

# ENTSO-E R&I priorities

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16 October 2018

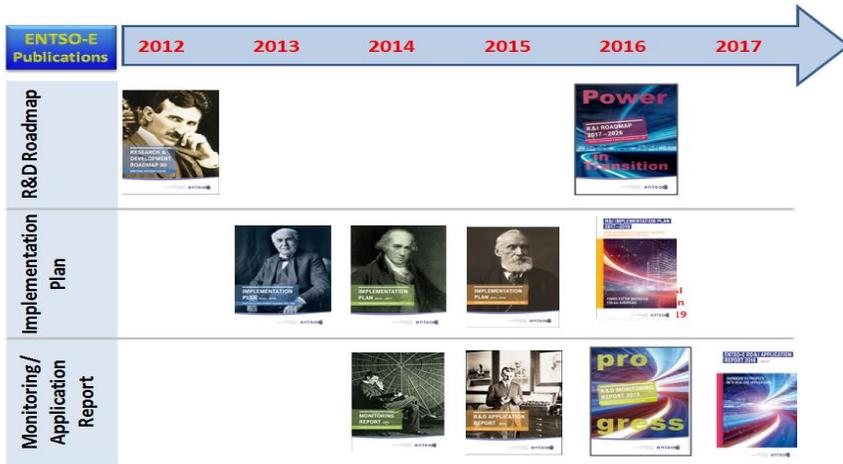
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# RDIC priorities 2018: mandate, knowledge hubs , European presence and cooperation

1

Mandated tasks by regulation

Research Plans



2

Cross committees cooperation  
Future of the power system

Knowledge hubs



3

European presence

ETIP SNET - vision



EC funded R&I projects



**Provide leadership on the future power system and promote market design solutions through Knowledge hubs and Cross Committee cooperation**

# Power System Modernization



## Technologies for Transmission System

This report was developed with the contribution of external experts from the industry; it provides the level of development of a range of transmission technologies and hence their viability for use in network development

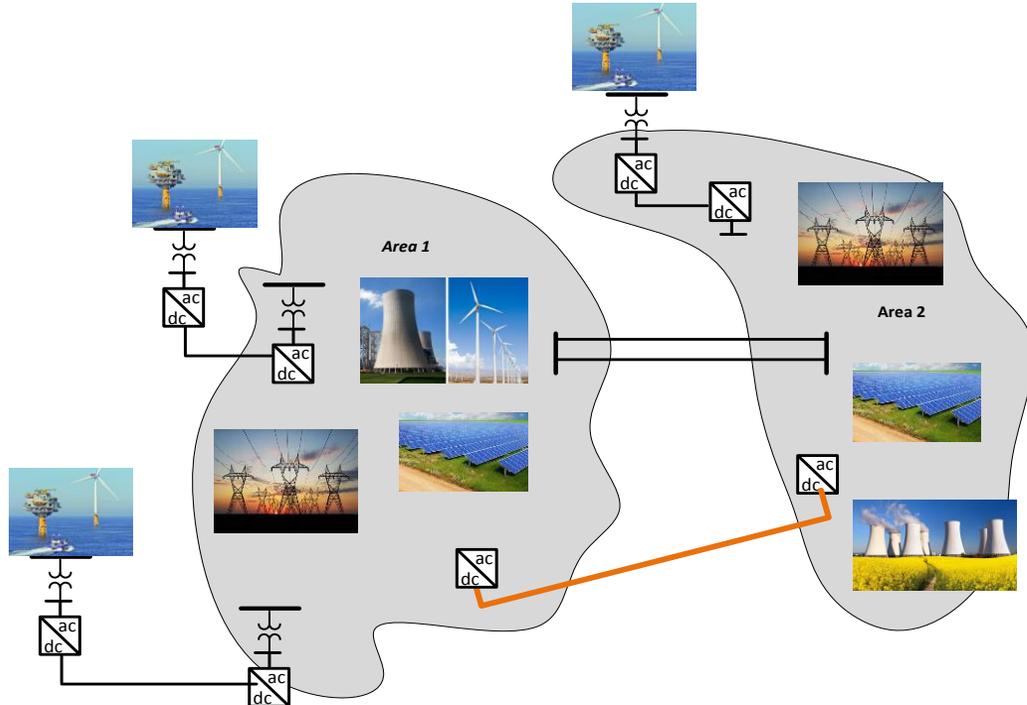


## Cooperation with ESA

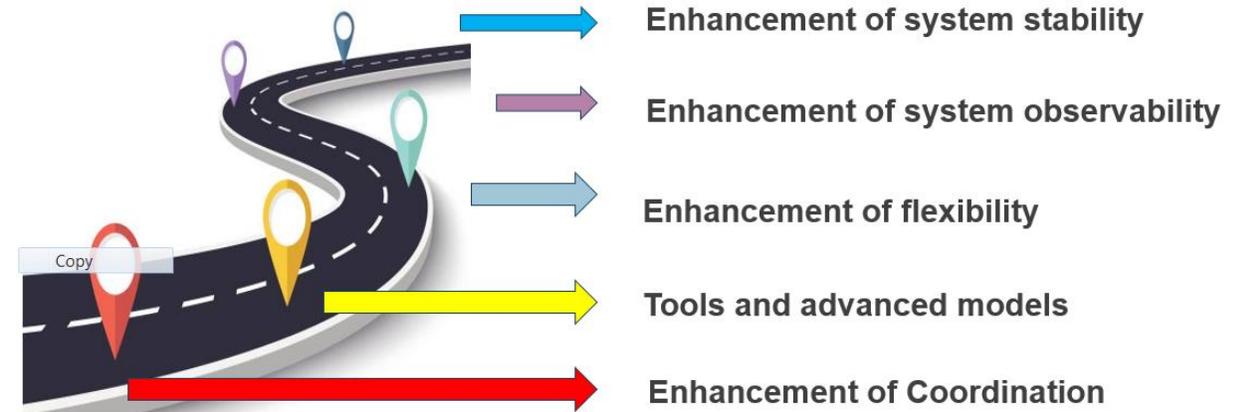
Using satellite technology to optimise the power grid - ESA & ENTSO-E to start a cooperation

## Mapping of transmission technologies – TYNDP 2018

# Security and system stability

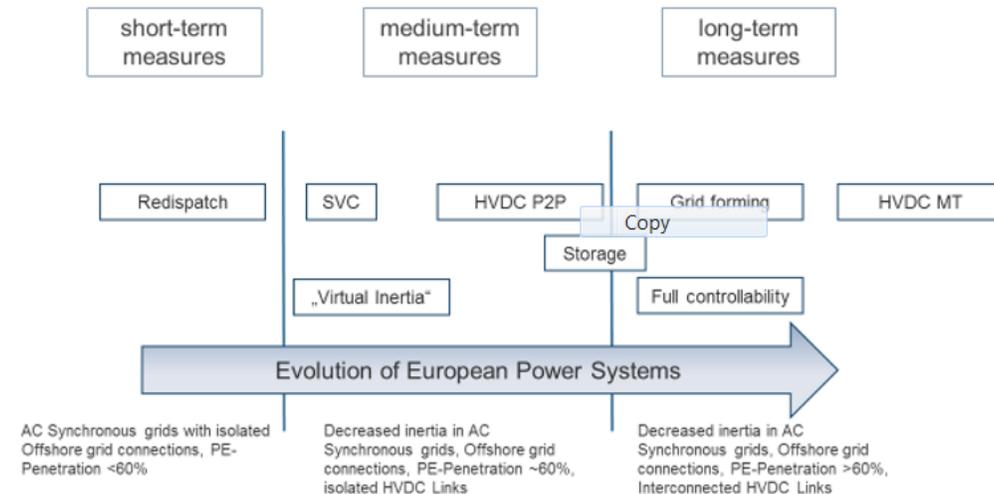


## System Operation vision 2030



→ Accommodate more Power Electronics and what do we do to maintain the same levels of security of supply?

## High Level of PE - Technology Trends

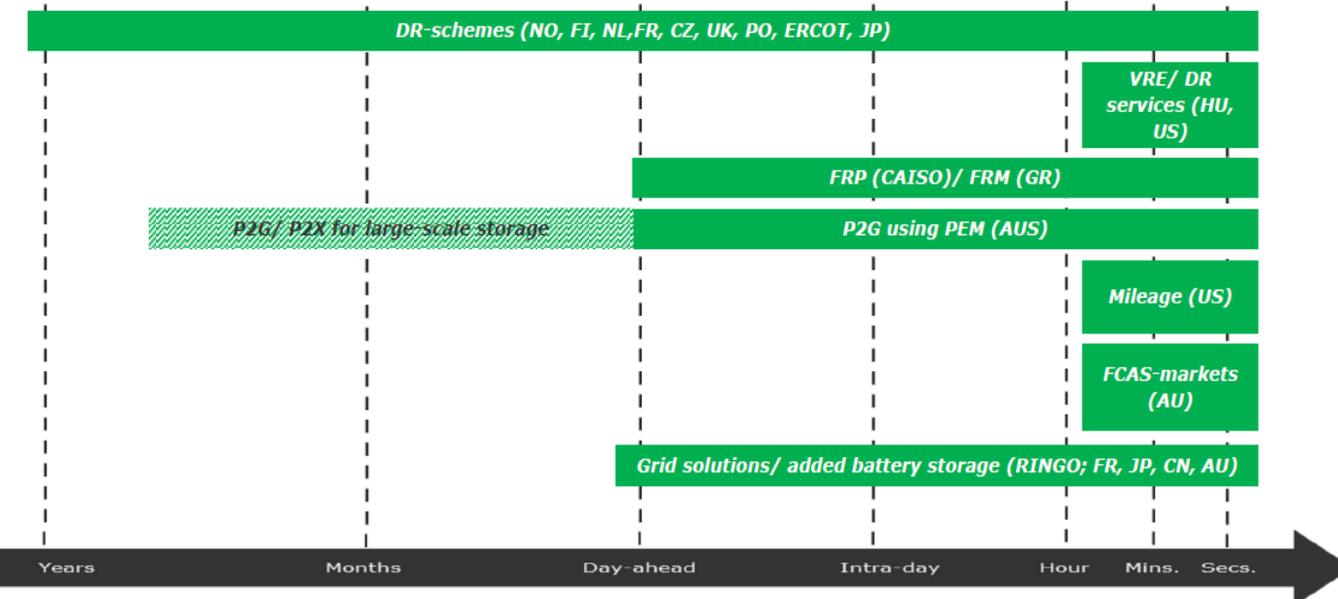


# Flexibility and digital technologies

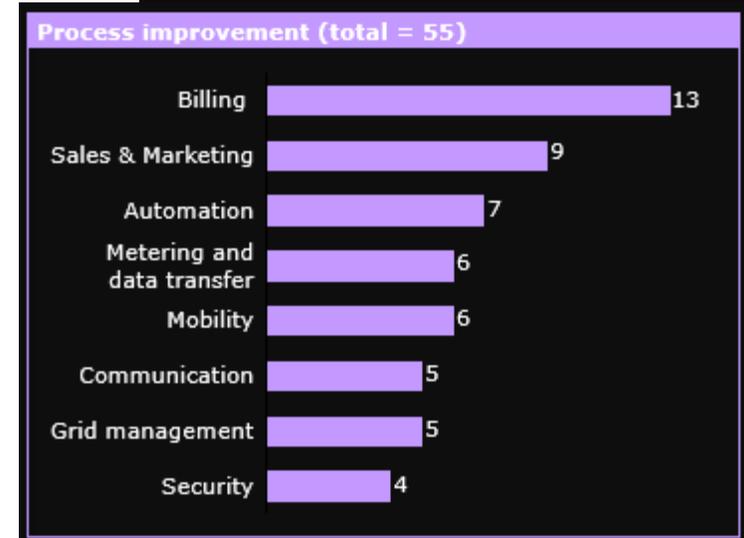
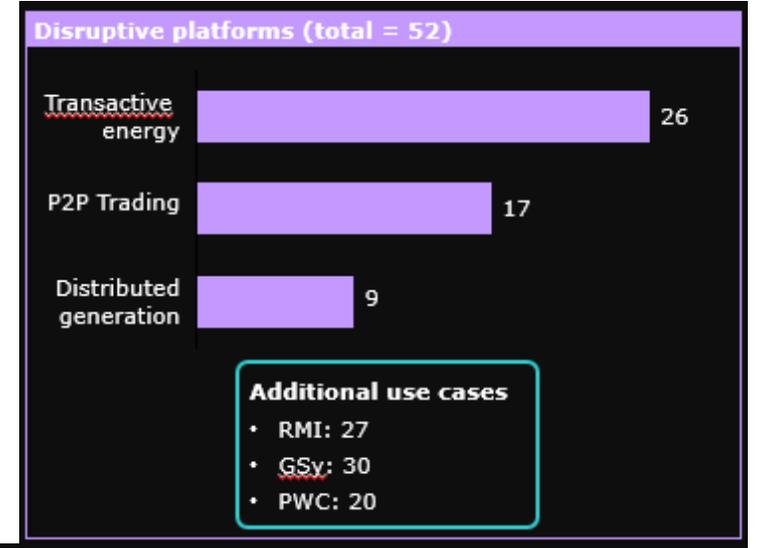
## Conclusions from the Workshop

- 1) **Overview of flexibility services:** focus on balancing for different time horizons across EU and USA, China, Australia, Japan, South Korea: 1) **Europe is a frontrunner in developing a multitude of projects;** 2) **Relevant market experiences in USA and Australia for services and products**
- 2) **Sources of flexibility:** experience from EU: **storage** –hydro-pumped, batteries, hydrogen, eV -, **Demand Response (DR)** – heating and cooling, eV, large and medium size customers, small customers through aggregators -, **Grid** as flexibility option, **DR** versus **Storage** versus **RES**
- 3) **Flexibility services and products** in different time frames : future for sector coupling, optimization of flexibility solutions and integration of the results of the H2020 funded projects (EUSYSFLEX, OSMOSE, CROSSBOW, FLEXITRANSTORE)
- 4) **Need for future developments** : potential for flexibility from different sources and for different services, costs , business cases , new actors, technologies including digital
- 5) **Regulatory framework** very diversified across Europe: more harmonization to unleash the potential of flexibility sources and in depth comparison EU-USA

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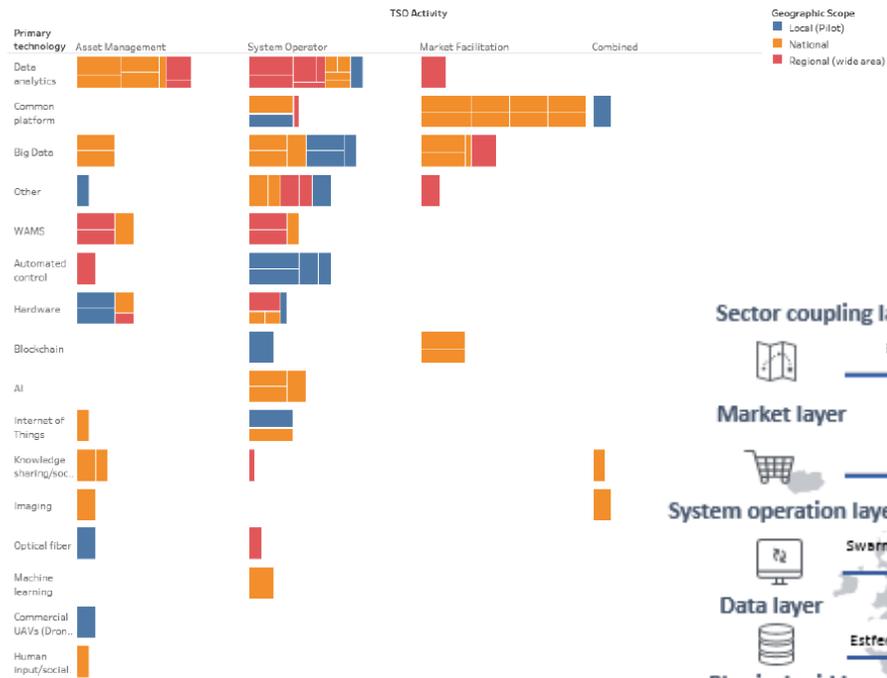
## Blockchain



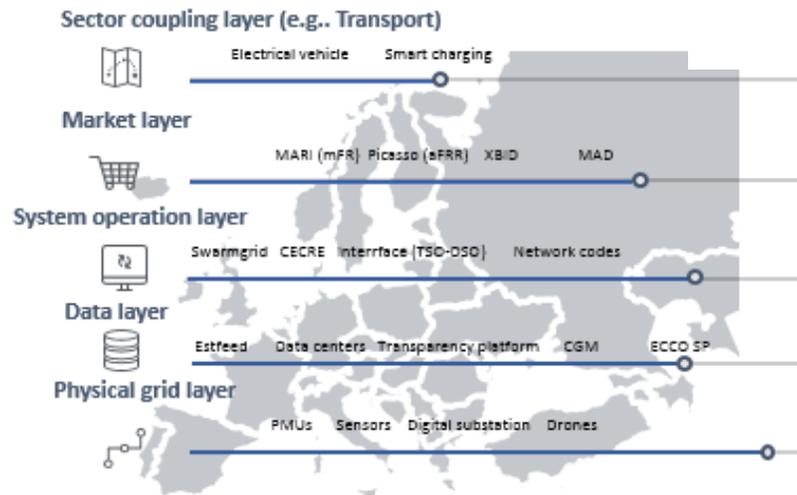
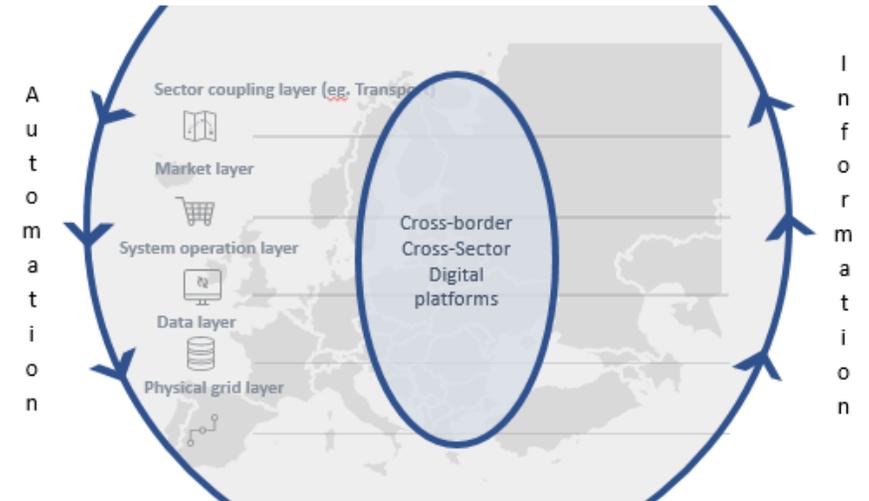
# Digitalization : policy and technical paper

100 projects surveyed

## USE OF DIGITAL TECHNOLOGIES BY TSO ACTIVITY

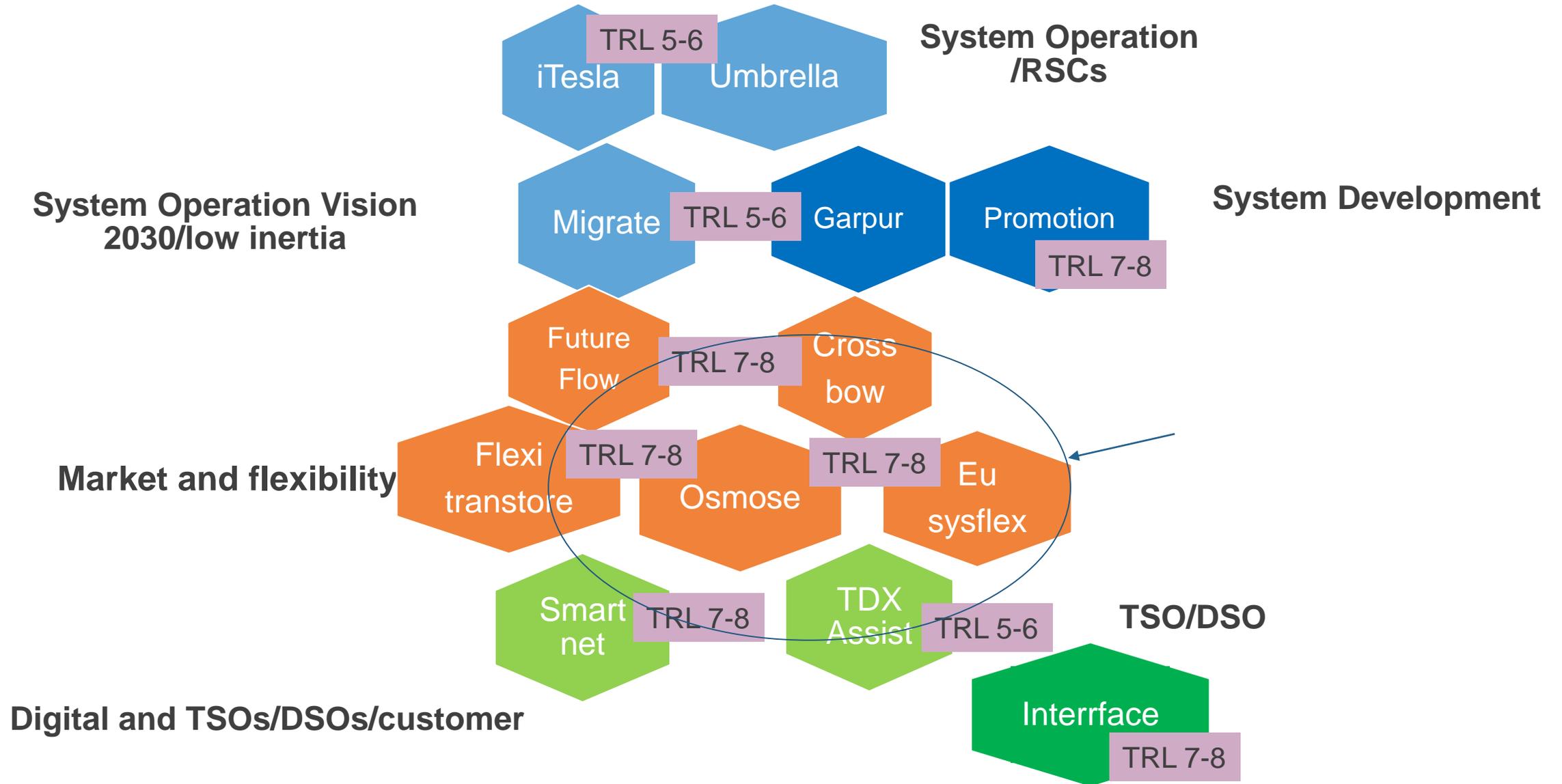


## The Vision 2030: The Digital Grid



# European presence

# Cross Committee Cooperation and success of EC funded projects



# INTERFACE: Concept

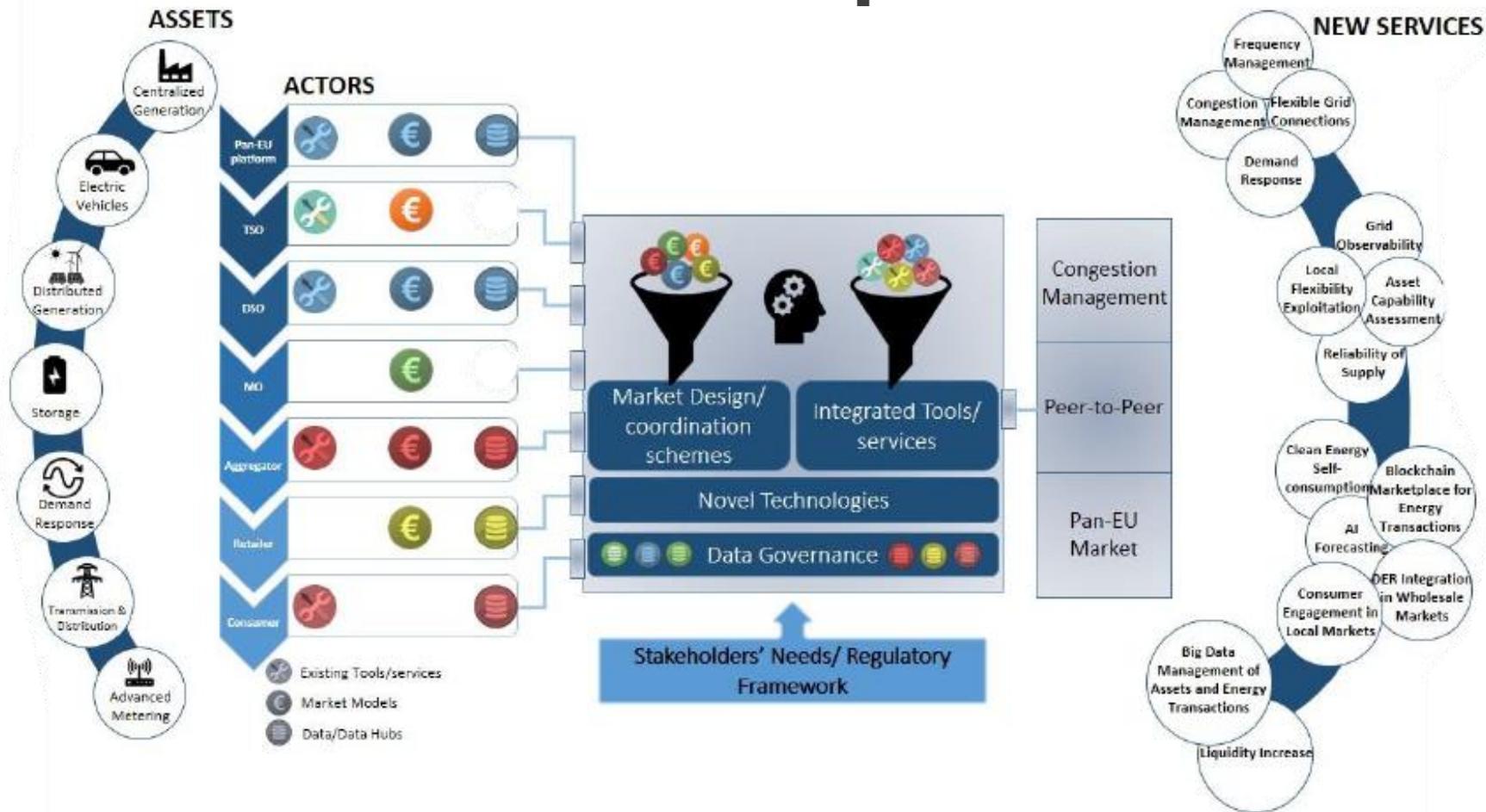


Figure 1 INTERFACE Concept

# VISION 2050

A SYSTEM OF SYSTEMS



Thank you for your attention