10	ENGINEERING - INGEGNERIA INFORMATICA SPA	38	INESC TEC - INSTITUTO DE ENGENHARIA DE SISTEMAS E COMPUTADORES, TECNOLOGIA E CIENCIA
11	ARETI S.P.A.	39	COOPERATIVE ELECTRICA DO VALE DESTA CRL
12	EDA ENERGIEWIRTSCHAFTLICHER DATENAUSTAUSCH GMBH	40	ENERGIENETZE STEIERMARK GMBH
13	VLAAMSE INSTELLING VOOR TECHNOLOGISCH ONDERZOEK NV.	41	NETZ NIEDEROSTERREICH GMBH
14	CUERVA ENERGIA SLU	42	backbone.one GmbH
15	FRAUNHOFER GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG EV	43	COMERCIAL VALLESANA DE SUMINISTROS SA
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22	SUITES DATA INTELLIGENCE SOLUTIONS LIMITED	50	EWII A/S
23	AUSTRIAN POWER GRID AG	51	RTE RESEAU DE TRANSPORT D'ELECTRICITE
24	TAURON DYSTRYBUCCJA SPOLKA AKCYJNA	52	ENERGINET
25	Operator Klasta Energii Sp. z o.o.	53	ELIA TRANSMISSION BELGIUM
26	EnliteAI GMBH	54	TREFOR EI-NET A/S
27	ADAION SMART GRID SOLUTIONS SL	55	Litgrid
28	Luxembourg National Data Service (PNED GIE)	56	Vattenfall AB R&D



Coverage & Use Cases

- 1 Energy Efficiency and Flexibility Management
- 2 Collective Self-Consumption
- 3 Grid Flexibility Services
- 4 Electromobility
- 5 Renewables Integration
- 6 Networks and Integration Planning
- 7 Smart Sector Integration

- THE COMMON EUROPEAN ENERGY DATA SPACE AS A “SET OF COMMON APIS”



• EUROPEAN REFERENCE MODELS / COMMON LANGUAGE

Reference model for *Collective Self-Consumption*

changes.

Context/ Whereas

(1) It was identified that it is advantageous for data sharing and the eligible party working with series refer to the metering point identifier and be independent from the underlying physical or underlying physical metering equipment is changed, the metering point identifier doesn't change.

(2) For the purpose of this act, 'accounting point master data' shall refer to (10000).

Definitions

In this section, each term is defined:

- 'term', in the context of this act, means ...

Responsibilities of Market Roles

In this section the responsibilities of each market role should be described.

Responsibilities of energy community operators

- Metering point administrators shall make metering point master data available online to final customers on due delay and whenever the final customer needs to access or share the data.
- Metering point administrators shall ensure that final customers can access and make available to eligible data and receive it in a structured, commonly used, machine-readable and interoperable format.

Responsibilities of metering point administrators

- Metering point administrators shall ensure the sound functioning of all eligible location

Relevant roles

Role name	Role type	Role description
Final customer	Business	A party connected to the grid that purchases electricity for its own use. Please note, that this also includes the case of active customer.
Energy community operator	Business	A party organising and operating an Energy community, doing the settlement of services and potentially - running an IT infrastructure supporting the fulfillment of these responsibilities.
Metering point administrator	Business	

Procedure 1 - Access to validated historical consumption data by the final customer

Step No.	Step	Step description	Info producer	Info consumer	Information exchanged
1.1	Identify data access provider	Final customers identify the data access provider that is responsible for their metering point under consideration.			
1.2	Link final customer and metering point	Final customer finds out metering point and request data for.			

```

graph TD
    FC[Final Customer] --> IDAP[Identify Data Access Provider]
    IDAP --> DAP[Data Access Provider]
    DAP --> LFCMP[Link Final Customer and Metering Point]
    LFCMP --> MPA[Metering Point Administrator]
    MPA --> MP[Metering Point]
    MP --> RDC[Request Data for Consumption]
    RDC --> DAP
    DAP --> FC
  
```

Annex

Table 1 contains information needed by eligible parties to set up for utilising connection point master data access in a Member State. It is primarily describing information that needs to be accessible for them to register, onboard or establish prerequisite infrastructure to take part in the procedures listed in Table 01.

General Information

ID	Name	Description
01	National competent authority	Name - Name of appointed national competent authority. Website - Website of appointed national competent authority. Official contact - Contact details for managing the mappings of national practices.
02	National co-ordination instance	Name - Name of the national body intended to help ECs. Website Email Phone Operational since no. as of now Comments
03	National regulatory basis for jointly Acting Self-Consumers	Implemented? Yes/No Reference - to national law URL - weblink to national law Operational since no. as of now Comments

Network Code on Demand Response

- defines the WHAT

Data Interoperability Implementing Acts
following Article 24 of Directive (EU)
2019/944

- streamlines the HOW and the way
towards a single, digital and participative
market

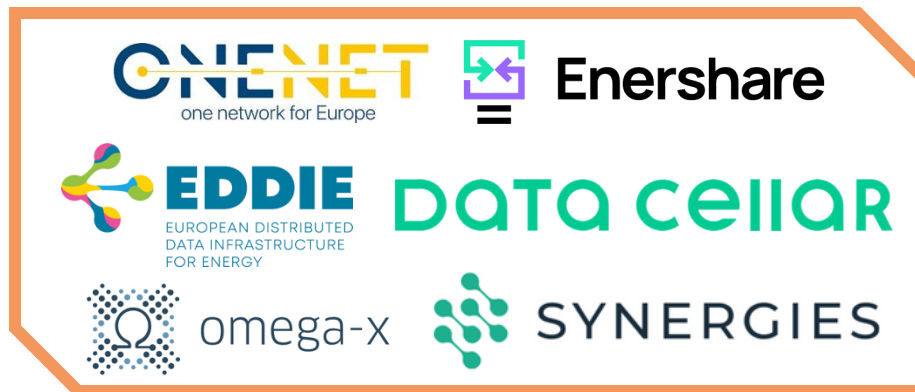
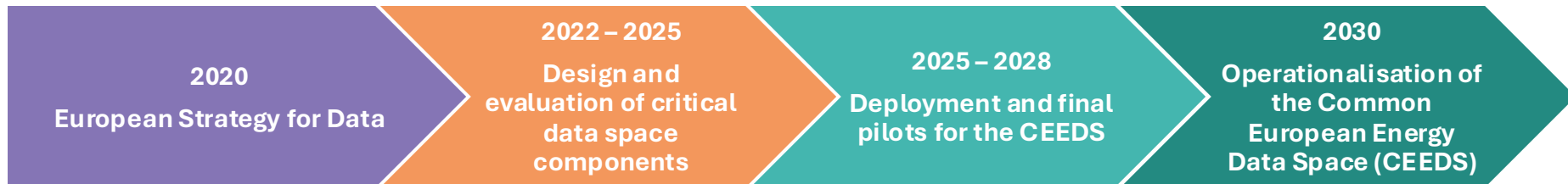
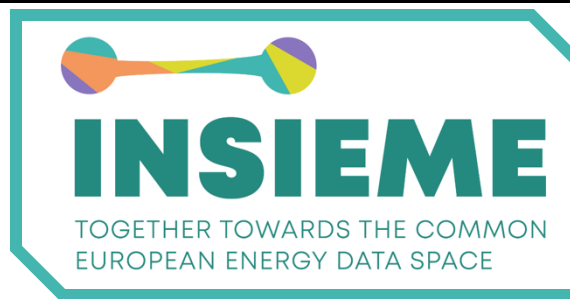
Data4Energy Expert Group

- tackles innovation and accompanies legislation to fill important gaps
 - paves the way for the actual operationalisation of the CEEDS

INSIEME Project (as a reality-check and to prove-in-use regulation under development)

- extend, leverage and combine a federation of INT:NET data spaces
- deploy key twin transition digital instruments in a streamlined way across the Union
- pave the way for the final operationalisation of the Common European Energy Data Space

- INSIEME WITHIN THE EUROPEAN STRATEGY FOR DATA





Thank you

- <https://insieme.energy>
- office@insieme.energy



This work has been co-funded by the European Union's Digital Europe Programme under grant agreement No. 101194952.



Coffee Break

LUXEMBOURG AI FACTORY:

Accelerating Companies on their AI Journey

Moderator



Fateh Amroune
Luxembourg AI
Factory Lead
Luxinnovation

Panelists



Filipe Pais
CCSO
LuxProvide



Daniele Pagani
Lead Partnership
Officer
Luxembourg Institute
for Science and
Technology (LIST)



Stefanie Östlund
Project Manager for
Mega Trends
Faculty of Science,
Technology and
Medicine, University
of Luxembourg



Christophe Trefois
Head of Technology
Luxembourg National
Data Service (LNDS)



Luis Perez
CTO
Alize



Leonhard Kossmann
Founder and CEO
Fundvis



**LUXEMBOURG
AI
FACTORY**



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EuroHPC
Joint Undertaking

Our Speakers

Panel Members



**Moderator
(LXI)**

**Fateh
Amroune**



Panelist (LXP)

**Felipe
Pais**



**Panelist
(Uni.lu)**

**Stefanie
Oestlund**



**Panelist
(LIST)**

**Daniele
Pagani**



**Panelist
(LNDS)**

**Christophe
Trefois**

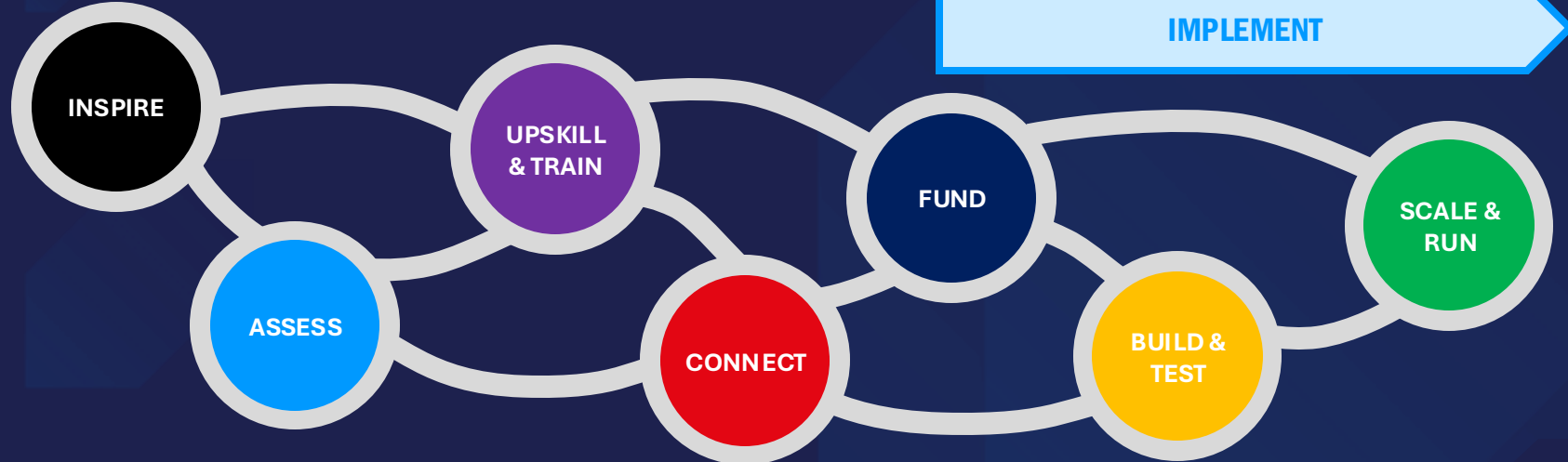
Accelerating Companies on their AI Journey

Service Catalogue

DISCOVER

GET READY

IMPLEMENT



Our guests

Luxembourg Start-Ups



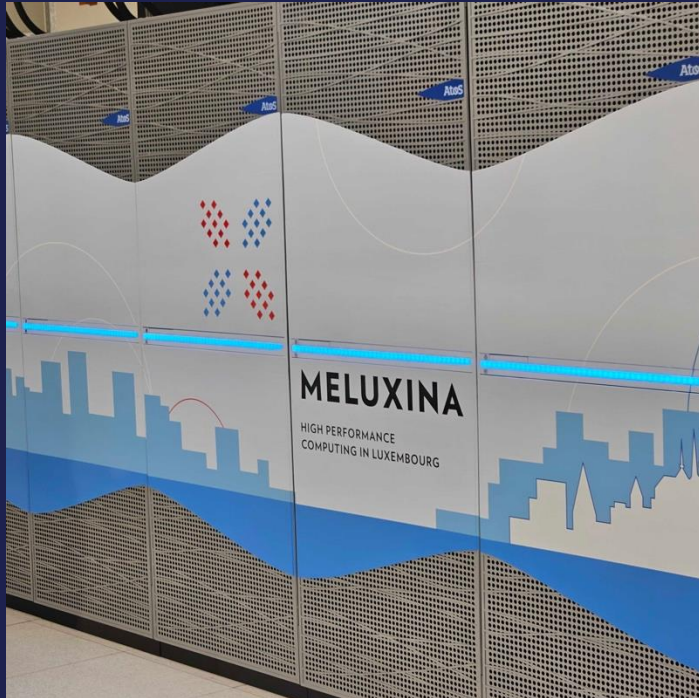
Luis Perez Sanchez
Co-founder & CTO
Alizé



Matthieu Detaille
CEO
Elora



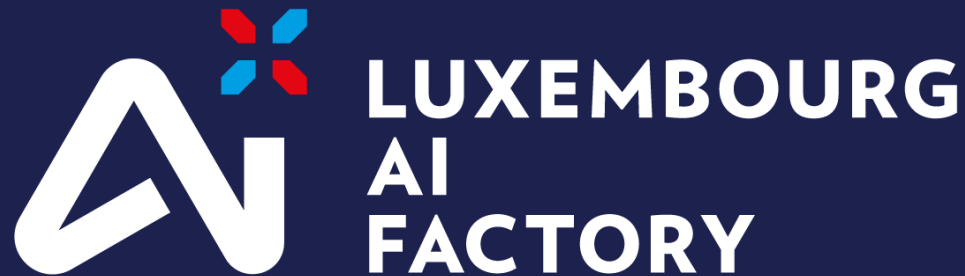
Leonhard Kossmann
Founder & CEO
Fundvis



TRUSTWORTHY AI MODELS

- HAVE A QUESTION?
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THANK YOU



<https://www.aifactory.lu/>



Co-funded by
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CLOSING WORDS

Bert Verdonck

CEO

Luxembourg National Data Service (LNDS)



Looking back at the Data Summit 2025

3 next steps



Datasummit.lu



Datasummit.lu



LNDS.lu

Outlook 2026

Inventory of Public Sector Data: Accelerate!

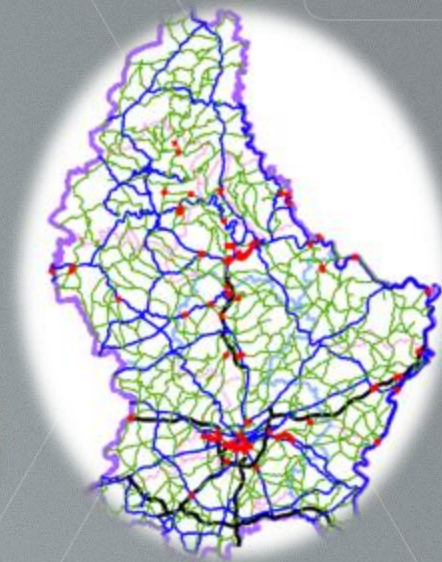


Outlook 2026

Authentic Data Source: Intensify!



<https://app.mengplaz.lu/>



Outlook 2026

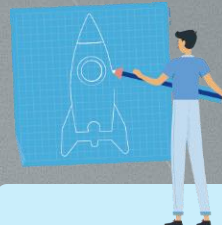
Data-driven Impact: across Various Domains!



Health



Energy



**Research
&
Innovation**



Other ...



Mobility



**Green
Deal**



Finance



**Public
Admin.**

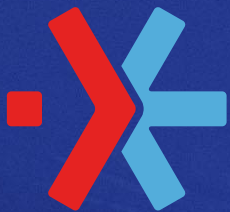
Outlook 2026

From Data to AI ... and back to High Quality Data





Networking Drinks



DATA SUMMIT LUXEMBOURG

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2 December 2026

European Convention Center Luxembourg



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Commissariat du gouvernement
à la protection des données
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Goodbye!