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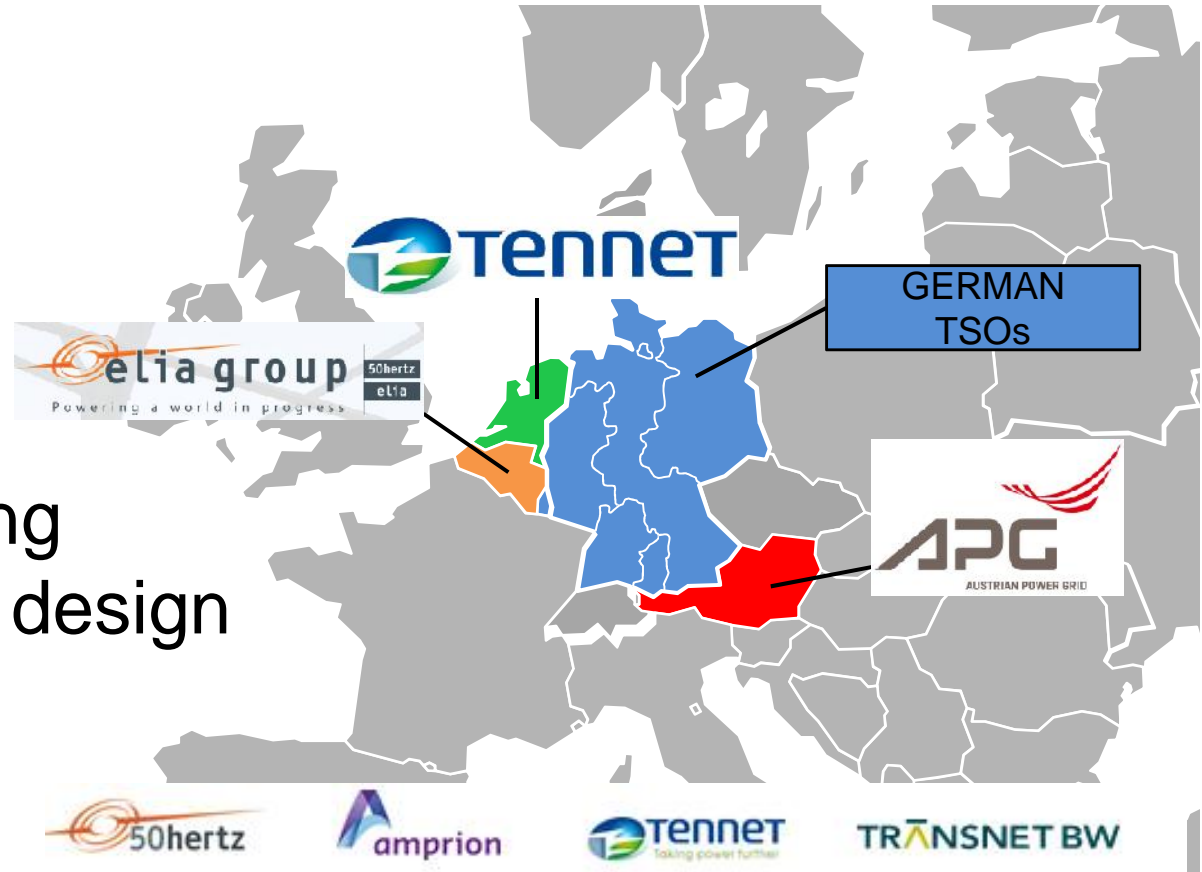
# EXPLORE

## Status Update

Balancing Stakeholder Group  
November 27th Brussels

# Explore

**E**uropean  
**X**-border  
**P**roject for  
**L**ong term  
**R**eal-time balancing  
**E**lectricity market design



## Background: Analysis common FRR market

1

- Common qualitative FRR market comparison on subject of BE-NL-GE CoBa
- *Results of study published on TSOs website*

2

- Austrian, German, Dutch and Belgian TSO decided to proceed with the analysis of a potential common FRR Balancing Market design
- *Work ongoing in newly set up Expert Group*

3

- Technical and market aspects of such cooperation are studied:
- **the products, technical implementation and processes** (bidding, activation, selection, exchange) for the exchange of aFRR and mFRR;
  - **interaction with intraday markets;**
  - required **level of harmonisation;**
  - proposed design for the **settlement of balancing energy and imbalance;**
  - **use of cross zonal capacity after ID markets** for different balancing processes.

- ✓ EXPLORE contributes to early implementation of EB GL and CoBa formation
- ✓ CBA of BE-NL pilot project (phase 3) is temporarily put on hold given this development

# BE-NL-DE-AT: natural partners for balancing

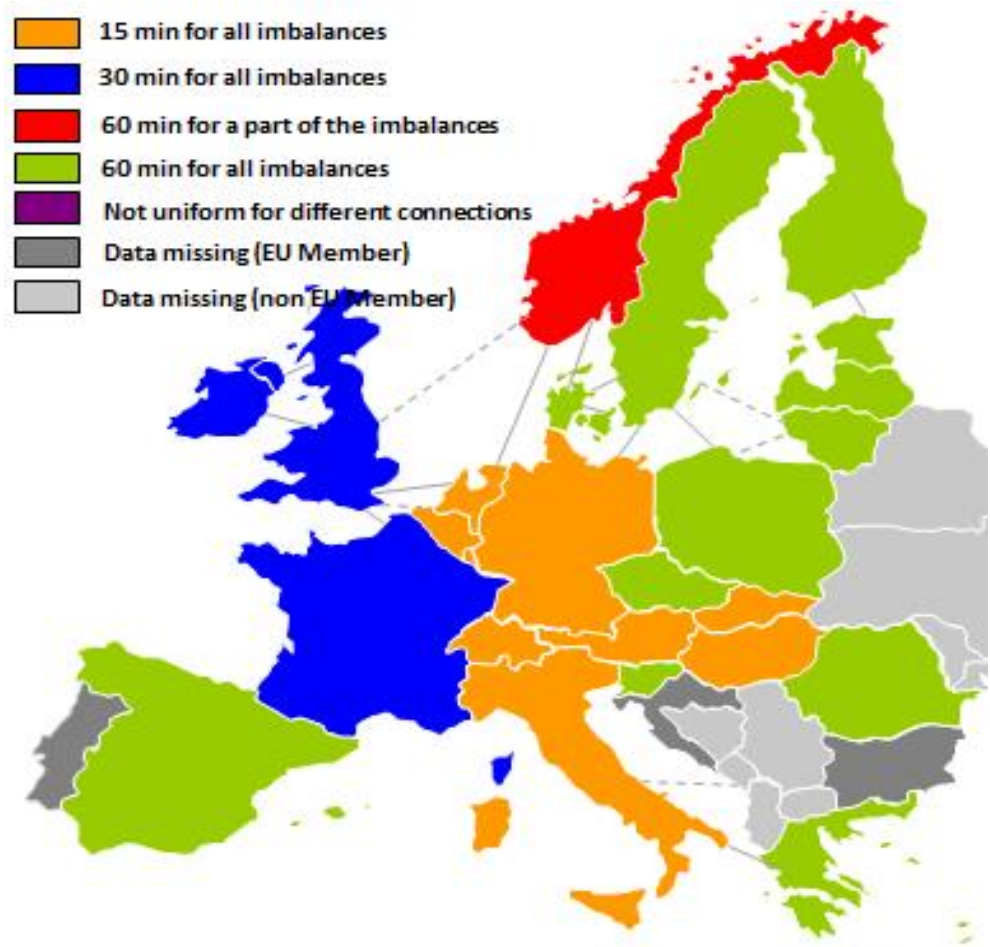


### No use of replacement reserves:

- ✓ (Mostly) reactive balancing;
- ✓ EXPLORE TSOs rely on ID markets with short GCT

Nevertheless there are still significant differences to overcome within EXPLORE: pricing, products, activation details,...

# BE-NL-DE-AT: natural partners for balancing



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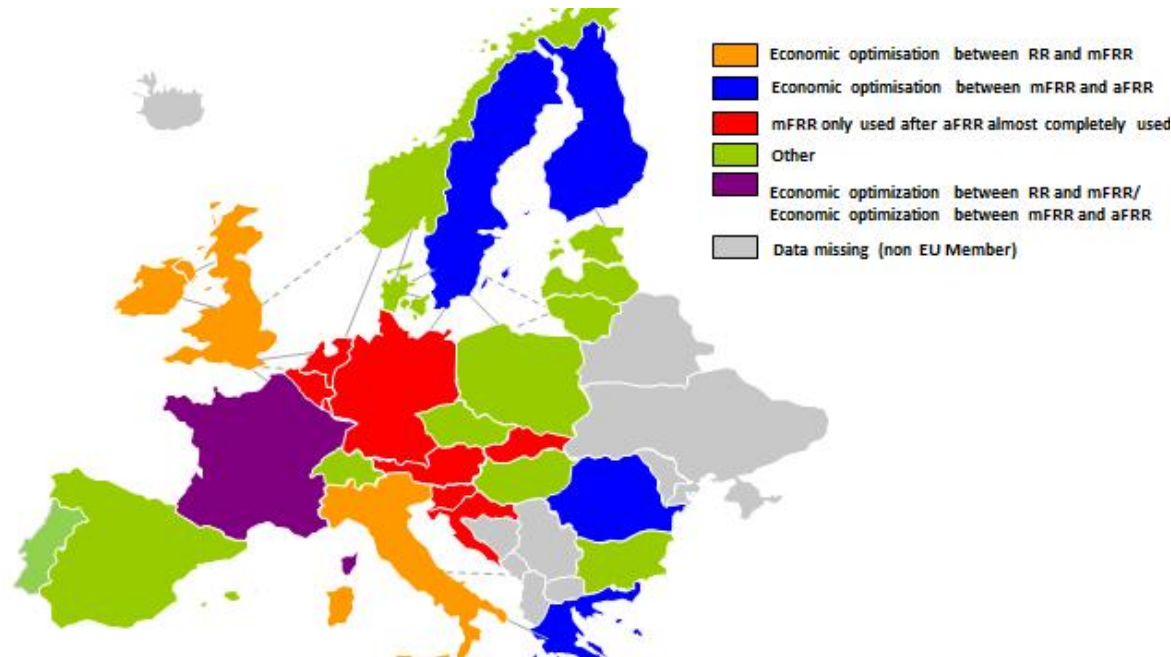
- ✓ (Mostly) reactive balancing;
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### Harmonized ISP of 15 minutes:

- ✓ Important for settlement, pricing, product design,...;
- ✓ Important for balancing incentives.

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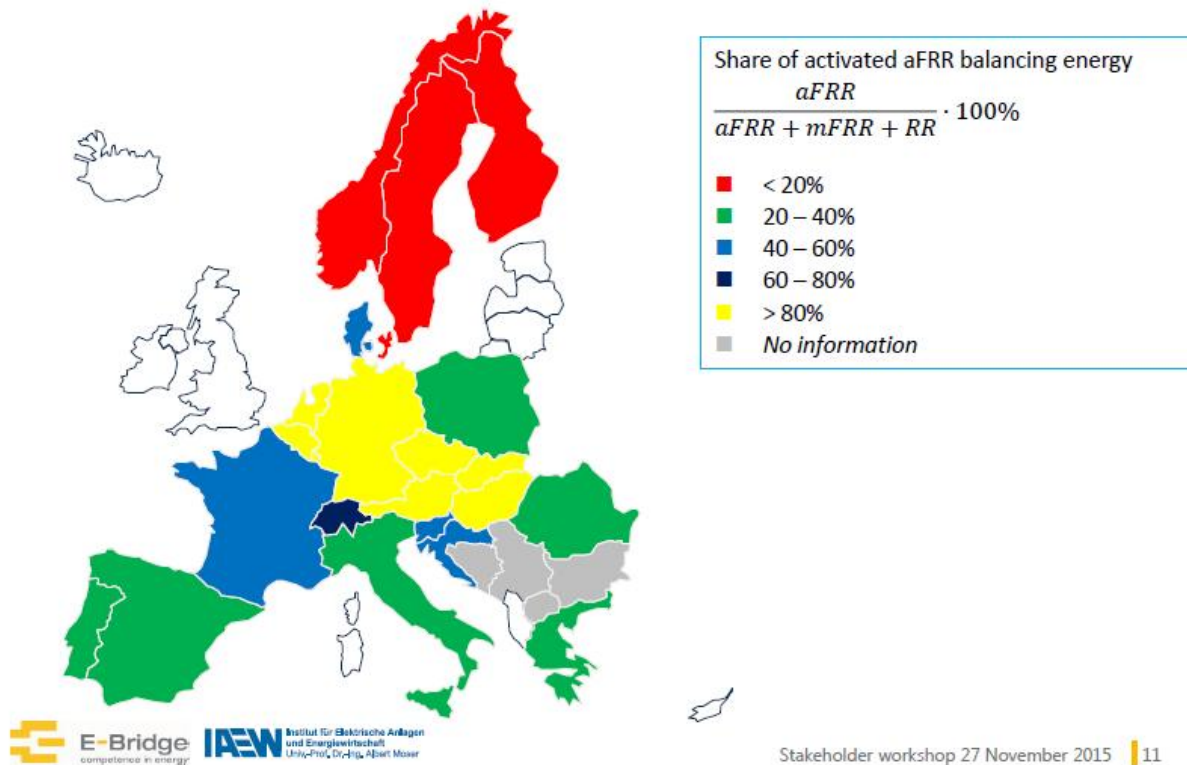
### No economic optimization between aFRR and mFRR:

- ✓ Similar activation strategies

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# BE-NL-DE-AT: natural partners for balancing



**Nevertheless there are still significant differences to overcome within EXPLORE: pricing, products, activation details,...**

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### Majority of the balancing performed by aFRR

- ✓ Similar activation strategies;
- ✓ Typical for reactive balancing systems.

# Objective and starting assumptions

## Objective EXPLORE:

- **Develop technical and market concepts for cross-border exchange of Frequency Restoration Reserve (aFRR & mFRR)**

## Starting points:

- **No economic optimization between use of aFRR and mFRR balancing energy:**
  - Activation trigger based on technical considerations only (regardless of price);
- **Exchanged bids are firm;**
- **Reserve Replacement is out of scope** of present initiative:
  - No consideration of a (local) potential costs optimization between RR and mFRR;
- The **proposed market design shall respect** to the extent possible:
  - Requirements from the future NC or GL on **CACM, Electricity Balancing and LFC&R;**
  - **local TSOs responsibilities** linked to LFC&R Block and LFC&R Area.



## Ongoing work in EXPLORE

### Discussions on pricing and settlement fundamentals:

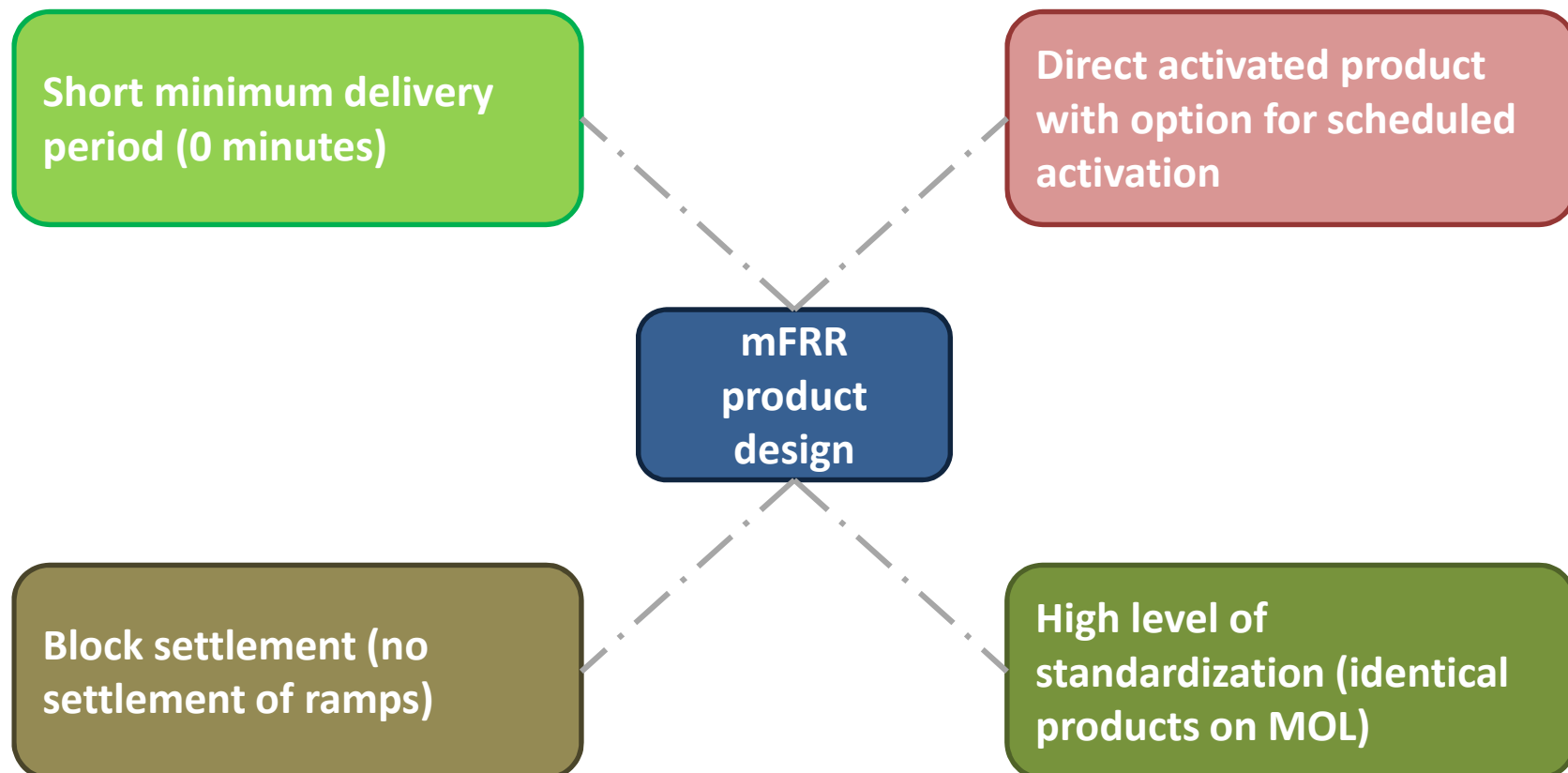
- Local or cross-border pricing;
- Per product or cross-product pricing;
- Pay-as-bid or pay-marginal;
- Function of imbalance pricing and desired balancing incentives;
- Balancing energy gate closure times;
- Relationship to intraday markets
- ...

→ Prior agreement on these fundamental topics is key for setting up any XB exchange

Detailed discussions on product design, activation algorithms, use of XZ transmission capacity,... will be tackled in a second stage (first half of 2016)

## mFRR product design discussions

Current reflections / first ideas of EXPLORE TSOs on the mFRR product design discussions go in following direction (might still change):





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Thanks for your attention!