Platone

PLATFORM FOR OPERATION OF DISTRIBUTION NETWORKS

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PLATform for Operation of distribution NEtworks

Flexibility and retail market options for the distribution grid

Key outcomes from Coordination Workshop

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Participating H2020 projects:

ebalance-plus

EUniversal

FEVER

FLEXIGRID

PARITY

X-FLEX

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The 2nd ES-1 Coordination Workshop

Knowledge exchange is the cornerstone to the uptake of flexibility solutions to optimise the operation, controllability, observability, and resilience of smart distribution networks. Grid innovation pivots on cooperation, transparency and information exchange across the whole energy ecosystem: Distribution System Operators (DSOs), Transmission System Operators (TSOs), markets, customers and aggregators.

To this end, on December 6th, 2022, the Platone project organised a **2nd Coordination Workshop** for Horizon 2020 projects funded under the ES-1 call "*Flexibility and retail market options for the distribution grid*". Following a successful first edition held in April 2021, the event saw the participation of about 50 representatives from the projects ebalance-plus, EUniversal, FEVER, FLEXIGRID, PARITY, and X-FLEX.

The event was hosted by **Selene Liverani** (E.DSO) leading the work on *DSO harmonisation and strategy* in Platone. The opening presentation on how to promote flexibility solutions in the energy system through knowledge exchange was delivered by **Ludwig Karg** (B.A.U.M. Consult), representing the Platone co-founded FlexCommunity[1]. Afterwards, each project delivered a pitch responding to the question "*What steps did you take, and which ones are needed next to overcome the challenges faced by the projects?*".

For the second part of the workshop participants joined different thematic breakout rooms to discuss and exchange knowledge around the following five core topics:

1. **New regulatory impact on innovation** (Moderator: **Selene Liverani,** E.DSO).
2. **Lessons learnt from field testing** (Moderator: **Froso Gralista**, HEDNO).
3. **Customer engagement strategies** (Moderator: **Andreas Corusa**, B.A.U.M. Consult).
4. **Energy communities and active user participation** (Moderator: **Gianluca Nori**, Acea Energia).
5. **Open Source for DSOs** (Moderator: **Ferdinando Bosco**, Engineering).

A presentation of the *stakeholder characterisation survey*[2] created as part of the BRIDGE Initiative was provided by **Andreas Corusa** (B.A.U.M. Consult), diving into how the insights from projects and experts' research can support the development of future engagement strategies.

To conclude the event, the key outcomes of each breakout room were reported by moderators to all participants, as described in the next chapters of this document.

Figure 1: The speakers and moderators of the 2nd ES-1 Coordination Workshop.

[1] For more information on the FlexCommunity: https://flex-community.eu/
[2] To contribute to the survey: https://s2survey.net/stakeholder/

1. New Regulatory Impact on Innovation

The first thematic breakout room was dedicated to *new regulatory impact on innovation*. Participants first discussed the changes that had taken place since the beginning of the ES-1 projects' activities in the **regulatory and legislative landscape** of the EU and its Member States (MS). Since 2019, an increasing interest in the **procurement of flexibility to provide grid services and support long-term planning of distribution networks** has triggered EU-wide discussion and pushed for **increasing TSO-DSO coordination**. The Clean Energy Package (CEP) has been unevenly transposed into national law by numerous MS, as in the case of Citizen Energy Communities (CECs) and Renewable Energy Communities (RECs).

The analysis of **remaining regulatory barriers**, despite the recognised advancements, highlighted how the national transposition of EU directives as "distinct concepts" rather than as a package, resulted in a **lack of harmonisation across the EU**. Among the obstacles to the establishment of (local) flexibility markets, the projects identified the difficulty of **capturing the long-term value of flexibility in clear business models**, the gaps in **regulation on aggregation**, and the too-slow introduction of **tariff schemes, new connection agreements and incentives** for the procurement of flexibility from DSOs. Lastly, the need for **real-time data**, on top of smart meters' generated data, and **investment in advanced monitoring and measurement systems** was recognised as a paramount challenge to address to unlock flexibility potential. A fast response to these requirements from national policy, together with the EU-level one, is needed to foster **scalability and replicability** of developed flexibility solutions. Differences across MS and regional specificities shall be addressed by the development of interoperable but tailorable tools.

Regulatory sandboxes were recognised as enablers of regulatory innovation, fostering engagement of different stakeholders in the energy ecosystem (market operators, aggregators, DSOs, TSOs, …). Although the implementation of sandboxes varies across MS in terms of organisational and legal structure, a common fundamental need that emerged is the necessity to keep calls for sandboxes updated to reflect overall challenges to innovation and society overall. In this context, Horizon-funded projects can be regarded as sandboxes themselves, offering a strong example to lead innovation in the industry, facilitating interaction across pilots from different countries and fostering the involvement of regulators and policymakers.

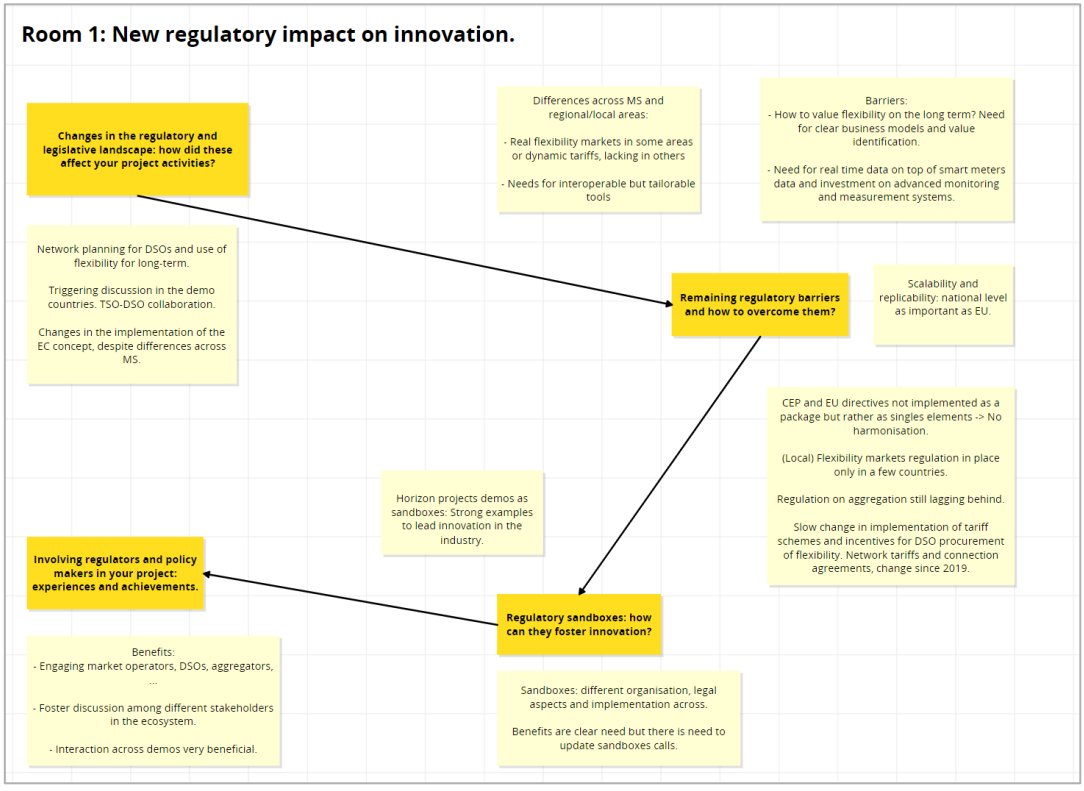

Figure 2: Outcomes of the discussion on *New regulatory impact on innovation*.

2. Lessons Learnt from Field Testing

The second thematic breakout room was dedicated to *lessons learnt from field testing.* Participants exchanged on their **different approaches to exploit flexibility in distribution grids**, ranging from **dynamic electricity tariffs** to **market-based solutions and trading platforms**. The ES-1 projects are testing the use of flexibility offered by a variety of resources including storage systems, electric vehicles (EVs), heating technologies and energy management systems (EMS). While highlighting **the importance of cross-sector integration** to boost the energy transition, experience from the field remarked the need to consider the **different requirements and drivers of stakeholders in the energy ecosystem** when designing new successful business models.

The projects then discussed the challenges they faced during the implementation of their demo activities and agreed on the fact that many **regulatory barriers are yet to be overcome**. Differences across member states' regulations, incentives and approval processes call for an **EU-wide solution driving a common understanding and value creation for flexibility**. Special attention was dedicated to **interoperability challenges** hindering the integration and interaction among DSO's legacy systems and novel IoT (Internet of Things) solutions, which call for the **harmonisation of communication protocols** across the EU. On top of these, the existence of **different standards for connection, baselining and control of flexible resources** also posed technical challenges in the pilot activities.

Lastly, looking at learnings from **engagement strategies** in the demos, the projects recognised that **well-designed incentives to prosumers** play a fundamental role in the procurement of flexibility, offering an alternative to costly reinforcements of distribution grids. In this respect, **awareness and information campaigns** have proved to be powerful tools to foster interaction with users and increase the know-how of DSOs.

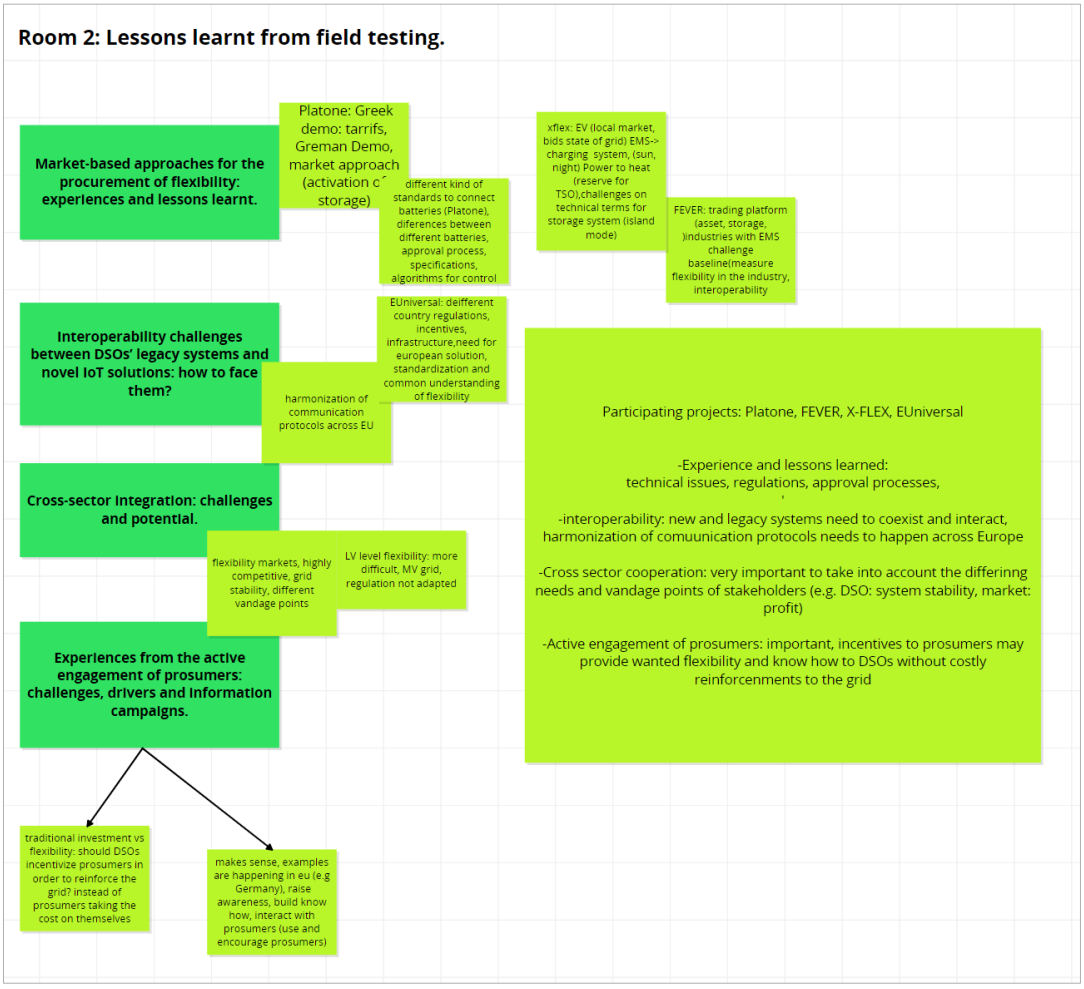

Figure 3: Outcomes of the discussion on *Lessons Learnt from Field Testing*.

3. Customer Engagement Strategies

The third thematic breakout room was dedicated to *customer engagement strategies.* The discussion first looked at the obstacles to customer engagement in local flexibility markets and identified three main ones: the (perceived) **impact on lifestyle**, the **change in costs and potential revenues**, and the **barriers posed by regulation**. It should be noted that, while electricity has historically been a low involvement good, current developments have made the **role of the user in the power system increasingly interactive and visible** and involvement strategies should evolve according to this change.

Based on these findings, the projects recognised four target areas for policy action and engagement strategies. First, the design of **action plans for education and communication**. Second, the **provision of incentives to minorities** and stakeholder segments that are harder to reach. Third, the **management of conflicts of interest** among market stakeholders and last, the **application of behavioural research and methods**.

Later, participants discussed the **interaction across user engagement strategies and Information and Communication Technology (ICT)**. While digital solutions can offer support and increase outreach, engagement activities should not solely rely on them. The **establishment of an emotional connection** represents an important factor to gain the attention of involved actors. The creation of a physical space for interaction, managed by experienced moderators or mediators, has proved to be beneficial. At the same time, barriers connected to the **acceptance of new technologies** should be taken into account: **information needs to be communicated in a simple, understandable and trustworthy way**.

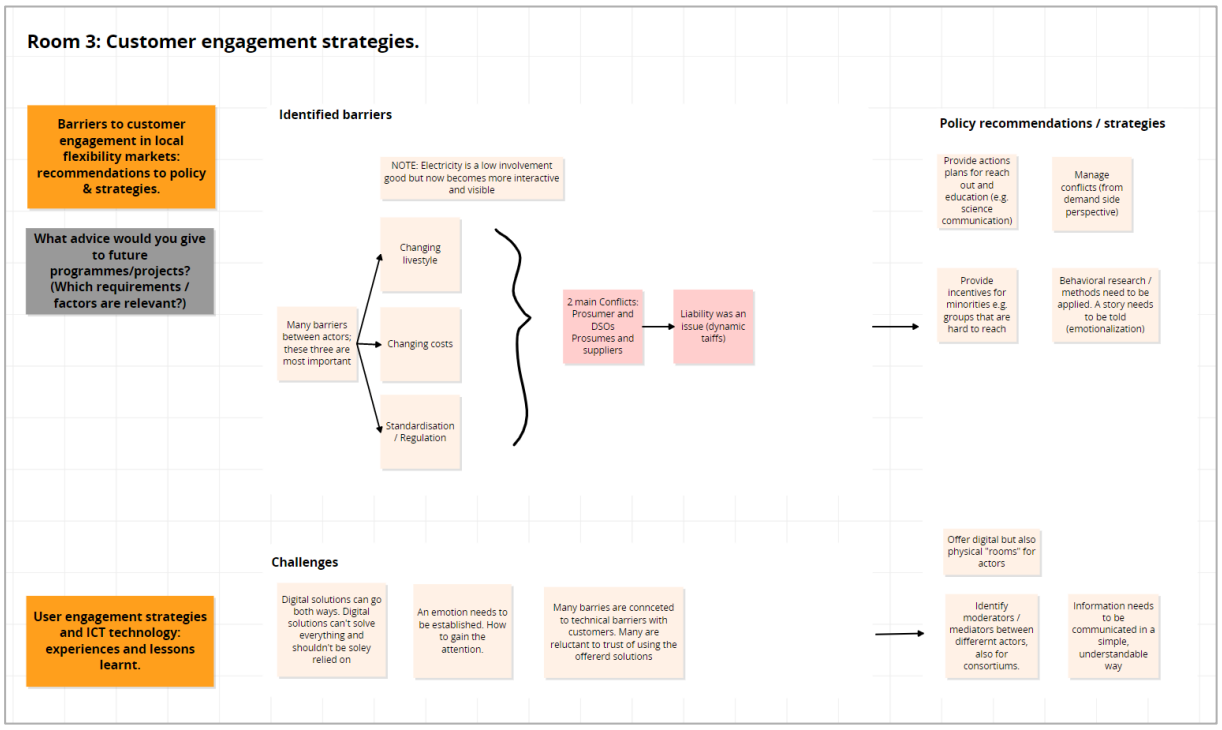

Figure 4: Outcomes of the discussion on *Customer Engagement Strategies.*

4. Energy Communities and Active User Participation

The fourth thematic breakout room was dedicated to *energy communities and active user participation.*

The projects first discussed the needs to be addressed for the active participation of energy communities (ECs) in flexibility solutions. Firstly, establishing **effective communication with community members is fundamental**. Technical aspects should be explained easily and understandably while benefits from participation for the community should be made clear. In this respect, the involvement of energy communities through bottom-up approaches that leverage on social responsibility has proved to be successful. Secondly, **minimum requirements and characteristics of ECs should be defined** to allow **both DSOs and prosumers to benefit respectively from the procurement and offering of flexibility**. Lastly, tools such as **blockchain and smart contracts** should be investigated and integrated to effectively unlock the flexibility potential of ECs.

Lastly, the projects looked at the opportunities stemming from the **cooperation between DSOs and ECs**. ECs offer a valuable platform to **investigate user participation** and understand their behaviour in a context in which **social responsibility emerges as an important driver besides economic return**. At the same time, ECs allow **testing the provision of bundles of services** to and from its members and evaluate the efficacy of implemented tools at an aggregated level. To this end, a recommendation from the projects' experience is to **organise workshops** at the beginning of pilot operations to **understand the characteristics of the involved ECs and optimally design interactions among stakeholders**.

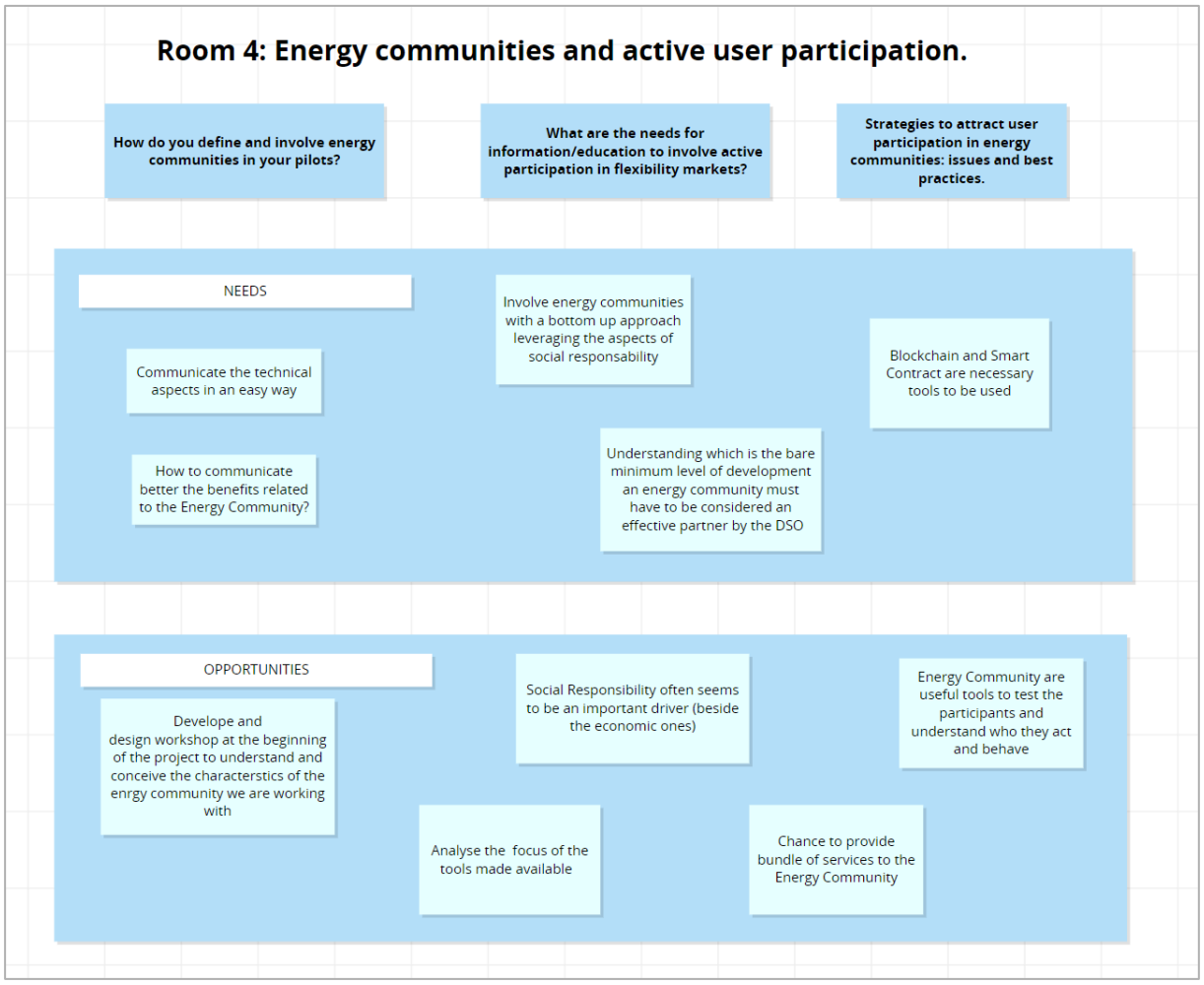

Figure 5: Outcomes of the discussion on *Energy Communities and Active User Participation.*

5. Open Source for Distribution System Operators

The fifth thematic breakout room was dedicated to *Open Source for Distribution System Operators.*

The projects first shared insights from the development and testing of different open solutions, which include modular frameworks that are interoperable with DSOs' legacy systems and APIs that aim to fulfil DSOs' needs while integrating information from third-party platforms. Among the identified barriers against the adoption of Open Source by DSOs were the **lack of ICT know-how, data access and privacy concerns, and gaps in specific regulations**. Nevertheless, the projects highlighted that the adoption of **blockchain and distributed ledger technologies** can significantly lower these concerns by **increasing transparency and trust**.

Moreover, the participants discussed the benefits of the adoption of open solutions and recognised that these **accelerate innovation and adoption of standards** while offering **easiness of adoption, integration and use**. To further support their uptake in the power distribution sector, however, **Open Source approaches should be supported and incentivised at EU policy level**. The **establishment of a European entity focusing on the promotion of interoperability** should be regarded as beneficial. While initiatives such as BRIDGE support the progress and interaction of projects during their implementation, **a reference entity to support the exploitation of projects' results is still lacking**.

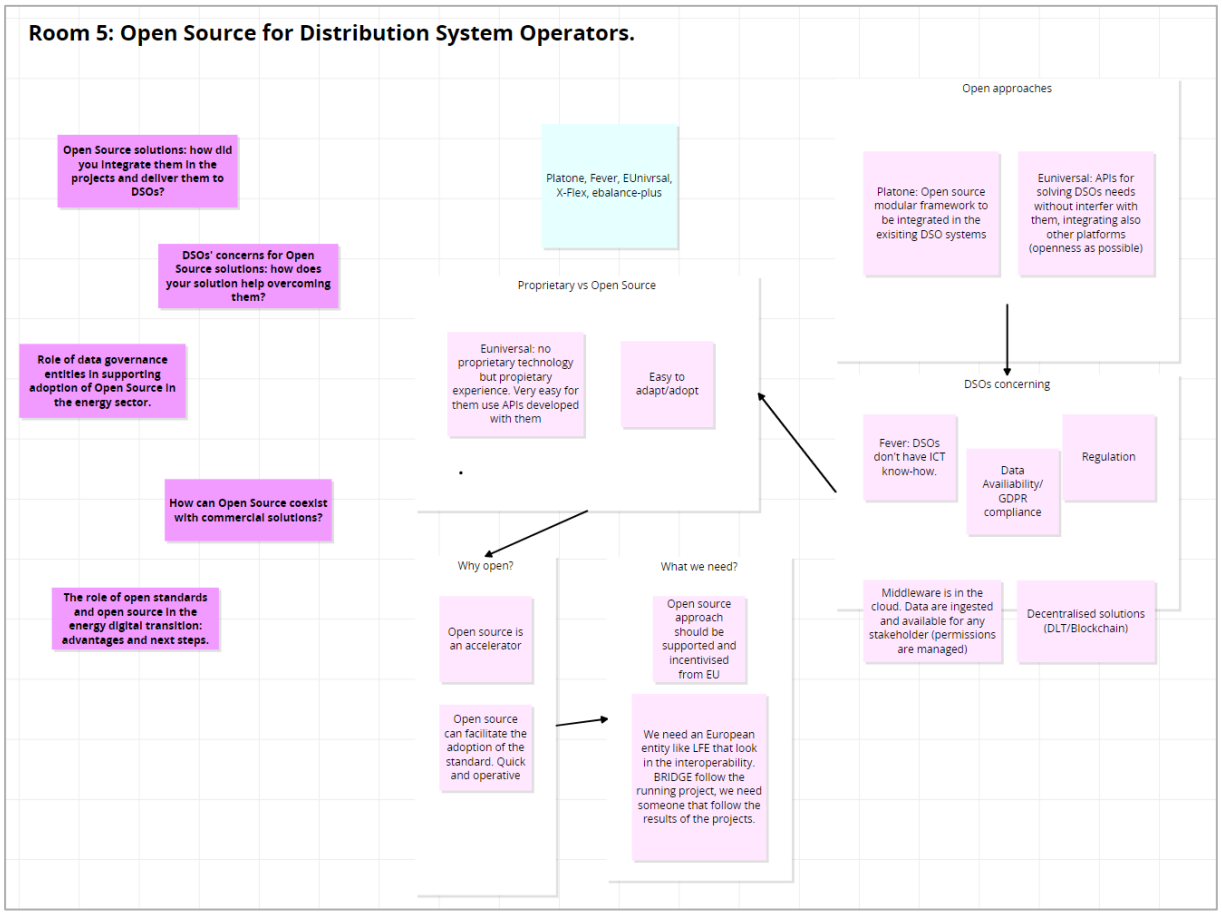

Figure 6: Outcomes of the discussion on *Open Source for Distribution System Operators.*

Conclusions

Since the beginning of the Platone project activities, fruitful interactions and collaborations have been established with Horizon 2020 sister projects and initiatives in the smart grids' domain. Notable examples include the co-funding of the FlexCommunity, and the participation in the BRIDGE[3] and OPEN DEI[4] activities. International cooperation was sought through the partnership with the Distributed Energy Management Initiative (DEMI) of the Northern Alberta Institute of Technology (NAIT)[5].

In this context, the 2nd Coordination Workshop, participated by seven projects answering the call "*Flexibility and retail market options for the distribution grid*", once again proved the value of knowledge sharing as an enabler of innovation. Participants worked together to identify remaining barriers to the rollout of flexibility solutions, exchange best practices and formulate recommendations for the final steps of their activities and future initiatives.

The results of this workshop, as part of the successful engagement and cooperation strategy of Platone, will pave the way for the exploitation of the project's solution after the conclusion of its activities in August 2023.

Figure 7: The projects participating to the 2nd ES-1 Coordination Workshop.

[3] More on Platone and BRIDGE: https://www.platone-h2020.eu/News/2258/Platone%E2%80%99s-cooperation-activities-%E2%80%93-How-Platone-is-involved-in-the-BRIDGE-initiative
[4] More on Platone and OPEN DEI: https://www.platone-h2020.eu/News/2260/Platone%E2%80%99s-cooperation-activities-%E2%80%93-How-Platone-is-involved-in-the-OPEN-DEI-project
[5] More on Platone and DEMI: https://www.platone-h2020.eu/News/2259/Platone%E2%80%99s-cooperation-activities-%E2%80%93-How-Platone-is-working-together-with-the-Ueniversity-of-Alberta-in-Canada

Appendix: The Platone project.

The project "*PLATform for Operation of distribution Networks – Platone*" aims to develop an architecture for testing and implementing a data acquisition system based on a two-layer Blockchain approach: an "Access Layer" to connect customers to the Distribution System Operator (DSO) and a "Service Layer" to link customers and DSO to the Flexibility Market environment (Market Place, Aggregators, …). The two layers are linked by a Shared Customer Database, containing all the data certified by Blockchain and made available to all the relevant stakeholders of the two layers.

The Platone Open Framework architecture allows greater stakeholder involvement and enables efficient and smart network management. The tools used for this purpose will be based on platforms able to receive data from different sources, such as weather forecasting systems or distributed smart devices spread all over the urban area. These platforms, by talking to each other and exchanging data, will allow collecting and elaborating information useful for DSOs, TSOs, markets, customers and aggregators. In particular, the DSOs will invest in a standard, open, non-discriminatory, blockchain-based, economic dispute settlement infrastructure, to give both the customers and the aggregator the possibility to more easily become flexibility market players.

The Platone solution will allow the DSO to acquire a new role as a market enabler for end users and a smarter observer of the distribution network. By defining this innovative two-layer architecture, Platone strongly contributes to aims to removing technical and economic barriers to the achievement of a carbon-free society by 2050, creating the ecosystem for new market mechanisms for a rapid rollout among DSOs and for a large involvement of customers in the active management of grids and in the flexibility markets. The Platone platform is being tested in three European demos (Greece, Germany and Italy) and within the Distributed Energy Management Initiative (DEMI) in Canada.

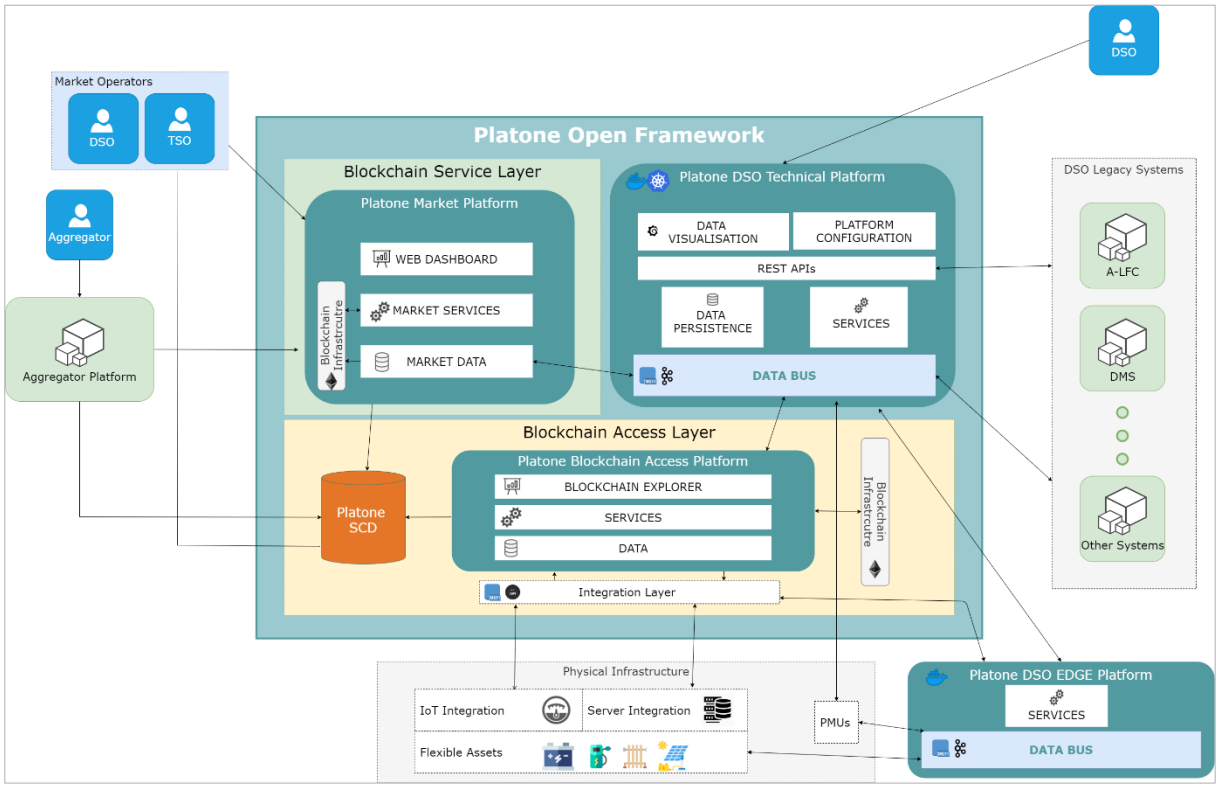

Figure 8: The Platone Open Framework.