Toward Regional System Operation: Key Issues and Challenges

Based on a study for ENTSO-E

5TH VIENNA FORUM ON EUROPEAN ENERGY LAW
A NEW SOFTWARE ALTOGETHER : MARKET INTEGRATION AND MARKET GOVERNANCE

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Presented To:

Presentation of FTI-CL Energy

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Global business advisory firm

Dedicated to helping organisations protect and enhance enterprise value

KEY FIGURES

- Established in 1982
- Revenues of over 1.5 billion US$, NYSE listed
- Over 4,200 employees, across 26 countries in 6 continents

AREAS OF WORK

- Economic and financial consulting
- Corporate finance / restructuring
- Legal, financial and economic assistance in the context of disputes and litigations
- Technology
- Strategic Communications

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FTI-CL Energy is a collaboration of energy experts from Compass Lexecon and FTI Consulting. Compass Lexecon is a wholly owned subsidiary of FTI Consulting.

EXPERTISE IN THE ENERGY SECTOR

- Strategy
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- Conflict resolution
- Competition economics and State aids
- Mergers / acquisitions and transactions

SERVICES OFFERED

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- Business model development
- Investment decisions support
- Energy markets modelling
- Investments in renewables and supply chain

FTI-CL Energy selected clients

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CLIENTS

- **Regulators**
- **Governments** on a national and European scale
- **Law firms**
- **Power companies**, including producers, transmission and distribution operators and end customers
- **Gas companies** all along the value chain
- **Equipment and technology suppliers**
- **Lenders and investors**
- **Trade associations**

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Context

Key areas of change for the electricity system

From *Where we were in the past*	Today *Where we are now*	TO *Where we might go in the future*
 	 	  
▪ Large, predictable, and centralised generation portfolio ▪ One-way flow to consumers with predictable demand patterns, hence no need for smart technologies / smart grids	▪ Increasing proportion of small, intermittent and decentralised generation with bidirectional flows at all voltage levels ▪ Reduced fossil plant load factors and thermal plant closure ▪ Increasing EU interaction ▪ Increasing smart technologies	▪ Mixed generation portfolio of distributed, CCGTs and low carbon technologies ▪ Suite of new technology assets and services ▪ Engaged, active, prosumers ▪ Further electrification of transport (focus on e-cars) ▪ Smart, data-centric system

A changing electricity market requires an evolving System Operation

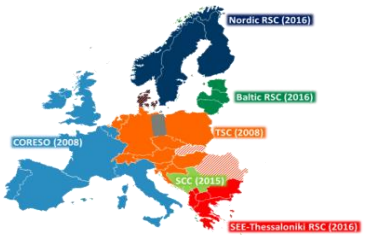
More integrated vision in operations

Coordination with local level (DSOs and decentralised resources)

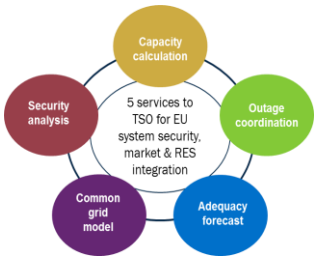
Scope of our work and approach

As the power system experiences a profound transformation (growth of variable renewables, decentralised generation, active demand participation…), system operation adapts and regional coordination strengthens

2016
RSCs established across EU



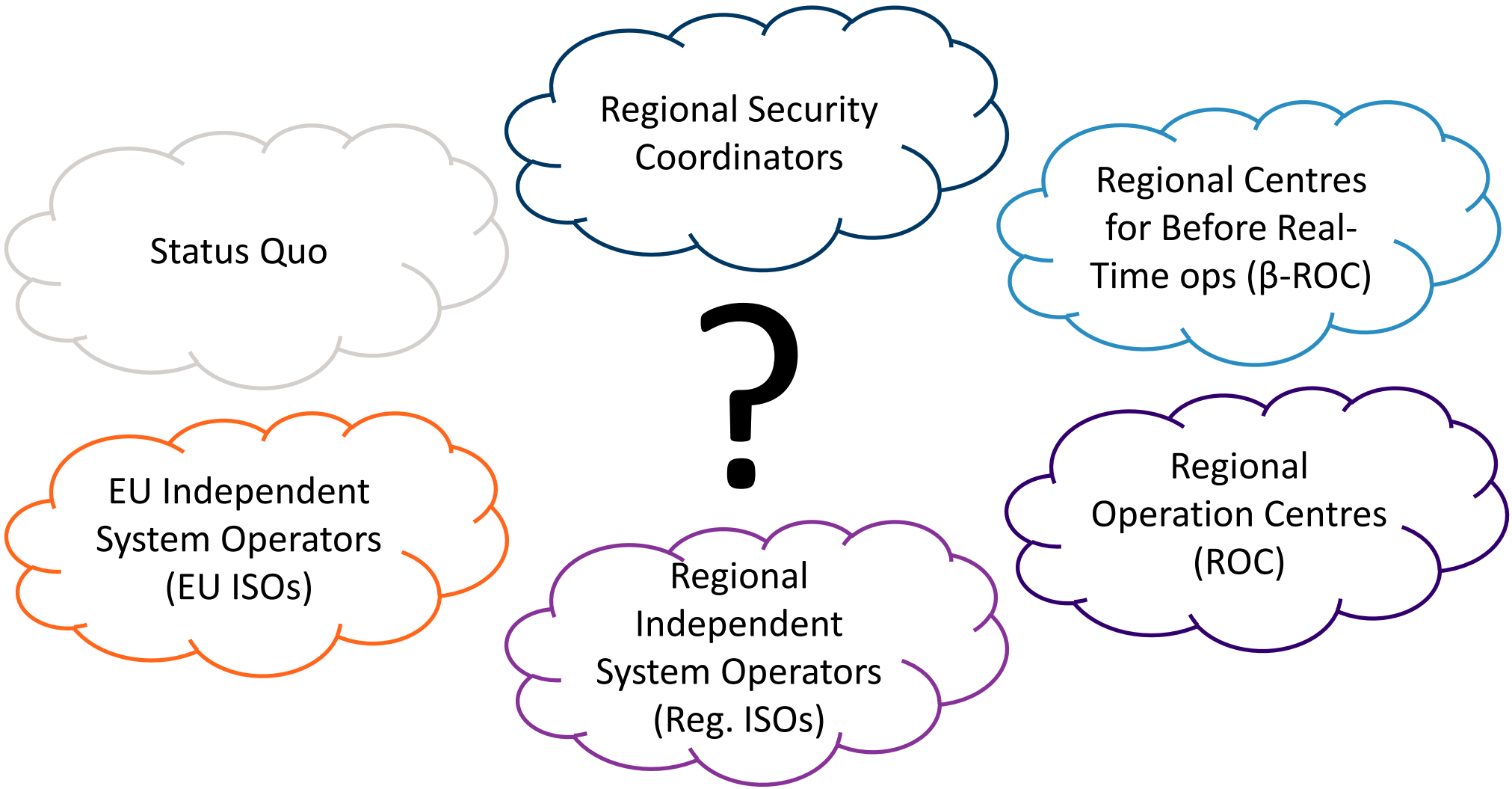
2019
RSCs fully implemented providing 5 services



2022
Full NCs and Guidelines implementation completed

The question is: what's next in terms of TSO coordination?

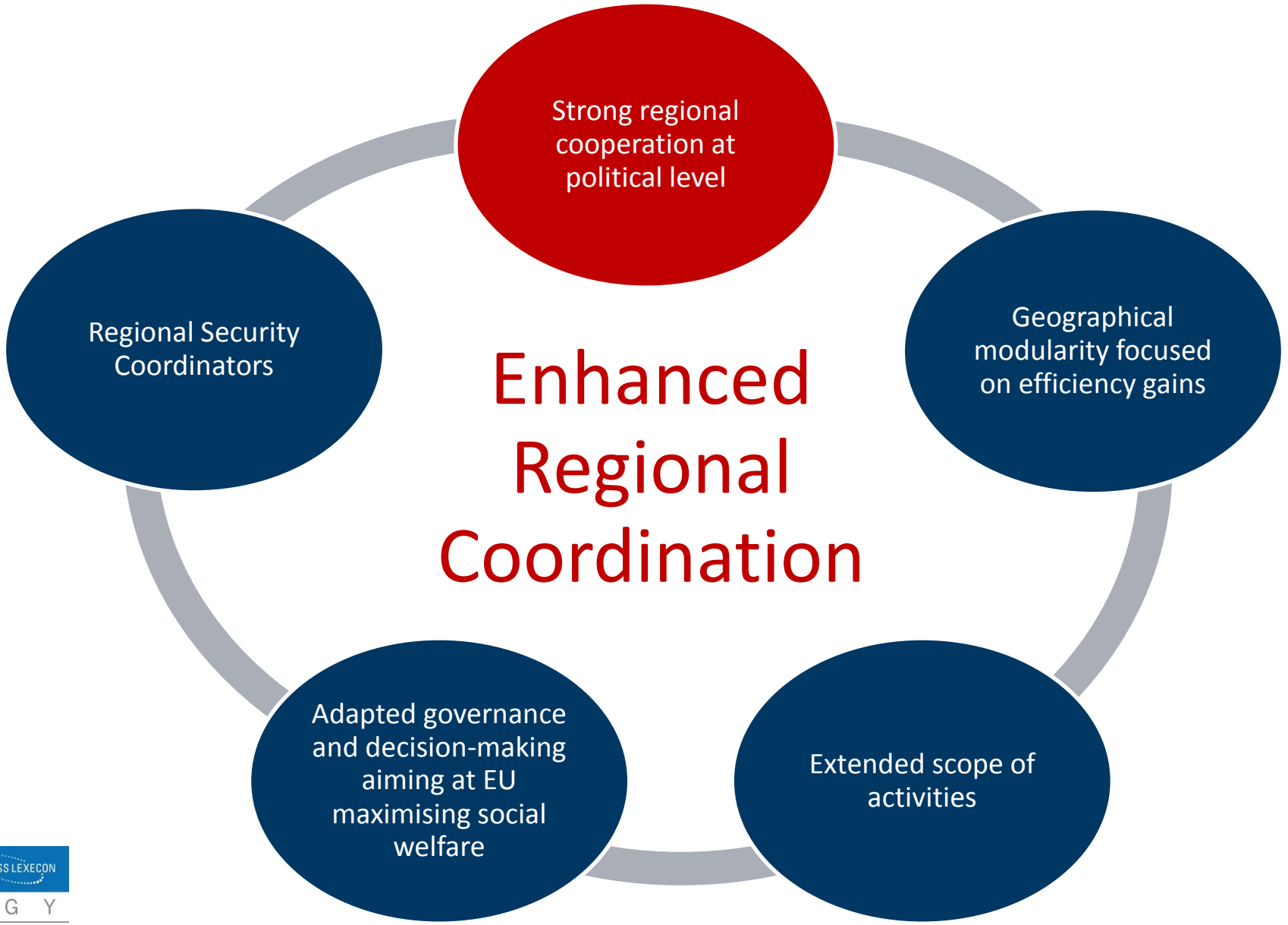
Options for regional coordination in system operation



Our approach was (a) to design a **pragmatic** solution (b) which could be **implemented right after the full implementation of Network Codes** and (c) which could be **flexible** enough to adapt to new changes

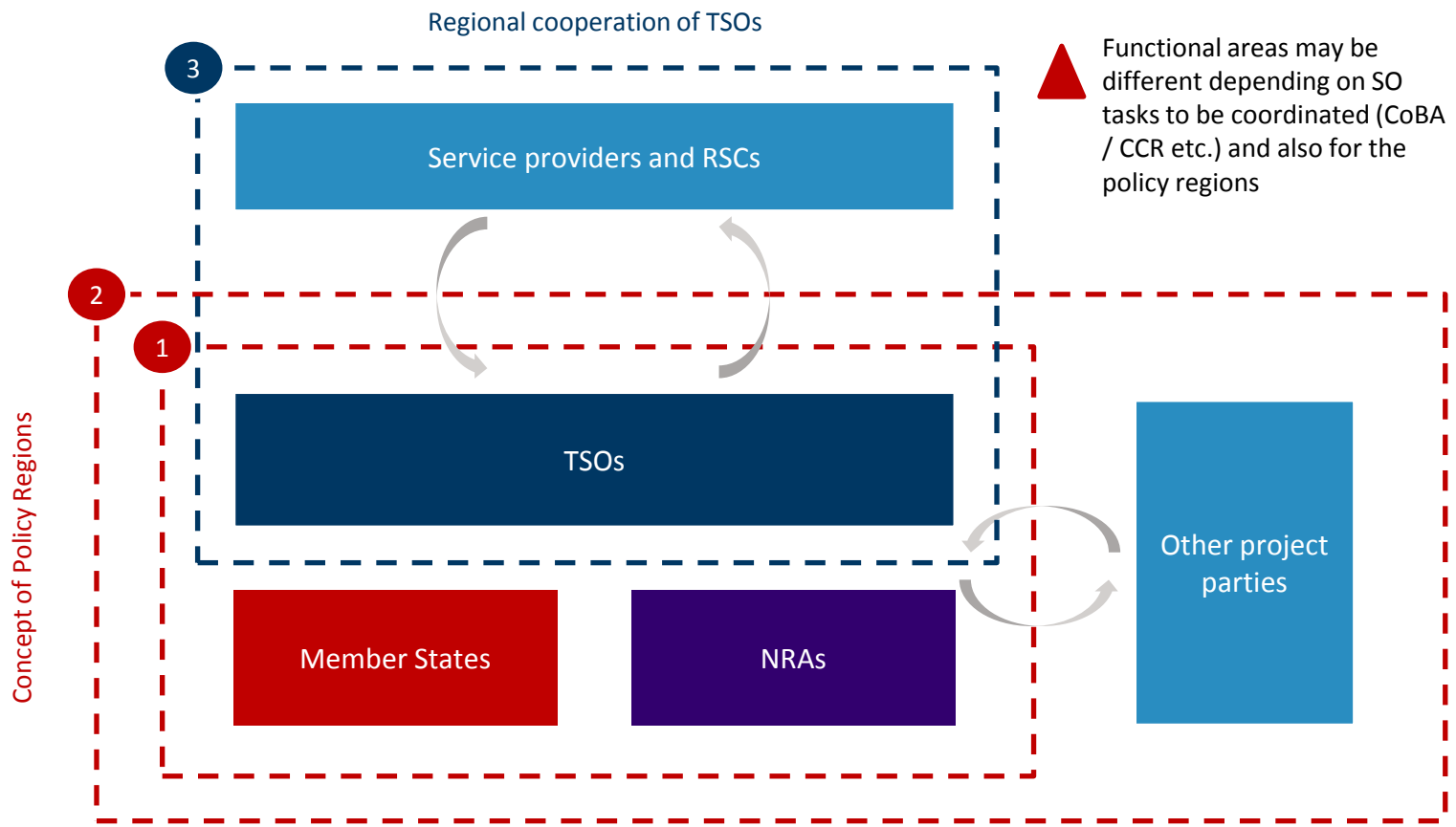
Proposed approach: an Enhanced Regional Coordination framework

The key principles of the Enhanced Regional Coordination (ERC) approach



A broader regional coordination framework is essential to cooperate on policies and regulations

Broader regional coordination beyond system operations



Comments

- Regional coordination beyond only system operations
- Member States, and possibly NRAs and TSOs, to coordinate policies and market design (1)
- Stakeholder engagement (2)
- Regional cooperation of TSOs with regional service providers, such as RSCs, when needed (3)
- Functional areas for operations depend on tasks to be coordinated, and may differ from policy regions

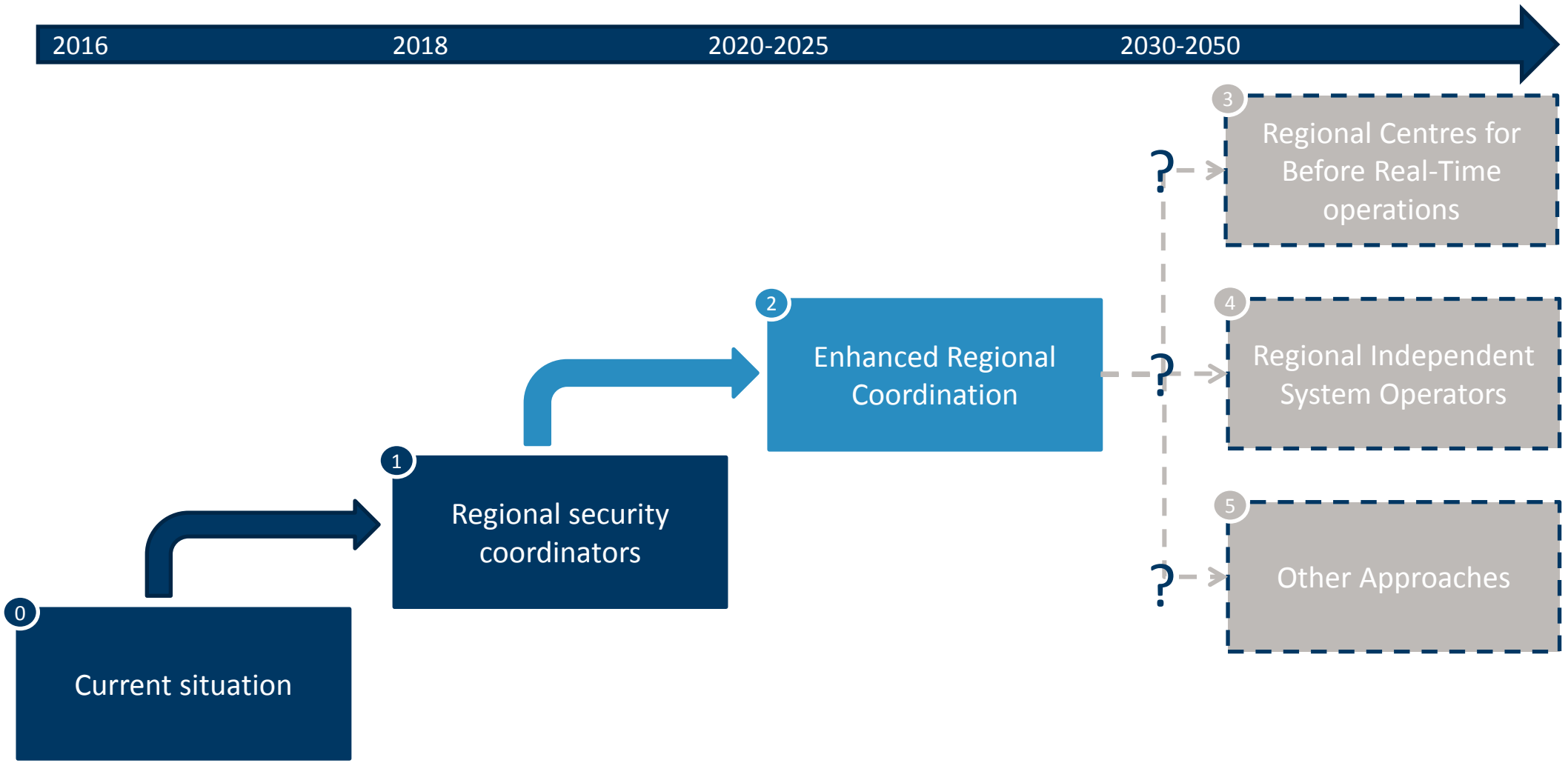
- To improve the operation of the system, the implementation of RSCs will be a major step forward; other functions could also be coordinated at regional level through RSCs
- In order to go further, the harmonisation and/or coordination of policies, regulatory frameworks and market design would be necessary;
- Regional cooperation at the policy / regulatory level is therefore essential

Investigating the extension in the scope of activities for RSCs after their full implementation

Note that these are suggestions / ideas to be further investigated and benefits to be defined in the future on additional services that could be performed at regional level, taking into account also the implementation of NCs:

	Possible tasks	Prerequisites
Enhanced operational planning	▪ **Coordination, prioritisation and optimisation of costly and non-costly RAs** ▪ **Regional capacity calculation** (**possible inclusion of (costly) RAs' activation)** ▪ Short-term generation adequacy assessment, including **seasonal outlooks** and identification of actions when tight situations are foreseen	▪ **Own experts**, developing gradually sufficient knowledge and experience ▪ **Access to all necessary information and data** ▪ Adequate IT equipment ▪ **Clear boundaries** for RSCs' tasks and responsibilities ▪ **RSCs to provide recommendations, TSOs may decide not to implement, notably for security of supply reasons; rejections to be reported to NRAs and justified** ▪ **Adapted regulatory framework** (cost recovery and allocate costs efficiently, gradual harmonisation of re-dispatch rules, end of priority dispatch for RES and access to all units for re-dispatch) ▪ **Clear guidelines** and approved methodologies should be used
Balancing	▪ **Capacity calculation for balancing time frame** + Merging merit order lists and host IT if deemed useful by TSOs ▪ **Regional analyses for TSOs on possibilities of sharing of reserves, enhanced dimensioning of balancing reserves, and reservation of cross-border capacity** for the exchange of balancing reserves ▪ A TSO platform/service provider for **regional procurement of balancing reserves**	
Generation adequacy	▪ **Regional generation / flexibility adequacy assessment** ▪ Analyses to **contribute to establish the need (or not) for system adequacy mechanisms (SAMs)** or for any other possible measures ▪ Contribute to TSOs additional analyses to **set up parameters of possible system adequacy mechanisms** (e.g. cross-border contribution / participation)	
Network planning	▪ Perform **cost-benefit analysis for specific regional projects** ▪ Support TSOs to perform studies aiming to **identify specific investment needs with a regional perspective**, e.g. providing further support to the TYNDP establishment	

Whatever the long term 'destination', the ERC approach is a necessary step forward



- The ERC approach is built on RSCs, but it would in any case be a necessary step for a smooth implementation of BRT-RCs, Regional ISOs or any other more centralised models

Conclusions

Conclusions: a pragmatic and evolutionary approach based on RSCs as the way forward

The power system undergoes a profound transformation and TSOs have embraced change to adapt system operation:

- Current practices have been built through an evolutionary process of gradual improvement and cooperation
- The implementation of RSCs, network codes and guidelines already represents a major step forward
- Any more radical change to system operation needs to be weighed with the costs associated with the potential loss of existing synergies with the potential benefits it would bring

We propose a practical and evolutionary way forward to Enhance Regional Coordination (ERC approach):

- Regional coordination should encompass in a comprehensive way system operation, market design and coordination of key policies and relevant regulations
- We recommend a step-by-step approach to strengthen interactions between TSOs building on ongoing initiatives and the RSCs
- The tasks performed by RSCs could be gradually extended to new activities based on the benefits identified and the evolution of the needs of the TSOs, taking into account regional specificities
- The most promising areas would be to extend services related to security analysis and operational planning and develop new services related to balancing services, network planning and long-term generation adequacy but further research is needed

RSCs governance and regulatory oversight will need to evolve to enable further system operation coordination:

- Reporting and transparency will be implemented with the SO / CACM guidelines
- The financial structure and the governance of RSCs should give them the means to carry out their tasks and gradually develop their expertise
- Regulatory oversight should be adapted. For instance, ACER could organise regional task forces to monitor the developments in each region. Regional decisions could be made by a subgroup of the ACER board of regulators

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Experts with Impact

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