

**SIDC Single Intraday  
Coupling**



# Single Intraday Coupling (SIDC)

## 3rd Wave Pre-Launch Event

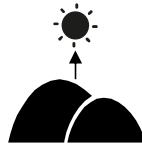
29<sup>th</sup> April 2021

GotoWebinar

10:00 – 15:30

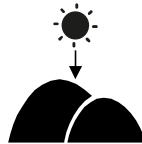


## Morning agenda



1	<b>Welcome, Introduction</b>	Jean Verseille (SIDC TSOs Steering Committee Chairman, Artelys) Stefano Alaimo (SIDC NEMOs Steering Committee Chairman, GME)	<b>10:00-10:15</b>	(1:5)
2	<b>Key Note Speech</b>	Mathilde Lallemand Dupuy (DG Energy, European Commission)	<b>10:15-10:30</b>	(1:15)
3	<b>Introducing continuous trading in the Italian market</b>	Marco Pasquadibiceglie (ARERA)	<b>10:30-10:40</b>	(1:10)
4	<b>Overview of SIDC – background, history and review of first years of operation</b>	Jean Verseille (SIDC TSOs Steering Committee Chairman, Artelys) Gilbert Guntschnig (SIDC TSOs Project Manager, APG)	<b>10:40-11:00</b>	(1:20)
5	<b>The SIDC matching solution</b>	Vladimir Satek (SIDC NEMOS' Project Manager, Minsait)	<b>11:00-11:30</b>	(1:20; QA:10)
6	<b>Overview of borders, market areas &amp; products</b>	Fabrizio Carboni (GME) Claudio Letardi (Terna)	<b>11:30-12:00</b>	(1:20; QA:10)
<b>BREAK</b>			<b>12:00-13:00</b>	

Afternoon agenda



**BREAK**

**12:00-13:00**

<b>7</b>	<b>Relevant information for market parties from Local Implementation Project (LIP)</b>	Fabrizio Carboni (GME) Viviana Rossetti (Terna)	<b>13:00-13:35</b>	(I:20; QA:15)
<b>8</b>	<b>Member's trial period, go-live plan and next steps for readiness</b>	Mario Pession (GME) Rosario Franzone (Terna)	<b>13:35-13:55</b>	(I:10; QA:10)
<b>9</b>	<b>Future plan for SIDC</b>	Gilbert Guntschnig (SIDC TSOs Project Manager, APG)	<b>13:55-14:15</b>	(I:15; QA:5)
<b>10</b>	<b>CRIDA</b>	Fabrizio Carboni and Mario Pession (GME) Paolo Fanelli (Terna)	<b>14:15-14:55</b>	(I:20; QA:20)
<b>11</b>	<b>General Q&amp;A + Summary and close</b>	Stefano Alaimo (SIDC NEMOs Steering Committee Chairman, GME)	<b>14:55- 15:10</b>	(I:5; QA:10)

# 1. Welcome, Introduction

**10:00-10:15**

Jean Verseille (SIDC TSOs Steering Committee Chairman, Artelys)  
Stefano Alaimo (SIDC NEMOs Steering Committee Chairman, GME)

29<sup>th</sup> April 2021

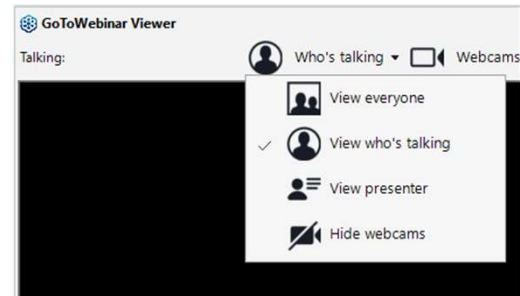
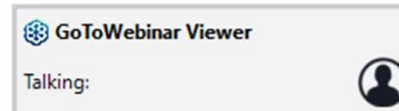


# Ground Rules



## Settings for Webcam View

- Screen NOT in “fullscreen mode”
- Click on the icon and select your view
- Suggestion: Select “View presenter”
- Presenters will have the webcams activated
- Webcams of attendees will not be activated



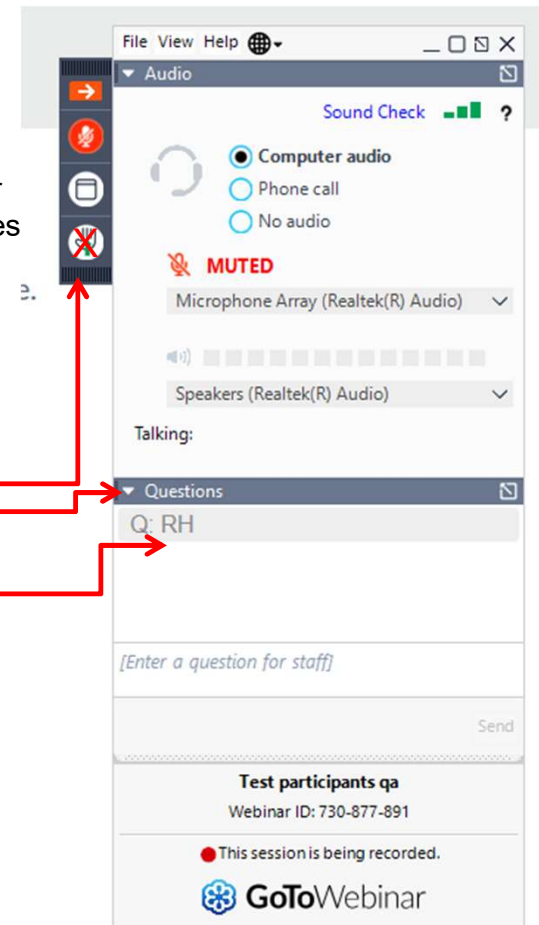
## Ground Rules

### Microphone settings

- During the presentation all participants are MUTED by the organizer
- When a participant will be given the word, they will be SOFT-UNMUTED by the organizer
- If such a participant is muted on his own computer, she/he will need to unmute themselves in order to be able to speak
- After the question was answered, the participants will be MUTED again by the organizer

### Asking Questions

- Please DO NOT USE the “Raise Hand” function
- Please DO NOT TYPE questions in the Q&A Tool
- Please USE the Q&A Tool only for posting an alert that you wish to ask a question by inserting “RH” or “Raise Hand” into the Q&A Tool
- The participants will be given the word in the order they provided their “RH” alert through the Q&A tool
- If any question remains unanswered due to time constraints, the participants can provide the question per email to: [Lenka.linke@cz.ey.com](mailto:Lenka.linke@cz.ey.com) ; Subject: 3<sup>rd</sup> Wave Webinar



## **2. Key Note Speech**

**10:15-10:30**

Mathilde Lallemand Dupuy (DG Energy, European Commission European Commission)

29<sup>th</sup> April 2021





# **SIDC 3<sup>rd</sup> Wave Go-Live Pre-Launch Event**

**29<sup>th</sup> April 2021**

Mathilde Lallemand Dupuy

European Commission

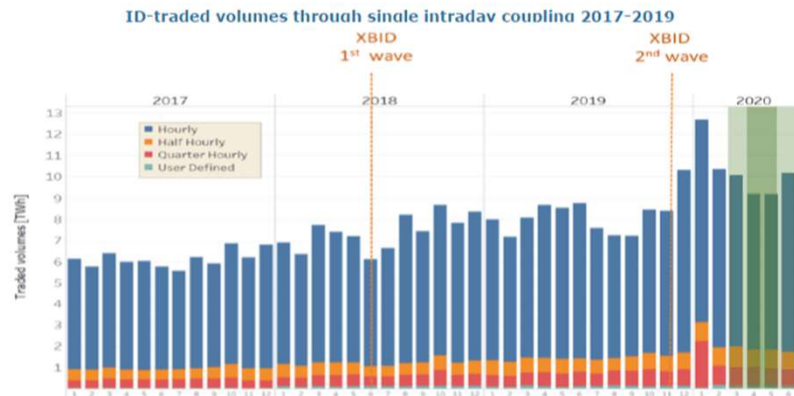
Energy

## The Pan-EU market coupling is in progress



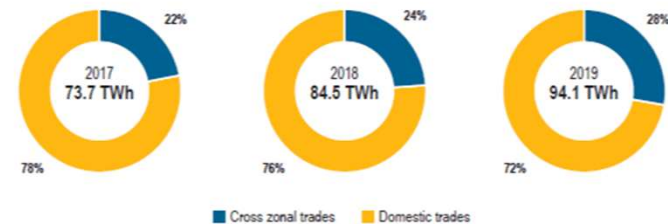
Energy

# Intraday market coupling: a needed tool to achieve the Green Deal



Source: XBID project

Figure 21: Share of continuous ID-traded volumes according to intra-zonal vs. cross-zonal nature of trades in Europe and yearly continuous ID-traded volumes – 2017–2019 (% and TWh)

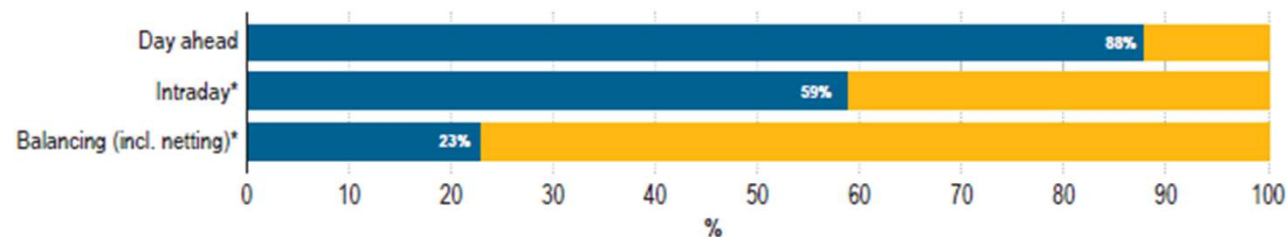


Source: ACER calculations based on NEMOs data.

Source: ACER MMR 2020

# Room for improvement in optimal use of cross-zonal capacity

Figure i: Level of efficiency in the use of interconnectors in Europe in the different timeframes (% use of available commercial capacity in the 'right economic direction') – 2019



Source: ACER calculations based on NRAs and ENTSO-E data.

Source: ACER MMR 2020



## Challenges and future developments

- Full extension to EU borders (Greece, Slovakia)
- Full alignment with CACM
  - Intraday flow-based capacity calculation
  - Intraday capacity pricing
- Future developments



**Thank you for your attention!**

## **3. Introducing continuous trading in the Italian market**

**10:30-10:40**

Marco Pasquadibiceglie (ARERA)

29<sup>th</sup> April 2021

# Continuous trading in Italian intraday market

Marco Pasquadibisceglie - Italy North Secretariat

29/04/2021



# Intraday market in Italy

2004

## Market opening

Adjustment market in D-1 after day ahead market (single auction)

2009

## Intraday market

Two auctions in D-1

2011

## D Auctions

Two auctions in D-1  
Two auctions in D

2015

## SDAC

Two auctions in D-1  
Three auctions in D

2017

## New auctions

Two auctions in D-1  
Five auctions in D

2016

## Intraday coupling

Implicit auctions with Slovenia  
One auction in D-2  
One auction in D

2019

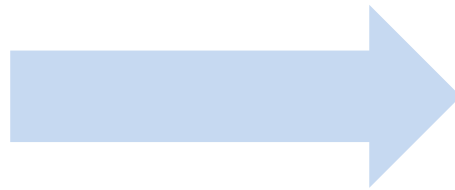
## Intraday coupling

Extension to Switzerland

- Originally conceived to allow market participants to adjust physical positions for large units
- Auctions gradually increased to accommodate RES and load needs
- Eventually, auctions opened for import as pilot project to replicate the benefit of day-ahead auctions in the intraday timeframe

# XBID implementation

XBID represents a significant step forward towards the European target model and a full implementation of CACM on Italian bidding zone borders



Significant change in market participants behaviour

- Trading room open 24/7
- Transaction cost mainly on small operators

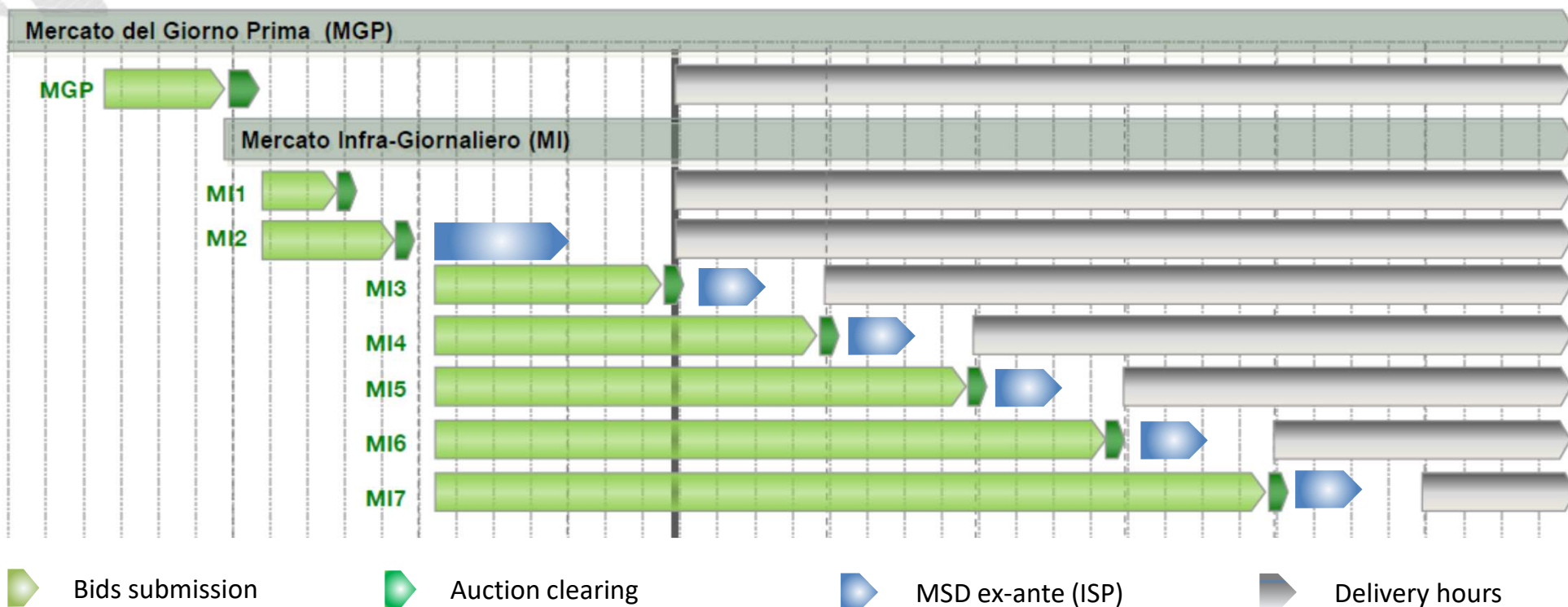
Significant change in dispatching approach

- Review the coordination between Intraday and Integrated Scheduling process

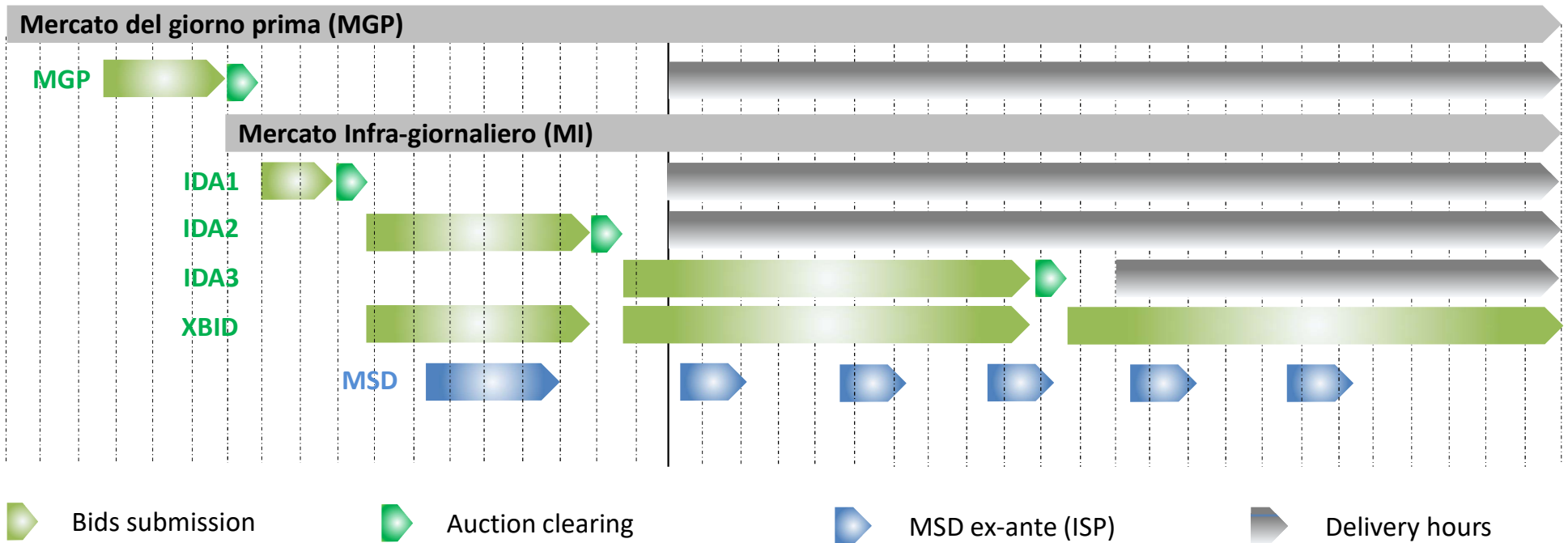
## Key elements for Italian electricity market

- Physical market
  - One needs to have an asset in Italy to be allowed to trade
  - A number of foreign operators are participating in the market
  - Very high liquidity (among the top markets in Europe)
- Central dispatch
  - Integrated scheduling process run to dispatch the generation units
  - Strong coordination with intraday market required

# Intraday and integrated scheduling process – as is



# Intraday and integrated scheduling process – to be



No longer full coordination between Intraday and MSD

Some reconciliation between ISP and Intraday is needed

## Implicit auctions as early IDAs implementation

### With XBID go-live

- Italy will abandon the 7 intraday auctions towards continuous trading for flexible adjustments for market participants
- Auctions are kept in order to provide a market value for the cross-border capacity that is a scarce resource
- Italy North CCR chase to align implicit auctions with IDA concept as approved by ACER
  - Same timings
  - Same target suspension for XBID
- Intraday coupling pilot project was a positive and effective tentative for an early and voluntary IDAs implementation

Thank you for the attention!

[mpasquadibisceglie@arera.it](mailto:mpasquadibisceglie@arera.it)

Office for European Regulation -REU

## **4. Overview of SIDC – background, history and review of first years of operation**

**10:40-11:00**

Jean Verseille (SIDC TSOs Steering Committee Chairman, Artelys)  
Gilbert Guntschnig (SIDC TSOs Project Manager, APG)

29<sup>th</sup> April 2021



## What is 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**

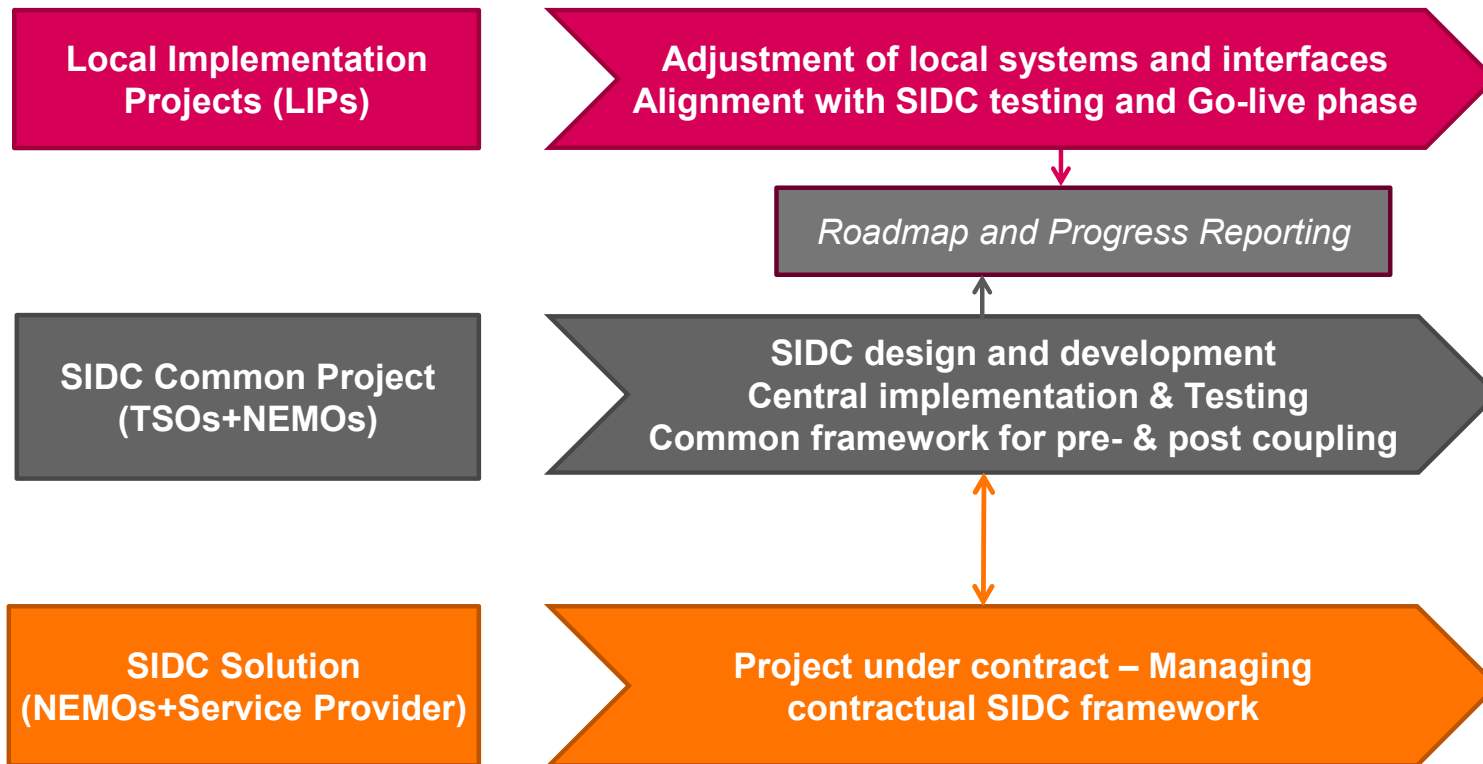
The Single Intraday Coupling Mechanism defined in CACM

## 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 RES
- 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.

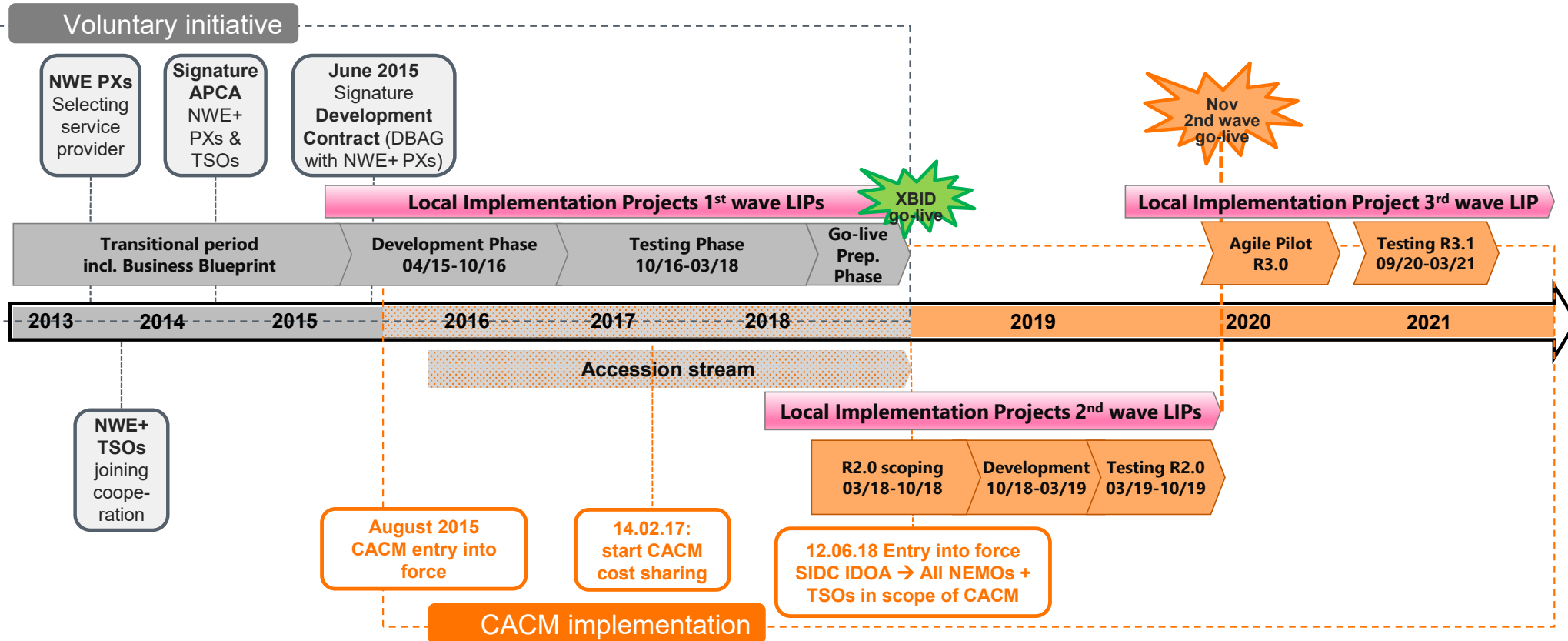
## SIDC Project Layers

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



# Key SIDC Historical Milestones

SIDC Single Intraday Coupling




**SIDC Single Intraday Coupling**





**Countries coupled Intraday with 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> SIDC Go-Live**

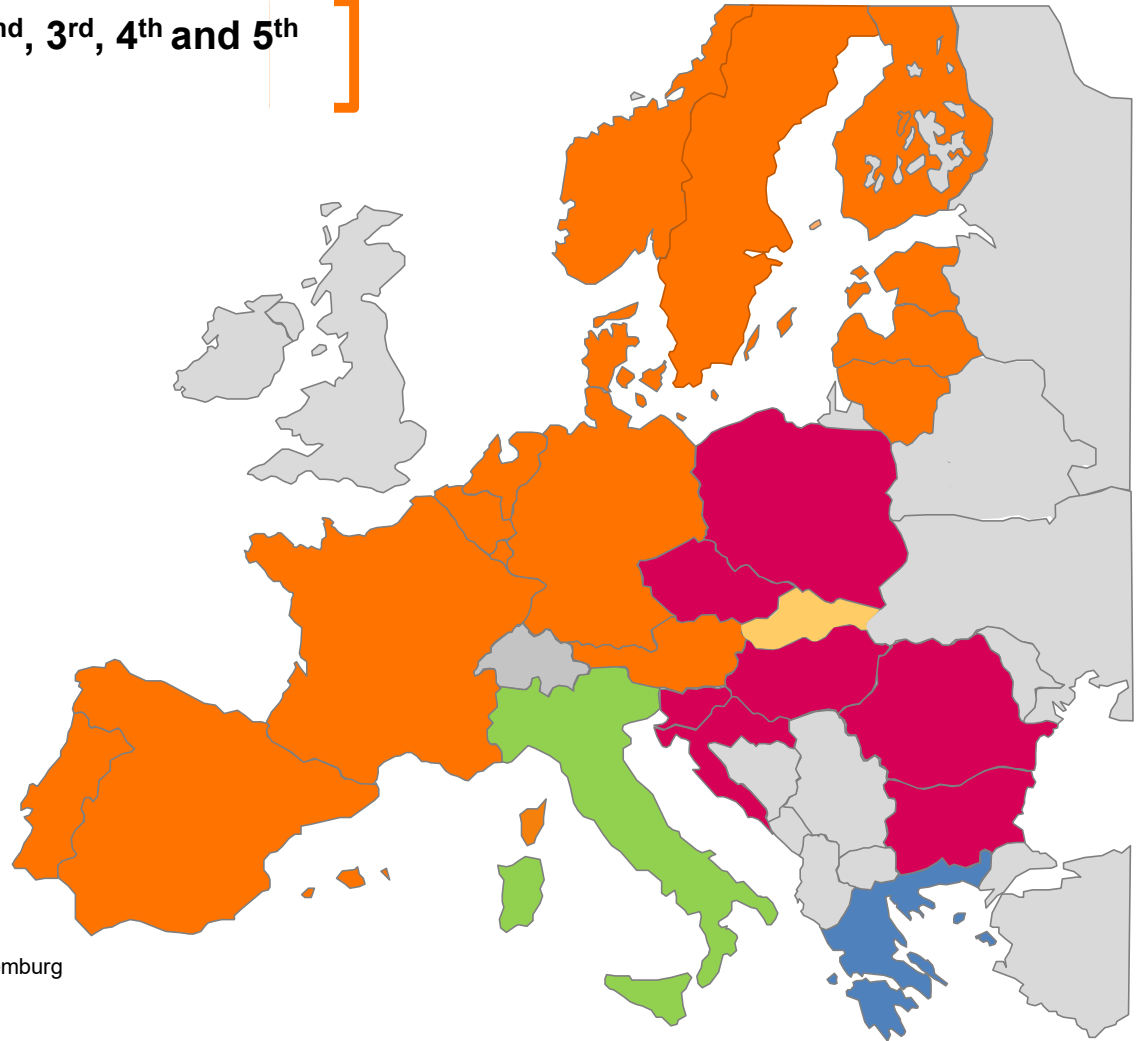
 Countries coupled in 1<sup>st</sup> go-live (June 2018)

 Countries coupled in 2<sup>nd</sup> go-live (November 2019)

 Country to be coupled in 4<sup>th</sup> go-live (Q1 2022)

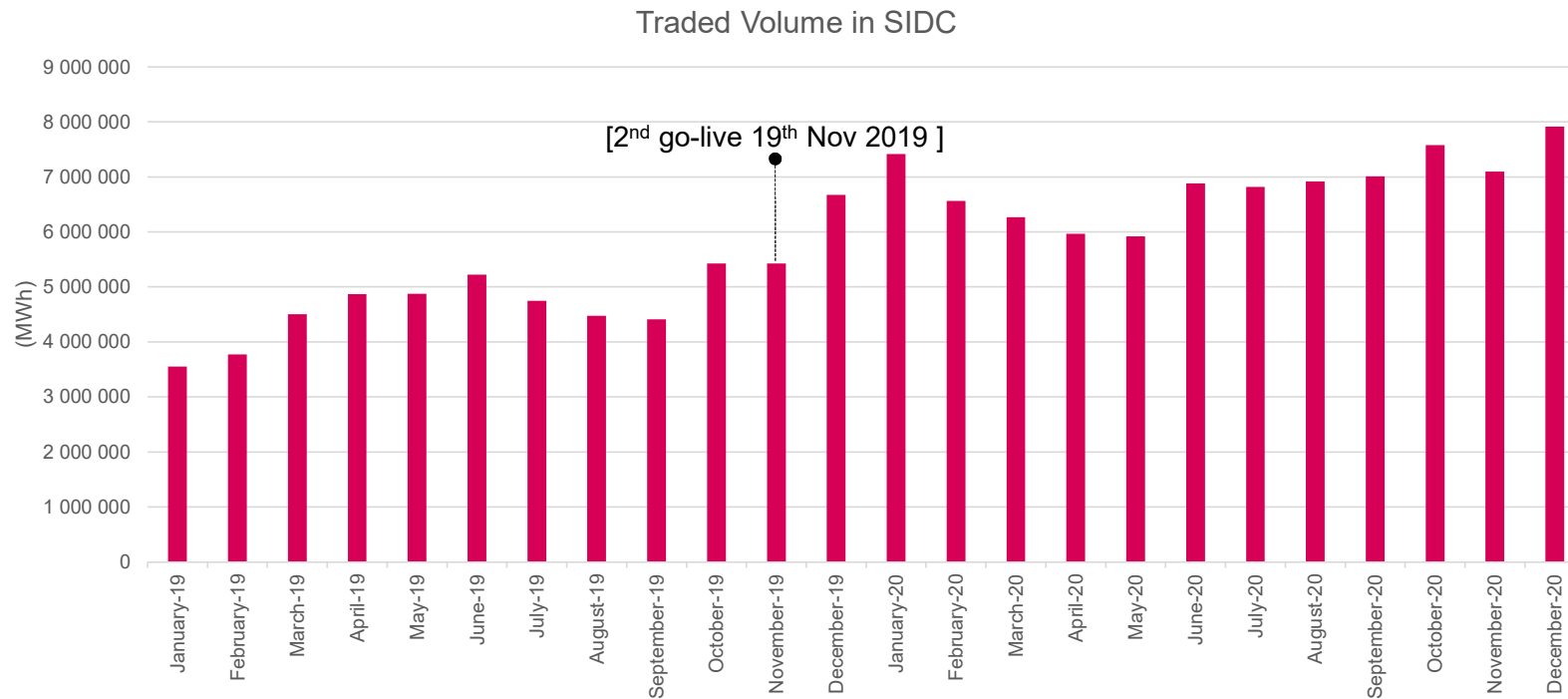
 Country to be coupled in 3<sup>rd</sup> go-live (Q3/2021)

 Country to be coupled in 5<sup>th</sup> 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 Operational Key Figures A growth story



➔ Traded volume 2019: 58 TWh

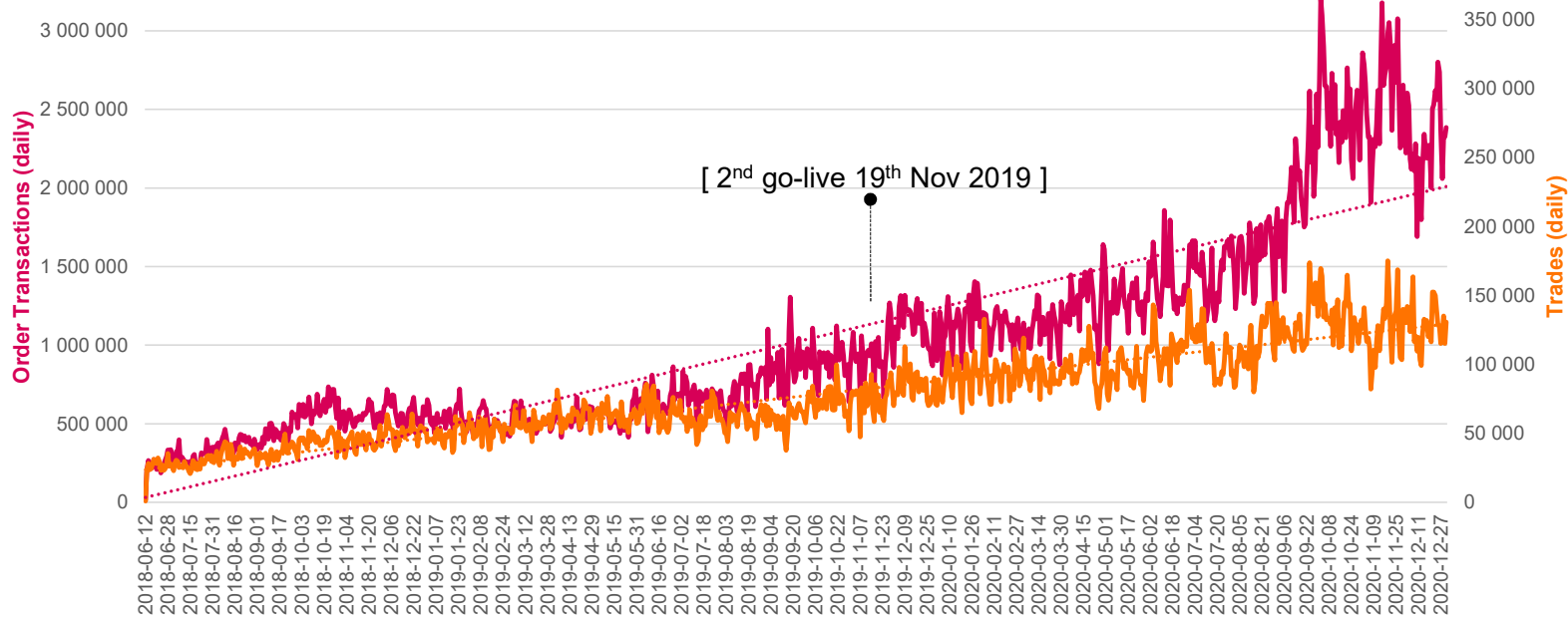
➔ Traded volume 2020: 82 TWh

**+42%**

# SIDC Operational Key Figures

## A growth story

Order Transactions / Trades



➔ Average No. daily trades 2019: 64.000

**+72%**

➔ Average No. daily order transactions 2019: 708k

➔ Average No. daily trades 2020: 110.000

➔ Average No. daily order transactions 2020: 1.646k

**+130%**

## **5. The SIDC matching solution**

**11:00-11:30**

Vladimír Satek (SIDC NEMOs' Project Manager, Minsait)

29<sup>th</sup> April 2021



## 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




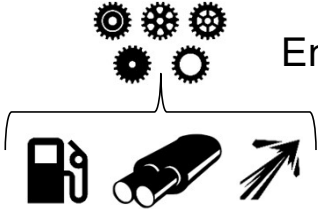
Relevant information for market parties from Local Implementation Projects (LIPs)



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



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

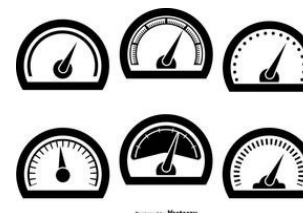
Component	Provided by	Comment
 Cockpit	LTS	Local Trading Solution (LTS) offers ultimate interface to Market Participants, either via pre-built screens or via automated communication which allows MP's development of the „cockpit“. <b>LTS is sole interface to MPs to provide market data</b> (order, trades, status of the market, status of the products, etc.). <b>Each LTS has an individual functionalities and individual look &amp; feel.</b>
 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)



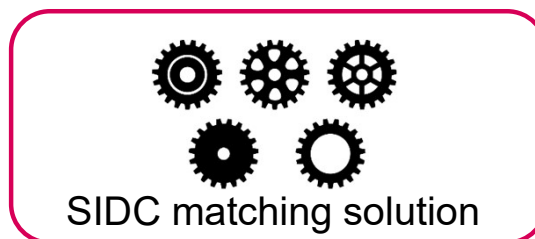
## 2. The SIDC matching solution from MP's view (2/2)

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.



**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.



### 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.

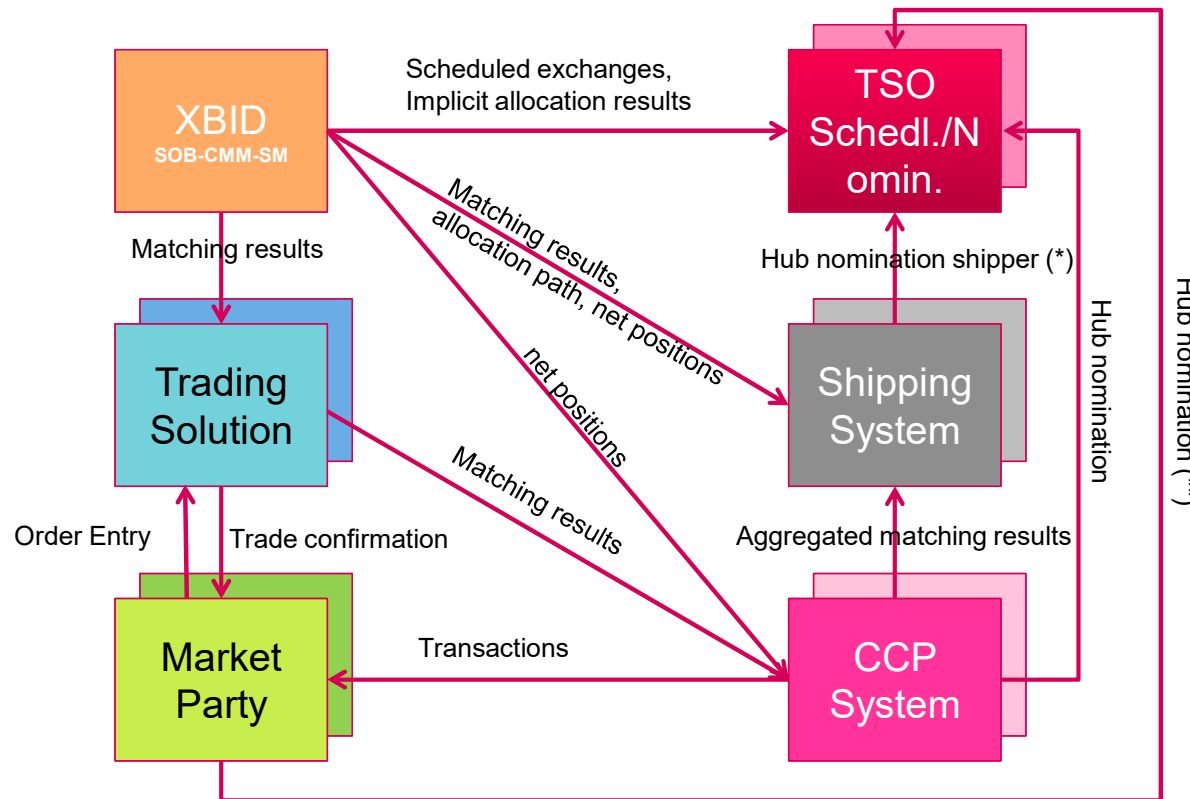
**The Shipping Module (SM)** of the XBID Solution provides information from trades concluded within XBID to all relevant parties of the post-coupling process. The SM receives data from the SOB about all trades concluded:

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.

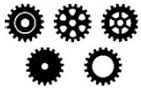


### 3. The SIDC matching solution – High Level Architecture

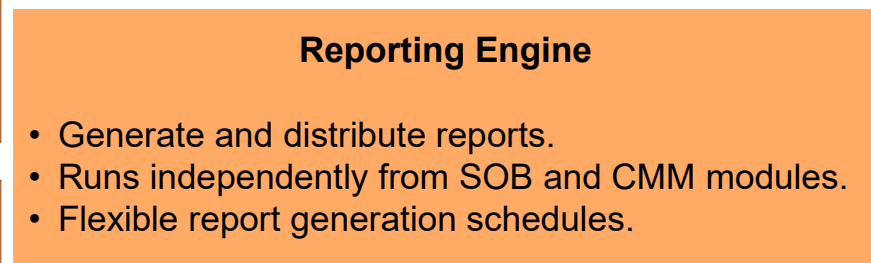
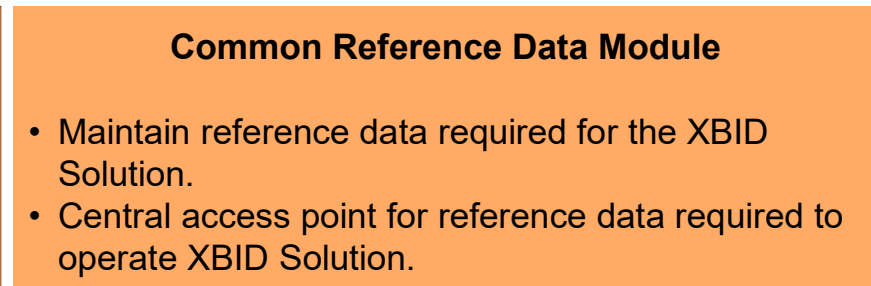
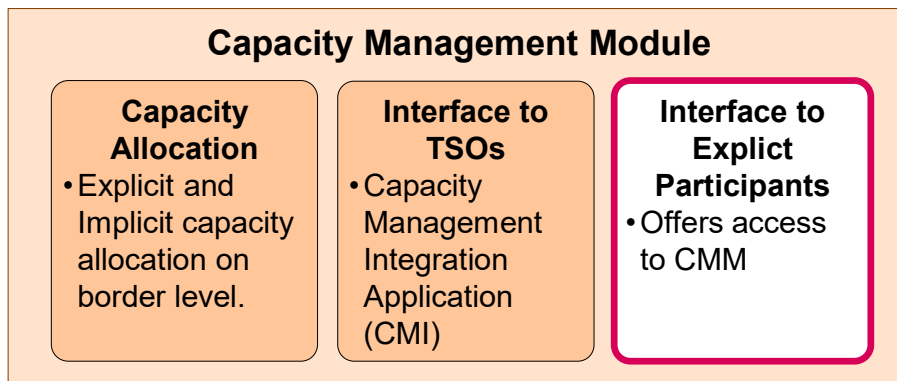
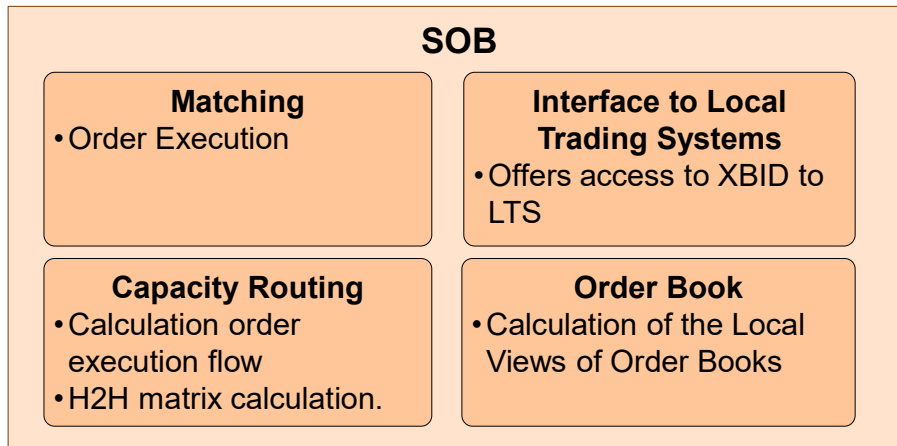


(\*) XB nominations could be also needed in areas where nomination behalf is not applicable

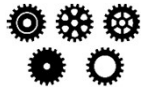
(\*\*) According to local procedures (direct or indirect nominations)



### 3. The SIDC matching solution – Architecture



**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

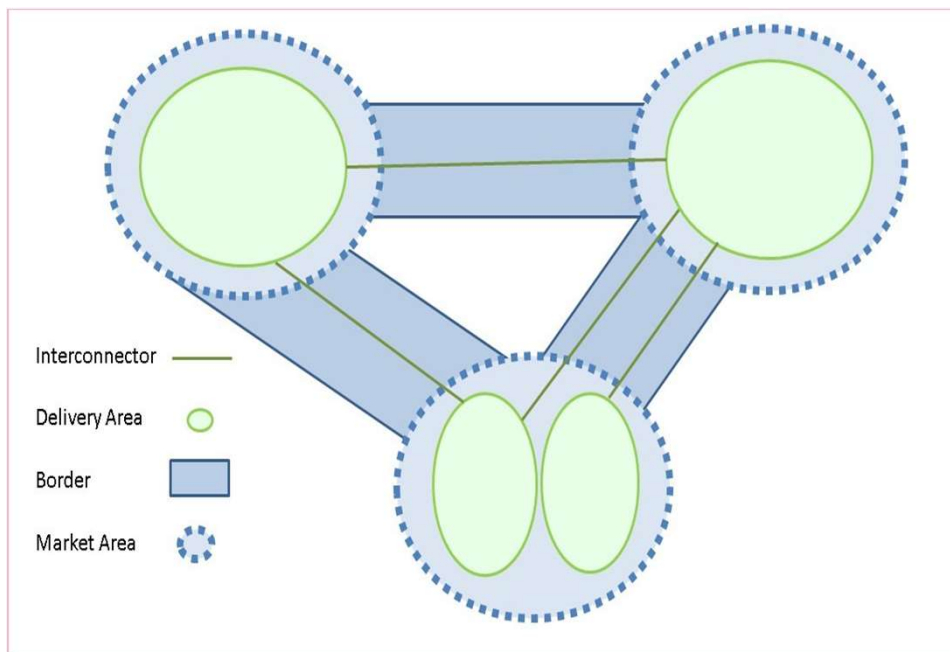
- Represents a 'price area' in the delivery grid
- Can contain **one or more** Delivery Areas
- Transport capacity between Market Areas is **subject to congestion**

#### 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)



### 3. The SIDC matching solution – CMM. Interconnectors and borders



#### Separate Configuration per Interconnector

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

**Interconnector**  
A connection  
between two  
Delivery Areas.

#### Common Configuration per Border

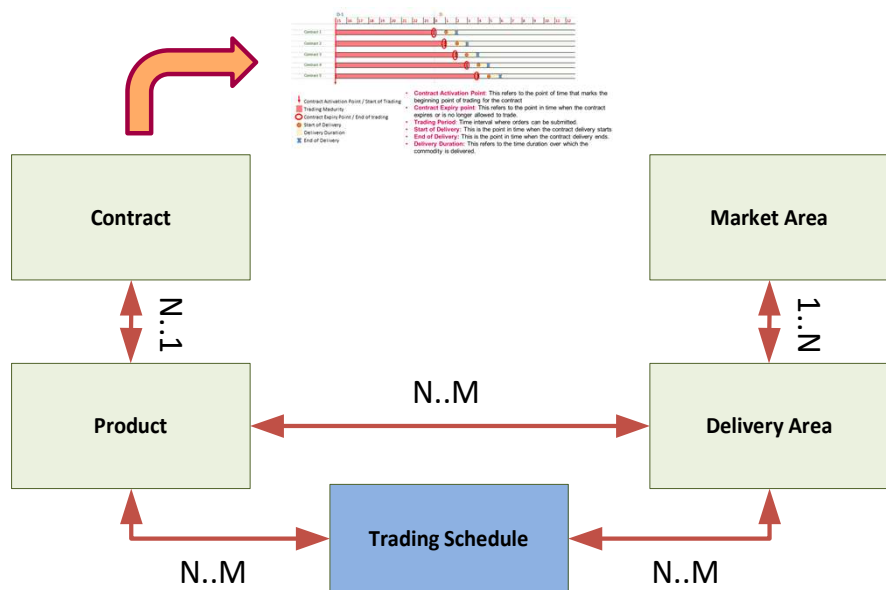
- Common ATC,
- Leading TSO,
- Validity, etc

**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

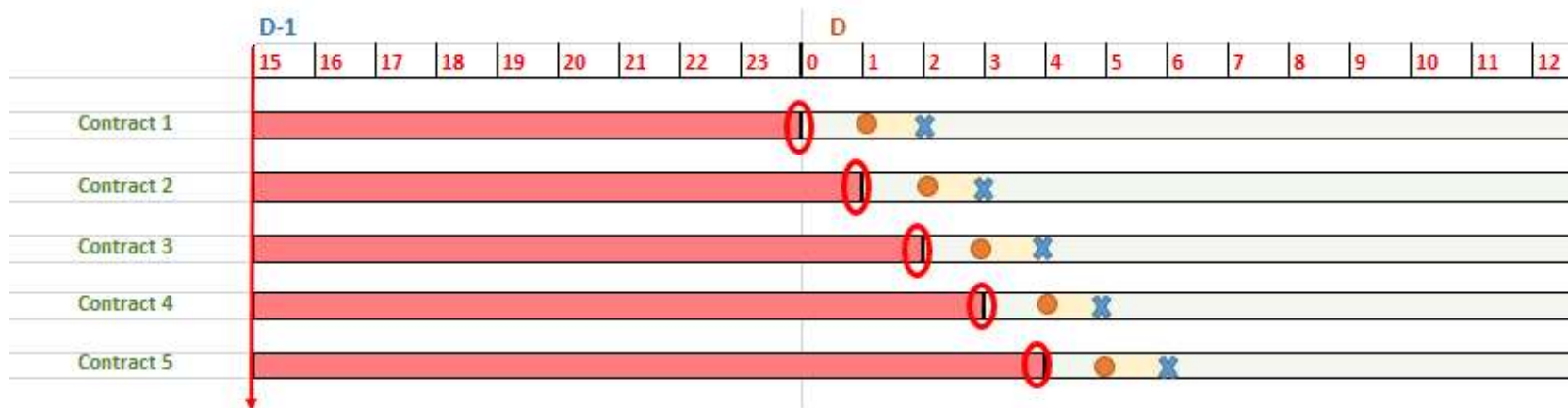
- An instance of a Product in time, an actual tradable instrument (e.g. the hour 11h-12h on 25 November 2017)
- With a predefined time of delivery
- Used by the trading member entities to enter into agreement to sell/buy a certain quantity
- Each product will have multiple contracts and each contract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

- **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.



### 3. The SIDC matching solution – SOB

#### 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

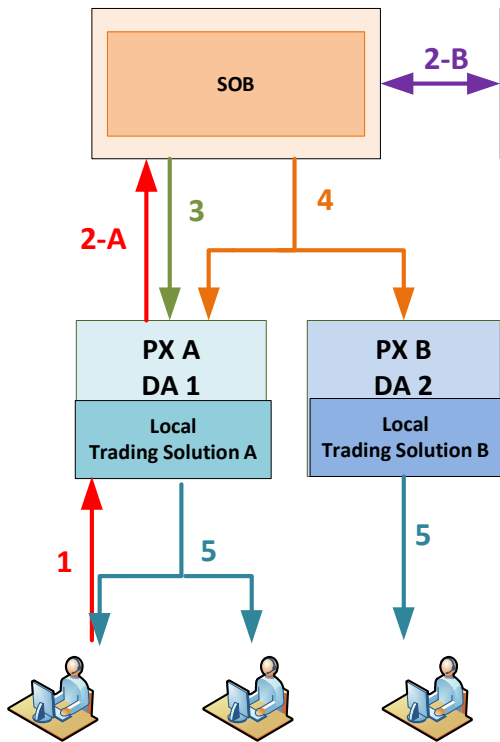
- **Price:** Orders are always executed at the best price
- **Time:** A timestamp (assigned at entry into SOB) is used to prioritize orders with the same price limit (earlier means higher priority)
- **Capacity:** Capacity should be available to make order execution possible

#### 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



Implicit Market Participant 1    Implicit Market Participant 2    Implicit Market Participant 3

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



### 3. The SIDC matching solution – Order Book

#### Order Book Calculation

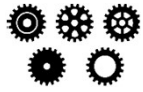
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- **Iceberg** orders are displayed with their **visible quantity** and not with their total quantity
- AON orders can only be displayed with full quantity

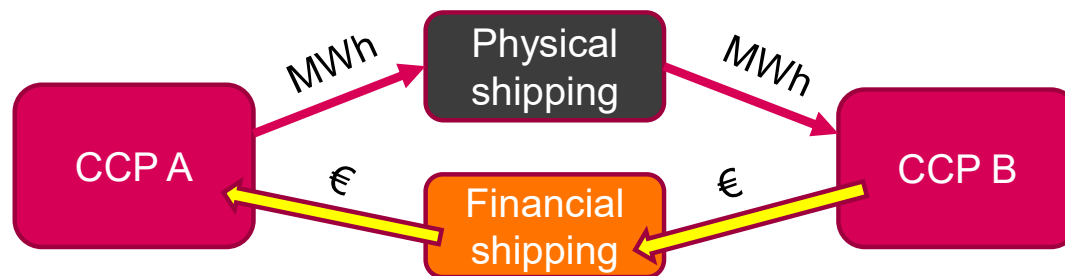


**Traders cannot see in which area the orders that they see in their local order book were entered**



### 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 2 <sup>nd</sup> 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 <b>2<sup>nd</sup> Business Go-Live</b>	<b>10 seconds</b>	<b>15%</b> Daily maximum of Order transactions in peak; sustainable load threshold <b>40</b> order transactions per second	<b>52</b> Hubs, <b>82</b> Interconnectors <b>1 500 000*</b> Order transactions per day	<b>100</b> orders in the Local View update
RTS4	<b>Subject of future implementation and optimisation</b>			

\*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%)

## 6. Overview of borders, market areas & products

**11:30-12:00**

Fabrizio Carboni (GME, Italian NEMO)  
Claudio Letardi (Terna, Italian TSO)

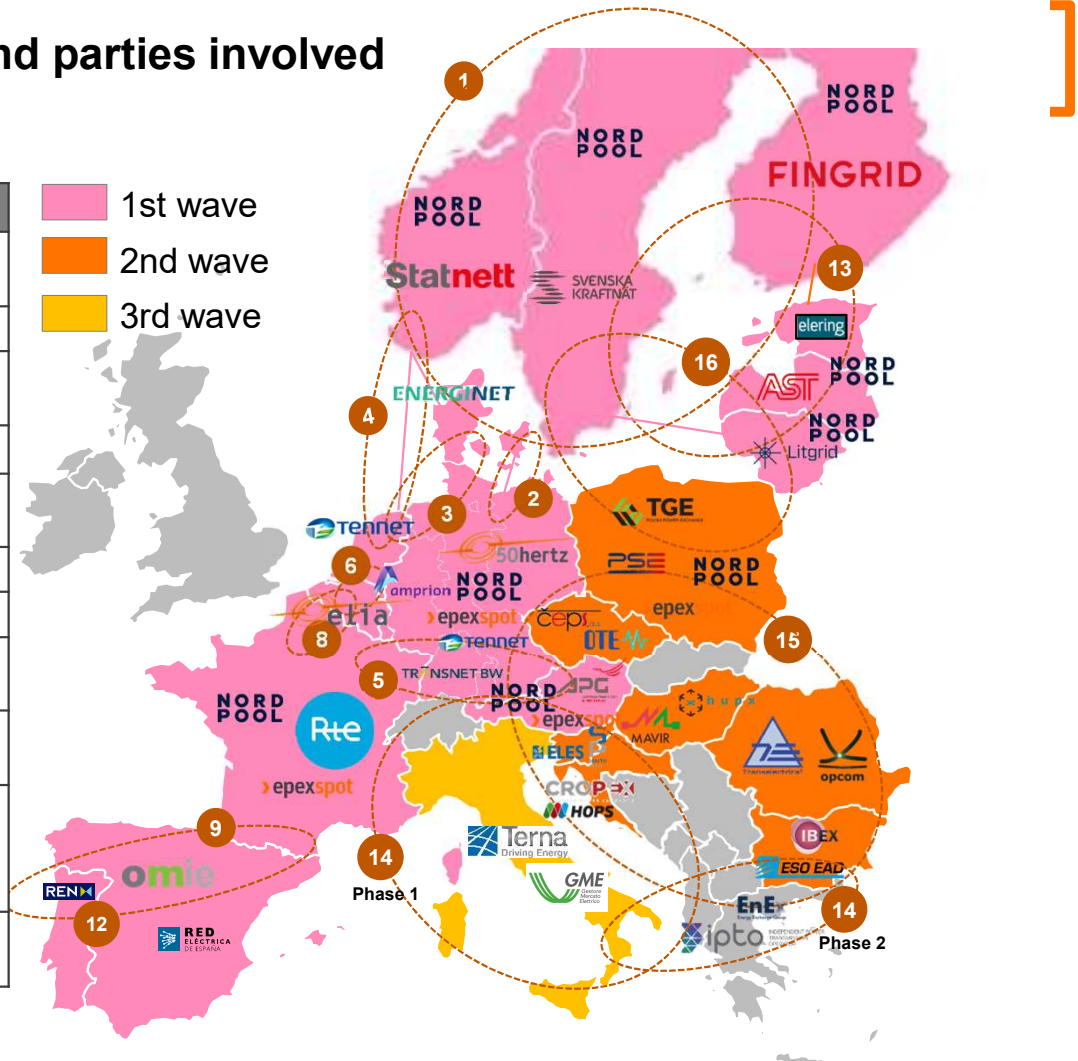
29th April 2021



## 1. Overview of 1<sup>st</sup> and 2<sup>nd</sup> go-live waves and parties involved

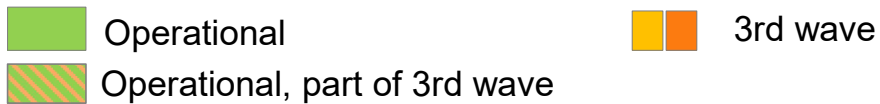
- LIPs part of 1<sup>st</sup> and 2<sup>nd</sup> waves go-live:

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, Croplex, 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

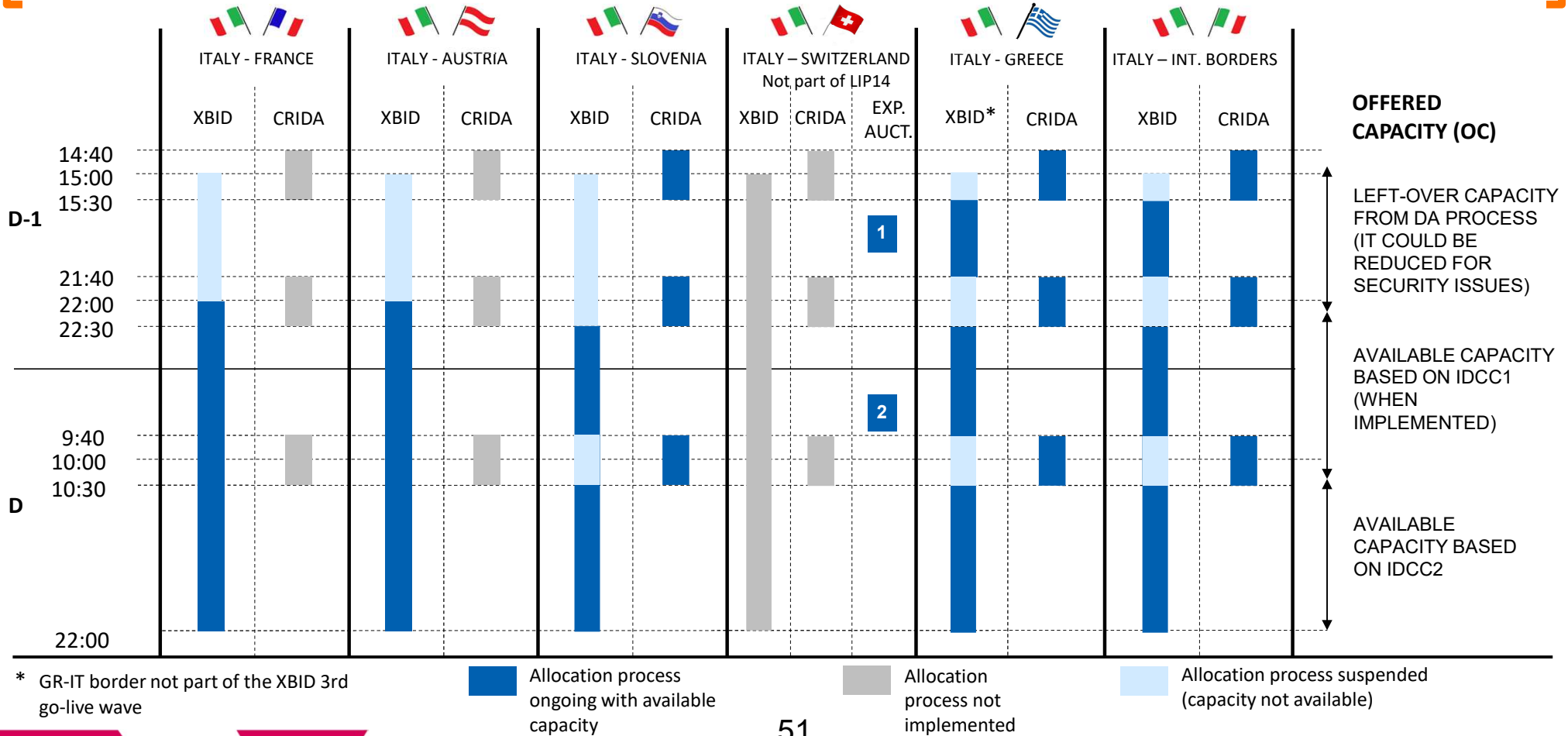


2. Overview of 3rd go-live wave and parties involved

LIP	Go-live	Border	Participants	Foreseen allocation
14	3rd wave	IT-FR, IT-AT, IT-SI, Italian Internal BZBs	<b>NEMOs:</b> GME, BSP, EPEX, EMCO <b>TSOs:</b> TERNA, RTE, APG, ELES	Implicit
	4th wave	GR-IT, GR-BG	<b>NEMOs:</b> HENEX, GME, IBEX <b>TSOs:</b> IPTO, TERNA, ESO	Implicit

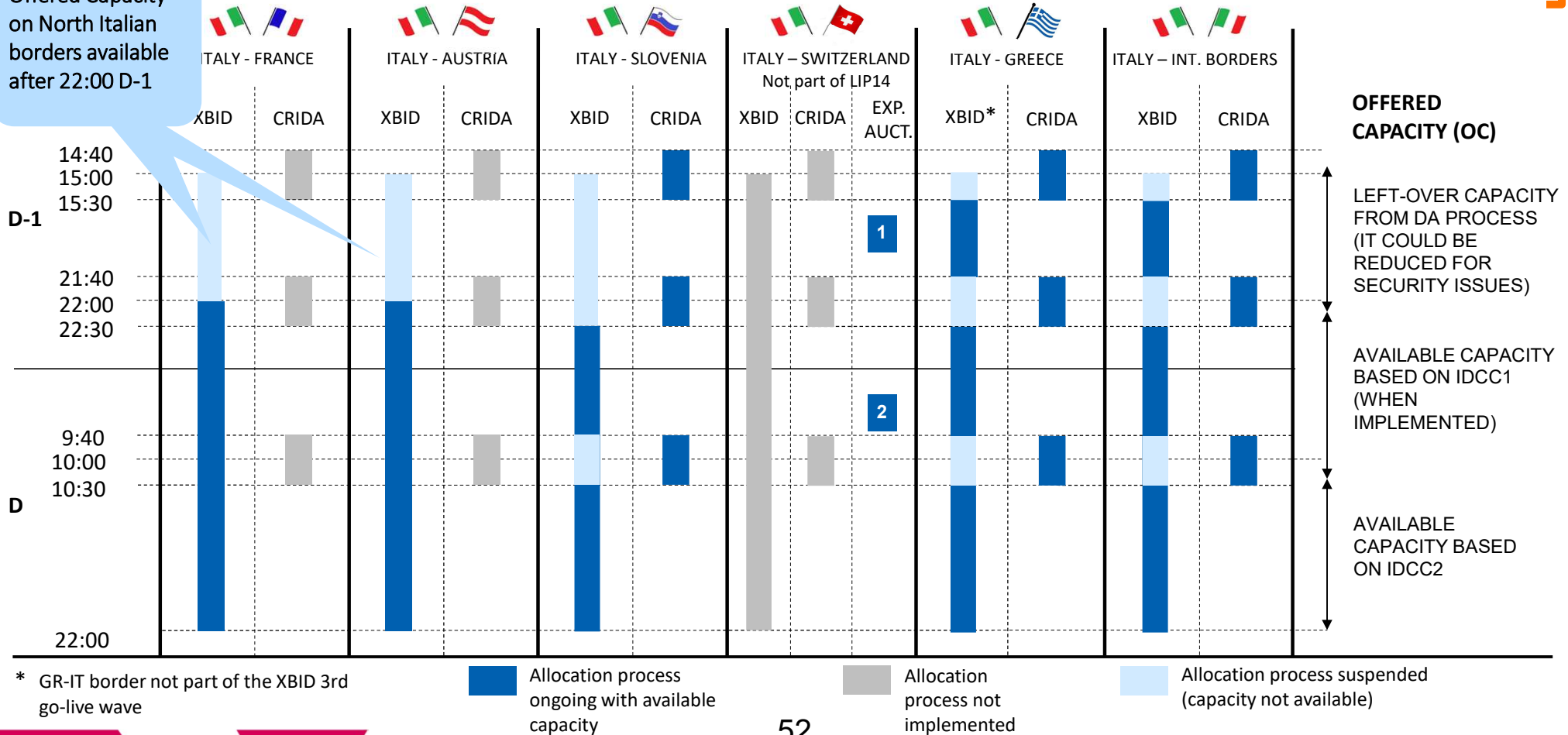


## 5. XBID and CRIDA: a hybrid model for capacity allocation

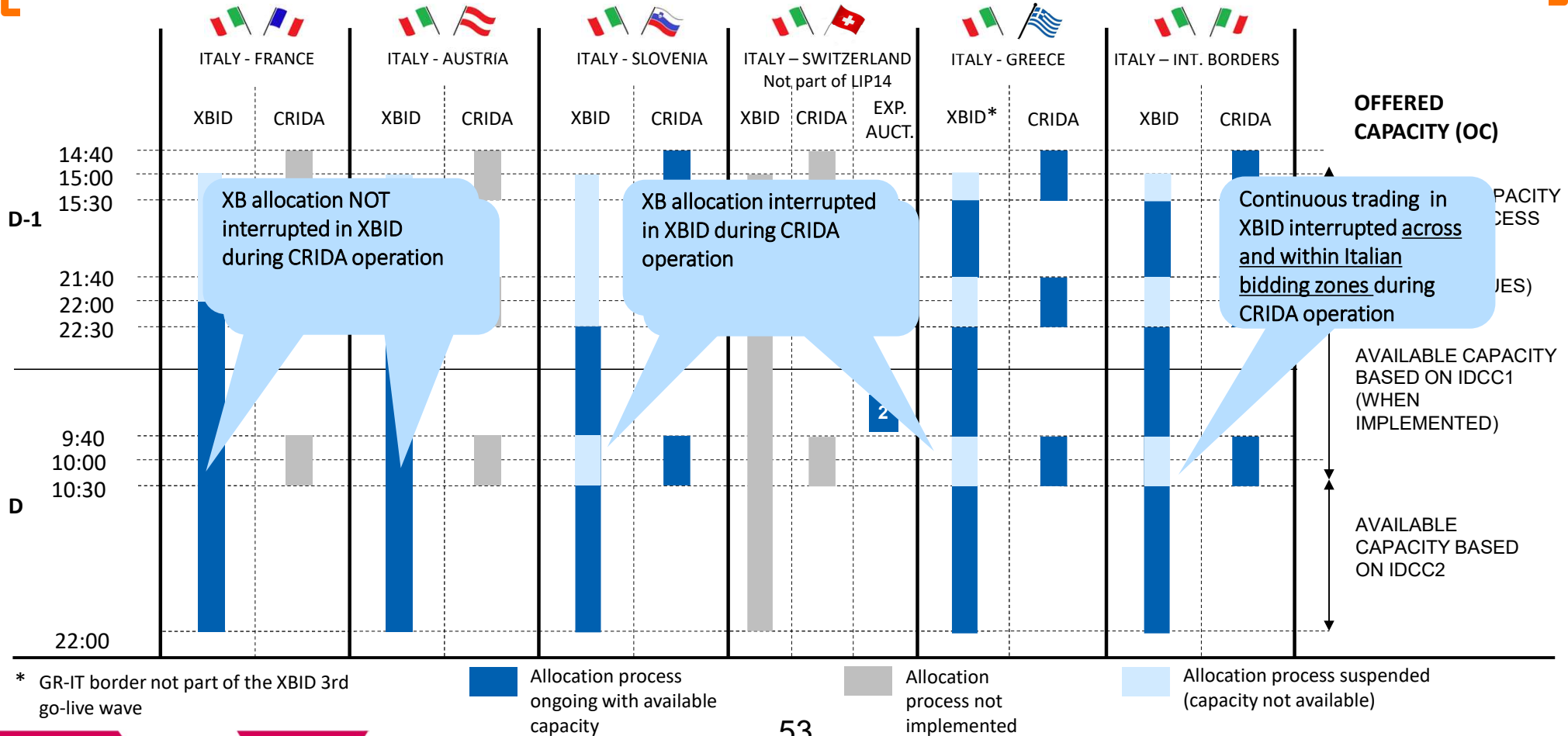


## XBID and CRIDA: a hybrid model for capacity allocation

Offered Capacity on North Italian borders available after 22:00 D-1



## 5. XBID and CRIDA: a hybrid model for capacity allocation





## 6. 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

## 6. Products offered in the XBID solution

### B. Details

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

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

## 6. Products offered in the XBID solution

### C. Order types

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

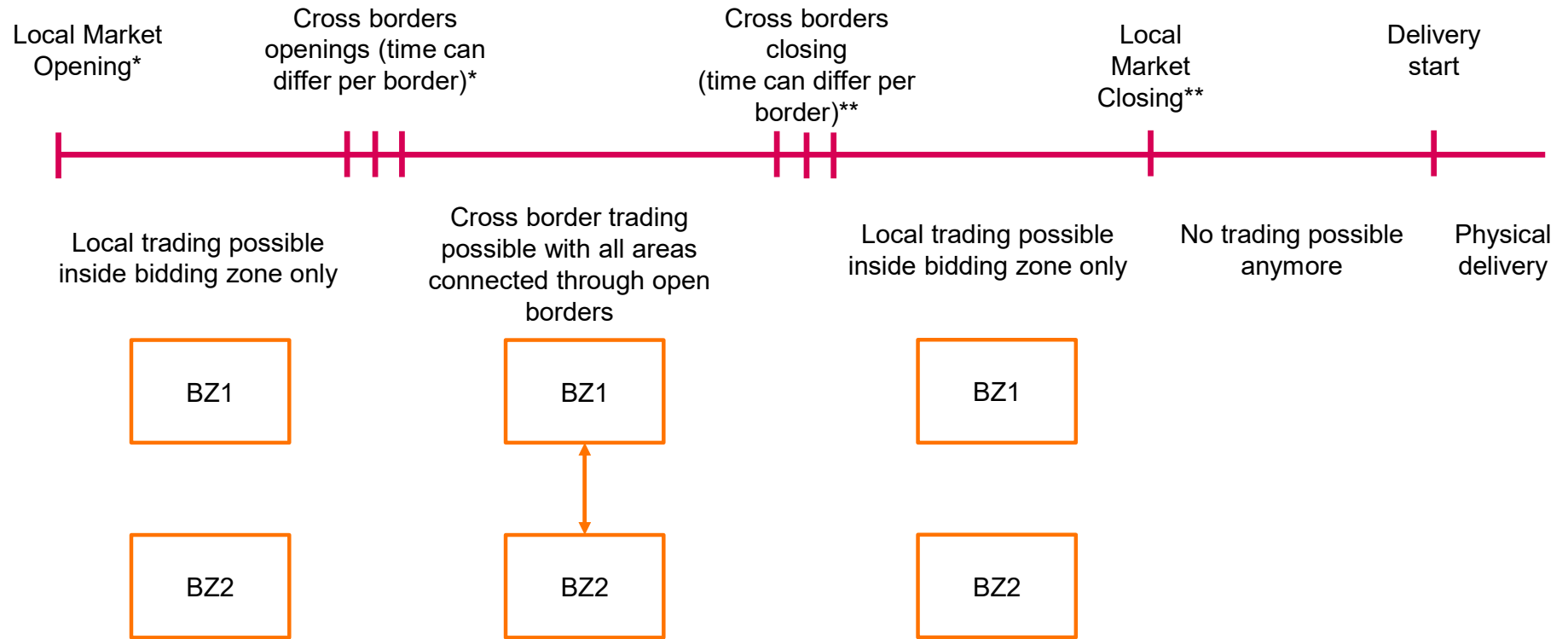
(1) Orders are processed as if they would have been submitted separately

(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"



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



\* 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

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

CC	Bidding Zone border	GOT as of 3rd 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 3rd go-live wave
Baltic	EE – FI	15:00 CET D-1	Calculated cross-border capacity, except for PL-LT 0	N/A, except for PL-LT 18:00 CET D-1	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-BE				
	DE – FR				
	DE – AT				
	PL – DE				
	PL – CZ				
	CZ – DE				
	CZ – AT				
	AT – HU				
	AT – SI				
SI – HR					
HR – HU					
RO – HU					
Hansa	DE – DK1	15:00 CET D-1	0	18:00 CET D-1	
	DK1 – NL				
	DE-NO2				
	DE – DK2				
	NO2 - NL				
PL – SE4					
SWE	ES-FR	15:00 CET D-1	0	22:00 CET D-1	
	PT-ES		Calculated cross-border capacity	N/A	
SEE	RO – BG	15:00 CET D-1	0	16:00 CET D-1	

D – Delivery Day

## 8. Opening and closing times in XBID (2/2)

### A. For Cross Border Allocation

CCR	Bidding Zone border	GOT as of 3rd 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 3rd go-live wave
Nordic	DK1-DK2, DK1-NO2, DK1-SE3, DK2-SE4	15:00 CET D-1	Calculated cross-border capacity	N/A	One hour before delivery of MTU
	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	
Italian Northern Borders	IT-FR; IT-AT	15:00 CET D-1	0	22.00 CET (D-1)	One hour before delivery of MTU
	IT-SI*	15:00 CET D-1	0	22.30 CET (D-1)	One hour before delivery of MTU
Italian internal borders	IT internal borders*	15:00 CET D-1	Calculated cross-border capacity	N/A	One hour before delivery of MTU

\* The capacity is not available during CRIDA process

## 8. Opening and closing times

### B. For SIDC Market Trading (within a Bidding Zone)

		1st wave						2nd wave						3rd wave	
		Austria	France	German TSO areas	Iberia	NL & Belgium	Nordics & Baltics	Bulgaria	Croatia	Czech Republic	Hungary	Poland	Romania	Slovenia	Italy
<b>Opening times</b>	All products	15:00	15:00	18:00	14:00	14:00	14:00	14:00	15:00	15:00	15:00	14:00	15:00	15:00	15:00
<b>Closing times</b>	15-min	H-30 min		H-30 min		H-5 min					H-60 min		H-60 min	H-60 min	
	30-min		H-30 min	H-30 min		H-5 min									
	Hourly	H-30 min	H-30 min	H-30 min	H-60 min	H-5 min	H-60min*	H-60 min	H-30 min	H-5 min	H-60 min	H-60 min	H-60 min	H-60 min	H-60 min
	User Defined Blocks	H-30 min	H-30 min	H-30 min		H-5 min	H-60min*	H-60 min	H-30 min	H-5 min	H-60 min	H-60 min	H-60 min	H-60 min	
<b>Notes</b>	* Finland and Estonia at D-30 min NOTE: The opening and closing times are SIDC/SOB system timings; individual NEMO timings might differ.														

H – Delivery MTU

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

**BREAK**

**12:00-13:00**

29<sup>th</sup> April 2021

## **7. Relevant information for market parties from Local Implementation Project (LIP)**

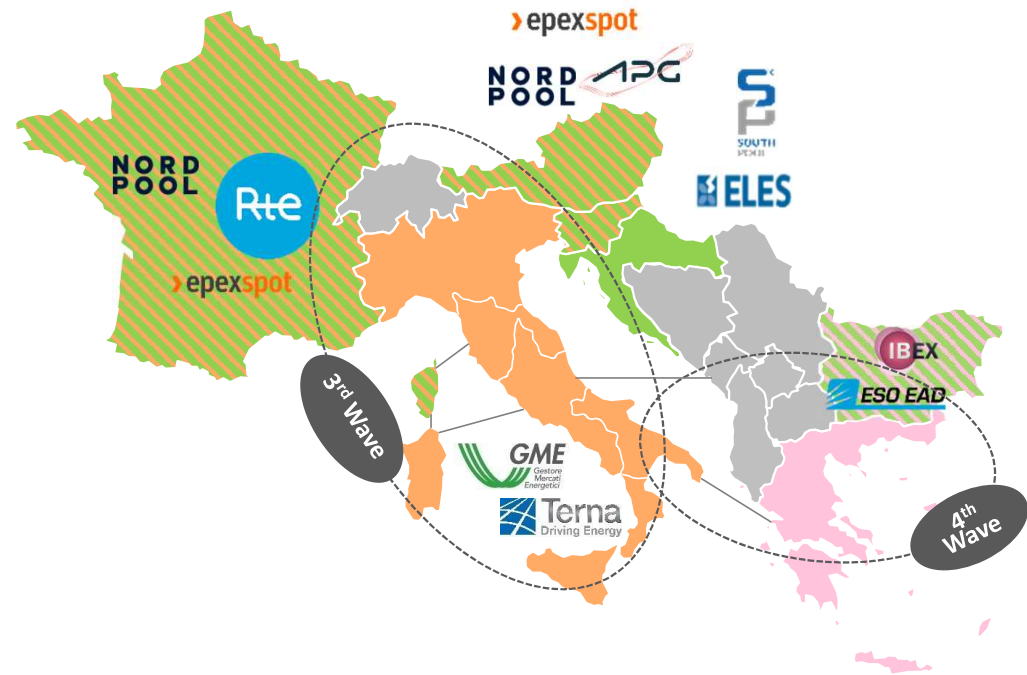
**13:00-13:35**

Fabrizio Carboni (GME)  
Viviana Rossetti (Terna)

29<sup>th</sup> April 2021

Overview of 3<sup>rd</sup> and 4<sup>th</sup> go-live waves and parties involved

LIP	Go-live	Border	Participants	Foreseen allocation
14	3rd wave	IT-FR, IT-AT, IT-SI, Italian Internal BZBs	<b>NEMOs:</b> GME, BSP, EPEX, EMCO <b>TSOs:</b> TERN, RTE, APG, ELES	Implicit
	4th wave	GR-IT, GR-BG	<b>NEMOs:</b> HENEX, GME, IBEX <b>TSOs:</b> IPTO, TERN, ESO	Implicit

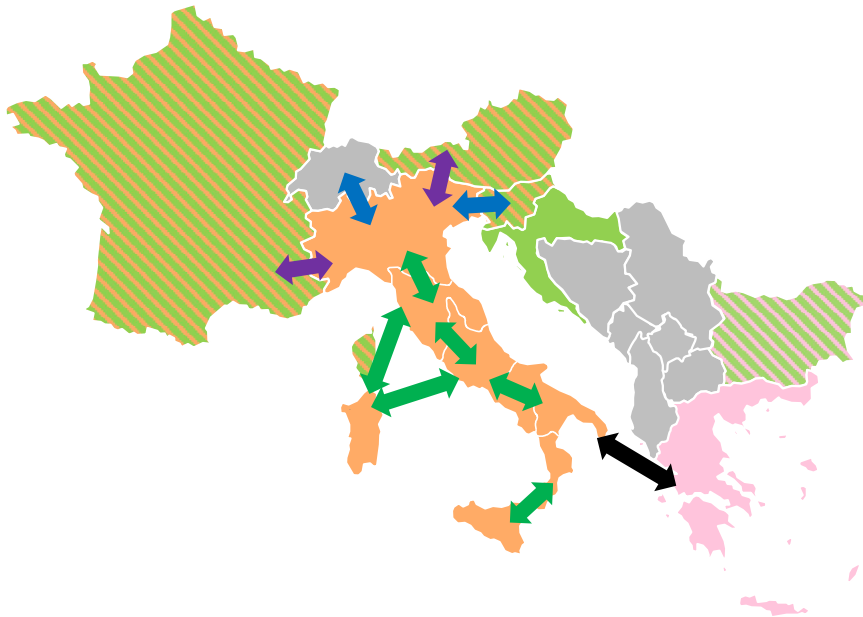


- Operational
- 3rd wave
- 4th wave
- Operational, part of 3rd wave
- Operational, part of 4th wave

## Type of cross-zonal capacity allocation

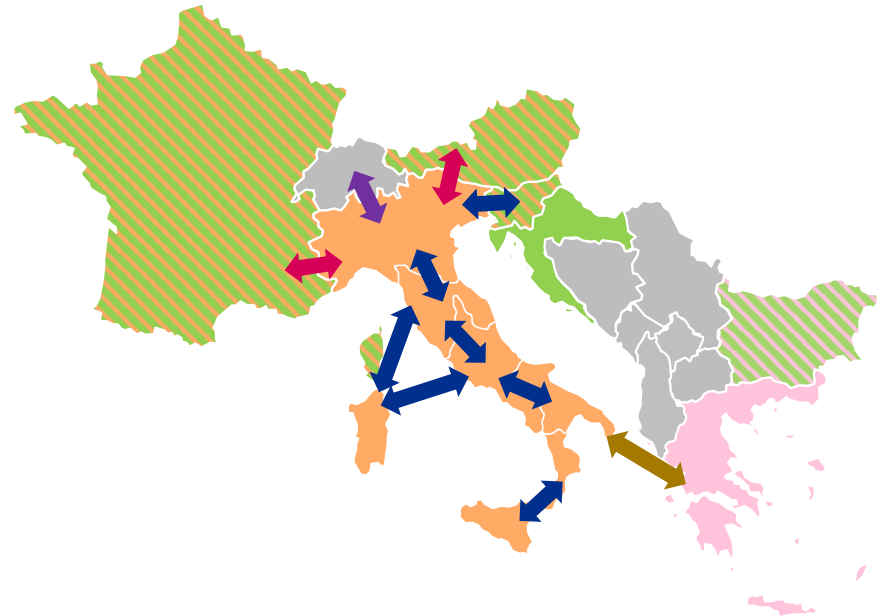
### Today

- 2 Implicit auctions
- 7 Implicit auctions
- 2 Explicit Auctions
- No Intraday



### As of 22.09.2021

- Implicit Continuous + 3 Implicit Auctions (CRIDAs)
- Implicit Continuous
- 3 Implicit auctions (CRIDAs)
- 2 Explicit auctions (not part of LIP 14)





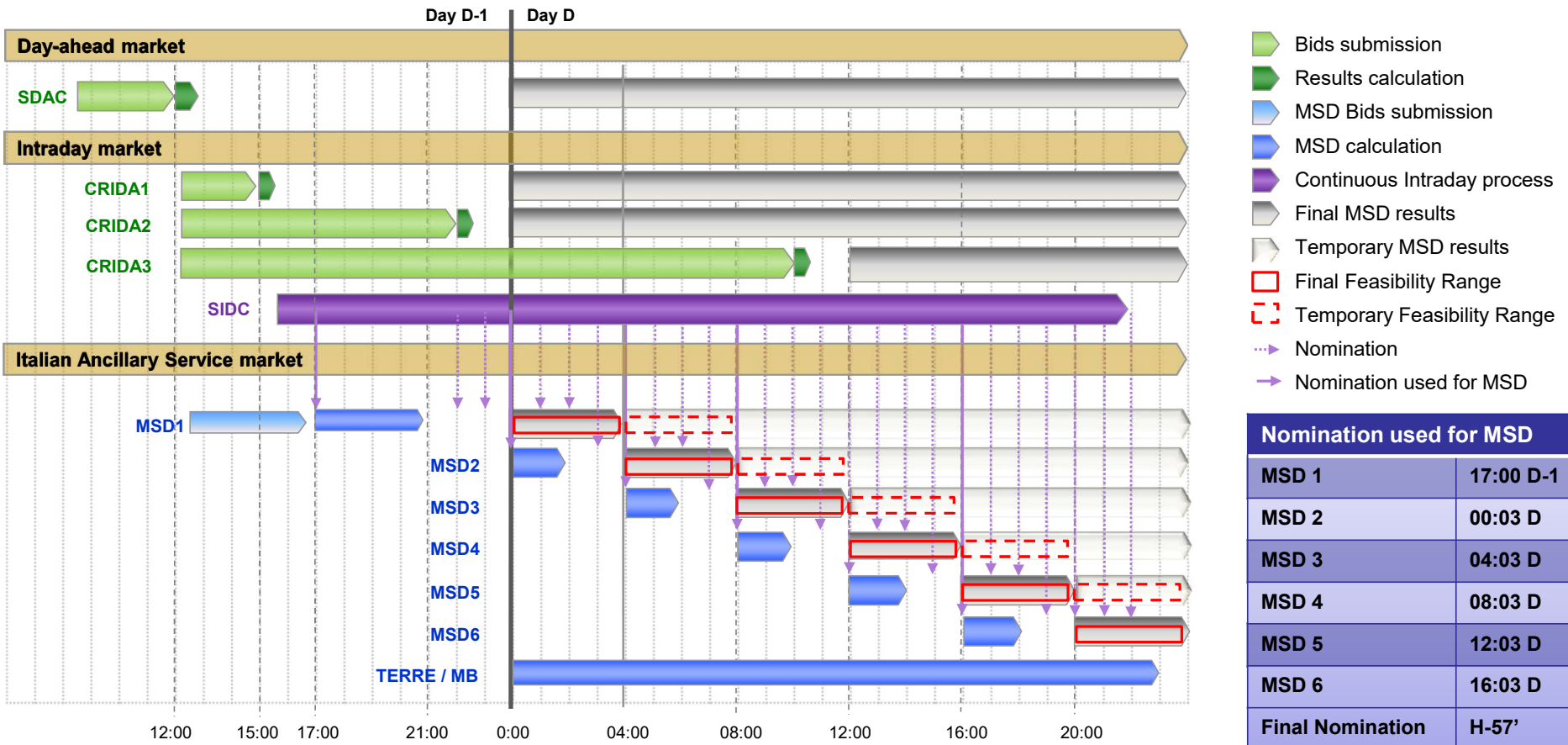
## Coordination between SIDC and Italian Ancillary Service Market (1/2)

- Terna applies a **central-dispatch model** procuring most of the ancillary service resources through an **integrated scheduling process (MSD)** after the day-ahead market based on several sessions
- In the **current approach**, the last session of **MSD runs** after the gate closure of the intraday process **when the energy market is closed**
- The introduction of the continuous intraday process with gate closure 60' before delivery changes completely the MSD approach and the **MSD session will have to run in parallel with the intraday continuous process**
- **Central-dispatch model** is currently transposed in **Italian spot markets** across all timeframes, **by allowing "unit-specific" trading**. **Portfolio bidding** shall be supported as well by GME and Terna on **intraday continuous trading (XBID)**, to accommodate **more flexible trading mechanism**, thus requiring the introduction of a **Nomination** process for Italian BRPs

### Coordination between MSD and SIDC is required

- **Nomination** of the energy negotiated portfolio based is required before each MSD session and after IDCZGCT
- Nominations of the units participating to MSD shall respect the **Feasibility Range** set by Terna in the MSD sessions
- Difference between the balance of the portfolio in the energy market and the nominations is subject to **Imbalance price** (single imbalance price of the not enabled units)

## Coordination between SIDC and Italian Ancillary Service Market (2/2)



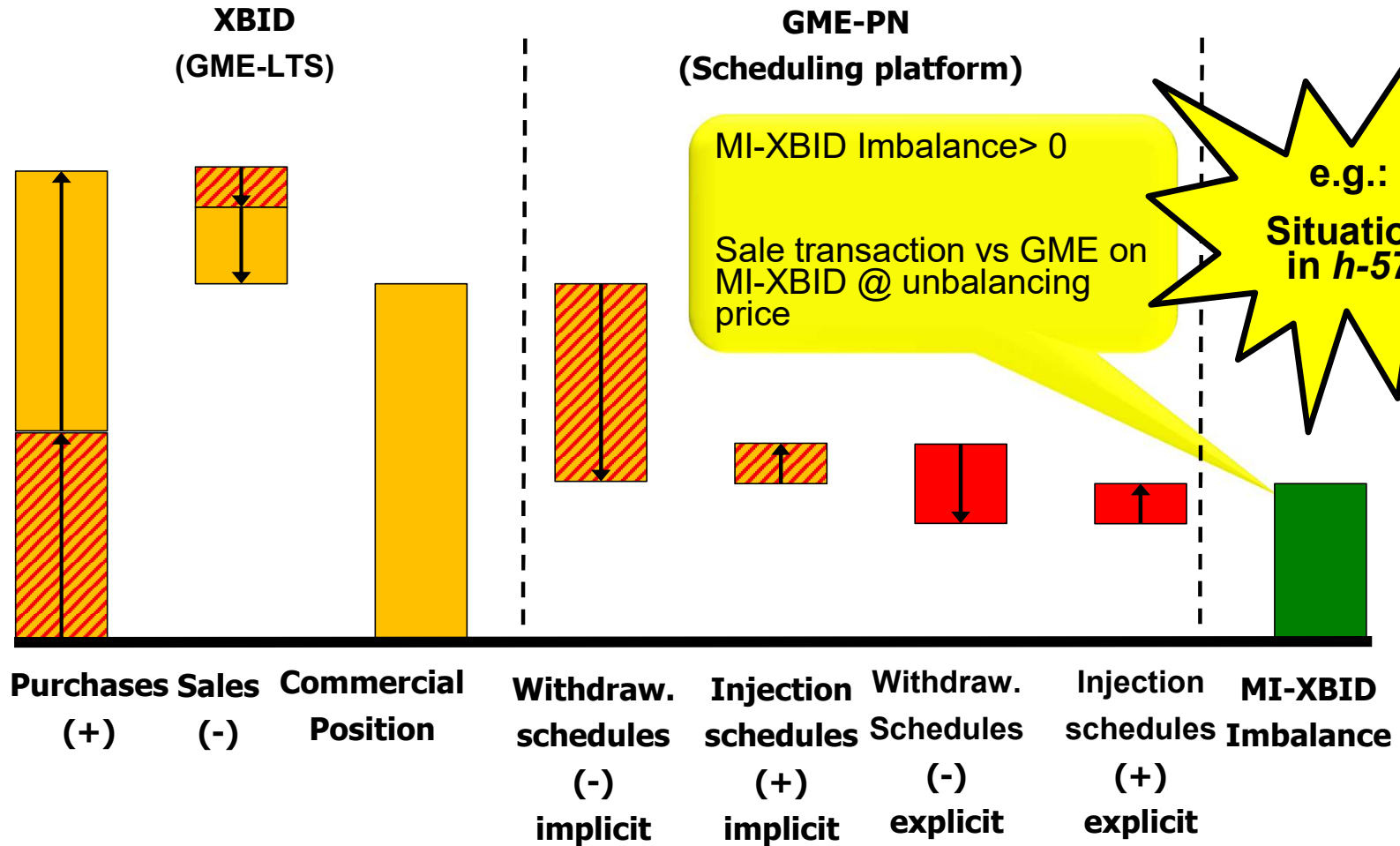
## Trading on SIDC for Italian Parties (1/2)

- Both **portfolio** and **unit specific bidding** is **allowed** on GME Local Trading Systems connected to **XBID**
- Each GME's **market participant** in each **bidding zone** is assigned 1 **portfolio** with **all units @zonal price** (UP/UPV/UCV/UPM) in its availability (Dispatching User or delegation)
- **Market participant** can **choose** whether to refer each offer to the **portfolio** (= indiscriminately to all units) or to the individual **unit @ zonal price**
- The **units @ PUN** (UC) are **not part** of the **portfolio (only unit-specific bidding allowed)**
- **Trading limit** for sale and purchase in case of **unit-specific bidding**: = **upward and downward margins of each unit**
- **Trading limit** for sale and purchase in case of **portfolio bidding**: =  **$\Sigma$  upward and downward margins of all units** of the portfolio
- In defining upward/downward margins, **feasibility range** imposed by Terna are taken into consideration for **unit participating to ancillary service market**

## Trading on SIDC for Italian Parties (2/2)

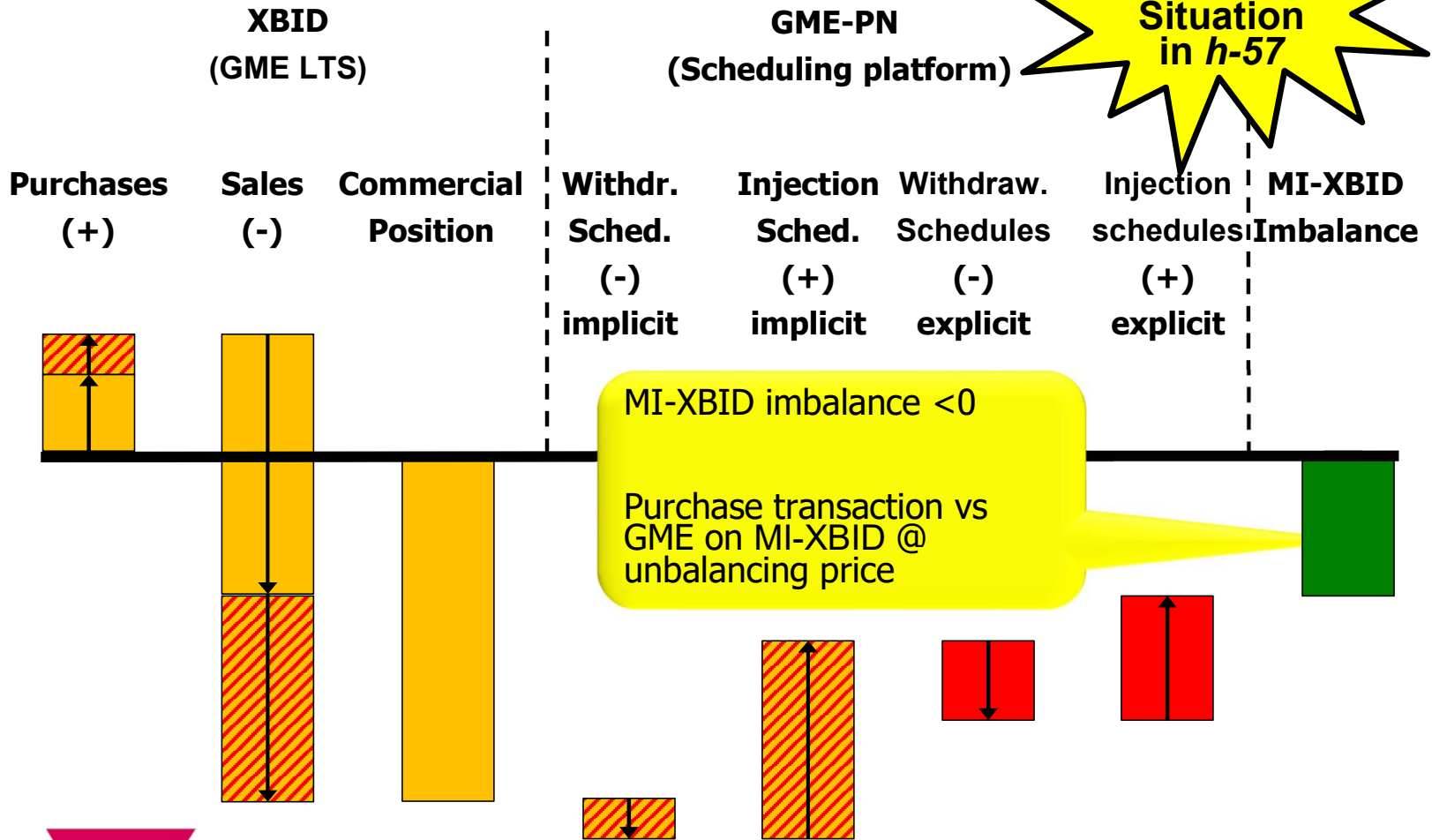
- Trades of each market participant on GME's LTS (both unit and portfolio), determine in each hour  $h$  a "zonal" commercial position (portfolio balance) for
  - every portfolio:  $\Sigma$  buy (+) and sell (-) offers referring both to the portfolio and to the units @zonal price from the same zone;
  - every units @ PUN (UC):  $\Sigma$  buy (+) and sell (-) offers
- The "zonal" portfolio balance accrued for each hour  $h$  must be «scheduled » (attributed to the corresponding units)
- Trading on GME's LTS via unit specific bidding corresponds to an "implicit" nomination
  - Market participants do not need to perform any nomination process, since trade accepted on each unit are automatically translated by GME into injection/withdrawal schedule
- Trading on GME's LTS via portfolio bidding requires an "explicit" nomination to be performed
  - Market participants need to perform an explicit nomination process on GME's Piattaforma di Nomina - PN (Scheduling Platform) by h-57' in order not to incur in any imbalance
  - The schedules "explicitly" nominated are verified as being congruous with respect to the corresponding commercial position of the portfolio to which they refer (unit @ zonal price) and the margins (feasibility intervals) of the units
- On each zonal Portfolio, for each hour  $h$ , market participants may incur an imbalance equal to:
  - $\Sigma$  purchase (+) and sale (-) offers (portfolio balance)
  - +
  - $\Sigma$  withdrawal (-) and injection (+) schedules (both implicitly and explicitly nominated)

Trading on SIDC and nomination for Italian Parties: examples (1/3)



Trading on SIDC and nomination for Italian Parties: examples (2/3)

e.g.:  
**Situation in h-57**

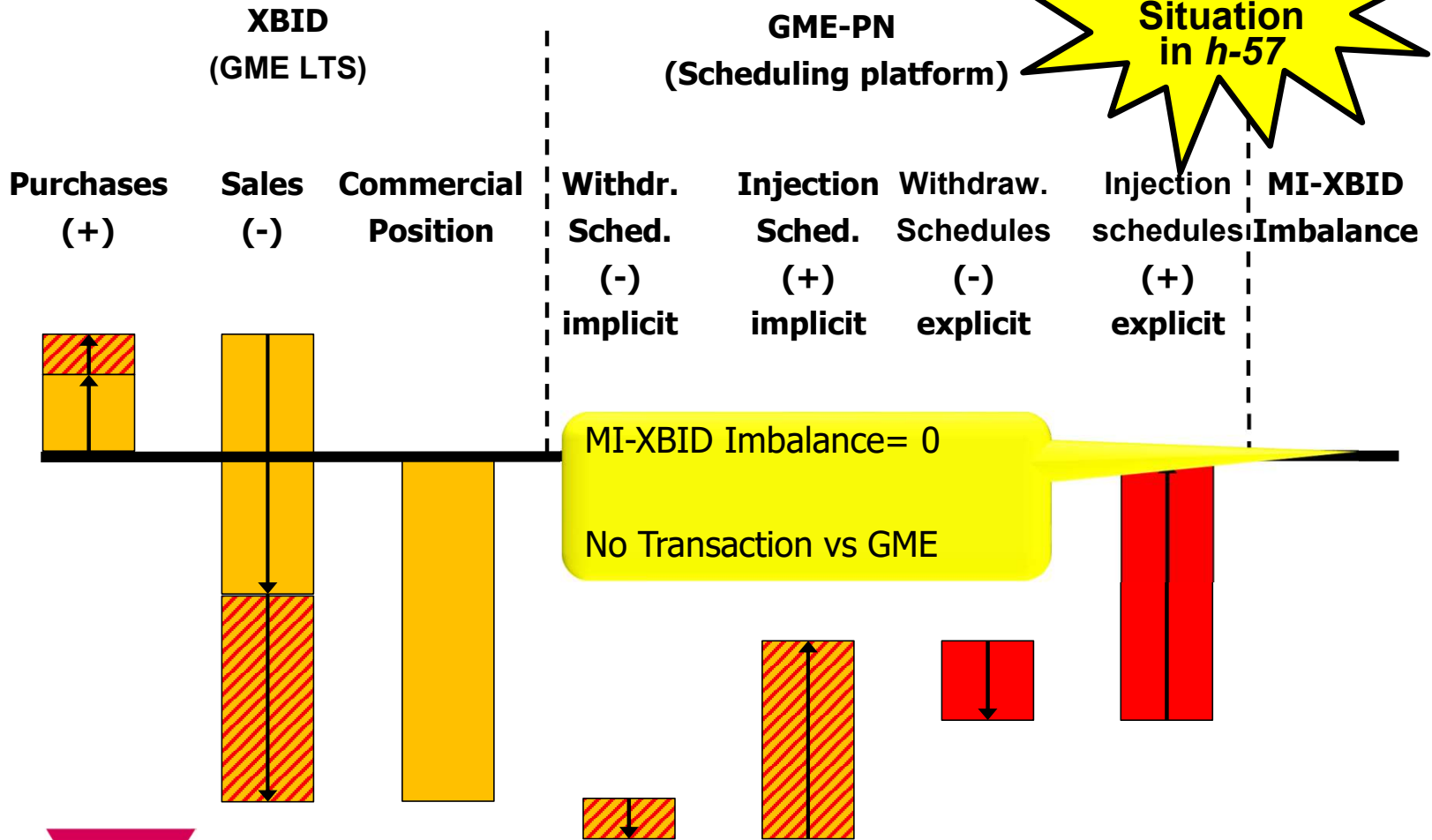


SIDC Single Intraday Coupling



Trading on SIDC and nomination for Italian Parties: examples (3/3)

e.g.:  
**Situation in h-57**



## **8. Member's trial period, go-live plan and next steps for readiness**

**13:35-13:55**

Mario Pession (GME)  
Rosario Franzone (Terna)

29<sup>th</sup> April 2021



## 1. Market Trial (1)

### What is the Market Trial?

- The Market Trial Period gives the Market Participant the **opportunity to connect via Local Trading Systems (LTS) of the NEMOs to the SIDC system and to perform the CRIDA auctions** (Slovenia, Italian and Greek regional auctions)
- Isolated tests with Italian participants on both platforms were already performed in previous weeks.
- **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 LIP14) are the main communication interface for both technical and organizational matters – **connectivity details and credentials will be communicated locally**
- Mainly focused on the new 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.

## 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 CRIDA process
  - With the new Italian market processes (integration between energy market and ancillary service market)
  - **Post-coupling activities like nominations are out of scope** of the Market Trial.
- **Period of execution:**
  - 1<sup>st</sup> timeslot: 21/06/2021 - 25/06/2021
  - 2<sup>nd</sup> timeslot: 28/06/2021 - 02/07/2021
  - 3<sup>rd</sup> timeslot: 05/07/2021 – 09/07/2021 (mandatory for TERNA and GME)
  - 4<sup>th</sup> timeslot: 06/09/2021 - 10/09/2021 (contingency week)
    - Note: **Activation of the 4<sup>th</sup> timeslot is subject to LIP14 approval.**
- Participation of Italian NEMO and TSO is mandatory for 3rd timeslot of the Market Trial Period, but it may be open to other parties as well.

## 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 LIP 14) – 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)

### 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 16.30 – results and reopening of continuous trading 17.00

(on the 3rd slot production timing is used: 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)

## 1. Market Trial (5)

### Detailed Schedule\*:

- **1<sup>st</sup> Timeslot, week:** 21/06/2021 - 25/06/2021
  - Mo 21.06.2021 Normal operations (XBID and CRIDAs 1 and 2)
  - Tu 22.06.2021 XBID Closing/Reopening of Italian market + CRIDAs
  - We 23.06.2021 XBID Closing of several market(s) + CRIDAs
  - Th 24.06.2021 XBID Closing of Italy-French border + CRIDAs + CRIDA2 cancellation
  - Fr 25.06.2021 XBID unavailability + only CRIDA3
- **2<sup>nd</sup> Timeslot, week:** 28/06/2021 - 02/07/2021
  - Mo 28.06.2021 Normal operations (XBID and CRIDAs 1 and 2)
  - Tu 29.06.2021 No testing planned (bank-holiday in Rome)
  - We 30.06.2021 Normal operations (XBID+CRIDA)
  - Th 01.07.2021 Normal operations (XBID+CRIDA)
  - Fr 02.07.2021 Normal operations (XBID + only CRIDA3)

\* Test scenario could be subject to revision

## 1. Market Trial (6)

### Detailed Schedule:

- **3<sup>rd</sup> Timeslot, week:** 05/07/2021 – 09/07/2021 (mandatory for TERNA and GME)
  - for Italian market participants
  - Normal Operation
  - Italian Ancillary Service Market tests
- **4<sup>th</sup> Timeslot, week:** 06/09/2021 - 10/09/2021 (contingency week)
  - Reserved for additional Trial Period testing if activated by the SIDC project
  - **Normal operations** = testing against production-like products
  - **Closing of market(s)/borders** = simulations of situations where specific messages will be communicated, specific local NEMO processes in local trading systems might be proposed

SIDC Single Intraday  
Coupling



Go-live

**Go-live is expected to be 21/09 for flow date 22/09**

## **9. Future plan for SIDC**

**13:55 -14:15**

Gilbert Guntschnig (SIDC TSOs Project Manager, APG)

29<sup>th</sup> April 2021

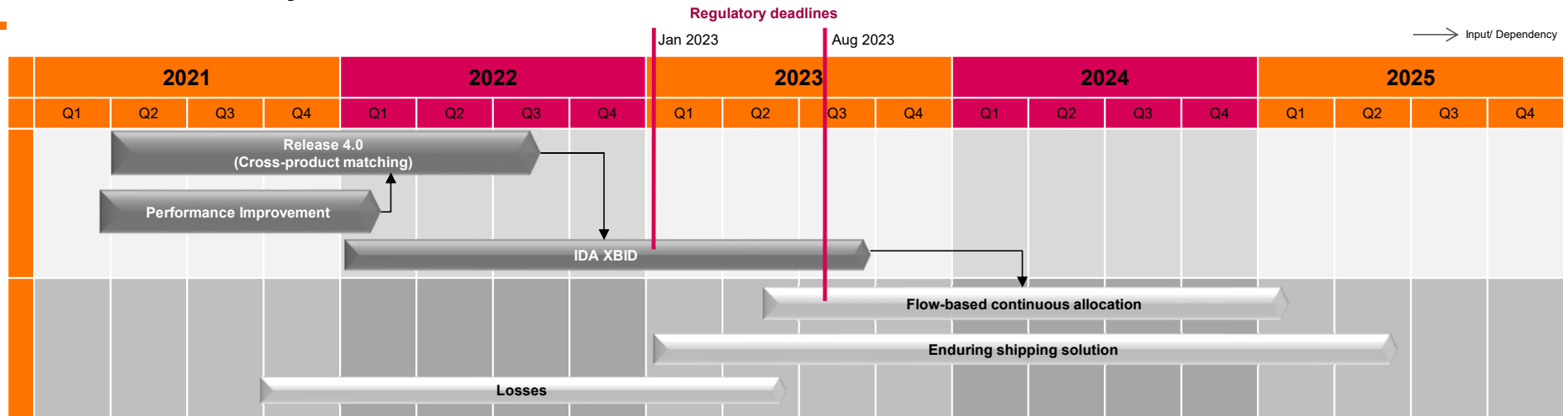


## SIDC- Future Roadmap

- SIDC has achieved major milestones with the 1<sup>st</sup> and 2<sup>nd</sup> wave go-lives, the forthcoming 3<sup>rd</sup> wave go-live will be an essential step to complete the Single European Intraday Market.
- SIDC now enters into a new phase in which its focus will be increasingly directed towards research and development of complex new functionalities, which will deliver further important benefits to the market, such as
  - **Cross-product matching**
  - **Intraday Auctions**
  - **Flow-based continuous allocation**
  - **Losses on HVDC lines**
  - **Enduring shipping solution**
  - **Maintaining the performance**
- In parallel, additional changes will be analysed and implemented with the aim to improve the system usability for SIDC operations and to roll-out existing functionality across Europe.



## SIDC Roadmap 2021-2025



- This roadmap illustrates the project’s best estimate based on the experience gained.
  - Chevrons show central development and testing activities, design phases are not depicted.
  - For the functionalities shown in light grey the start time of development remains unclear.
- Development and testing of releases cannot be done in parallel thus dependencies between major deliverables needs to be foreseen.
  - Testing a new release takes 6 months+, this means that there can be no more than one major release p.a.
- The scoping of future releases is still to be decided. This could result in the merging of some of the above deliverables into one bigger release in case this turns out to be feasible.

## SIDC Roadmap 2021-2025

### Cross Product Matching (CPM)



Enables matching between

- 15-min and 60-min products, 30-min and 60-min products, 15-min and 30-min products and
- any combination of the mentioned products, for example two 15-min and one 30-min product against one 60-min product.



- Design of central system changes is almost finalised. This phase will be followed by system development, which is expected to start in Q2 2021. Securing the performance will be one of the main challenges on the way to implementing CPM.
- Once the technical design is agreed, SIDC will organize a **webinar** for market participants to explain the impact on SIDC trading in detail and to prepare for the upcoming change.

## SIDC Roadmap 2021-2025

### 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 will enable the pricing of transmission capacity in the intraday timeframe as provided for in the CACM regulation.
- For efficiency reasons the infrastructure used for the auctions in day ahead (SDAC) will be reused for the operation of the IDAs.



- High level design has been finalised. SIDC aims to decide on how the interface between SIDC and the day ahead infrastructure will be designed in the coming weeks.
- Once this decision is taken, the changes to be implemented both in the intraday (SIDC) as well as in the day ahead (SDAC) infrastructure will be elaborated in detail.
- The system development in SIDC could theoretically start three months after the decision on the interface is taken.

## SIDC Geographical Extension

- The extension of the coupled Intraday region remains an SIDC priority.
- Contrary to previous releases the dependency between major SIDC releases and geographical extensions is no longer a limiting factor, ie. additional countries will be integrated into SIDC as soon as their local developments are ready and go-live preparations are carried out.
- Plans for the integration of the 4<sup>th</sup> wave borders are already made.

LIP 14		4 <sup>th</sup> Go-live wave
	Greece - Italy	Planned Q1 2022
	Greece - Bulgaria	
LIP 17		5 <sup>th</sup> Go-live wave
	Slovakia - Czech Republic	Planned Q4 2022
	Slovakia - Poland	
	Slovakia - Hungary	

## Future Governance

- SIDC is currently setting up a joint governance structure with SDAC.
- The cornerstone of the joint governance is the merging of the steering bodies of SDAC and SIDC to the so-called **Market Coupling Steering Committee**.
  - This will allow decision-making beyond the individual projects for topics that affect both SDAC as well as SIDC (eg. Intraday Auctions which are under SIDC responsibility but use infrastructure that was initially conceived for day-ahead)
- The legal and the communication working groups of both projects will be merged as well.
- The governance changes need to be reflected in the operational agreements of the projects, and these contract adaptation are currently underway.
- The new contracts will undergo regulatory approval where necessary before they are signed by the member parties.
- Implementation of the new governance is planned in Q1 2022.



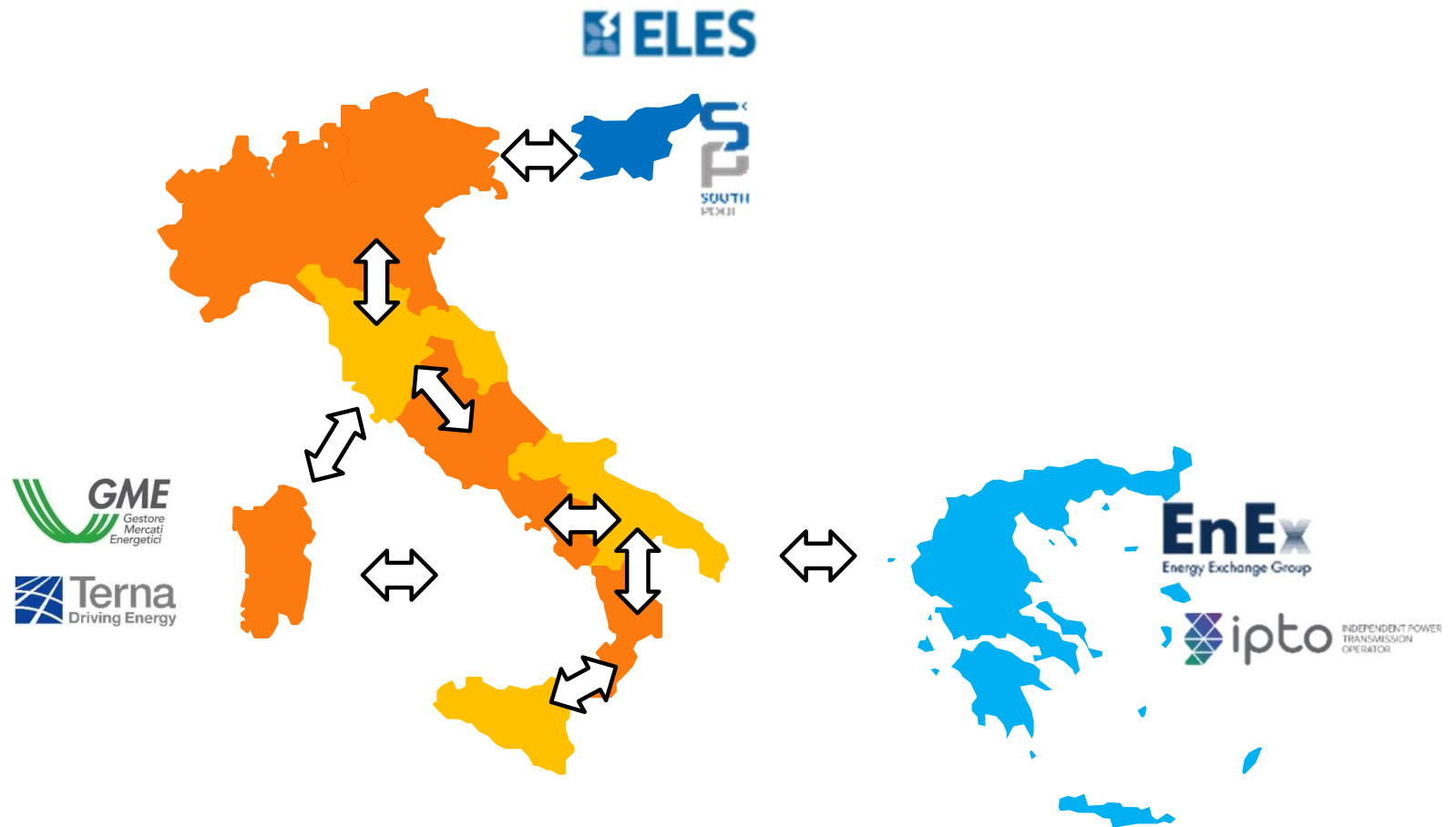
## **10. CRIDA**

**14:15-14:55**

Fabrizio Carboni and Mario Pession (GME)  
Paolo Fanelli (Terna)

29<sup>th</sup> April 2021

1. Overview of CRIDA: geographical scope





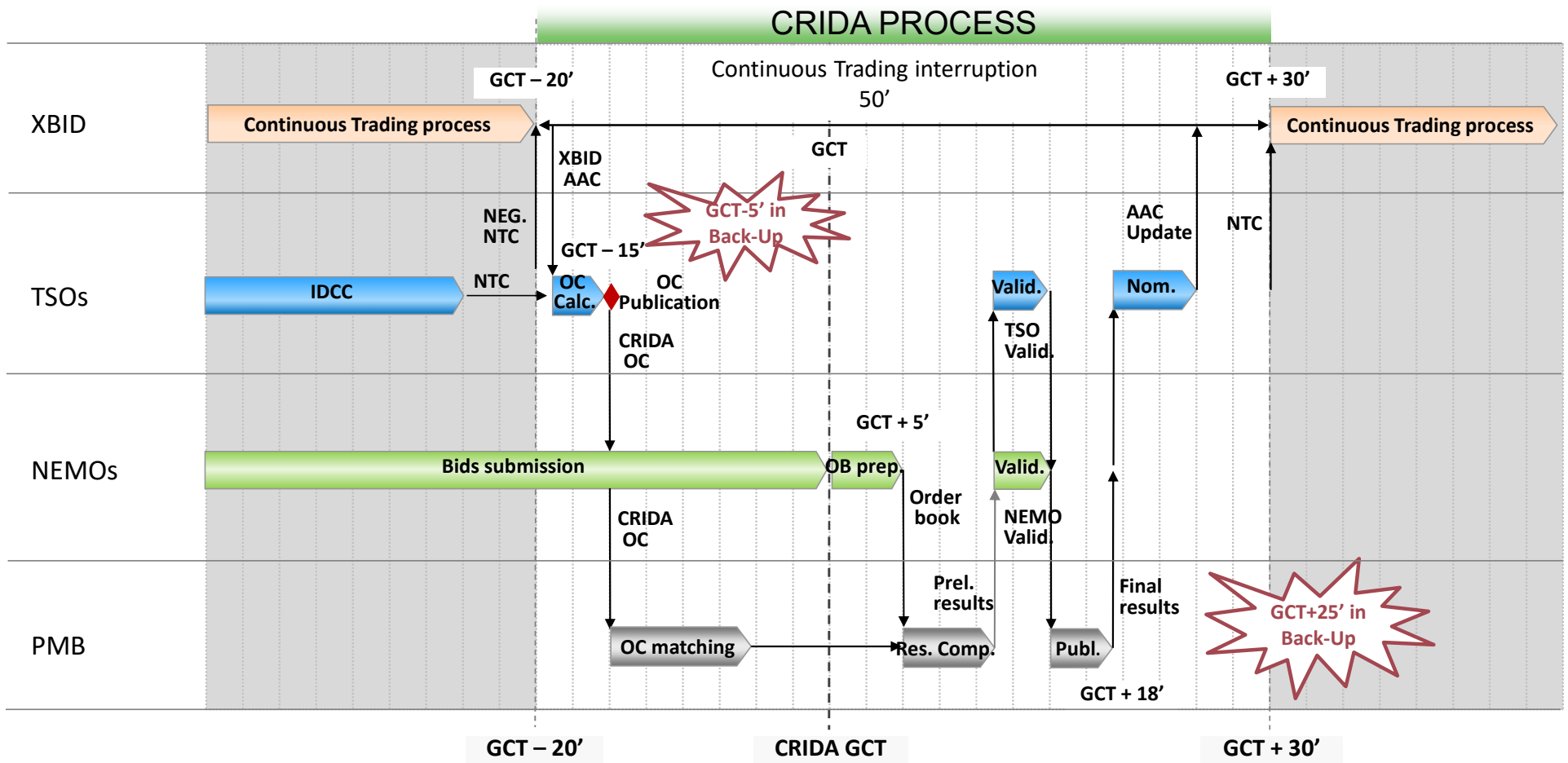
## 2. Overview of CRIDA: background

- Complementary Regional Auctions based on price coupling mechanism
  - Approved methodology by NRAs of Italy North and Greece-Italy CCR according to art. 63 of CACM
  - Compliant with art. 55 of CACM (*Pricing of Intraday capacity*) -> early implementation of the *Intraday Auctions for Pricing* (IDA)
  - Regional scope: implicit auction for capacity allocation across bidding zones (BZs) of Italy, Slovenia and Greece based on same assets and algorithm adopted in SDAC
  - Capacity allocation with reliable price signals reflecting market congestions on the intraday timeframe
  - Timing of the CRIDAs (similar to IDAs) based on the Intraday coordinated Capacity Calculation (IDCC) processes at regional level

### 3. Overview of CRIDA: timing, tradable hours and Offered Transmission Capacity (OC)

- **CRIDA** is composed of 3 different implicit auctions.
  - **1st CRIDA** (MI1 in Italian market):
    - Timings: Gate closure at 15:00 D-1 → Publication of Results at 15:30 D-1
    - Tradable hours: all 24 hours D
    - OC: «residual» available capacity after SDAC
  - **2nd CRIDA** (MI2 in Italian market):
    - Timings: Gate closure at 22:00 D-1 → Publication of Results at 22:30 D
    - Tradable hours: all 24 hours D
    - OC: available capacity after recalculation IDCC1 (starting from end of 2022)
  - **3rd CRIDA** (MI3 in Italian market):
    - Timings: Gate closure at 10:00 D → Publication of Results at 10:30 D
    - Tradable hours: 12.00 – 24.00 (13<sup>th</sup> h - 24<sup>th</sup> h) D
    - OC: available capacity after recalculation IDCC2

## 4. Timing of CRIDA process



## 5. Products offered in the CRIDAs

		CRIDAs		
		Greece	Italy	Slovenia
<b>Size</b>		Min vol. Increment 0.1 MW	Min vol. Increment 0.001 MW	Min vol. Increment 0.1 MW
<b>Price Tick</b>		EUR 0.01 per MWh		
<b>Price Range</b>		-9 999 €/MWh to 9 999 €/MWh		
<b>Products</b>	15-min			
	30-min			
	Hourly	X	X	X

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

## General Q&A + Summary and close

14:55-15:10

29<sup>th</sup> April 2021



**Thank you for your attention!**

29<sup>th</sup> April 2021