

Future Power Markets Platform

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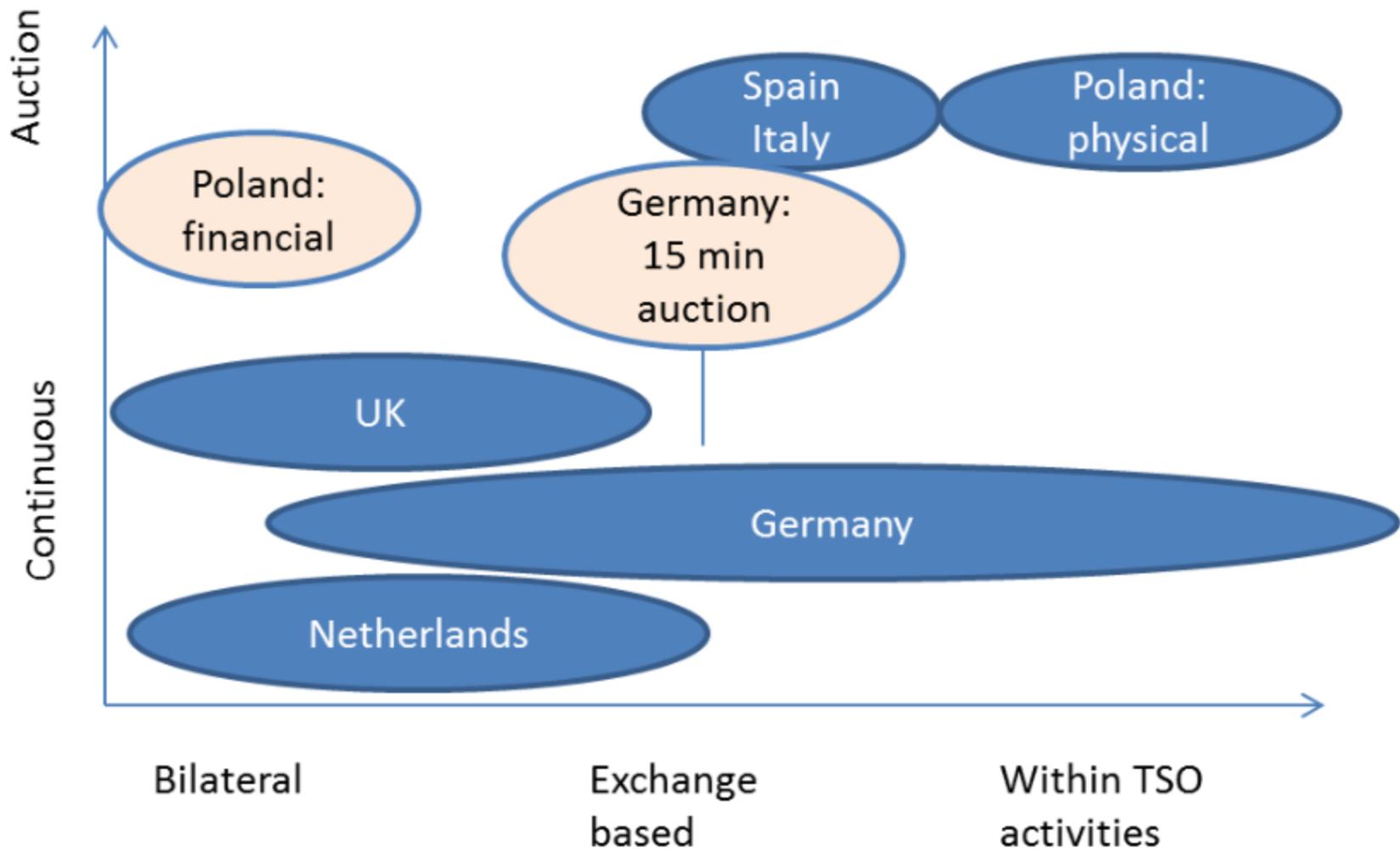
## Auctions for Intraday Trading

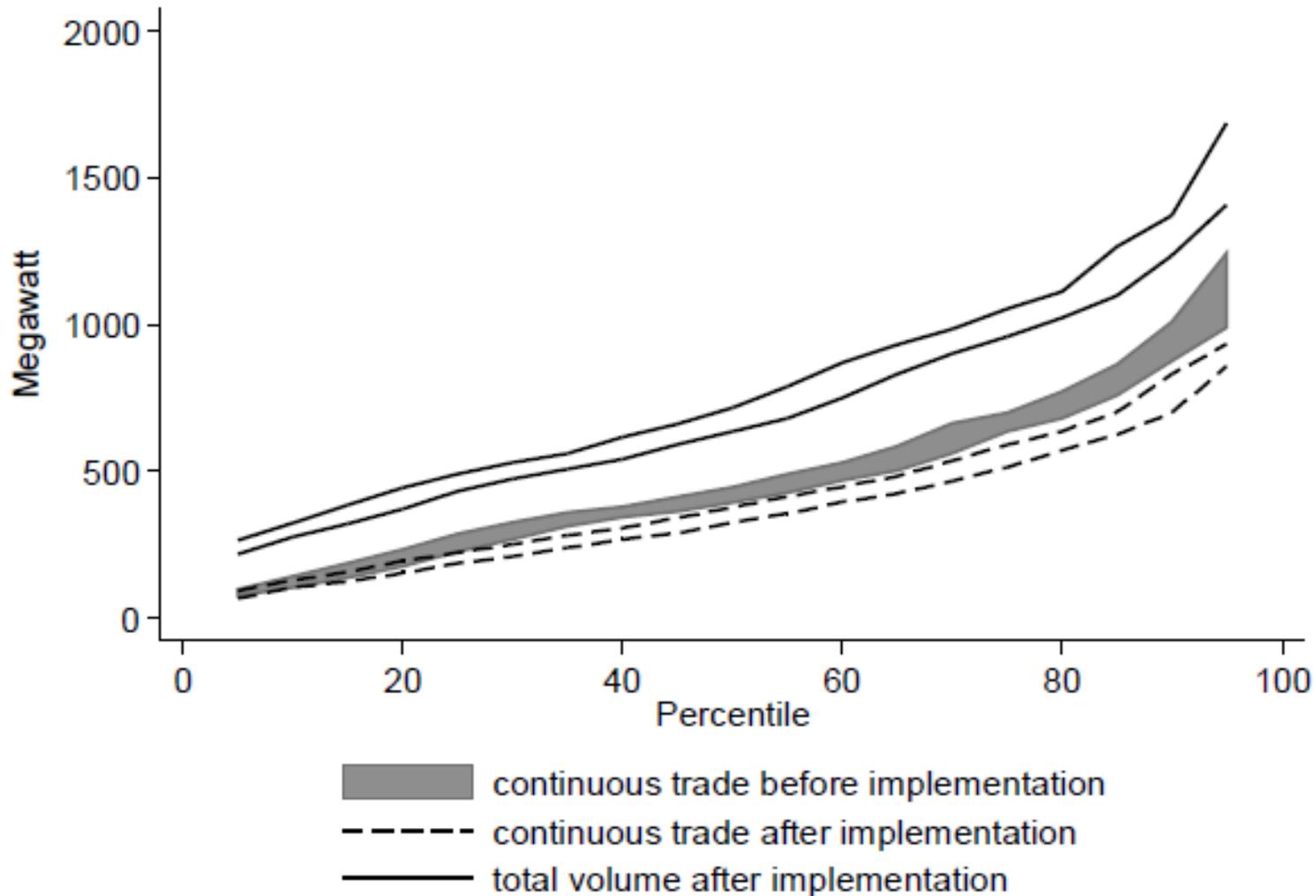
Introduction to the Meeting

Karsten Neuhoff

Paris, 2.10.2016

# 1 Intraday trading arrangements in European countries

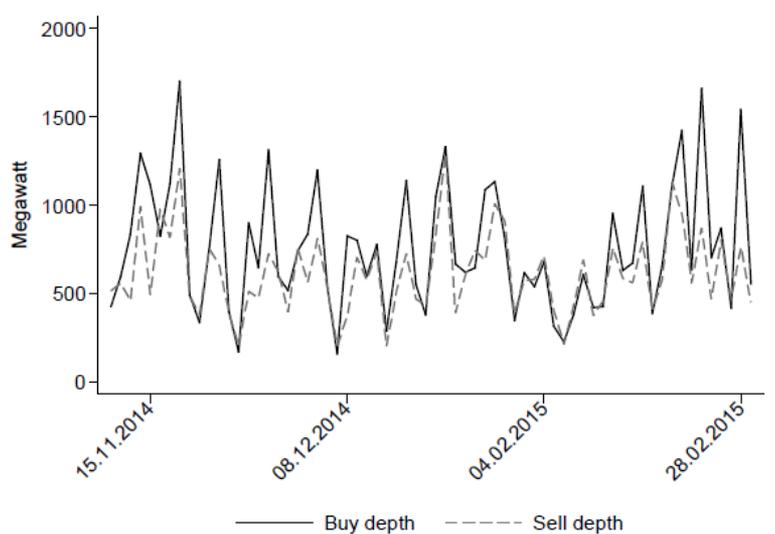




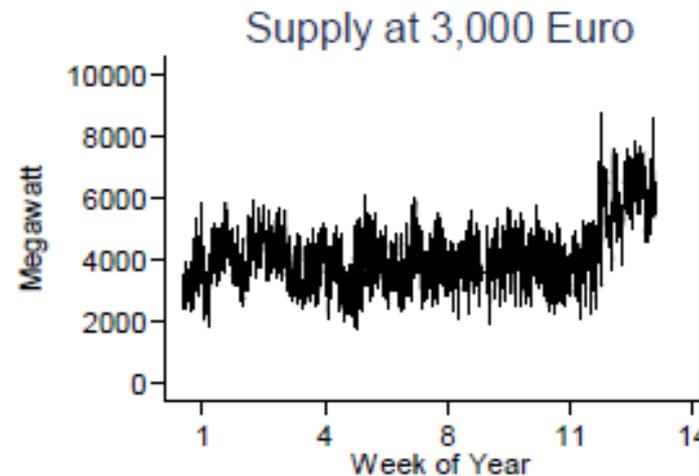
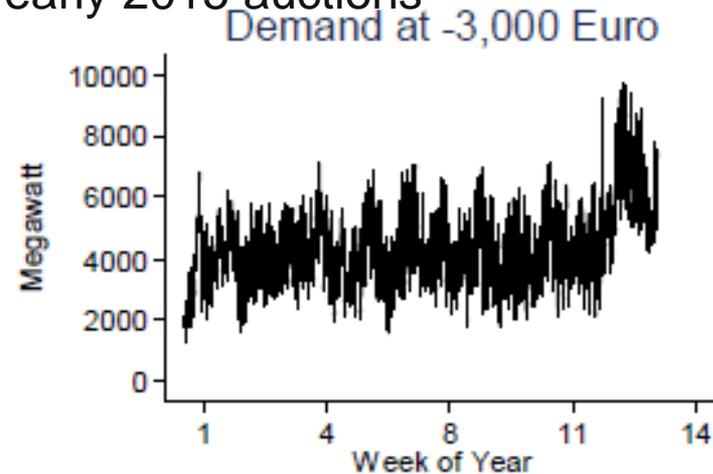
# 3

## Intraday auction increases market depth

Order book depth on the 15min continuous intraday market



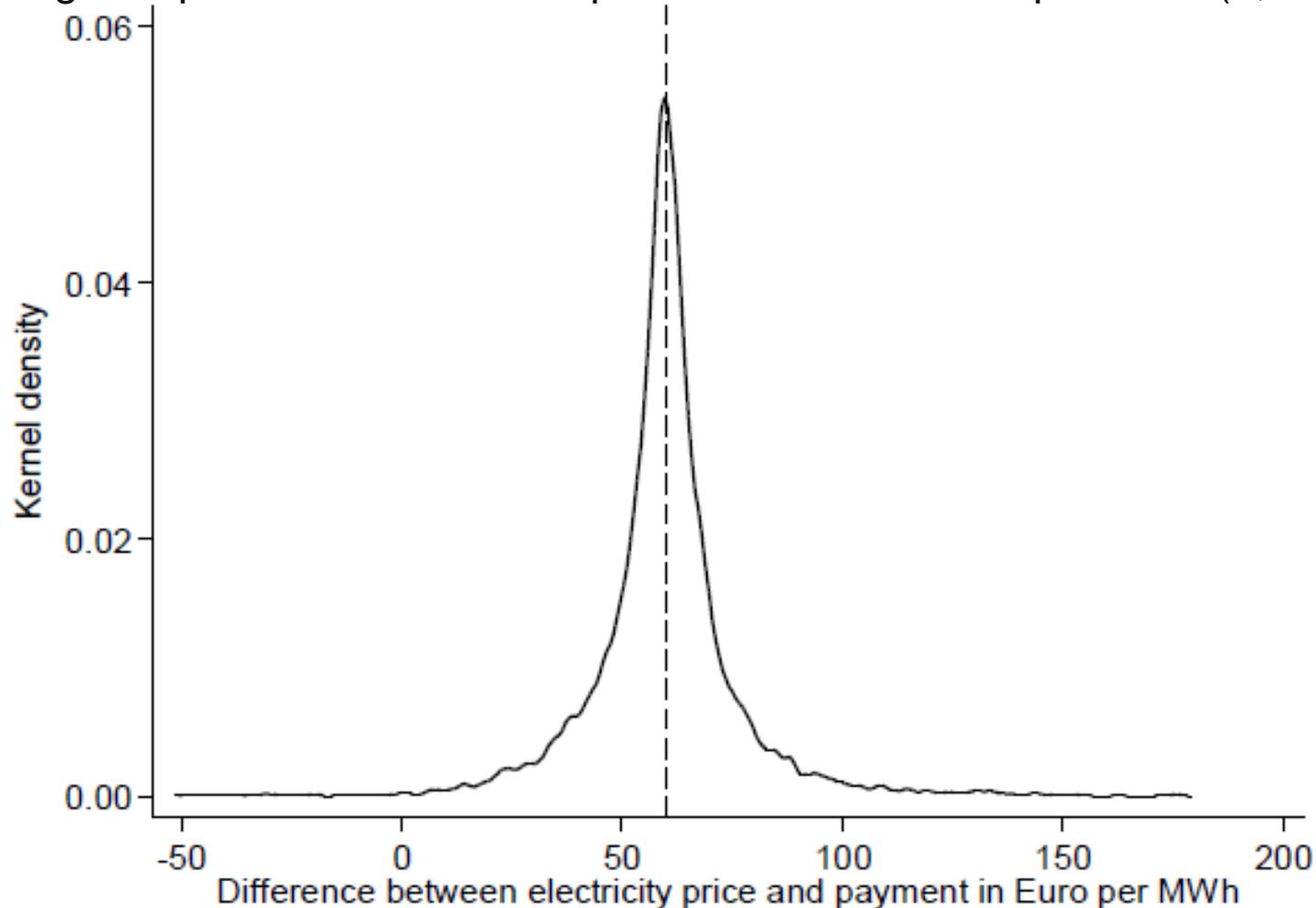
Aggregated supply and demand in early 2015 auctions



## 4

# Intraday auctions provide functioning reference point for contracts to support flexibility

Volume weighted price index for the cap futures Jan 2014 – April 2015 (2,5 Mio. Trades)



In 5% of the transactions the basis risk is more than 86 €/MWh.

Referenced to an index based on continuous trading only offers limited hedge.

## Intraday auctions allow for pricing and efficient use of cross-zonal transmission capacity

### **Pricing of T capacity in continuous trading difficult**

- ex-ante set price inhibits efficient trades / can violate T
- ex-post set price – trading risk limits arbitrage

### **Allocating T capacity on first come first serve (for free)**

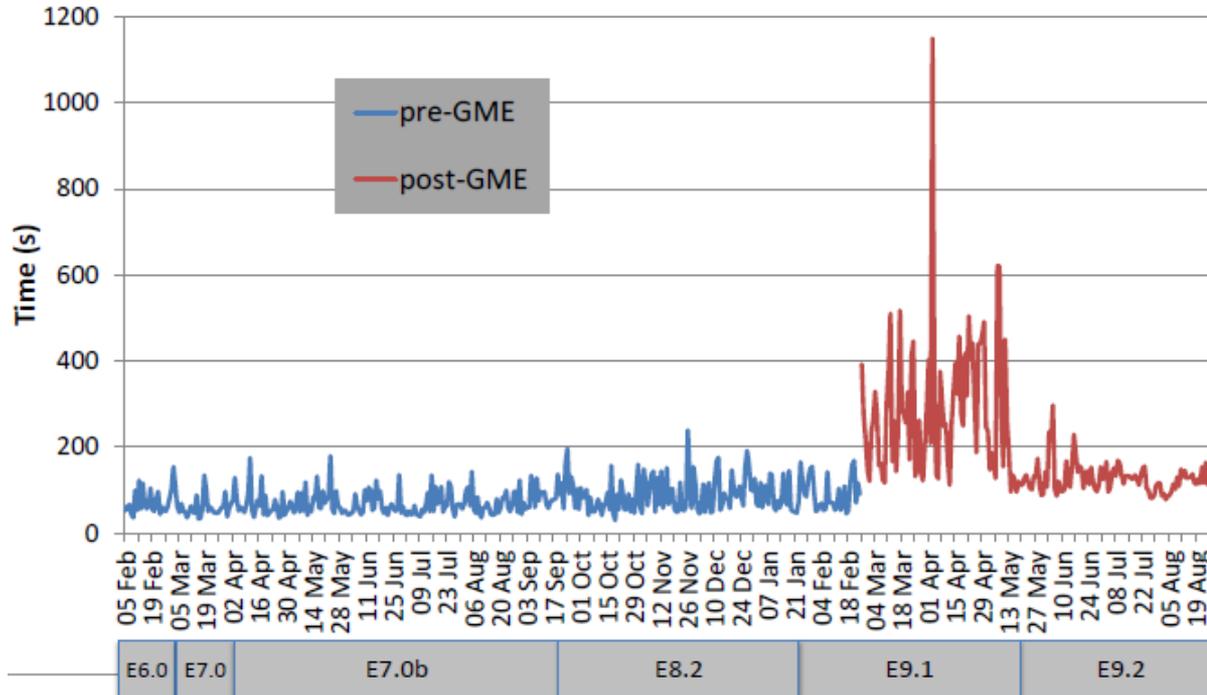
- gives scarcity value to traders not consumers
- inefficient use of scarce resource in flow based approach

**-> politics changed as robots not traders capture margin**

## Intraday auctions support effective participation of players of all scale and technologies (including flexibility)

- Capability (unit based) bidding possible
  - Reflecting start-up times/costs, ramps, minimum runs ..
- Ensures non-discriminatory participation of small players
- Allows all generation / demand options to enter
  - Provide full value to system
  - Receive remuneration for full value to system
- Aggregation remains option
  - To reduce transaction costs
  - But not required to match standardized products

## Time to first solution of Euphemia



Multiple types of block bids very challenging for solution algorithm:  
 -> further argument for moving to common formats of capability bids

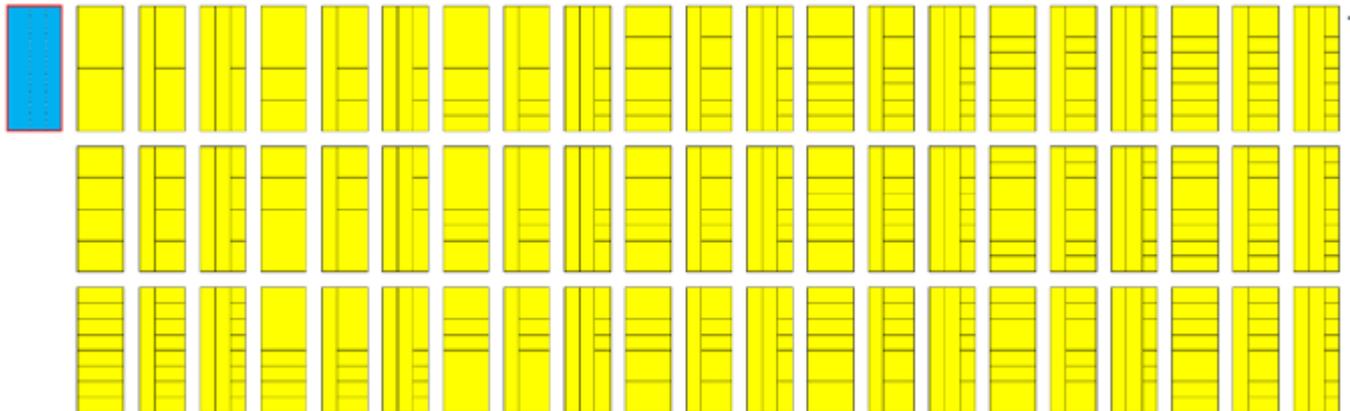
Graph from presentation „Euphemia performance” to European stakeholder committee SEP 2015

## 7

## Auctions resolve challenges of intraday matching

- Penetration of algorithmic trading in intraday exchanges  
-> higher trading speeds, turnover rates, order-to-trade ratios
- Intraday exceeding 100.000 orders per day (only Germany)
- Risk of back-logs and ultimately secure operation
- Challenges would increase with block-bids / more sophisticated cross-boder clearance ..

Matching a 3MW hourly order with hourly, half-hourly or quarterly order combinations.



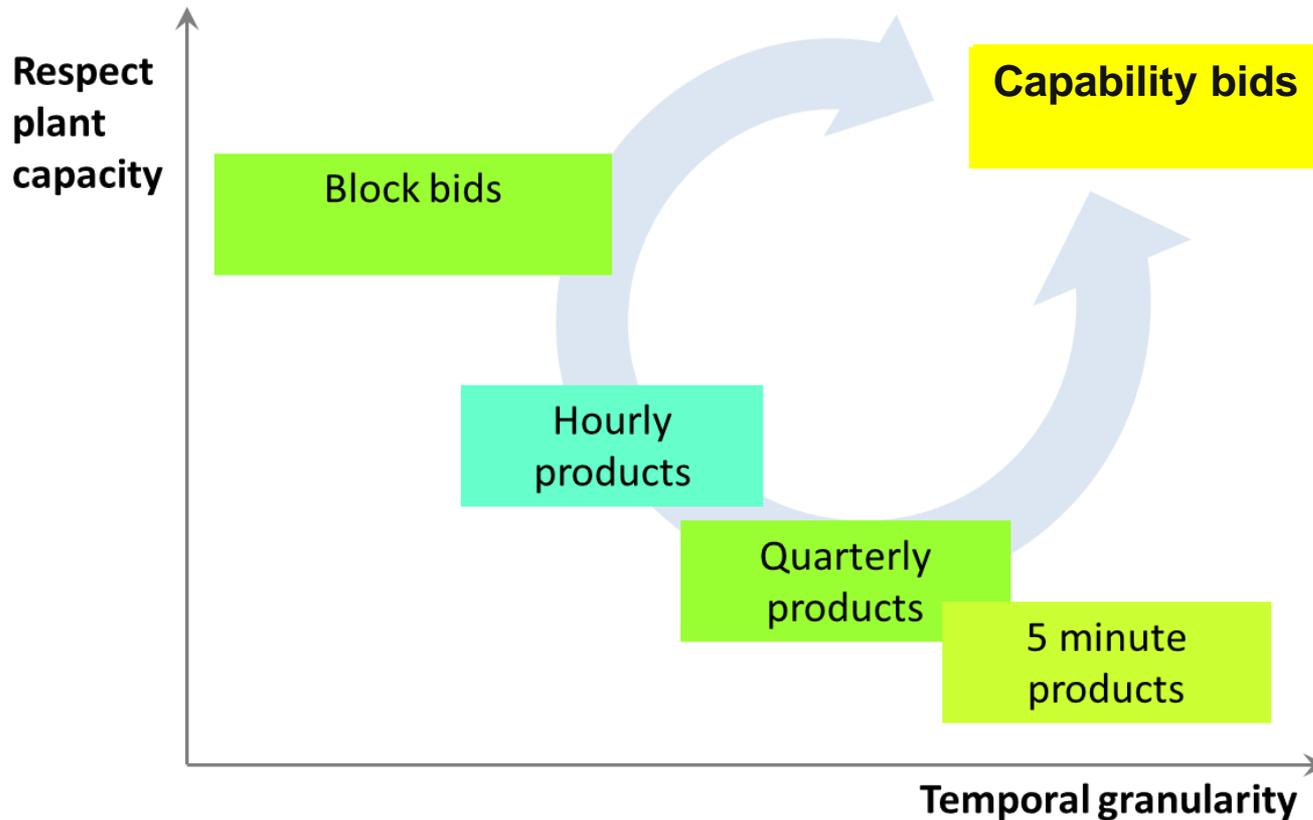
- Unit based bidding results in early & reliable schedules (also consistent with outcome of real-time/balancing markets)
- Improves flow-forecasts in countries with diverse actors
- Reduces
  - Volume of unannounced loop-flows
  - Amount of reserves needed for balancing & re-dispatch
  - Risks from unanticipated flow patterns

- Flexibility options require real-time/balancing market
  - Should be based on marginal clearing (demand side ...)
- Risks in case of continuous intraday (inherent pay as bid)
  - Shift of liquidity from intraday to balancing -> inefficient
  - Arbitrage/gaming between different clearing algorithms
- Importance to align (not only within Terre/explore) but
  - **between time-frames**
  - **across EU** to share flexibility / generation adequacy

Multiple intraday auctions with capability based bids have advantages – but:

- Are they a sufficient step – or do we ignore further needs?
- How to align with real-time/balancing markets?
- What are implications of different design choices?
- How to avoid regional lock-in with different choices?

- What bid formats to allow?
  - Capability bids - what information to provide on operational point, balancing/re-dispatch commitments?
  - Additional products – for flexibility/storage needs?
- How to treat discrete nature of units?
  - Minimum uplift payments
- How to facilitate consistency with real-time / balancing?
  - Virtual bids



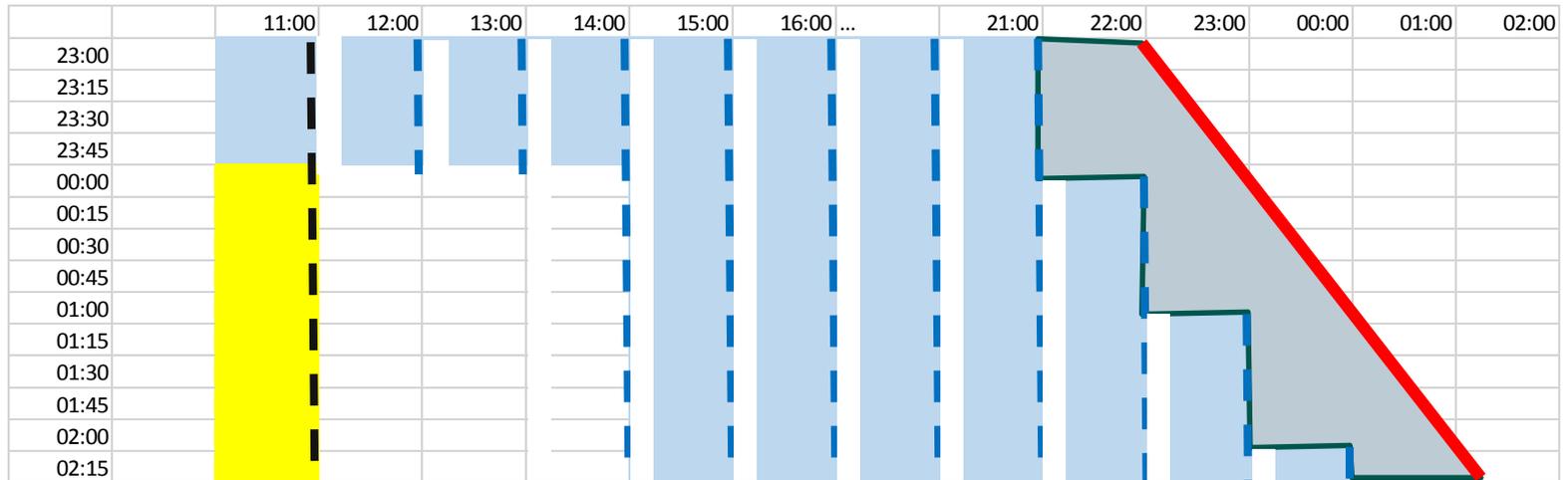
## II How to align intraday auctions with continuous trading?

- How can intraday auctions (also foreseen by CACM as complementary regional measures) interface with continuous trading (platform)?
- How can intraday auctions be integrated with different pre-existing intraday market designs?

## How to align intraday auctions with continuous trading? (scenario hourly)

- Day ahead capacity calculation
- Continuous intraday trading
- Day ahead auction\*
- Intraday auctions
- TSO activity (redispatch etc.)
- Real time balancing (market)

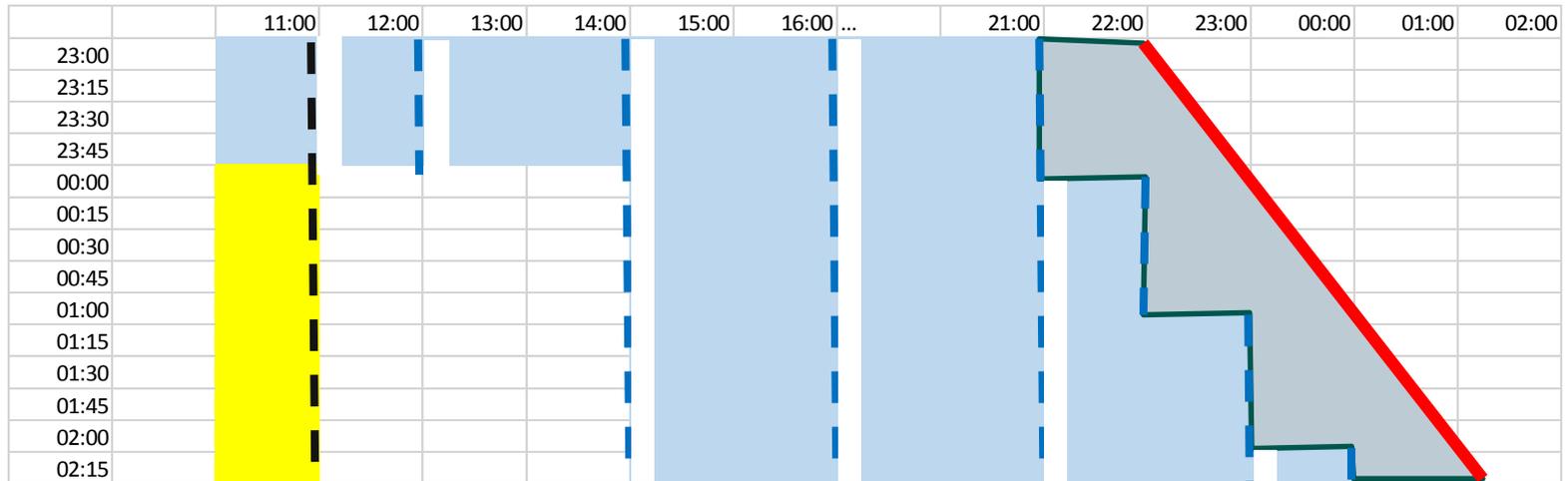
Time slot considered



## How to align intraday auctions with continuous trading? (multi-hourly+closing)

- Day ahead capacity calculation
- Continuous intraday trading
- Day ahead auction\*
- Intraday auctions
- TSO activity (redispatch etc.)
- Real time balancing (market)

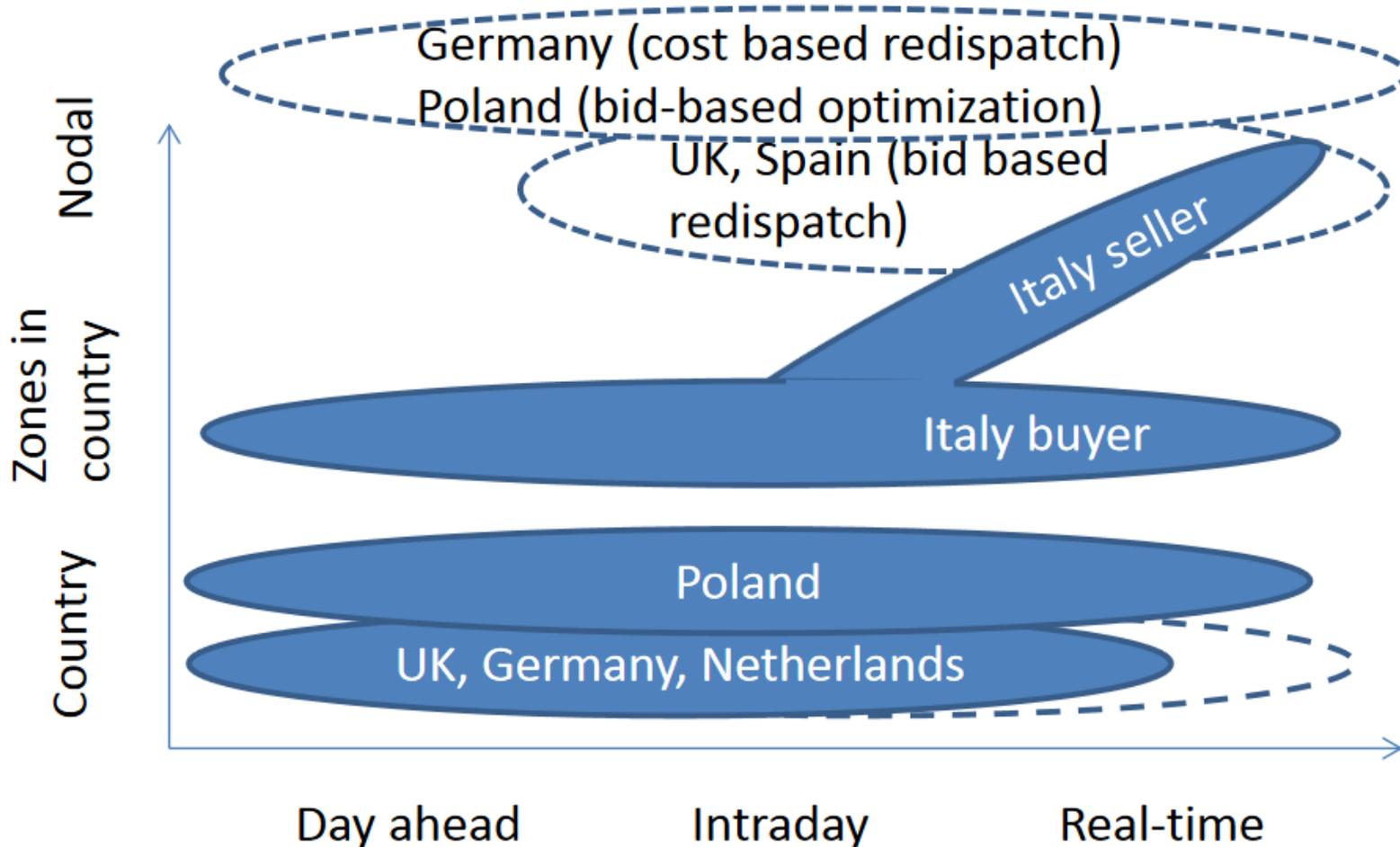
Time slot  
considered



- Can capability based bidding (unit specific) enhance reliability of generation schedules for TSOs?
- How to allocate transmission capacity between bidding zones if continuous and auction based trading co-exist?
- Are PXs and TSOs able to better integrate energy trading algorithms with other system needs?
- How can intraday auctions be integrated with short-term procurement of reserve and multi-lateral remediate actions for redispatch?

# Spatial clearing structure of countries in different time frames

Blue energy markets, white relating to transactions to address transmission constraints





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## **Increased need for short-term adjustments (Wind , solar ...)**

- Enhanced liquidity
- Enhanced market depth

## **Increased need for flexibility (Functioning energy market)**

- Reference price for derivative products
- Open for all flexibility options

## **Closer alignment with system operation (EU integration)**

- Early & reliable information on flow patterns
- Facilitate consistency with real-time market
- Efficient & market based allocation of cross-zonal capacity

# Illustration of different balancing approaches

