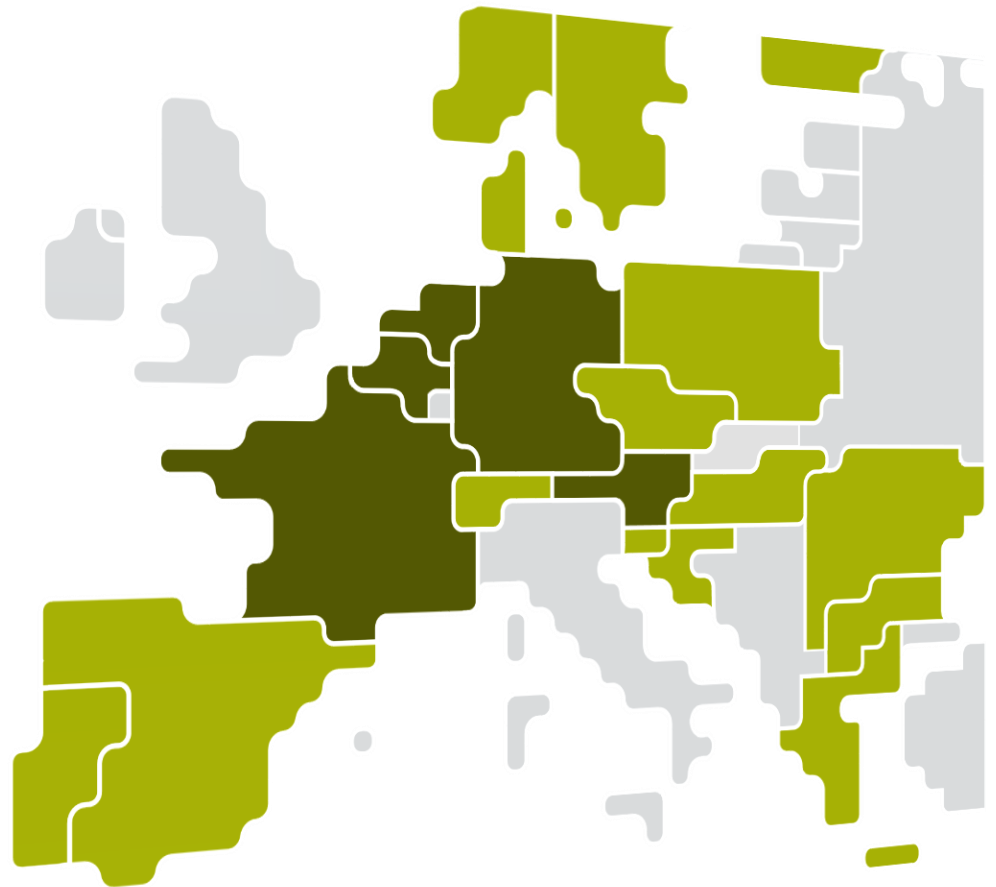




PICASSO: update BSG meeting

7 December 2017





- PICASSO project has been endorsed as reference project for the aFRR platform by ENTSO-E
- Project now includes 23 TSOs:
 - 8 members: 50Hz, Amprion, APG, Elia, RTE, Tennet DE, Tennet NL, Transnet BW
 - 15 observers: CEPS, Eles, Fingrid, Statnett, Energinet.dk, PSE, SvK, MAVIR, ESO, REE, HOPS, REN, Swissgrid, ADMIE/IPTO and Transelectrica
 - Observers can join as member without waiting period
 - 6+ TSOs are expected to join as member in early January
 - Only 2 TSOs having to implement the aFRR platform are missing: SEPS and TERNNA
- First consultation (call for input) is running until December 20th, 2017
 - Informal consultation
 - Many open design points where the views of the stakeholders are requested to help coming to a proposal
 - Please invite all stakeholders to participate
- Further stakeholder involvement:
 - End of March: stakeholders' workshop to present results of consultation
 - 2nd consultation:
 - Formal consultation on the implementation framework of the aFRR platform, in accordance with Article 21 of GLEB
 - Timing: 2 months around May – June (– July)
 - Consultation on pricing (Article 30) to follow up later on



**Harmonising and integrating
aFRR balancing markets:
Key challenges**

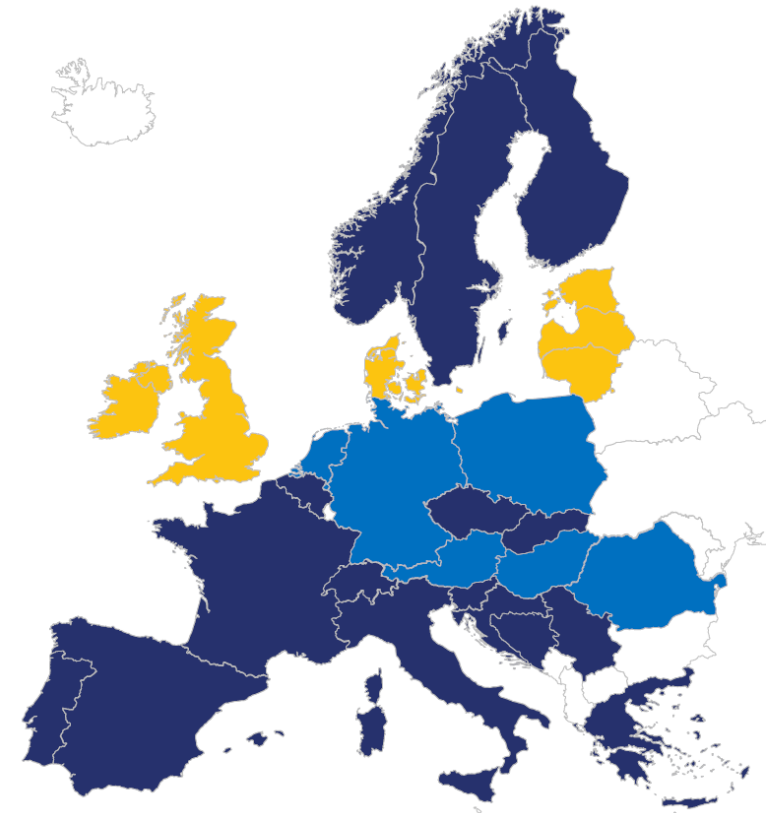
Harmonising aFRR market: some key challenges

Pro-rata vs. Merit order



- Many TSOs are currently using a pro-rata activation for aFRR
- Evolving towards merit-order activation will require adaptation of the SCADA system/EMS
 - Likely a multi-year project for many TSOs!

➔ **This change is a basic enabler for even considering an integrated European aFRR market compliant with GLEB**



Key:

White	Missing data
Yellow	N/A
Dark Blue	Pro Rata (Parallel Activation)
Light Blue	Merit order

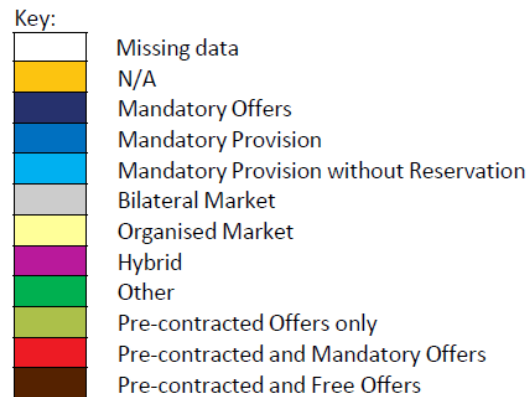
Harmonising aFRR market: some key challenges

Heterogeneous market designs



- Very heterogeneous market arrangements in all countries
- Only one country has already reached the GLEB requirement of having contracted bids and non-contracted bids: The Netherlands

→ Many changes at national level on top of the developments at European level



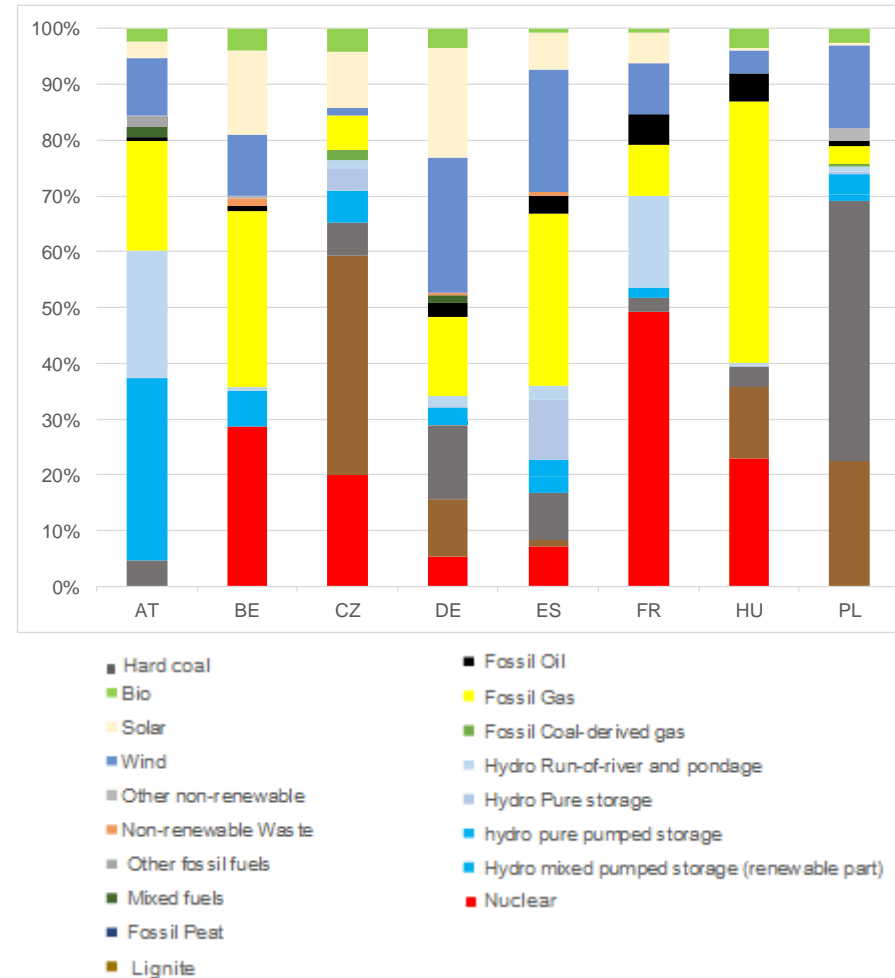
Harmonising aFRR market: some key challenges



Challenges in the harmonisation of Full Activation Time

- Value of FAT in Europe currently ranges from 2 to 15 minutes
- This is a result of historical choices when the need for harmonisation of the products was limited to an agreement on some minimal requirements
 - Basically: different generation structures have led to different choices taking into account the local technical capabilities
- Now we have to define a single harmonised value for the FAT to create a level playing field, while the generation structure and the type of providers are only slowly evolving
- The frequency quality is also of concern when defining the FAT

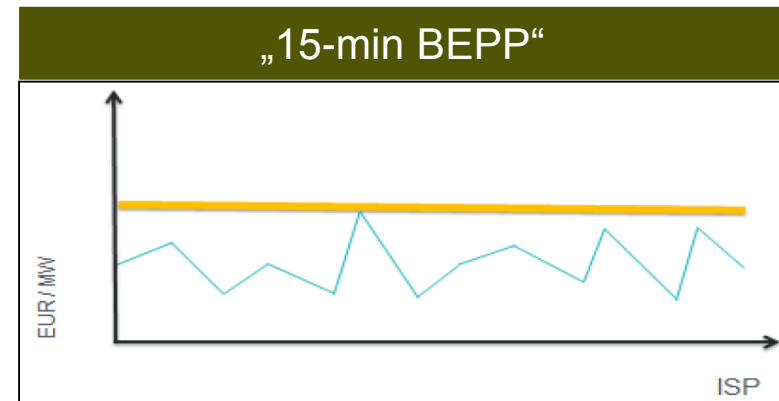
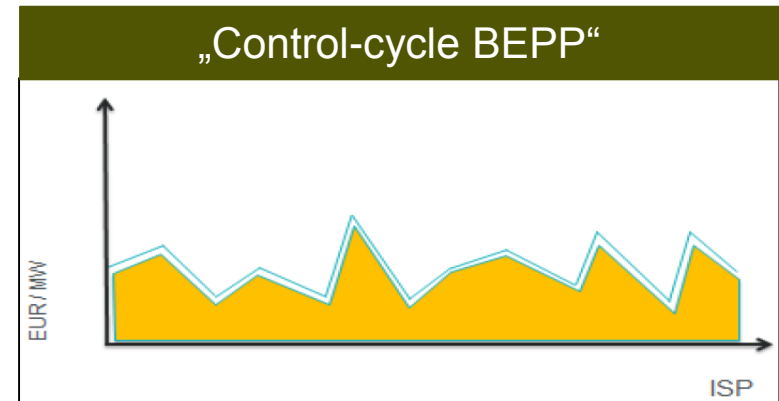
➔ **Harmonisation might have adverse effects, the right balance has to be sought**





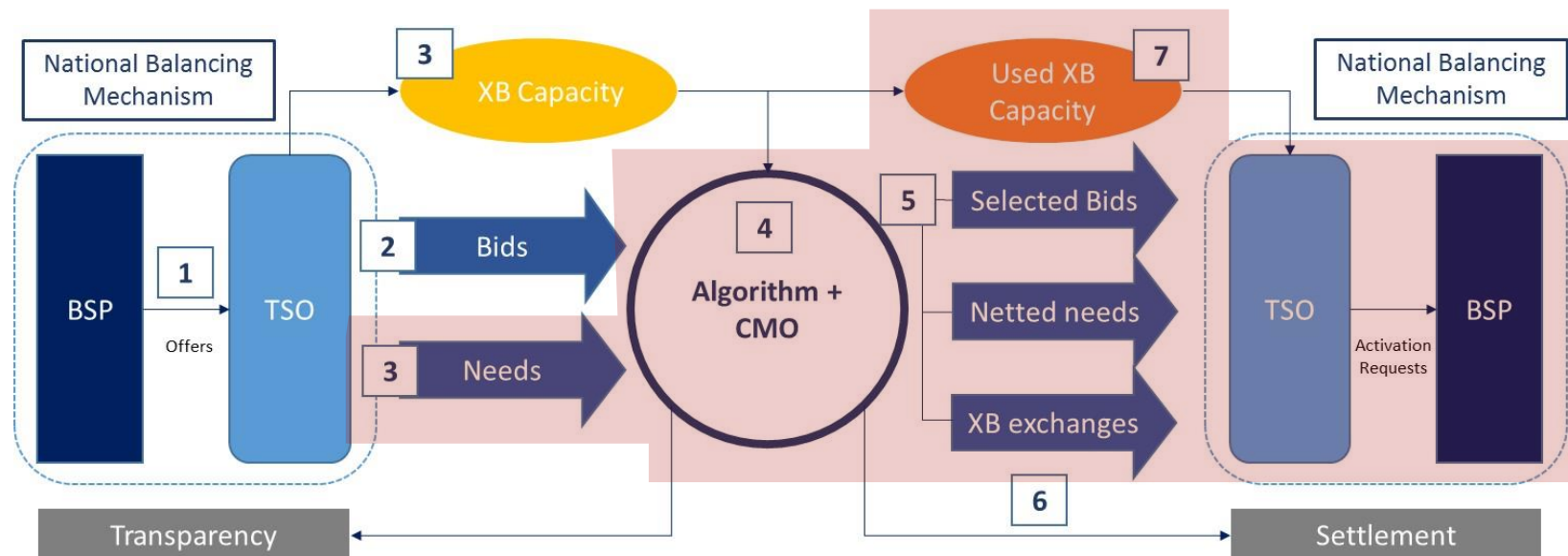
Pricing for aFRR: different options

- aFRR demand is constantly evolving (every 4s), implying the need to activate different bids at different time
 - Different ways to determine the marginal pricing may be defined → Balancing Energy Pricing Period (BEPP)
 - The 2 extreme options are control-cycle BEPP and 15-min BEPP
 - The 2 options are conveying different incentives towards BSPs and BRPs, lead to different ways to determine the uncongested areas, and have different impacts in terms of implementation
- **Fundamental market design questions are still open and need to be solved in the coming year**



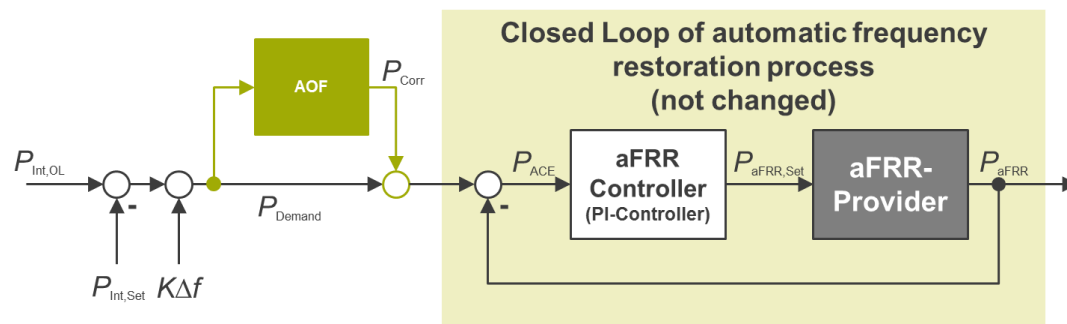
Integrating aFRR markets: some key challenges

Specific considerations for the aFRR platform



- Platform is similar in its structure to TERRE & MARI but signals have to be exchanged and algorithm has to run every **4 seconds** (vs. every 15 min or every minute)
- Platform will link control loops of all European controllers → presence of dynamic effects to be identified by simulations and mitigated where needed

→ **Specific technical challenges beyond the market challenges**





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