



Trans European Replacement Reserve Exchange

Stakeholders meeting
17th December 2014



Please note that these slides are a snapshot of the current status of the TERRE work streams

The information provided is still under discussion and does not reflect the final status of the project



Agenda

Context

Project description

Focus: TERRE Product

Focus: TERRE CMO

Focus: TERRE Settlement

Focus: TERRE CBA

Plan

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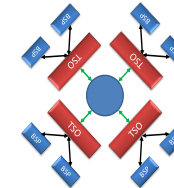
Context

Context

TERRE = Pilot Project validated by ENTSO-E for RR exchanges

The Design of TERRE solution will be compliant with the requirements of:

- **The FW guidelines on Electricity Balancing**
- **The implementation of TSO-TSO balancing model**
- **The NC on Electricity Balancing (NCEB)**
 - Centralised and automatic management of XB capacity
 - Offer based on “cheapest” internal bids
 - Improved matching process...



The TERRE solution will enhance the experience of current Balit bilateral solution used between NG-RTE, REE-RTE and REN-REE

The TERRE project will use as an input the previous work of REN, REE and RTE on enduring regional solution for the exchange of balancing energy between TSOs

TSOs involved = more than 80% of TSOs using RR

REN ✓

NGET ✓

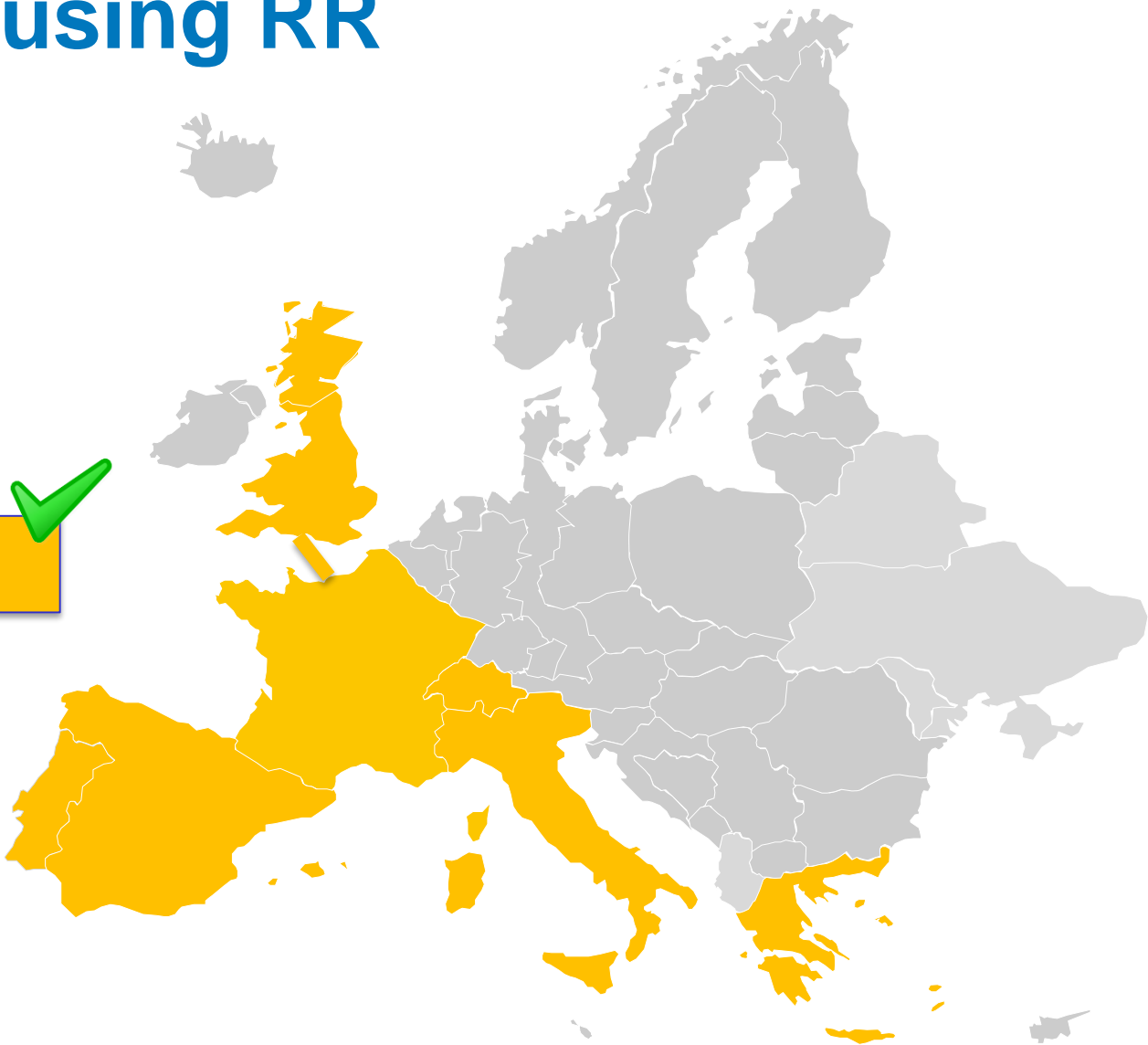
TERNA ✓

REE ✓

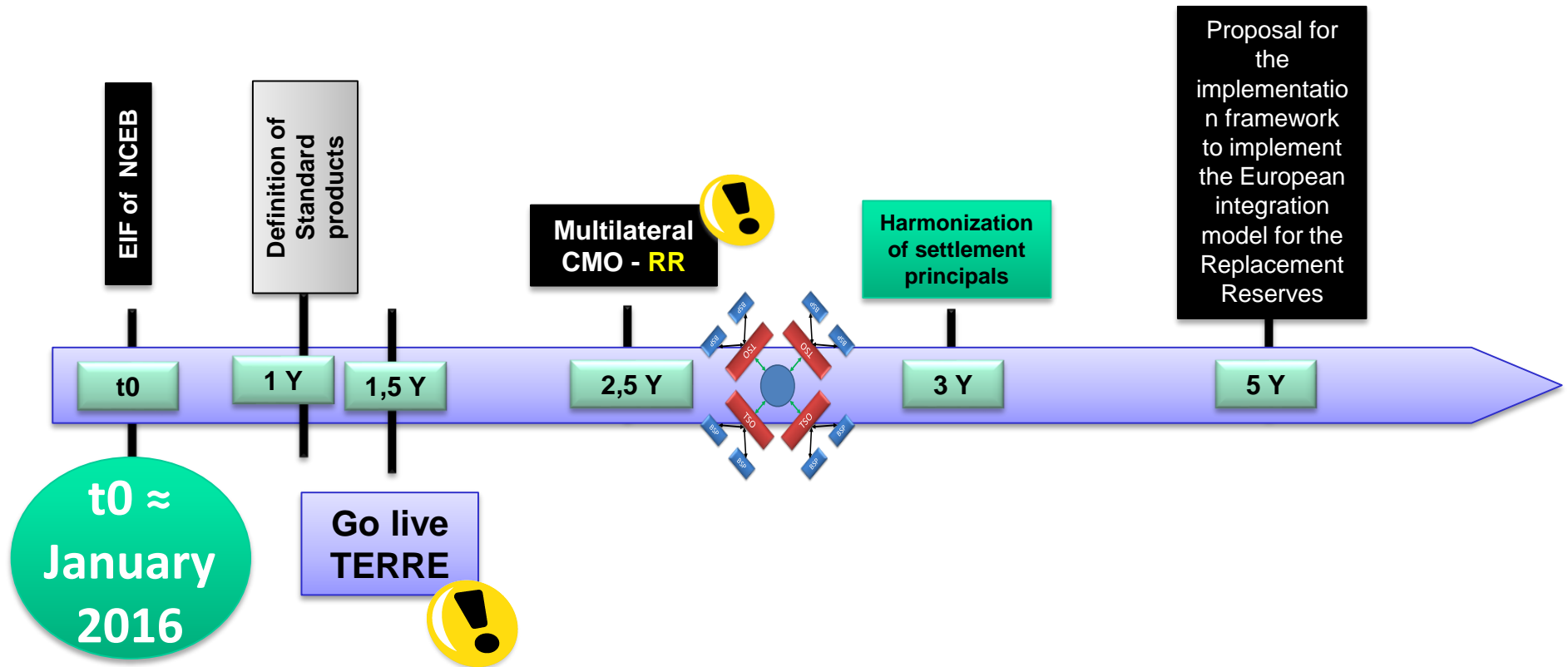
RTE ✓

ADMIE ✓

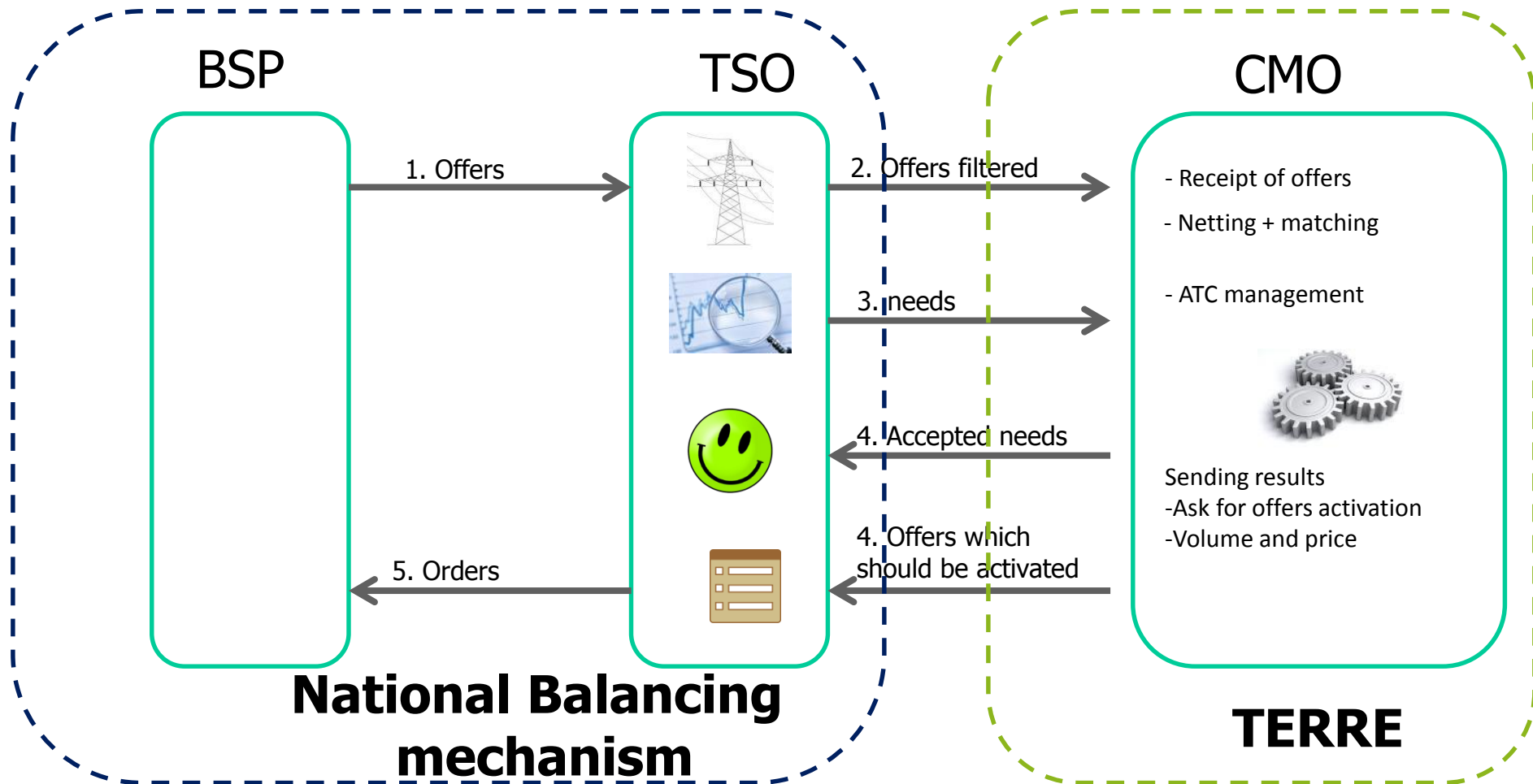
Swissgrid ✓



TERRE in the NCEB context



TERRE and local mechanisms



Local implementation of TERRE project will be carried by the national market frameworks

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Project description

Working axes

1

Definition of the standard TERRE products

RR offer by BSP

RR requests by TSO



2

Balancing CMO

«FCFS» will be improved by «Algorithmic optimization» including automatic ATC management



3

Settlement procedure

Marginal price as preferred solution for XB exchange

Definition of Financial settlement between the TSOs



4

Cost-Benefit analysis

Study of the potential financial benefit (social welfare)



Working axes

5

Timing and scheduling

6

ATC management

Centralized ATC management module
Interaction between the Intra-day market and the TERRE process

7

Governance issues

Preparation of the NRAs approval process
Preparation of the Implementation Phase

Communication and consultation process

Discussions will be launched between TSOs and NRAs in order to set up the best discussion, exchange and consultation framework for TERRE project

The TSOs will organize within 2015 an ad-hoc TERRE stakeholders meeting

In parallel, each TSO involved in TERRE will communicate (at periodic meetings and/or specific local workshop) with local market participants for discussing TERRE development

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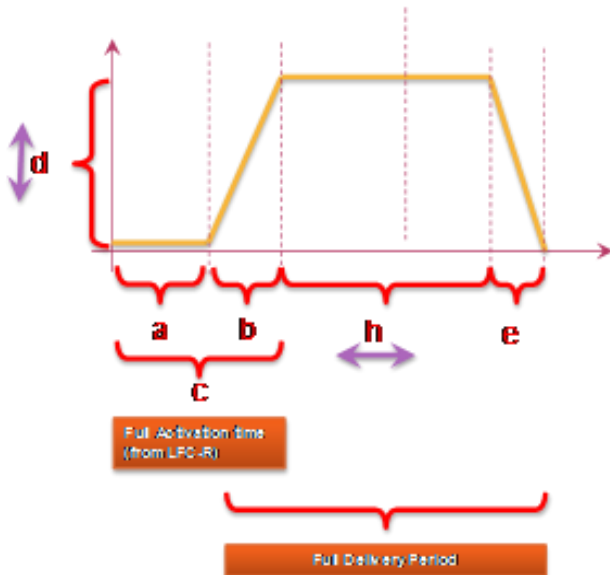


Focus: TERRE Product

TERRE product

TERRE product should:

- be compliant with TSOs requirements
- be as close as possible with the RR standard product definition
- be scheduled and manually activated



- (a) Preparation Period
- (b) Ramping Period
- (c) Full Activation Time;
- (d) minimum and maximum quantity;
- (e) Deactivation Period;
- (f) Price of the Bid;
- (g) Divisibility;
- (h) minimum and maximum duration of Delivery Period;
- (i) The Bidding Zone where the bid is located;
- (j) Validity Period;
- (k) Mode of Activation.
- (l) minimal duration between end of Deactivation Period and the beginning of following Ramping Period

TERRE product

1- Preparation period = 0-30min

2- Ramping period = 0-30 min

2b- Full activation time ≤ 30 min (DMO)
Still under discussion

3- Min quantity = 1 MW

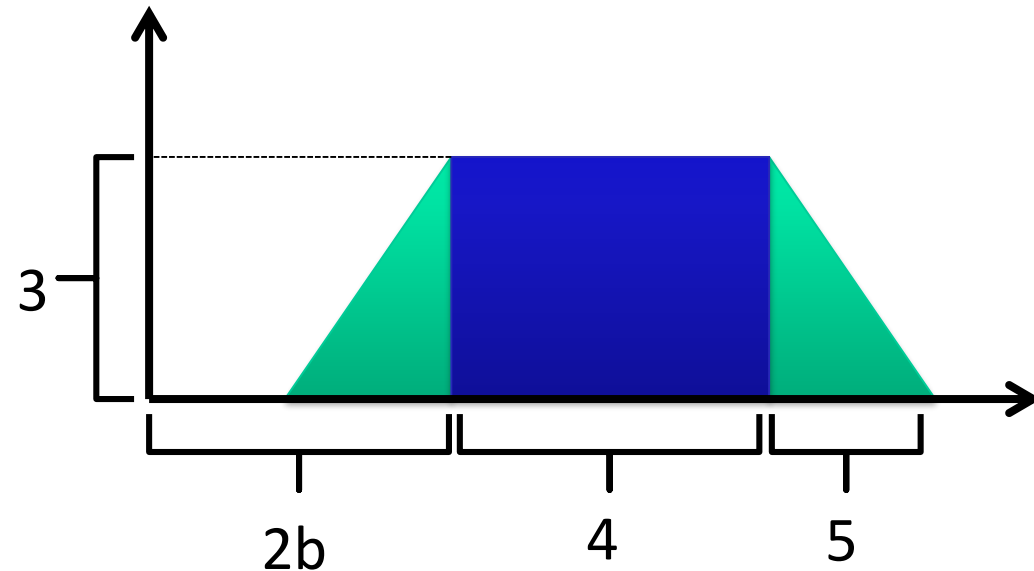
3- Max Delivery period = 60 min (DOmax)

4- Min Delivery period = 15min (DOmin)

5- Deactivation period = Ramping period

Time Divisibility : **To be fixed by BSP**

Quantity divisibility: 1MW (proposed by BSP)



The BSP could apply toward its connecting TSO an offer which represents several products

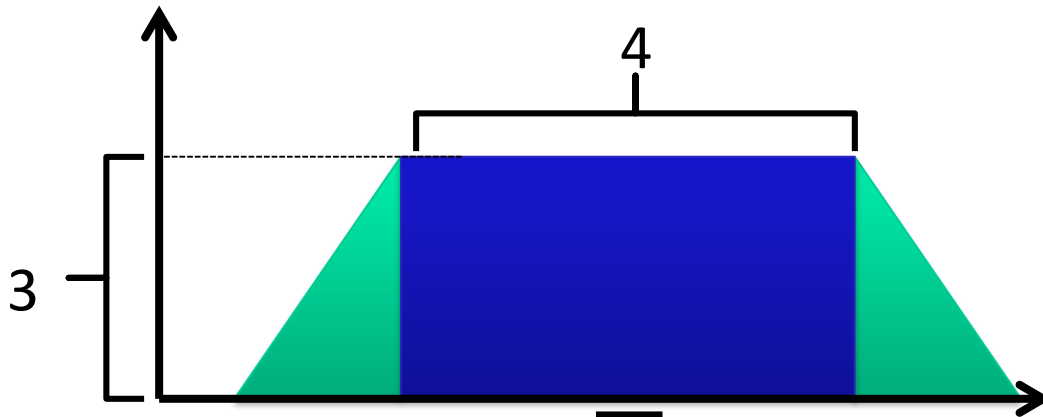
The TERRE CMO, based on TSOs needs, will select the offer required

TERRE product: Linked blocks / firmness of offers

- ❖ Minimum duration of TERRE product is 15 min (e.g. product cannot last 5 or 10 min)
- ❖ TERRE products can last 15, 30, 45 or 60 minutes (nX15min)
- ❖ BSPs can offer longer products (e.g. duration > 15 min) by linking several consecutive blocks (through time divisibility condition)
 - E.g. if a BSP links 2 blocks, the BSP shall be activated during (at least) 30 minutes
- ❖ The BSPs will include this information in the RR offer by putting different parameters in the product (e.g. duration, validity period, divisibility, etc)
- ❖ A BSP will be invited to send all parameters which represent the offer in order to have all information for the CMO processing

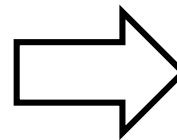
Once the offer is selected by the matching process and asked for activation, the connecting TSO is responsible for the energy delivery on its border.

TERRE product



=

Energy volume used for
the centralized matching



The financial flows
between BSP and
connecting TSO should be
defined (under national
framework)



Financial exchanges
between TSOs will be
based on this energy
volume

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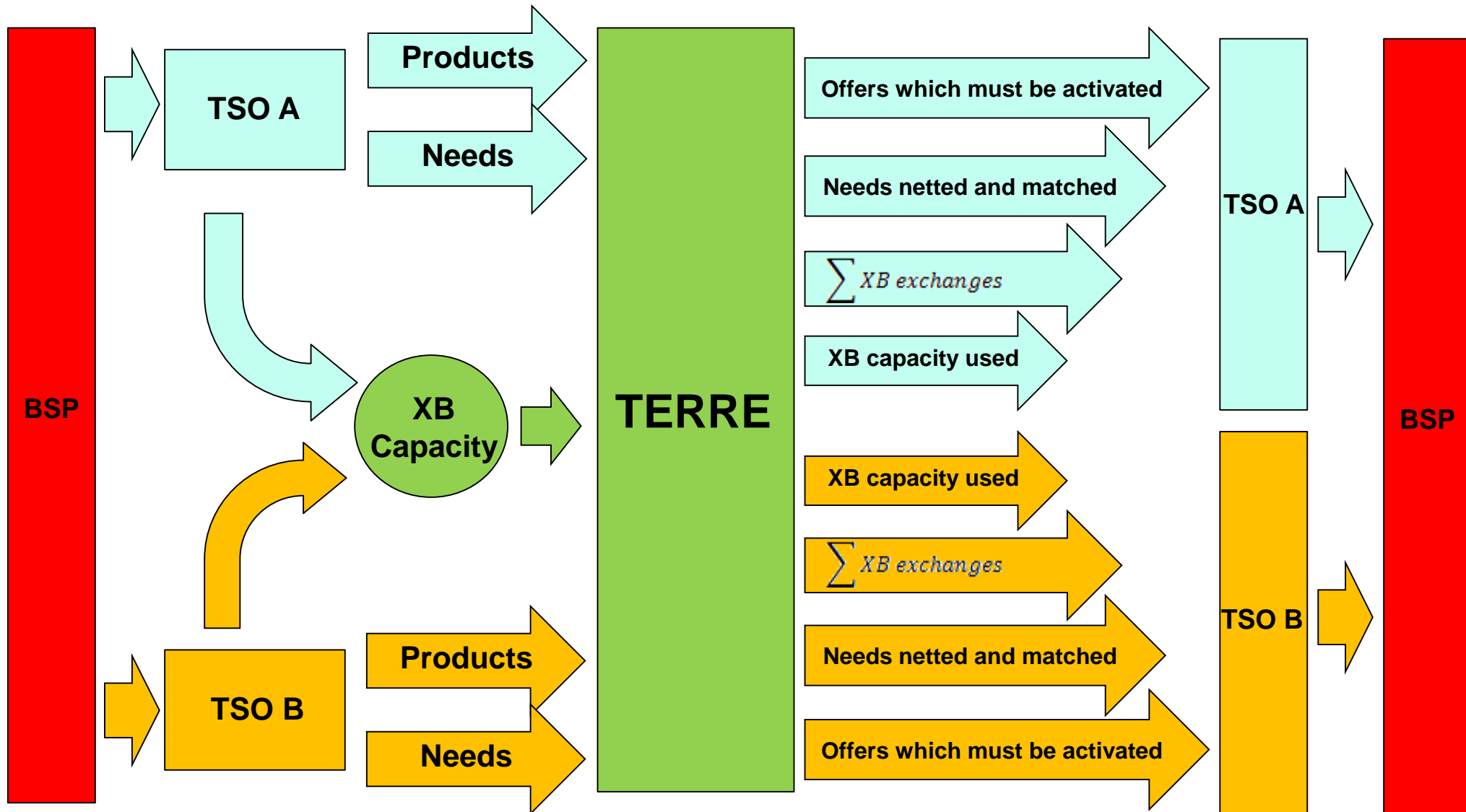


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Focus: TERRE CMO

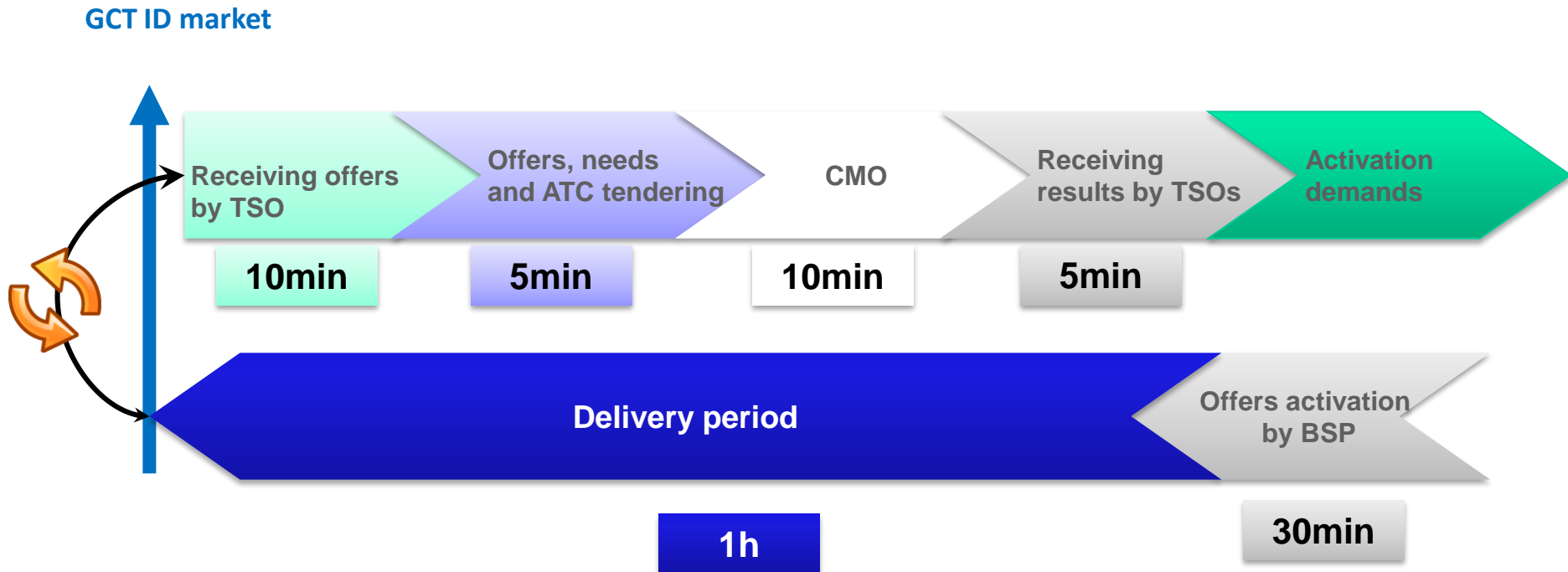
TERRE process



Needs

- ❖ Each TSO must submit to TERRE, after the ID GCT and before the TERRE algorithmic matching process, the need expected for the next hour/delivery period
- ❖ Following an initial qualitative study and analysis using a simplistic prototype, it was concluded that the most efficient matching solution is an algorithmic optimization based on implicit auctions model. A second study will now look at defining the “mathematical equations” of the algorithm
 - ➔ **The project focus its studies on algorithmic matching (CMO)**
- ❖ The aim of this centralized optimization will be:
 - **The netting of needs when it's economically efficient**
 - **The matching between the needs and the TERRE offers submitted by TSOs**
- ❖ The project will process quantitative simulations in order to demonstrate that this solution could be implemented at an “industrial” level

TERRE process (current proposal)



The process is still under discussions

- Warning: ID market GCT not harmonized
- The time allocated to the CMO is not completely defined yet

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Focus: Settlement

Settlement (I)

NC EB:

Article 39 GENERAL PROVISIONS

- “1. All TSOs shall harmonise the pricing methods for at least each Standard Product for Balancing Energy (...)*
- 2. No later than one year after the entry into force of this Network Code, all TSOs shall develop a proposal for the pricing methods of each Standard Product for Balancing Energy. The pricing methods shall be based on marginal pricing (pay-as-cleared), unless TSOs complement the proposal with a detailed analysis demonstrating that a different pricing method is more efficient for European-wide implementation pursuing the general objectives defined in Article 10. “*

Following the NC EB request, the proposal for settlement in TERRE CMO would be XB settlement based on marginal price

Settlement (II)

- ❖ **Settlement of TSO-TSO exchanged energy**
- ❖ **Governance of settlement tasks (TSO-TSO):**
 - **TSO-TSO Settlement Function (NC EB): Assumed by one/more TSOs, delegation to 3rd Party, etc**
- ❖ **TERRE settlement: global financial flows**
 - **Calculation of XB financial Flows**
 - **Firmness (TSO, BSP)**
 - **Penalties (TSO, BSP)**
 - **Impact on National Balancing Markets (Settlement TSO-BSP, TSO-BRP)**
 - **How to manage financial neutrality of TSOs**
- ❖ **Fallback procedure for settlement**

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Focus: CBA

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Plan

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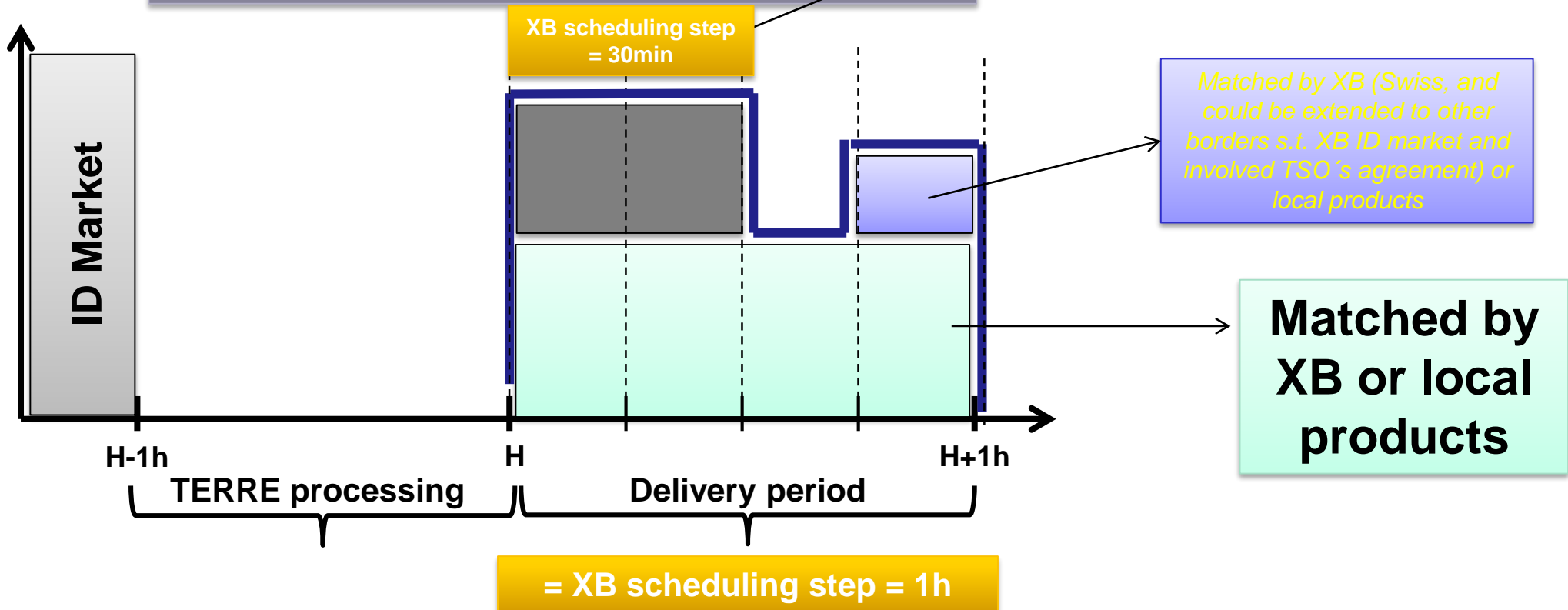
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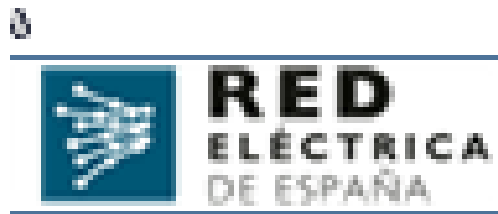
Annex

Matching example

Structure of TSO need (example)



If XB ID time market period = 1 hour, The TSO (Control Block) net position $\sum_{XB \text{ exchanges}}$ updated by TERRE results must be the same for the whole delivery hour, unless TSO's involved would agree a shorter timeframe for LFC Control Block process



Thank you...

