

5 MARCH 2024

#OneNetFinal

FINALEVENT

ONENET
one network for Europe



AGENDA



- | | |
|----------------------|---|
| 9:00 – 9:10 | Welcome |
| 9:10 – 9:20 | OneNet Vision |
| 9:20 – 9:30 | Keynote Speech by Mark van Stiphout (European Commission) |
| 9:30 – 10:15 | TSO-DSO coordination / Market Design |
| 10:15 – 11:15 | Coffee break and pitching sessions by the Demo clusters |
| 11:15 – 12:30 | OneNet Demos |
| 12:30 – 14:00 | Lunch break |
| 14:00 – 14:45 | Customer Engagement |
| 14:45 – 15:45 | Data Spaces |
| 15:45 – 16:45 | A Roadmap for the way forward |



**Antonello
Monti** (Fraunhofer)



**Ferdinando
Bosco** (Engineering)

OneNet: One Network for Europe

Prof. Antonello Monti

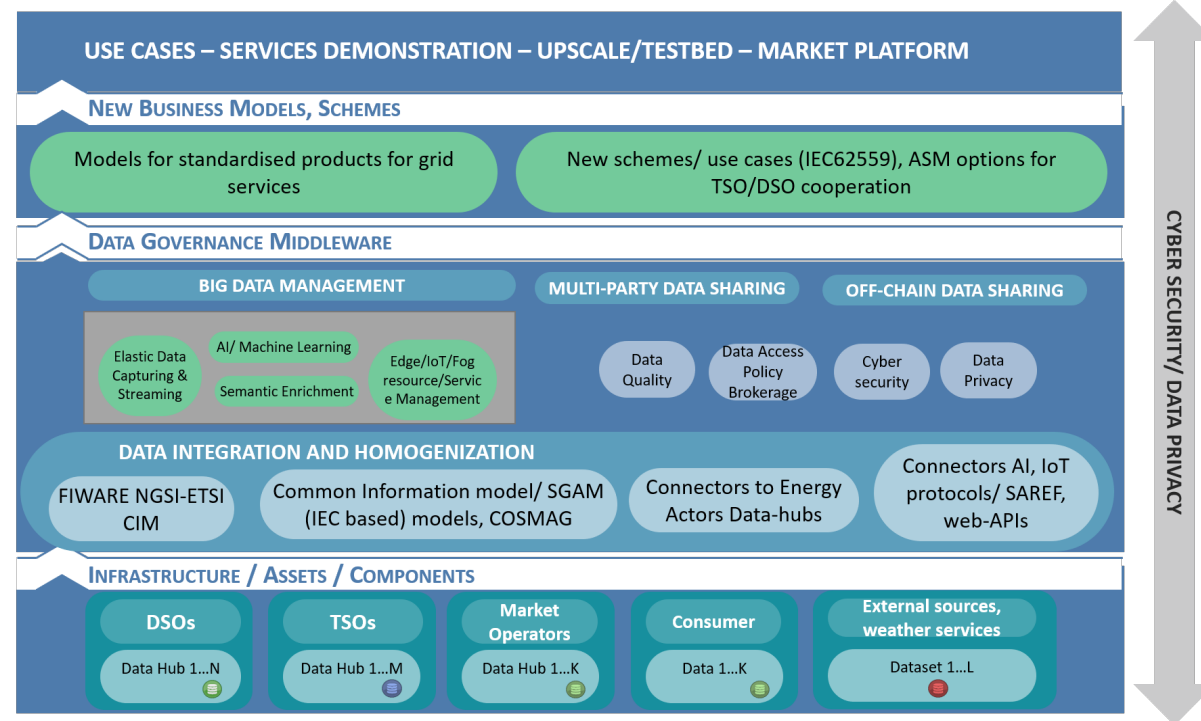
RWTH Aachen University – Fraunhofer FIT Center for Digital Energy



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 957739

OneNet Vision

- To create a **fully replicable and scalable architecture** that enables
- the whole European electrical system to **operate as a single system** in which
- a **variety of markets** allows
- the **universal participation of stakeholders** regardless of their physical location – at every level from small consumer to large producers



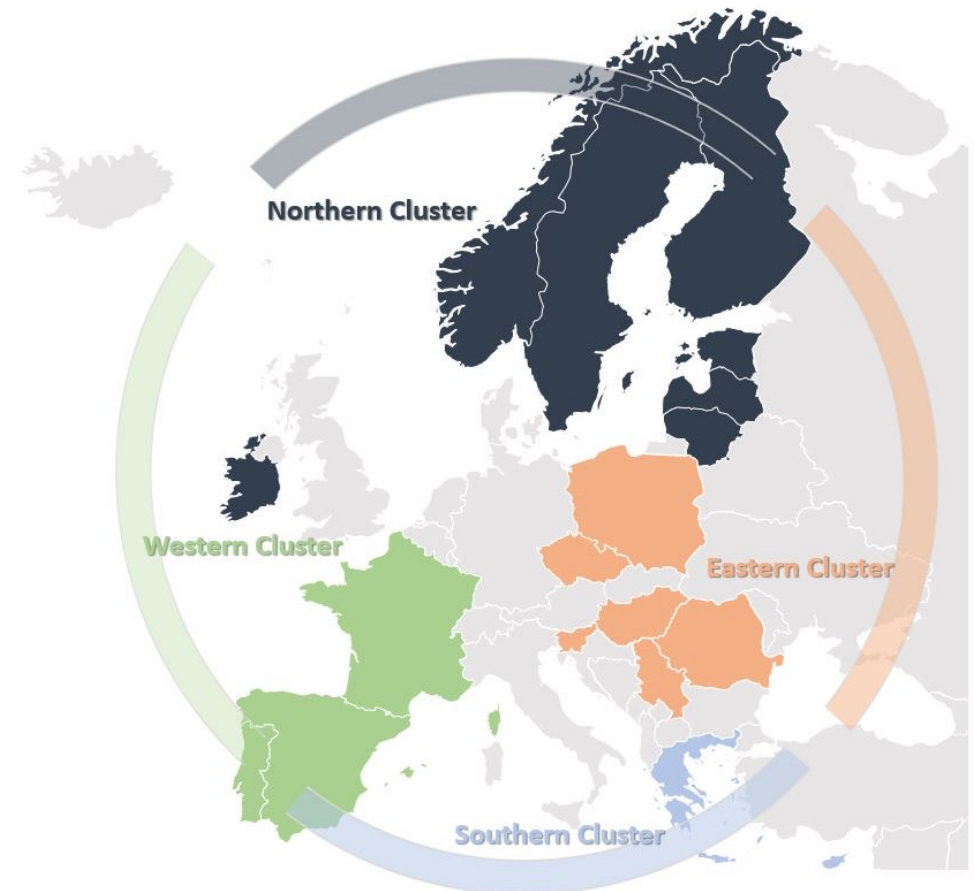
European consortium

- OneNet brings together >70 partners
 - Including E.DSO and ENTSO-E
 - Together with a large set of TSOs and DSOs
 - Leading IT companies and
 - Renowned research institutions



Demo clusters

- Several demos organized in 4 clusters covering the whole Europe
- Each cluster involving multiple DSO and TSO to implement completely new scenarios
- New market concepts tested in real life



What is OneNet?

What OneNet System is...

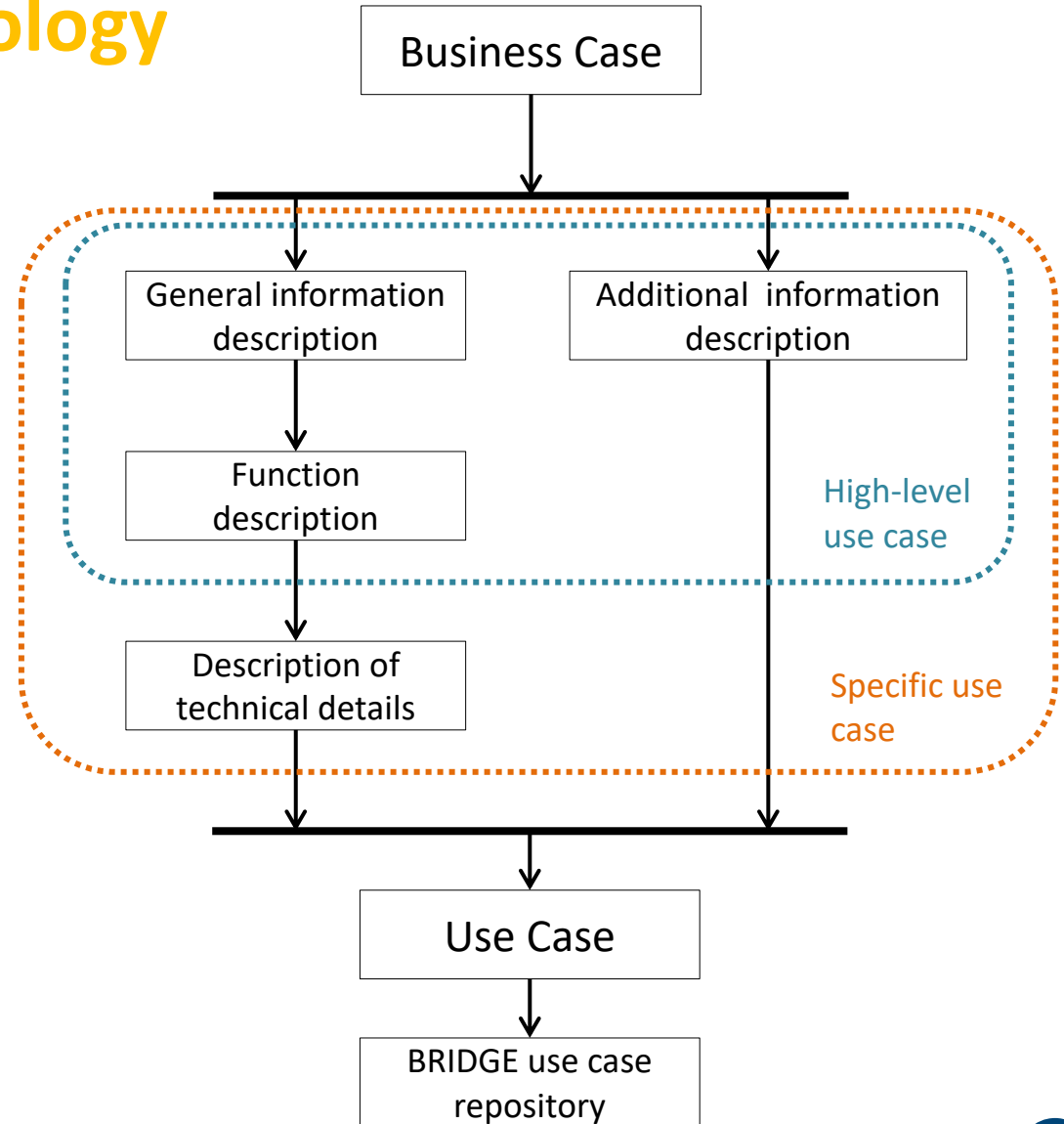
- Open platform-agnostic architecture
- Set of interoperability exchange mechanisms
- Allows cross-platform federation and integration
- Enables Multi-countries, multi-domains market models and coordinated operations
- Makes available and accessible data from different sources (actors)

... and what is not!

- a new overarching and centralized platform
- specific designed for each business player
- a system that offers business functionalities

Use cases development methodology

- OneNet demonstrators' use cases were described in a standardised way compliant with **IEC-62559 template**.
- **Top-down description:** start with high-level description of business processes (BUC) and come to the description with more technical details (SUC).
- Decoupling SUCs from BUCs enables reuse of SUCs in more BUCs and reduces new BUC development time.
- Use case descriptions will be stored in **BRIDGE Use Case Repository**.



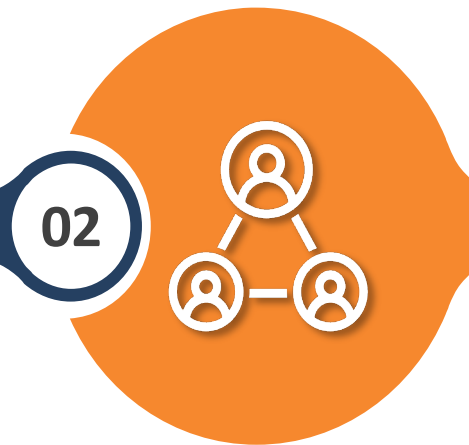
OneNet demo business use cases evaluation framework

What were the services addressed in each use case?



The services were mapped against the OneNet system services framework.

What was the approach of the SO to acquire this service?



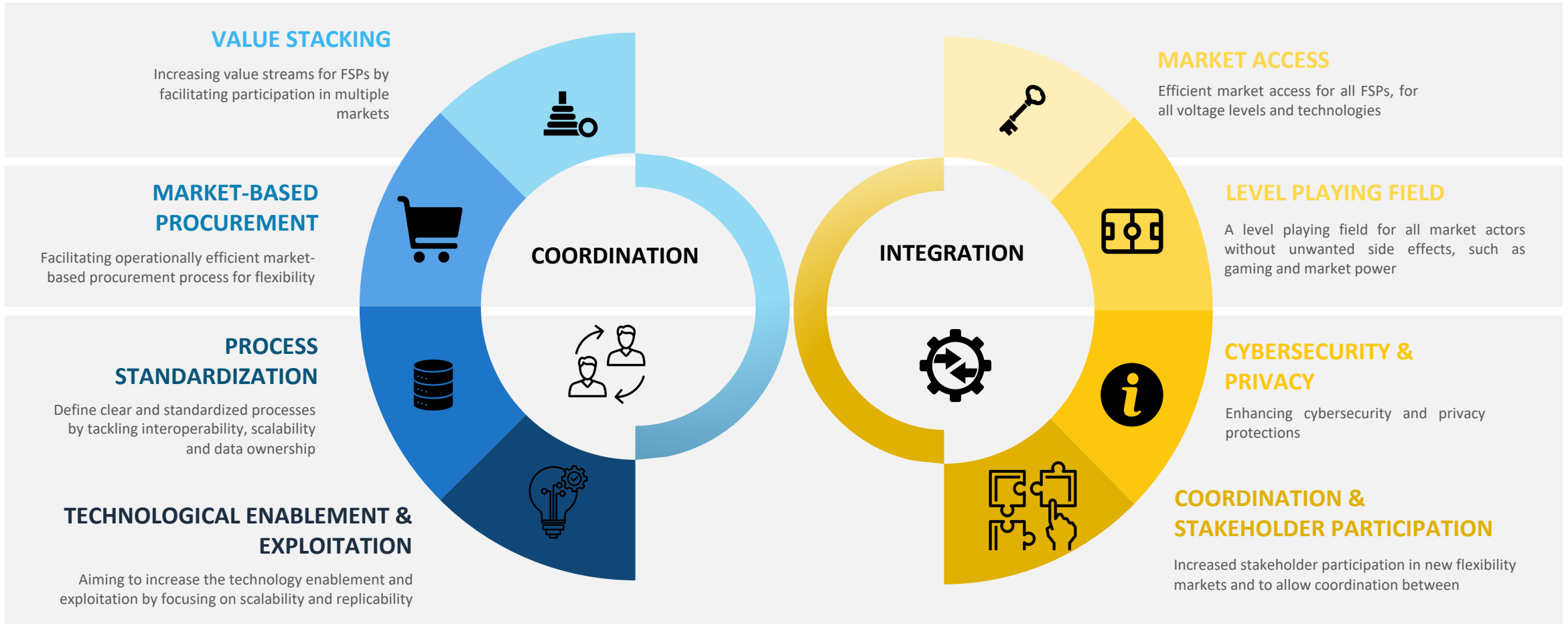
The type of coordination between TSO-DSO-FSP was identified and the BUCs were grouped in 3 categories.

Which were the business roles defined within each use case?

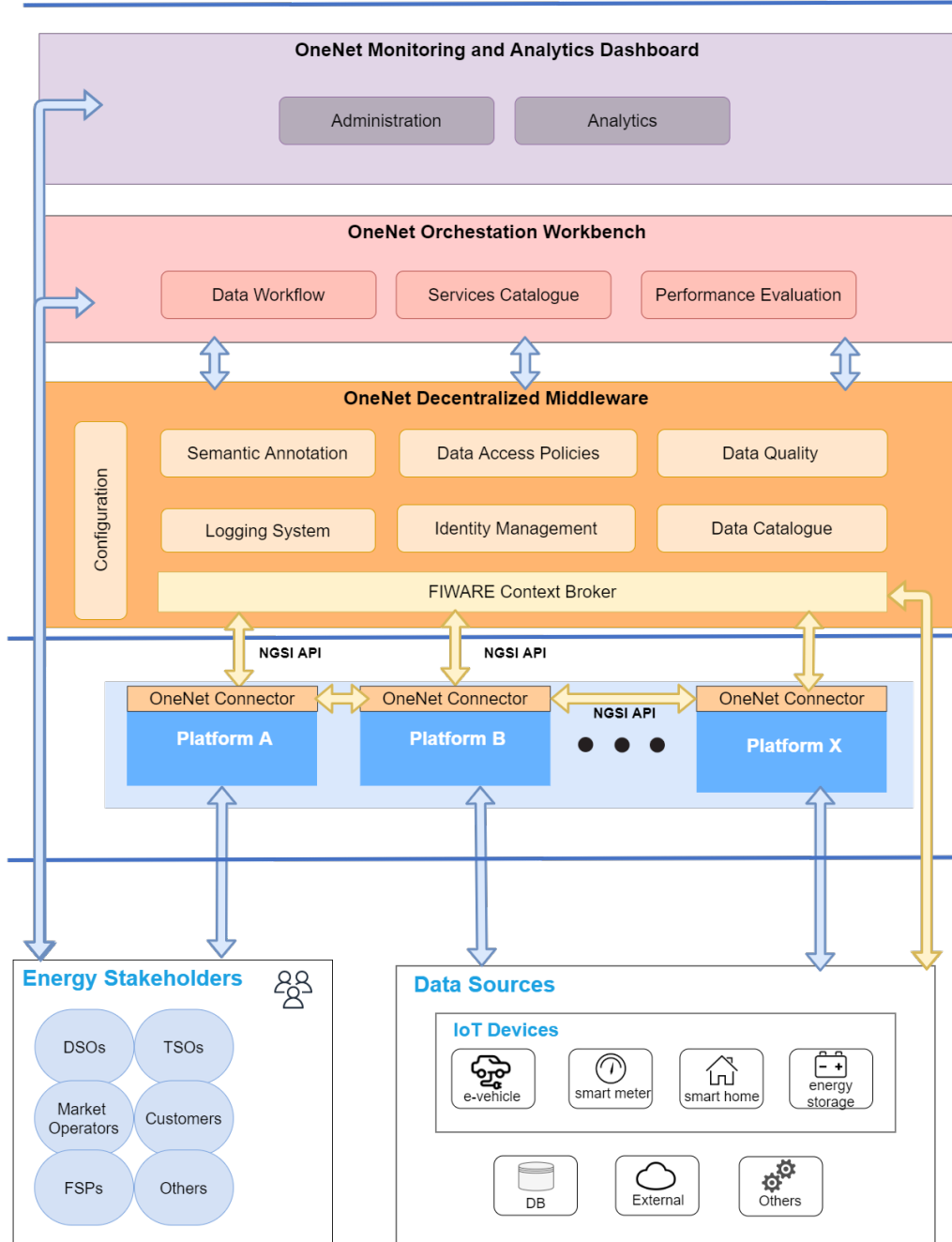


The defined business roles were mapped against the ones reported in HEMRM.

OneNet aims to reach a fully Coordinated and Integrated market



OneNet Reference Architecture



OneNet Framework

- UI Administration Interface**
- Data and Service Orchestration**
- Interoperability Standards**
IDS Connector, FIWARE Context Broker
- Standards Modeling**
CIM, CGMES, SAREF, EccoSP, etc...
- Data Harmonization**
- Cybersecurity and Data Governance**

OneNet Network of Platforms

- Business and Data Platforms**
DSO Platforms, Market Platforms, Data Exchange Platforms...
- Cross-Platform Services**
Flexibility Market, Grid Modeling, Pre-Qualification...

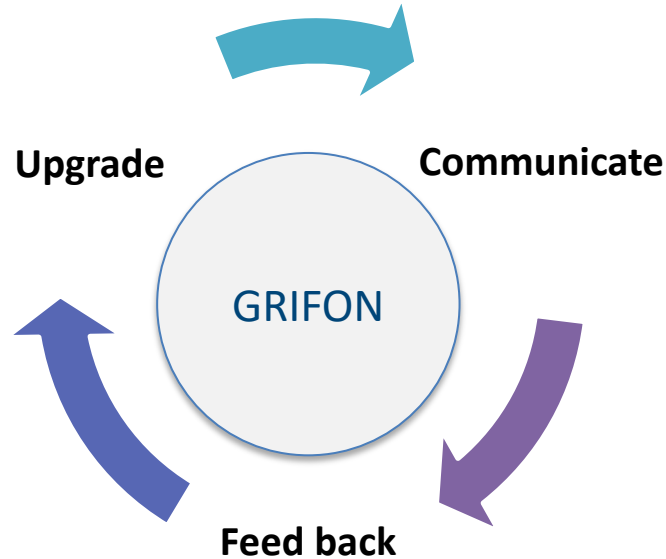
OneNet Participants

- Data Providers and Data Consumers**
- Service Providers**
- Data Sources**
CIM, CGMES, SAREF, EccoSP, etc...

GRIFON: A platform to create unique European level consensus



- Create mechanisms of inclusions for any interested stakeholder
- Develop European level consensus and acceptance of OneNet proposed solutions
- Disseminate via two key documents:
 - **Interoperability Strategy** for OneNet
 - **Market design** for OneNet



OneNet lives on

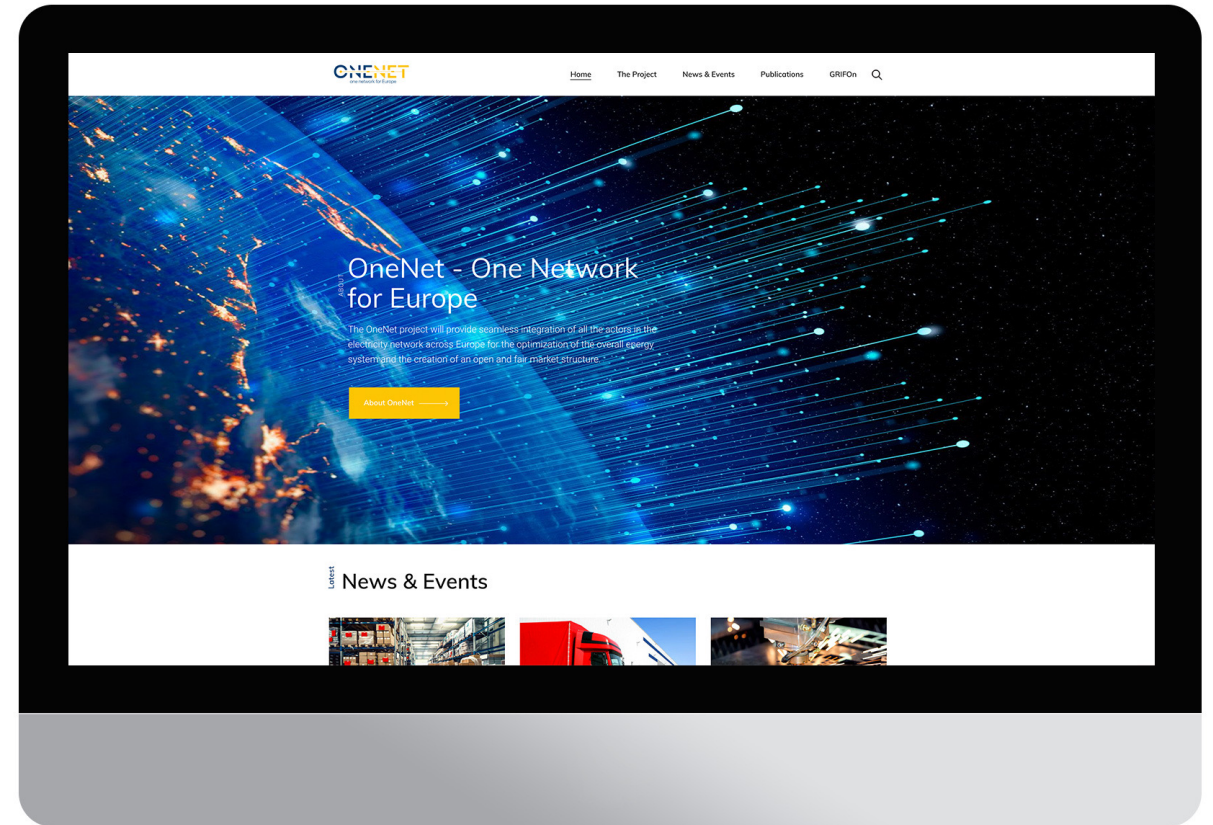
- The effort does not end with the funding period
- **The OneNet architecture and its component have been proposed as Open-source community to the Linux Foundation Energy.**
- Several projects are expanding our products
 - InterStore adopted the OneNet Connector and developed an open source GUI
 - TwinEU will further expand the connector
 - ENERSHARE is using the OneNet Connector
- GRIFOn concept will be also used within TwinEU to continue the interaction community started in OneNet.

The logo for Linux Foundation Energy, featuring a stylized 'LF' in blue and 'ENERGY' in a lighter blue font.The logo for Enershare, consisting of a purple rectangular background with a white icon of a computer monitor and a plug, followed by the word 'Enershare' in white text.The logo for InterStore, featuring a light blue background with a white icon of three stacked cubes and the word 'interstore' in a dark blue font.The logo for TwinEU, featuring the word 'TwinEU' in a bold, teal font with a white star above the 'i'.

OneNet website

The website provides:

- overall information about the project
- information about the project consortium
- access to the project related publications
- latest news and events
- blog posts
- newsletter subscription
- list of useful links
- information about GRIFOn
- press room



Launched: 22.02.2021

onenet-project.eu

OneNet Final Event

Vision of OneNet

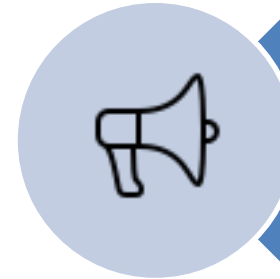
Ferdinando Bosco - Engineering



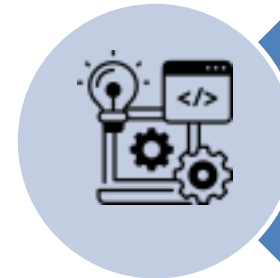
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OneNet Three Pillars

- Definition of a set of standard products and services for implementing a **common Market Framework**
- Full definition of an Open IT architecture of the for **secure and trust end-to-end data exchange**
- **Validation** in cross-country cluster demonstration sites



Market
Framework



Open IT
Architecture



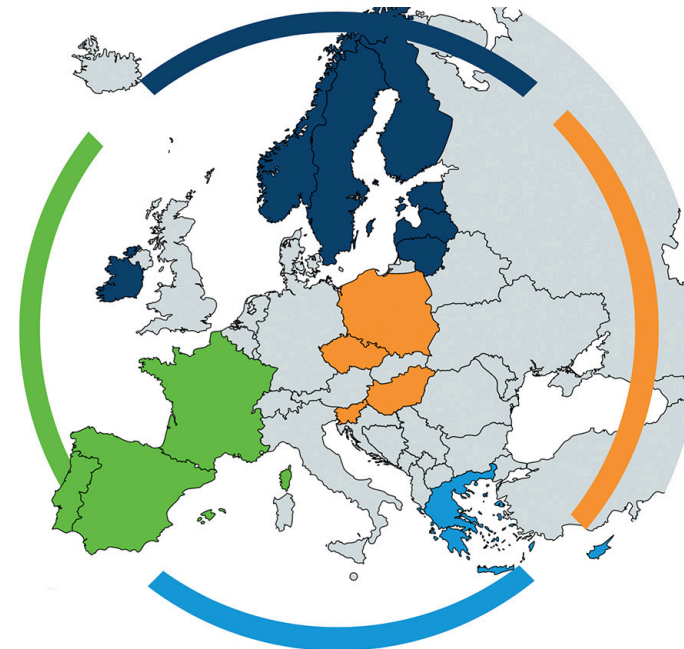
Validation

OneNet – One Network for Europe



OneNet aims to create a P2P fully **decentralised ecosystem for interoperability and data exchange**. In the OneNet Framework, two systems (OneNet Participants) can exchange their own data directly each other, without intermediation by a third party. Any kind of energy stakeholders is able to participate in the OneNet Ecosystem using the **OneNet Decentralised Middleware** and the **OneNet Connector**

- 10 demonstration countries
- 4 European cluster
- 21 use cases applications (4 cross-country)



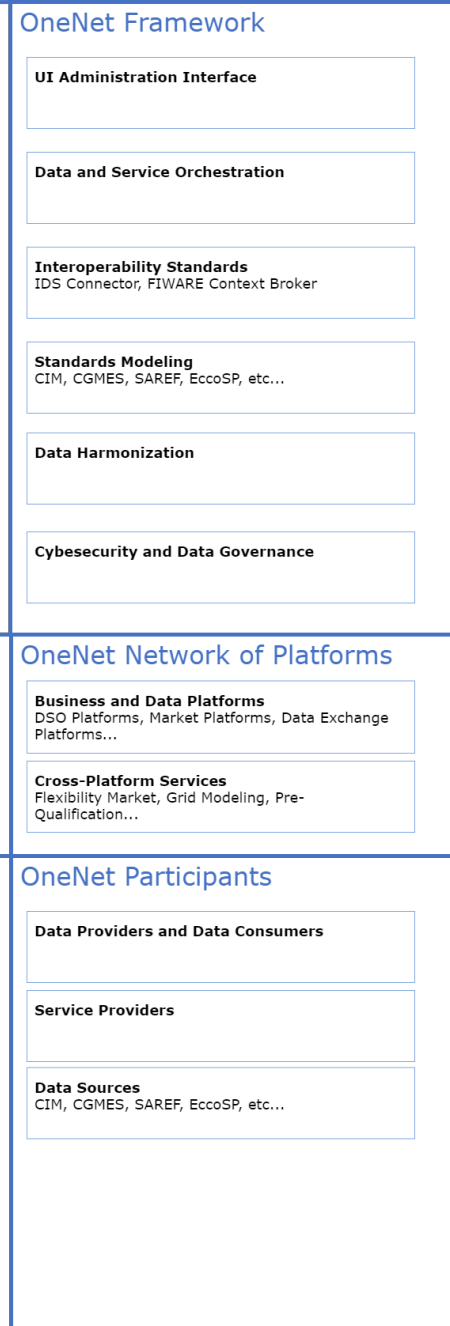
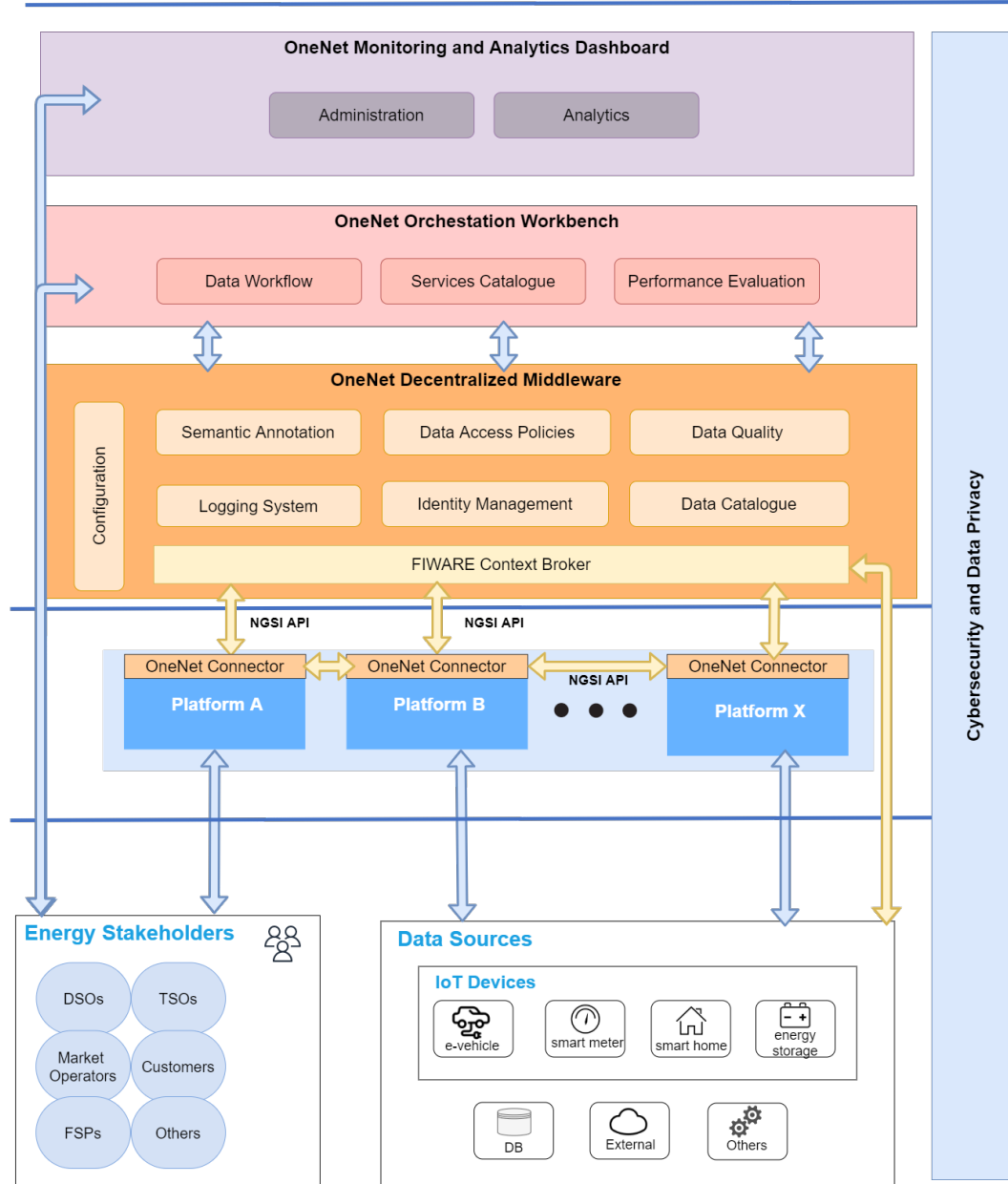
Northern Cluster Demonstrator
Ireland, Norway, Sweden, Finland,
Estonia, Latvia, Lithuania

Western Cluster Demonstrator
Portugal, Spain and France

Eastern Cluster Demonstrator
Czech Republic, Poland,
Hungary, Slovenia

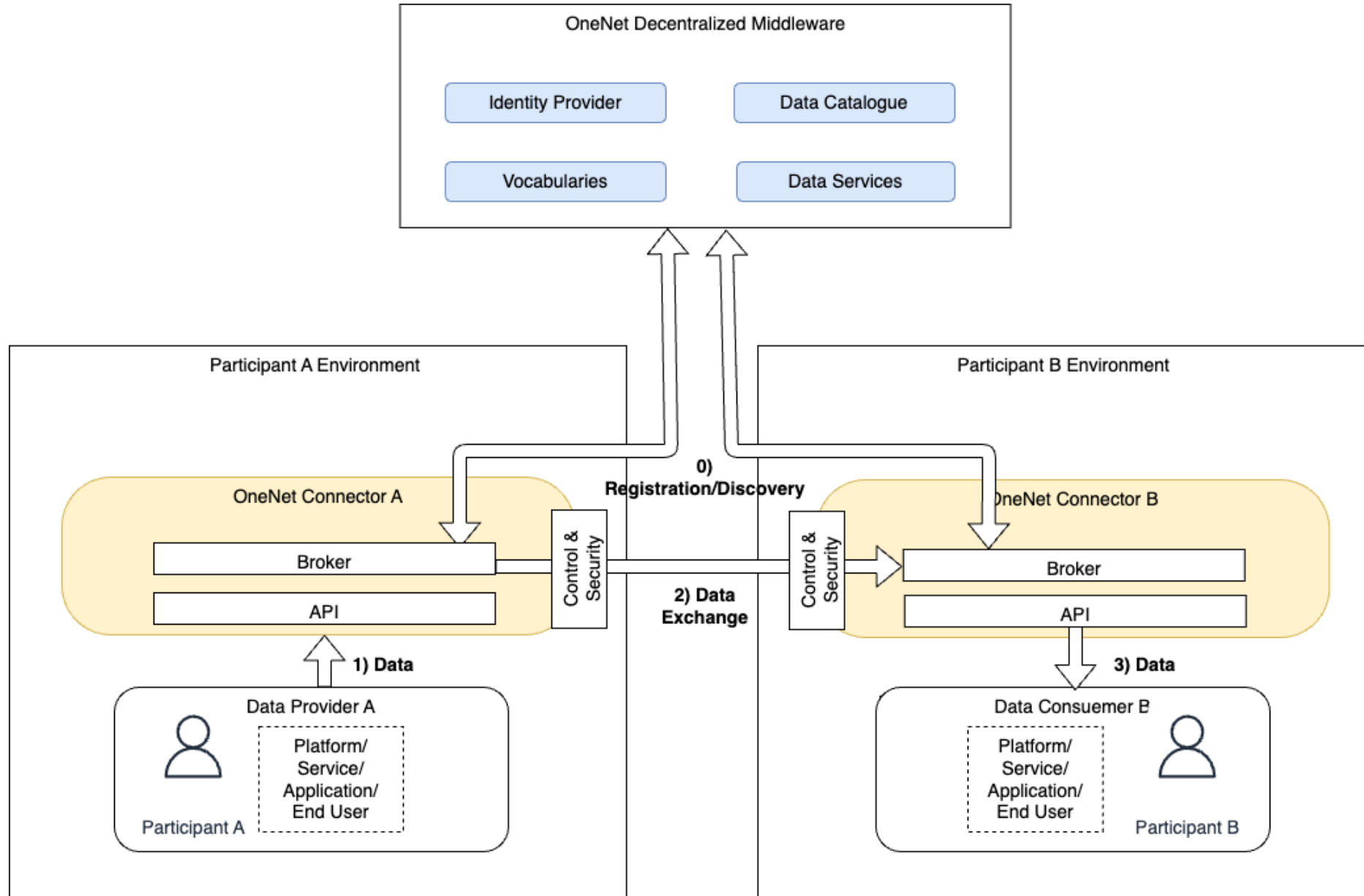
Southern Cluster Demonstrator
Greece and Cyprus

OneNet Reference Architecture

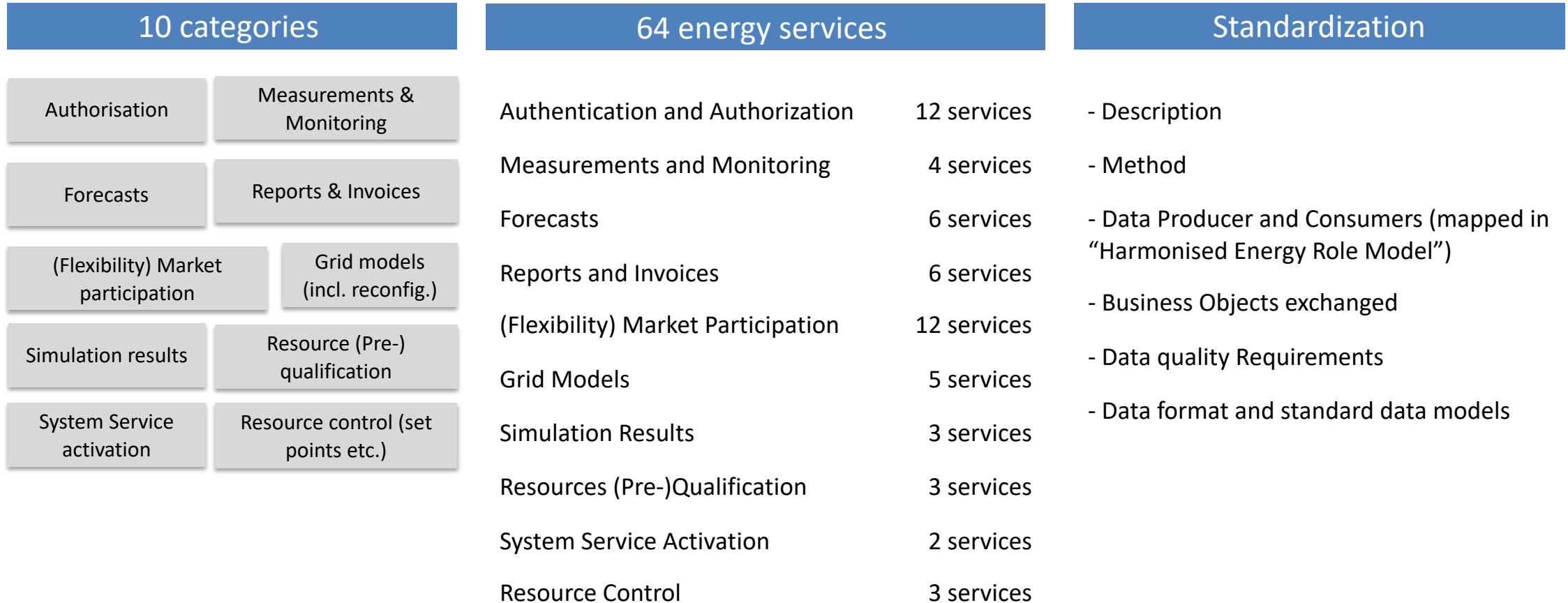


- allows **cross-countries participation of stakeholders at all levels**, from TSOs to DSOs, from small consumers to large producers
- facilitates the **platforms integration and cooperation for cross-platform market and network operation services**
- makes **available and accessible data** from different sources (actors) in a **secure and trusted way ensuring data ownership and privacy**

OneNet Decentralized Approach



OneNet Decentralized Approach



KEYNOTE SPEECH



Mark van Stiphout

(European Commission)



Helena Gerard (VITO)



Siddesh Gandhi
(ENTSOE)



Peter Hermans
(former CTO Stedin)



Charles Esser
(E.DSO)



Mark van Stiphout
(European Commission)

DEMO PITCHING SESSIONS & COFFEE BREAK

10:15 – 11:15

Room Edison

10:15 – 10:45

Western Cluster

Madalena Lacerda (E-REDES)



10:45 – 11:15

Eastern Cluster

Primož Rušt (Eles)



Room Marconi

10:15 – 10:45

Southern Cluster

Lenos Hadjidemetriou
(University of Cyprus)



10:45 – 11:15

Northern Cluster

Jan Segerstam (Volue)



ONENET DEMOS

11:15 – 12:30



José Pablo Chaves Ávila (Comillas)



Madalena Lacerda
(E-REDES)



Jan Segerstam
(Volue)



Primož Rušt
(Eles)



Markos Asprou
(University of Cyprus)

DEMO PITCHING SESSIONS (LUNCH BREAK)

12:30 – 14:00

Room Edison

Eastern Cluster

Primož Rušt (Eles)



Northern Cluster

Jan Segerstam (Volve)



CUSTOMER ENGAGEMENT

14:00 – 14:45



Nicolò Rossetto (EUI)



Daniele Stampatori
(EUI)



Laurent Schmitt
(Digital4Grids)



Dimitri Vergne
(BEUC)



Adriana Guth
(European Commission)

OneNet Final Event

Panel discussion on Customer Engagement

Daniele Stampatori (EUI)



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Barriers to customer engagement in flexibility markets

Barriers groups	Barriers
Economic barriers	Limited value of flexibility Risky business Market and product design
Behavioural barriers	Lack of awareness Lack of skills to process information Inertia
Legal barriers	Market exclusion Contractual issues Data privacy and access to info
Technical barriers	Lack of infrastructure Data exchange Interface design and communication


ELECTRICITY

Flexibility from consumers: four set of barriers to overcome

This is the third and conclusive installment of the Topic of the Month: Energising engagement

AUTHORS
 DANIELE STAMPATORI

RELATED
TOPIC OF THE MONTH **Electricity** consumers entering a new universe



Recommendations to enhance customer engagement

Barriers groups	Recommendations	
Economic barriers	<ul style="list-style-type: none"> • Increase flexibility value • Suitable market and product design 	<ul style="list-style-type: none"> • Reduce risk
Behavioural barriers	<ul style="list-style-type: none"> • Know your customer(s) • Effective communication 	<ul style="list-style-type: none"> • Promoting awareness • Overcome inertia
Legal barriers	<ul style="list-style-type: none"> • Market inclusion • Privacy protection 	<ul style="list-style-type: none"> • Energy contracts • Standards and digitalisation
Technical barriers	<ul style="list-style-type: none"> • Anticipate infrastructure needs • Standards 	<ul style="list-style-type: none"> • User-friendly interfaces



Recommendations for customer engagement strategies D11.5

Authors:

Daniele Stampatori (EUI)	Juan Adolfo Galeano (RWTH)
Nicolò Rossetto (EUI)	Dusan Jakovljevic (EEIP)
Gwen Willeghems (VITO)	Jürgen Ritzek (EEIP)
Kris Kessels (VITO)	Stavroula Pappa (REScoop.eu)
Madalena Lacerda (E-REDES)	Rod Janssen (EEIP)
Beatriz Corceiro (E-REDES)	Emmanouil Zoulias (University of Athens)

Responsible Partner	EUI
Checked by WP leader	José Pablo Chaves Ávila, 27/06/2023
Verified by the appointed Reviewers	Teresa Pilar Hormigo Gonzalez (UFD), 27/06/2023 Carlos Damas Silva (E-REDES), 27/06/2023 Martin Chytra (ECD), 30/06/2023
Approved by Project Coordinator	Padraic McKeever (Fraunhofer), 30/06/2023

Dissemination Level	Public
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Return on Experience on Residential Estonian Pilot

Laurent SCHMITT
Paris March, the 5th 2024
OneNet Final Event



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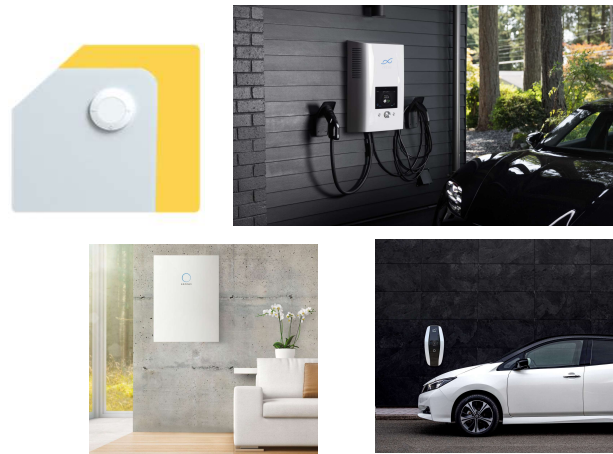
*This project has received funding from the European Union's Horizon 2020
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Criteria to select Prosumers

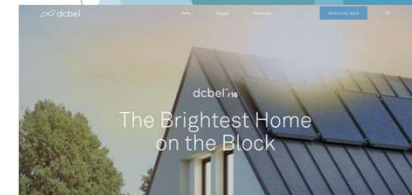
Controllable Demand Side Flexibility



Storage devices & V1G



Residential solar self consumption



Objective to new real-time automated digital interactions through a consumer community



Beaurepaire – June 2023 / True CO2 Emissions
 Home & EV : 34,7kg
 Conventional Car : 1198,6kg (3571km)
 Solar : -19kg
 Net Month : 1213,7kg

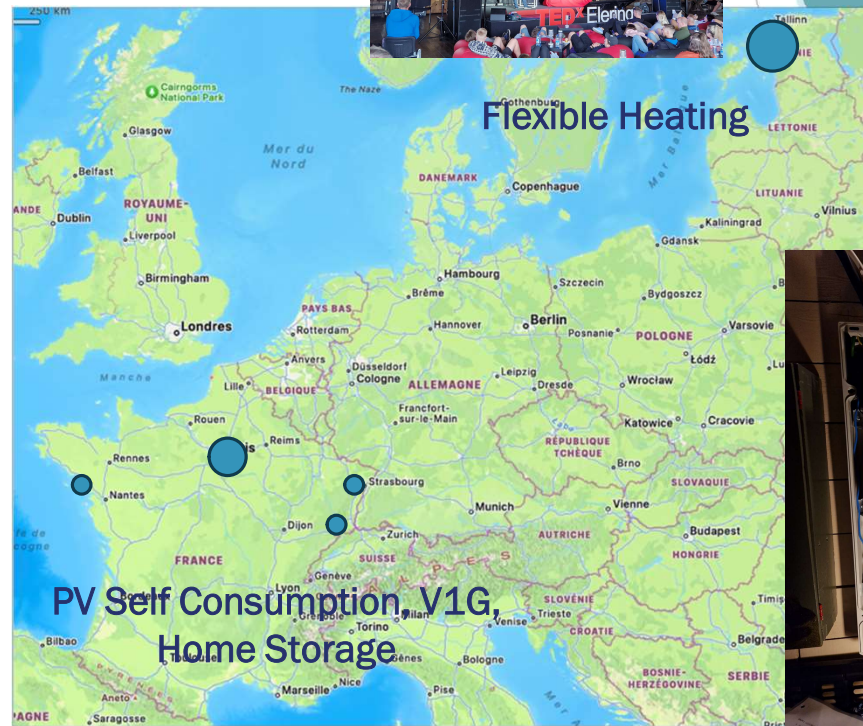
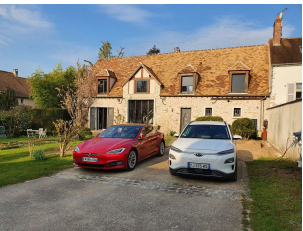
Crystal – June 2023 / True CO2 Emissions
 Home & EV : 34,5+5,5 = 37,1kg
 Supercharging : 8kg (1522km)
 Solar : -13kg
 Net Month : 32,1kg

Rosheim – June 2023 / True CO2 Emissions
 Home & EV : 14,4kg
 Conventional Car : 0
 Solar : 0kg
 Net Month : 14,4kg



Demonstration Portfolio

14 connected houses and apartments with DERs using DMDs across France and Estonia



ENENET
one network for Europe



Prototyping residential DER flexibility end to end autotrading

Elering Flexibility Market



Estonia resource group bidding activity - last 24 h

Bids summary

# Bids sent	# Periods activated	Quantity sent	Quantity activated	Price requested	Price winning
194	24	730 kWh	24 kWh	€620	€23.1

Bids list

ID	DER type	DER size (kWh/day)	Start time	End time	# Periods activated	Flex group	Interval at
9666735489e44...	A	1145	2024-02-14 07:00:00	2024-02-14 08:00:00	0	down	2024-02-14 06:30:07
166474633865447...	B	1142	2024-02-14 06:00:00	2024-02-14 07:00:00	0	down	2024-02-14 06:30:06
2024689586f462...	B	823	2024-02-14 06:00:00	2024-02-14 06:00:00	0	down	2024-02-14 04:33:07
394458829373447...	B	575	2024-02-14 04:00:00	2024-02-14 05:00:00	0	down	2024-02-14 03:33:06
46888442c94402...	B	714	2024-02-14 03:00:00	2024-02-14 04:00:00	0	down	2024-02-14 02:33:05
44444444c234472...	B	714	2024-02-14 02:00:00	2024-02-14 03:00:00	0	down	2024-02-14 01:33:06
43054042199482...	A	774	2024-02-14 00:00:00	2024-02-14 01:00:00	0	down	2024-02-13 23:33:05
216471777462487...	A	923	2024-02-13 22:00:00	2024-02-13 23:00:00	0	down	2024-02-13 21:33:06
94e715977568404...	A	1112	2024-02-13 21:00:00	2024-02-13 22:00:00	0	down	2024-02-13 20:33:06
8146346448c443...	A	1142	2024-02-13 20:00:00	2024-02-13 21:00:00	0	down	2024-02-13 19:33:05
142084e146c433...	A	1139	2024-02-13 19:00:00	2024-02-13 20:00:00	0	down	2024-02-13 18:33:06
3d71989416c494...	A	1139	2024-02-13 18:00:00	2024-02-13 19:00:00	0	down	2024-02-13 17:33:06
42b74054594459...	A	1147	2024-02-13 17:00:00	2024-02-13 18:00:00	0	down	2024-02-13 16:33:06
4371464424e1471...	A	707	2024-02-13 16:00:00	2024-02-13 16:00:00	0	down	2024-02-13 14:33:06



Prototype Autotrading Platform

- Flexibility Device Prequalification
- DER Self Nomination & Flexibility Bidding
- DER automated Activation
- DER Flexibility & Imbalance Settlements



Flexibility Service provider : key lessons learned

Success

- ▶ Dedicated Measurement Device in place offering real-time data exchanges / Test of CU operator models
- ▶ Demonstrated dynamic transactive controls at DER levels
- ▶ End to end DER transaction management down to settlements
- ▶ Use of interoperable CIM Based APIs throughout the value chain

Challenges

- ▶ Lengthy consumer recruitments
- ▶ Stability of Home low-cost Internet Connections
- ▶ Unsuitable statistical baseline methods (need to evolve towards real-time MBMA methods)
- ▶ Deeper implication of consumers into test environments

DATA SPACES

14:45 – 15:45



Kalle Kukk (Elering)



Georg Hartner
(Oesterreichs Energie, EDDIE project)



Ferdinando Bosco
(Engineering)



**Konstantinos
Stamatis**
(DG ENER)



Natalie Samovich
(Enercoutim, ETIP SNET)

Towards the governance of European Common Energy Data Space

Kalle Kukk, Elering



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 957739

Why then don't we still have:

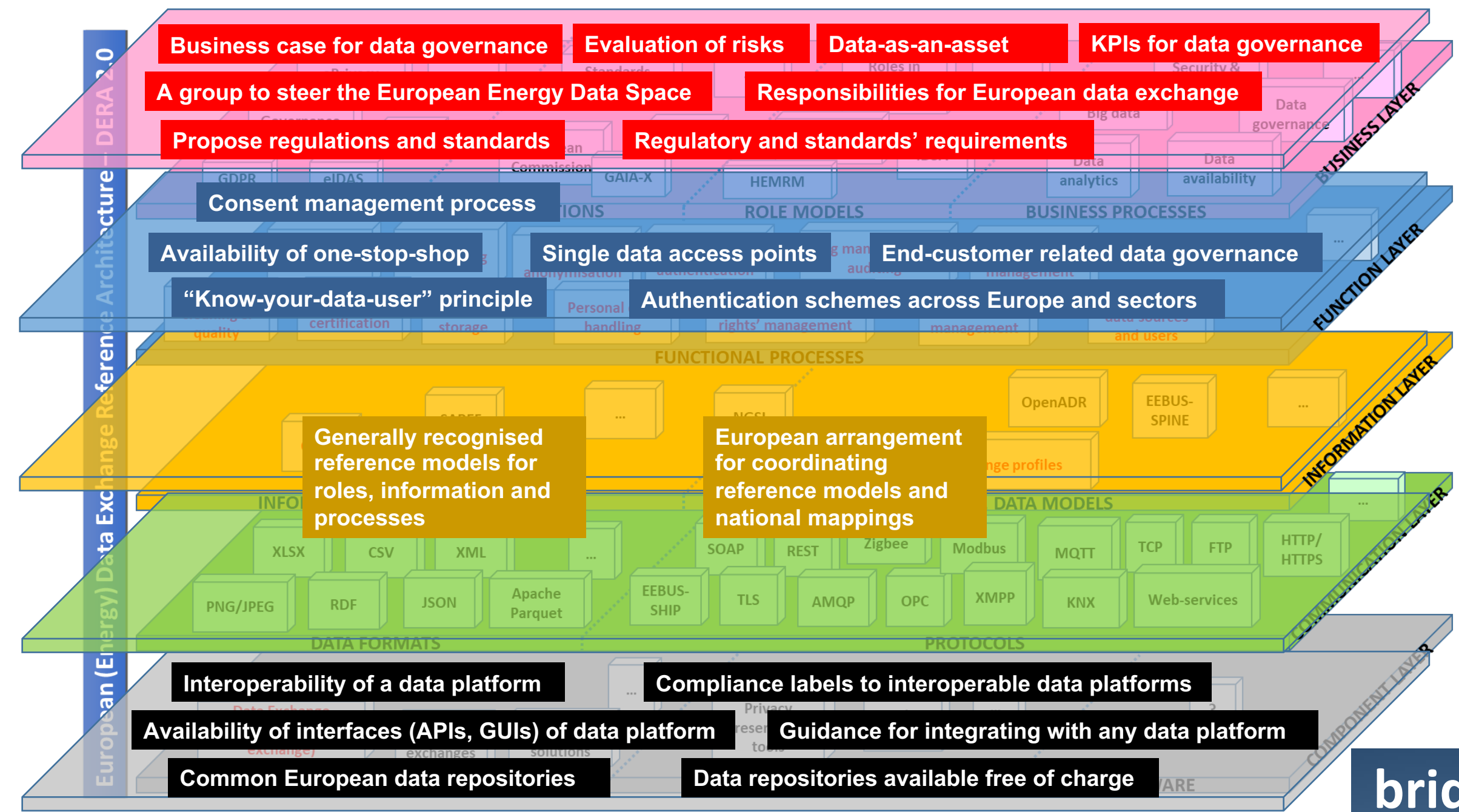
... easy access to My Data (meter data, sub-meter data, market data)?

... including access to My Data in other countries?

... single data access points for different types of data from different sources?

... possibilities to provide My Data to any party across Europe, incl. across sectors?

Reference Data Governance Model (RDGM) for Data Exchange Reference Architecture (DERA)



OneNet Final Event

OneNet Data Space approach

Ferdinando Bosco - Engineering



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OneNet Architecture – The Three Layers



OneNet Participants

Any kind of actor involved in the OneNet ecosystem. Can be divided into: data source, data provider, data consumer and service provider.

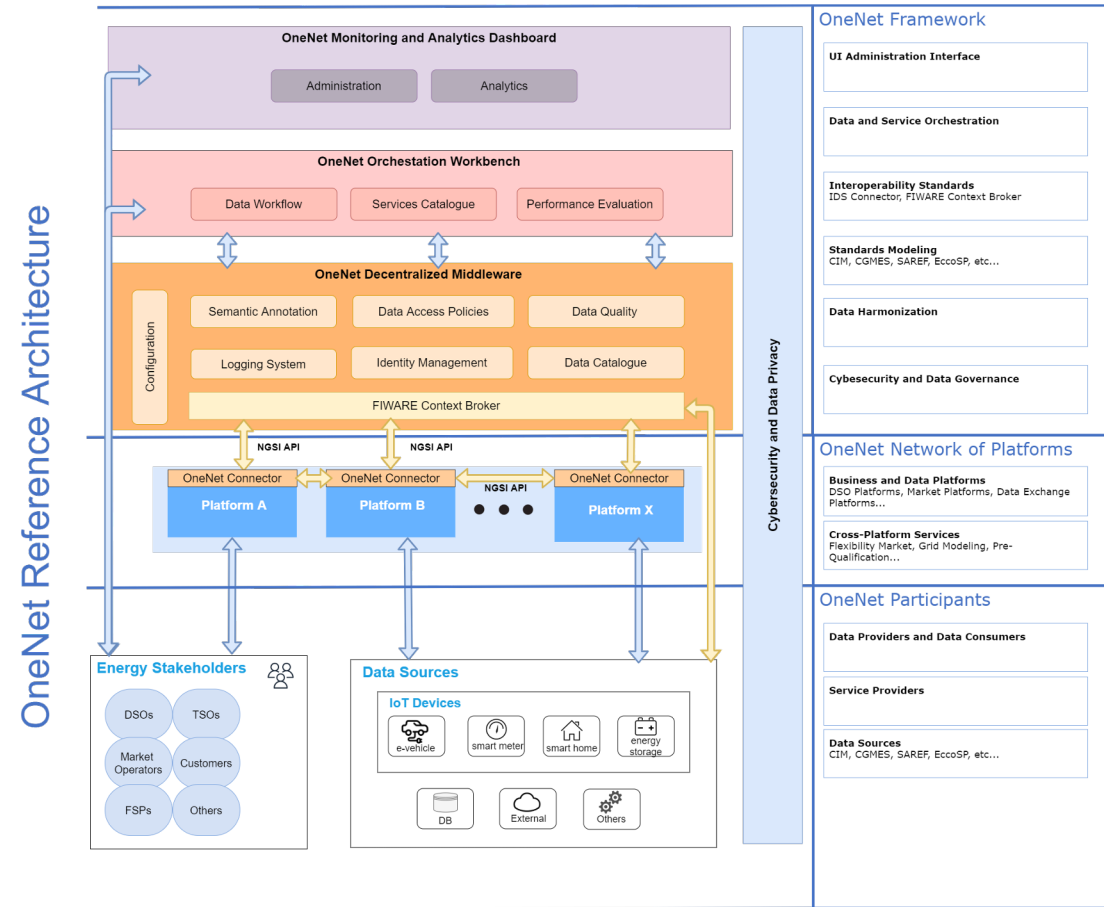
OneNet Network of Platforms

Any Demo Platform (e.g., DSO platforms, Market platforms, DEPs) able to connect with the OneNet Middleware using the OneNet Connector. It aims to be a **P2P fully decentralised ecosystem for interoperability**. In the OneNet Network of Platforms, two systems (OneNet Participants) can interact directly with each other, without intermediation by a third party.

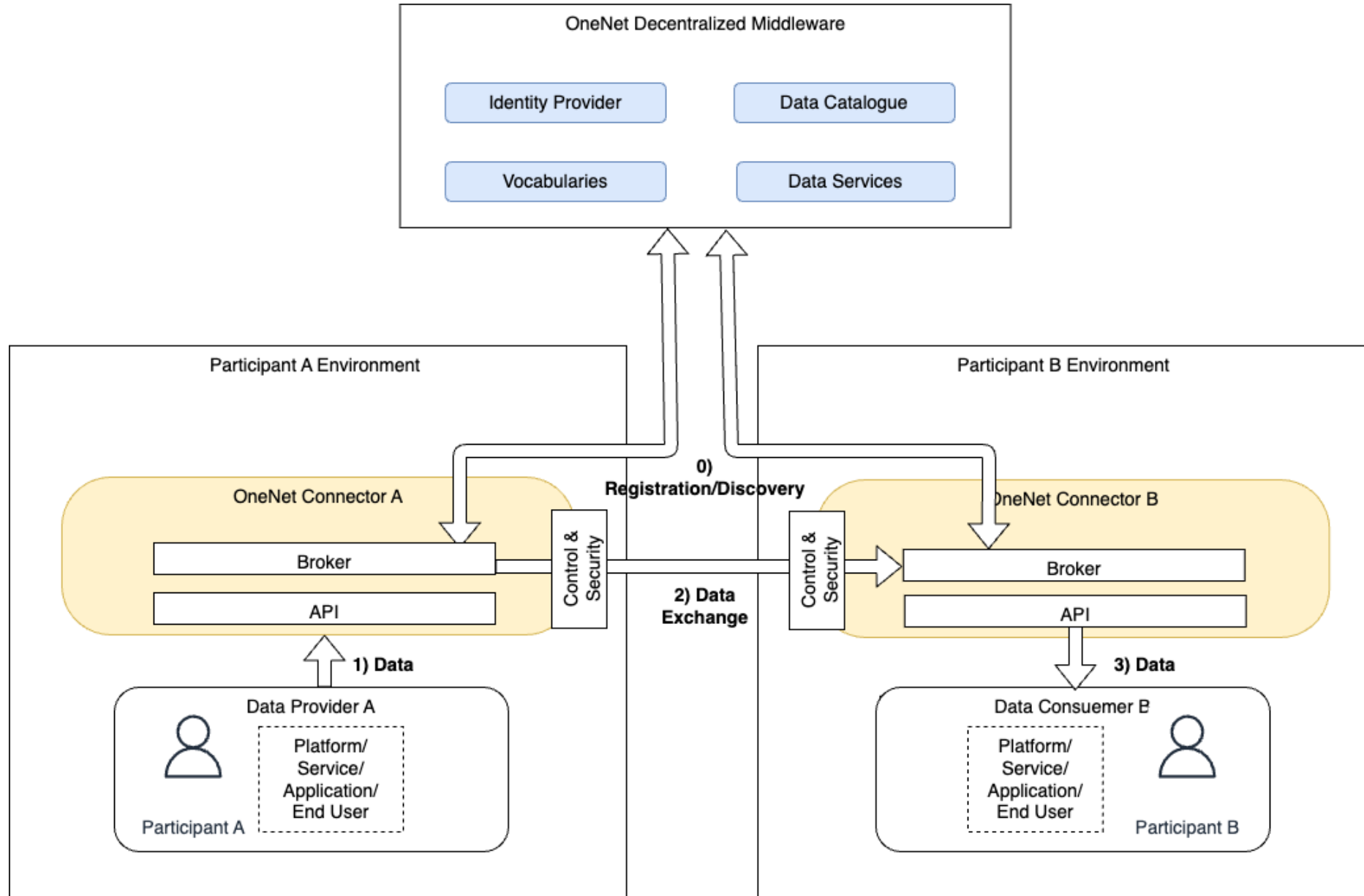
OneNet Framework

The core of the OneNet Architecture. It consists of three main components:

- OneNet Decentralized Middleware
- OneNet Orchestration Workbench
- OneNet Monitoring and Analytics Dashboard

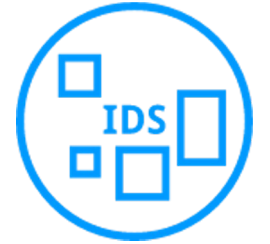


Decentralized Approach



OneNet Middleware

- enables **the participation on the OneNet Data Space ecosystem**
- offers central features to all the OneNet participants like ***identity management, data discovery, vocabularies and ontologies***



OneNet Connector

- follow the standards **IDS specifications**
- is a **decentralized plug-and-play solution**
- is **responsible for the execution of the complete data exchange process**
- each OneNet Participant is able to **deploy and configure its own connector**
- Context Broker in the OneNet connector is based on **FIWARE Orion Context Broker and NGSI-API**
- It also includes
 - **Configuration tool**
 - Set of **interoperable API** for the connection with already existing Platform/Application/Services
 - **OneNet Data Harmonization services**



OneNet Connector Exploitation

- **The OneNet Decentralized Middleware and OneNet Connector have been proposed as Open-source community to the Linux Foundation Energy.**
- Several projects are expanding our products
 - InterStore adopted the OneNet Connector and developed an open source GUI
 - TwinEU will further expand the connector
 - ENERSHARE is using the OneNet Connector

The logo for LF ENERGY, featuring a stylized 'LF' in blue and 'ENERGY' in a lighter blue font.The logo for Enershare, consisting of a purple rectangular background with a white icon of a computer monitor and a double-headed arrow, followed by the word 'Enershare' in white text.The logo for interstore, featuring a light blue trapezoidal background with a white icon of three stacked cubes and the word 'interstore' in a dark blue font.The logo for TwinEU, featuring the word 'TwinEU' in a bold, teal font with a white star above the 'i'.

A ROADMAP FOR THE WAY FORWARD

15:45 – 16:45



Peter Hermans (former CTO Stedin)



Helena Gerard
(Vito)



Jukka Rinta-Luoma
(Fingrid)



Norela Constantinescu
(ENTSO-E)



Vassilis Sakas
(European Dynamics)



Antonello Monti
(Fraunhofer)



Madalena Lacerda
(E-REDES)



Sonia Jimenez
(IDSA)



Richard Vidlicka
(CEZ Group)

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