

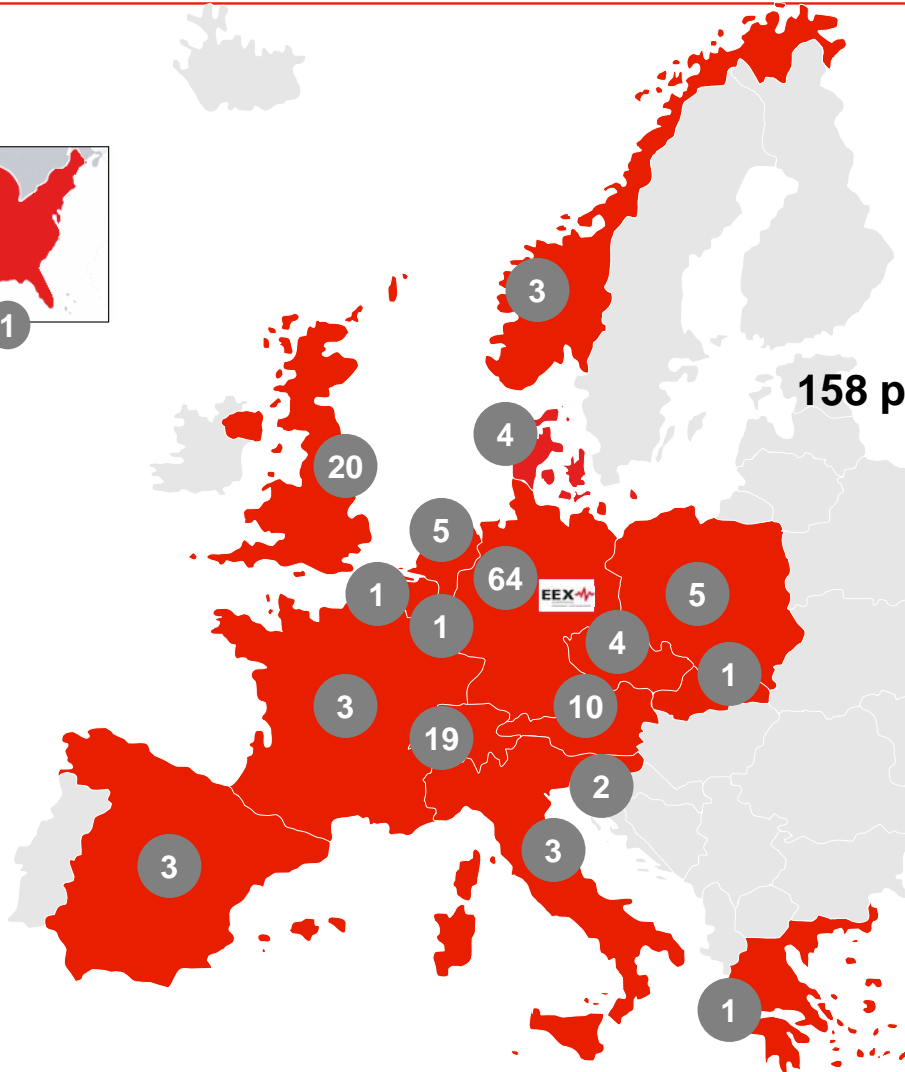
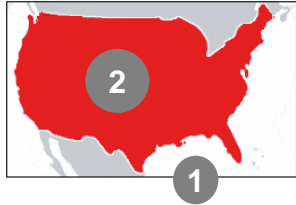
## Organizational set-up of EU ETS-auctions

Stefan Teis – EEX AG

University of Cambridge

January 12<sup>th</sup> 2007, Cambridge, UK

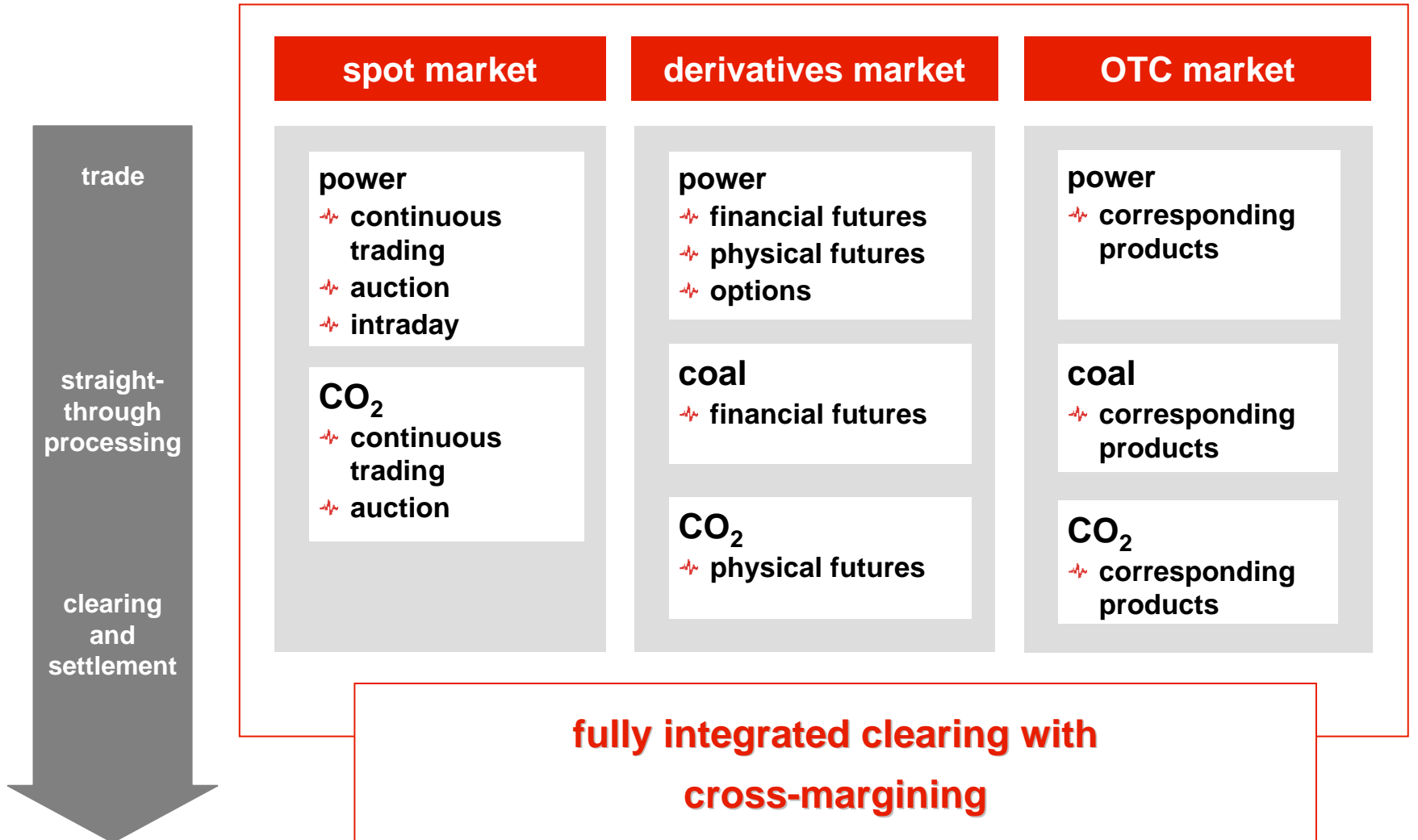


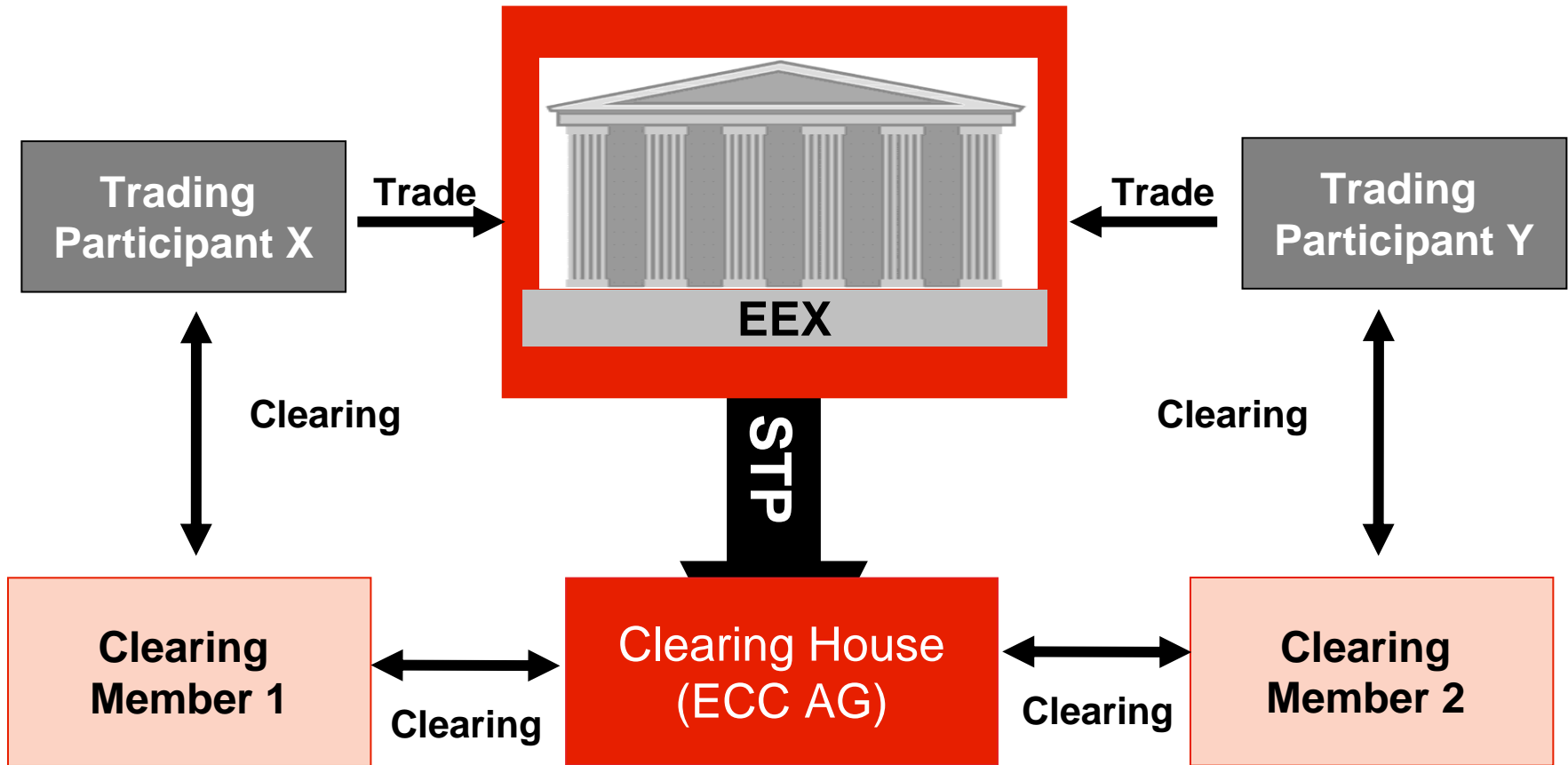


**158 participants from 19 countries**

- 136 spot market participants
- 76 derivatives market participants
- 165 OTC clearing participants
- 13 general clearing member
- 9 broker
- 7 market maker
- 6 transmission system operators

updated: 8 January 2006





## ⚡ Power Spot (day-ahead)-Market

- Auction for each hour of the year (8759 / 8783) per year per market area (Germany/Austria and Switzerland)

## ⚡ Opening Auctions – for all products in continuous trading

- Block contracts for day-ahead power
- EUA Spot
- Derivatives markets

## ⚡ Intra-Day Auction

- EUA-Spot

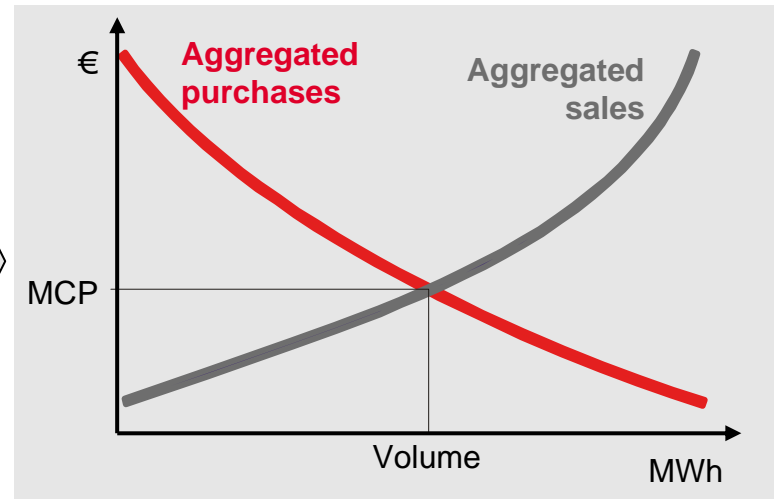
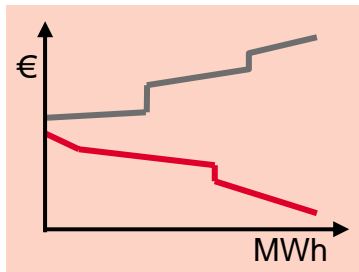
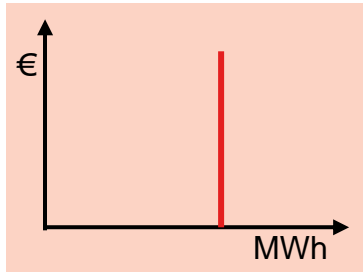
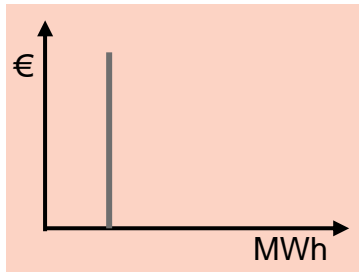
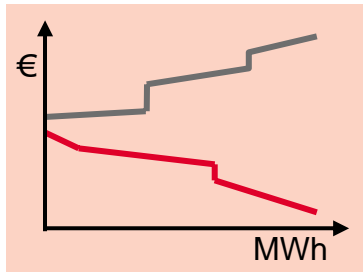
## ⚡ EOD Auctions

- Block contracts for day-ahead power

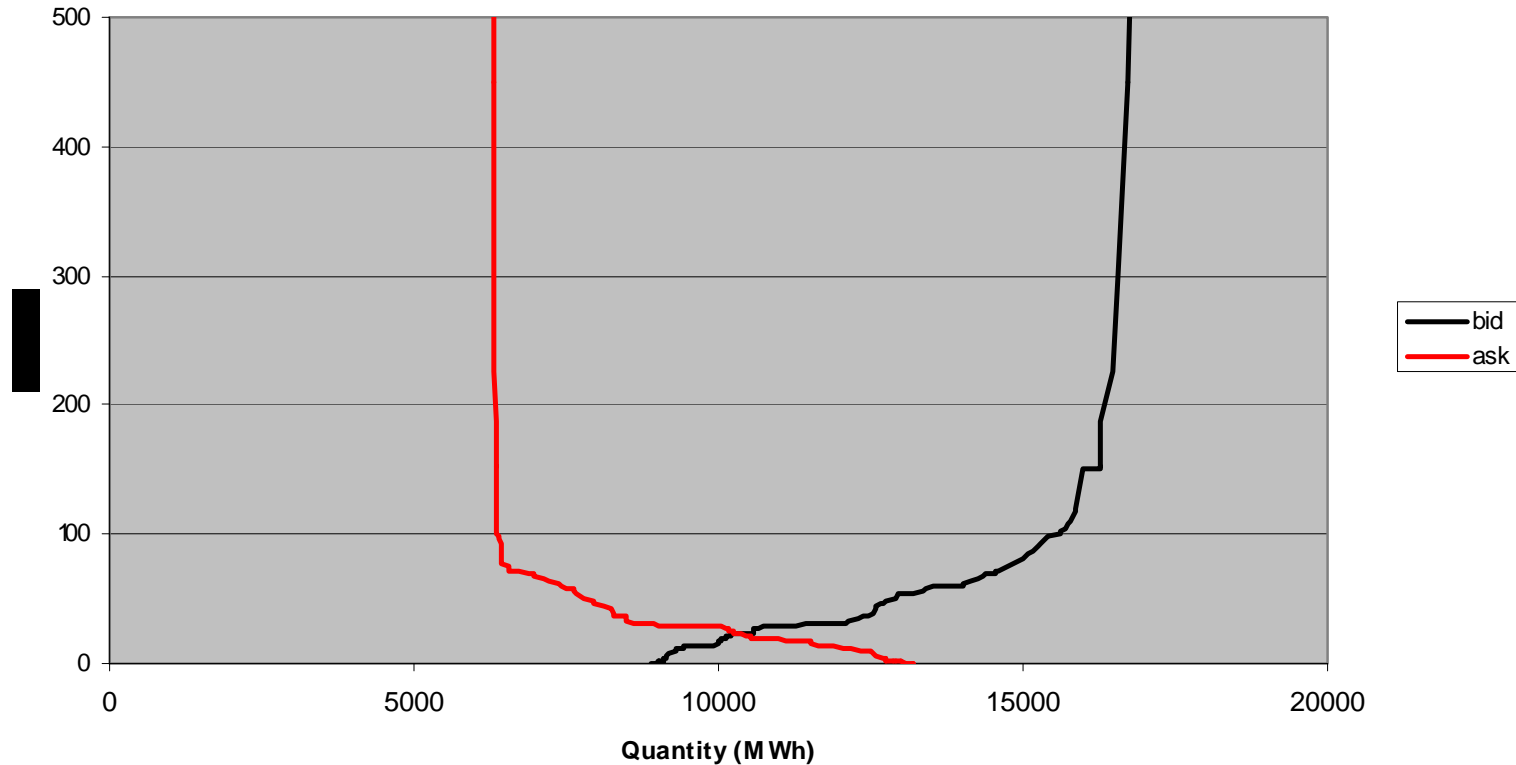
# Hourly contracts on power

## Auction principle

Hour/Price	0	6.9	7	16.9	17	17.1	17.2	149.9	150	3000
	200.0	200.0	100.0	100.0	0.0	-75.0	-75.0	-75.0	-275.0	-275.0
	154.9	154.9	42.6	42.6	6.3	6.3	0.0	0.0	-20.0	-20.0
3	-57.0	-57.0	-100.0	-100.0	-100.0	-175.0	-175.0	-175.0	-325.0	-325.0
4	200.0									200.0



Bid & Ask Curves Hour 5, 23rd of November 2006



**Aggregated price curves are distributed daily via EEX information products**

## German power

⚡ 14th to 2nd day before delivery

**Entering, deleting, changing, retrieving of orders**

7:30 am – 8:00 pm

⚡ Day of auction

**Entering, deleting, changing, retrieving of orders**

7:30 am – 12:00 pm

**Price establishment**

12:00 pm – 12:15 pm

**Result distribution, participants objections**

12:15 pm – 12:45 pm

**Trade administration**

12:45 pm – 08:00 pm

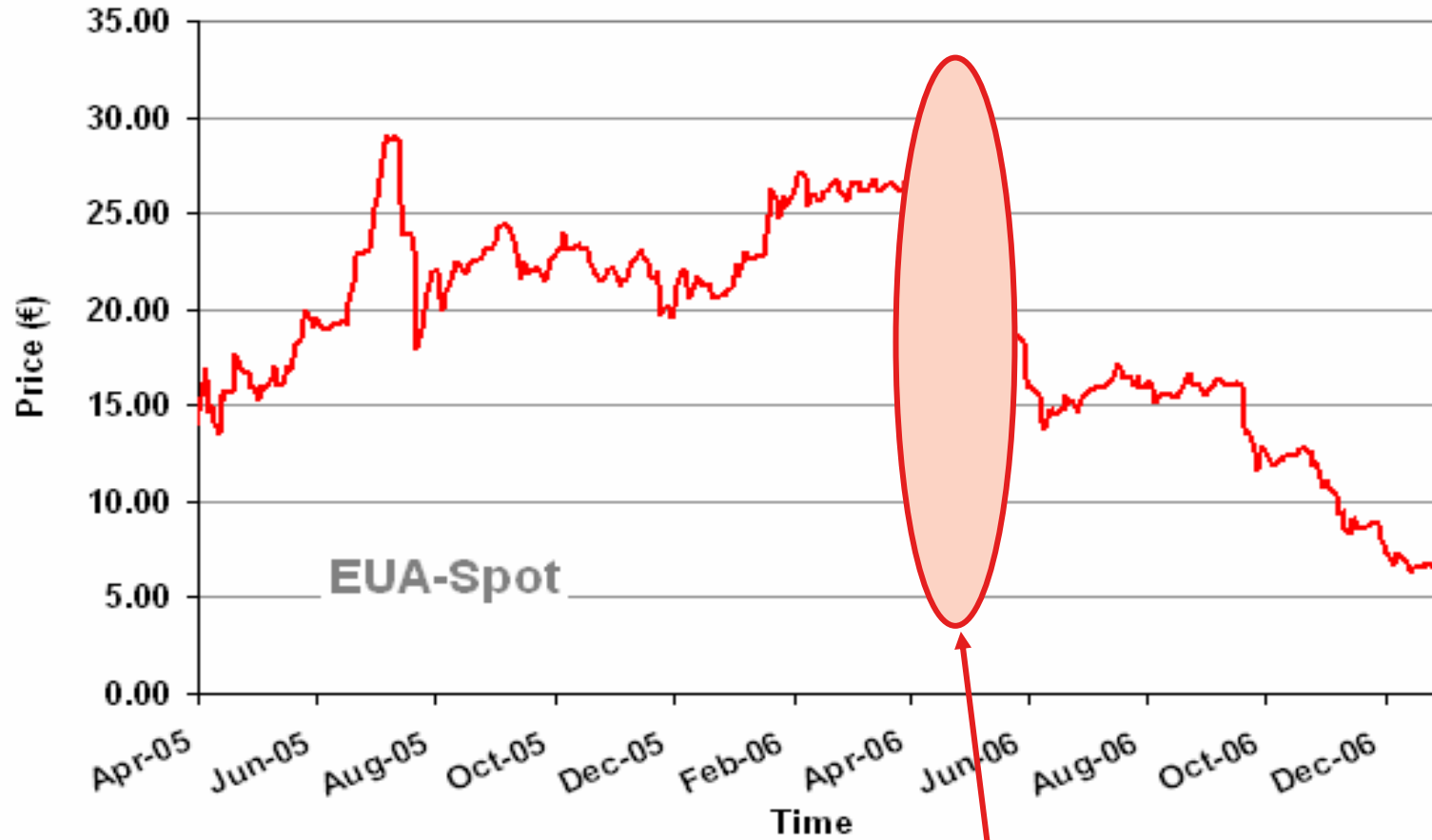
## Swiss power

⚡ Same timeline; price establishment 10:30 am

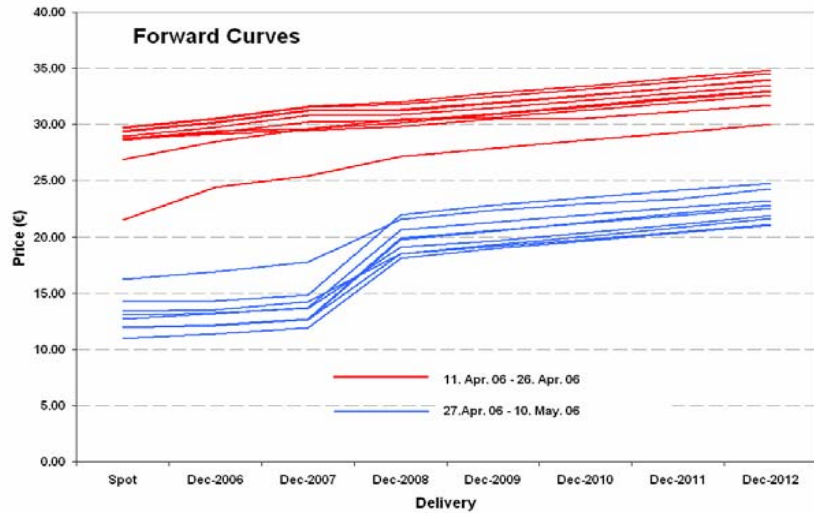
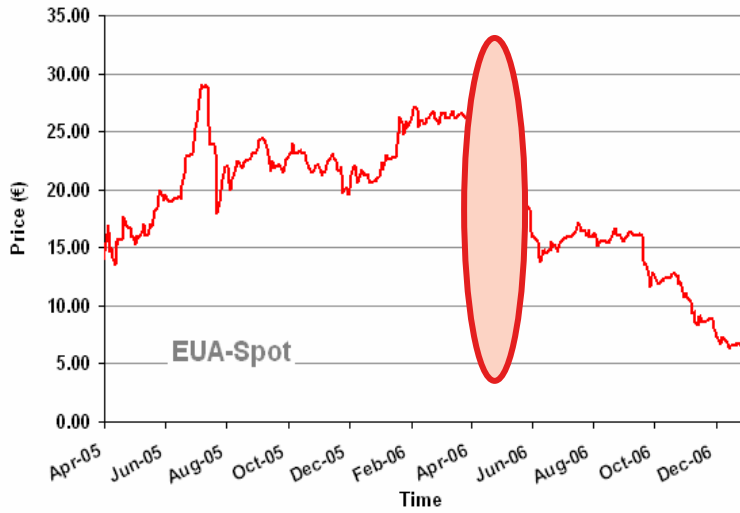
⚡ 24/23 auctions in parallel – hrs. of a day

⚡ Time shifts on trading days prior to weekends or holidays due to the fact that several auctions are conducted (on Fridays auctions are performed for Sat., Sun. and Mon. , if Mon. is not a holiday)





**Publication of data on emissions**



... rumours as well

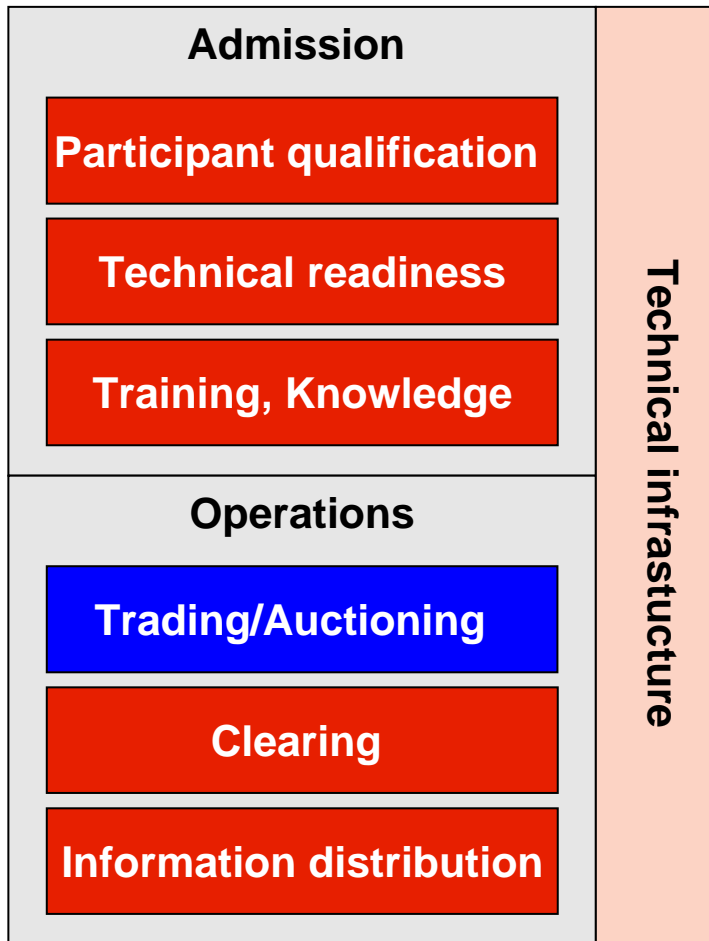
⚡ „turn-around“ time of auction should be  
in line with the „speed“ of the secondary EUA market

- time from closing of order book to publishing of results << **1 day**

⚡ High **reliability** and **transparency**

- Processes
- Technical infrastructure
- Result / information distribution

Goal: Avoid disturbing the ongoing EUA trading scheme  
possible through delays, operational errors or missing  
transparency of/in the auction process(es)



**Who is allowed to participate?**

**Participant and auctioning organisation are technically able to handle data required for auction / clearing process**

**Knowledge building: process, timing, etc.**

**Auction process: frequency, algorithm, timing, etc.**

**Credit risk mitigation, settlement**

**Result distribution to individual participants and the market**

Auction-office and participants are technically and operationally ready to pursue the auction and the clearing process (depending on the clearing process chosen)

⚡ Contracts required are in place and verified e.g.

- Debit orders
- Bank guarantees, collateral agreements – depending on the credit risk mitigation mechanism chosen

⚡ Participants master data available and verified

- General data, communication data etc.
- Participation criteria
- National registry
- Bank / payment data

⚡ Participants have proper access to the auction system

- technical access
- security measures for the interaction with the system are in place
- participants are able to operate the system

Provide participants with knowledge about the auction and processes

 **Distribution**

- Web-infrastructure (content, downloads, podcasts, FAQ threads etc.)
- Interactive sessions, hotlines, support

 **Information about (examples)**

- Auction process (timelines, deadlines)
- Auction methodology
- IT-Infrastructure

 **Simulations**

## ⚡ Alignment of auctions

- Schedule for auctions within each country
- Throughout Europe

## ⚡ Auction algorithm (not discussed in this presentation)

## Auction Schedule (for each auction)

⚡ Pre-auction phase – x days prior to auction

Entering, deleting, changing, retrieving of orders

hh:00 – hh:00'

⚡ Day of auction

Entering, deleting, changing,  
retrieving of orders

hh:mm – aa:00

Price establishment

aa:00 – aa:xx

Result distribution,  
participants objections

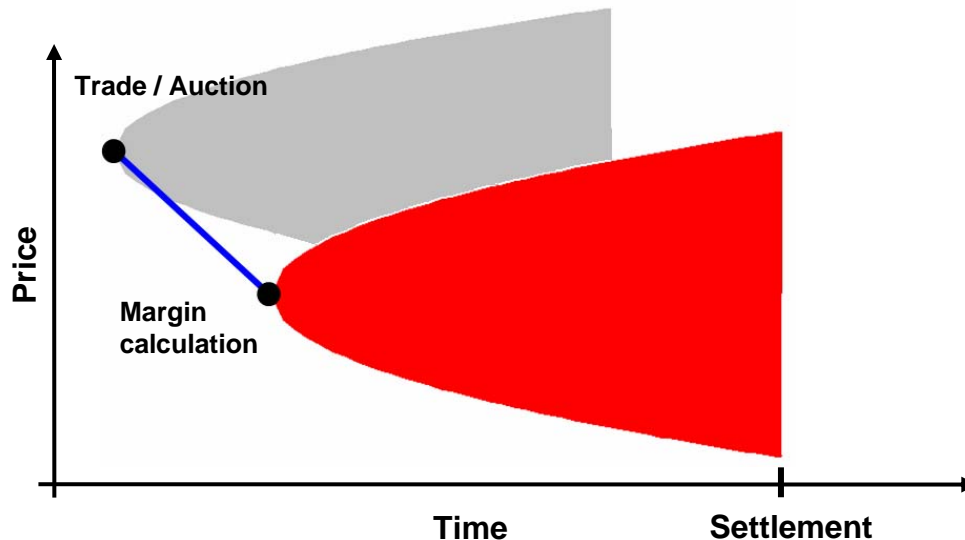
aa:xx – aa:yy

Begin of clearing

- ⚡ Credit risk in EU ETS auctions in one-sided – governments bear the risk of defaulting auction participants
- ⚡ Questions
  - How can the government be protected against these **monetary** credit losses?
  - What is the **non-monetary** impact of high number of (credit) defaults in the auctions?
  - Which question is more important for establishing an auction process?



- ⚡ Careful participant qualification process
- ⚡ Setting of price limits
- ⚡ Limiting the amount of certificates a participant can bid for
  - In general?
  - According to the financial strength?
  - According to the need of certificates in the production process?
  - Other
- ⚡ Decrease of number of certificates auctioned at any one given time
  - Increase of number of auctions
- ⚡ Require „monetary“ credit risk mitigation

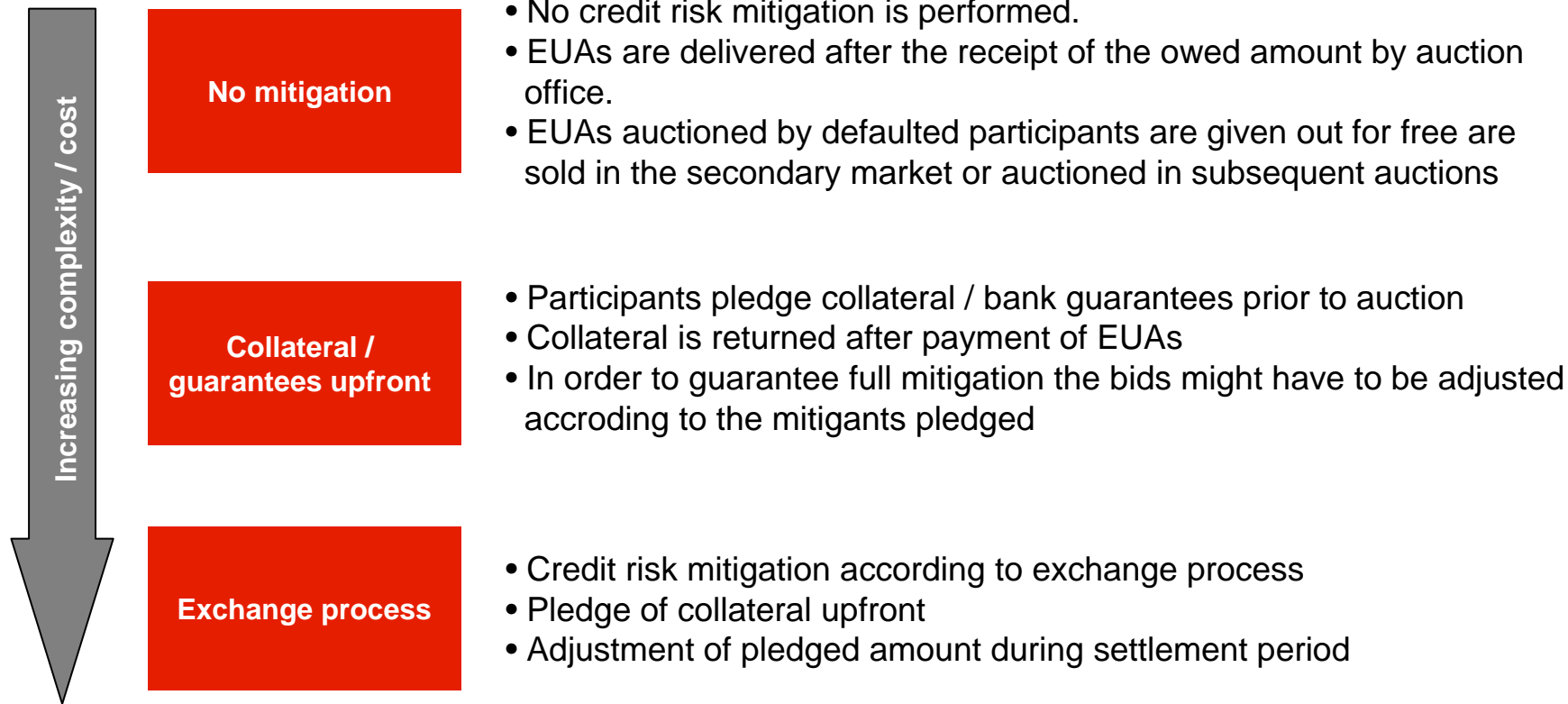


- ⚡ **Current Liquidating Margin**  
Mitigation of potential losses if open net positions (EUA and cash) have to be liquidated at current market conditions, in case of a counterparty's failure
- ⚡ **Additional Margin**  
Mitigation of potential losses (close-out costs) due to changes in market conditions (volatility), in case of a counterparty's failure. Calculation base: quantile of loss distribution.
- ⚡ Initial Margin/clearing fund – upfront
- ⚡ Daily processes, highly automated margining and settlement processes

Purchase of 1,000 EUA at a price of 9.50 €/EUA		
Long 1,000 EUA	Short 9,500 € Cash (EUA) Short 1,805 € Cash (VAT)	
Evaluation of the position* at the current market value of 10 €/EUA		
Long 1,000 EUA: - 9,997.30 €*	Short 11,305.- € Cash: 11,302.50 €*	CLM = 1,305.20 €
Evaluation of the change in the market price of the position based on the assumption of a maximum price fluctuation of 3.3 € (AM parameter)		
Long 1,000 EUA: 1,000 x 3.3 €= 3,300 €	Short 11.303 € Cash: 0 €	AM = 3,300 €

**Total margin = 4,605.20 €**

\* Evaluation of positions discounted to the current trading day and rounded to one digit



**Possibility: Improvement of the credit risk mitigation processes related to the EU ETS auctions over time.**

## Credit lines

- If participant has to borrow the collateral the cost of the collateral will scale with the credit rating
- Cost of bank guarantees also depends on the participant's credit rating and type of company

## Opportunity cost

- Difference between the interest received for the margins and the interest that could have been earned in the market / through investments

## Process cost

- Increasing implementation cost for the different mitigation procedures

## Basics

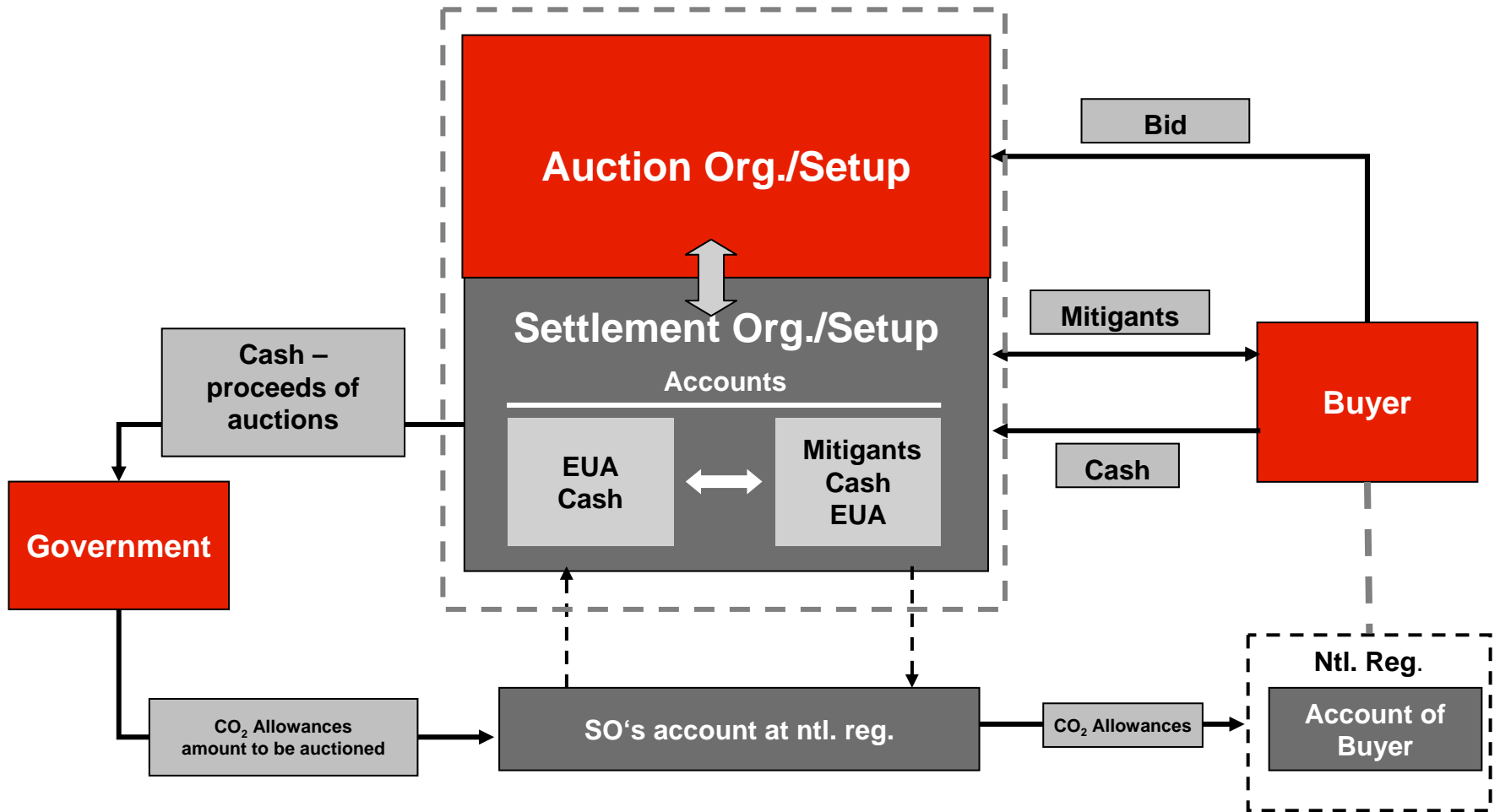
- ⚡ Thousand - few thousand participants
- ⚡ Participants: small companies -> large financial institutions
- ⚡ Heterogeneous and various levels of sophistication of IT-infrastructures at participants sites
- ⚡ Low cost IT-infrastructure

## Auction infrastructure

- ⚡ „Real“-time
- ⚡ Light-weight web-application
- ⚡ High security measures (banking standard)
- ⚡ Emergency procedures (manual)

## Clearing infrastructure

- ⚡ Settlement and credit risk mitigation through „standard“ banking infrastructures
- ⚡ „Near time“
- ⚡ Collateral balancing possibly daily – depending on the credit risk mitigation process implemented
- ⚡ High security measures (banking standard)





## Thank you very much for your attention

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