Single Intraday Coupling (SIDC)

4th Wave Pre-launch Event

29th September 2022

Presentation for publication

SIDC

Agenda

No.	Time Slot	Agenda Topic	Presenters	Allocated Time	
1	10:00 – 10:15	**Welcome, Introduction**	Stefano Alaimo, MCSC NEMO Co-chair, GME	15 minutes	For the key note speeches please listen the video here
			Andre Estermann, MCSC TSO Co-chair, 50Hertz		
2	10:15 – 10:40	**Keynote Speech**	Mathilde Lallemand, European Commission	25 min	
			Slovakian and Greek NRA representatives		
3	10:40 – 11:00	**Overview of SIDC – background, history, and insight into the operation**	Andre Estermann, MCSC TSO Co-chair, 50Hertz	20 minutes	Content of this presentation
			Radek Adamec, SIDC TSO Project manager, CEPS		
4	11:00-11:30	**The SIDC matching solution**	Vladimir Satek, SIDC NEMO ID SC Secretary, chair of SIDC QARM	30 minutes	
5	11:30-12:00	**Overview of borders, market areas & products**	Ján Kaiser, Market Development Analyst, OKTE	30 minutes	
	12:00 -13:00 LUNCH Break				
6	13:00 – 13:35	**Relevant information for market parties from Local Implementation Project (LIP)**	Tomáš Semko, Market Administrator, OKTE	35 minutes	Content of this presentation
			Andreas Ntomaris, Head Market Support, HENEX		
7	13:35 – 13:55	**Member's trial period, go-live plan, and next steps for readiness**	Andreas Ntomaris, Head Market Support, HENEX	20 minutes	
8	13:55 – 14:15	**Future plan for SIDC**	Radek Adamec, SIDC TSO Project manager, CEPS	20 minutes	
9	14:15 - 14:45	**General Q&A + Summary and close**	Stefano Alaimo, SIDC NEMO Co-chair, GME	30 minutes	

SIDC

Agenda

MCSC
Market Coupling Steering Committee

No.	Agenda Topic	Presenters	Starting time in the video
	First Part: <u>Watch it here</u>		
1	**Welcome, Introduction**	**Stefano Alaimo**, MCSC NEMO Co-chair, GME	**02:37**
2	**Keynote Speech**	**Mathilde Lallemand,** European Commission	**05:11**
		Olga Filippopoulou, Dipl. Electrical & Computer Engineer NTUA,M.Sc. , Wholesale Electricity Market Regulation Regulatory Authority for Energy (RAE)	**10:40**
			14:50
		Andrej Juris, Chairman of ÚRSO - Regulatory Office for Network Industries (RONI)	
3	**Overview of SIDC – background, history, and insight into the operation**	**Andre Estermann,** MCSC TSO Co-chair, 50Hertz	**20:47**
		Radek Adamec, SIDC TSO Project manager, CEPS	**31:28**
4	**The SIDC matching solution**	**Vladimir Satek**, SIDC NEMO ID SC Secretary, chair of SIDC QARM	**38:34**
5	**Overview of borders, market areas & products**	**Ján Kaiser**, Market Development Analyst, OKTE	**1:15:40**
	Second Part: <u>watch it here</u>		
6	**Relevant information for market parties from Local Implementation Project (LIP)**	**Tomáš Semko**, Market Administrator, OKTE	**00:18**
		Andreas Ntomaris, Head Market Support, HENEX	**05:07**
7	**Member's trial period, go-live plan, and next steps for readiness**	**Andreas Ntomaris**, Head Market Support, HENEX	**19:02**
8	**Future plan for SIDC**	**Radek Adamec**, SIDC TSO Project manager, CEPS	**28:16**

SIDC

Welcome

Introduction

Please listen the recording here

Stefano Alaimo, MCSC NEMO Co-chair, GME
Andre Estermann, MCSC TSO Co-chair, 50Hertz

1. Introduction - SIDC Geographical extension

- 3rd go-live wave (Italy)

- Italy successfully integrated into Single Intraday Coupling on 21st September with first deliveries on the 22nd September 2021.

- The SIDC implementation of new border and interconnector between Slovenia and Hungary – beginning of July 2022.

- 4th go-live wave (Greece)

- The SIDC integration of Greece (coupling with Italy) will go live at the same time as Slovakia in November 2022.
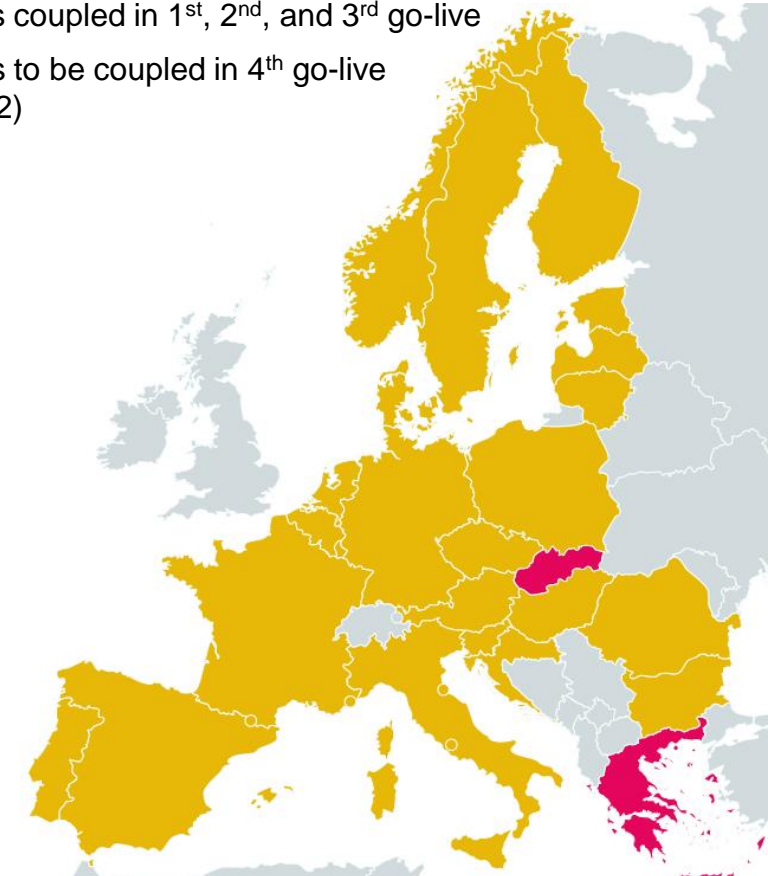
- 4th go-live wave (Slovakia)

- Slovak borders (SK-CZ, SK-HU, SK-PL) planned to go-live in November 2022

future

Countries coupled Intraday with 4th SIDC go-live

Countries coupled in 1st, 2nd, and 3rd go-live

Countries to be coupled in 4th go-live (end 2022)

Note: Luxembourg is part of the Amprion Delivery Area. Market participants in Luxemburg have access to SIDC through the Amprion Delivery Area.

SIDC

Overview of SIDC

Background, history, and insight into the operation

Andre Estermann, MCSC TSO Co-chair, 50Hertz
Radek Adamec, SIDC TSO Project manager, CEPS

What is Single Intraday Coupling (SIDC)?

SIDC (formerly known as the XBID project) objective:

"Establish a common cross border implicit continuous Intraday trading solution across Europe, where all the cross border capacities are allocated..."
Quote from Request for Offer (RFO) Issued 2012

SIDC accommodates the continuous matching of orders from market participants in one bidding zone with orders coming from its own bidding zone and from any other bidding zone where cross-zonal capacity is available.

Shared Order Book (SOB)

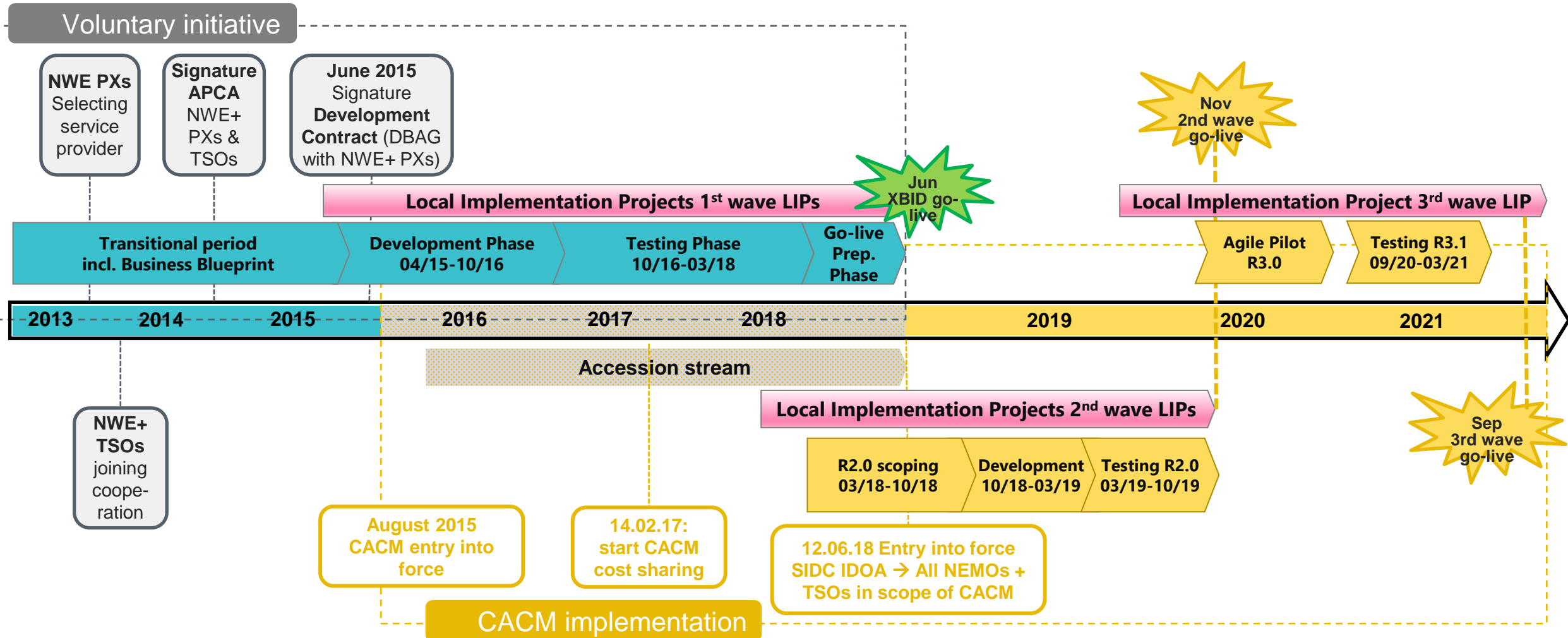Capacity Management Module (CMM)

Shipping Module (SM)

SIDC System – 3 main modules
The Single Intraday Coupling Mechanism defined in CACM

Main benefits delivered by SIDC

Cross-border trading opportunity close to real-time across Europe on one platform

Enables increased optimisation of generation assets – especially variable renewable energy sources

Leads to welfare benefits

Brings the whole European Intraday continuous market together and complements the Day-Ahead market

One-stop shop for transmission capacity allocation in Intraday

Capable of delivering a wide product range – 15 minutes, 30 minutes, hourly, block products etc.

Key SIDC historical milestones

Voluntary initiative

NWE PXs Selecting service provider

Signature APCA NWE+ PXs & TSOs

June 2015 Signature **Development Contract** (DBAG with NWE+ PXs)

NWE+ TSOs joining coope-ration

Local Implementation Projects 1st wave LIPs

Jun XBID go-live

Nov 2nd wave go-live

Local Implementation Project 3rd wave LIP

Transitional period incl. Business Blueprint

Development Phase 04/15-10/16

Testing Phase 10/16-03/18

Go-live Prep. Phase

Agile Pilot R3.0

Testing R3.1 09/20-03/21

| 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |

Accession stream

Local Implementation Projects 2nd wave LIPs

Sep 3rd wave go-live

R2.0 scoping 03/18-10/18

Development 10/18-03/19

Testing R2.0 03/19-10/19

August 2015 CACM entry into force

14.02.17: start CACM cost sharing

12.06.18 Entry into force SIDC IDOA → All NEMOs + TSOs in scope of CACM

CACM implementation

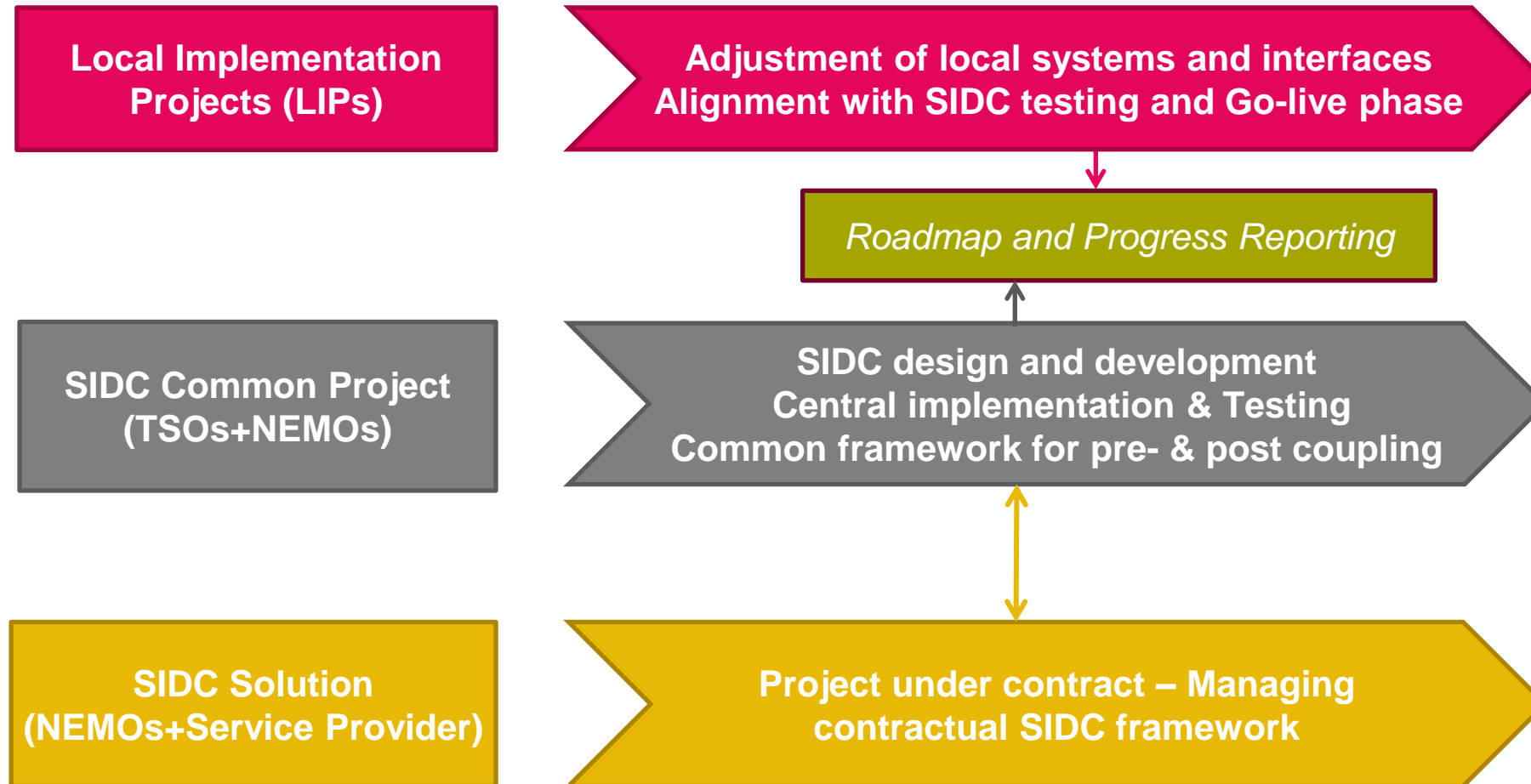# Countries coupled intraday with 1ˢᵗ, 2ⁿᵈ, 3ʳᵈ, and 4ᵗʰ SIDC go-live

Countries coupled in 1ˢᵗ go-live
(June 2018)

Countries coupled in 2ⁿᵈ go-live
(November 2019)

Country coupled in 3ʳᵈ go-live
(September 2021)

Country to be coupled in 4ᵗʰ go-live
(Q4 2022)
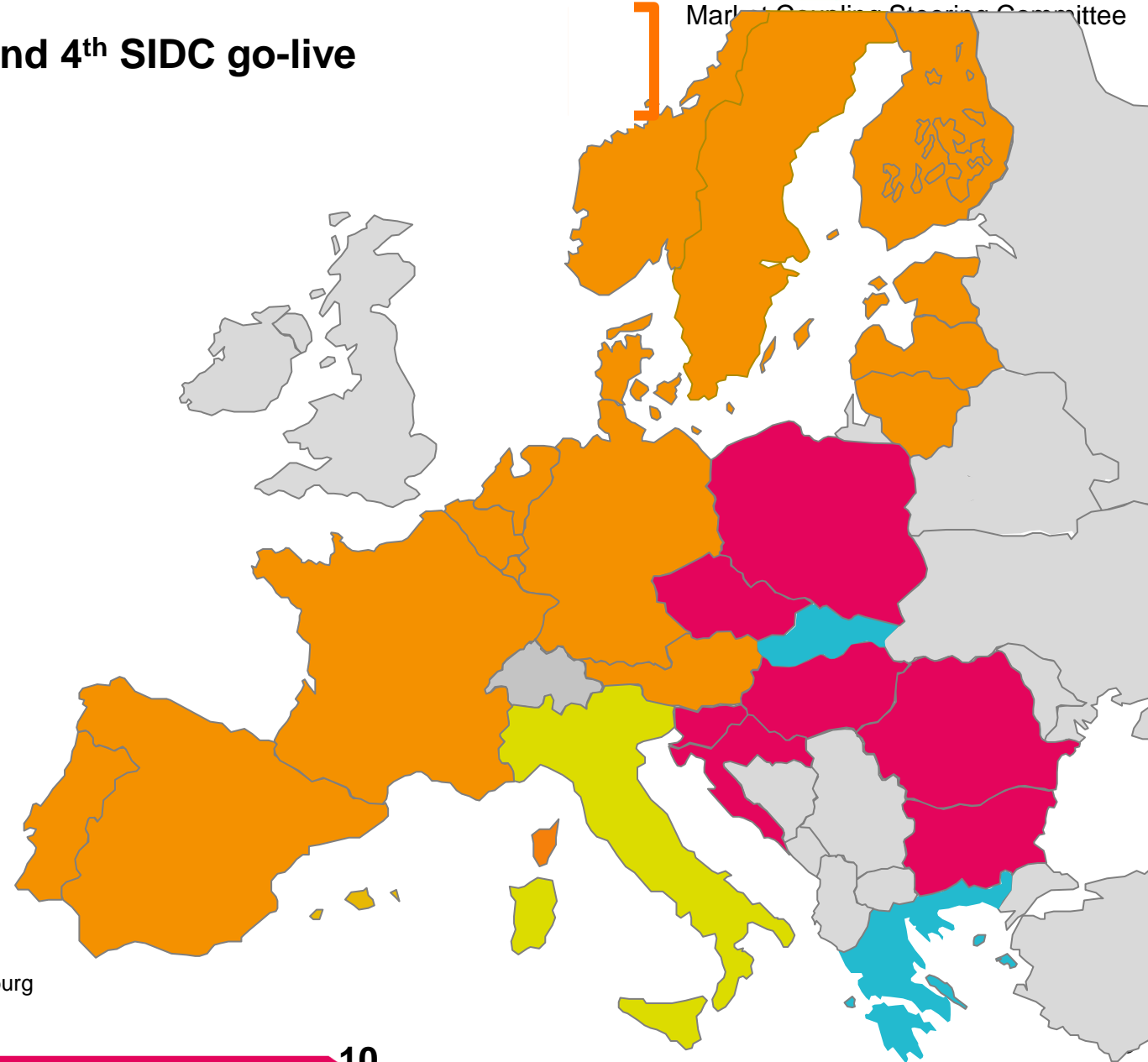
Note: Luxemburg is part of the Amprion Delivery Area. Market participants in Luxemburg have access to SIDC through the Amprion Delivery Area.

SIDC Project Layers

Delivery of SIDC has, and still, involves 3 areas of distinct focus:

Local Implementation Projects (LIPs) → **Adjustment of local systems and interfaces
Alignment with SIDC testing and Go-live phase**

Roadmap and Progress Reporting

SIDC Common Project (TSOs+NEMOs) → **SIDC design and development
Central implementation & Testing
Common framework for pre- & post coupling**

SIDC Solution (NEMOs+Service Provider) → **Project under contract – Managing contractual SIDC framework**

Performance of operation

- Since Go-live in 2018 SIDC has been extended to **23 countries**; extension to the next 2 countries depends on the development of the local systems.

- SIDC faces a huge increase of the market:
    - Volume: **57** TWh in 2019, 82 TWh in 2020, **93 TWh** in 2021
    - Average **number of orders per day**:
        o 2018 => 451 000
        o 2019 => 708 000
        o 2020 => **1 645 000** (max: 3 206 000)
        o 2021 => 2 531 000 (max: 3 465 000 on 3rd December 2021)
    - Number of trades:
        o 2018 => 7,8 Millions
        o 2019 => 23,3 Millions
        o 2020 => 40,3 Millions   ⟹   132,3 Millions of trades since go-live
        o 2021 => 60,9 Millions

- Time for processing an order has decreased thanks to performance improvements measures.

- Reliability of operations remains very high:
    - Total downtime visible to the market since Go-live (almost 3 years): 73h of which 50% planned maintenance (**99,7% availability**)

Order transactions / Trades (06/2018 - 07/2022)

Order Transactions / Trades
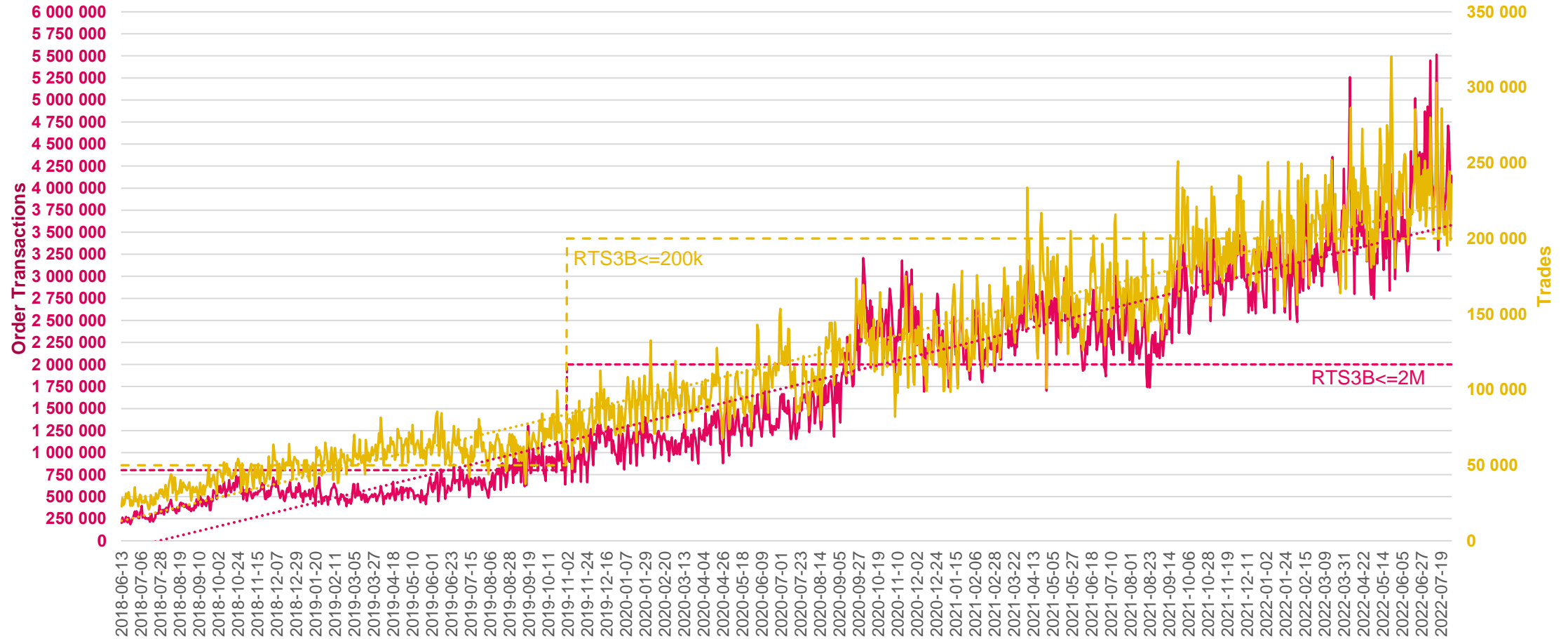
The SIDC matching solution

Key SIDC elements

Please listen the recording [here](#)
(from 17:49)

Vladimir Satek

SIDC NEMOs' Project Manager, Minsait

1. The SIDC matching solution in the context of SIDC project

Overview of SIDC – background, history and review of 1st year

The SIDC matching solution

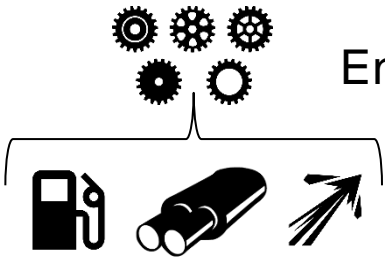Overview of borders, market areas & products

Relevant information for market parties from Local Implementation Projects (LIPs)

Member's trial period, go-live plan and next steps for readiness

2. The SIDC matching solution from MP's view (1/2)

	Component	Provided by	Comment
	Cockpit	LTS	Local Trading Solution (LTS) offers ultimate interface to Market Participants, either via pre-built screens or via automated communication which allows MP's development of the „cockpit". **LTS is sole interface to MPs to provide market data** (order, trades, status of the market, status of the products, etc.). **Each LTS has an individual functionalities and individual look & feel.**
	Engine	XBID Solution (SIDC matching solution)	Core of the system ensuring matching of the orders in line with predefined and transparent principles including processing of the trades. It is done via utilization of The trading Module (SOB), The Capacity Management Module (CMM) and The Shipping Module (SM)

To get familiar with your LTS you need to contact your respective NEMO(s).

- It is important to note that XBID Solution provides relevant information to LTS **at the same time and in the unique form, which ensures transparency and equal treatment on the SIDC.**

- Content of the information differs based on the market areas reflecting e.g. available capacities.

- It is **responsibility of each NEMO** how the information is presented to the market participants.
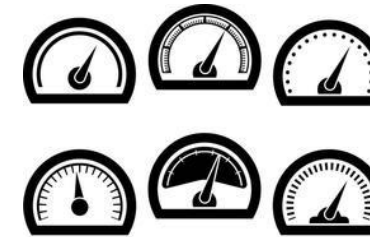
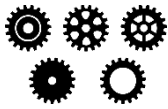**Note 1:** The XBID Solution provides capacities to all LTSs in the form of Hub-To-Hub matrix (H2H). LTSs process the H2H matrix and provide this information further to Implicit Market Participants. The presentation form of H2H matrix is specific per each LTS.

SIDC matching solution

Note 2: The XBID Solution provides matching services (SOB) to LTSs. **Each NEMO has a right to offer local matching services by LTS' specific functionalities, products and services or by any other means.** This may also relate to the cases in which LTS provides extended trading period outside of the XBID Solution and therefore the approach may differ per NEMO/LTS.

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3. The SIDC matching solution – XBID Solution

The XBID Solution is a trading solution designed to enable power exchanges to trade energy contracts seamlessly across different geographies in a transparent, efficient. It aims at creating an integrated matching platform based on the shared order book concept of trading module (SOB), the Capacity Management Module (CMM) and the Shipping Module (SM). The combined entity allows multiple exchanges in different geographies to trade cross border energy contracts continuously on a 24 by 7 basis on a centralised platform.

The trading Module (SOB) is a commodity trading system catering to the requirements of the energy markets. The trading system is designed to offer trading services to the members continuously. It supports a wide range of energy products and contract types.

The Capacity Management Module (CMM) refers to a capacity allocation module which offers the ability to allocate cross border capacity to users continuously. CMM offers both explicit (standalone capacity requests by user entities) as well as implicit (triggered by trades generated in SOB) allocation.

The Shipping Module (SM) of the XBID Solution provides information from trades concluded within XBID to all relevant parties of the post-coupling process. The SM receives data from the SOB about all trades concluded:

1. Between two different Delivery Areas (DA)
2. In the same DA between two different Exchange Members

The data from the SOB and the CMM are enhanced with relevant TSO, CCP and Shipping Agent data from the SM and transferred to the parties at the configured moments.
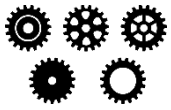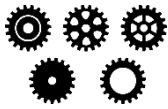
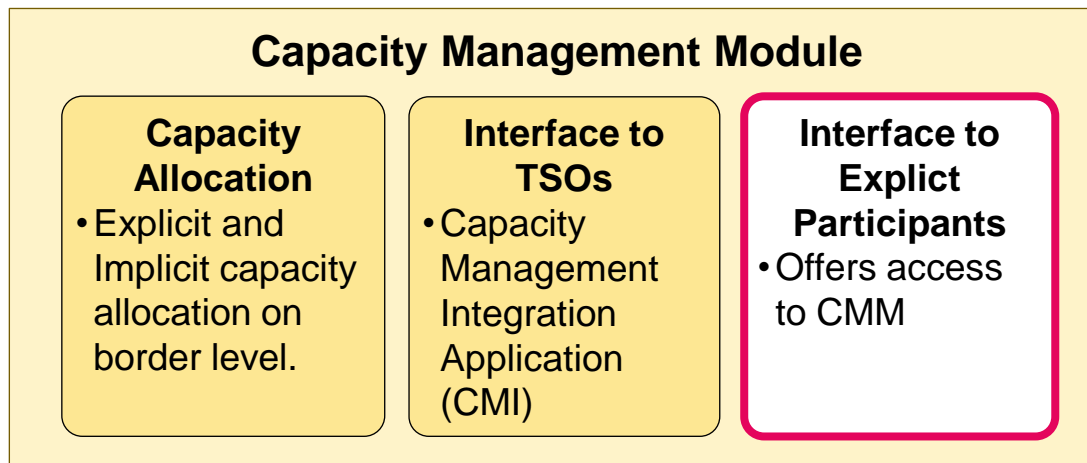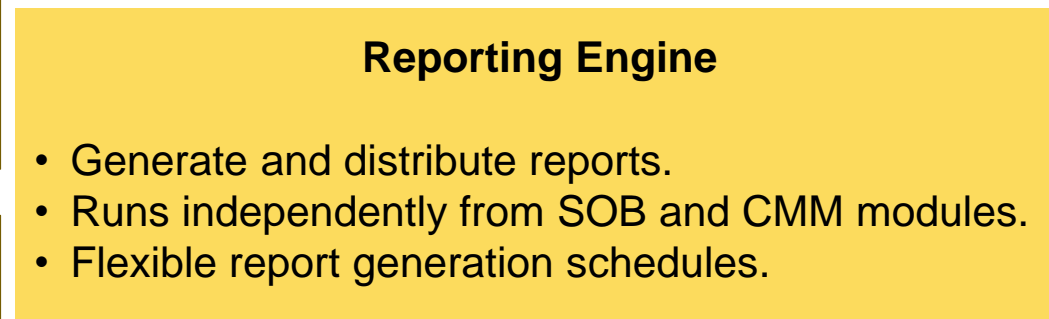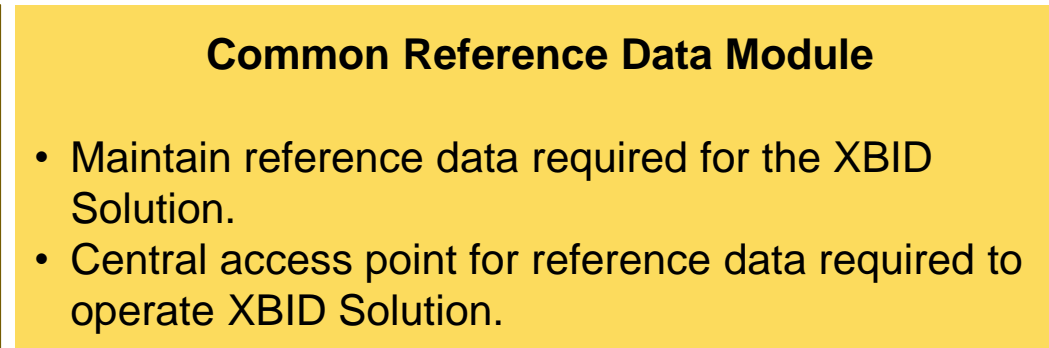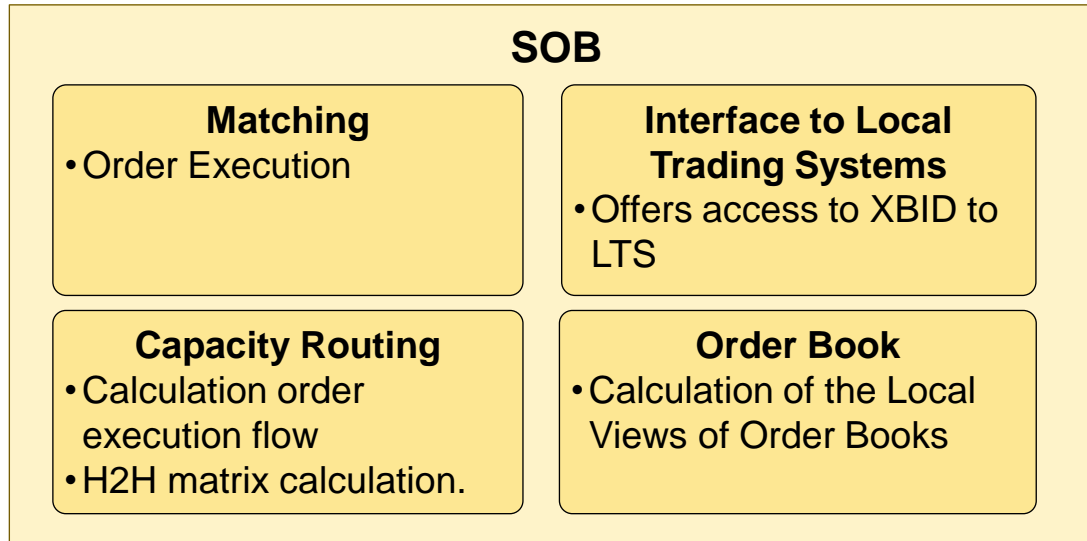# 3. The SIDC matching solution – High Level Architecture
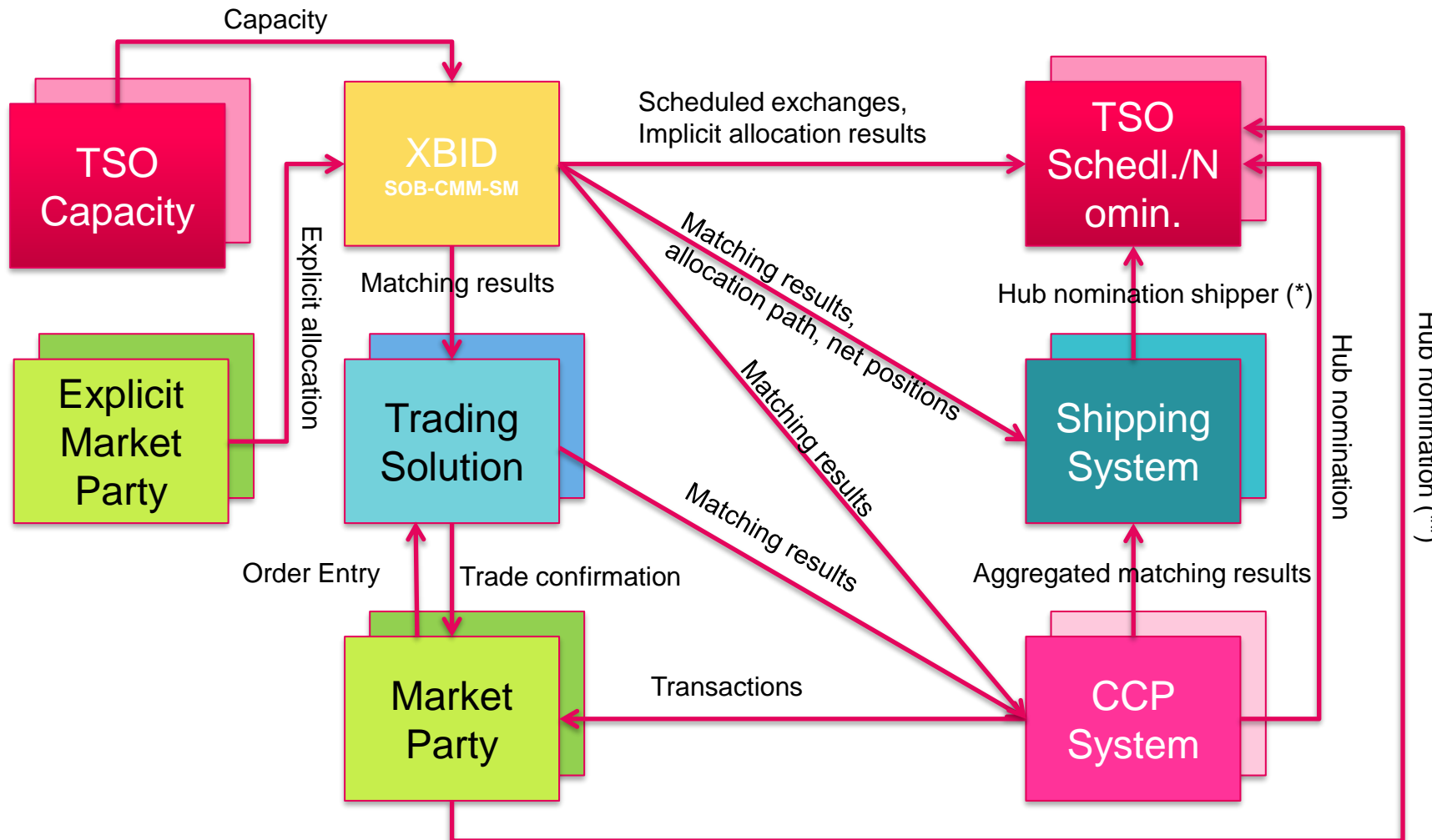
(*) XB nominations could be also needed in areas where nomination behalf is not applicable
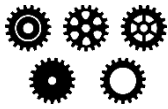
(**) According to local procedures (direct or indirect nominations)

3. The SIDC matching solution – Architecture

SOB

Matching
• Order Execution

Interface to Local Trading Systems
• Offers access to XBID to LTS

Capacity Routing
• Calculation order execution flow
• H2H matrix calculation.

Order Book
• Calculation of the Local Views of Order Books

Capacity Management Module

Capacity Allocation
• Explicit and Implicit capacity allocation on border level.

Interface to TSOs
• Capacity Management Integration Application (CMI)

Interface to Explicit Participants
• Offers access to CMM

Common Reference Data Module

• Maintain reference data required for the XBID Solution.
• Central access point for reference data required to operate XBID Solution.

Reporting Engine

• Generate and distribute reports.
• Runs independently from SOB and CMM modules.
• Flexible report generation schedules.

Explicit Market Participants have a direct technical access to the XBID Solution in order to perform explicit allocations on the German-French and Croatian-Slovenian borders.

3. The SIDC matching solution – CMM. Market Area / Delivery Area

Market Area 1

Delivery area 1

Market Area 2

Delivery area 2
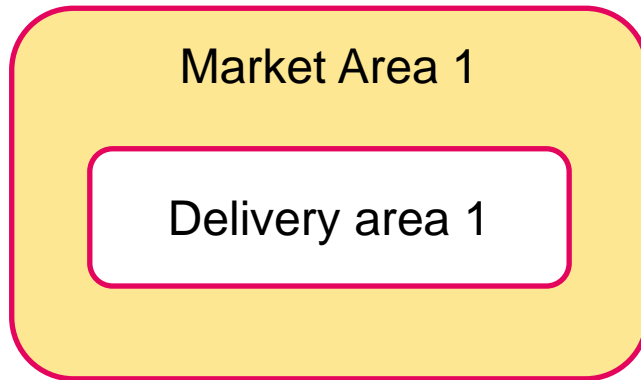
Delivery area 3

Market Area
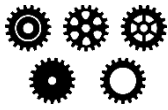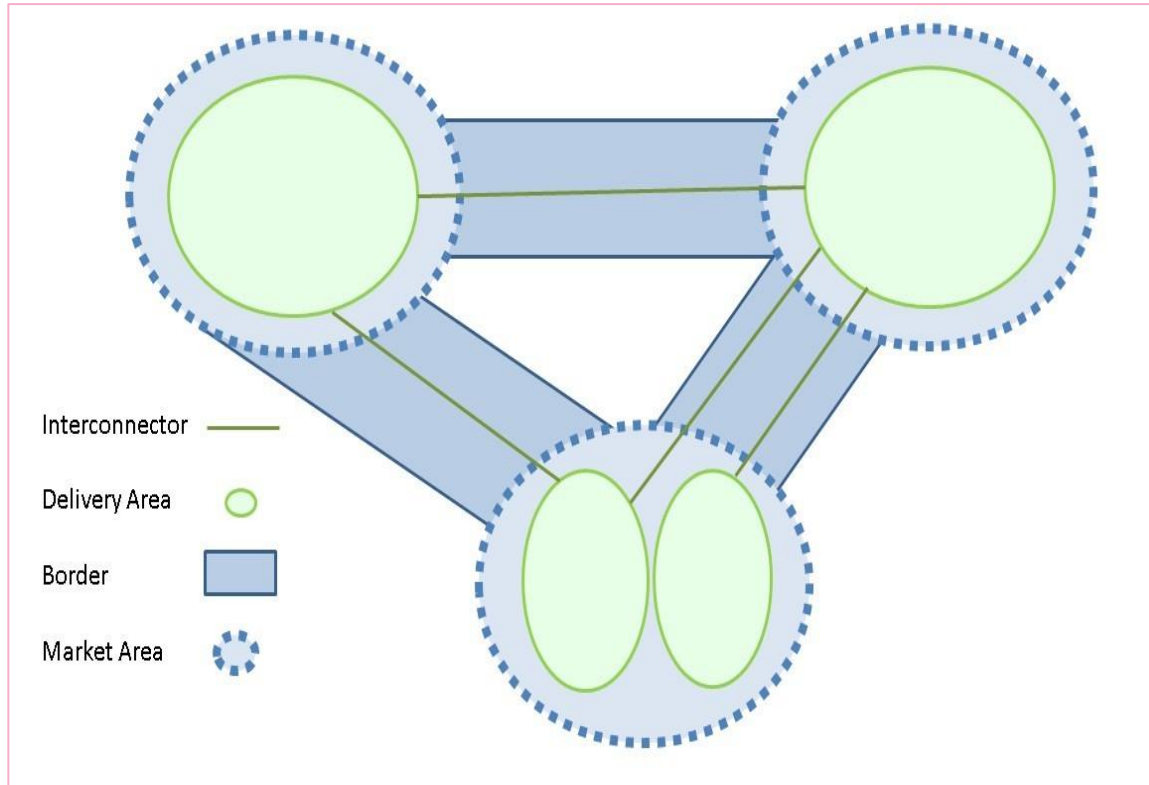
- Represents a '**price area' in the delivery grid**
- Can contain **one or more** Delivery Areas
- Transport capacity between Market Areas is **subject to congestion**

Delivery Area

- Represents an area in the delivery grid which is **managed by one TSO**
- **Order entry is into a Delivery Area** (from which a bought commodity is received, or to which a sold commodity is delivered)

Market Coupling Steering Committee

Legend:
- Interconnector —
- Delivery Area ○ (green circle)
- Border (blue rectangle)
- Market Area (blue dotted circle)

Separate Configuration per Interconnector

- Opening and Closing Time,
- Capacity Resolution,
- Default Capacity,
- Ramping,
- Validity, etc

Common Configuration per Border

- Common ATC,
- Leading TSO,
- Validity, etc

Interconnector
A connection between two Delivery Areas.

Border
A connection between two Market Areas.

3. The SIDC matching solution – products, contracts, trading schedule
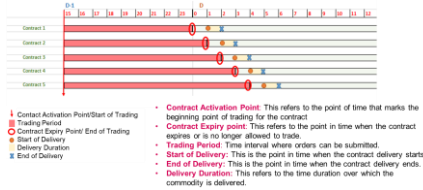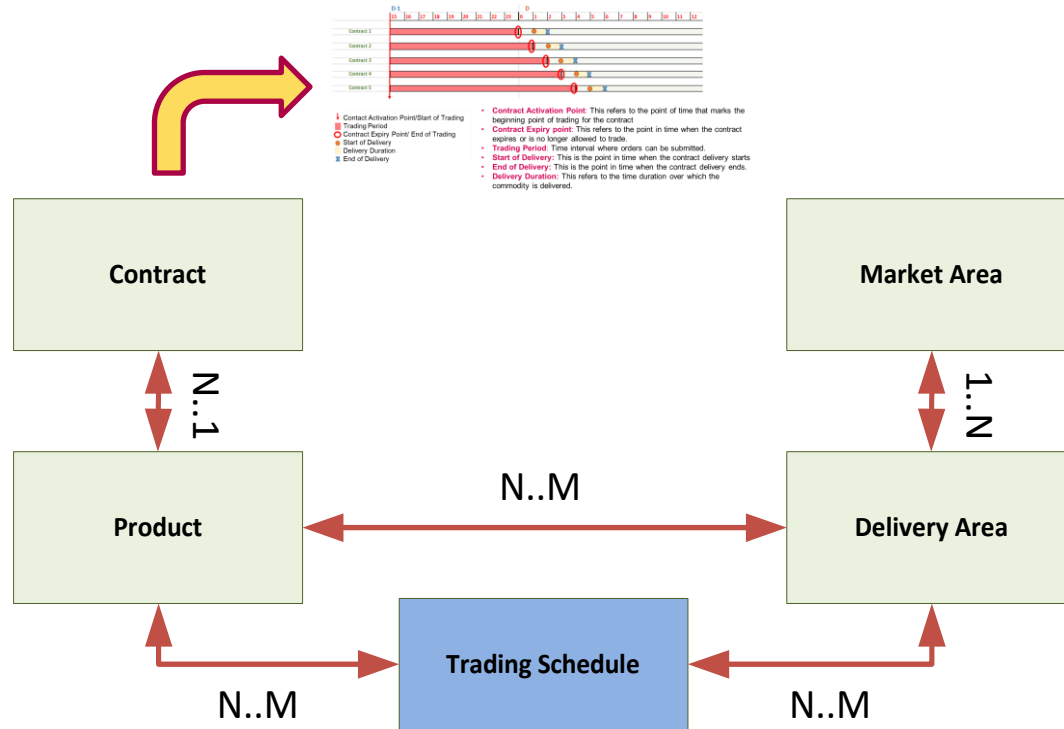
Product
- Represents one unique set of trading features (e.g., hourly product, an hour)
- Defines the guidelines for generating the underlying contracts
- Products are made available for trading per delivery area; thus, each delivery area can have a separate set of tradable contracts.

Contract
- An instance of a Product in time, an actual tradable instrument (e.g., the hour 11h-12h on 25 November 2017)
- With a predefined time of delivery
- Used by the trading member entities to enter into agreement to sell/buy a certain quantity
- Each product will have multiple contracts and each contract will belong to one and only one product.

Trading Schedule
- Defines when a contract opens and closes for trading
- Each delivery area will be assigned to some specific schedule (pre-defined).

3. The SIDC matching solution – Contract Life Cycle

- **Contract Activation Point**: This refers to the point of time that marks the beginning point of trading for the contract
- **Contract Expiry point**: This refers to the point in time when the contract expires or is no longer allowed to trade.
- **Trading Period**: Time interval where orders can be submitted.
- **Start of Delivery:** This is the point in time when the contract delivery starts
- **End of Delivery:** This is the point in time when the contract delivery ends.
- **Delivery Duration:** This refers to the time duration over which the commodity is delivered.

Legend:
- Contact Activation Point/Start of Trading
- Trading Period
- Contract Expiry Point/ End of Trading
- Start of Delivery
- Delivery Duration
- End of Delivery

SOB

- Enters orders coming from LTS into a **public order book**
- **Matches orders** against the most suitable counter-orders (following price-time-capacity priority criteria)
- Initiates implicit **capacity allocation**

Price-time-capacity priority criteria

- **Price:** Orders are always executed at the best price
- **Time:** A timestamp (assigned at entry into SOB) is used to prioritize orders with the same price limit (earlier means higher priority)
- **Capacity**: Capacity should be available to make order execution possible

Order Book Views

- The SOB maintains a single **consolidated order book** for all orders that are entered for a contract
- CMM maintains two ATC values, one for each direction in that power could flow. Based on these two values the SOB module can calculate a customised **local view** for each contract and delivery area, which contains all the executable orders for the concerned area.
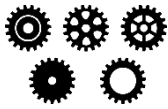
3. The SIDC matching solution – Order Processing
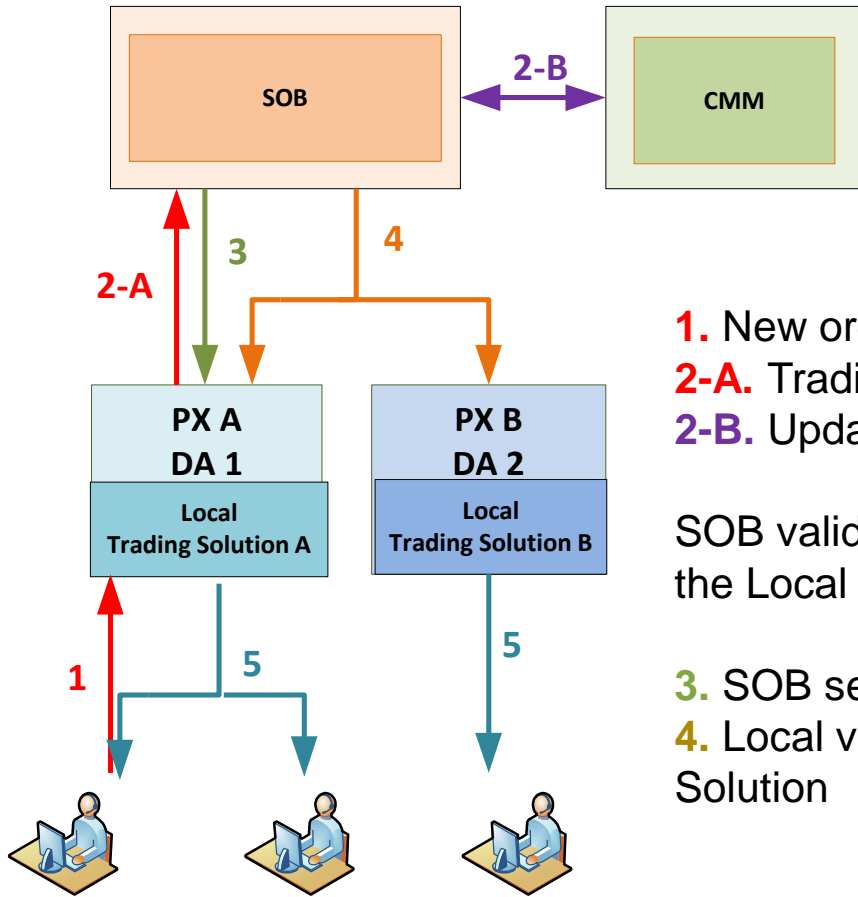
Calculation of the local view of an order book is based on the following factors:

- **The available transmission capacity.**
- **Orders entered for the contract.**

1. New order entered
2-A. Trading Solution anonymized the order and forward to SOB
2-B. Update available capacity.

SOB validates if any orders in the local view of the order book can match and calculate the Local View for each DA

3. SOB send the result of order entry to trading solution
4. Local view of the updated order book is published via the PMI to the Trading Solution

5. Trading Solution publish new local view

Order Book Calculation
- Local views will be **enriched with cross-border orders** if sufficient transmission **capacity** is available
- The same order can be displayed **in multiple local views** (depending on available transmission capacity)
- Cross-border orders in the local views will be displayed **up to the available capacity**; hence orders can be shown with partial volume
- An order is **removed from all local views** after full execution, deactivation or deletion

Rules for Order Book Calculation
- Orders from other markets are selected based on **available capacity and price-time-priority**
- Iceberg orders are displayed with their **visible quantity** and not with their total quantity
- AON orders can only be displayed with full quantity

! Traders cannot see in which area the orders that they see in their local order book were entered

Order Book Calculation

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!   **Traders cannot see in which area the orders that they see in their local order book were entered**

3. The SIDC matching solution – Shipping Module

- Shipping is the process of **transferring energy between CCPs** within and across the delivery areas including the financial clearing. By definition, shipping does not apply to explicitly allocated capacities

- **Physical shipping** is the process to transfer energy between CCPs by way of nomination, without the financial clearing for the change of energy ownership.

- **Financial shipping** is the process of financial clearing for the change of ownership of the transferred energy between CCPs.
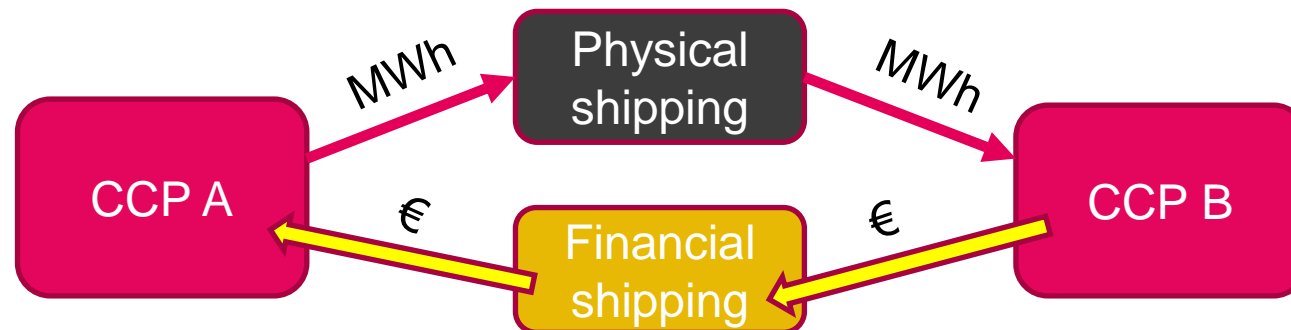
4. The SIDC matching solution – Performance

Performance development stage	**Peak length** - as the current production peak length is exceeded in some cases	**Peak load** - as the current production value is close to or even exceeding defined boundary	**Overall load and topology** – uplift for 2nd Wave and to give some headroom	**Relaxation of Order Book limit -** (increase # of Orders in Local View)
RTS3 Slice B - required capacity of the XBID Solution since **2nd Business Go-Live**	**10 seconds**	**15%** Daily maximum of Order transactions in peak; sustainable load threshold **40** order transactions per second	**52** Hubs, **82** Interconnectors **2 000 000*** Order transactions per day **200 000** trades per day	**100** orders in the Local View update
RTS4 Slice A – capacity of the XBID Solution around **4th Business Go-Live**	**10 seconds**	**25%** Daily maximum of Order transactions in peak; sustainable load threshold **120** order transactions per second	**52** Hubs, **82** Interconnectors **10 000 000** Order transactions per day **600 000** trades per day	**100** orders in the Local View update

*Additional safeguard related to the order transactions per day:

• 1,5 million (1 500 000) maximum daily number of Order Transactions with daily maximum of 15.00% of Order Transactions in peak

• 1,5 - 2 million (2 000 000) maximum daily number of Order Transactions with daily maximum of 11.25% of Order Transactions in peak (This is linked to KPIs and timing percentiles of 93% respectively 96.50%)

Overview of borders, market areas & products

Please listen the recording [here](from 54:55)
(from 54:55)

Ján Kaiser

Market Development Analyst, OKTE

1. Overview of 1st, 2nd and 3rd go-live waves and parties involved

LIPs part of 1st, 2nd and 3rd waves go-live:

LIP		Participants	Allocation
1	Nordic	Fingrid, Energinet, SvK, Statnett, Nord Pool, EPEX	• Implicit
2	Kontek	Energinet, 50Hz, Nord Pool, EPEX	• Implicit
3	DK1/DE, DE/NL	Energinet, TenneT NL& DE, Amprion, EPEX, Nord Pool	• Implicit
4	NorNed	Statnett, TenneT NL, EPEX, Nord Pool	• Implicit
5	FR/DE, DE/AT	Amprion, TransnetBW, APG, RTE, EPEX, Nord Pool, Tennet DE	• Implicit - all • + Explicit (DE/FR)
6	NL/BE	Elia, TenneT NL, EPEX, Nord Pool	• Implicit
8	FR/BE	RTE, Elia, EPEX, Nord Pool	• Implicit
9 / 12	FR/ES& ES/PT	RTE, EPEX, OMIE, REE, REN, Nord Pool	• Implicit
13	Baltic	Elering, Litgrid, AST, Fingrid (Estlink), Svenska Kraftnät (NordBalt), Nord Pool	• Implicit
15	AT-CZ, AT-SI, AT-HU, BG-RO, CZ-DE, CZ-PL, DE-PL, SI-HR, HR-HU, HU-RO	BSP, Cropex, EPEX, HUPX, IBEX, Nord Pool, OPCOM, OTE, 50Hertz, APG, CEPS, ELES, ESO, HOPS, MAVIR, PSE, Transelectrica, TTG	• Implicit • + Explicit (SI-HR)
16	LT-PL, PL-SE	Nord Pool, TGE, Litgrid, PSE, Svk	• Implicit

Legend:
- 1st wave
- 2nd wave
- 3rd wave
- 4th wave
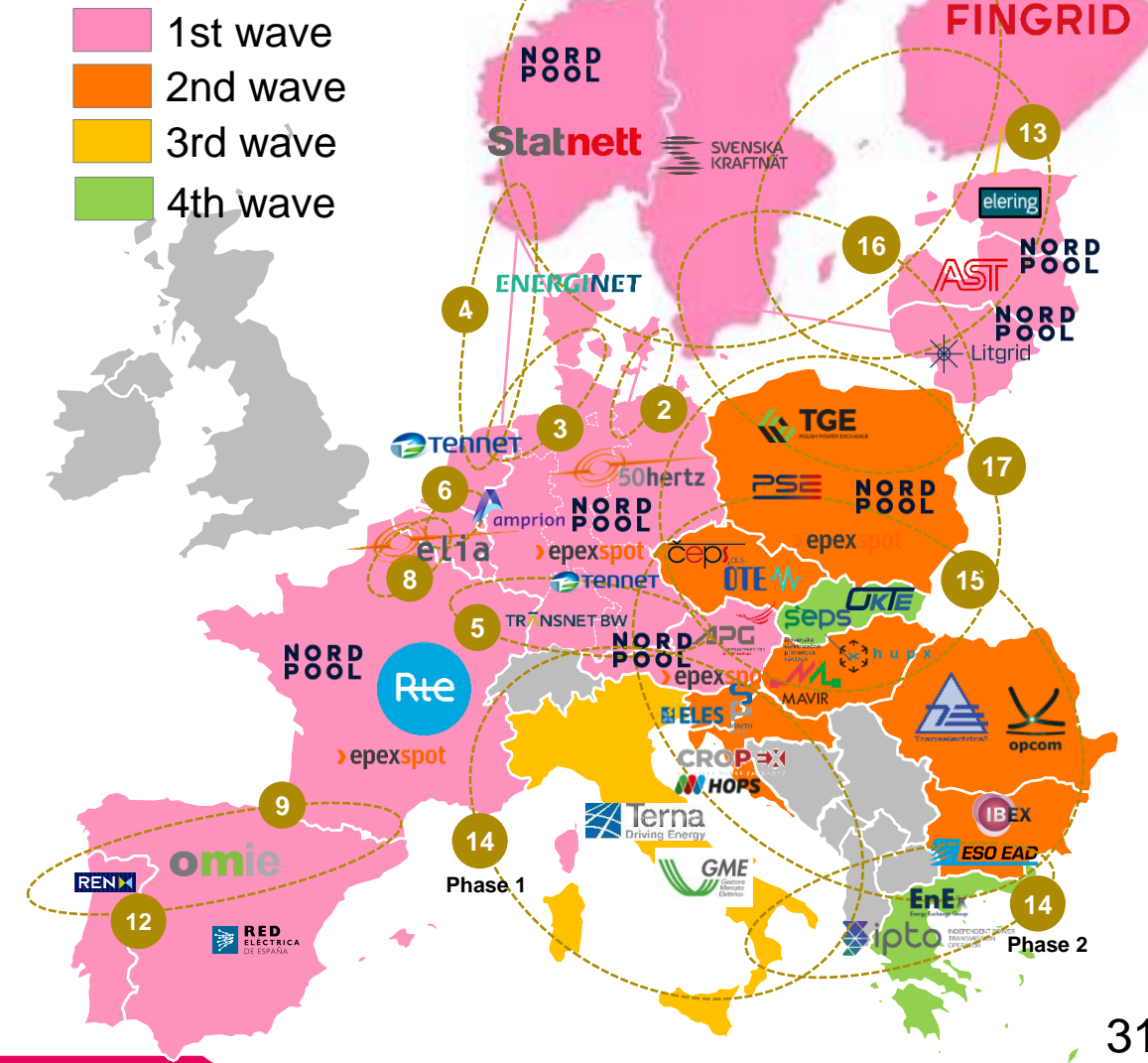
2. Overview of 4th go-live wave and parties involved

LIP	Go-live	Border	Participants	Foreseen allocation
14	4th wave	GR-IT, GR-BG	**NEMOs**: HENEX, GME, IBEX **TSOs**: IPTO, TERNA, ESO	Implicit
17		SK-CZ, SK-HU, SK-PL	**NEMOs**: OKTE, OTE, EPEX, HUPX, Nord Pool, TGE **TSOs**: SEPS, ČEPS, MAVIR, PSE	Implicit

Operational   3rd wave

2nd wave   4th wave

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3. Products offered in the XBID solution
A. Overview

XBID system supports the following products:

- 15-minutes

- 30-minutes

- 60-minutes

- Hourly User Defined Blocks

Products are configured to the XBID solution per market area

For specific product availability in different market areas see next slide

3. Products offered in the XBID solution
B. Details

	1st wave						2nd wave							3rd wave	4th wave	
	Austria	France	German TSO areas	Iberia	NL & Belgium	Nordics & Baltics	Bulgaria	Croatia	Czech Republic	Hungary	Poland	Romania	Slovenia	Italy	Slovakia	Greece
Size	Min vol. Increment 0.1 MW															
Price Tick	EUR 0.01 per MWh															
Volume Range	0.1 MW to 999 MW															
Price Range	-9 999 €/MWh to 9 999 €/MWh															
Products 15-min	X		X		X					X		X	X		X	
30-min		X	X		X											
Hourly	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
User Defined Blocks*	X	X	X		X	X	X	X	X	X	X	X	X		X	X
Notes	* Hourly blocks (not 15 or 30 min blocks)															

Please note that locally traded products are not indicated on the slide

4. Contract life cycle for a Bidding Zone (BZ) in XBID

Local Market Opening*

Cross borders openings (time can differ per border)*

Cross borders closing (time can differ per border)**

Local Market Closing**

Delivery start

Local trading possible inside bidding zone only

Cross border trading possible with all areas connected through open borders

Local trading possible inside bidding zone only

No trading possible anymore

Physical delivery

BZ1

BZ1

BZ1

BZ2

BZ2

BZ2

* In some cases Local Market Trading opens in the same time as Cross Borders Trading
** In some cases Cross Borders Trading closes in the same time as Local Market Trading

5. Opening and closing times in XBID (1/2)
A. For Cross Border Allocation

CCR	Bidding Zone border	GOT as of 2nd go-live wave	Cross-border capacities published at GOT	Point in time cross-border capacity is made available latest after GOT (Effective GOT)	GCT as of 2nd go-live wave
Baltic	EE – FI	15:00 CET D-1	0	As soon as possible after GOT	One hour before delivery of MTU
	LT – LV				
	EE – LV				
	LT – SE4				
	PL –LT				
Core	DE – NL	15:00 CET D-1	0	22:00 CET D-1	
	FR – BE				
	BE – NL				
	DE – FR				
	DE – AT				
	PL – DE				
	PL – CZ				
	CZ – DE				
	CZ – AT				
	AT – HU				
	AT – SI				
	SI – HR				
	HR – HU				
	RO – HU				
	HU – SI				
	SK – CZ				
	SK – PL				
	SK – HU				
Hansa	DE – DK1	15:00 CET D-1	0	18:00 CET D-1	
	DK1 – NL				
	DE – DK2				
	NO2 - NL				
	PL – SE4				
SEE	RO – BG	15:00 CET D-1	0	16:00 CET D-1	
	MA_IT-GR-GR			15:30 CET D-1	
	GR-BG			16:00 CET D-1	

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5. Opening and closing times in XBID (2/2)
A. For Cross Border Allocation

CCR	Bidding Zone border	GOT as of 2nd go-live wave	Cross-border capacities published at GOT	Point in time cross-border capacity is made available after GOT (Effective GOT)	GCT as of 2nd go-live wave
SWE	FR-ES	15:00 CET D-1	0	22:00 CET D-1	One hour before delivery of MTU
	ES-PT		Calculated cross-border capacity	N/A	
Nordic	DK1-DK2, DK1-NO2, DK1-SE3, DK2-SE4	15:00 CET D-1	Calculated cross-border capacity	N/A	
	FI-SE1, FI-SE3, NO1-NO2, NO1-NO3, NO1-NO5, NO1-SE3, NO2-NO5, NO3-NO5, NO3-SE2, NO4-SE1, NO3-SE4, NO4-SE2, SE1-SE2, SE2-SE3, SE3-SE4, NO3-NO4	15:00 CET D-1	Calculated cross-border capacity	N/A	
Italy North	MA_IT-CP-FR MA_IT-CP-AT	15:00 CET D-1	0	22:00 CET D-1	
	MA_IT-CP-SI	15:00 CET D-1	0	22:30 CET D-1	
Italy	Italian Internal Bidding Zones	15:00 CET D-1	0	15:30 CET D-1	

5. Opening and closing times
B. For SIDC Market Trading (within a Bidding Zone)

		1st wave						2nd wave							3rd wave	4th wave	
		Austria	**France**	**German TSO areas**	**Iberia**	**NL & Belgium**	**Nordics & Baltics**	**Bulgaria**	**Croatia**	**Czech Republic**	**Hungary**	**Poland**	**Romania**	**Slovenia**	**Italy**	**Slovakia**	**Greece**
Opening times	All products	15:00	15:00	15:00	15:00	14:00	14:00	14:00	15:00	15:00	15:00	14:00	15:00	15:00	15:00	15:00	13:00
Closing times	15-min	D-30 min		D-30 min		D-5 min					D-15 min		D-60 min	D-60 min		D-30 min	
	30-min		D-30 min	D-30 min		D-5 min											
	Hourly	D-30 min	D-30 min	D-30 min	D-60 min	D-5 min	D-60min*	D-60 min	D-30 min	D-5 min	D-15 min	D-60 min	D-60 min	D-60 min	D-60 min	D-30 min	D-60 min
	User Defined Blocks	D-30 min	D-30 min	D-30 min		D-5 min	D-60min	D-60 min	D-30 min	D-5 min	D-15 min	D-60 min	D-60 min	D-60 min		D-30 min	D-60 min

Ramping Constraints	50HzT-DK2, DK1A-NO2, DK1A-SE3, DK1A-DK1, ,DK1-DK2, DK1-TTN, EE-FI, LT-SE4, NO2A-TTN, TTG-NO2A, NO2A-NO2, PLC-SE4, LT-PLC
Contract Resolution	50HzT-AMP, 50HzT-TNG, 50HzT-TTG, AMP-APG, TNG-APG, TTG-APG, AMP-TNG, AMP-ELIA, AMP-TTG, AMP-TTN, ELIA-TTN, TNG-TTG, TTG-TTN, MAVIR-APG, MAVIR-TEL, ELES-APG, CEPS-APG, ITCOUPL-APG, MAVIR-ELES, SEPS-MAVIR: 15 min AMP-RTE, TNG-RTE, RTE-ELIA: 30 min. All other ICs: 60 minutes
Notes	* Finland and Estonia at D-30 min NOTE: The opening and closing times are SIDC/SOB system timings; individual NEMO timings might differ.

Please note that locally traded products are not indicated on the slide

D – Delivery

Relevant information for market parties from LIP17
Slovakia

Tomáš Semko

OKTE

Market administrator

Please listen the recording [here](#)
(from 00:18)

Products offered in the XBID solution
C. Order types

Order type	Execution Restrictions	Validity Restrictions	Predefined	User-Defined
Regular predefined	NON (None) IOC (Immediate-or-Cancel) FOK (Fill-or-Kill)	GTD (Good Till Date) GFS (Good For Session)	Yes	No
Regular user-defined block	AON (All-or-Nothing)	GTD (Good Till Date) GFS (Good For Session)	No	Yes
Iceberg	NON (None)	GTD (Good Till Date) GFS (Good For Session)	Yes	No
Basket Orders	None (1) Valid (2) Linked (3)	--	Yes	No

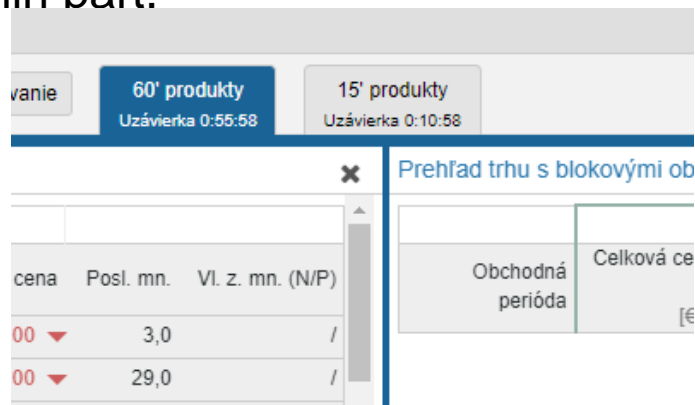(1) Orders are processed as if they would have been submitted separately
(2) All orders in the basket are accepted or rejected
(3) All orders in the basket must be executed immediately with their entire quantity, all orders inside basket have the execution restriction "FOK"

Not applicable for SK market

Relevant information for Slovak market participants 1/2

- Joining the SIDC is a **comprehensive extension** of OKTE Local Trading system. **Parties do not need to create additional access.** The design of the current LTS will be unchanged – **familiar enviroment**

- Minor improvements based from input from **market participants.**

- OKTE LTS supports the **following products**:

  - 15-minutes

  - 60-minutes

  - Hourly user Defined Blocks (**will be not possible to be define BL, PL or Off peak as usual**, it will be necessary o define block of **min 2 hours**)

- Due to the simultaneous run of two products, the trading screen will be separated into a 60-min part and a 15-min part.
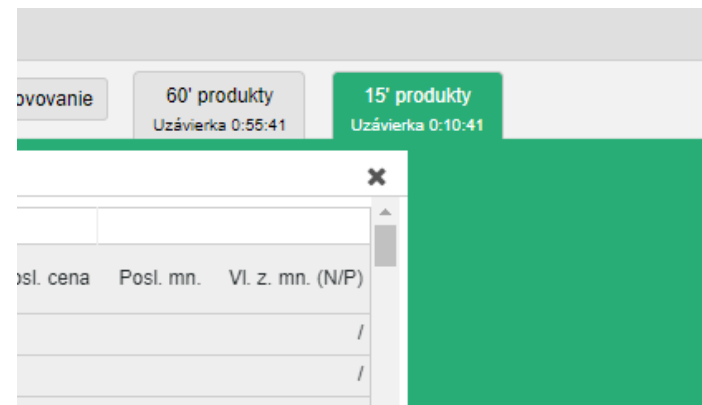
Relevant information for Slovak market participants 2/2

- It will be possible to see the **depth of the market** for selected period.
- Direct access in the trading screen to view data related to cross-border-capacity in the **Hub-to-Hub matrix and ATC values**.

- OKTE proceeds to change:
  - OKTE operating rules
  - Technical specification
  - Publication of results

- You will find relevant information on our website www.okte.sk
- if you have any questions, you can contact us by email at intraday@okte.sk

Relevant information for market parties from LIP14b
Greece

Andreas Ntomaris, PhD

Head Markets Support, HEnEx

Please listen the recording here
(from 05:07)

Key elements of the Intra-day market in the Greek Market Area

CRIDAs — Existing

▶ Auctions with marginal pricing

▶ Algorithm: EUPHEMIA

▶ Regional scope: Implicit allocation of interconnection capacity between
  ◦ Italian Bidding Zones
  ◦ Italy and Slovenia
  ◦ Italy and Greece

▶ Hourly MTU

▶ 3 Auctions per Delivery Day

▶ Asset-based participation

SIDC (XBID) — New

▶ Continuous trading

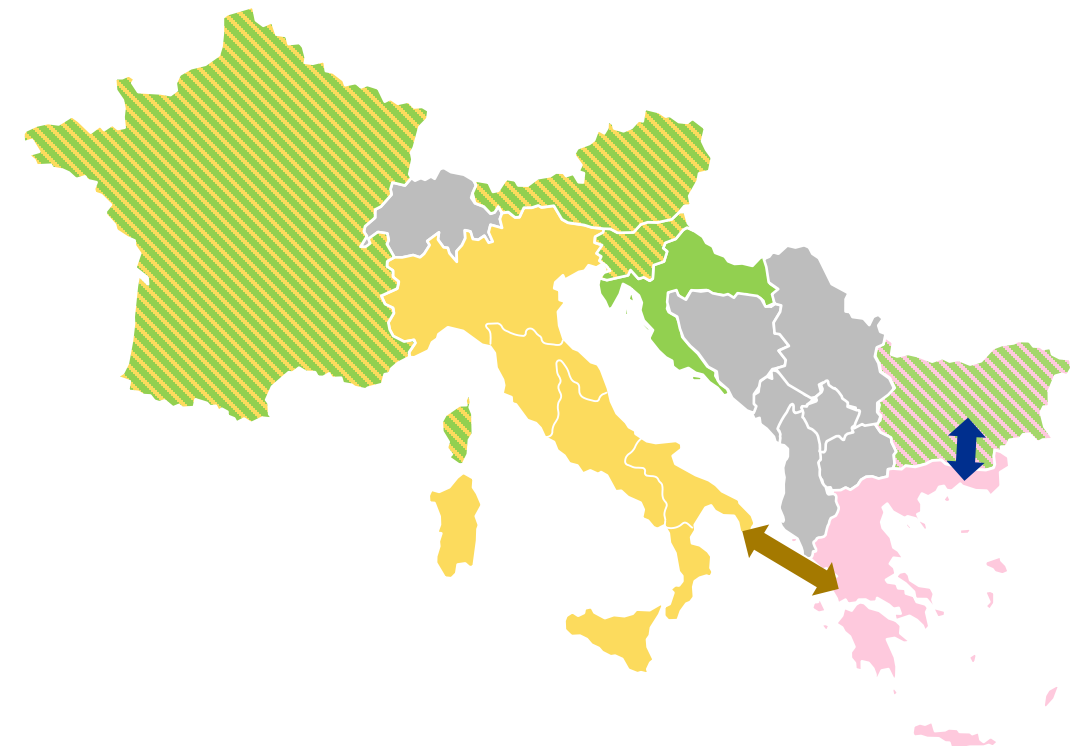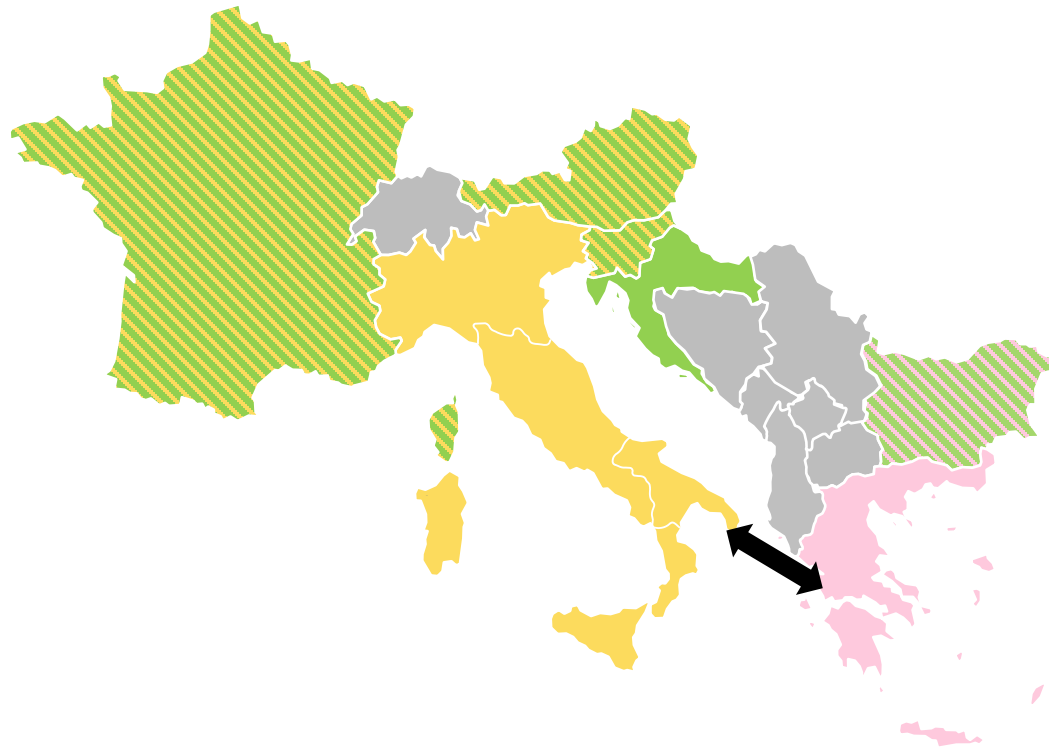▶ Algorithm: XBID

▶ EU-wide scope: Implicit allocation of interconnection capacity between
  ◦ Italy and Greece
  ◦ Bulgaria and Greece

▶ Hourly MTU

▶ Products
  ◦ 60min products
  ◦ User-defined Blocks

▶ Asset-based participation

Type of cross-zonal capacity allocation on Intra-day level

3 Implicit auctions (CRIDAs)

Implicit Continuous + 3 Implicit Auctions (CRIDAs)

Implicit Continuous

Timeline overview for DAM & IDM auctions

MCSC
Market Coupling Steering Committee

| D-2 | D-1 | D |

gate open for trading

DAM trading MTUs

10:00   12:00

CRIDA1 trading MTUs

13:00   15:00

CRIDA2 trading MTUs

15:30   22:00

CRIDA3

22:30   10:00   12:00
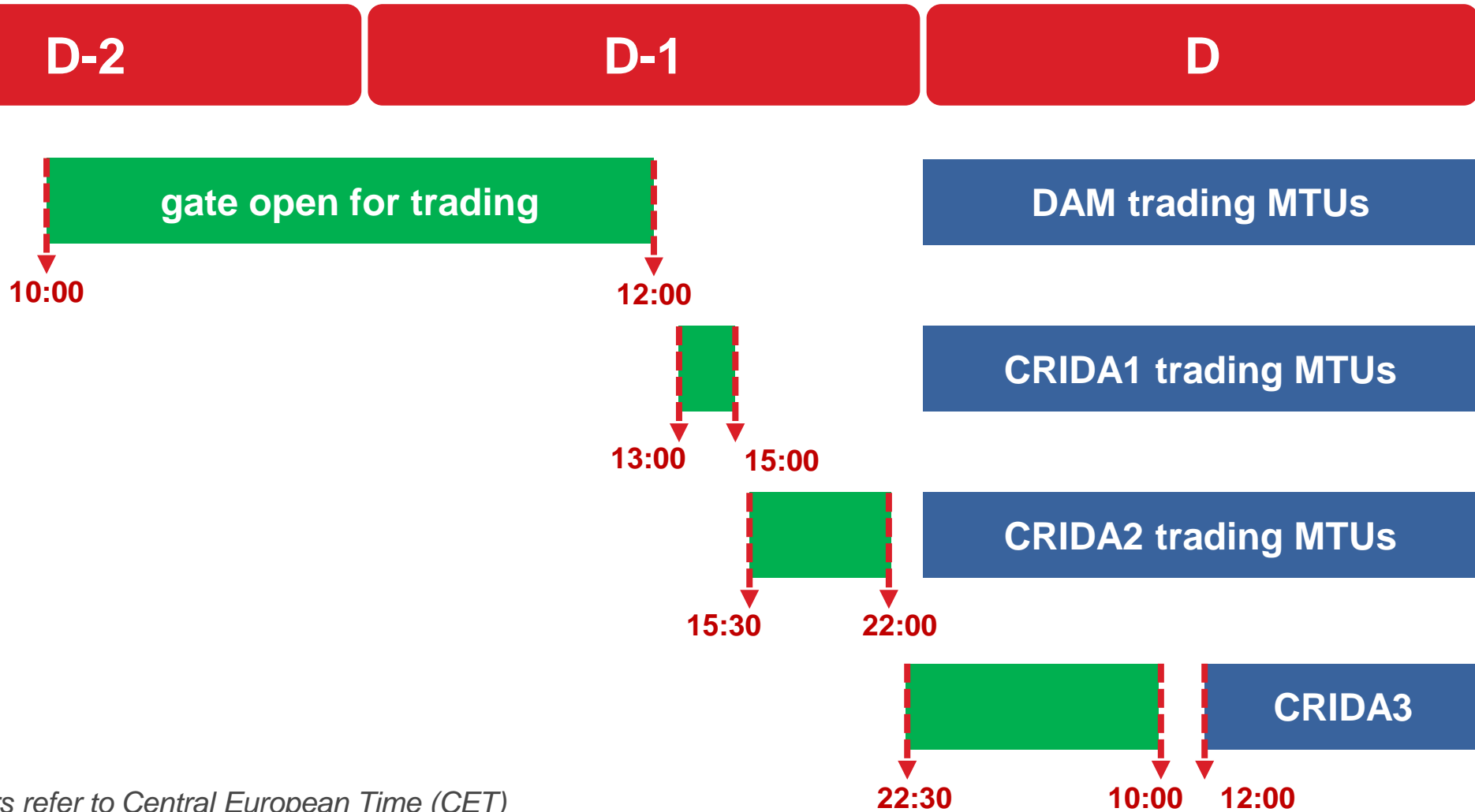
All hours refer to Central European Time (CET)

SIDC

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SIDC: Contract Life Cycle for the Greek MA

All hours refer to Central European Time (CET)
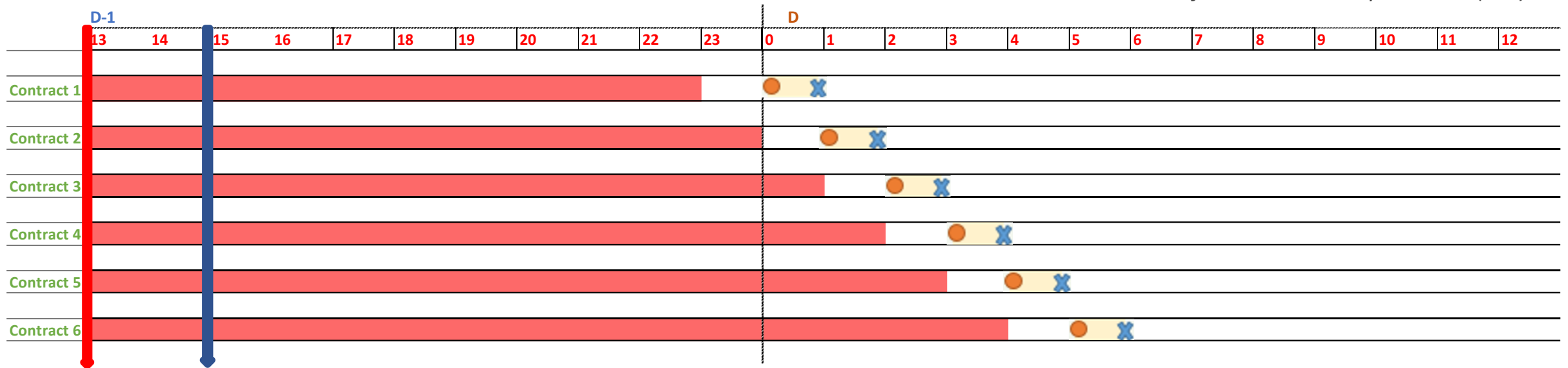
Contract Activation Point / Start of trading: This refers to the point of time that marks the beginning point of trading for the contract

Intra-Day Cross Zonal GOT: This is the point in time when cross zonal matching of orders in enabled

Trading Maturity: Time interval where orders can be submitted

Contract Expiry Point / End of trading: This refers to the point in time when the contract expires or is no longer allowed to trade

Start of Delivery: This is the point in time when the contract delivery starts

Delivery Duration: This refers to the time duration over which the commodity is delivered

End of Delivery: This is the point in time when the contract delivery ends

XBID halting during CRIDAs solution calculation process

▸ Handling of XBID orders during CRIDAs solution calculation process

  ◦ For a 30-min period, starting from CRIDA GCT non (coupling phase in CRIDA): **XBID Order insert and edit not possible - All existing orders in Greek DA are automatically hibernated by the LTS**

    · Parallel operation of XBID and CRIDA during the CRIDA calculation may lead to asset over-allocation and infeasible market schedule

  ◦ **Re-activation of the orders is the MPs' responsibility** (after the above 30-min period) ❗

▸ Cross-border allocation interruption in XBID during the solution of CRIDAs

  ◦ XBID matching engine is interrupted during the solution of CRIDAs in order to **avoid double allocation** of the same cross-zonal capacities on interconnections

  ◦ Interruption for a 50-min period (20 min shall be used for pre-coupling phase and 30 min for coupling phase)

TIMING

XBID CRIDA   XBID

13:00 D-1

15:00 D-1

15:30 D-1

21:40 D-1

22:00 D-1

22:30 D-1

9:40 D

10:00 D

10:30 D

23:00 D

XB allocation interrupted in XBID during CRIDA solution (50 min)

Order entry/edit not possible in XBID for the coupling phase of CRIDA (30 min)

Process in operation with available capacity

Process stopped

Local trading only Cross border allocation has not started

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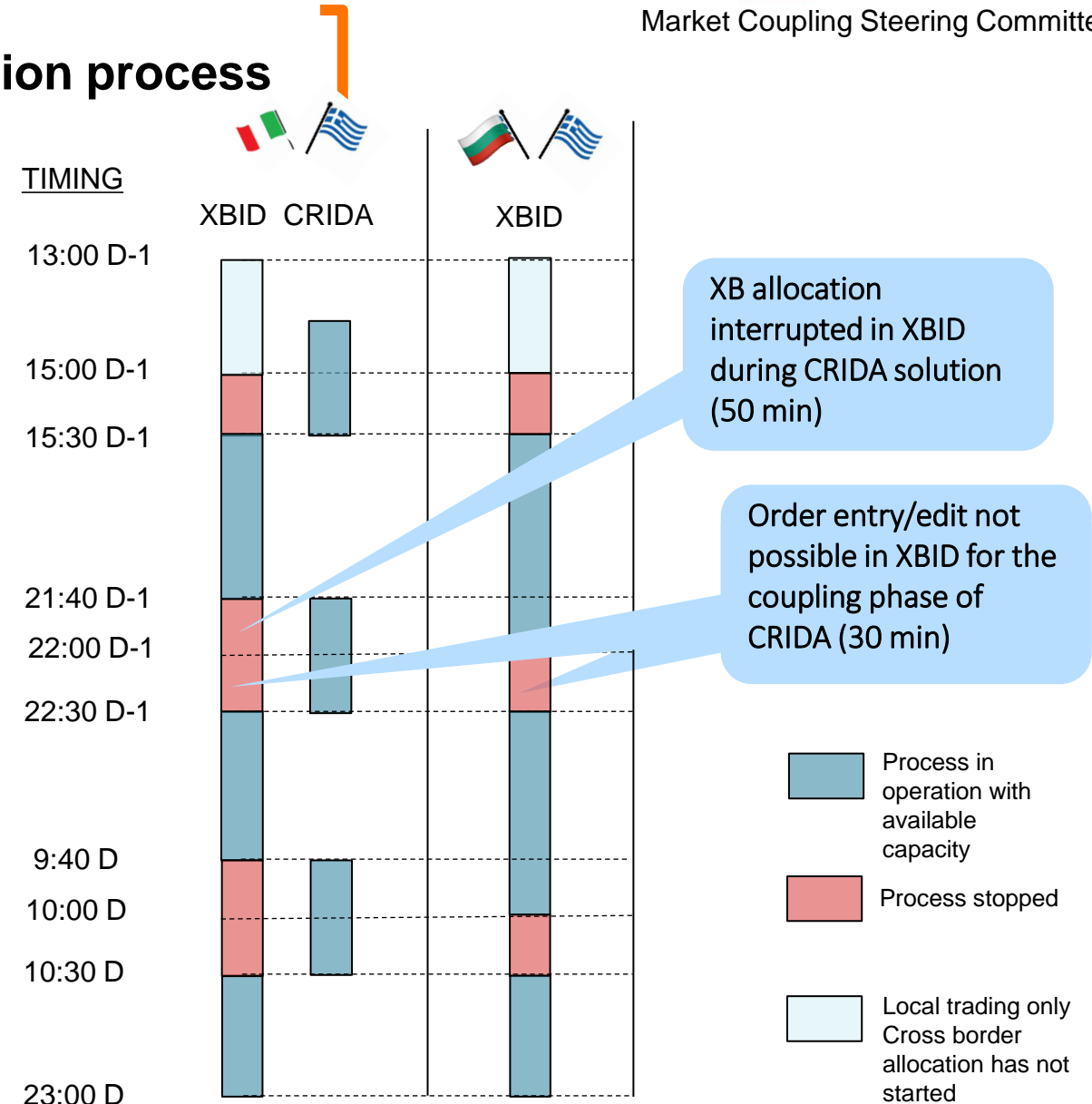
SIDC-CRIDAs interaction in the Greek MA

MCSC
Market Coupling Steering Committee

XBID GOT
- For all Contracts of day D
- Only local trading available for the Contracts of day D
13:00

XBID trading through Italian borders halted
21:40

XBID Trading in Greek DA & through Italian borders resumed
22:30
CRIDA 2 results publication

XBID trading through Italian borders halted
09:40

XBID Trading in Greek DA & through Italian borders resumed
10:30
CRIDA 3 results publication

Intra-day Cross-Zonal GOT
Trading among other DAs is available for the Contracts of day D
XBID Trading in Greek DA halted
15:00

XBID Trading in Greek DA halted
22:00

XBID Trading in Greek DA halted
10:00

XBID Trading in Greek DA resumed
15:30
CRIDA 1 results publication

D-1

D

1st ISP results
15:45

2nd ISP results
23:00

3rd ISP results
11:00

All hours refer to Central European Time (CET)

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SIDC

Asset Validation Checks

▸ Conventional generators, RES units and RES portfolios (dispatchable)
  ◦ Available Capacity & Technical Minimum taking into account the awarded ancillary services and the decided commitment status of the previous ISP

▸ RES units and RES portfolios (non-dispatchable)
  ◦ Registered Capacity

▸ Load portfolios (non-dispatchable)
  ◦ No validation checks

▸ Traders in non-coupled interconnections (for CRIDAs only)
  ◦ Intraday PTRs – NOT currently available

Validation Rules: Non-dispatchable assets / Dispatchable assets not committed in ISP
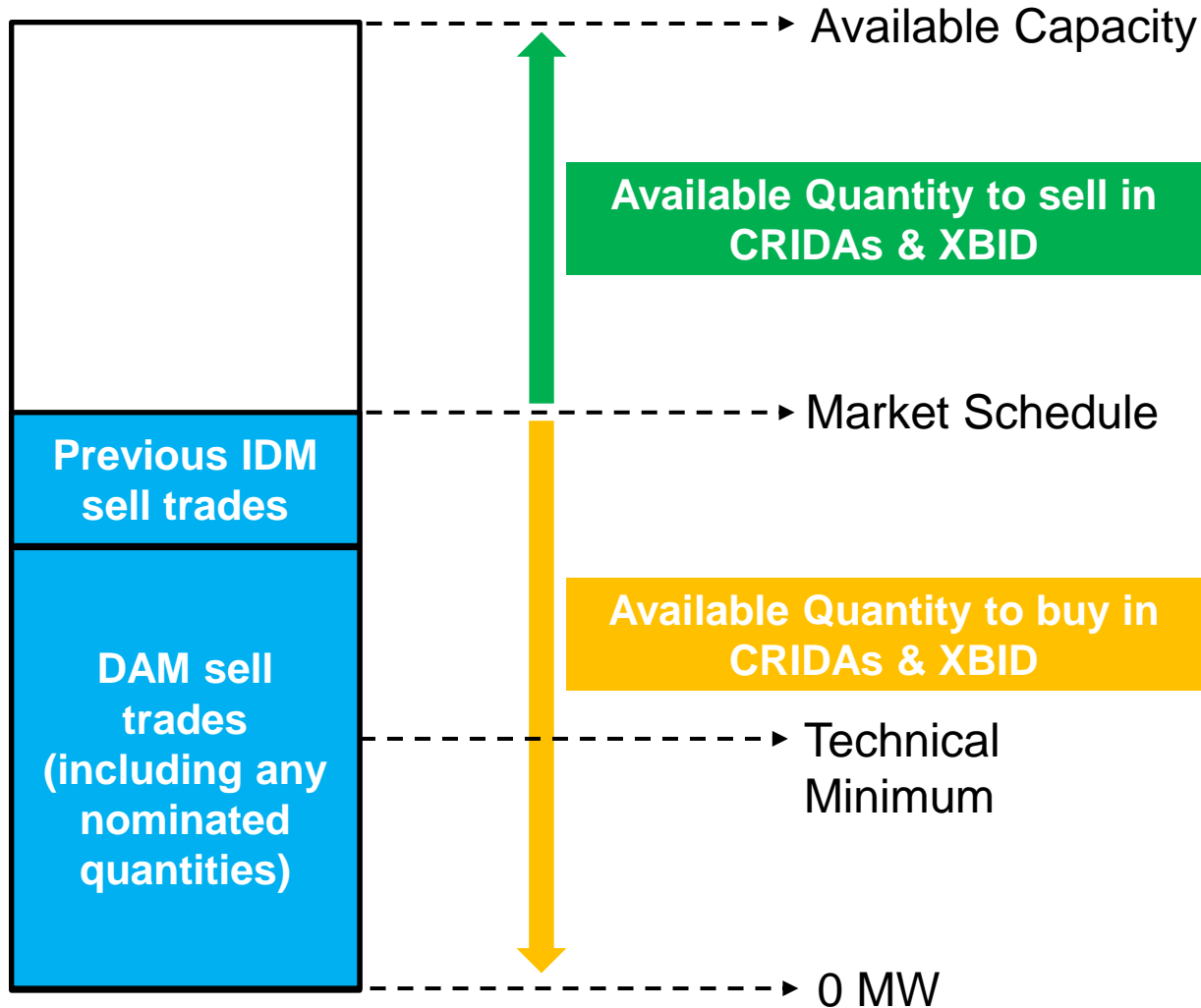
Available Capacity

Available Quantity to sell in CRIDAs & XBID

Market Schedule

Previous IDM sell trades

DAM sell trades (including any nominated quantities)

Available Quantity to buy in CRIDAs & XBID

Technical Minimum

0 MW

Net energy quantities already sold in DAM
+
any net energy quantities already traded in previous CRIDAs
+
any net energy quantities already traded in XBID
+
Submitted Intra-Day Market Sell quantity

≤ Available capacity of generating unit

Net energy quantities already sold in DAM
+
any net energy quantities already traded in previous CRIDAs
+
any net energy quantities already traded in XBID
-
Submitted Intra-Day Market Buy quantity

≥ 0

Validation Rules: Dispatchable assets committed in ISP
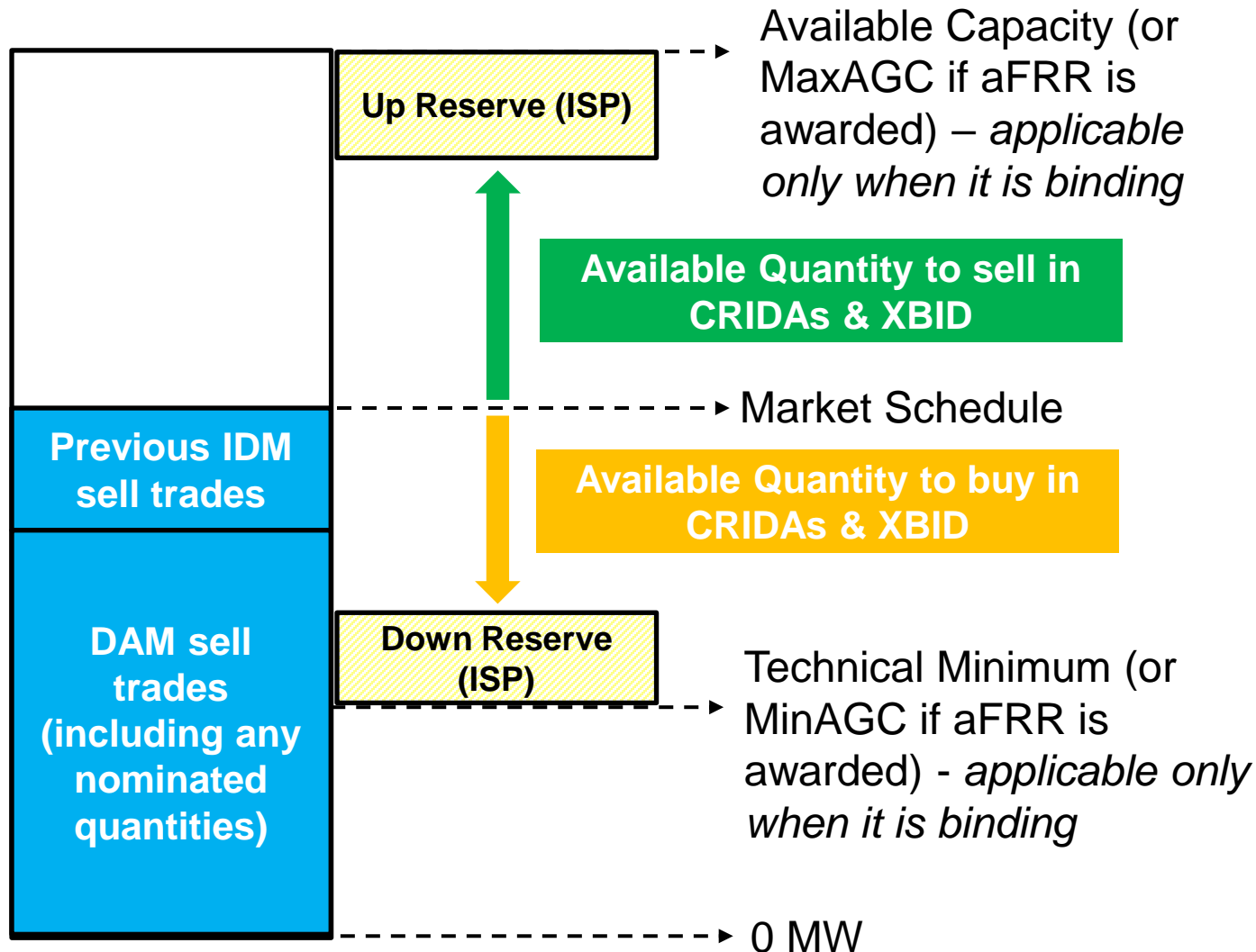
Up Reserve (ISP)	Available Capacity (or MaxAGC if aFRR is awarded) – *applicable only when it is binding*

Available Quantity to sell in CRIDAs & XBID

Market Schedule

Available Quantity to buy in CRIDAs & XBID

Previous IDM sell trades

DAM sell trades (including any nominated quantities)

Down Reserve (ISP)	Technical Minimum (or MinAGC if aFRR is awarded) - *applicable only when it is binding*

0 MW

Market schedule of a Generating Unit or RES Unit
+
any already awarded downward FCR, a-FRR and m-FRR
+
Intra-Day Buy Order quantity

≤ Available capacity of generating unit

Market schedule of a Generating Unit or RES Unit
-
any already awarded downward FCR, a-FRR and m-FRR
-
Intra-Day Buy Order quantity

≥ Technical minimum of generating unit

Other special provisions

Re-Validation Rules

▶ Handling of XBID orders in case of
- decrease in the available capacity of an Asset, or
- change of commitment status, or
- change of allocated reserves in ISP

  ◦ In case the total quantity of the submitted orders in IDM for a specific Generating Unit or Dispatchable RES Portfolio violates the technical validation rules, then **all relevant XBID orders are cancelled**

▶ Handling of XBID orders in case of decrease of the available credit limit

  ◦ In case the credit limit consumption of already submitted orders in IDM violates the updated available credit limit, all XBID orders for the specific Clearing Sub-account are cancelled

▶ Trades are final and irrevocable

  ◦ Trades can only be cancelled in case of an invalid trade caused by the XBID solution
  ◦ Trade recall is not allowed

* All relevant provisions are outlined in HEnEx's DAM & IDM Trading Rulebook and accompanying Decisions

Member's trial period, go-live plan and next steps for readiness

Andreas Ntomaris, PhD

Head Markets Support, HEnEx

Please listen the recording here
(from 19:02)

1. Market Trial (1)

What is the Market Trial?

- The Market Trial Period gives the Market Participants the **opportunity to connect via Local Trading Systems (LTS) of their NEMOs to the SIDC system**

- **The Market Trial Period is locally organized by individual NEMOs/TSOs** – NEMOs and TSOs (for Explicit Market Participants, but these are not present in borders belonging to 4W) are the main communication interface for both technical and organizational matters – **connectivity details and credentials will be communicated locally**

- Mainly focused on Greek and Slovak Market Participants, but **all** market participants are invited and encouraged to join

- The Market Trial will be conducted in **production-like conditions**, meaning that following items are configured in accordance with the foreseen go-live configuration:
  - product range
  - product naming and product scheduling
  - cross-border capacities availability times
  - coupling perimeter

- During the Market Trial Period HEnEx will also perform DAM and CRIDA auctions (Slovenian, Italian and Greek regional auctions), extending the local tests with its market participants planned to start at the beginning of October

1. Market Trial (2)

Goal: to become familiar:

- With **SIDC functionalities and process** – applicable for the Market Participants who are not using SIDC services yet

- With the new Greek market processes (integration between energy market and ancillary service market/ integration of DAM – CRIDAs – continuous intraday market)

- **Post-coupling activities like nominations are <u>out of scope</u> of the Market Trial**

Period of execution:

- 1st timeslot: 17/10/2022 - 21/10/2022

- 2nd timeslot: 24/10/2022 - 27/10/2022

- Note: Activation of the 2nd timeslot is the full responsibility of the SIDC project. The goal is to execute all related scenarios within the first timeslot.

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1. Market Trial (3)

Operating times:

- The IT System will be operating on a 24x5 basis during the Trial Period

- The support services (operational and technical consultation, simulation of the predefined scenarios) will be provided between 9am and 5pm CET by NEMOs for Implicit Market Participants

- All requests for support or consultation outside of the supported times are the responsibility of each of the NEMOs

Technical arrangements:

- Implicit Market Participants – are fully the responsibility of each NEMO

- Explicit Market Participants (not part of 4W) – are within the responsibility of the respective TSOs – connectivity data distribution, connectivity tests, manuals for Explicit MPs, …

Operational Messages:

- The purpose of the Trial Period is to simulate operation as close as possible to the standard production operation. This implies that the systems will generate operational messages. The Market Participants shall be advised to distinguish between messages coming from the Trial Period and those coming from routine operations

1. Market Trial (4)

Detailed Schedule*:

1st Timeslot, week: 17/10/2022 - 21/10/2022

- Mo 17.10.2022   XBID Normal operations (+DAM/ CRIDAs 1 and 2 for Greece)

- Tu 18.10.2022   XBID Normal operations - Closing/Reopening of Greek/ Slovak market area (+DAM/ CRIDAs for Greece)

- We 19.10.2022   XBID Normal operations - Closing of several markets (+DAM/ CRIDAs for Greece)

- Th 20.10.2022   XBID Normal operations - XBID Unavailability - Transit Shipper Issues (+ DAM/ CRIDAs for Greece)

- Fr 21.10.2022   XBID Normal operations – Closing/reopening of Greek/ Slovak borders (+ DAM/ CRIDA3 for Greece)

2nd Timeslot, week: 24/10/2022 – 27/10/2022

   Reserved for additional Trial Period testing if activated by the SIDC Project

Normal operations = testing against production-like products

Closing of market(s)/ borders = simulation of situations where specific messages will be communicated, specific local NEMO processes in local trading systems might be proposed

 * Test scenarios could be subject to revision

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1. Market Trial (5) – Greek Market

Timing for DAM:

DAM: date: D-1, gate closure time 12.00 (production timing) – results by 13.00

Timing for CRIDAs:

CRIDA1: date: D-1, gate closure time 15.00 – results and reopening of continuous trading 15.30 (production timing)

CRIDA2: date D-1, gate closure time **for test 16.30** – results and reopening of continuous trading 17.00 (production timing: gate closure at 22.00 – results and reopening of continuous trading at 22.30)

CRIDA3: date D, gate closure time 10.00 – results and reopening of continuous trading 10.30   (production timing)

SIDC continues to expand and innovate

Geographical Extension

- SIDC has achieved major milestones with the 1st, 2nd and 3rd wave go-lives, the forthcoming 4th wave Go-live will be an essential step to complete the Single European Intraday Market.
- The aim to roll-out existing XBID solution across Europe will continue.

Research and development of new functionalities

- Capacity pricing via establishment of Intraday Auctions (IDAs)
- Further extension of products (15 min)
- Flow-based allocation in continuous trading
- Implicit losses on HVDC

Stable, robust and effective XBID system operation

- Further Performance improvements to cope with growing ID market and smaller granularity of products
- Improvement of the XBID system usability for better day-to-day operation of the system

Research and development of new functionalities

Intraday Auctions (IDAs)

Three implicit intraday coupled auctions (15:00 D-1, 22:00 D-1 and 10:00 D) will be implemented per delivery day. This should enable the pricing of transmission capacity in the intraday timeframe as requested by the CACM regulation.

IDA Go-live in Q1/2024 remains SIDC project priority No. 1.

- Final technical design of IDA solution has been finalized with IT providers of XBID and IDA CIP. Requests for change provided to SDAC (EUPHEMIA + PMB) were aligned with PCR IT providers. Development phase is ongoing on all layers.
- Performance tests in XBID and EUPHEMIA are completed.
- Discussion on the set of products to be used for Go-Life is being finalized.
- Regional implementation projects are setup. There are some Nordic TSOs which will not be ready for the Big-Bang IDA Go-live in Q1/2024.
- IDA Testing Group has started to work focusing to IDA CIP tests and overall coordination of testing. The preparation of the IDA CIP testing is under full swing.

Research and development of new functionalities

Cross-product matching (CPM)

This functionality should enable matching between 15-minute and 60-minute products, between 30-minute and 60-minute products, and between 15-minute and 30-minute products and for any combinations of the products.

- Design of the first part (so called Minimum Viable Product) as well as substantial part of the MVP implementation was executed.
- A significant impact on the performance of the SIDC Solution was discovered.
- Market participants were informed on the technical details of solution within an online Market Coupling Consultative Group meeting on 7 June 2022.
- Based on the priority assessment, ACER and NRAs advised SIDC parties to not finance the implementation of the CPM functionality unless the legal basis has been clearly proven and the benefits of it outweigh the costs.

  → Following this position, **the SIDC parties have put the CPM implementation on hold.**

Further Performance improvements

Performance optimization measures (POMs)

The development of the market and a geographical extension contributes to the grow of the system performance needs. The performance is constantly monitored and improved if needed.

- Implementation of the first set of POMs reflecting current functional scope of the SIDC is ongoing as part of current release R3.3.
- The key system boundaries will be extended to 10 million of orders transaction per day respectively 600 thousand of trades per day while increasing a sustainable load as well as peaks.
- Future set of improvements reflecting IDA impact will be implemented as part of R4.0.

SIDC Roadmap 2022-23

Market Coupling Steering Committee

today

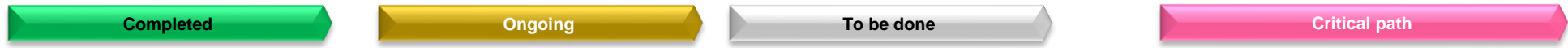|	2022												2023												2024								

4th wave: Planning, FITs, SITs & Trial, Go-Live window)

Perf. Imp (R3.3): Implementation, Testing, Go-Live window)

IDAs & Priority CRs (R4.0):
- Analysis of additional functionalities & performance
- XBID Impact analysis on the local systems (not fully completed for some parties)
- XBID & LTS Implementation R4.0
- XBID Test Execution R4.0
- Technical Go-Live window)
- Analysis of changes in PCR/Euphemia, XBID, CIP, Local systems
- Development & testing of the involved systems
- Local and central testing
- IDA test (integration, FIT and SIT)
- Go-Live window (& Member Testing)

Minor CRs: Development *, Testing *, Go-Live window)

* Subject of further clarification

Other items: Design/ Analysis of FB, Losses

Legenda: Completed | Ongoing | To be done | Critical path

SIDC

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New governance already in place

Market Coupling Steering Committee (MCSC) is a new governance structure where cooperation among NEMOs and TSOs is taken to another level with the creation of a new joint structure. By integrating the decision making for both the day-ahead (SDAC) and intraday (SIDC) timeframe, the new structure will ensure further coordination, foster efficiency and create a faster decision-making mechanism.

The first meeting of the newly formed MCSC took place on 2nd - 3rd February 2022.

All NEMOs and TSOs have decided to go beyond advocacy and to start implementing, on a voluntary basis, some of the most relevant building blocks of their proposals for the CACM review:

- Creation of a Consultative Group with stakeholders;
- Implementation of joint Qualified Majority Vote.

Closing remarks, further information

Thank you for attending our event

The presentation will be available on the NEMO Committee page here.

If you have any further question, please send an email to EnEx-Member-Support@enexgroup.gr , intraday@okte.sk