

**A PCG Report to the XVIIth Florence Forum
10&11 December 2009, Rome**

**PCG Proposal for Target Model and
Roadmap for Capacity Allocation and
Congestion Management**

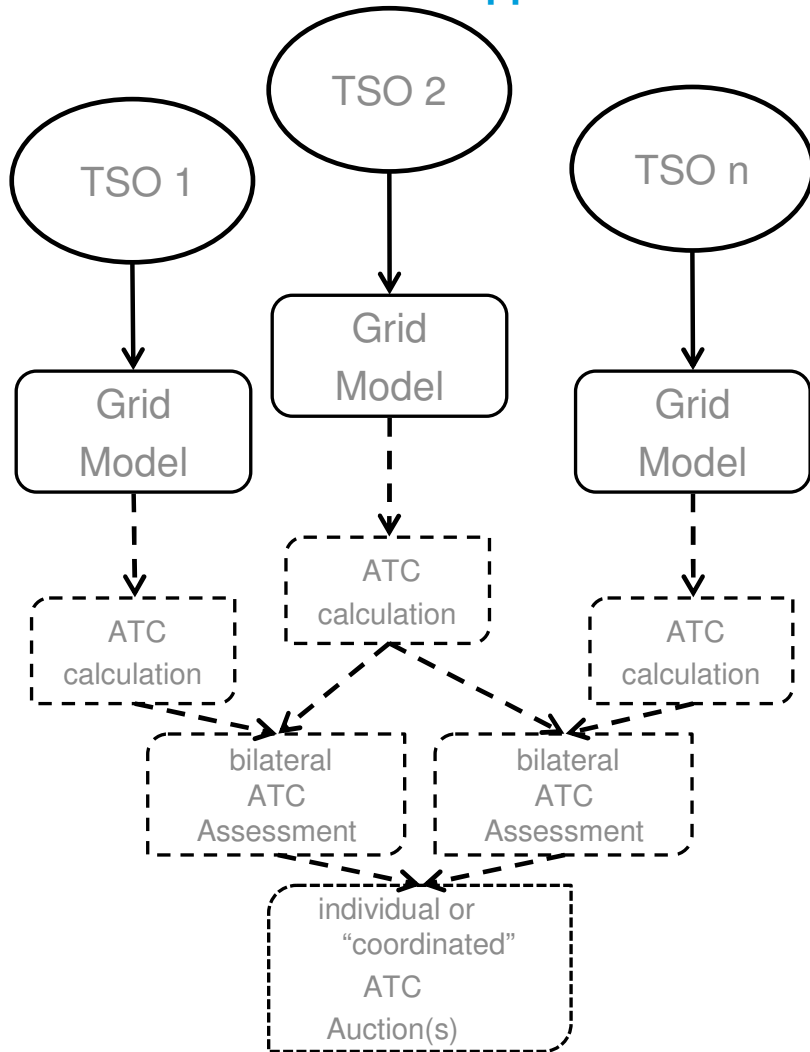
2nd of December 2009

PCG Proposal for Target Model and Roadmap for Capacity Calculation

2nd December 2009

Main difference between bilateral NTC approach and FBA/coordinated TC approach

Bilateral NTC approach

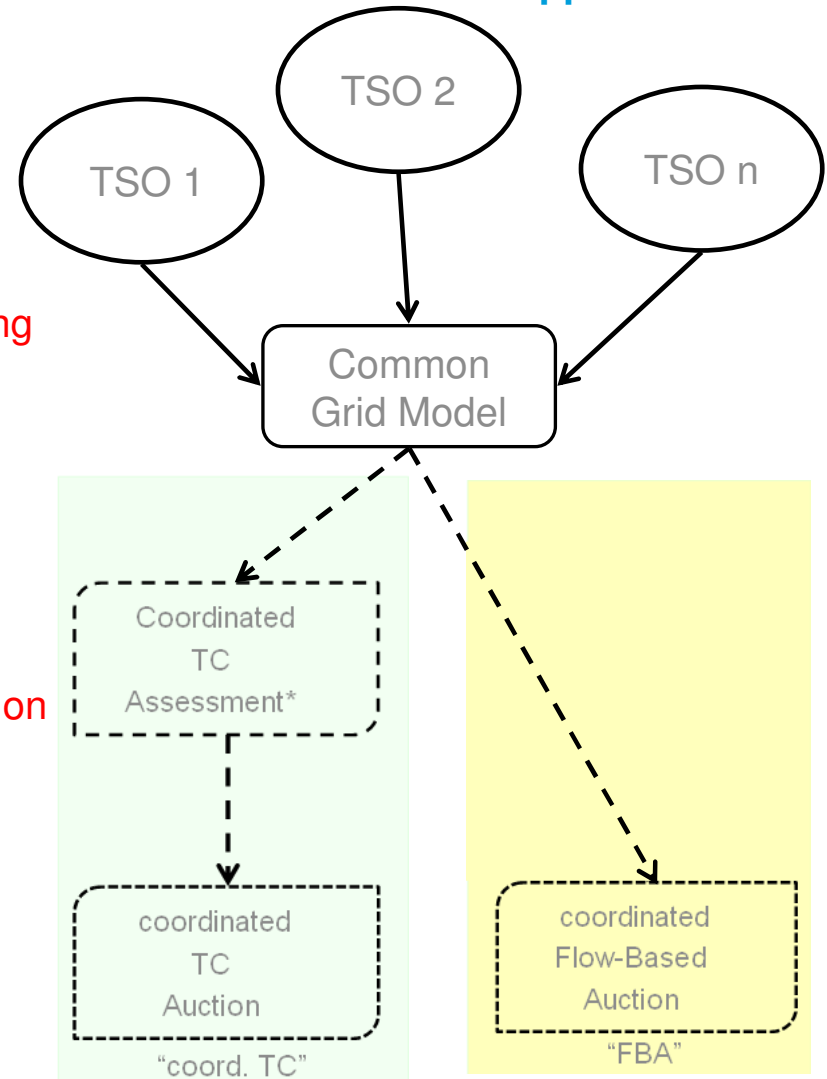


Grid Modeling

Capacity Determination

Auction

FBA/ coordinated TC approach



* "Allocation" of capacities to certain borders by TSOs.

Capacity calculation – key is increased level of coordination and cooperation

- Establishment of a European-wide common grid model (EU-CGM), consisting of the same level of information
 - Coordinated RM (reliability assessment) based on the EU-CGM
 - Coordinated security analysis (capacity assessment) based on the EU-CGM
 - Coordinated curative redispatch measures based on a EU-CGM to guarantee firmness

Criteria for Capacity Calculation

- Efficiency
 - Social welfare
 - Level of commercial capacities
 - Effective network use
 - Redispatching actions & costs
- Security
 - System security
 - Compliance with N-1 security
- Feasibility

Next steps - Proposal

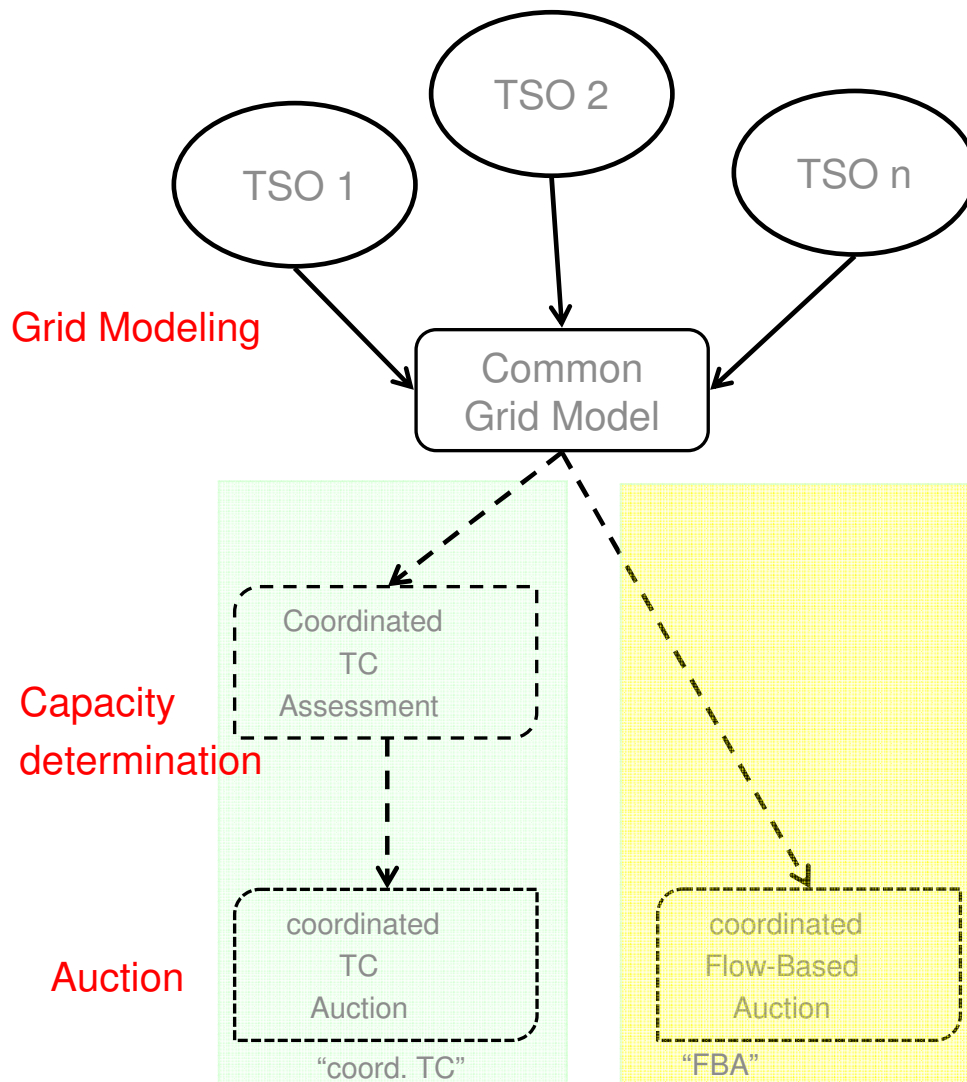
- Design:
 - Design of a Common Grid Model (CGM)
 - Coordinated capacity assessment and/or flow-based allocation
 - Regional application of coordinated capacity assessment and/or flow-based allocation
 - Interregional application of coordinated capacity assessment and/or flow-based allocation
- Project structure:
 - Implementation Project to be set up and led by ENTSO-E
 - As Capacity Calculation is one of the core businesses of TSOs, ENTSO-E will define and set up the project structure
 - There will be appropriate involvement of the other stakeholders into the project to ensure transparency and to guarantee that regulatory and market requirements are adequately considered under the condition of safeguarding security of supply
- Timing:
 - Set up project structure in the beginning of 2010
 - CGM and coordinated capacity assessment rules (ca. 1 year)

➔ concrete and clear mandate expected and needed!

ANNEX

Notes: FBA vs. coordinated TC approach

FBA/ coordinated TC approach



- Both approaches rely on the same principles:
 - Deep coordination amongst TSOs
 - Common Grid Models for capacity assessment
- Main differences:
 - Within the coordinated ATC case, TSOs have to assess where (which border) to put the available capacities. Hence, market assumptions have to be made by TSOs without knowing the markets preference. As an example the 'enhanced NTC' method (ETSO/EuroPEX).
 - Within the FBA approach, the market determines at the time of allocation where to use the available capacities.
 - The FBA approach provides better transparency.

Common Grid Model

- The Common Grid Model (CGM) is the basis for the coordination of the capacity calculation
- The Common Grid Model will provide
 - Increased level of coordination/cooperation amongst TSOs
 - Establishment of a European-wide model consisting of the same level of information
 - Coordinated RM (reliability assessment) of TSOs
 - Coordinated security analysis (capacity assessment) of TSOs
 - The basis to develop coordinated curative redispatch measures
 - The basis for the coordinated capacity calculation and capacity allocation (in case of flow-based approaches)
- Time frames and resolutions:
 - Usually for each time horizon (e.g. yearly, monthly, daily, Intraday) own common grid models have to be generated
 - In general: the closer to real time the higher the level of detail

Additional Issues to be discussed

- Discussion on base cases
- Discussion linked with GSK
 - Size of zones
 - Underlying model (GSK in combination with D-2CF, shadow market model, security constrained unit commitment) and implication for the role of the TSOs/NRAs
- Preventive redispatching (for maximising the global social welfare)
 - + Proactive maximisation of the global social welfare by taking into account redispatch measures (and costs) at the allocation process
 - ex-ante definition of cost expenditures has to be agreed on
- (dynamic*) cross-country zonal / nodal models
 - + further maximisation of social welfare independent of political borders
 - existing market structure (e.g. involvement of local PX) needs to be investigate

* changing the size of zones according to market needs

Regional Comments I/III

- Capacity Calculation:
 - Consistency of the capacity calculation methodology amongst different time frames is needed.
 - Flow-based capacity calculation is needed only for highly meshed regions and loop flow problems
 - NTC-based approach in particular for intraday is seen as sufficient
 - Improved intraday capacity calculation deemed as necessary (updated calculation during the day)
 - Higher transparency needed
 - Flow-based approach may delay the general market progress because of higher level of complexity
 - Nodal approach preferable; aggregation of nodes into zones only if not jeopardising the system security
 - ATC-approach preferred for SWE
 - Graphical representation which approach is deemed as most useful for each region
 - Concrete implementation plan is missing

Regional Comments II/III

- Redispatch:
 - Preventive redispatch is seen as critical as it could jeopardise the network security
 - Preventive redispatch needs to be further analysed
 - Enhanced use of counter trading by TSOs

Regional Comments III/III

- Other influencing factors:
 - Size of the zones needs to be analysed from political **and** technical and socio-economic perspective
 - Discussion on minimum capacity requirements
 - Regional coordination centres (Coreso, SSC, TSC,...) are necessary to reach the target
 - Being less prescriptive for target model
 - Bigger bidding areas are seen as better for the market
 - Regional/interregional governance regarded as important
 - More regional focus (step by step approach)
 - Capacity calculation needs to be done on a pan-European perspective
 - Remaining need to invest in grid infrastructure and to shorten permit procedures to enforce the transmission network
 - Increasing transparency and coordination between TSOs
 - Firmness of allocated capacities (full market spread compensation without caps)

PCG Proposal for Target Model and Roadmap for Day-Ahead Market

2nd December 2009

Definition of the DA Target model

DEFINITION:

- The Target Model (TM) is to implement Single Price Coupling (SPC) all over Europe
- In the TM, one single matching algorithm is able to establish prices and volumes across all borders between the "PX market areas" and/or bidding areas compatible with capacity calculation

IMPLICATION:

- Pan-European Price Coupling (the TM) implies that a single algorithmic solution is used by all the Power Exchanges responsible for the matching
- All day-ahead bids and offers information necessary for the Pan-European Price Coupling need to be matched with this single algorithmic solution, jointly with all the cross-border capacity information across Europe
- Such bids and capacity information must thus be fully and equally available to the matching algorithm

Target model - key issues

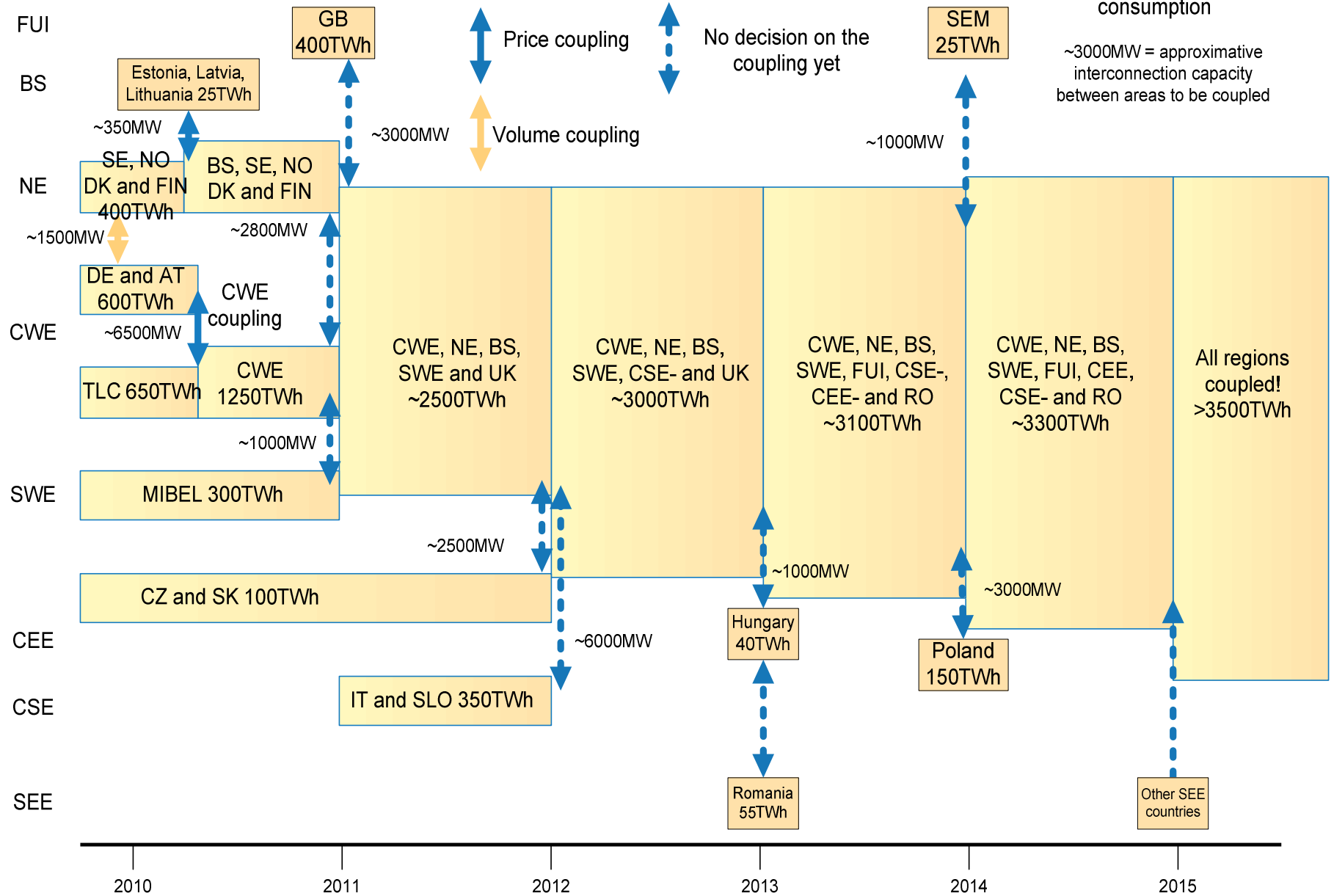
- The design prerequisites for price coupling can be partly identified /foreseen currently; however, this identification is not comprehensive since the technical challenges naturally emerge as markets are gradually coupled
- The algorithm can be updated/reviewed from time to time according to market needs/requirement/extensions
- The high level design prerequisites currently identified illustrate that it is not necessarily the implementation of the design prerequisites that will be the main challenge, but the governance issues associated with the design prerequisites
- High level governance arrangements require identifying roles and assigning responsibilities between parties, in order to facilitate the realisation of design prerequisite

Design prerequisites for price coupling and associated governance issues

Price coupling prerequisites	Possible governance-related issues (see notes)
Implementation of a single algorithmic solution by the PXs, and full availability and use of all bids and capacity information required for the Pan-European Price coupling	Which arrangements required between all the PXs involved? Between the PXs and the TSOs ?
Power exchange operating a hub in each market	Some markets still without a PX. How is this to be achieved?
Algorithm should support all current PX products	What if it can't – e.g., infeasibilities, long processing times? Could imply reducing range of products/greater standardisation in this case: - Who decides? - On what basis? (criteria)
Algorithm shall support additional new functionalities e.g. new products due to increased wind	How can local market parties, TSO and PXs influence design decisions?
Algorithm should support geographic extension, geographic extension may imply new types of products.	What if it doesn't? If impossible, see 1. If possible: - Who pays for changes? - Who determines sequencing/timing of extensions? If algorithm is not as flexible as promised, what are the consequences (finding a replacement, sunk costs)
Optimal trade-off between flexibility (functionality), cost, time to implement, processing time/performance	Who decides? On what basis? Who pays? Need for formal governance processes (e.g., full arm's length) vs greater reliance on mutual interest, partnership
Necessary harmonisation (e.g., critical procedures/deadlines)	How to enforce harmonisation obligations?
Discretionary harmonisation (e.g. min/max prices)	What freedoms should individual markets/TSOs have? How is this controlled? Who pays for extra functionality?
Handling different currencies	Responsibility of central algorithm or local markets? Who bears currency risk?

Possible sequence of European market coupling

(Please note that the sequence and timing is only indicative and does not represent any agreed position of the PCG)



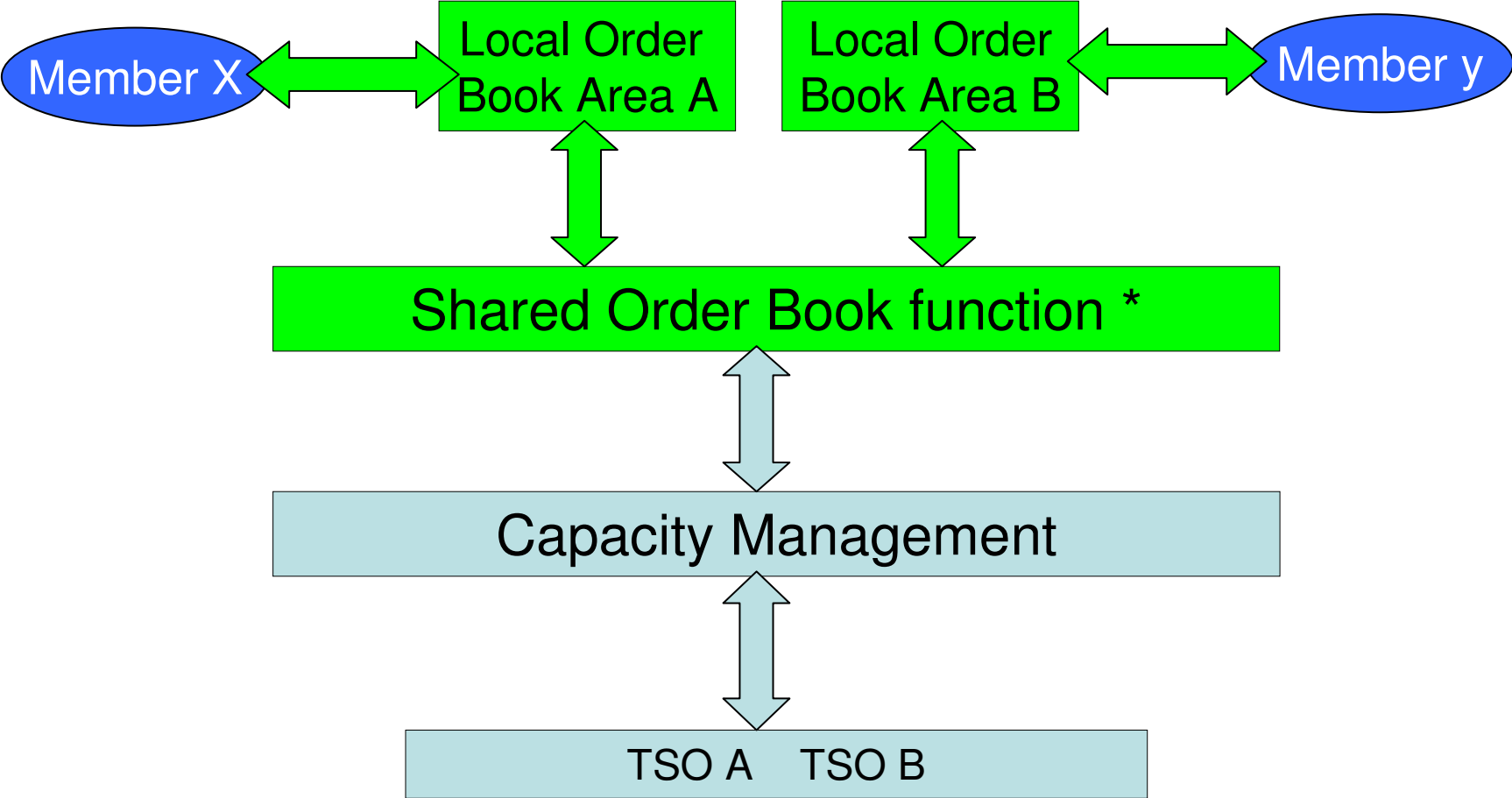
PCG Proposal for Target Model and Roadmap for Intraday Market

2nd December 2009

Summary of the Target Model

- The Target Model (TM) for Inter-Regional Cross-Border capacity allocation is implicit continuous allocation (continuous trading)
- Where appropriate, specific National/Regional ID trading solutions may be developed
- A specific National/Regional ID trading solution is not obligatory. The Inter-Regional Target Model mechanism can be used as the National/Regional solution
- Any specific National/Regional ID trading solution must be compatible with the Inter-Regional Target Model

Target Model (TM) for Inter-Regional Cross-Border capacity allocation



* Role of the shared Order Book function is to make Bids in Local order book A available in Local order book B, subject to the availability of cross-border capacity

Features of the Target Model for Inter-Regional Cross-Border capacity allocation

- **Target Model must allow block bids**
 - Users will therefore be able to execute through the platform deals which would otherwise be concluded on a bilateral basis
 - **When significant additional capacity becomes available this capacity should be allocated using a market-based mechanism**
 - The definition of significant additional capacity will have to be developed
 - There are several possible market-based mechanisms to allocate significant additional capacity (e.g. auctions)
 - It is not necessary to have finalised this to implement Target Model
-

Roadmap

	Description	2010	2011	2012	2013	2014	2015
Stage 1	Common principles + compatibility Requirements for ID trading	■					
Stage 2	Centralized capacity management and shared order book function	■	■				
Stage 3	ID National/Regional development ^o		■	■	■	■	
Stage 4	Stepwise implementation of TM			■	■	■	■
End	EU wide trade (target model)						■

^onew development or copy/paste



PCG Proposal for Target Model and Roadmap for Balancing

2nd December 2009

Definition / Focus

Whereas

the balancing markets and balancing process include a number of interrelated components,

this work is mainly focused on the:

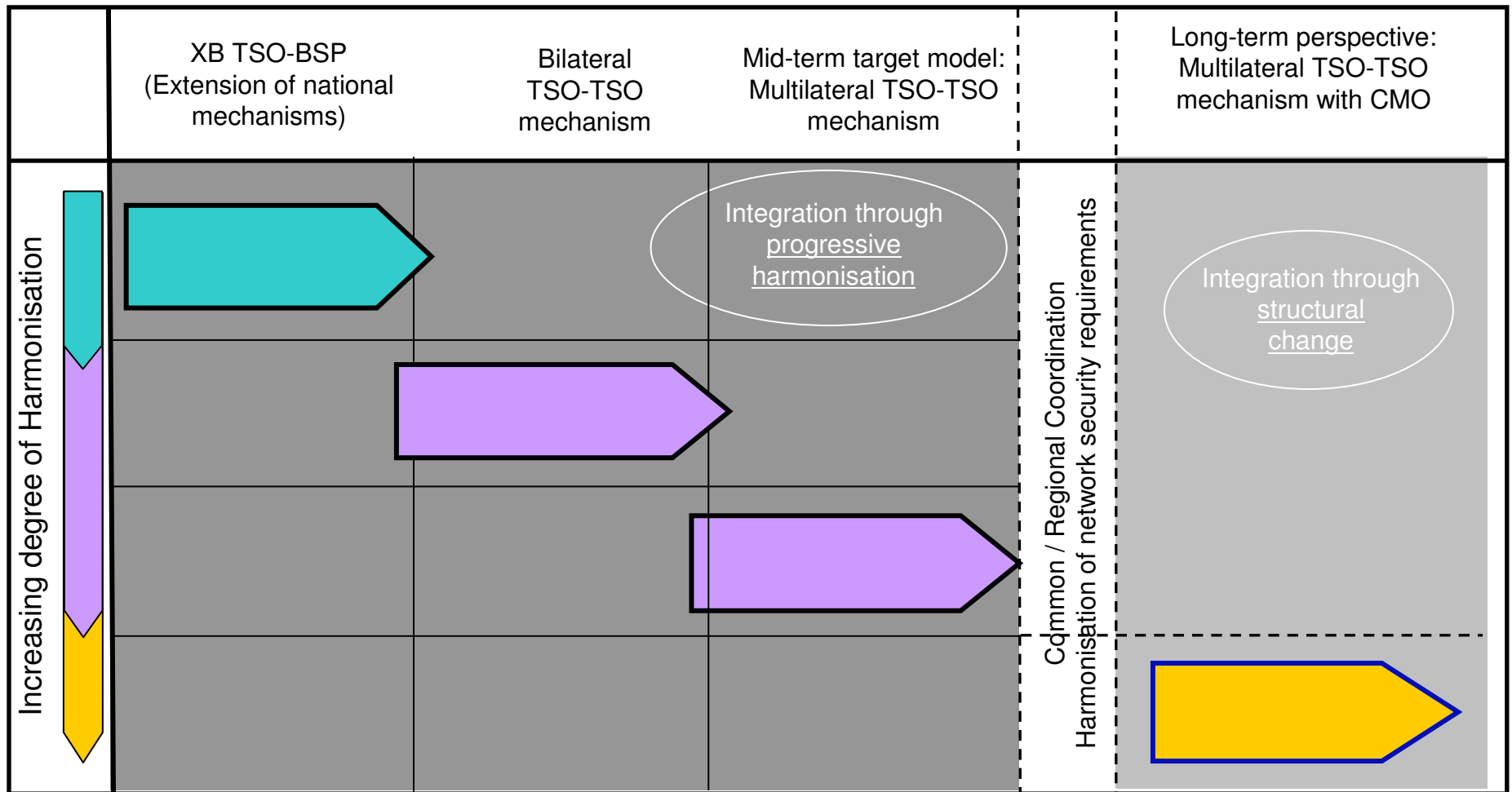
manually-activated reserves and cross-border electricity balancing market integration in that sense

Identification of integration stages and prerequisites

Roadmap - Principles

- Full harmonisation of balancing markets is not a prerequisite for cross-border balancing
- Pragmatic approach is important
- Major steps:
 - Pilot projects (Social welfare gains – demonstrated in cost-benefit analyses)
 - Harmonisation of gate closures and technical characteristics (+ roles and responsibilities of all major parties)
 - Introduction of cross-border intraday supports progress in cross-border balancing
 - Case by case (in a feasible “area”) development of multiple TSO cooperation (ending in coordinated system operation)

Proposed Roadmap for the Cross-Border Integration of Electricity Balancing Markets




Legend: XB = cross-border
 BSP = Balance Service Provider
 CMO = Common Merit Order

XB Balancing Models: pre-requisites and harmonisation requirements

Basic compatibility
 Harmonisation by TSOs
 Central governance

	Cross-border extension of national balancing mechanisms	Bilateral TSO-TSO exchanges (without c.m.o.)	Multilateral TSO-TSO exchanges (without c.m.o.)	TSO-TSO exchanges with c.m.o
Prequalification criteria (technical requirements for suppliers)	Not harmonised, but TSO arrangement to ensure the same product quality	Not harmonised, but TSO arrangement to ensure the same product quality	Not harmonised, but TSO arrangement to ensure the same product quality	Harmonised
Delivery mechanism (technical mode of activation)	Not harmonised, but TSO arrangement to ensure the same product quality	Not harmonised, but TSO arrangement to ensure the same product quality	Not harmonised, but TSO arrangement to ensure the same product quality	Harmonised
Bid construction process	BSPs according to BM rules of corresponding TSO	TSOs on the basis of bilateral rules	TSOs on the basis of multilateral rules	BSPs on the basis of common rules
<i>- Product features (size, activation time, duration of activation)</i>	Not harmonised	Exchanged products are tailor-made by TSOs	Exchanged products are tailor-made by TSOs	Harmonised
<i>- Payment schemes</i>	Not harmonised	Pricing of exchanged products tailor-made by TSOs	Pricing of exchanged products tailor-made by TSOs	Harmonised
<i>- Shared volumes (in all cases, "surpluses" beyond each TSO's security reserve requirement)</i>	Some surpluses offered by BSPs willing to participate	All surpluses of 2 TSOs (combined in offers by the TSOs)	All surpluses of involved TSOs (combined in offers by the TSOs)	All offers directly put together
Implementation of exchange	BSPs offer whenever possible (depending on availability of capacity, intraday and national balancing markets), each TSO approves and activates according to security and interconnection situation	Each TSO offers and activates according to security and interconnection situation	Each TSO offers and activates according to security and interconnection situation	TSOs share all offers - regional process of activation on the basis of common security and interconnection situation
<i>- Gate closure time of cross-border intraday market</i>	Not harmonised, BSPs offer whenever possible	Not harmonised, TSOs decide when to share offers	Not harmonised, TSOs decide when to share offers	Harmonised for products to be shared
<i>- Security criteria</i>	Not harmonised	Not harmonised	Not harmonised	Harmonised
Governance	contractual arrangements (coordination limited to involved BSPs and TSOs)	contractual arrangements (bilateral coordination between TSOs with ad-hoc rules for exchanges)	complex contractual arrangements (extensive multilateral coordination between TSOs with ad-hoc rules for exchanges)	central governance with common rules for exchanges and security management
TSO involvement	low (information exchange)	increasing	high	very high

Comments

- Specific projects don't have to go through all steps, theoretically you could go to a common merit order in one step
- Intra-day harmonisation isn't a prerequisite, but there are technical interdependencies. Hence, a well-functioning integrated intraday market will increase the efficiency of the balancing market
- Each step brings additional benefits, but requires:
 - Legal and regulatory changes
 - Greater harmonisation of Balancing Mechanisms
 - Practical changes (coordination, IS changes)
- Need for careful analysis before each step can be implemented:
 - Analysis of impacts on system safety
 - Economic cost/benefit analysis
- Implementation of TSO-TSO with common merit order requires
 - Supranational control process
 - centralised governance process
 - Harmonisation of security criteria
 - Harmonisation of intra-day gate closure times
-  ■ these structural changes will take time

Integration Road Map Regional Dimension

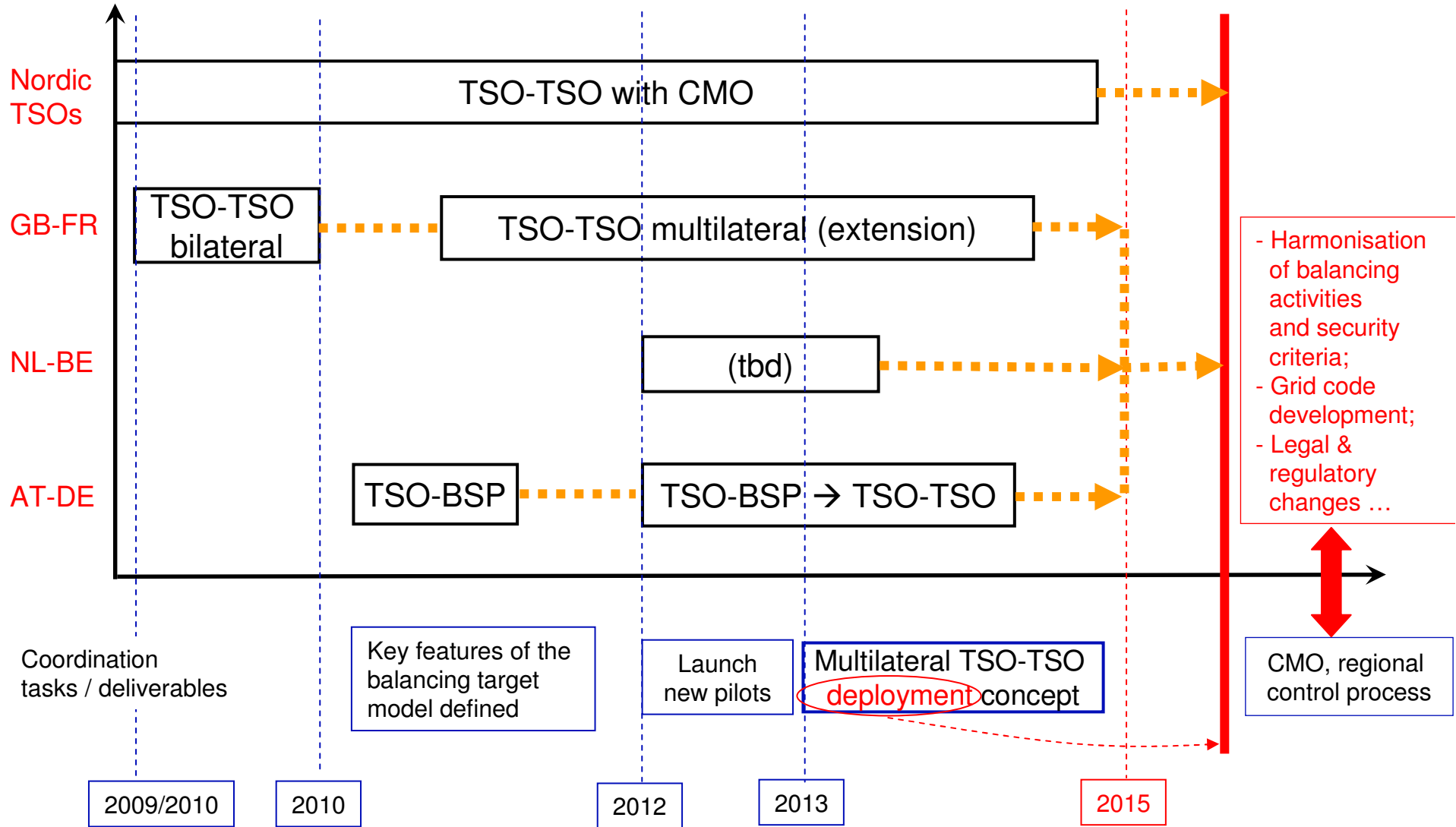
(Pilot Projects)

List of identified pilot projects

- Projects already implemented:
 - Nordic area
 - German & Swiss actors bidding in the French Balancing Mechanism
 - France/UK TSO-TSO (interim phase started in 03/09, in progress)
- Projects not implemented, planned or in discussion:
 - France/Spain TSO-TSO => discussions starting
 - Germany/Austria: Hybrid (TSO-Market Participants and TSO-TSO)
 - Belgium/Netherlands (academic suggestion)
- Other identified projects:
 - German TSO-TSO (inside Germany started in 12/08, in progress)

Implementation Details

- Most pilots already exist
- Starting point is different
- Pilots could hook up to others
- May result in areas that will combine
- Timing is indicative



Feedback from the
Consultation of Regions
(Summary)

General Considerations and Deployment Strategy

- A clearer and more detailed definition of balancing is needed, with more clarity also of the roadmap and more details on which products are actually to be included
- Although the timeline is quite ambitious, it is important to have clear goal and start the deployment and practical work ASAP to the benefit of IEM
- Top down approach will foster integration and implementation and is therefore mandatory, even there will be regional deployment differences (different paces / speeds for example)
- Cross-border intraday market shall be considered in parallel

Technical Issues and Details

- TSO-TSO with CMO accepted and acknowledged as the target model, whereas top-down approach will foster integration and implementation and the TSO-BSP model can be used as soon as possible as the first step (e.g. DE/AT)
- ENTSO suggestion to rephrase bullet point above in order to align it with agreed changes in the WS slides: "TSO-TSO with CMO is accepted and acknowledged as the long-term target model. In the mid term, initiatives (preferably TSO-TSO model, but also TSO-BSP in some cases) should be encouraged and developed in order to implement as many exchanges as possible, whilst encouraging that they do not impede long-term convergence to the ultimate goal"
- Moreover, besides DE/AT, the further practical steps could include the work on NL/BE and further development of Nordic system and FR/UK
- Common definitions of technical properties and commercial products are essential; to that matter it is important to distinguish clearly what is meant by "balancing market" and how that is related to "reserve energy product" shall be included

Harmonisation & Compatibility

- Elements of harmonisation
 - Harmonisation of gate closures and technical characteristics is an important ultimate goal
 - Some basic coherence / compatibility steps are needed even before the full harmonisation (see also ERGEG GGP)
 - Imbalance payment shall be also addressed within that scope (it is an important component of the balancing market)

PCG Proposal for Target Model and Roadmap for Forward Markets

2nd December 2009

High level objectives

- Create competitive and integrated European markets
- Provide a level playing field across Europe
- Stimulate market entry and lower entry barriers
- **Practical means to achieve these objectives**
- Efficient long term price signals (forward markets)
 - Incentives for efficient investment
 - Long-term hedging and risk management
- Competition across borders (forward transmission markets)
 - Incentives for efficient investment
 - Long-term hedging and risk management between market zones
- Efficient linkage of forward market with short term price signals (market splitting/coupling)
 - Optimal use of network capacity
 - Optimal use of generation capacity

Proposed target model for the primary forward transmission market (1/2)

- TSOs should sell/offer/issue transmission capacity on a forward basis
 - The amount of sold/offered/issued capacity should reflect the available physical capacity
 - The amount of capacity should be maximised across all timeframes (as required by Reg. 1228/2003)
 - TRs are Use It Or Sell It (UIOSI)

Proposed target model for the primary forward transmission market (2/2)

- These transmission rights could be sold/issued/offered on a regional basis with a high level of compatibility
 - Either between bidding areas or between a reference system area and a bidding area
 - Either as options or obligations
 - In case of physical rights (PTRs), they should be granted as options
 - In case of financial rights , they can be either options (e.g. FTR) or obligations (e.g. CfD)
 - Either as physical or financial
- In some markets, where long-term trading/hedging mainly is handled via derivatives, this may mean:
 - TSOs give available physical capacity for utilisation in the D-1 MC process, while TSOs are selling in advance longer maturity financial instruments reflecting 100% of forecast available capacity between bidding areas

Target model for sale of longer maturity transmission rights – a regional choice of rights

▪ FTRs

- 100% of the forecast available capacity is sold forward as FTRs. This way the whole capacity will be automatically used in the day-ahead MC process.
- There is an issue that this would not support OTC markets and does not force PX to compete with the OTC market.
- Others argue that OTC trades may well be accommodated and reflected in the MC process. Thus, capacity would become priced appropriately for OTC and implicit trades. As a result OTC and PX trades would be competitive trade opportunities.

▪ PTRs with Use It Or Sell It (UIOSI)

- 100% of the forecast available capacity is sold forward as PTRs UIOSI. Every right that does not get nominated will convert automatically into a FTR and the capacity will be used in the day ahead MC process.
- There is an issue that this way it is not guaranteed, that there will be D-1 capacity for the MC process (if the whole capacity is nominated).
- Moreover, to satisfy the need for hedging of price risks as the primary reason for selling long-term transmission rights this may also be achieved by FTR.

100% PTR

100% FTR

Note: The choice of model would depend on many factors, including regional circumstances and preferences, the requirement for a robust day-ahead price and future regulations of financial derivatives.

Trading of transmission capacity in the secondary market (I)

- Establishing a secondary market for trading transmission capacity rights is a very high priority
- Transmission capacity should be able to be split and sold without constraints – down to individual hours and in 1 MW units
- For PTRs trade should be able to take place until the deadline for exercising the option (i.e. the nomination deadline)
- FTRs could be traded until D-1 PX gate closure, and that is conceptually true also for CfDs

Trading of transmission capacity in the secondary market (II)

- Transmission capacity transfer to take place by full assignment of rights and obligations to new owner of capacity
- If PTRs, TSOs are required to operate a registry against which all transactions need to take place. If FTRs, another entity could be responsible for the registry.
- Credit and approval by TSO that transfer of the capacity rights can occur must ultimately take place at the cut off time of trade.
 - Such technology is already widely available and used for trading Energy
 - Independent platforms can be used to establish such a service, e.g. by using auction offices
- Exchanges and clearing houses can also offer clearing service to facilitate credit risk management

Firmness is an important issue for the forward transmission market

- Transmission capacity should be sold (financially) firm in order to hedge cross-border positions
 - Subject to standardised European definition of force majeure
 - The price payable by a TSO as compensation for capacity curtailment needs to be market-linked, predictable and standardised
- (Financial) firmness of capacity rights is an essential feature to make secondary capacity markets work properly (→ without firmness, title tracking is a high administrative burden)
 - Essential for well-functioning secondary market
 - Required by XB regulation 1228/2003
- The costs of guaranteeing firmness should be met from TSOs' allowed revenues with appropriate incentives

Roadmap for the implementation of the Target Model options (I)

- The target model options shall be implemented across Europe as soon as possible and by 2015 at the latest
- Key criteria for successful implementation of the target model
 - Forward sale of all capacity to ensure economic efficiency across Europe's borders
 - Reliable and robust day ahead spot market prices
- These two criteria may conflict during the implementation of the target model
 - If TSOs sell all capacity forward, there may be a risk of insufficient capacity to allow robust day ahead prices
 - If TSOs sell insufficient forward capacity, the economic efficiency across Europe's borders could be decreased

Roadmap for the implementation of the Target Model options (II)

- As a result of this potential conflict, the following may be required in the regions as part of the roadmap for implementing the target model during an interim phase:
 - That some defined part of the total forward capacity sale is used through market coupling (to ensure efficient price formation).
 - This may in turn mean that TSOs reserve some day-ahead capacity for market coupling use, or TSOs sell it in such a way to ensure it is used for MC (e.g. as FTRs - or CfD's)
- There is also a possibility that the PTR/UIOSI part of the model may over time emerge towards an FTR model

Roadmap for the implementation of the Target Model options (III)

- There is further a need for increasing harmonisation of product access rules, interfaces and IT exchanges to take place on a regional basis as follows
 - By 2012/13: Harmonisation on a regional basis based on the applicable product(s) chosen
 - By 2015: Harmonisation across Europe based on the two options defined in the Target Model

Roadmap example

(Note: Dates, products for illustrative purposes only)

- Capacity sales take place further into the future
 - Today, capacity has been sold for months, quarters, 2010, 2011, 2012, etc.
 - The capacity can be traded freely, like energy, in secondary markets
- For PTRs, at/before the PXes close, the owner of the capacity will either:
 - Nominate physical use of the capacity, or
 - Relinquish the capacity through the market coupling process and receive cash if there is a spread for that capacity
 - In the case the FTR target model is adopted, nomination is unnecessary, all capacity will be used for market coupling with a cash payment to the capacity owner
- As required, this model makes it impossible for owners to hoard capacity – the capacity rights are either used or relinquished for utilisation in the D-1 MC process

Annex 1.1: Description how forward market in Energy is operating

Forward market in Energy

- Energy is most frequently traded as the following products
 - Baseload
 - Peaks
 - Offpeaks
- Energy is traded in (roughly) the following timeframes
 - Calendar years forward to Y+3 or Y+4 (2010, 2011, etc)
 - Quarters
 - Months
- The forward market for trading energy works well nationally and has evolved over many years
- However cross-border energy trading is limited by transmission capacity constraints between markets

Annex 1.2: Detailed examples of sale of forward transmission capacity rights of longer maturities

TSOs should sell primary transmission capacity or related relevant products in line with energy markets

- Annual capacity sold in line with energy trades (e.g. sale of 2010, 2011, 2012, and 2013 baseload cross-border capacity in 2009)
- Ultimate goal
 - Sell available forecasted capacity in line with what is traded in Energy market
 - Remaining capacity sold as it becomes available/known (e.g. at D-1 stage)
 - Precondition: A liquid market for transmission exists. This is likely to take several years to achieve once trading starts
- Indicative percentages (until sufficiently liquid secondary market exists)
 - 10% of capacity has been sold for Y+3
 - 20% of capacity has been sold for Y+2
 - 40% of capacity has been sold for Y+1
 - 70% of capacity has been sold after Months or Quarters
 - 100% of capacity has been sold at D-1
- Percentages can differ regionally but should relate to the TSOs' best estimate of the forward capacity available
- Further investigate multi-annual allocation process in order to optimise allocation

Example of proposed process for selling capacity (transition period)

- As an example, a forecast 1000MW of capacity for 2010-2013 may be sold in auctions every quarter as follows:
 - Q1: 25MW 2013, 25MW 2012, 50MW 2011
 - Q2: 25MW 2013, 25MW 2012, 50MW 2011
 - Q3: 25MW 2013, 25MW 2012, 50MW 2011
 - Q4: 25MW 2013, 25MW 2012, 50MW 2011
- Totals
 - 100MW 2013 and 2012 (10%)
 - 200MW 2011 (20%)
- Likewise, in 2011, the sales would be
 - Q1: 25MW 2014, 25MW 2013, 50MW 2012
 - Q2: 25MW 2014, 25MW 2013, 50MW 2012
 - Q3: 25MW 2014, 25MW 2013, 50MW 2012
 - Q4: 25MW 2014, 25MW 2013, 50MW 2012
- New totals sold to date
 - 100MW 2014 (10%)
 - 200MW 2013 (20%)
 - 400MW 2012 (40%)

Annex 1.4: Example process at forward/D-1 switchover

- For illustrative purposes only, to show how the forward target model fits in with the day-ahead process – times indicated are not suggestions

Example process at forward/D-1 switchover

(for illustrative purposes only, to show how the forward target model fits in with the day-ahead process – times indicated are not suggestions)

- Before 10.45 D-1: Cut off for secondary trading of PTRs
- 11.00 D-1: Nomination of whether PTRs used physically or sold in day-ahead process/MC (UIOSI) as an FTR (nominated PTRs are now obligations)*
- 11.15 D-1: Auction office publishes total available capacity, including amount of capacity used as PTRs and to be included in MC as FTRs
- 11.45 D-1: Cut off for secondary trading of FTRs (if only FTR)
- 12.00 D-1: Bids and offers due on DA Spot Exchanges
- 12.15 D-1: Exchange results published
- 12.30 D-1: Intraday market starts

* Option to use physically to be exercised at a nomination deadline as close as possible to the PX gate-closure to allow TSOs to compute and publish final ATC for implicit allocation in the D-1. In cases where all capacity is offered DA due to for ex. existing financial solution, via among others CfDs, this check point is irrelevant.

Annex 1.5: Definitions

- **Financial Transmission Right (FTR)**: Financial product which entitles its owner to receive at maturity a price spread - i.e. the difference between two exchanges prices or between an exchange price and the system price - if positive. Therefore, FTRs are often referred to as "options"
- **Physical Transmission Right (PTR)**: tradeable product which entitles the owner to nominate a cross-border flow if exercised. Therefore, PTRs are often referred as options (Unlike for FTRs, the decision to exercise the option belongs to the right's owner – the exercise is not automatic). With Use-It-Or-Sell-It (UIOSI), if PTRs are not exercised at a given deadline, they convert into FTRs.
- **Swap or obligation or contract for differences (CfDs)**: (Financial) product which entitles its owner to pay or receive a negative or positive price spread – i.e. the difference between two exchanges prices or between an exchange price and the system price - at maturity (and/or delivery period).
- **Primary market**: market where transmission rights are sold forward via transmission rights or obligations and for which a congestion revenue is collected or obligations purchased.
- **Secondary market**: market where transmission rights are exchanged between market participants
- **System price**: reference energy price used for the settlement of financial products

PCG
Governance

2nd December 2009

Prerequisites for a Target Model for Governance

- A “governance framework” is vital for the good operation and development of regional/ interregional solutions
- Need to address a number of challenges:
 - Important European “public interest” goals
 - Multiple national jurisdictions
 - Involvement of a number of different parties - power exchanges, TSOs and merchant interconnectors – operating under a variety of regulatory and commercial structures

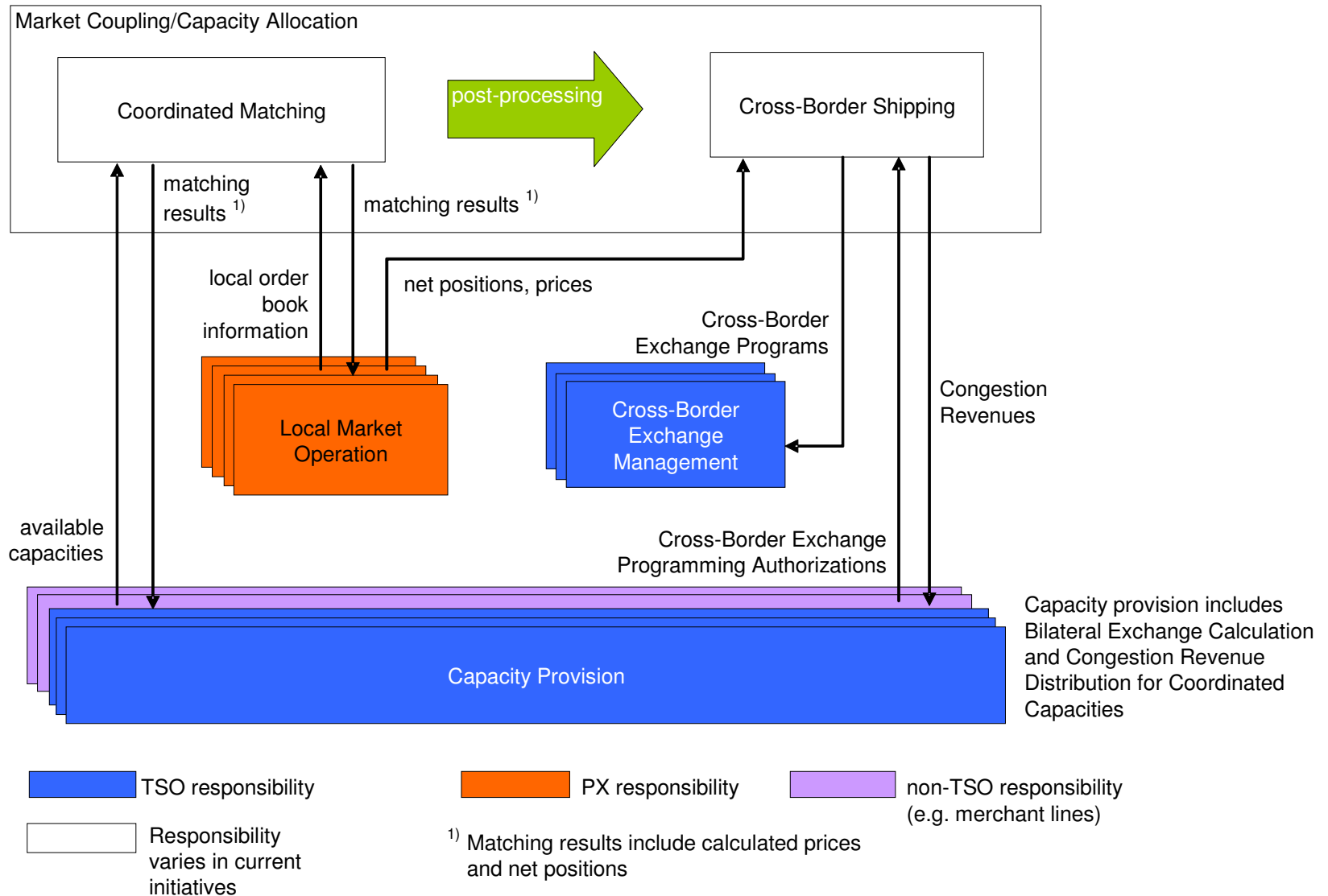
The way forward with Governance

- Focus on the governance of the **key functions** that need to be undertaken
- Obligations on parties assigned to do functions:
 - Comply with necessary harmonisation requirements
 - Coordinate with other parties on joint functions
- The governance **work has started with the governance issues related to day-ahead market**
- The plan has been to look at the governance needs for price coupling solution with coordinated matching


Requirements for price coupling & coordinated matching arrangement

- Sustainability - enable the achievement of an Europe-wide solution
 - The scope and pace of geographical extension
 - Openness (easiness of entering or leaving the arrangement), non-TSO capacity
- Level of subsidiarity (does not impose unnecessary changes at local level)
- Timely, good quality, fair and transparent decision-making/dispute resolution
- Transparency of coordinated matching

Functions of Single Price Coupling



Description of Functions

- **Coordinated Matching**
 - Simultaneous matching of local order books using capacities of capacity providers and maximising economic surplus
 - **Cross-border Shipping**
 - Processing of all cross-border transactions on provided capacity equalising local market net positions and collecting congestion revenues
 - **Local Market Operation**
 - Receipt and processing of orders from local market participants, clearing and settlement of those orders with local market participants according to coordinated matching results, clearing and settlement of resulting local net position with Cross-border Shipping
 - **Cross-border Exchange Management**
 - Operational management of control area exchanges according to agreed TSO rules
 - **Capacity Provision**
 - Making capacity available to the market and getting congestion revenues in return, where required in a coordinated way (e.g. multi-path flows between control blocks/areas in a synchronised network)
- 

Example Responsibilities: TLC & CWE

Coordinated Matching

TLC/CWE: PXs jointly responsible for design, build and operation, subject to:

- Functionality agreed with TSOs
- Algorithm validation/testing accepted by TSOs
- Changes under all-party controls
- Operational procedures agreed with TSOs
- Incident management by all
- Operational performance overseen by all

Cross-Border Shipping

TLC:

- TSOs buy/sell on local PX and trade with each other, collect/share congestion revenue
- TSOs nominate X-border flows

CWE Market Coupling:

- PX clearing houses settle X-border internally or between each other; pass congestion revenue to TSOs
- Clearing houses nominate X-border flows

Example Responsibilities: GME, OMEL, Nord Pool Spot

Coordinated Matching

GME, OMEL, Nord Pool Spot:

PXs responsible for design, build and operation, subject to:

- Functionality assigned to PXs and approved by the regulators
- Algorithm validation/testing accepted by regulators
- Changes under control of regulators
- Operational procedures, including incident management, of TSOs and PX approved by regulators
- Operational performance of PX and TSOs overseen by regulators

Cross-Border Shipping

GME, OMEL, Nord Pool Spot:

- PX settles X-border internally and pass congestion revenue to TSOs
- PX communicates X-border schedules to TSOs