EDDIE

EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

PROJECT EDDIE

A common European Energy Data Space for a flexible and participative energy system

October 29th 2024

INTRODUCTION PROJECT EDDIE

Agenda

Welcome and quick introduction

Solutions based on energy data

EDDIE‘s guiding vision

Outlook

Questions & answers, discussion and room for co-operation

GEORG HARTNER

Contributor to EU-Level Expert Groups for Austrian Energy Association and EU DSO Entity

For Entarc.eu GmbH and University of Applied Sciences Upper Austria Co-Initiator and Technical Coordinator Projects EDDIE and INSIEME

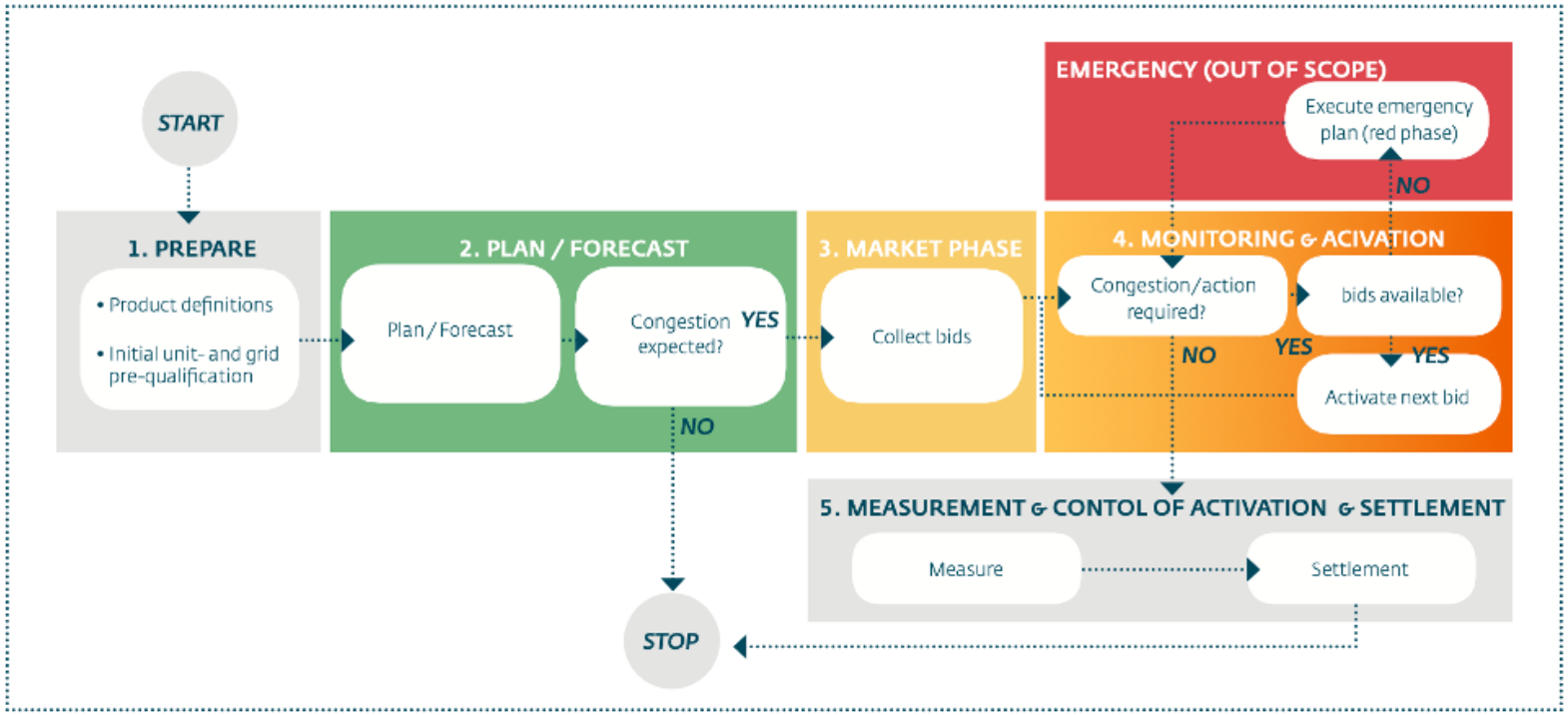
EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

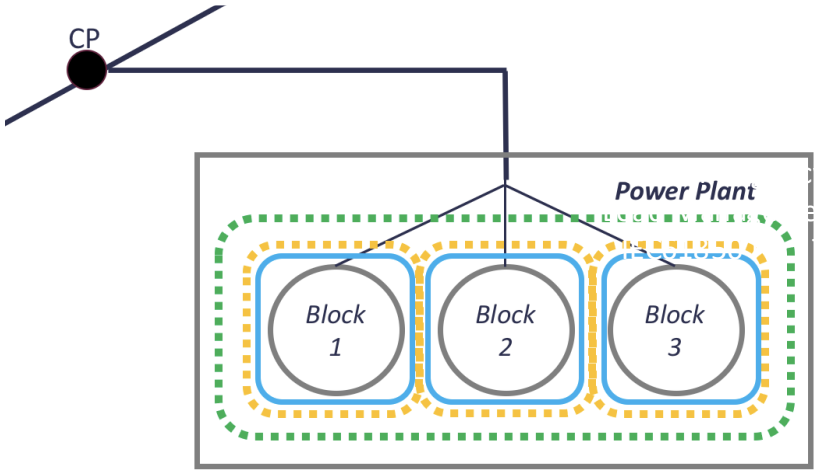
USE CASES FOR ENERGY DATA

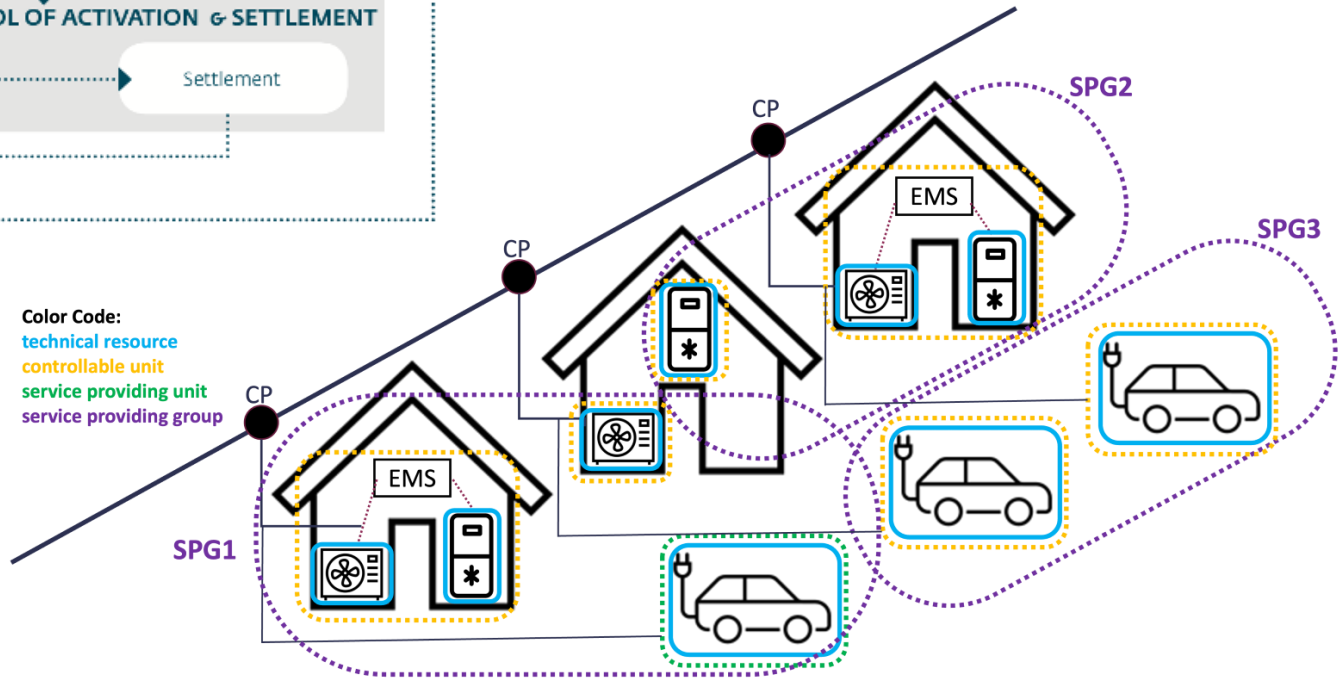
Where we help…

HIGH POTENTIAL, HIGH RISK AND MUCH EFFORT

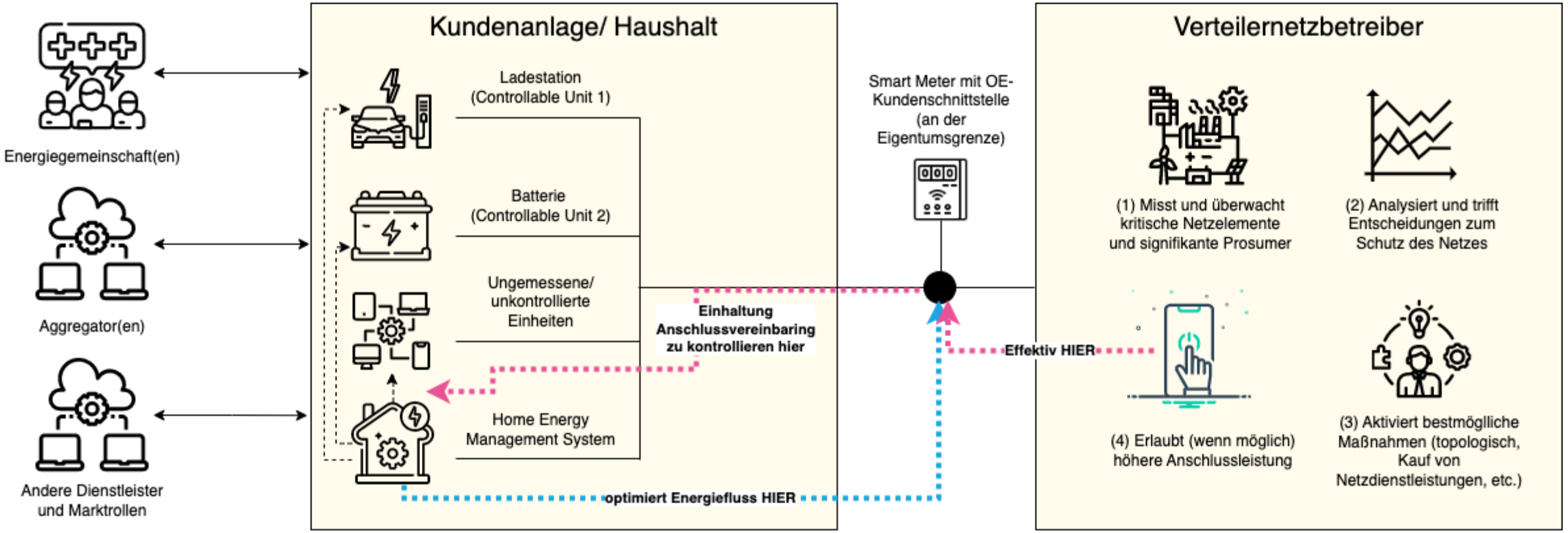
EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY







EXAMPLE: USE CASE FLEXIBLE CONNECTION AGREEMENTS



EntArc.eu
Enterprise Architecture

Jointly acting self-consumers: „A group of at least two jointly acting renewables self-consumers … who are located in the same building or multi-apartment block;“

Article 2 (15) of Directive (EU) 2018/2001

Renewable Energy Communities: Legal entity which

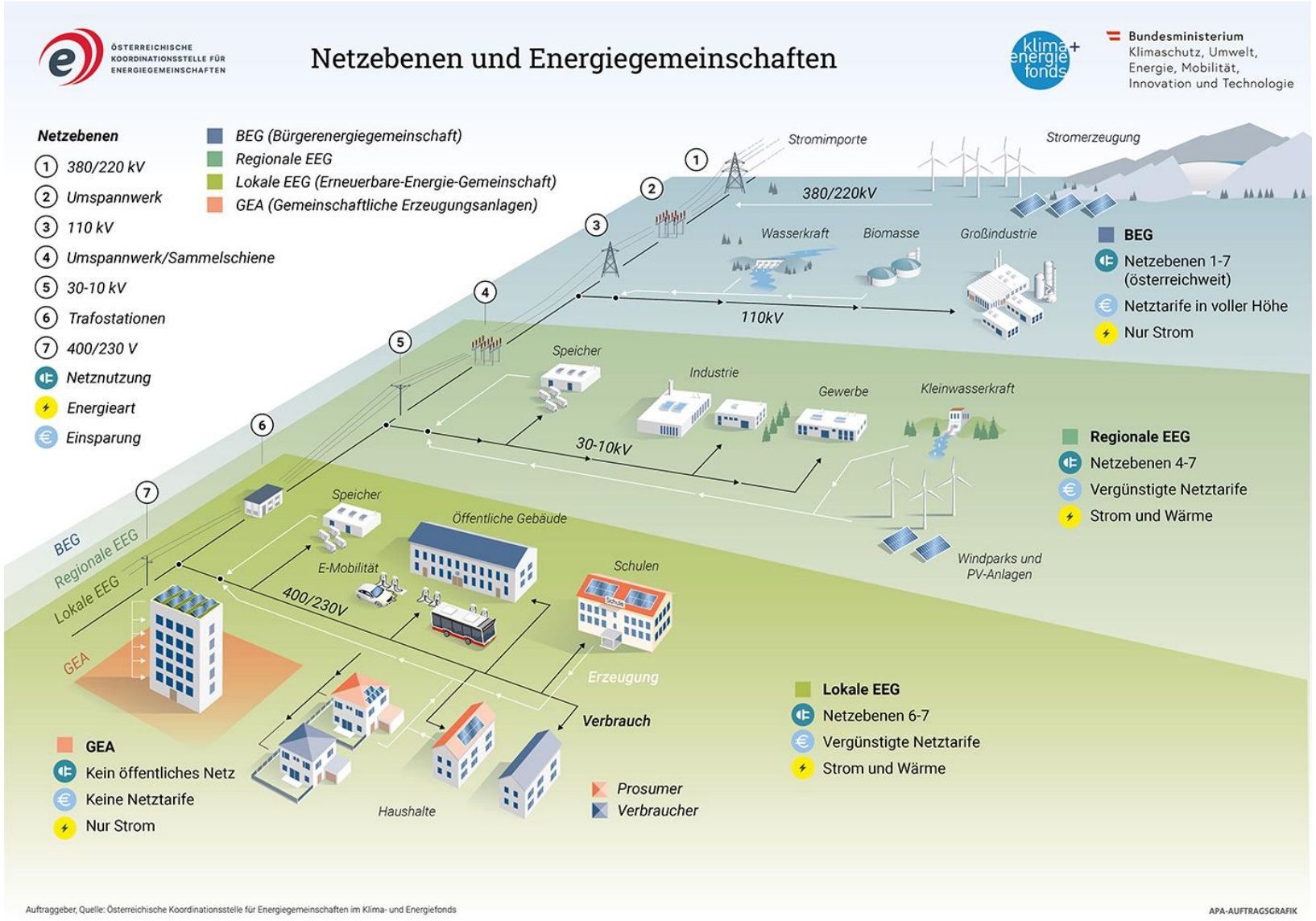
- … is based on open and voluntary participation, … located in the proximity of the renewable energy projects that are owned and developed by that legal entity;
- the shareholders … are natural persons, SMEs or local authorities, including municipalities;
- the primary purpose … environmental, economic or social community **benefits for its shareholders or members or for the local areas where it operates**, rather than financial profits;

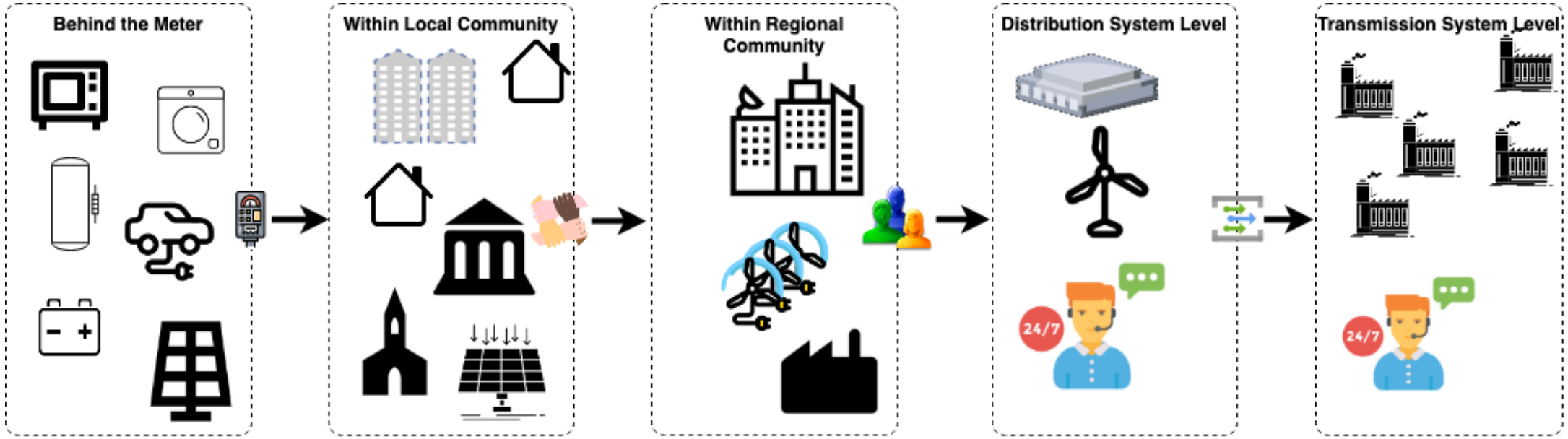
Article 2 (15) of Directive (EU) 2018/2001

Citizen Energy Communities: like REC, but may be involved in generation, *including from* renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency services or charging services for electric vehicles or provide other energy services to its members or shareholders;

Article 2 (11) of Directive (EU) 2019/944

THE AUSTRIAN MODEL





…incentivising best-effort balancing at different levels.

DIVERSE RAISONS D‘ÊTRE

1. **KEMAM** (KEM Amstetten Nord/Süd)
2. **WYBBS** (Waidhofen and der Ybbs)
3. **LASSA** (JASC Lassacher)
4. **EMMIC** (Emmicom)
5. **ZELLA** (Zell-Arzberg)
6. **SAARE** (Saaremaa CEC)
7. **SOLAI** (Solai Lann Coat)
8. **PARTA** (Partegelec)
9. **HUREP** (Communauté Energétique du Hurepoix)
10. **HYDRO** (DEDA Hydrogen Village)
11. **BALEN** (Balenyá)
12. **CANFO** (Can Forns Low-Volage EC)
13. **ELPRA** (El Prat de Llobregat)
14. **LACHA** (Living Lab Lachar)
15. **MALP1** (Magliano d'Alpi REC 1)
16. **MALP2** (Magliano d'Alpi REC 2)
17. **MALP3** (Magliano d'Alpi REC 3)
18. **MALP4** (Magliano d'Alpi REC 4)
19. **CARRU** (REC Carru)
20. **SANDA** (REC San Daniele del Friuli)
21. **MONTE** (REC Montelabbate)
22. **ATQAS** (Austrian Self-Service Testing for New Actors)
23. **ATCCA** (Austrian Citizen Energy Community assignment Service)
24. **ESQAS** (Spanish Self-Service Testing for New Actors)
25. **ESCCA** (Spanish Citizen Energy Community assignment Service)

INSIEME

- **Agricultural**
- **Anti-Nuclear**
- **Community2Community**
- **EV-Charging - focussed**
- **JASCs**
- **Neighbourhood**
- **Municipal**

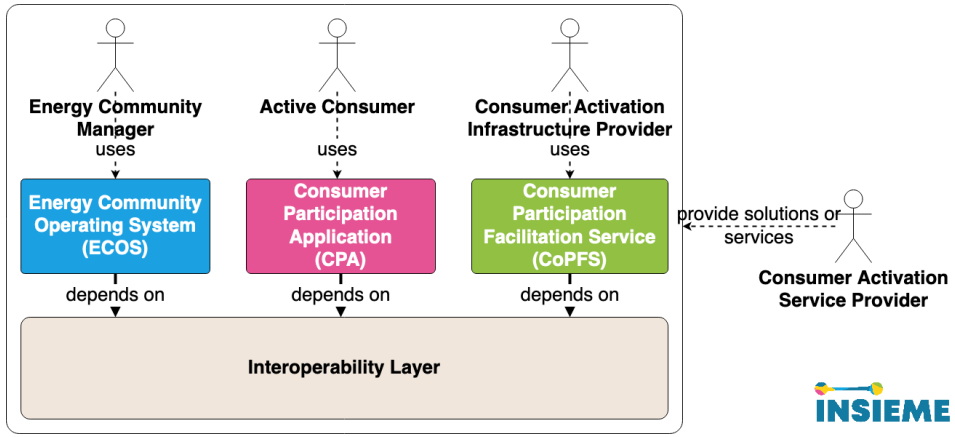
EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

USE CASE 3

Digital multi-sided platforms for energy communities and P2P energy sharing/trading

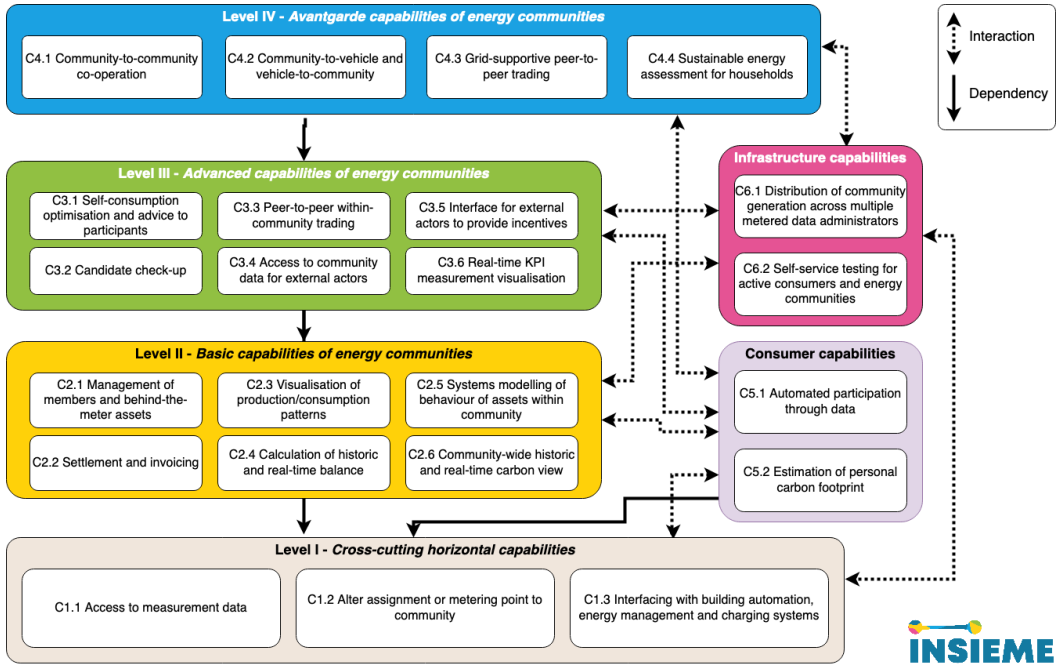
(Future)

Dataspace for energy communities



INSIEME

Follow-up H2020 call objectives



INSIEME

EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

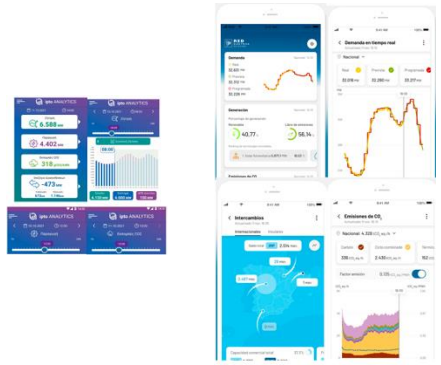
USE CASE 4

Interoperable framework for next energy apps

(Future)

Dataspace for building efficiency

Follow-up H2020 call objectives



Discussions with Member States
Highlight importance of low cost & incentives as success criteria
For consumer: ease of use, clear added value through the application
For providers: promotion, broad adoption of smart meters
Impact proportional to degree of adoption

ETRA landscaping study
Provision of applications and platforms to consumers by:
Retailers and DSOs
TSOs
3rd parties with non-personalised information of retail prices
3rd parties with personalised information of consumption and production in real time
National energy data platforms

Building on experiences in Member States and with existing applications

Today - 2023: Blueprint (1st generation) Supported by H2020-Interconnect (2M€ investment)
Data: public data, anonymised data from smart meters, data voluntarily provided by the user through the application
Target: Different groups of users by region, Electric vehicle owners, households, solar panel owners, …
Recommendations: Avoid consumption, Eco tips, energy bill reduction, incentivise load shifting
Intervention: Manual by the user
Implementation: Reference frameworks for interoperability framework with DSO and TSO interfaces, reference back-end and front-end for the application
Piloting: in 10 Member States supported through open calls for funding for SMEs, service providers, …

2024 +: Blueprint (2nd generation) Planned to be supported by DIGITAL (5M€ investment)
Data: Real-time consumption data from meters, contracts,…
Target: Extended functionality with customised features
Recommendations: Personalised per application user
Intervention: Automated by intermediary/service provider

Smart Grids Task Force - Expert Group 3 -
Level of service according to functionalities of applications:
Level 1: General guidance/tips on energy efficiency
Level 2: + Critical state alerts and warnings, but still with general information
Level 3: + Information on available incentives and related support
Level 4: + Simplified incentives and rewards for active engagement
Level 5: + Customised advice, supported by steered action and incentives

European Energy Savings Reference Framework
https://digital-strategy.ec.europa.eu/en/news/first-generation-blueprint-common-european-reference-framework-energy-saving-applications

EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

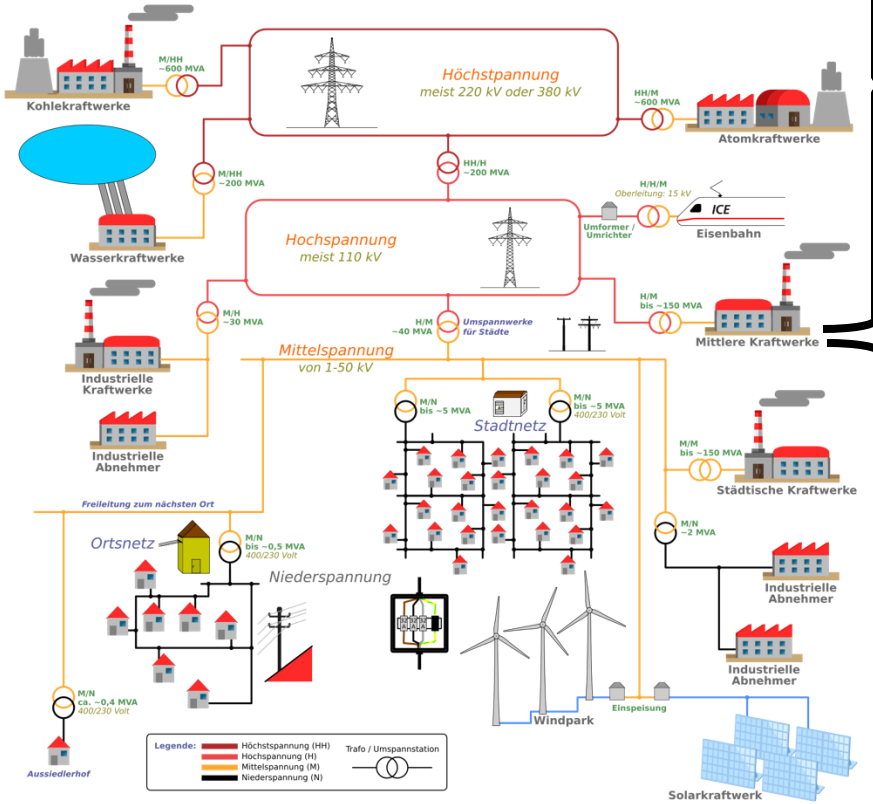
USE CASE 5

Virtual Power Plant for Renewable and C&I Demand side flexibility

(Future)

Dataspace for Explicit Prosumer Participation

- DER Master data synchronization (day aheard)
- Automatic -BRP Switching
- Real-time DER performance monitoring
- Automatic metering and consumption data aquisition for settlement
- Tracking of Guarantees of Origins across value chains
- Operate across multiple Member States through harmonized interfaces



Follow-up H2020 call objectives

Current situation

- < 1000 Assets across Europe
- Limited spread across Memberstates
- Proprietary hardware for Realtime connectivity
- Difficulty to synchronize master data and reconcile settlements

Future targets

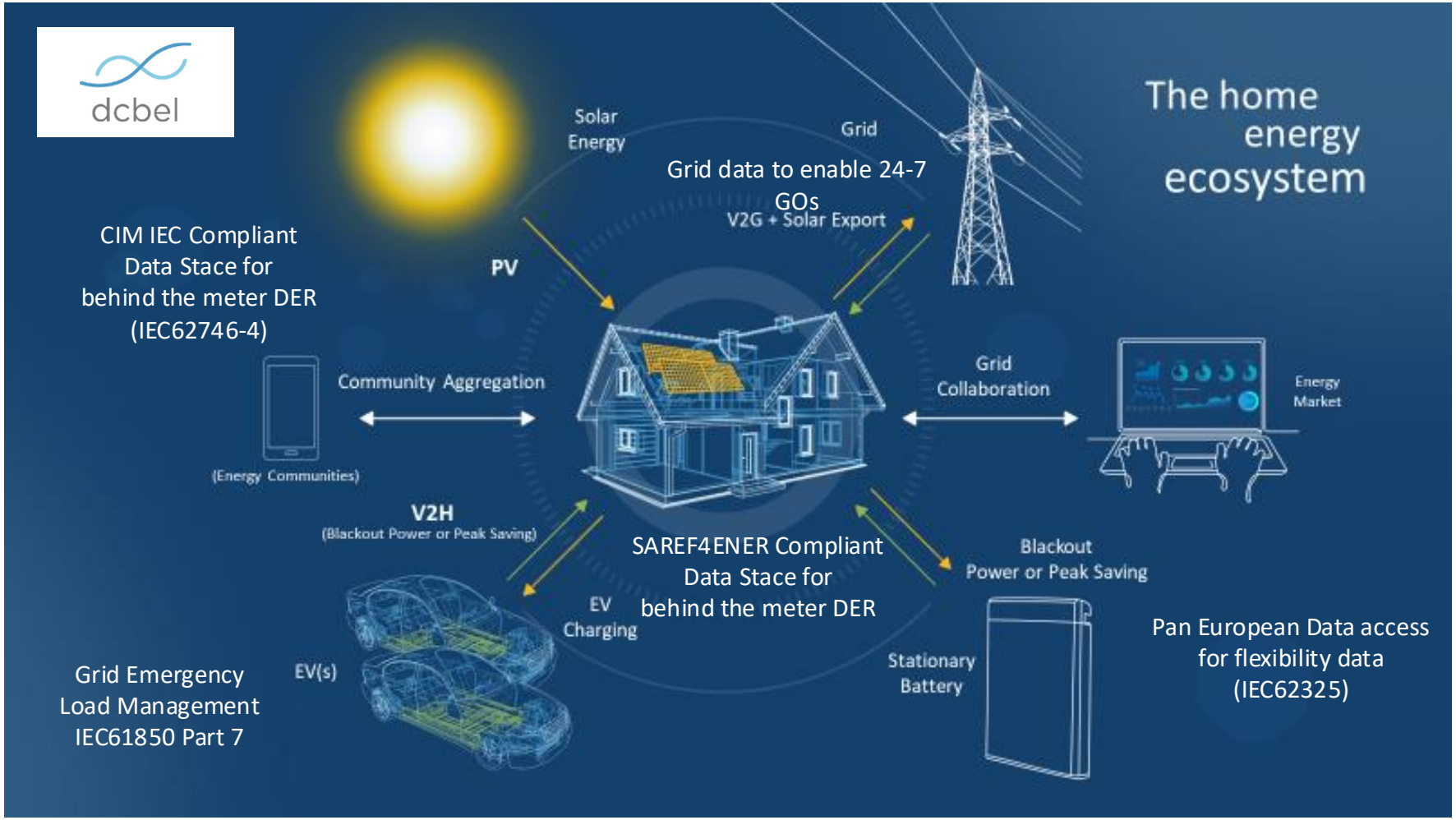
- Access > 10.000 Assets
- Harmonize market APIs across Member States
- Open hardware APIs
- Real-time master data synchronization & Guarantees of Origins
- Real-time DER switching

EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

USE CASE 2

Residential Energy Optimisation in future Netzero homes integrating PV self consumption, storage and V2X

Dataspace for implicit Prosumer Participation



EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

USE CASE 1

24-7 Carbon-free Energy Matching and Granular Carbon Accounting

Dataspace for Granular Carbon Accounting

Data Collection

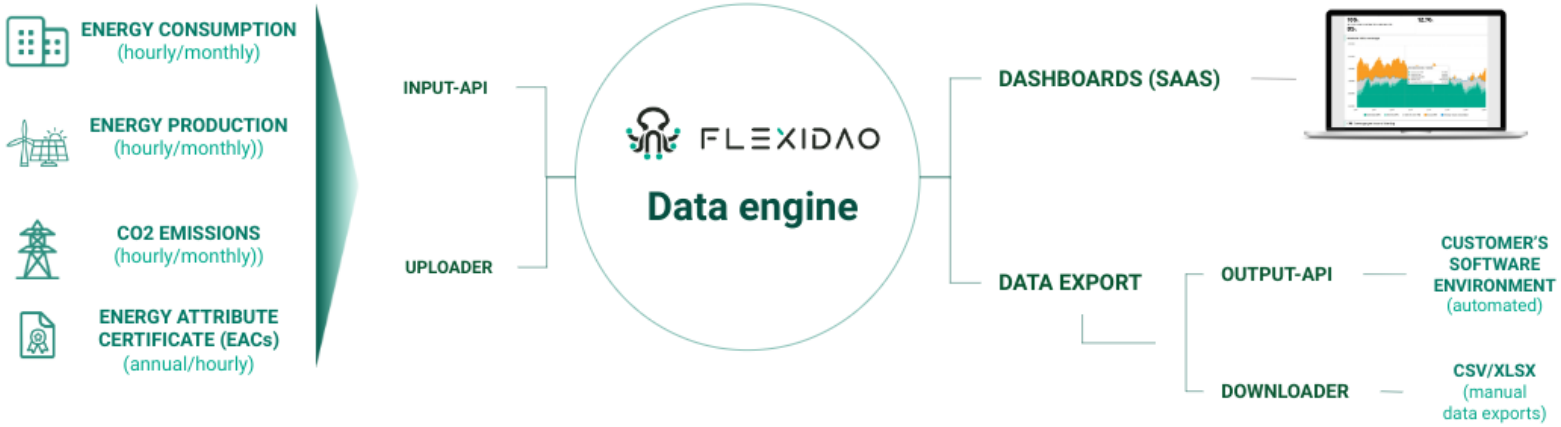
FlexiDAO can automate the collection of granular "Scope 2" data on its clients' behalf from different sources, or allow for manual upload.

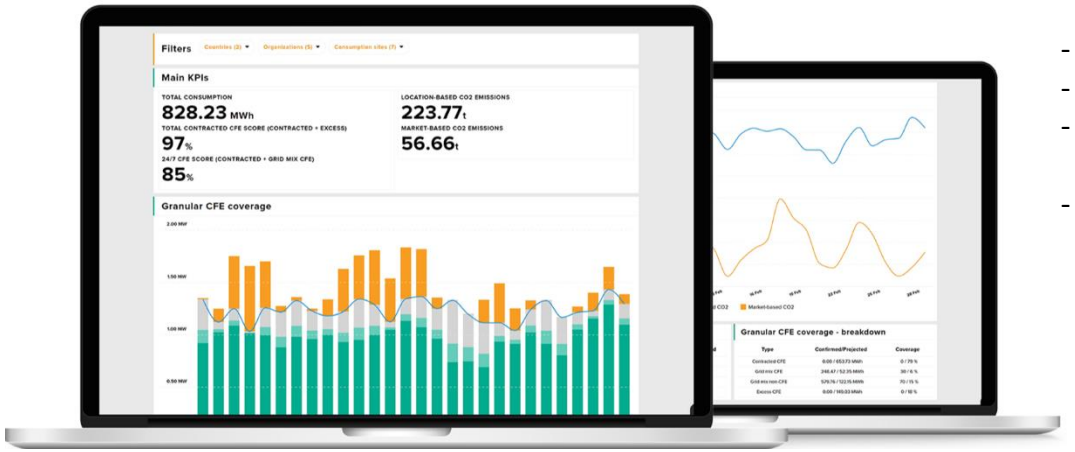
Data Aggregation

Data is ingested, cleaned and processed into relevant insights for decision making and reporting

Data Analysis

Customers can use Flexidao's SaaS dashboards to analyse information or can export the data to their software platforms to enable other use cases



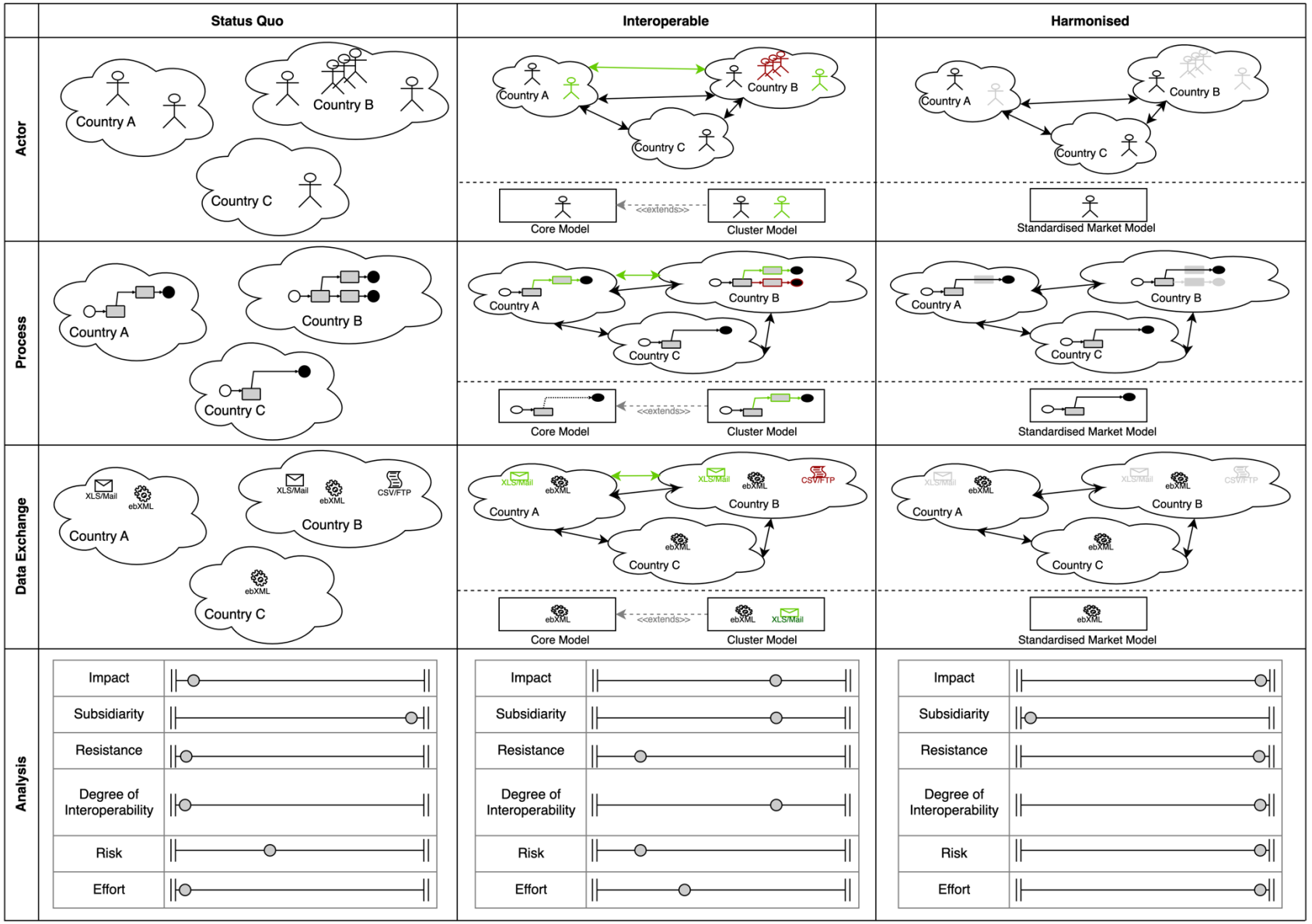


- Granular Scope 2 Carbon Accounting.
- Renewable energy procurement decisions.
- Renewable energy contracts, certificates and emissions in one place.
- Understand your 24/7 Carbon free performance and KPIs.

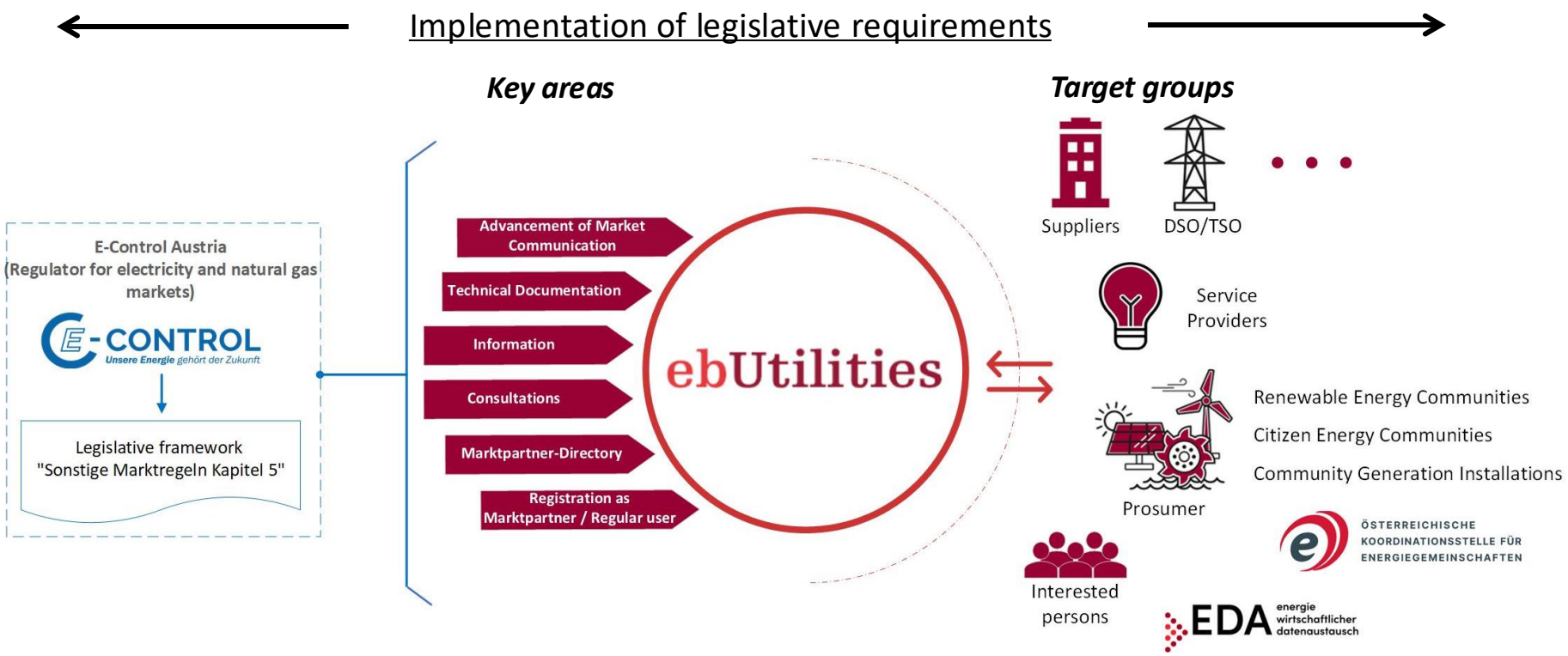
FLEXIDAO

GESAMTEUROPÄISCHE INTEROPERABILITÄT - OPTIONEN

EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

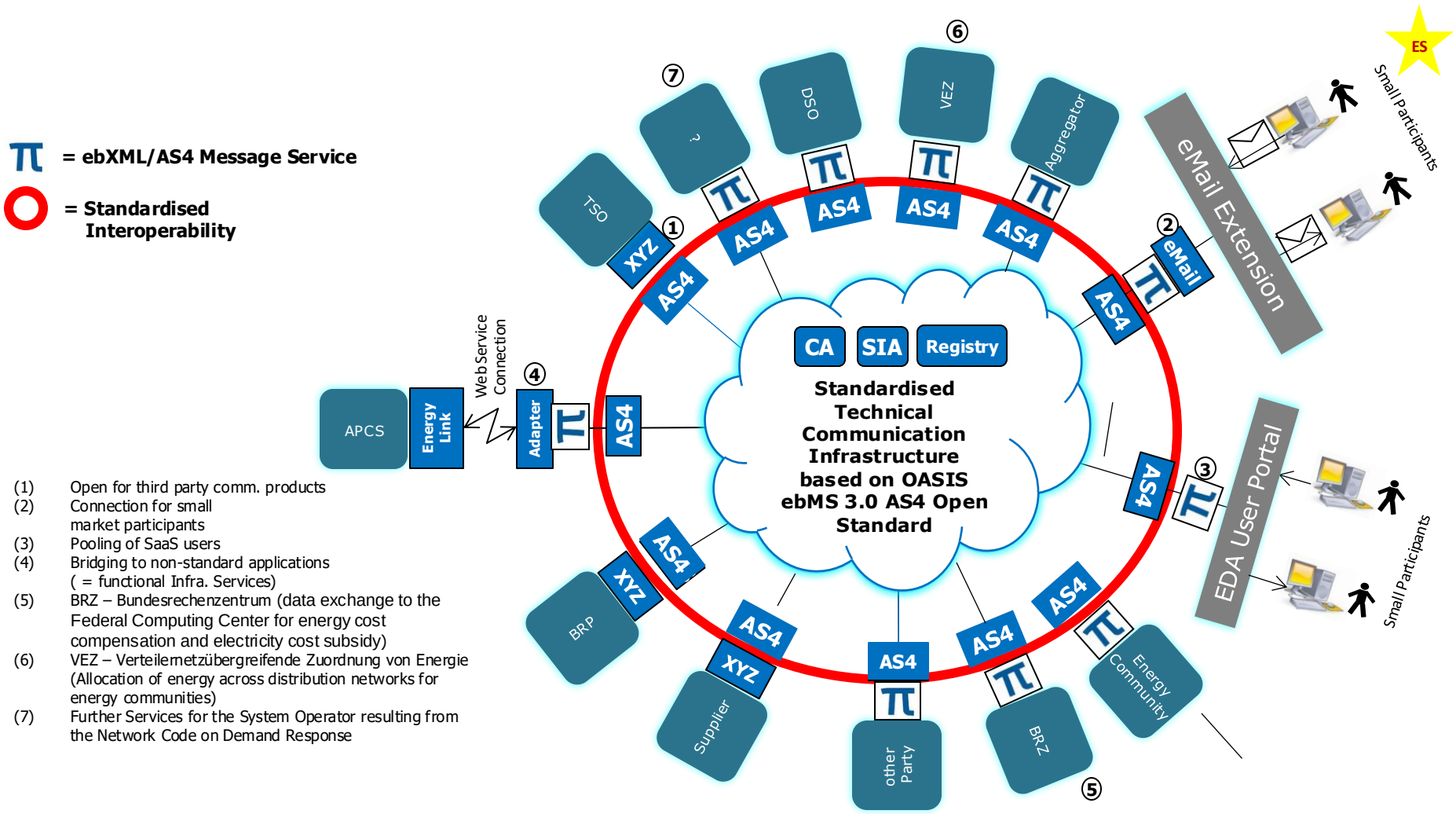


ROLE OF EBUTILITIES.AT IN AUSTRIA



AUSTRIAN EDA ENERGY DATA EXCHANGE SYSTEM

EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY



(1) Open for third party comm. products
(2) Connection for small market participants
(3) Pooling of SaaS users
(4) Bridging to non-standard applications (= functional Infra. Services)
(5) BRZ – Bundesrechenzentrum (data exchange to the Federal Computing Center for energy cost compensation and electricity cost subsidy)
(6) VEZ – Verteilernetzübergreifende Zuordnung von Energie (Allocation of energy across distribution networks for energy communities)
(7) Further Services for the System Operator resulting from the Network Code on Demand Response

2019 REPORT: TOWARDS INTEROP WITHIN EU FOR ELECTRITICY AND GAS

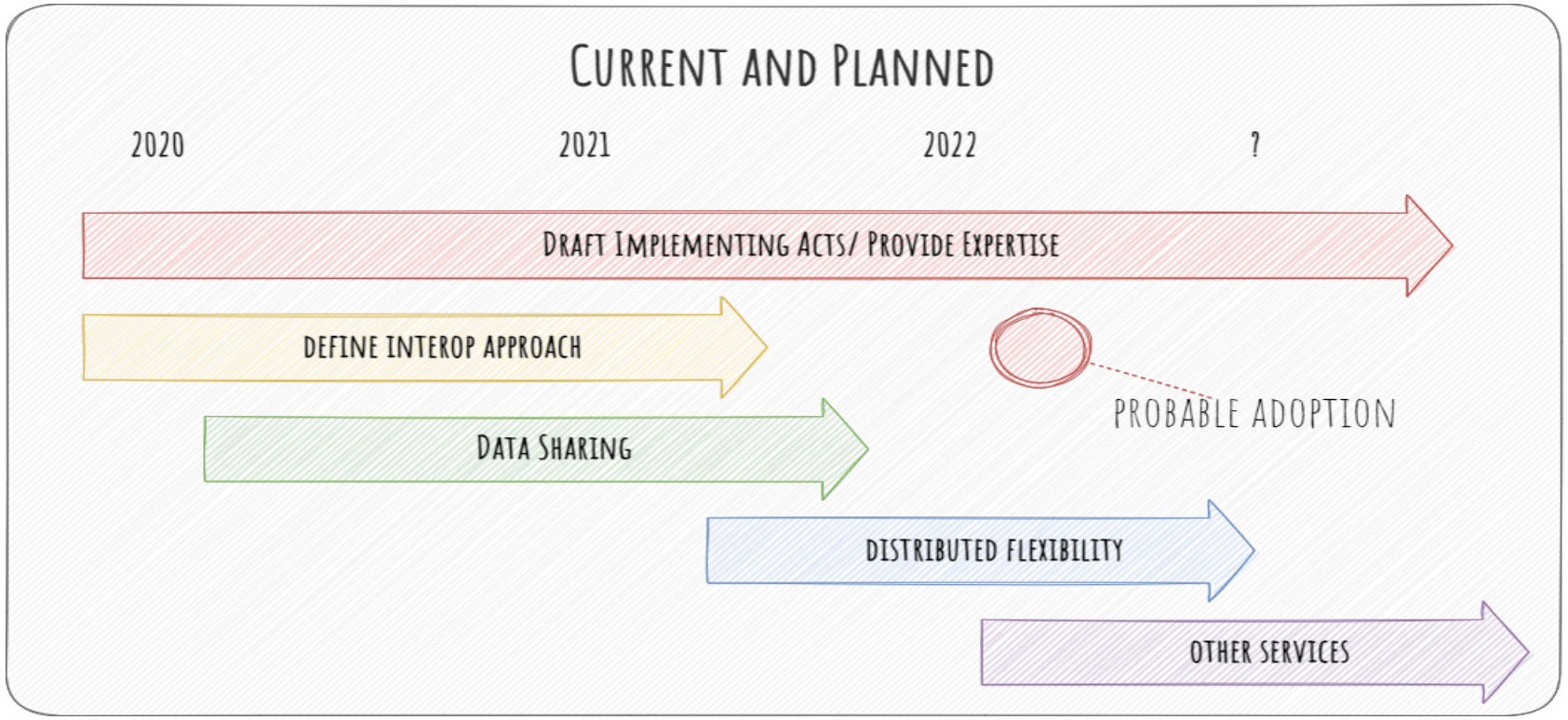
EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

1. Involve All Stakeholders.
2. Adopt a Common Role Model.
3. Use a Common Information Model.
4. Adopt a Core Process Model.
5. Technology-Neutral Business Requirements.
6. Leverage European Standards.
7. Monitor the Convergence Process.
8. Exchange Information Between Roles.
9. Address Legal Barriers.
10. Interoperability Not Conditional on Cost/Benefit.
11. Interoperability as a Step-by-Step Process.
12. Business Use Cases for Emerging Services.
13. Extend Role Models for Emerging Services.
14. Inform Consent Registry Upon Service Cancellation.
15. Immediate Notification for Consent Revocation.

Report: https://energy.ec.europa.eu/system/files/2019-05/eg1_main_report_interop_data_access_0.pdf

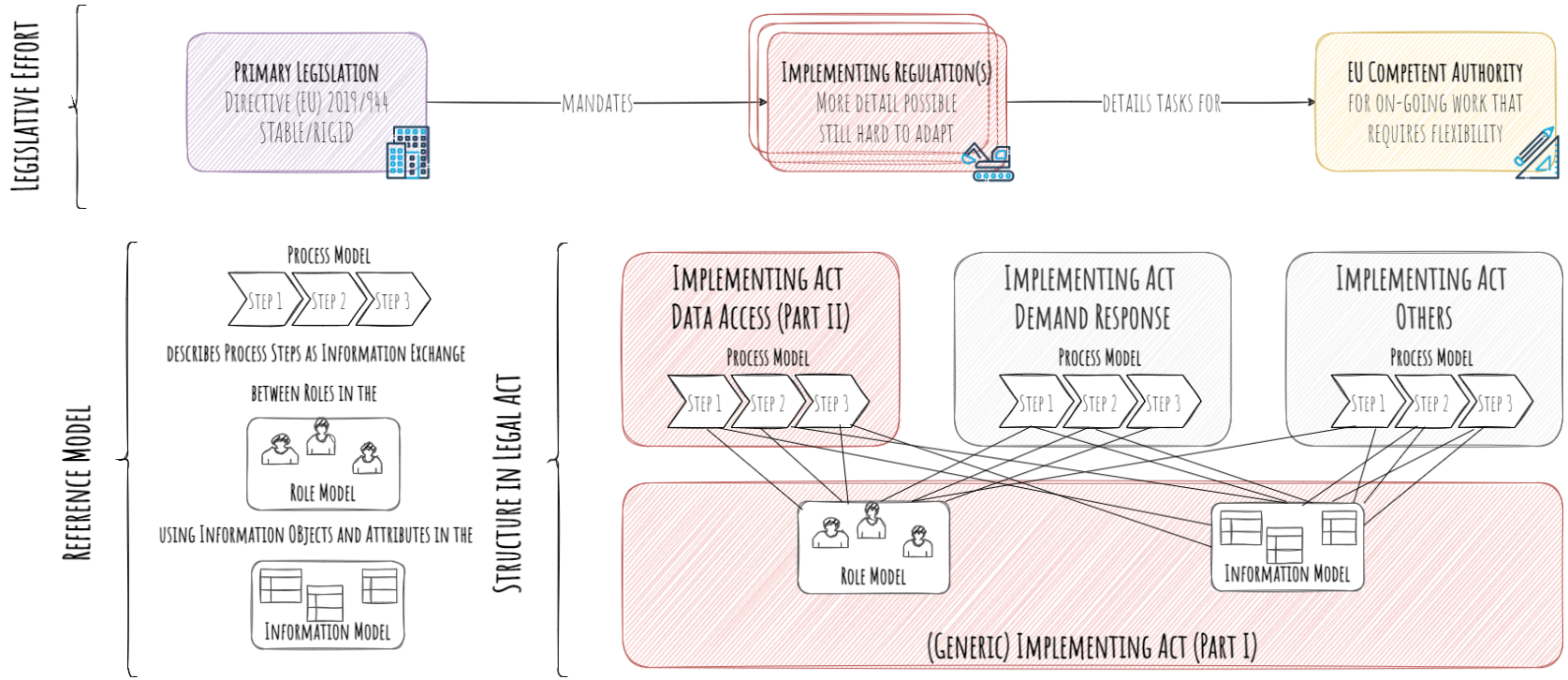
CLEAN ENERGY PACKAGE

Works on the Implementing Acts for Data Interoperability as mandated by Arts 20, 23, 24 of Directive (EU) 2019/944



EU APPROACH

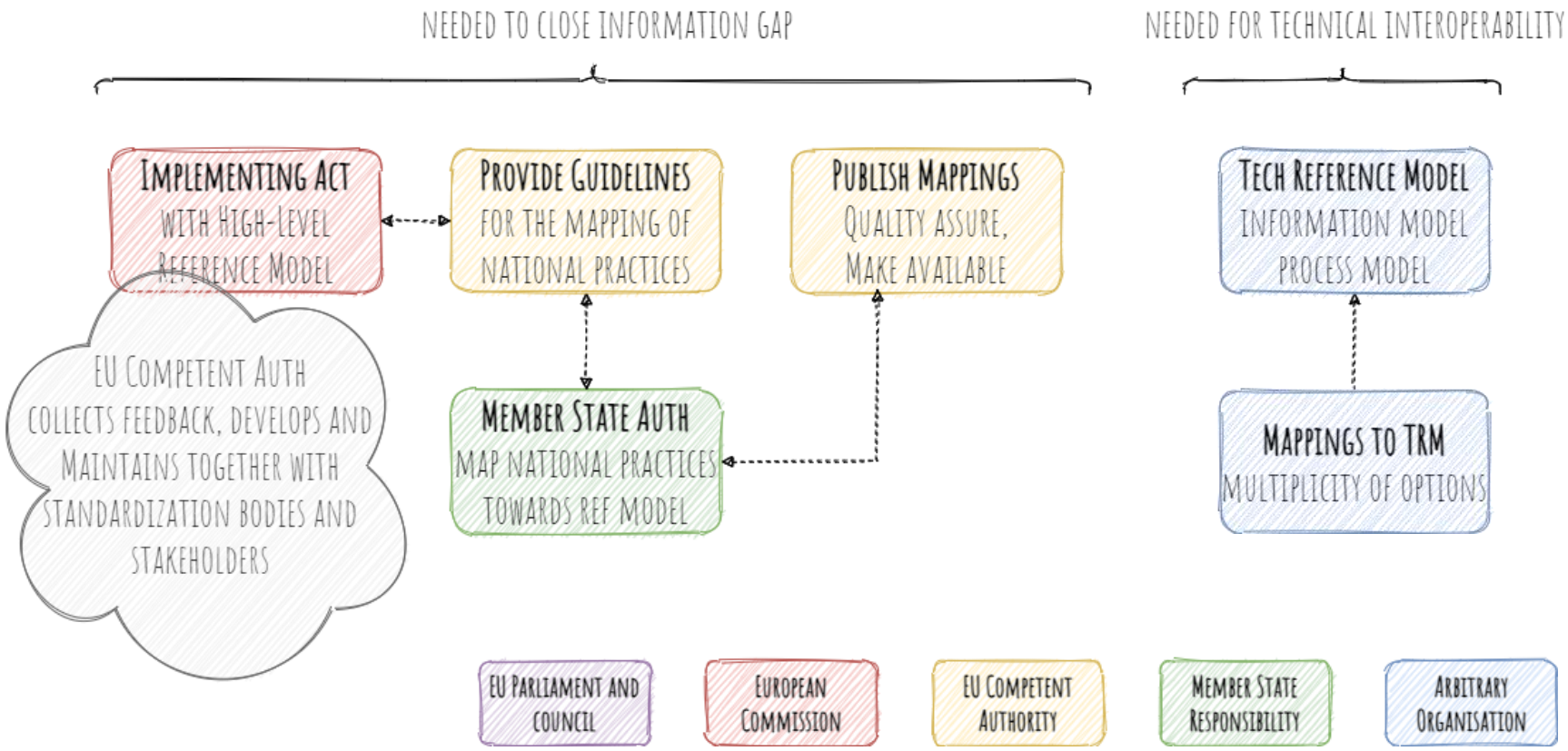
Works on the Implementing Acts for Data Interoperability as mandated by Arts 20, 23, 24 of Directive (EU) 2019/944



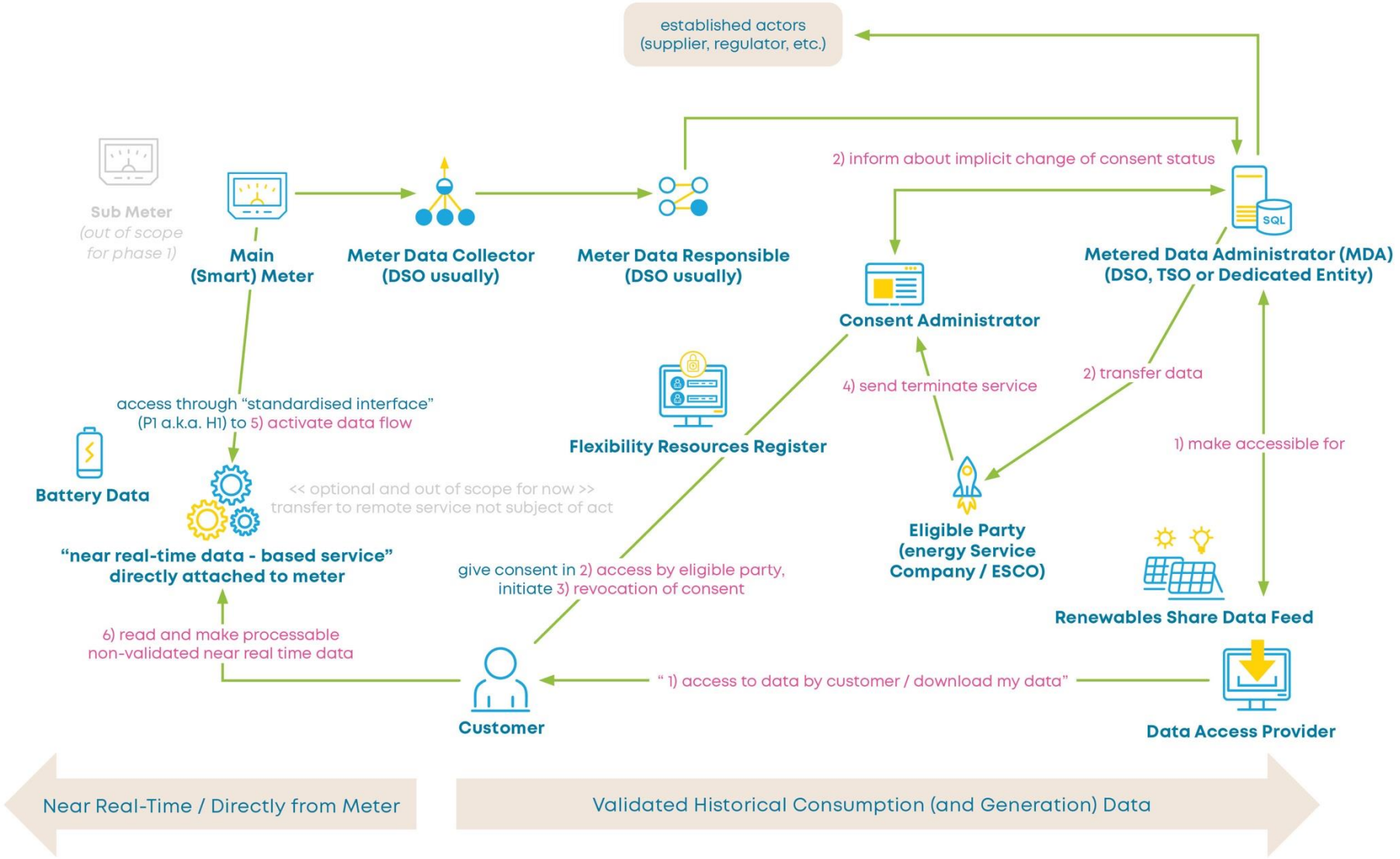
EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

CLOSING THE INFO GAP

Consistent approach across use cases



PRESSING PROBLEM – LATE AVAILABILITY OF VALIDATED DATA

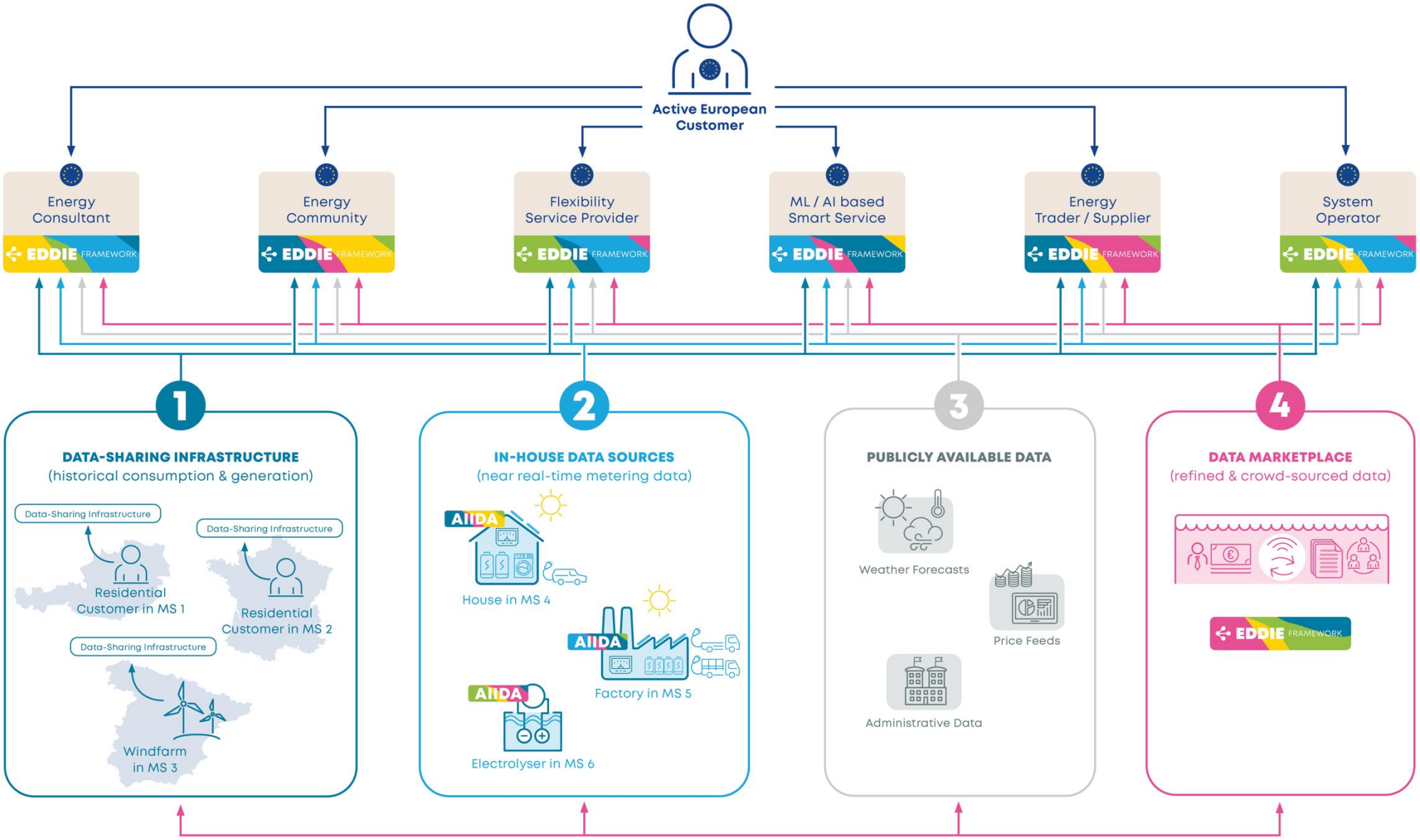


Procedure Conditions

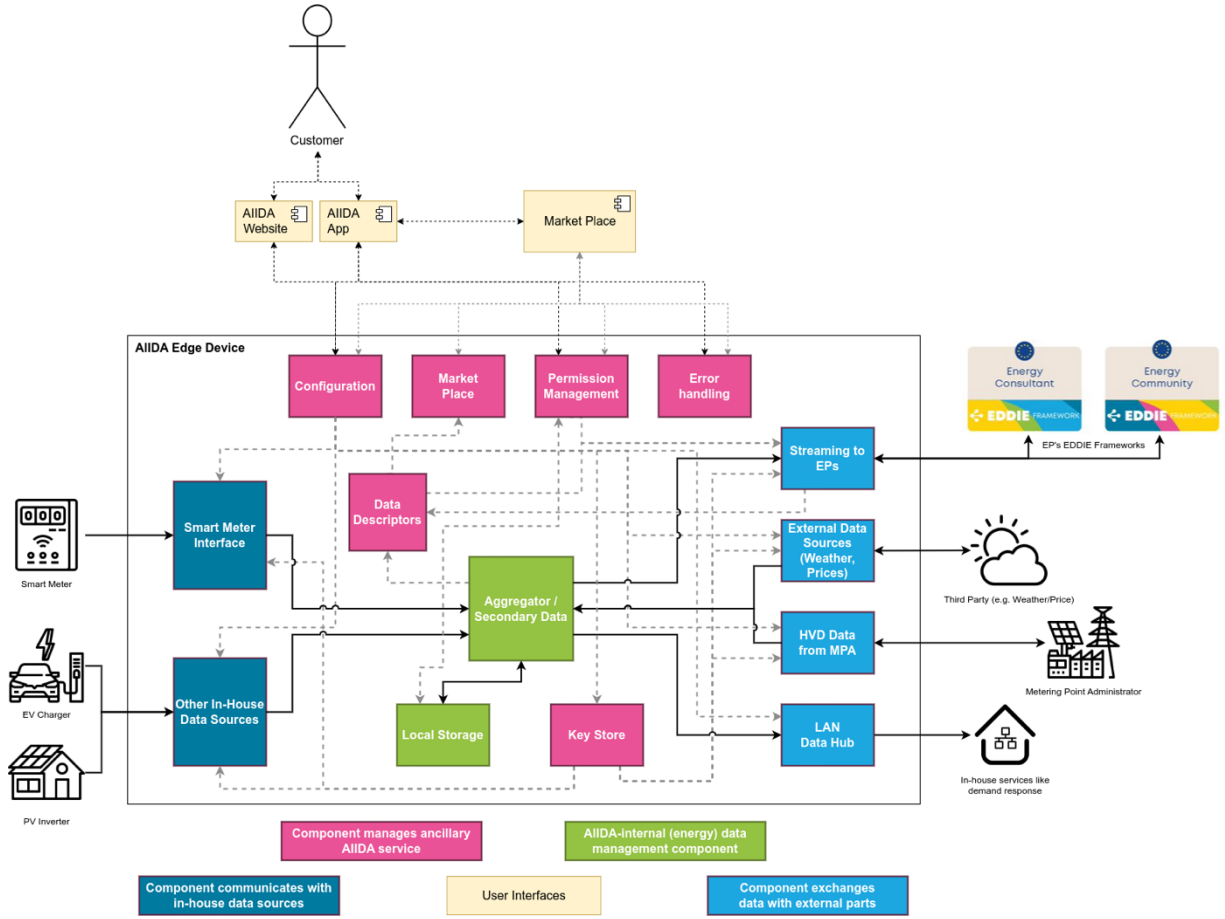
No	*Procedure name*	*Primary actor*	*Pre-condition*
1	Access to validated historical metering and consumption data by the final customer	Final customer	Final customer is on-boarded.
2	Access to validated historical metering and consumption data by an eligible party	Final customer	Final customer is on-boarded. Eligible party is on-boarded.
3	Termination of service by an eligible party	Eligible party	Active permission is available or other legal or contractual basis.
4	Revocation of an active permission by the final customer	Final customer	Active permission is available.
5	Activate near real-time data flow from smart meter or smart metering system	Final customer	Smart meter or smart metering system is installed in metering point of the final customer.
6	Read near real-time data from smart meter or smart metering system	Near real-time data consumption system	Steps in Procedure 5 have been accomplished.

EDDIE CORE VISION – AN INTEGRATED DISTRIBUTED ENERGY DATA SPACE

EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

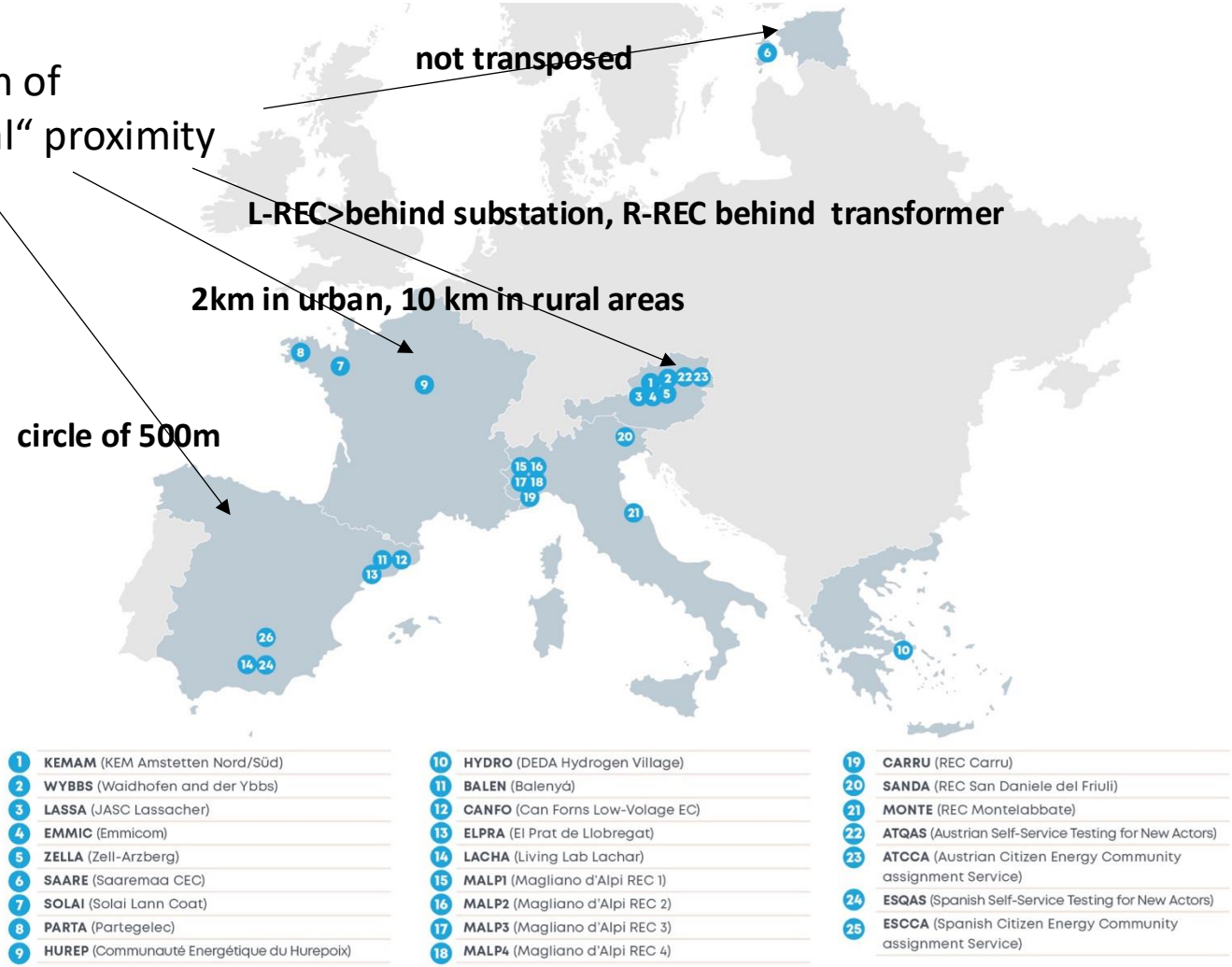


AIIDA – ADMINISTRATIVE INTERFACE FOR IN-HOUSE DATA ACCESS



EXPRESSION OF VICINITY

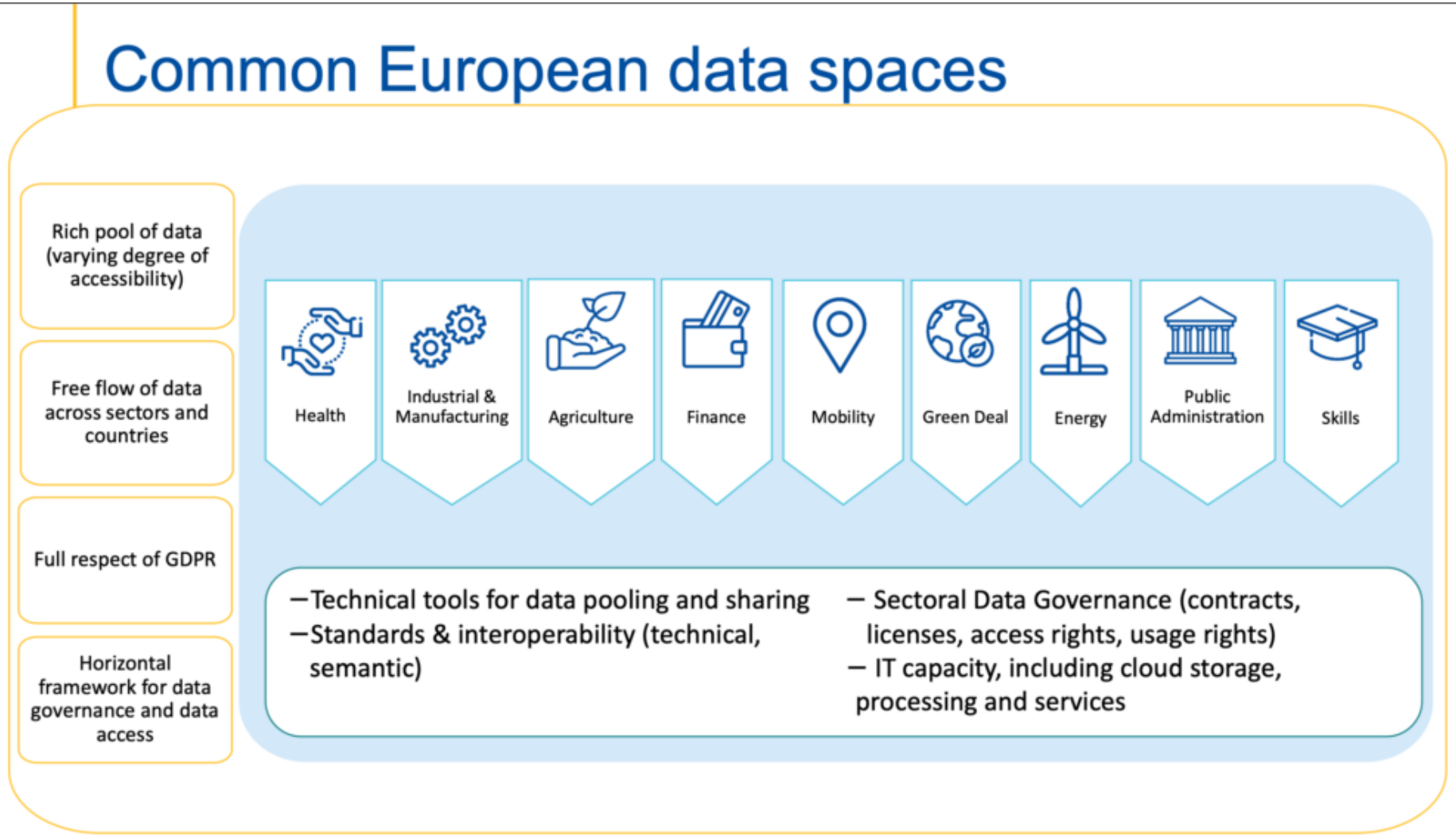
Expression of
„locational“ proximity



INSIEME

Same issue for

- Legal form of Ecs
- Data Formats
- Means of communication
- Timing
- Responsibility for settlement
- Degree of transposition
- …



Source: https://dataspaces.info/common-european-data-spaces/#page-content

SEE INT:NET PROJECT LIST OF INITIATIVES

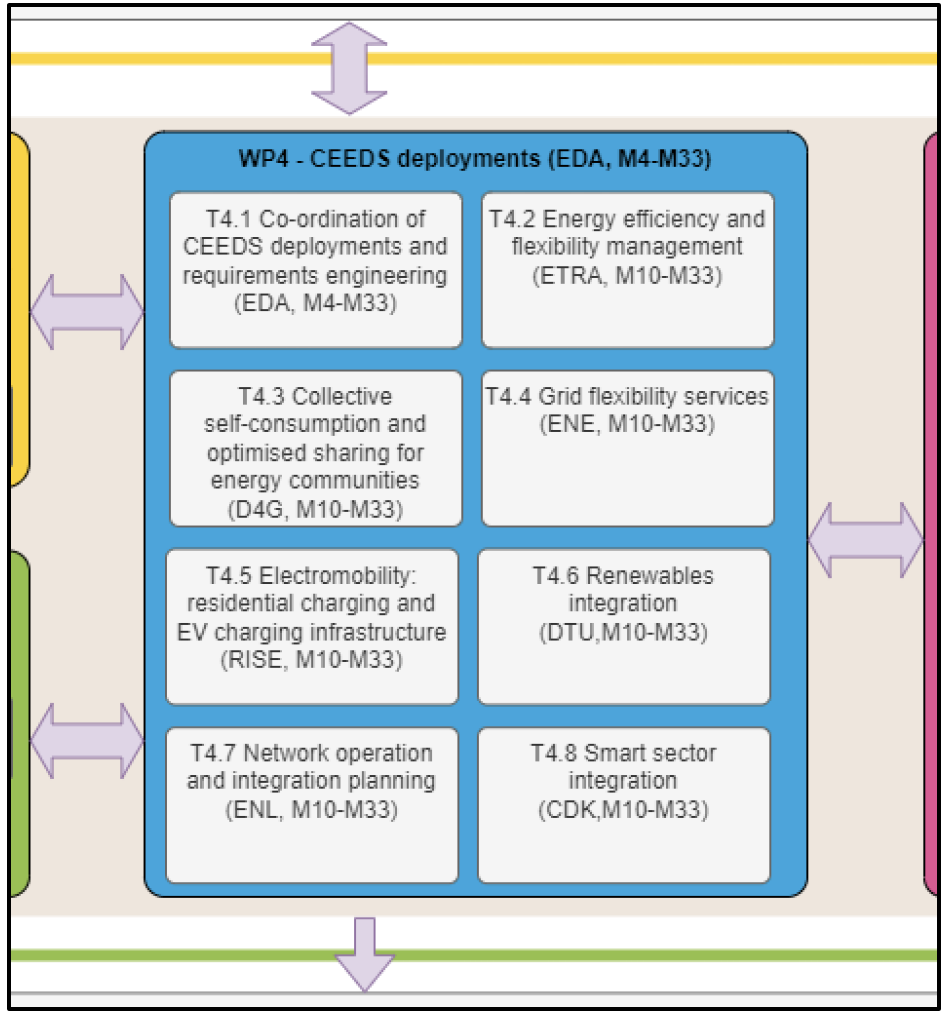
https://community.intnet.eu/projects__initiatives/project_initiatives_list

INSIEME

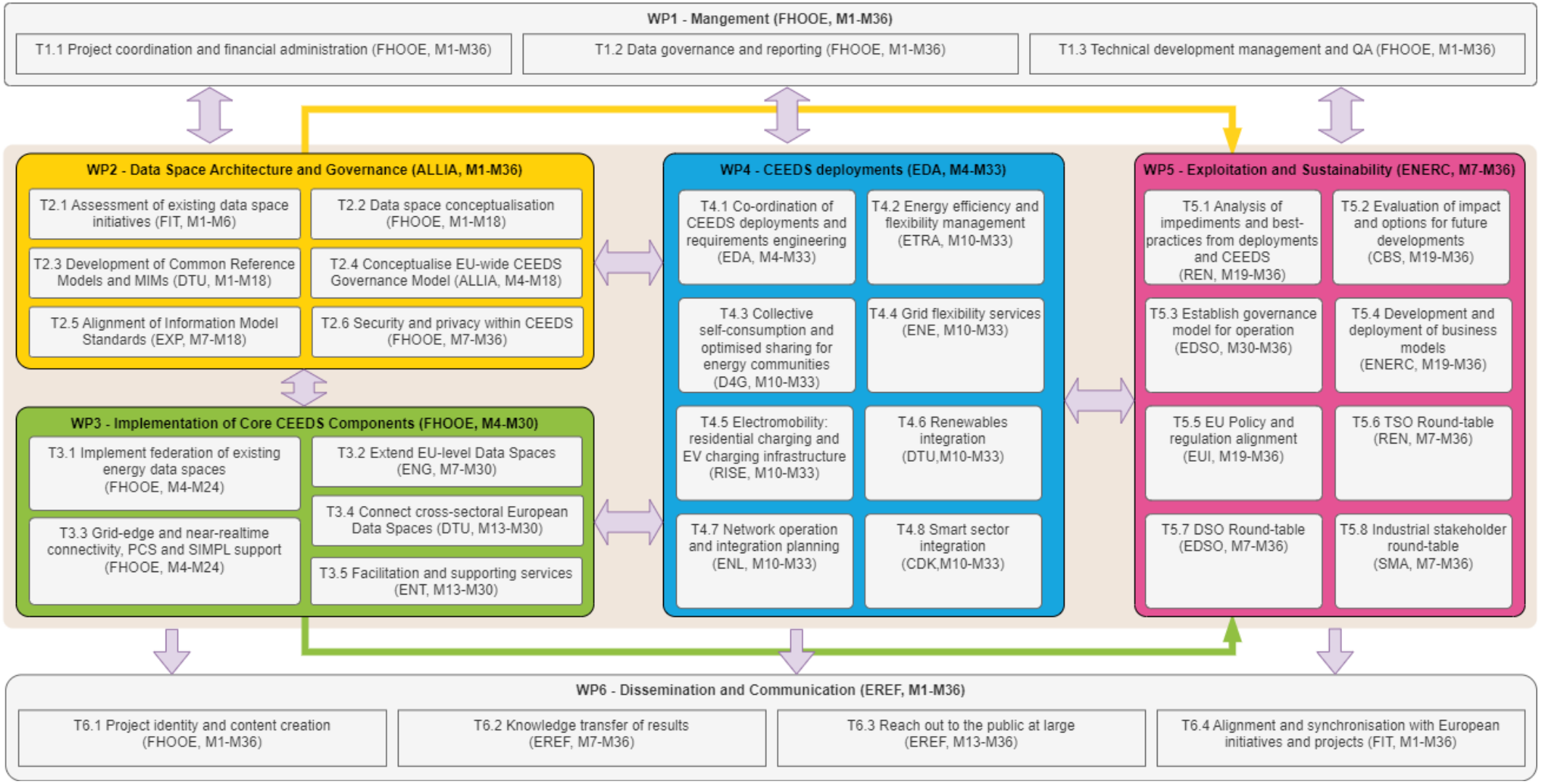
Swedish Partners:
Vattenfall, Volvo, RISE

60 European Partners

16 Mio. Budget

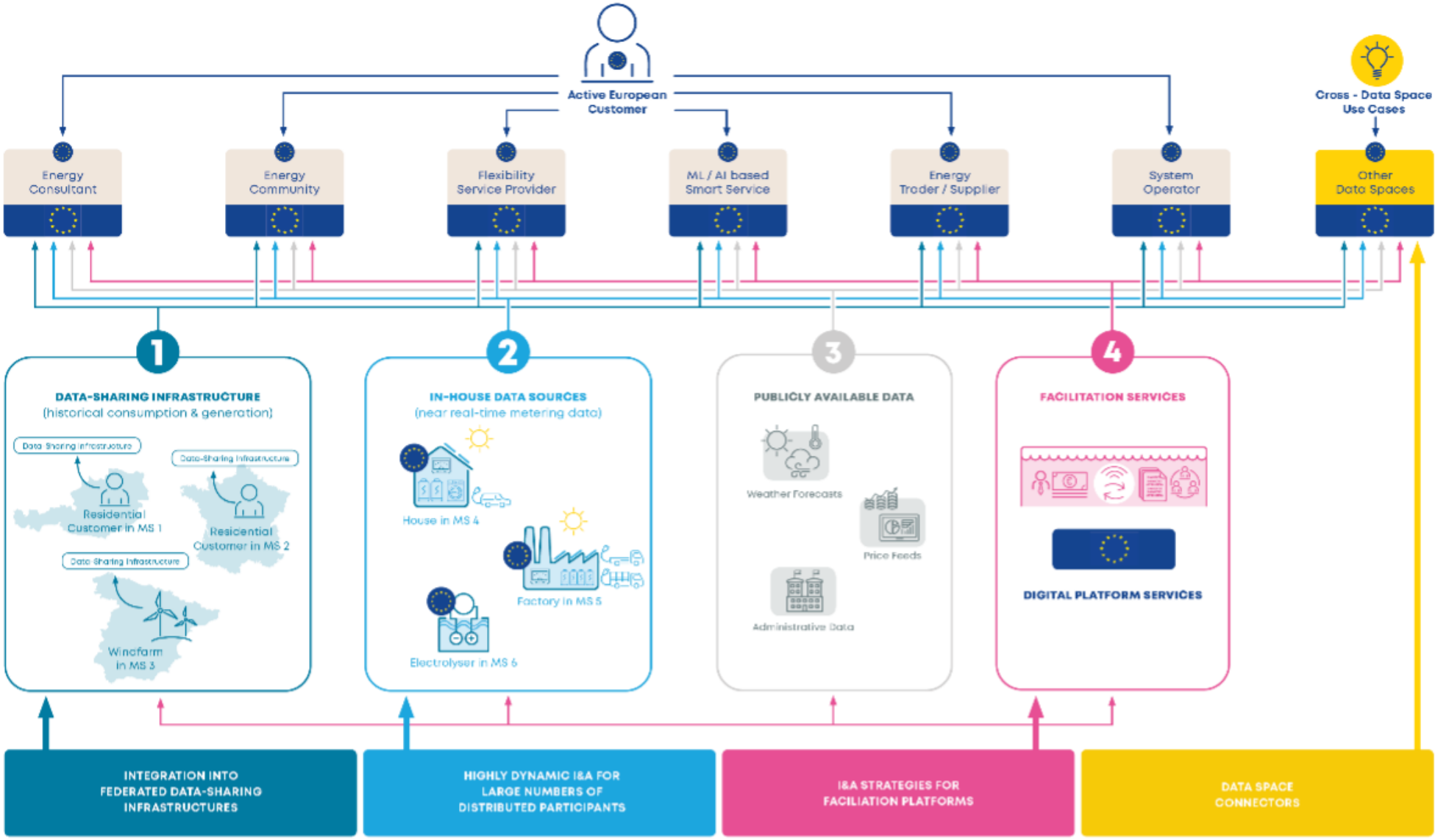


Project INSIEME - Preliminary Work Package Proposal



OUTLOOK 2 – IDENTIFICATION AND AUTHENTICATION IN CEEDS

EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

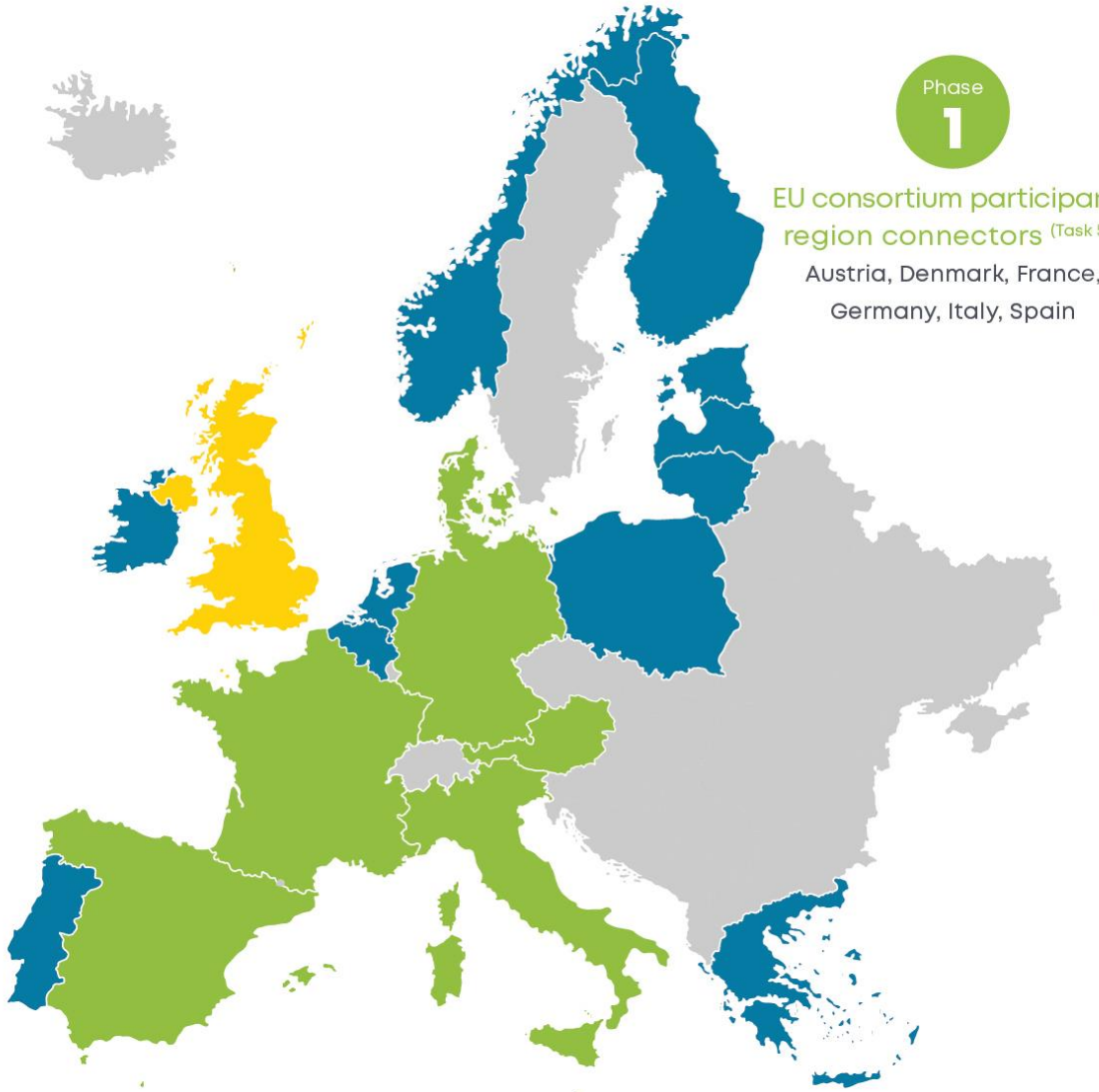


NEW VERTICALS (AND REGIONS)

- Energy Communities and Energy Sharing
- Balancing and Local Market interfaces
- Interactions with Flexibility Registers
- Extendes solutions for “Problem Class 3“
- and much more…

GEOGRAPHICAL SCOPE

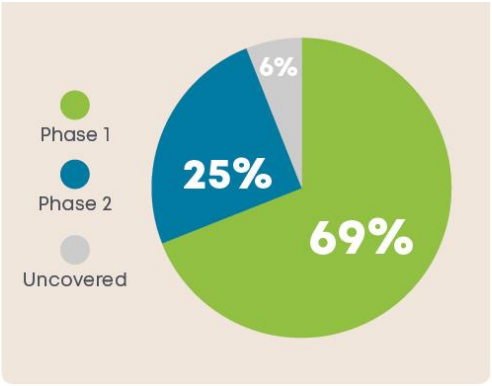
EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY



Phase 1

EU consortium participants region connectors (Task 5.2)

Austria, Denmark, France, Germany, Italy, Spain



Phase 2

Other EU Member State connectors (Task 5.3)

Belgium, Estonia, Finland, Greece, Ireland, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal

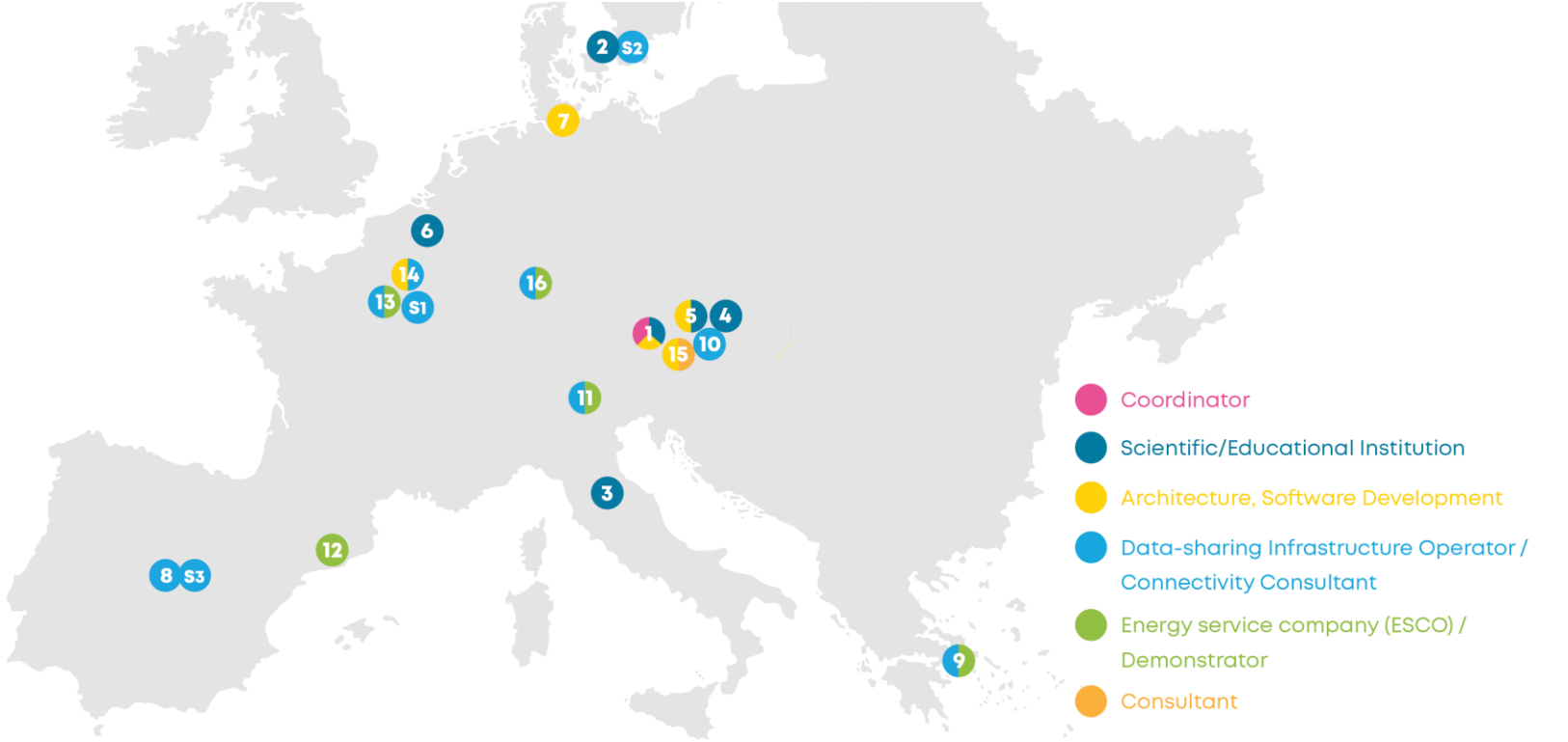
Phase 3

Non-EU connector integration (Task 5.4)

Australia, UK, US

PROJECT CONSORTIUM

EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY



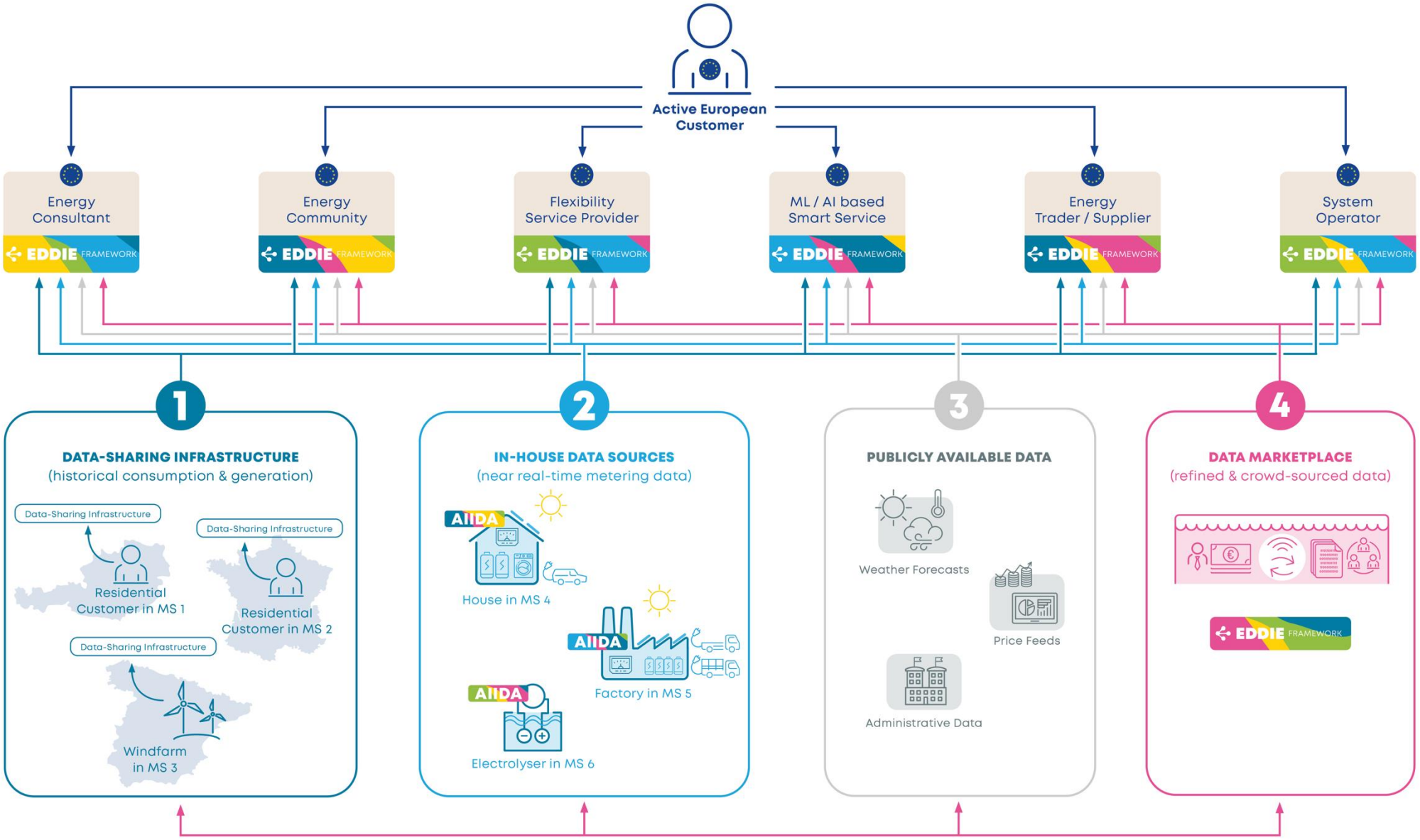
1. University of Applied Sciences Upper Austria – Campus Hagenberg – Research and Development, Hagenberg
2. Copenhagen School of Energy Infrastructure, Department of Economics, Copenhagen Business School, Copenhagen
3. European University Institute, Florence
4. University of Vienna, Faculty of Computer Science, Cooperative Systems Research Group, Vienna
5. Austrian Institute of Technology, Center for Digital Safety & Security, Competence Unit Cooperative Digital Technologies, Vienna
6. The Lisbon Council for Economic Competitiveness and Social Renewal asbl, Brussels
7. PONTON GmbH, Hamburg
8. Asociación de Empresas de Energía Eléctrica (aelec), Madrid
9. DEDA – Public Gas Distribution Networks – Single Member S.A., Athens
10. EDA Energiewirtschaftlicher Datenaustausch GmbH, Vienna
11. Südtiroler Energieverband, Bozen
12. FlexiDAO, Barcelona
13. Digital4Grids, Paris
14. EASEE Gas, Paris
15. Entarc.eu, Waidhofen/Ybbs
16. ETA+ GmbH, Stuttgart

Support:

- S1 Enedis, Paris
- S2 Energinet, Copenhagen
- S3 Plataforma Datadis C.B., Madrid

DISCUSSION

EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY



EDDIE EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

EntArc.eu
Enterprise Architecture

Contact: office@entarc.eu

press@eddie.energy

EDDIE
EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

THANK YOU

georg.hartner@eddie.energy