WG Data Management
Action #2 – EU data exchange reference architecture

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BRIDGE - Event on the EU INDUSTRY WEEK

26 March 2021

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Agenda

- Overview of BRIDGE workflow & motivation
- Survey on Interoperable Data Exchange Platforms
  - Approach
  - Survey results
- Cross-sector integration
- Final remarks

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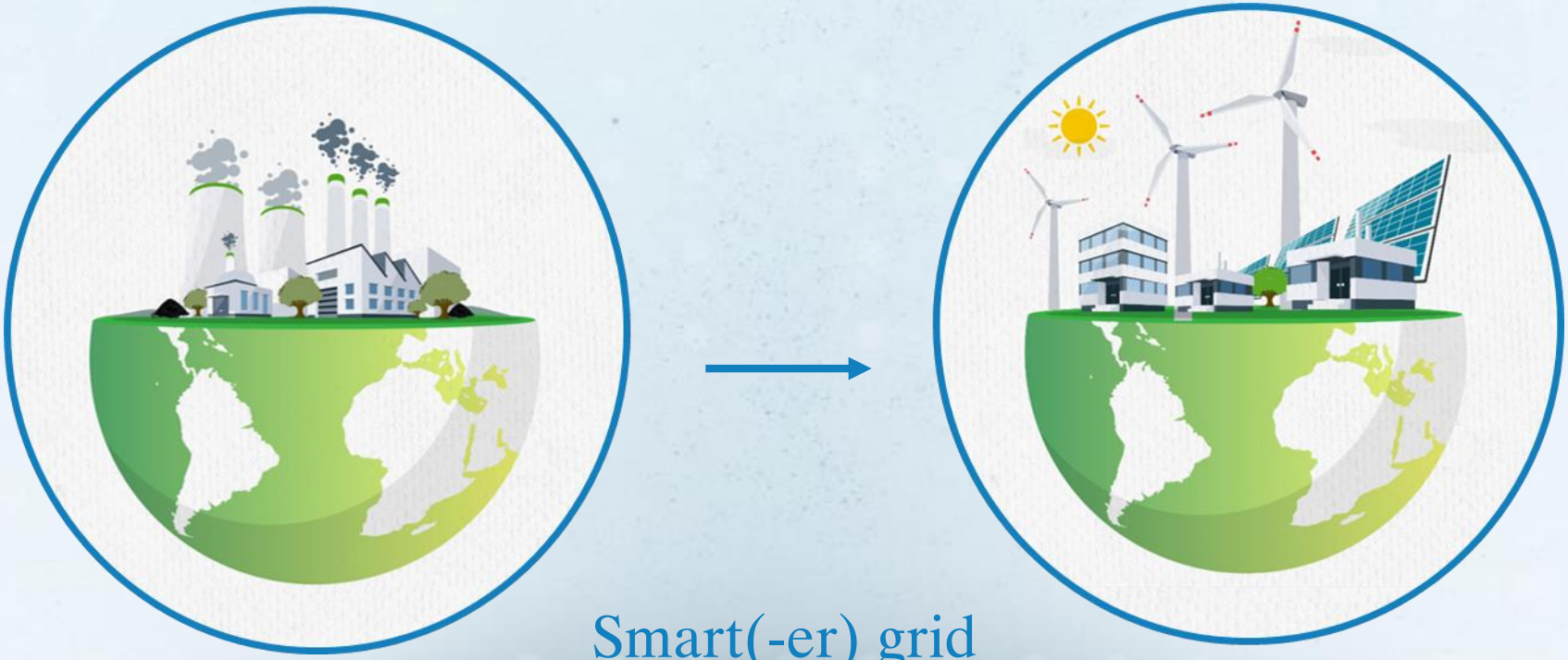
Motivation



Smart(-er) grid

"An electricity network that can *intelligently* integrate the actions of all users connected to it – generators, consumers and those that do both – in order to **efficiently** deliver sustainable, **economic** and **secure** electricity supplies"

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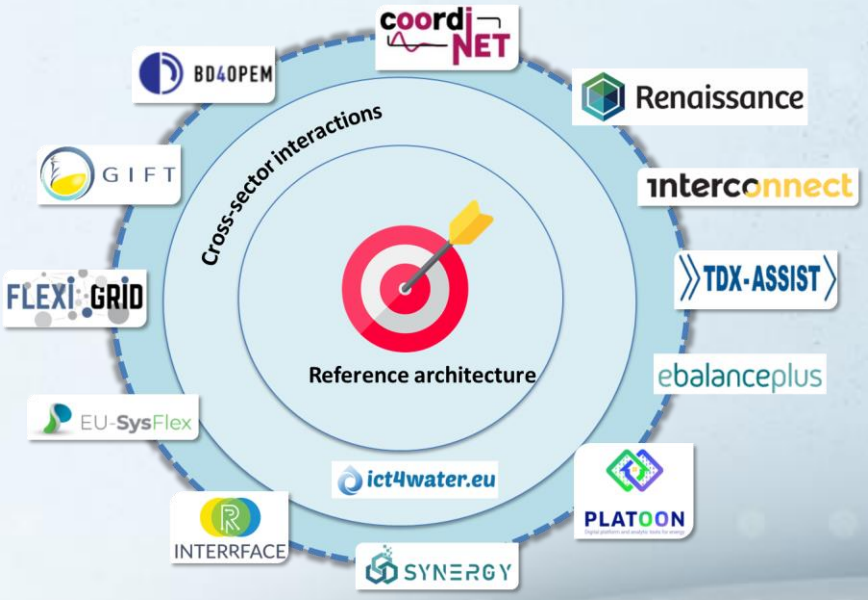
Overview of the workflow

- Develop conceptual European data exchange model, involving elements like **functionalities, governance, data access, open source, standardisation needs**.
- Define "**interoperability of platforms**" and identify platforms with European ambition and potential for replicability and scalability.
- Ensure GDPR compliance and data owner's control over their data.

Landscape of data exchange platforms



Project name	Data exchange platform
INTERRFACE	IEGSA Platform , enabling coordination and the more robust operation of the power systems
EU-SysFlex	Platform scaling and replicating Estfeed distributed solution and agnostic to specific business processes
FLEXIGRID	FLEXIGRID DEP based on ATOS FUSE
GIFT	Enterprise Service Bus based DEP
InterConnect	Platform focusing on semantic interoperability
Platoon	Platoon DEP COSMAG compliant
SYNERGY	SYNERGY Big Data-driven Energy-as-a-Service (EaaS)
CoordiNet	CoordiNet Platform grid monitoring & operation, market operation and aggregation & disaggregation
BD4OPEM	DEP that leverages smart grid big data
TDX-ASSIST	Cloudera platform eploiting ECCo SP
ebalance-plus	concept of distributed data storage (middleware) that is deployed on management units
RENAISSANCE	DEP based on Atos

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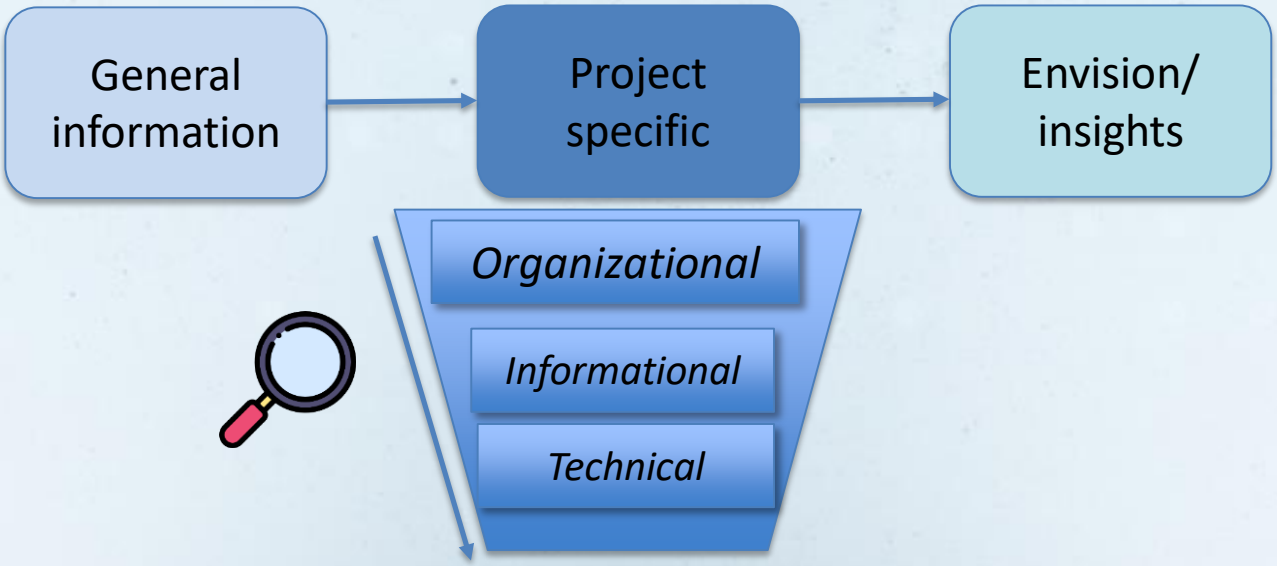
Interoperable Data Exchange Platforms



- ✓ Mapping of results on SGAM
- ✓ Methodological approach applied
- ✓ Standardization of processes & functionalities

11 analytical contributions received

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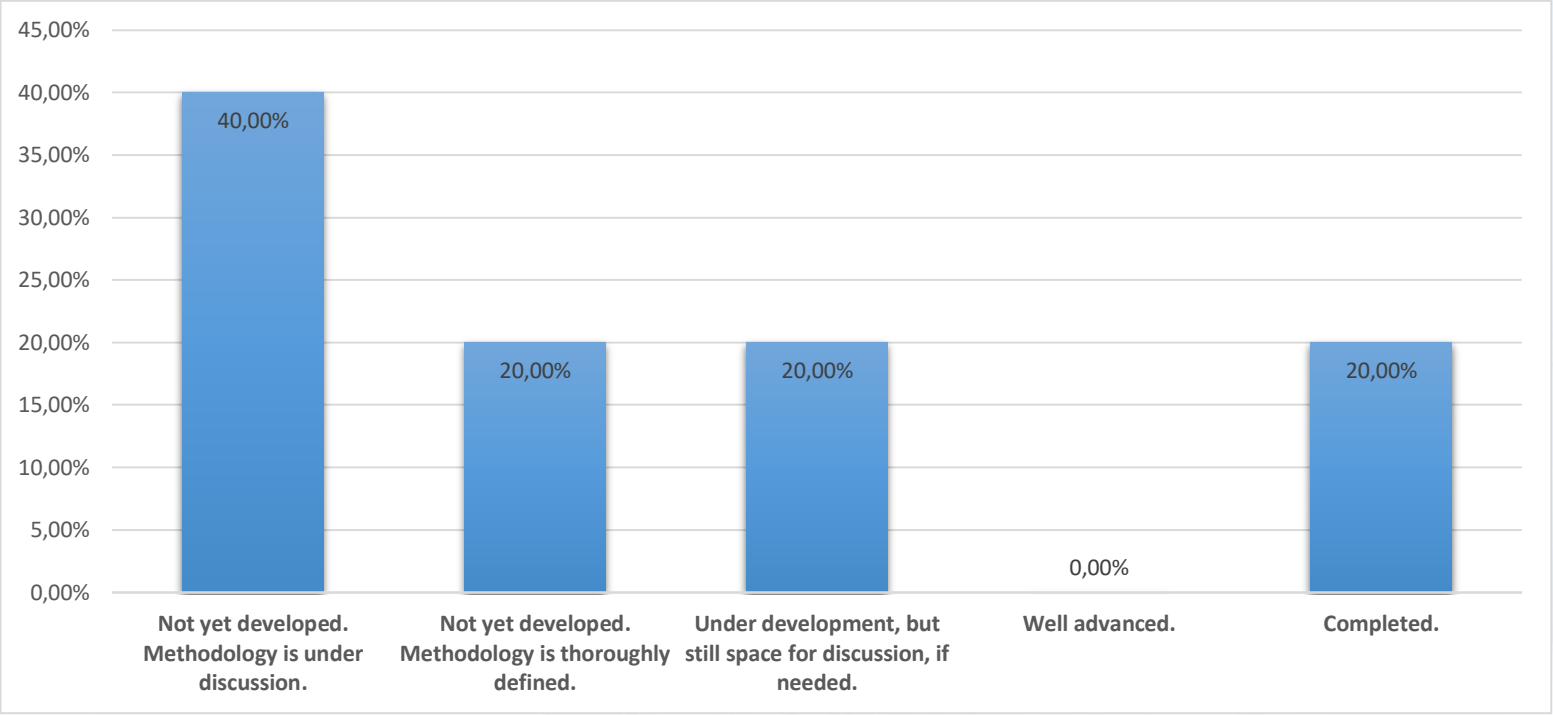
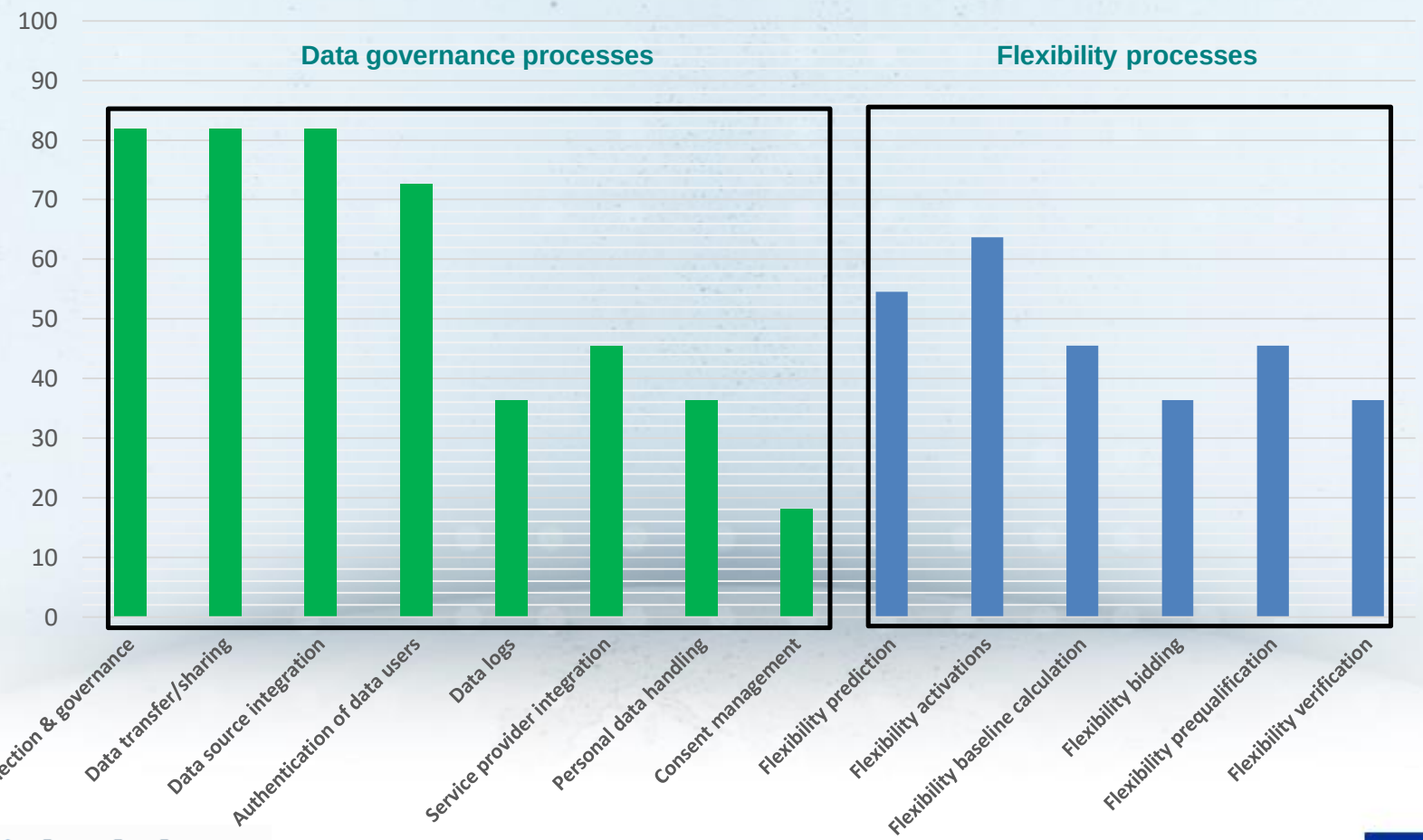
Survey Results

- Phase of implementation

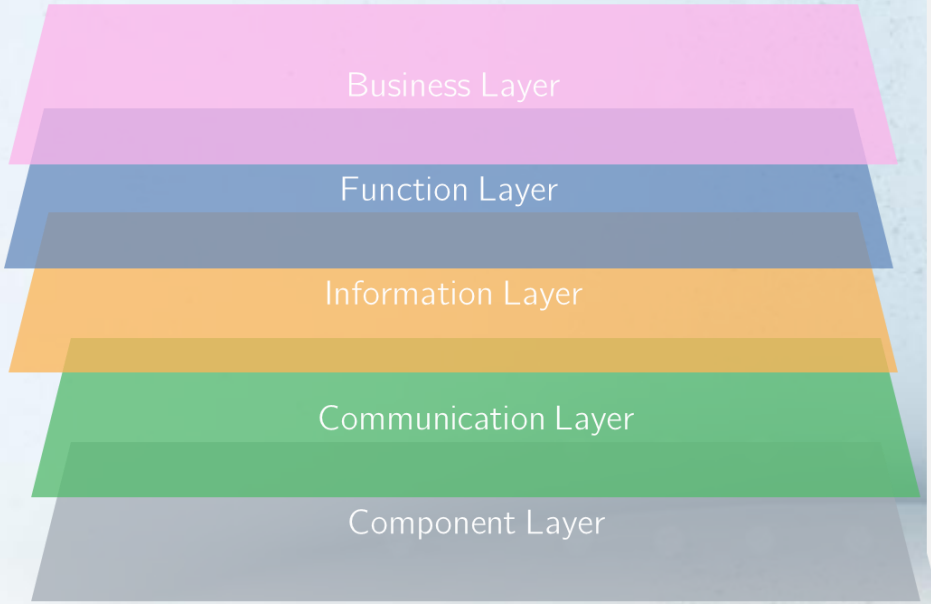


Survey Results

Standardization of processes in data exchange platforms



Mapping Results on SGAM Layers



- Business layers (e.g. regulatory framework -local, national and EU level-)
- Economic/regulatory (i.e. political and economic perspective)
- Role-oriented/business procedures (to avoid lock-in effects)
- Business objectives (i.e. strategic and tactical objectives)

- Functions and services including their relationships and interactions

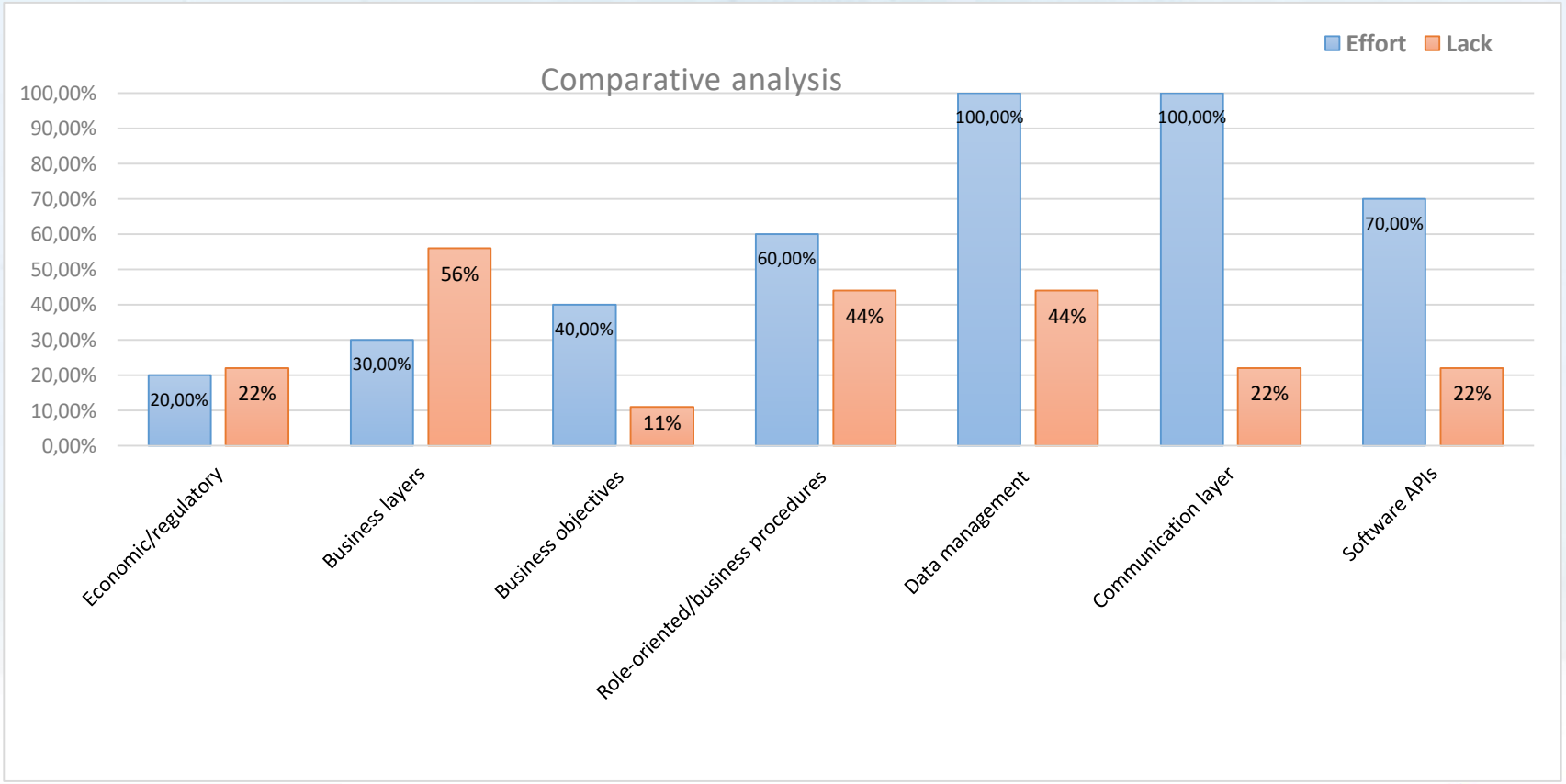
- Data management (i.e. semantics, data profiling)

- Information and Communication Technologies (e.g. exchange protocols, authentication, syntactic)

- Software APIs (e.g. power flows, state-estimation engines, optimizers)

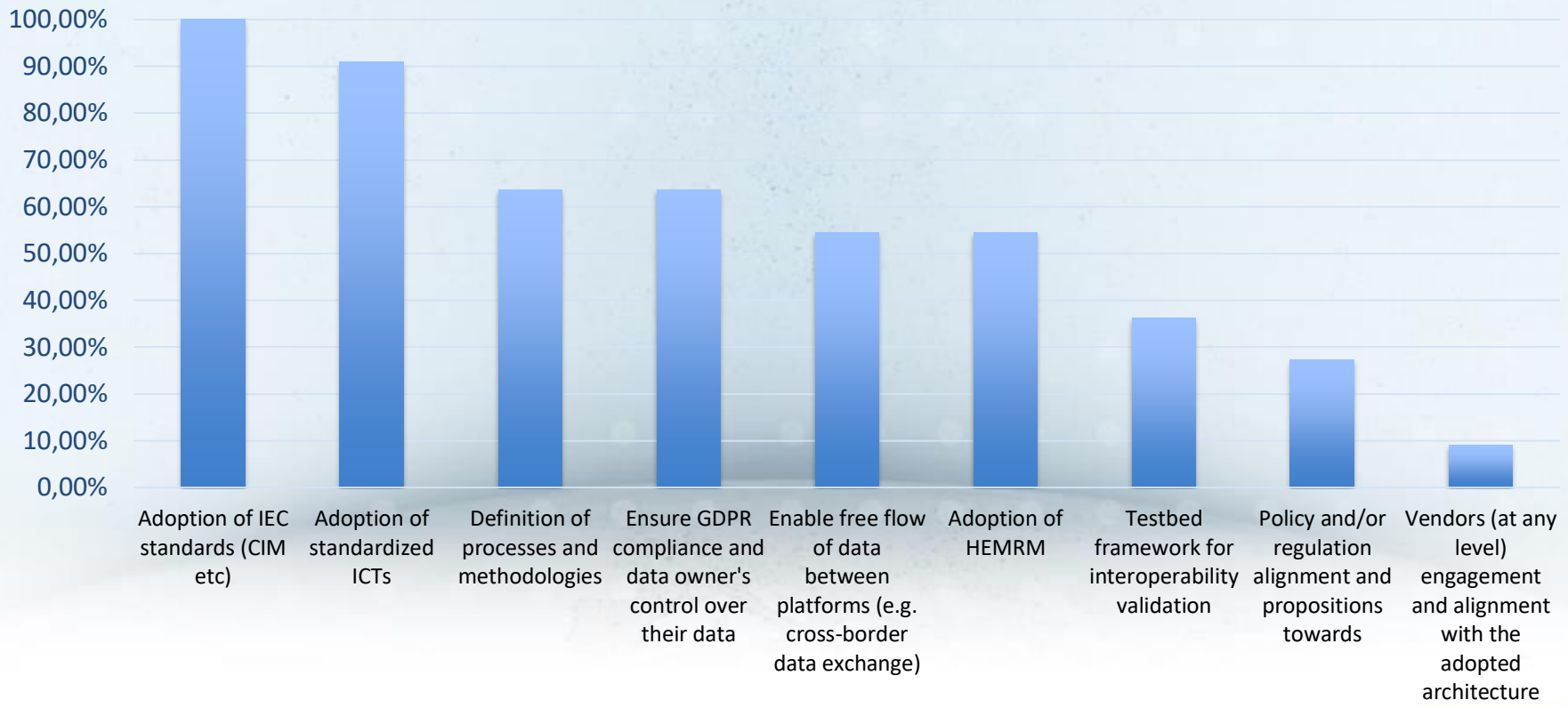
Survey Results

Layers of interoperability features lacking utmost



Survey Results

- Methodological approach applied



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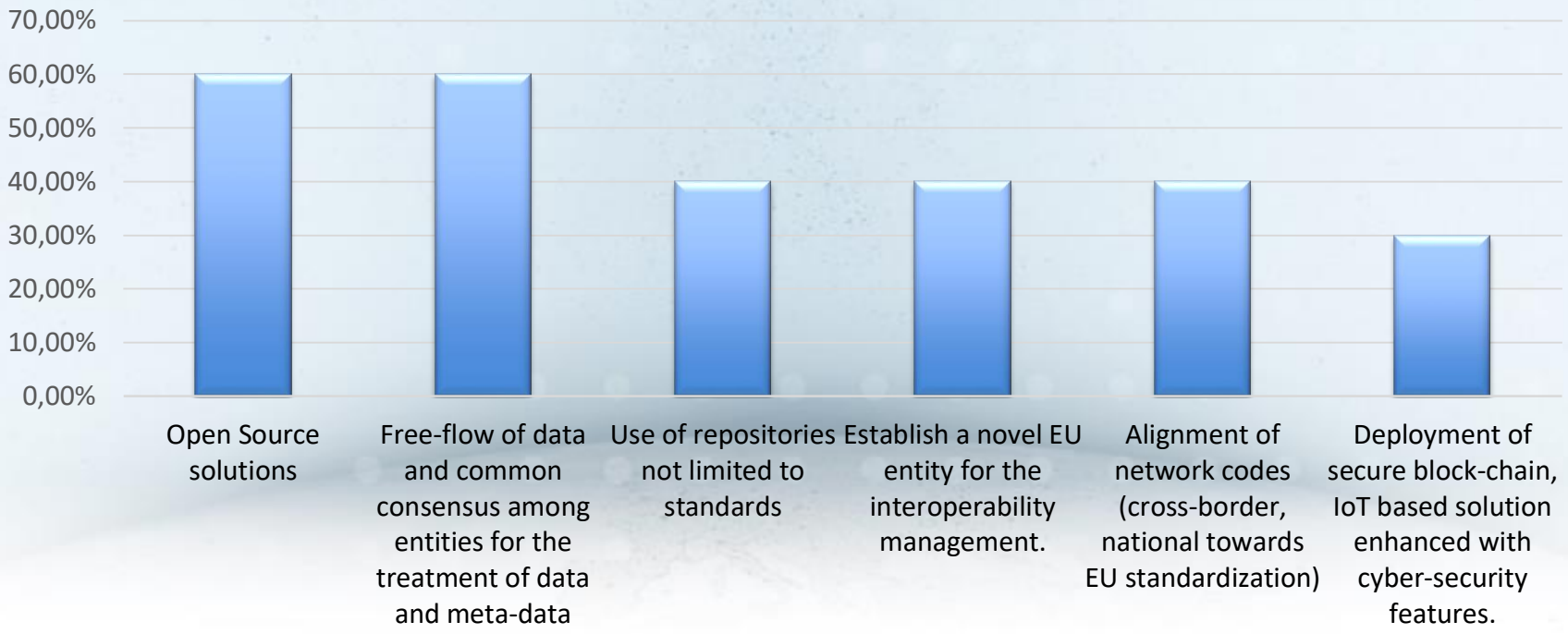
Survey Results(insights)

- Pillars envisaged as the most significant towards common architecture



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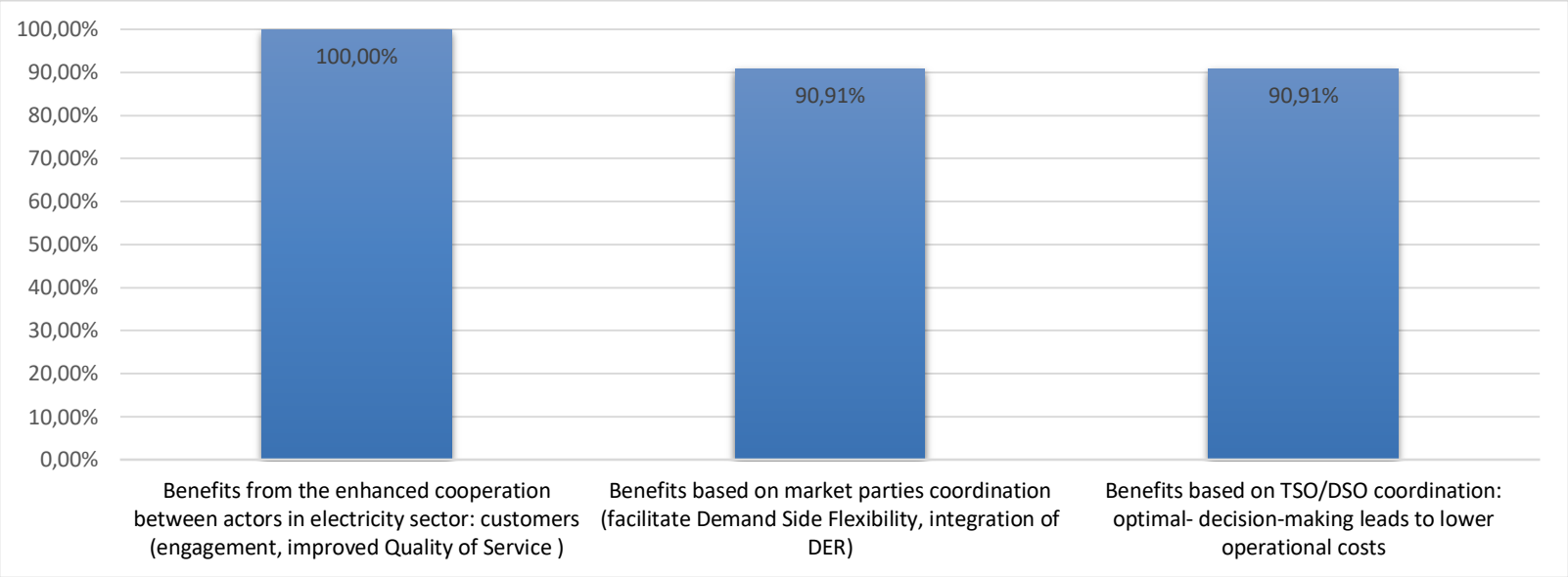
Survey results (insights)

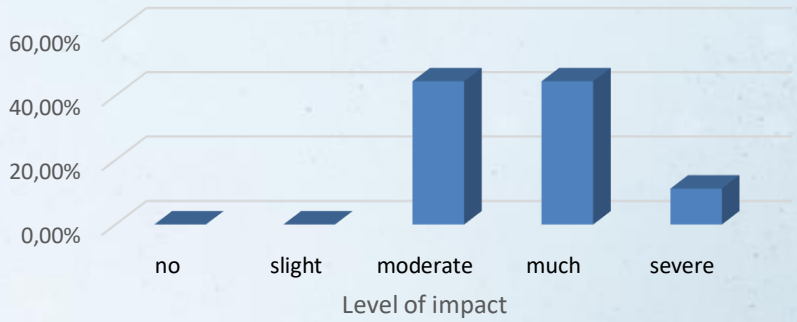
- **100%** of participants find beneficial a common architecture



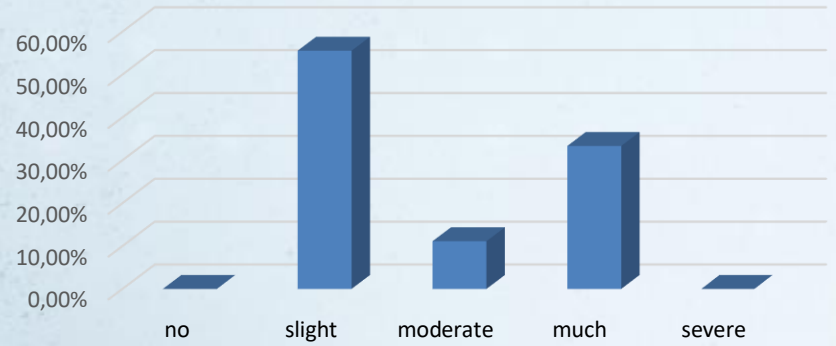
- Participants:
  - *Decreased ICT development and maintenance costs,*
  - *the whole electricity data value chain at multiple layers*
  - *Complex task (investments, effort), actors should be open-minded ->increased cooperation*
  - *Benefits for technology providers (applicability across EU), for tech procurers*

Preliminary results (insights)

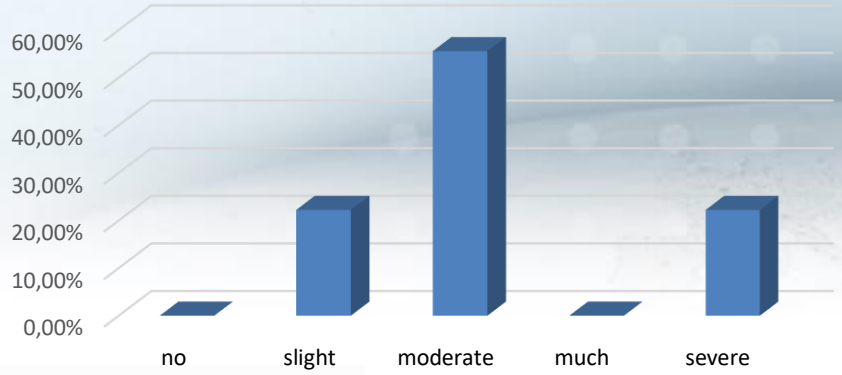
Limited standards or need for advances/updates



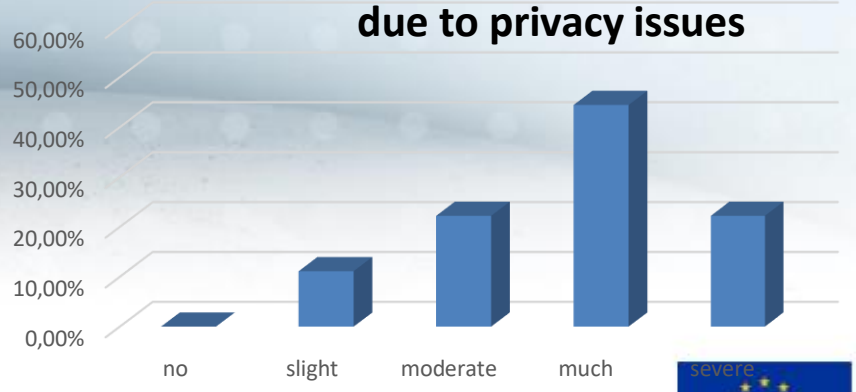
Competition among vendors/suppliers



Vulnerability to cyber-attacks



unwillingness among players to exchange private data and models due to privacy issues



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Cross-sector integration

- The current energy sector is : multi-carrier energy systems:
  Electrical + Natural Gas + district heating utilities
- Dependencies among sector due to seasonality and variability effects
- Fusion of sensory devices and ICT by the utilities (e.g., electricity, gas, heating, water)

Interoperable data exchange platforms

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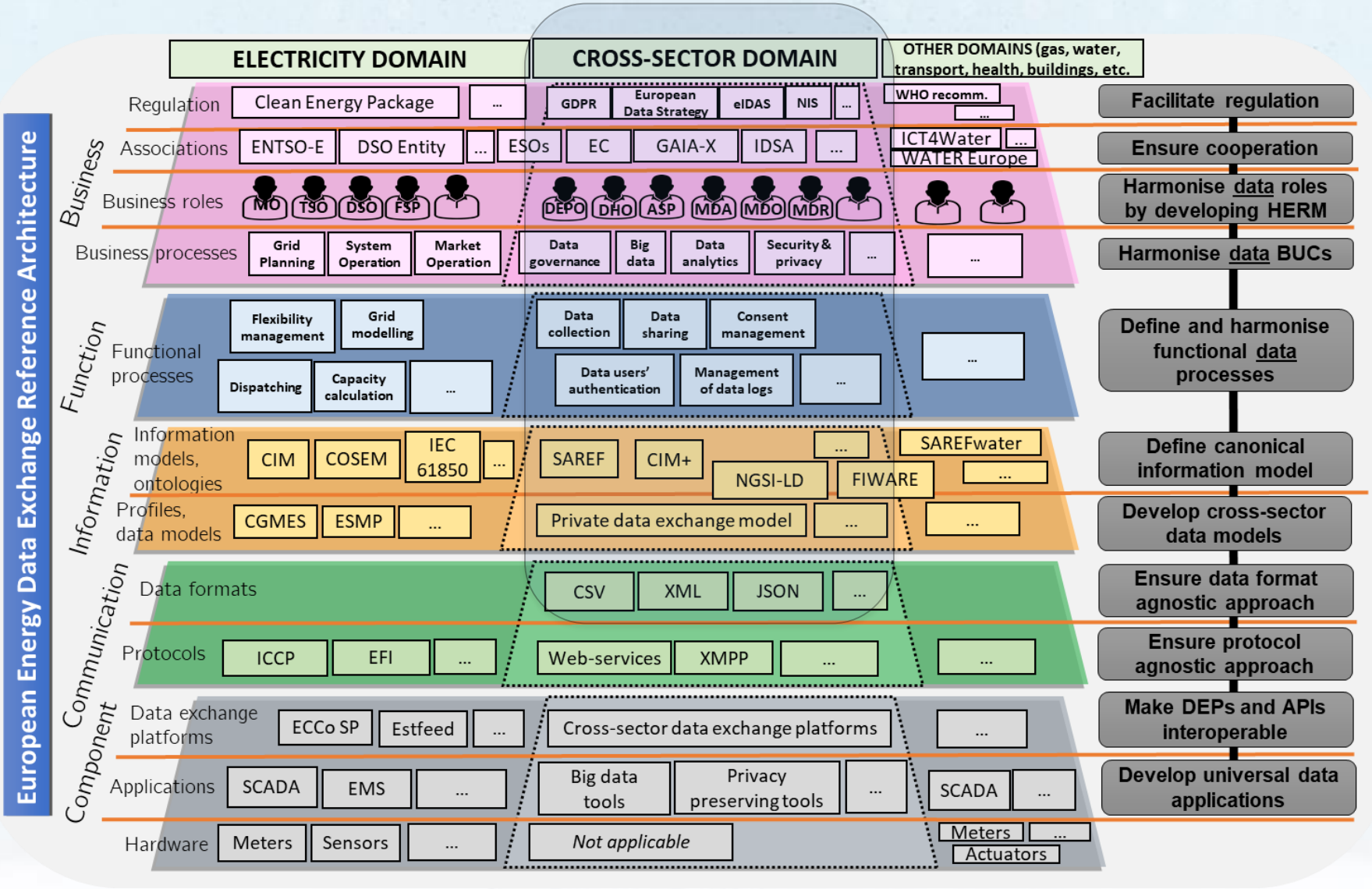

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