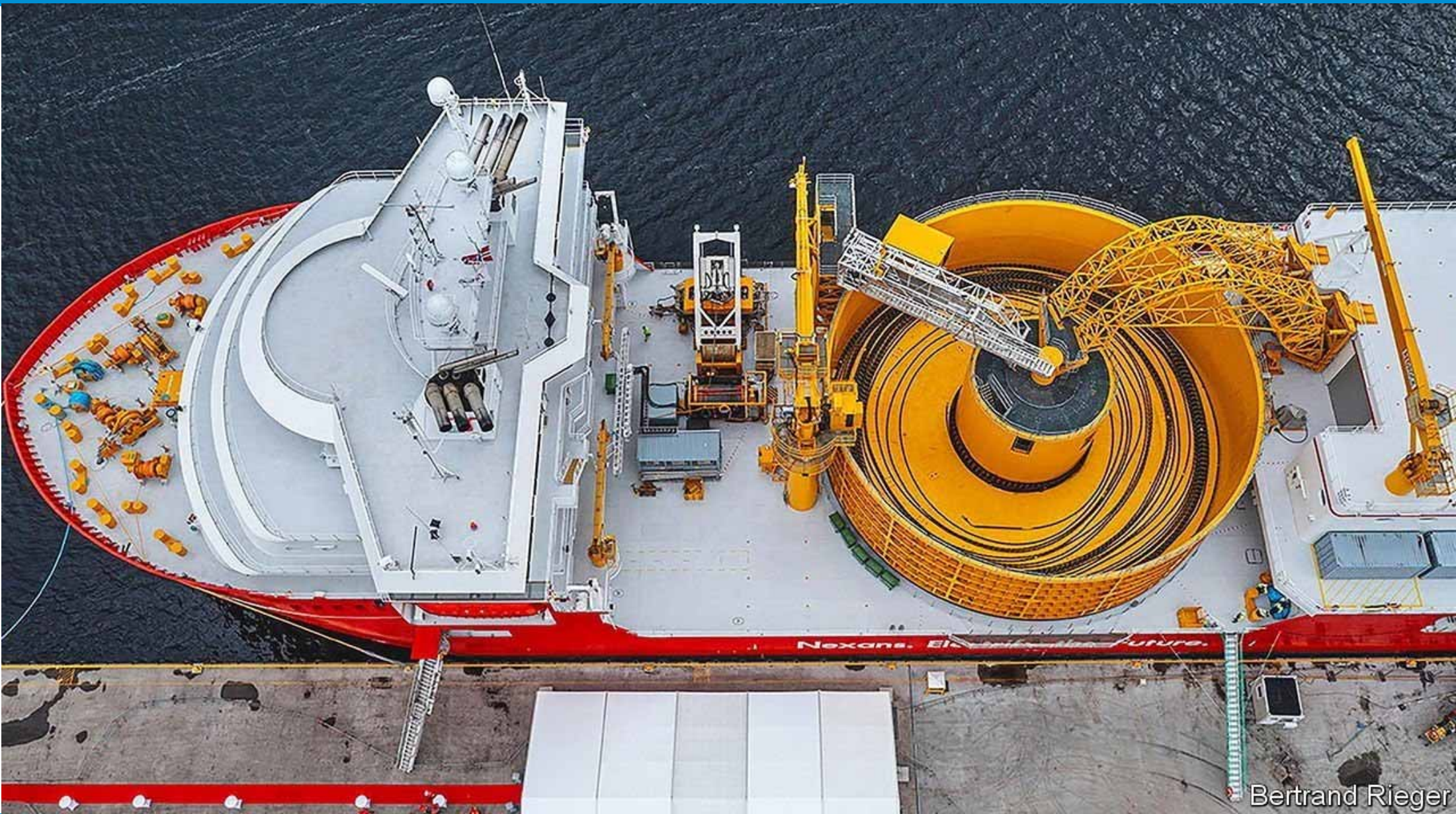


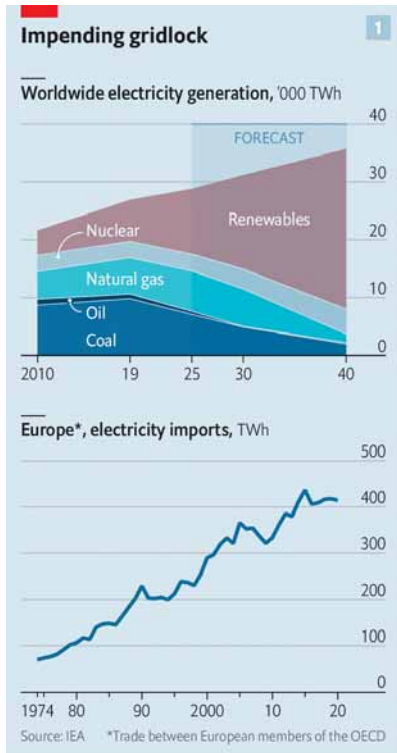
**Propuesta de valor
de las tecnologías
digitales para los
nuevos servicios
energéticos
derivados de la
transición energética**





Bertrand Rieger

Previsiones a 2030



The Economist

~510 GW

50 - 70M EV












~470 GW

~40 GW

2% 460Mtoe

ESG

Servicios Energéticos #1

		Type of utility	Thermal generation	Renewable generation	Transmission	Distribution	Electricity retail	Energy services	Non-energy services
Europe		Integrated	Reduce	Grow	Maintain	Grow	Maintain	Grow	Not active
		Integrated	Maintain	Grow	Maintain	Maintain	Maintain	Grow	Grow
		Integrated	Maintain	Grow	Not active	Grow	Grow	Reduce	Reduce
		Retail + grid	Not active	Not active	Not active	Maintain	Maintain	Grow	Grow
		Integrated	Maintain	Grow	Grow	Grow	Grow	Grow	Reduce
		IPP	Reduce	Grow	Not active	Not active	Not active	Not active	Not active
		IPP	Reduce	Maintain	Not active	Not active	Maintain	Grow	Not active
		Integrated	Maintain	Grow	Not active	Reduce	Grow	Grow	Grow
United States		Integrated	Reduce	Maintain	Grow	Grow	Grow	Grow	Explore
		Integrated	Maintain	Grow	Grow	Grow	Maintain	Grow	Not active
		Integrated	Maintain	Grow	Grow	Grow	Reduce	Grow	Not active

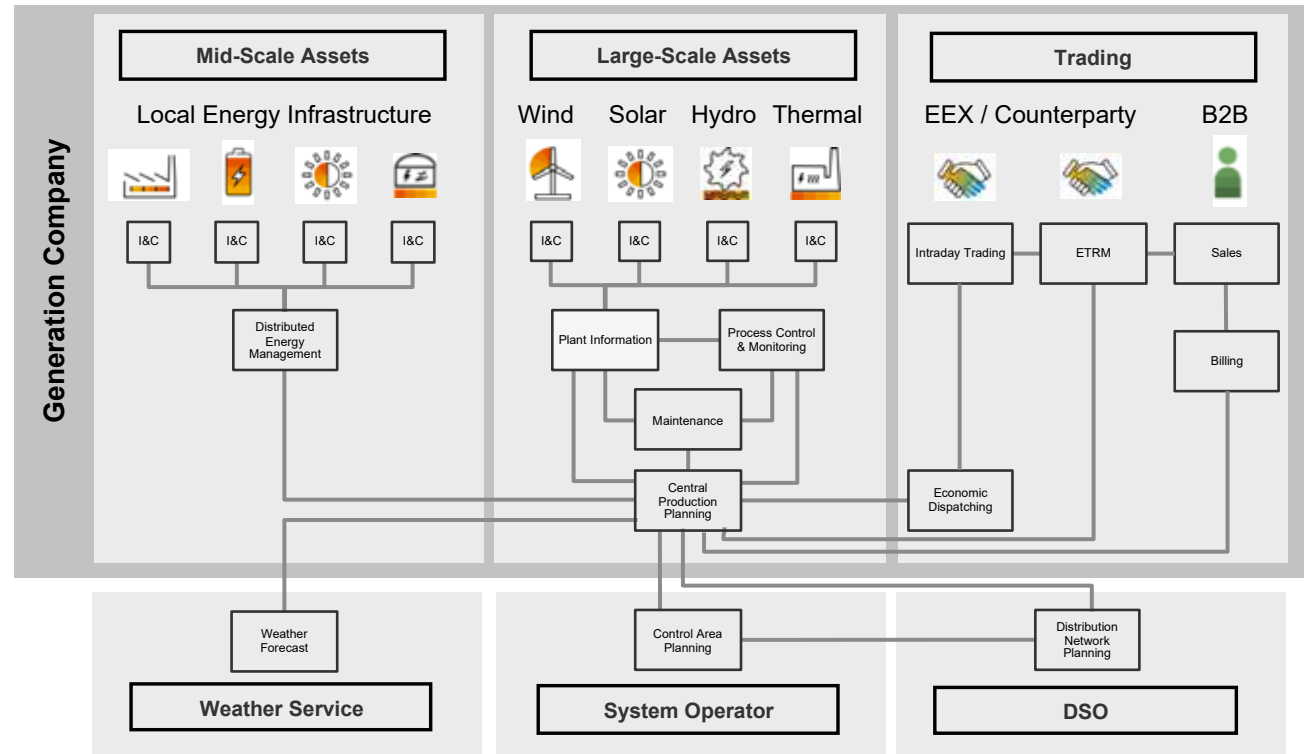
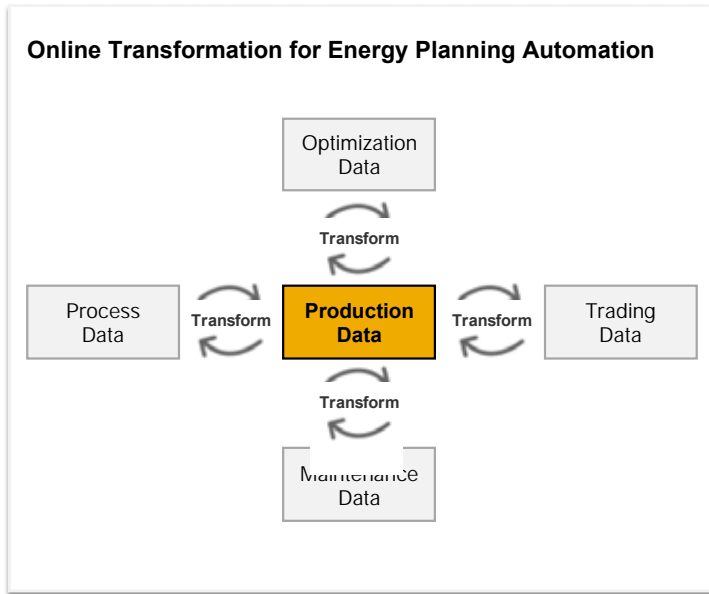
Source: BloombergNEF

El nuevo paradigma energético de flexibilidad: LA PLATAFORMA



- Planificación a corto plazo de recursos energéticos
- Coordinación de forma centralizada la cartera de producción y energía
- Implementar estrategias de optimización económica y power-2-x

Plataforma integral de energía



El nuevo paradigma energético de flexibilidad: LA PLATAFORMA



- Planificación a corto plazo de recursos energéticos
- Coordinación de forma centralizada la cartera de producción y energía
- Implementar estrategias de optimización económica y power-2-x
- Orquestación servicios de energía de acuerdo a normativa GDPR
- Servicios de flexibilidad B2B para Transportistas (balances, reservas ...) y Distribuidoras (control de voltaje,...)
- Conectividad e interoperabilidad con elementos de la red
- Almacenamiento en red
- Plataforma de gestión en 'near real time' para la gestión de la información de los **DSO** (SCADA, Smart Meter Management, planning, ADMS,..) con la información de los **agregadores** y los **DERs**

Modelo probado y en constante evolución

Digital Network and Platform

1 Overview

Champion: **ENERCORA**

Partners: **Enel, E.ON, Scytl, etc.**

Workstream 5: Digital Network and Platform

Main goals

- Deliver value to customers, generators, distributors and shippers integrating flexibility services in network planning and grid operation by developing platforms and through data exchange
- Customers: Platforms set up to integrate customers' flexibility and transfer their value
- Generators: Integrate distributed resources locally and efficiently, complying with national and EU decarbonisation targets
- Distributors: Combine grid and third party's resources to extract value for the system (customers, TSO) aggregation, regulation... (through a more efficient usage of the grid)

Short description and milestones etc.

- 2024: Integrated DSO platforms.** Integration of DSO tools will allow extracting the added value from the interaction between DSOs and VPPs to improve traditional DSO activities and offer a better service to customers/generators while reducing grid operation costs. The development of a platform to manage RMM is included here to ensure faster grid access for generators in areas with capacity constraints and higher return by exporting energy before congestions are reached.
- 2024: Platform for near real-time grid data.** For efficient grid operation (i.e., power flow optimisation) grid observability will be key to the DSOs (in compliance with Article 40.8 of NREX). A platform to exchange near real-time information between the DSOs and VPPs (directly or through aggregation/generation control centers) is necessary for that.
- 2024: Platform to manage flexibility services.** DSO-DSO interaction coordination, allowing ancillary services provision and network constraints relief. It enables an efficient integration of DSOs by taking advantage of their flexibility and reduce the necessary grid expansion. Customers and distributed generators will be incentivised to offer services to the grid.
- 2024: Cybersecurity to system architecture.** Since the electricity grid is increasingly dependent in digital equipment, cybersecurity plans with minimum common requirements need to be implemented across all DSO systems, which includes the cybersecurity assessment of the proposed platforms above.

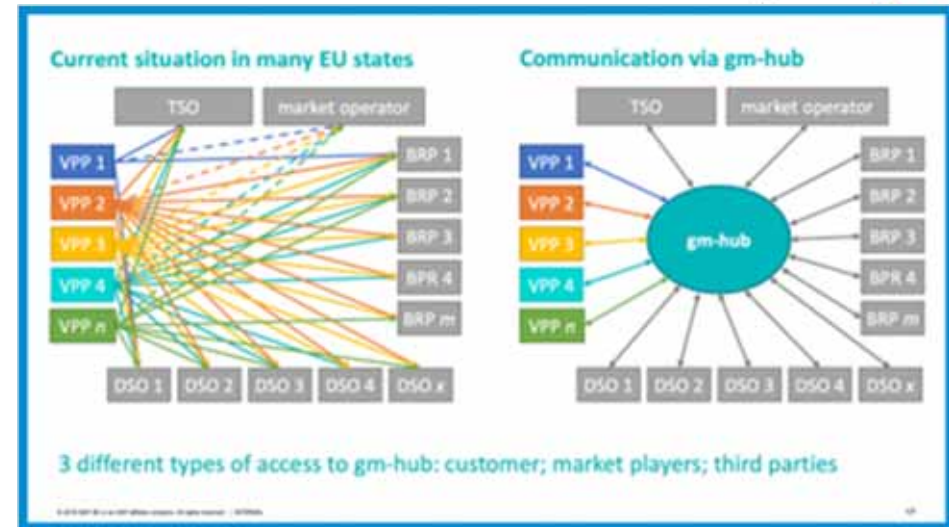
Main obstacles

- Flexibility platforms need in many cases a TSO-DSO/generator coordination in order to successfully manage DSO services, for which a specific operation with different types of responsibility needs to be defined.
- The heterogeneity of EU countries electricity systems and regulations pose a difficulty to unify guidelines for DSO platform architecture definition.
- Market based solutions are generally preferred by regulators, even if not always the most efficient. Difficulty in implementing flexibility in DSOs needs (in contrast to TSOs), since platforms need to be created from scratch and incentivising schemes need to be defined.

Summary of policy asks

- Flexibility needs should fit DSO's real needs. DSOs have different needs by TSOs and each of them should identify their platform architecture and coordinate with each other when required.
- Investment in digital platforms for planning, operation and data management should be recognised by regulators.
- A coordinated remuneration scheme that fosters offering flexibility by DSOs and considers the role of using flexibility by TSOs needs to be defined.
- Integrated platforms at DSO level should be promoted as a preliminary step for the more efficient smart grids management.

Grid and Market Hub



El nuevo paradigma energético de flexibilidad: LA PLATAFORMA



- Planificación a corto plazo de recursos energéticos
- Coordinación de forma centralizada la cartera de producción y energía
- Implementar estrategias de optimización económica y power-2-x
- Orquestación servicios de energía de acuerdo a normativa GDPR
- Servicios de flexibilidad B2B para Transportistas (balances, reservas ...) y Distribuidoras (control de voltaje,...)
- Conectividad e interoperabilidad con elementos de la red
- Almacenamiento en red
- Plataforma de gestión en 'near real time' para la gestión de la información de los **DSO** (SCADA, Smart Meter Management, planning, ADMS,..) con la información de los **agregadores** y los **DERs**
- Optimización y control de recarga de coche eléctrico en escenarios B2B
- Gestión de paneles solares y baterías en escenarios B2C
- Comunidades energéticas
- Visibilizar el impacto de la huella de carbono

Modelo probado y en constante evolución

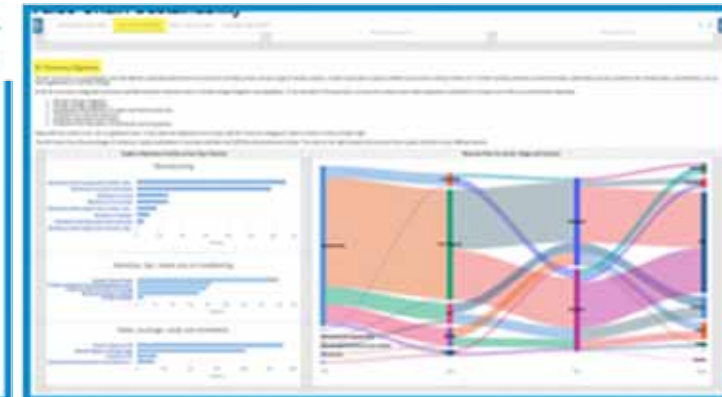
Emobility charging operations



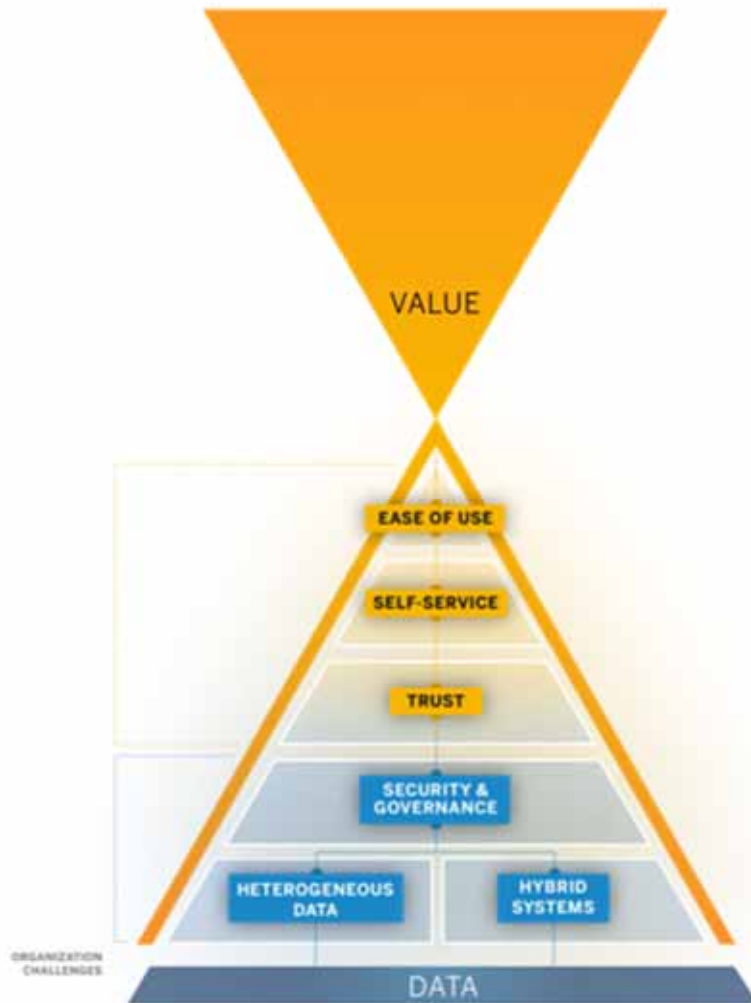
Comunidades energéticas



Huella de carbono



¿Cuál es el valor que aporta la plataforma?



- **Multiusuario & Multiservicio:** DSO, Agregadores, Comunidades energéticas, Consumidores, Generadores
- Habilitar una **semántica común** que facilite añadir nuevas aplicaciones y servicios.
- **Privacidad y seguridad:** Garantizar altos estándares de mercado para ganar la confianza de los diferentes participantes (GDPR,...)
- Gestión de altos volúmenes de datos: **estructurados y no estructurados**

Muchas gracias!

Contact information:

Jordi Masip Montserrat
ENR Industry Advisor Expert
M: jordi.masip@sap.com

1 Overview

Champion:  IBERDROLA

Partner:    



Workstream 5: Digital Network and Platform

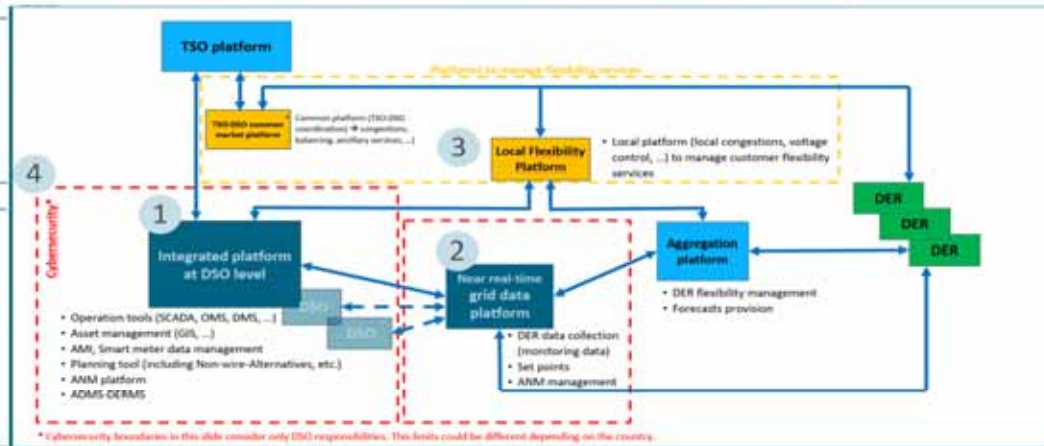
Main goals

Deliver value to customers, generators, stakeholders and shareholders **integrating flexibility services in network planning and grid operation** by developing platforms and through data exchange.

- **Customers:** Platforms set-up to integrate customers' flexibility and monetize their value.
- **Generators:** Integrate distributed resources timely and efficiently, complying with national and EU decarbonization targets.
- **Stakeholders:** Combine grid and third party's resources to extract value for the system (customers, TSO, aggregator, regulator, ...) through a more efficient usage of the grid.

Short description and milestones etc.

- **ITEM 1: Integrated DSO platform.** Integration of DSO tools will allow extracting the added value from the interaction between DSOs and DERs to improve traditional DSO activities and offer a better service to customers/generators while reducing grid operation costs. The development of a **platform to manage ANM** is included here to ensure faster grid access for generators in areas with capacity constraints and higher return by exporting energy before upgrades are ready.
- **ITEM 2: Platform for near real-time grid data.** For efficient grid operation (i.e., power flow optimization) grid observability will be key to the DSOs (in compliance with Article 40.6 of SOGL). A platform to exchange near real time information between the DSO and DERs (directly or through aggregators/generation control centers) is necessary for that.
- **ITEM 3: Platform to manage flexibility services.** DER-DSO interactions coordination, allowing ancillary services provision and network constraints relief. It enables an efficient integration of DERs by taking advantage of their flexibility and reduce the necessary grid upgrades. Customers and distributed generators will be incentivized to offer services to the grid.
- **ITEM 4: Cybersecurity in systems architecture.** Since the electricity grid is increasingly dependent in digital equipment, cybersecurity plans with minimum common requirements need to be implemented across all DSO systems, which includes the cybersecurity assessment of the proposed platforms above.



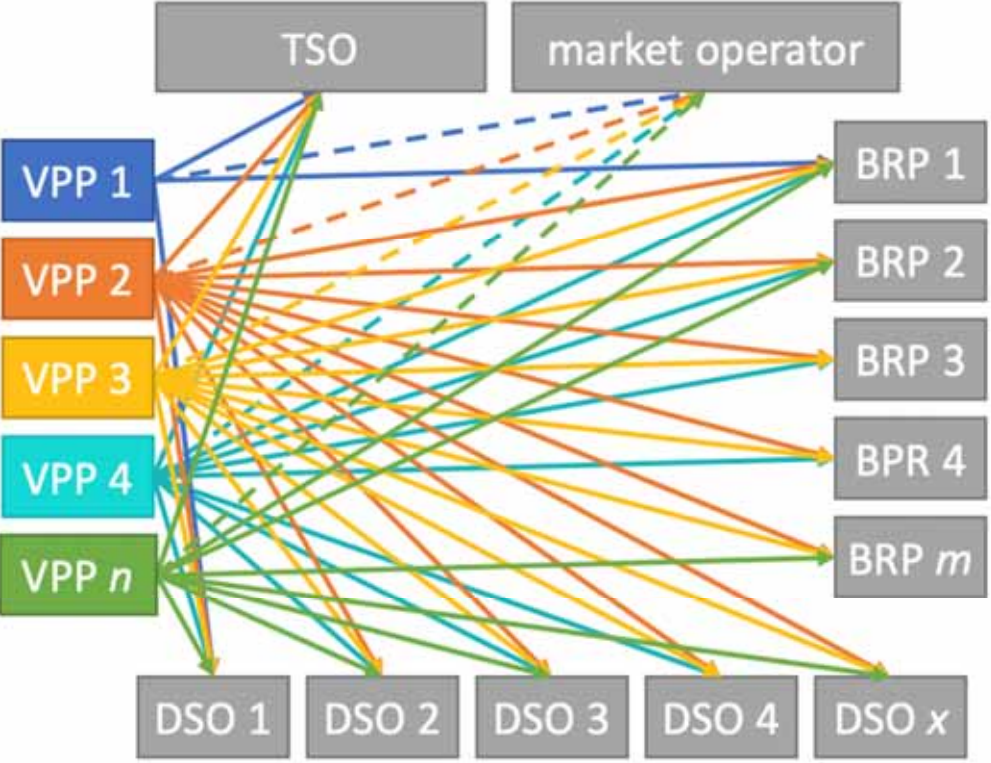
Main obstacles

- Flexibility platforms need in many cases a TSO – DSO proper coordination in order to successfully manage DERs services, for which a system operation with different layers of responsibility needs to be defined.
- The heterogeneity of EU countries electricity systems and regulations pose a difficulty to unify guidelines for DSO platforms' architecture definition.
- Market-based solutions are generally preferred by regulators, even if not always the most effective.
- Difficulty in implementing flexibility in DSO's tools (in contrast to TSOs), since platforms need to be created from scratch and incentivizing schemes need to be defined.

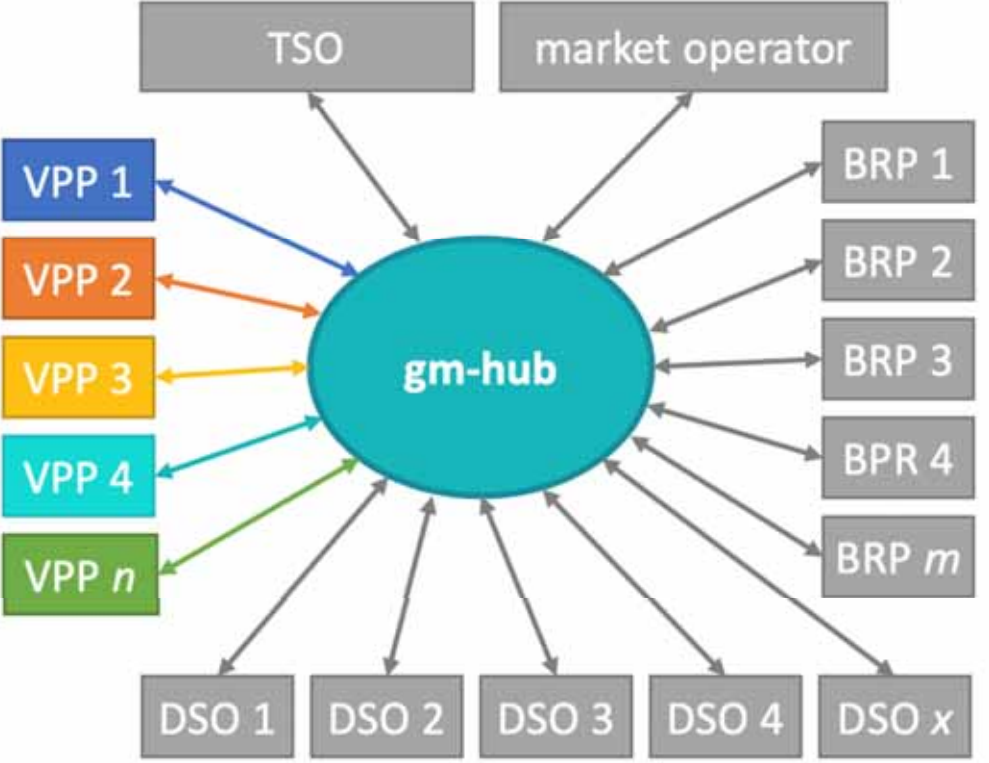
Summary of policy asks

- **Flexibility tools should fit DSO's real needs.** DSOs have different needs to TSOs and each of them should develop their platform architecture and coordinate with each other when required.
- **Investment in digital platforms** for planning, operation and data management **should be recognized by regulators.**
- **A coordinated remuneration scheme** that fosters offering flexibility by DERs and considers the risks of using flexibility by DSOs **needs to be defined.**
- **Integrated platforms at DSO level should be promoted as a preliminary step** for the most efficient smart grids management.

Current situation in many EU states



Communication via gm-hub



3 different types of access to gm-hub: customer; market players; third parties



COMMUNITY

DATE	ENTITY	TYPE	USER	METER	DER
22/07/2019 - 28/07/2019	Entity	Type	User	Meter	DER

Presenting data for 22/07/2019 - 28/07/2019, for 225 meters

OVERVIEW

ANALYSIS

ASSETS

LEDGER

METRICS

SIMULATIONS

SOURCE DATA

Assets

Smart Meters	225	Data Availability	92%	Installed PV Capacity	1.104 MW	Installed Flexibility	245 kWh	Flexibility Operated	1.036 MWh
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Energy Costs

Total Community Savings \$ 1,890 20.8%

BASELINE COSTS	\$ 9,086	COMMUNITY COSTS	\$ 7,195
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Energy Performance

Total Locally Traded Energy 21,179 kWh 61.4%

TOTAL CONSUMPTION	34.03 MWh	TOTAL GENERATION	37.32 MWh
TOTAL DEMAND	49.22 MWh	TOTAL SUPPLY	32.78 MWh

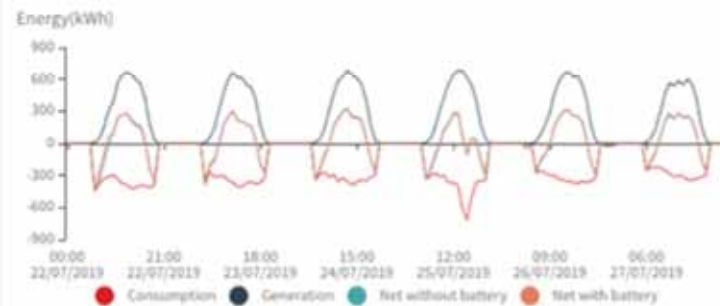
Cost Savings



Trade without flexibility	20.2%	\$
Trade with flexibility	0.66%	\$ 59.8 1,811

Grid Balancing

Day week month 22 Jul-28 Jul



Peak energy	Baseline	Optimized Community	Difference
Net peak demand [kWh]	393	393	0 kWh / 0%
Net peak supply [kWh]	330	330	0 kWh / 0%

EU Taxonomy Alignment

The EU Taxonomy is a classification tool that defines sustainable performance of economic activities across a broad range of industry sectors. It helps corporates to assess whether an economic activity of their own / of their business partners is environmentally sustainable and are consistent with climate policy commitments such as Paris Agreement on Climate Change.

So far EU taxonomy categorizes economic activities that play important roles in climate change mitigation and adaptation. To be included in this taxonomy, an economic activity must make substantive contribution to at least one of the six environmental objectives:

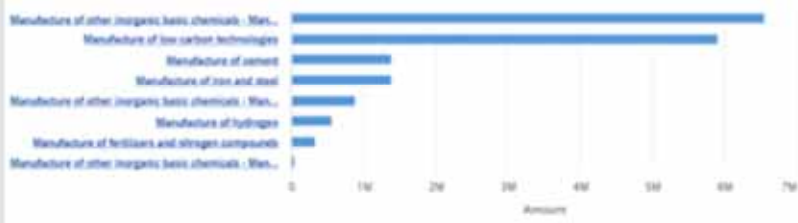
- Climate change mitigation
- Climate change adaptation
- Sustainable and protection of water and marine resources
- Transition to a circular economy
- Pollution prevention and control
- Protection and restoration of biodiversity and ecosystems

Meanwhile the activity must "do no significant harm" to the other five objectives and comply with the "minimum safeguard" which is mainly in terms of labor right.

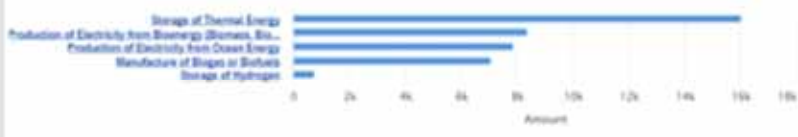
The left charts show the percentage of company's capital expenditure in business activities that fulfill the aforementioned criteria. The chart on the right presents the revenue flow in green activities across different sectors.

CapEx in Business Activity across Top 3 Sectors

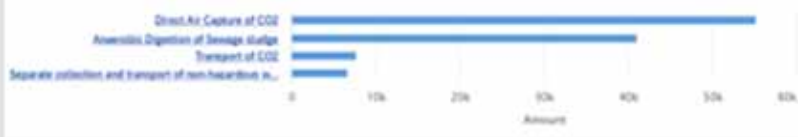
Manufacturing



Electricity, Gas, Steam and Air Conditioning



Water, sewerage, waste and remediation



Revenue Flow by Sector, Stage and Country

