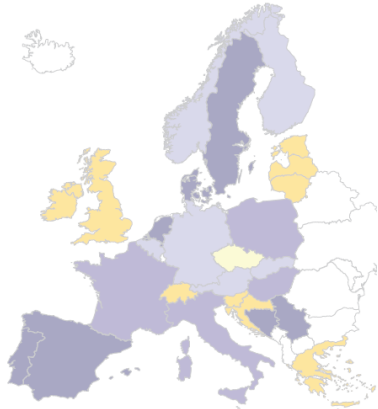


Where will move the cross-border cooperation among transmission system operators in the area of balancing reserves and balancing energy?

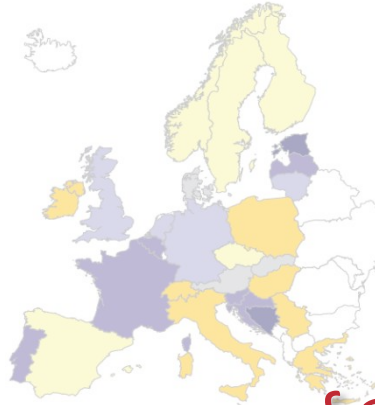
Tomáš Bednář

Energy markets development department

Status quo?



Secondary control (aFRR)



Tertiary control < 15min (nFRR)



Tertiary control > 15min (RR)



Imbalance settlement period



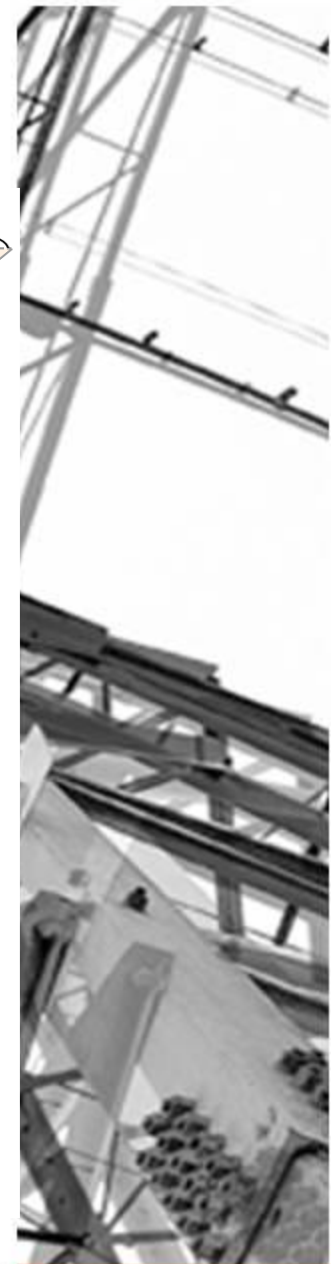
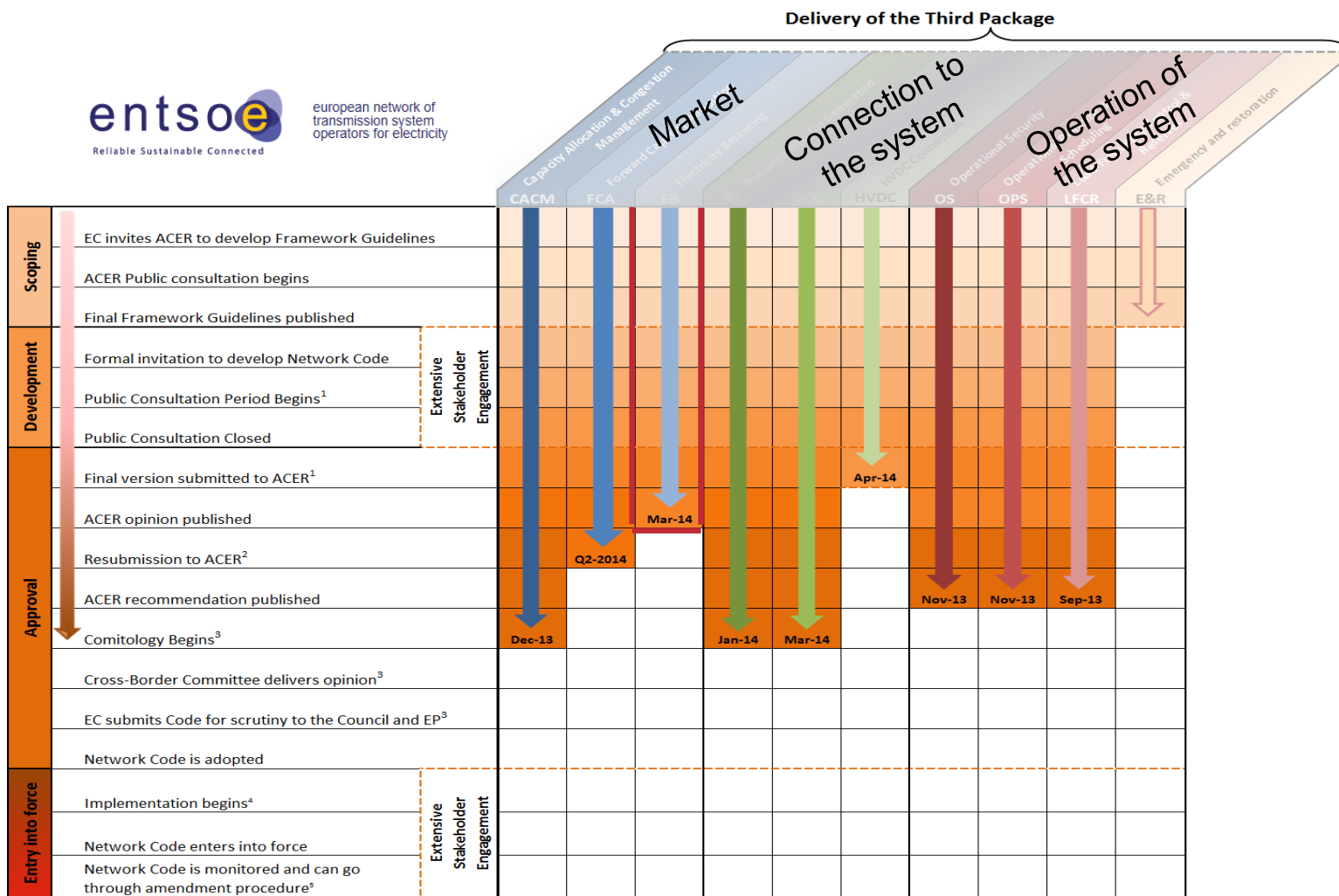
Power system control

...

Currently same categories of ancillary services only.



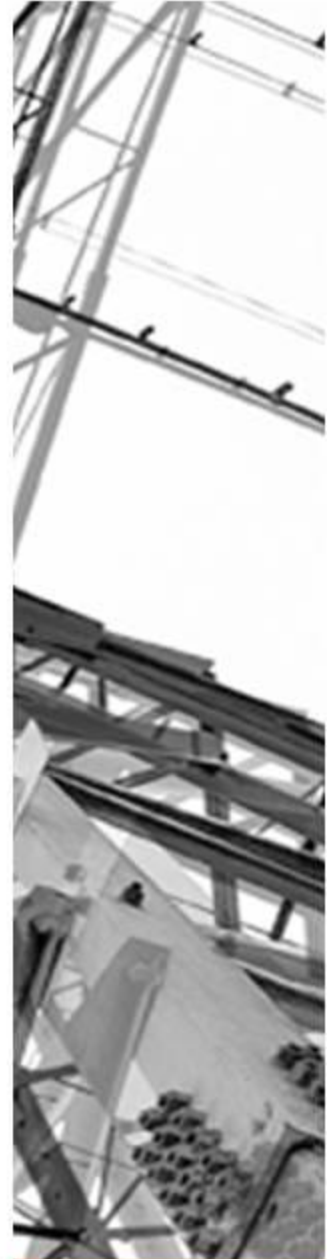
Network codes



Integration of electricity markets



Electricity market			Balancing reserves market	Balancing energy market
Long term	D-A	Intraday	Balancing power reservation	Close to real-time (H-1)

NC on Forward Capacity Allocation	NC on Capacity Allocation and Congestion Management	NC on Electricity Balancing
		NC on Load Frequency Control and Reserves
		NC on Operational Security
	NC on Capacity Allocation and Congestion Management	

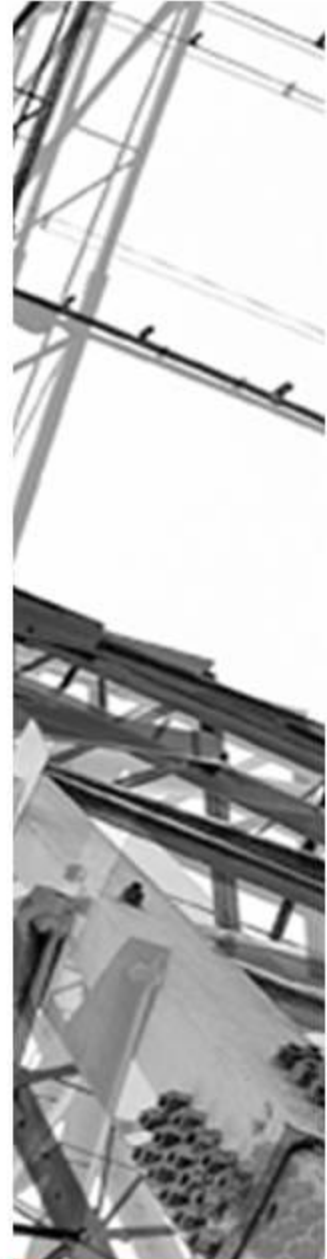


„Balancing market“ pillars

Cooperation between TSO while using standard products

Common market with balancing reserves	Common market with balancing energy	Real-time cooperation	Imbalance settlement harmonization
<p>Exchange of reserves</p> <p>Sharing of reserves</p> <ul style="list-style-type: none"> • Balancing reserves standard products • Methodologies for cross-border capacity acquisition 	<ul style="list-style-type: none"> • Balancing energy standard products • Gate closure time for bid submission close to real-time • Balancing energy settlement harmonization 	<p>Imbalance netting</p>  <p>Common merit order list</p> 	<ul style="list-style-type: none"> • Imbalance settlement period 30min and less • Imbalance calculation harmonization • Imbalance settlement price harmonization

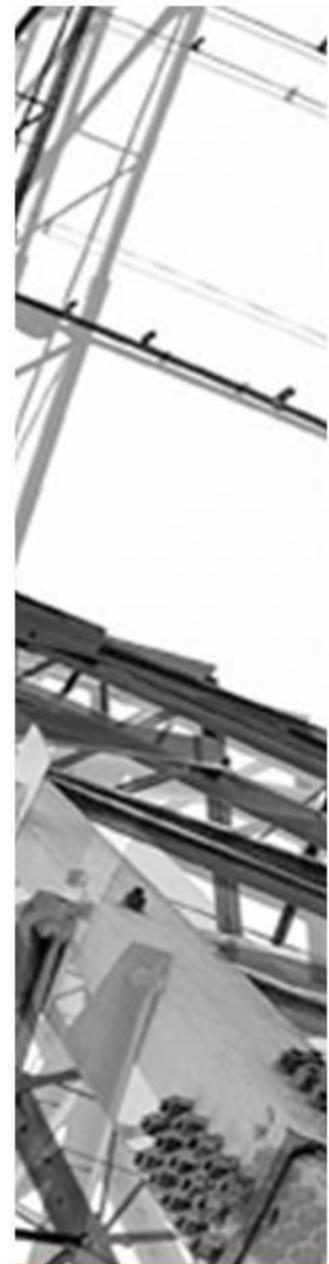
Voluntary



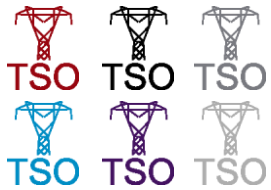
Coordinated Balancing Area

*Coordinated Balancing Area (CoBA):
geographical area with harmonized
rules for national balancing reserve and
energy market and with rules for
market participants*

- Common framework for „Terms and conditions related to Balancing“ (= Grid code + ordinance on electricity market rules)
- Each TSO must be in a CoBA with at least one other TSO from a different member state
- Exchange of a standard product and imbalance netting
- Central operation of the „Balancing market“

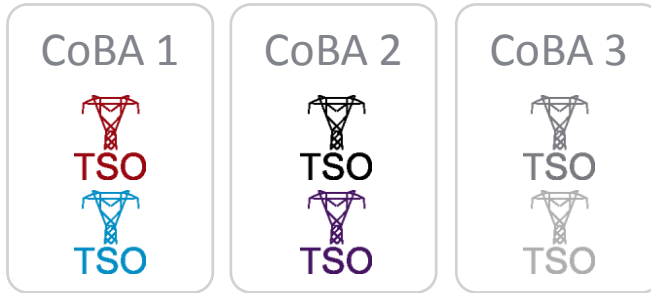


From present, through regions towards EU solution



Present

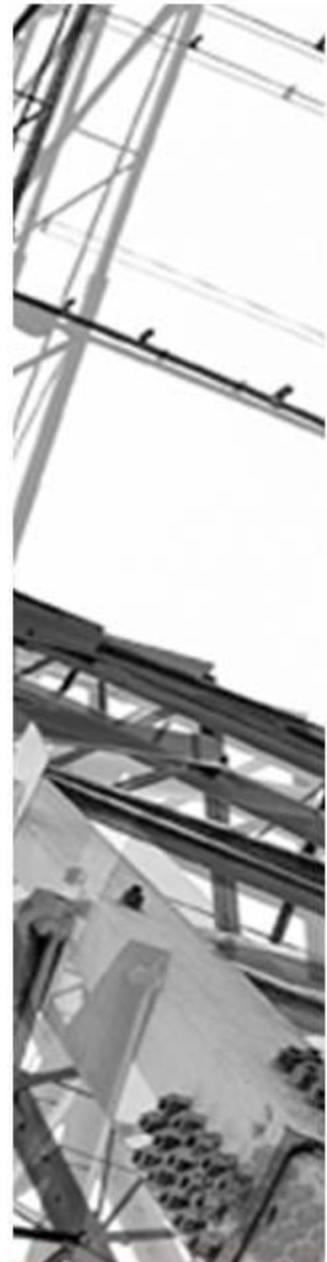
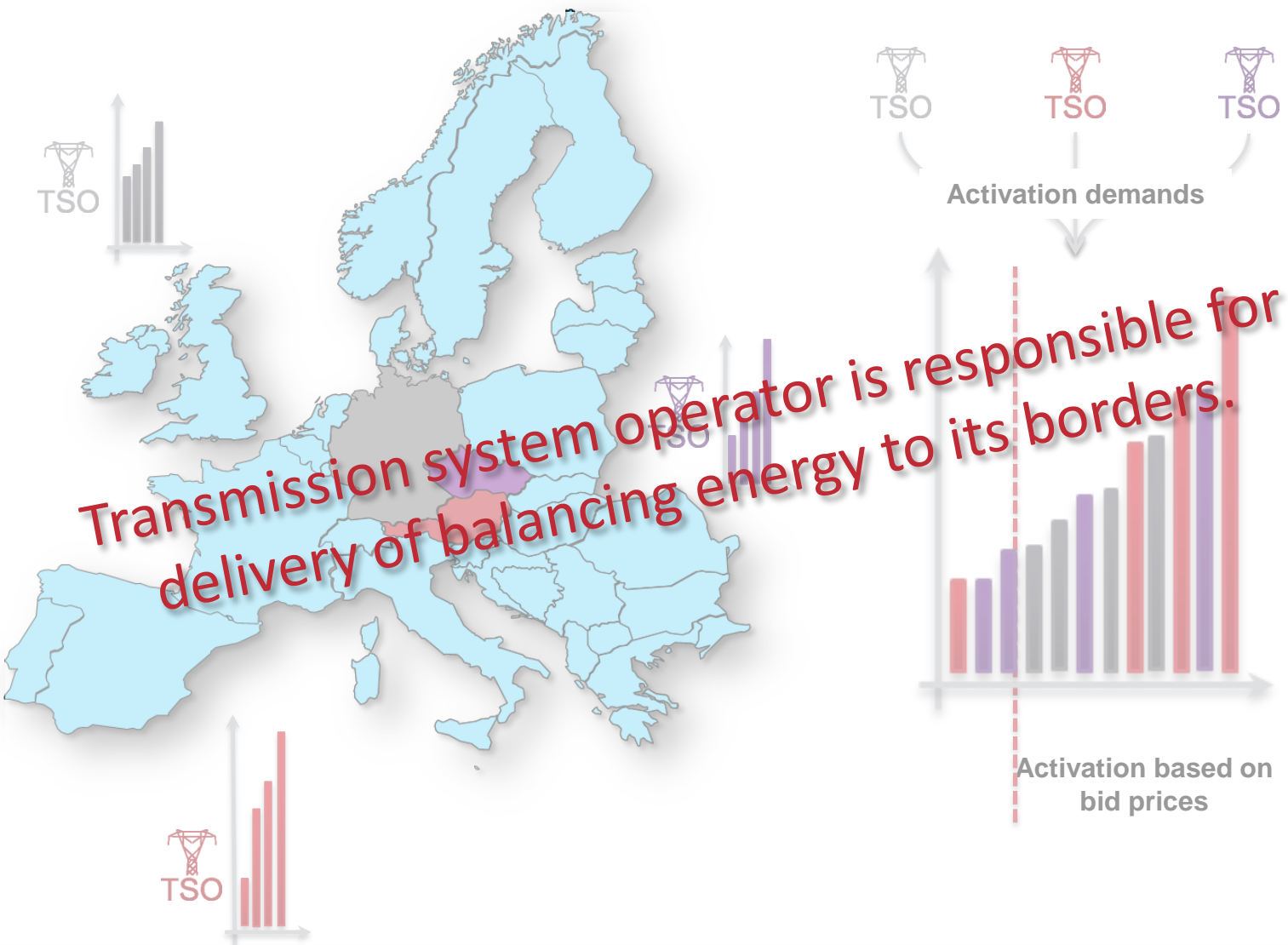
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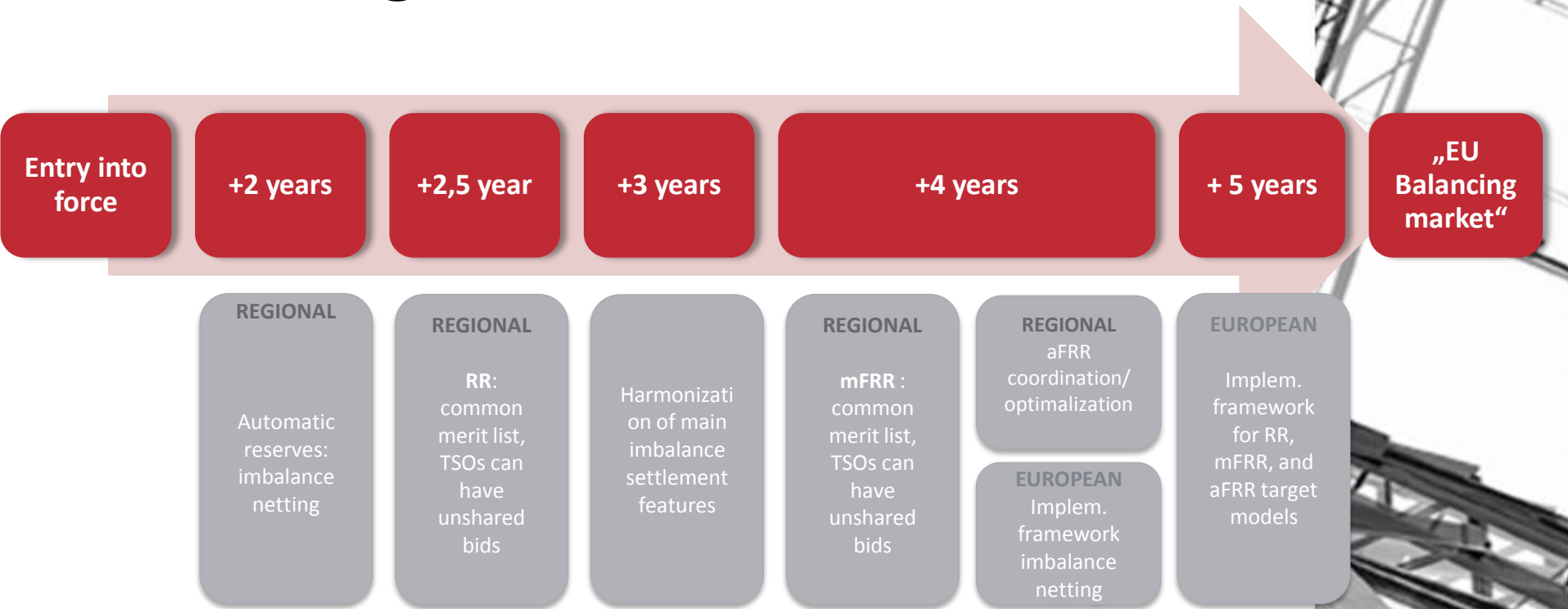
Regional cooperation



Common merit order list under TSO responsibility



„Balancing market“ - when?



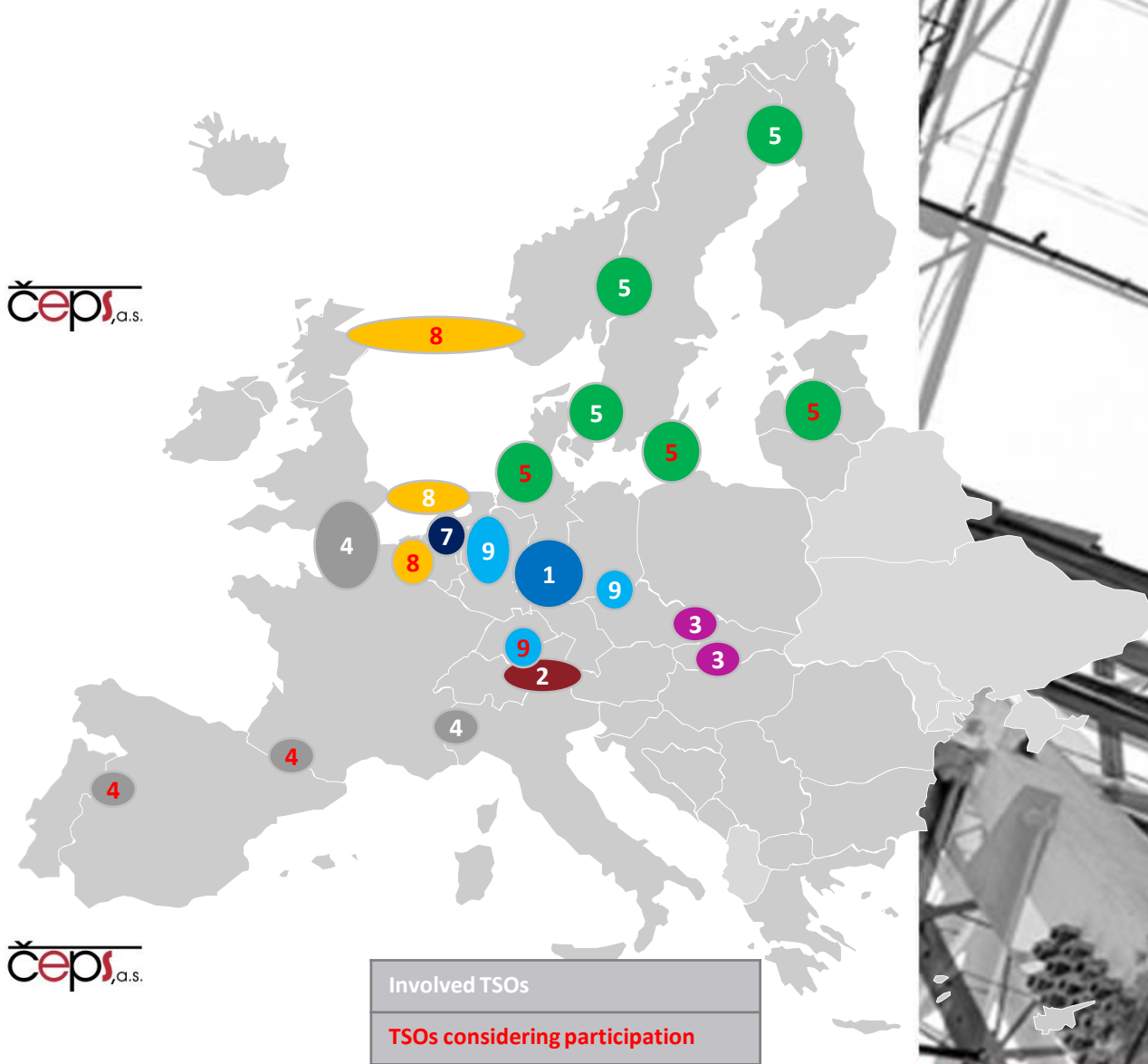
What is not included in network code draft:

- Description of models and standard products.
- Final targets for the EU solution.
- Targets and milestones for balancing reserve market.

„Balancing market“ pilot projects



- 1 CMOs for mFRR and aFRR with real Time Flow Based congestion management
- 2 Cross-border market for FCR based on TSO-TSO model
- 3 e-GCC
- 4 TERRE: Trans-European Replacement Reserves Exchange
- 5 Development of the Nordic RPM
- 7 Design and evaluation of a harmonised reactive balancing market with XB optimisation of Frequency Restoration while keeping control areas, bid zones, and Regulatory oversight
- 8 BritNed / TenneT / National Grid Balancing Services
- 9 IGCC Imbalance Netting, aFRR-Assistance and Flow-Based Congestion Management.

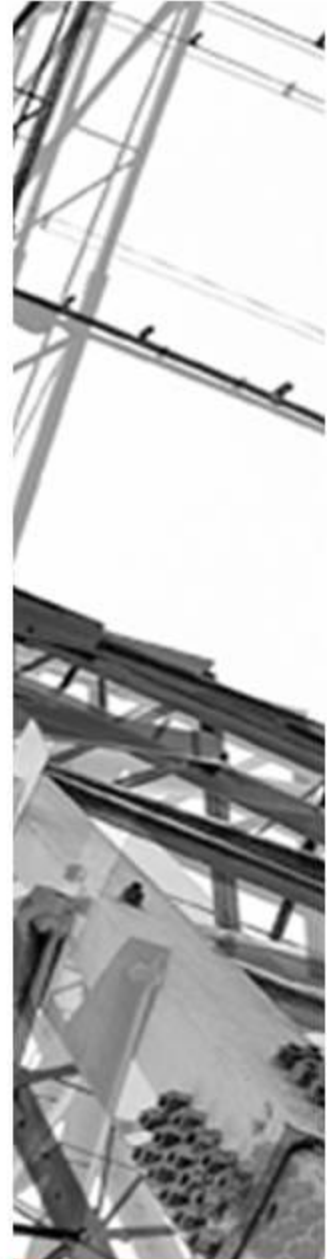
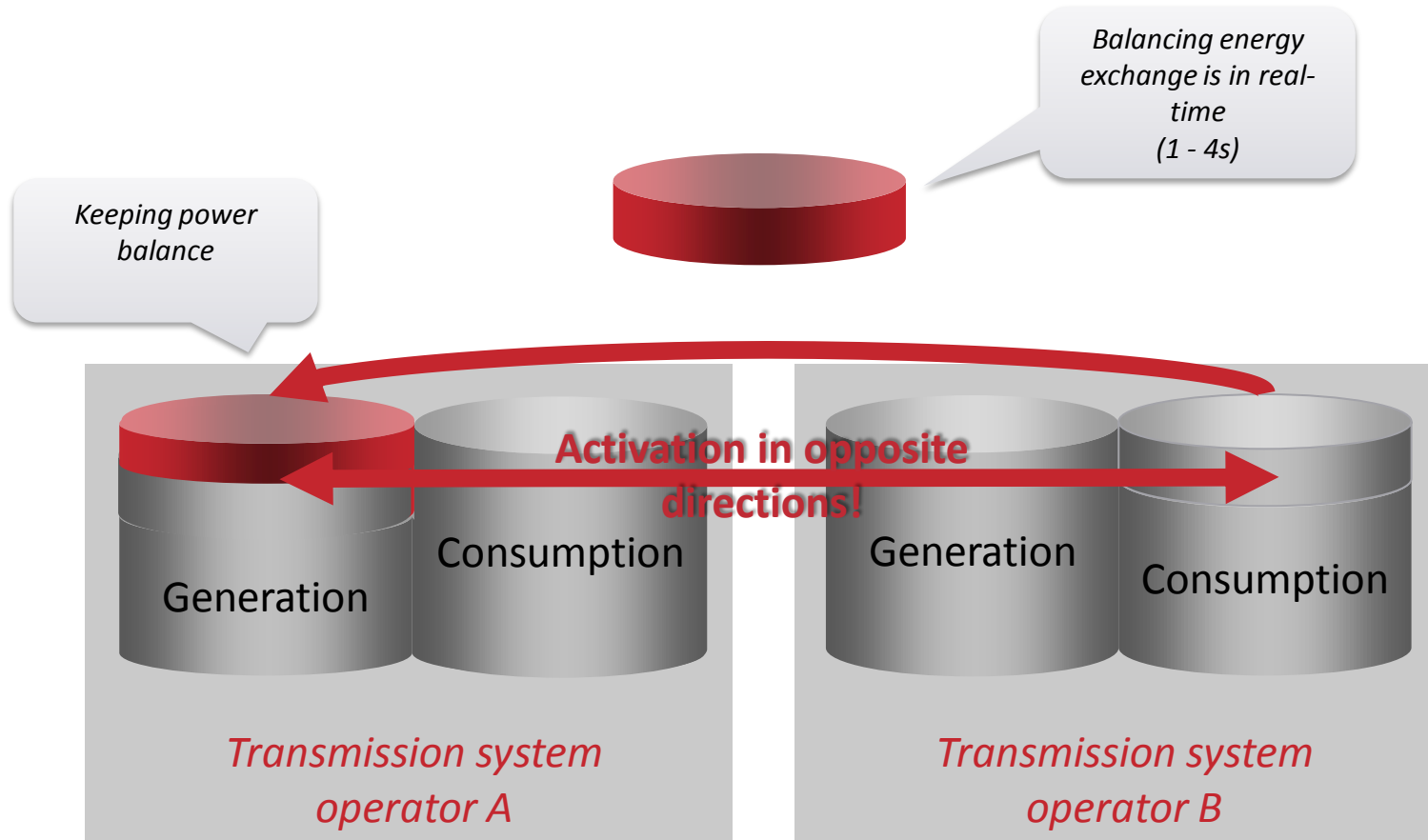


Involved TSOs
 TSOs considering participation

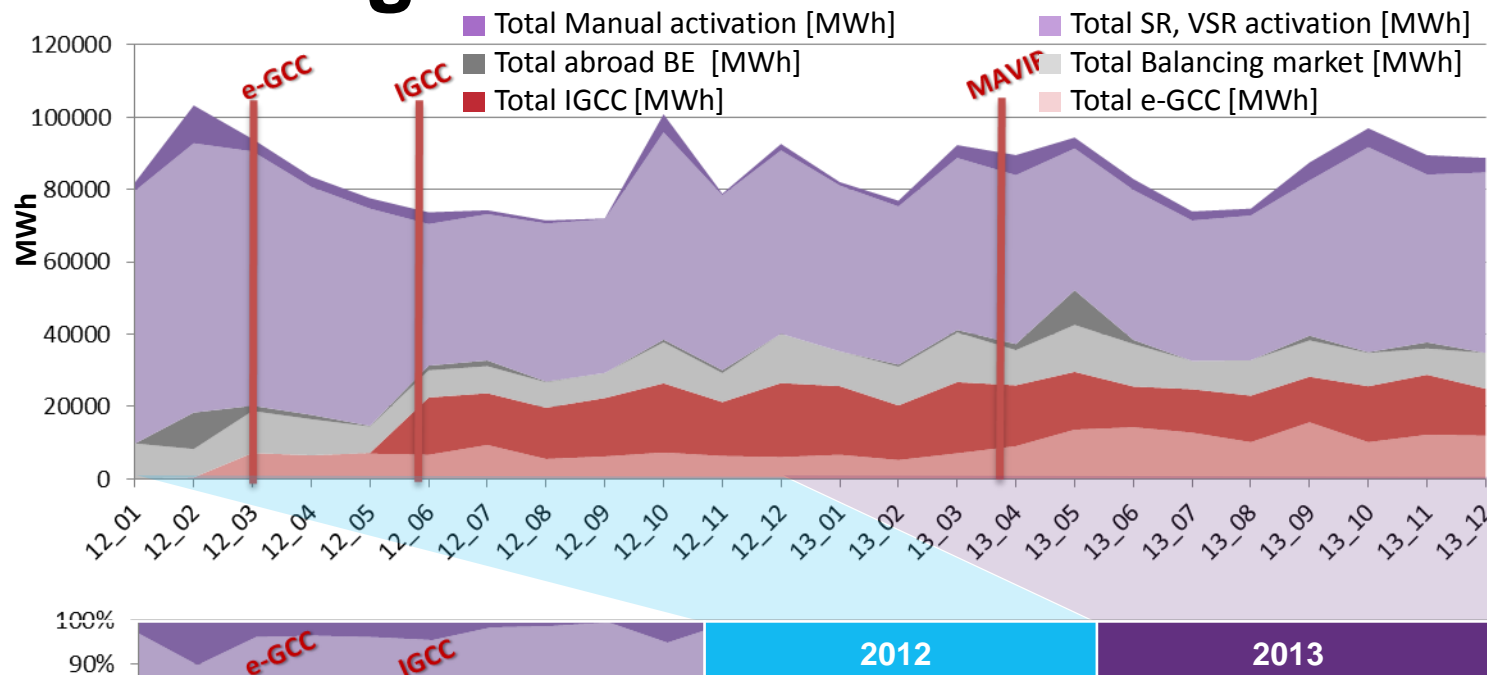
Imabalance netting and ČEPS



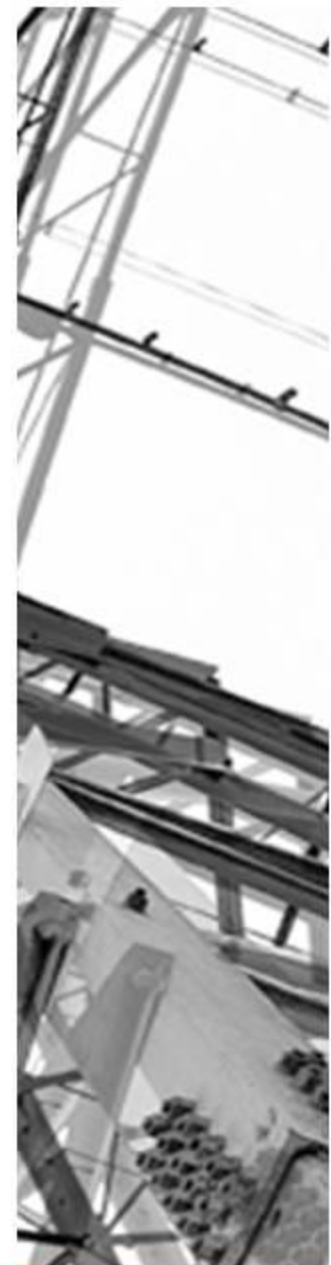
How imbalance netting works?



Imbalance netting share on balancing in ČR

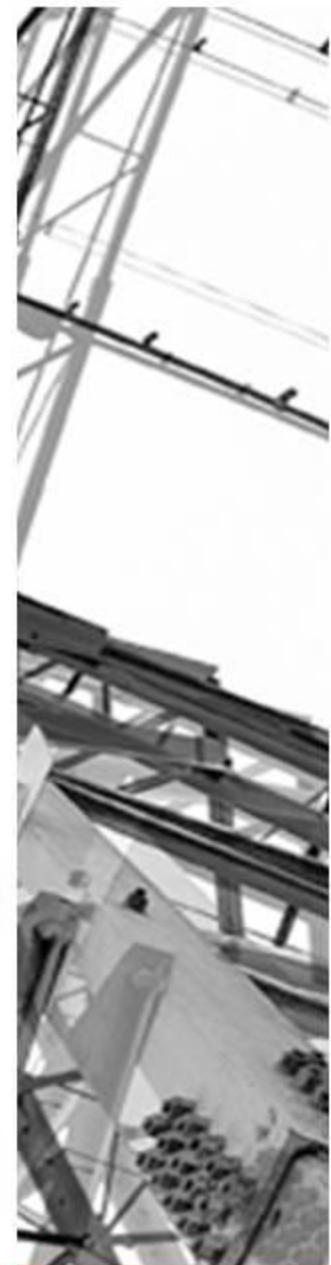
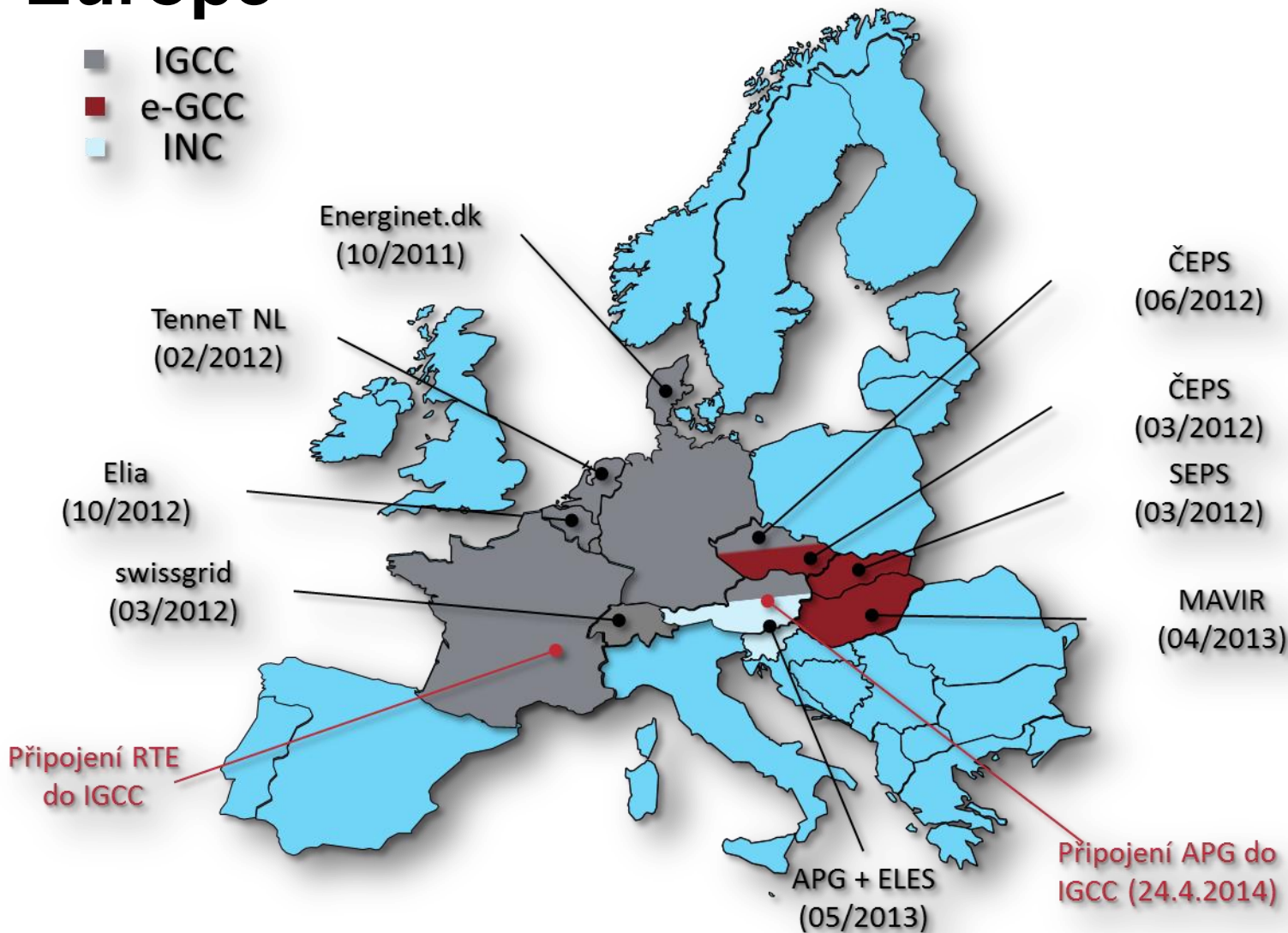


	2012	2013
Share of non-guaranteed BE on total BE	31%	44%
GCC (IGCC + e-GCC) share on total BE	18%	30%
BE exchange total [GWh]	185	315
- of which IGCC [GWh, %]	115 (62%)	186 (59%)
- of which e-GCC [GWh, %]	70 (38%)	129 (41%)
Positive / negative BE _{GCC} [%]	57% / 43%	59% / 41%
Average BE _{GCC} in one hour [MWh]	21	36



Imbalance netting development in Europe

- IGCC
- e-GCC
- INC



„EU wide Balancing market“

- Almost zero experience
- Regional cooperation will be crucial for further development
- Will be other „core“ business for transmission system operators



Well unbundled connectivity

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