

Meeting NBM - Statnett and Svenska Kraftnät – a technical view

26.08.21

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Agenda

- Intro NBM – Eivind Lindeberg
- BSP Test - Approach in brief – Gudny Hauknes & Stein-Ole Gabrielsen
- Technical specifications - Anders Gisnås
- Test environments - Hans Erik Ruud
- Process – how do we go along? Hans Erik Ruud
- Transition and preparation for go-live – Per Otto Garsjø
- Q&A

What and why – Nordic Balancing Model

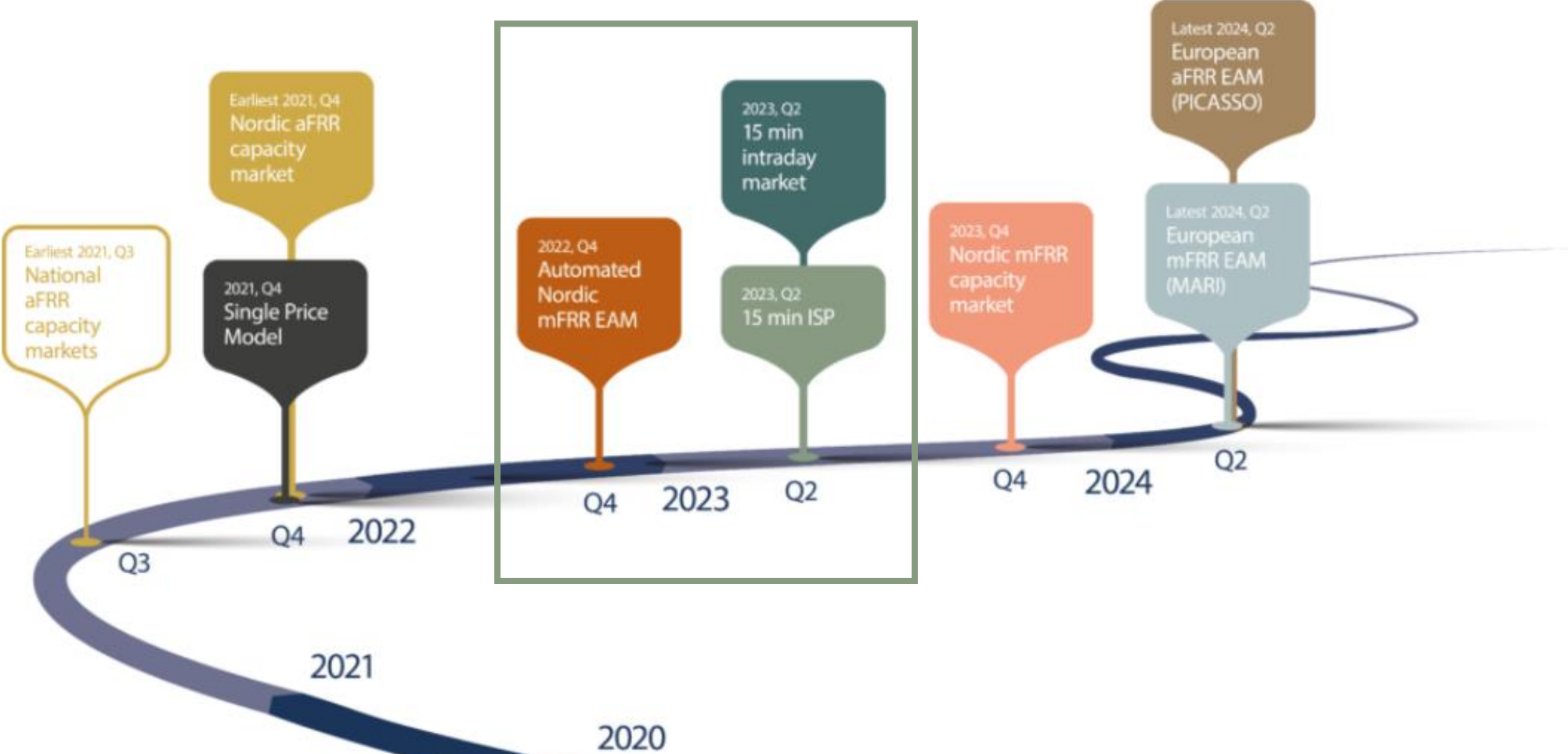
Eivind Lindeberg

NBM in brief– Nordic Balancing Model

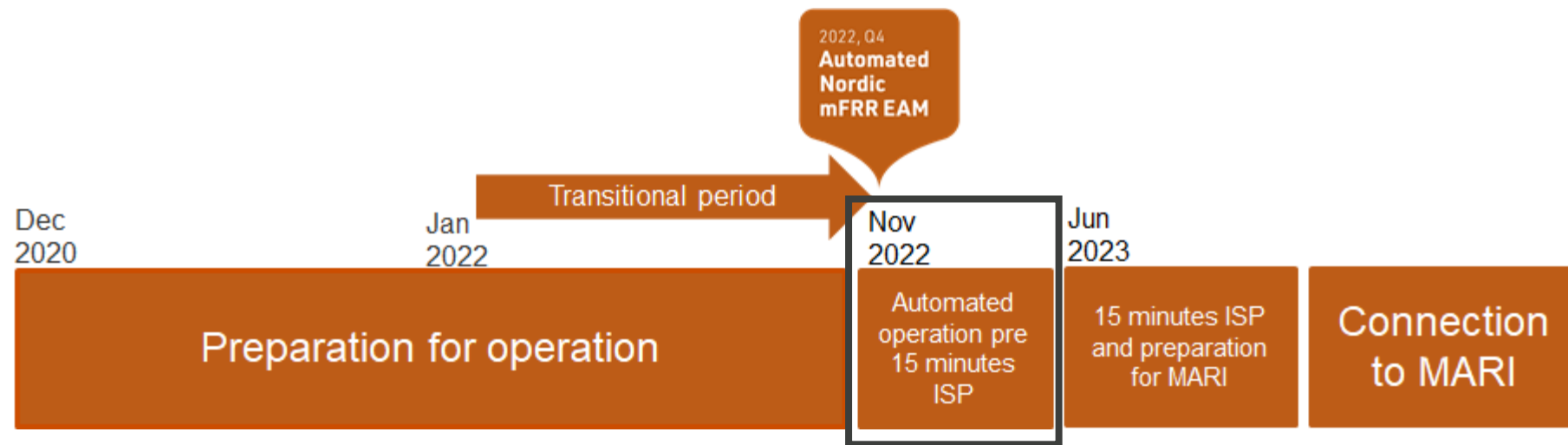
- Fundamental changes in the balancing of the Nordic power system
- Why:
 - Today's manual, operator-centered balancing process not longer feasible
 - 15 min time resolution
 - Necessary changes to prepare for European Platforms
- What:
 - Automated processes
 - Balancing per bidding zone (ACE)
 - Common optimization to exchange balancing between bidding zones and ensure effective balancing
 - First mFRR, then aFRR

Updated time plan for the NBM program

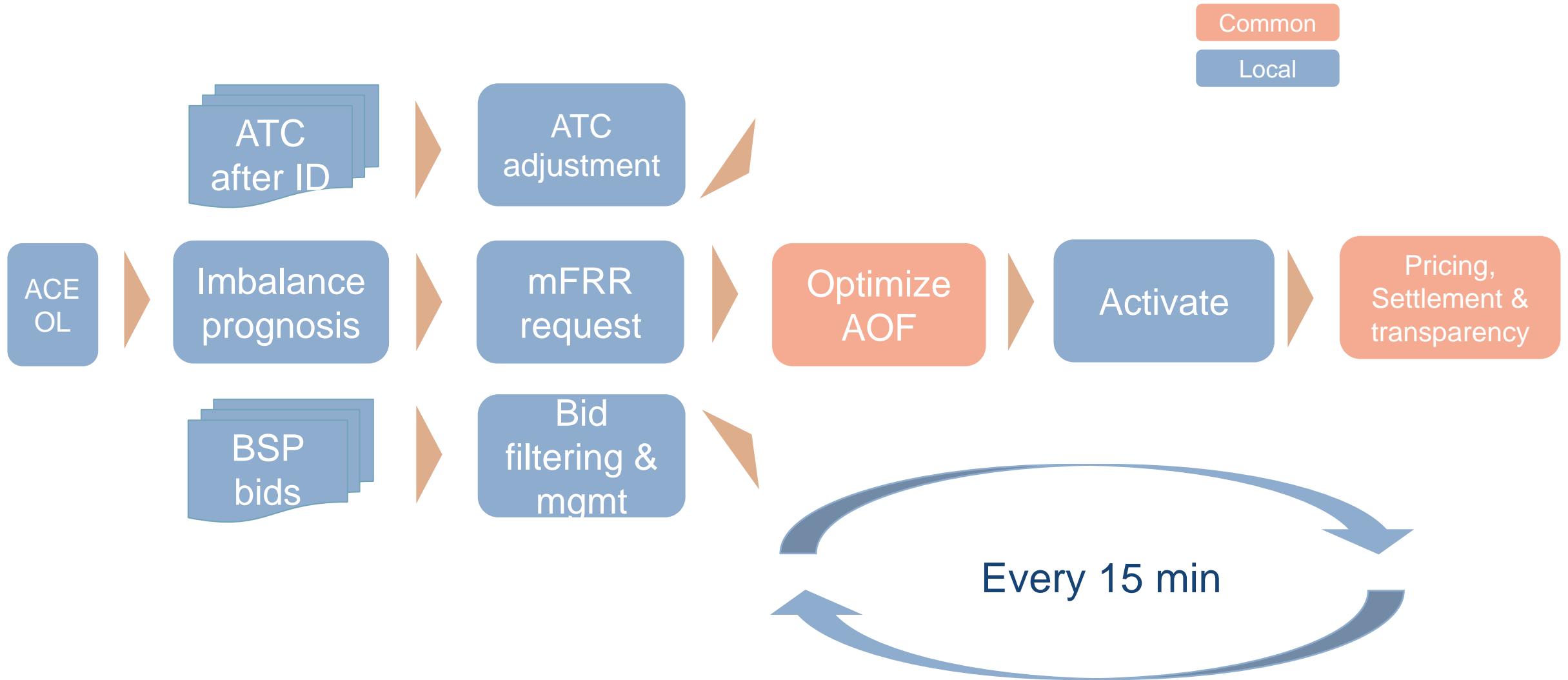
Roadmap December 2020



mFRR Energy Activation market – timeline

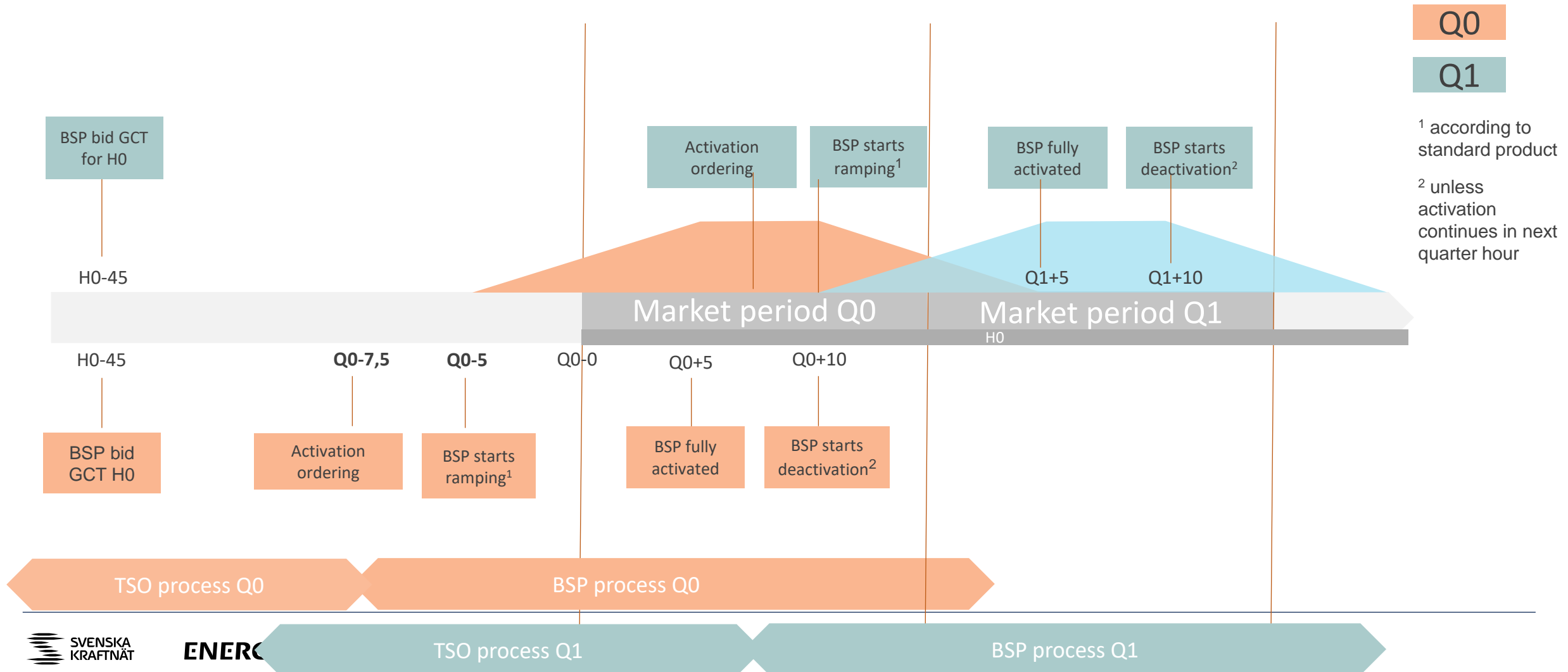


Balancing process in NBM



Activation process

"Automated operation pre 15 min ISP"



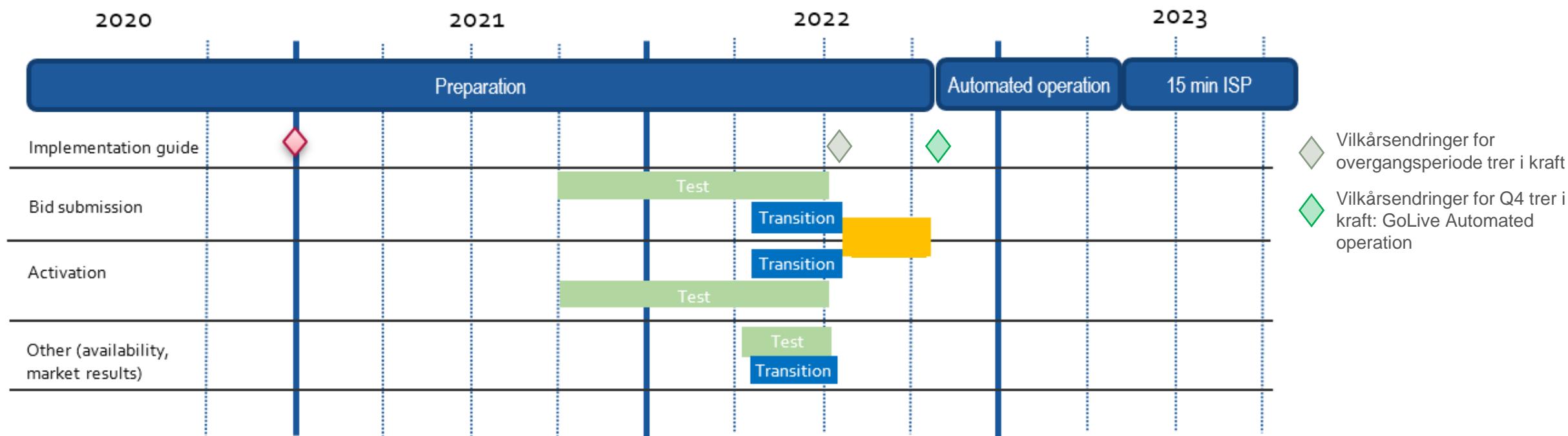
Important messages today

- Bidding and activation process will change significantly
 - Information in the bids are used explicitly
 - New processes required also at BSPs
 - Expect shorter activations – 15 min per activation + direct activation
- *All participants must use the new solutions – It is not an option to keep using the old solutions*
- We will start using the new solutions in about a year

Fremtiden er elektrisk

Transition phase in Q3 2022

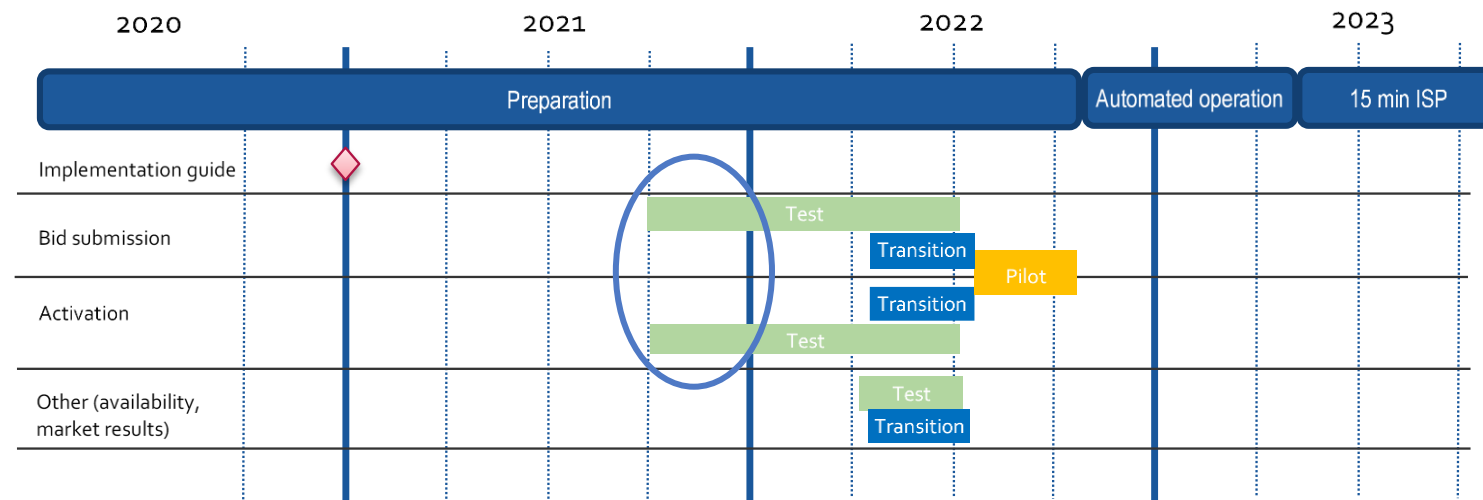
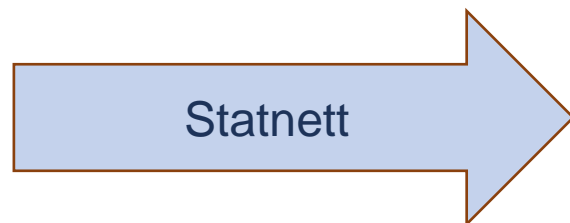
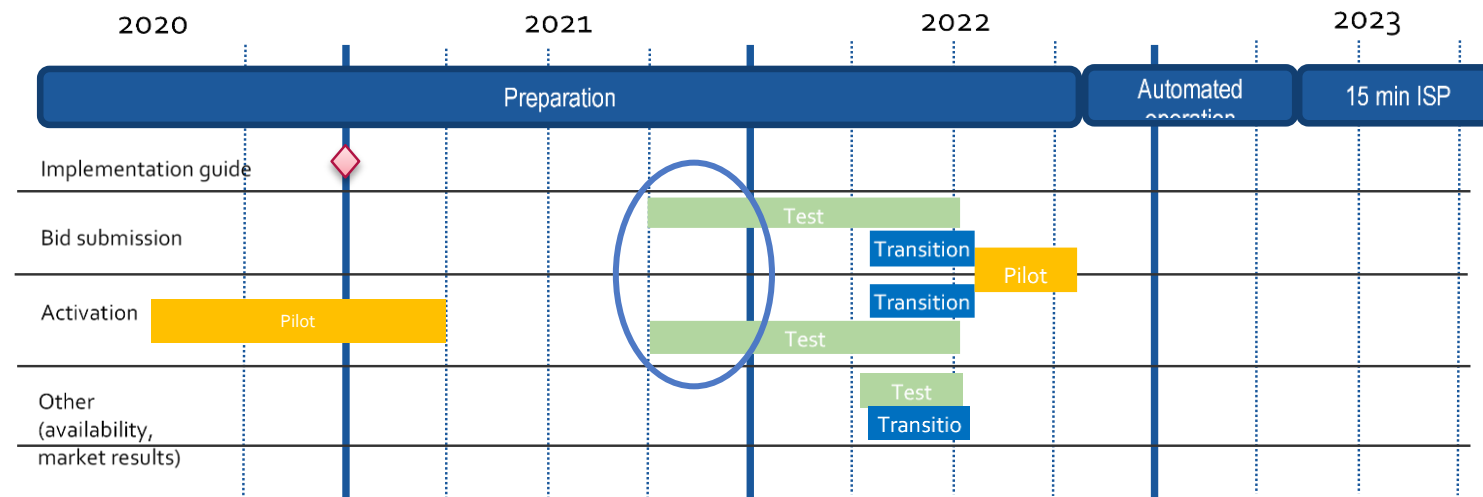
- Large changes when entering "Automated operation". Stepwise implementation whenever possible
- Transition phase is planned to be finished in August/September 2022. After this all bidding in the mFRR EAM use the new formats. After this period more extensive testing of the bidding and activation will be possible.



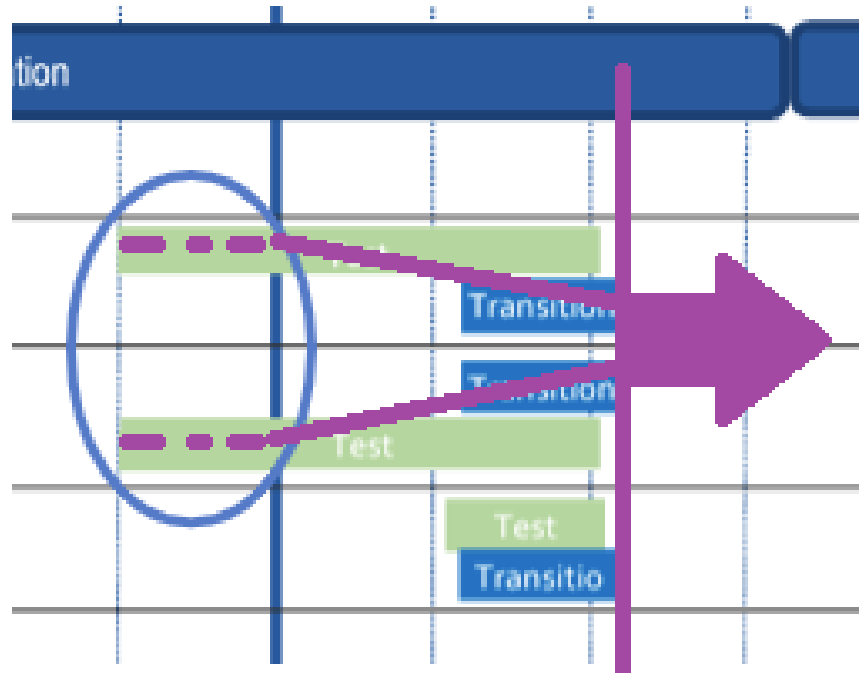
BSP Test - Svk and Statnett

Approach in brief

BSP Test Svk and Statnett - starting Q4 2021



Approach in brief – Functional scope

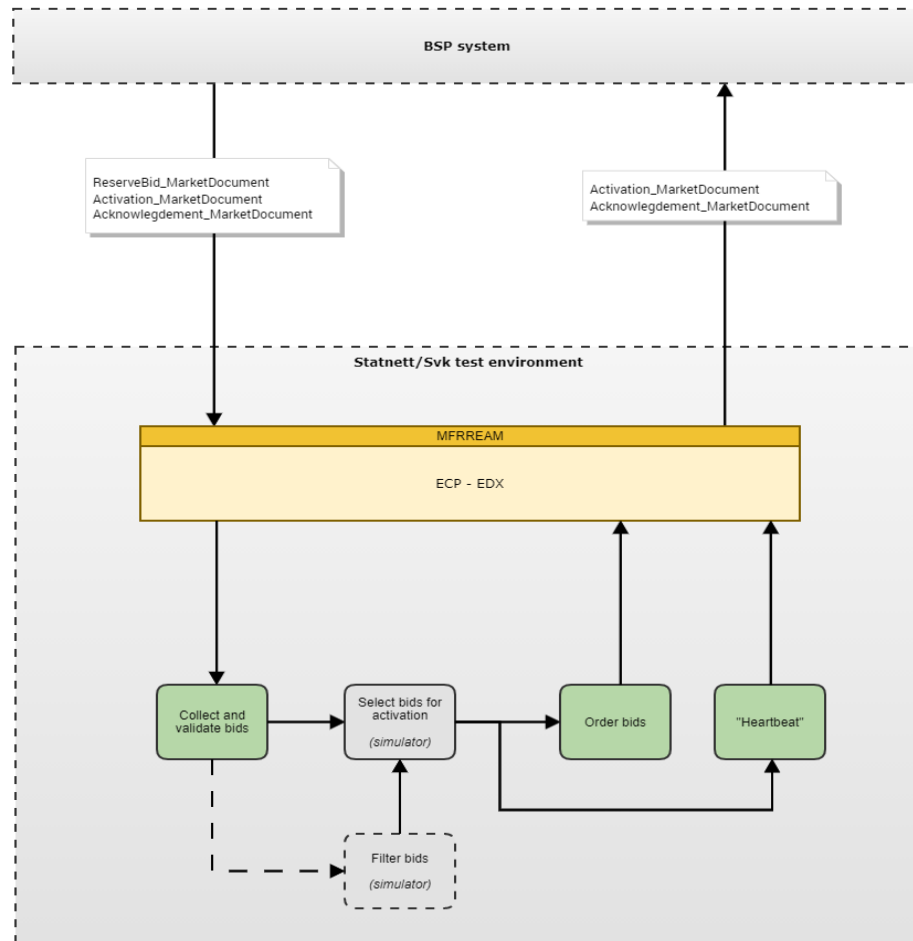


- Functional state in test starting from Q4/2021:
 - After transition
 - New solution receiving XML/CIM bids and activations
- Gradually enriching BSP Test Service with more functional content:
 - Simple bids
 - Technically linked simple bids
 - Complex bids, linked complex, national attributes etc.
- FiftyWeb: Not included yet

Approach in brief – Value chain

- Supports processes:
 - Bid submission
 - Scheduled activation
 - Heartbeat
- Starting point:
 - BSP bid submission with TSO acknowledgement
- End point:
 - TSO activation order, BSP acknowledgement, BSP activation response

Approach in brief – Technical perspective



Focus

The BSP test aim at enabling verification of the messages that constitute the Bid collection process and the Energy activation process

- The BSPs will be able to verify that the ReserveBid documents they submit are accepted (or rejected with a reason) by the TSO
- The BSPs shall receive requests for activation and should reply to these requests
- The BSPs shall receive heartbeat messages and should reply to these requests

TSO environment

The provided test environment consists of the basic system components that make up the TSO solution and includes

- An ECP/EDX test instance
- The Services handling the bid collection process
- Configurable simulators for selecting bids for activation
- The Services handling the activation process

Approach in brief – Test data main principle

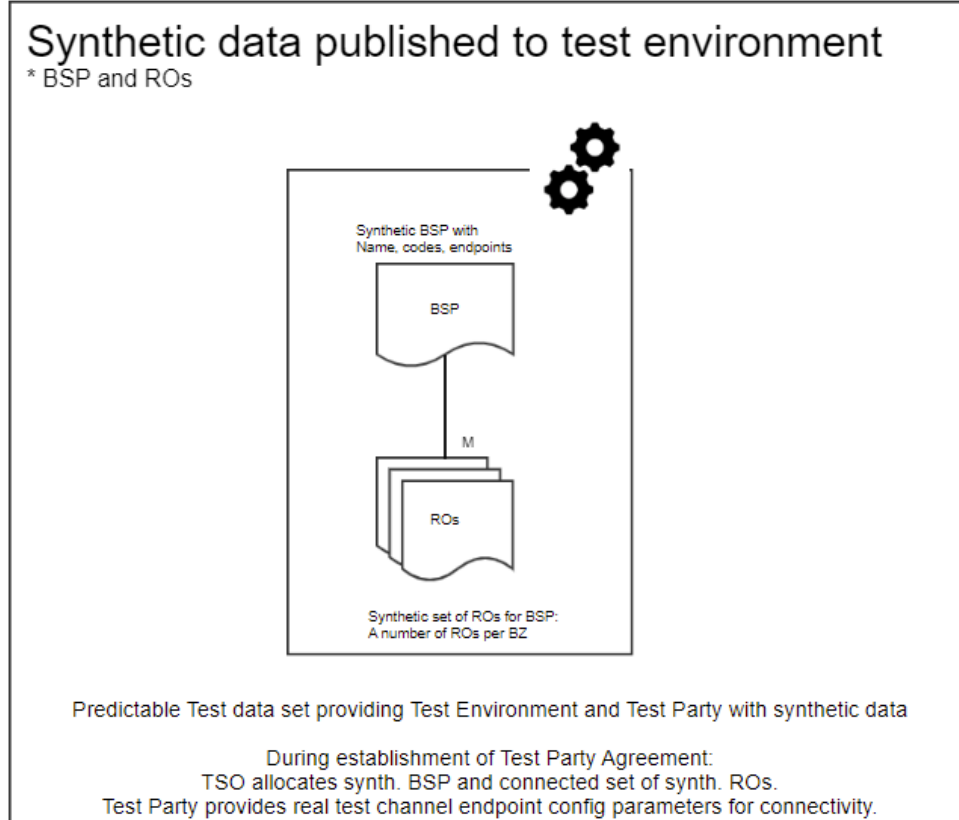
Synthetic BSPs and resource objects

The BSP Test will use synthetic BSPs and resource objects

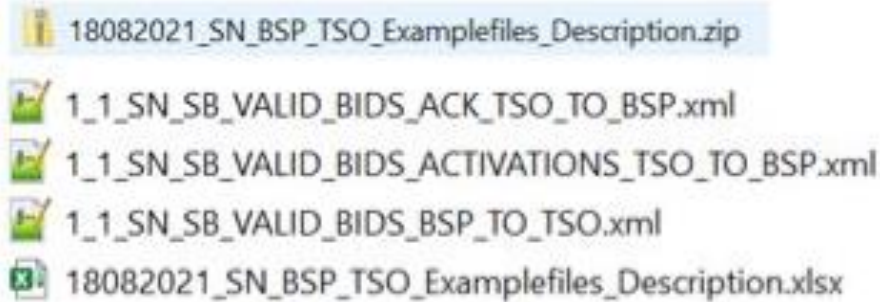
- **Why synthetic?**
TSO information classification policies
- **How to?**
Fifty & TSOs coordinate with each Test Party during setting up the BSP Test Agreement

Synthetic BSP and a set of synthetic resource objects will be assigned to each Test Party

- **Question:**
Will this represent a problem for you?



Approach in brief – Example files



What's in this?

- Fifty and TSOs will distribute example files for some scenarios

How and where?

- Not yet decided details for where, routines for publishing and information flow
- Gradually deliver more example files

TSO	Statnett		
Test data set	Synthetic BSP, synthetic RO, Real TSO, Real bidding area, Real domain		
Coverage	FROM (Bid submission BSP-> TSO) UNTIL INCLUDED (Activation from TSO to BSO)		
Scenario			
	No	Name	File name base name
	1	Simple bids	
	1.1	Submit valid simple bids	1_1_SN_SB_VALID_BIDS_
			Bid message with valid bids in four subsequent

BSP Test - Svk and Statnett

Technical specifications

Implementation guide updates

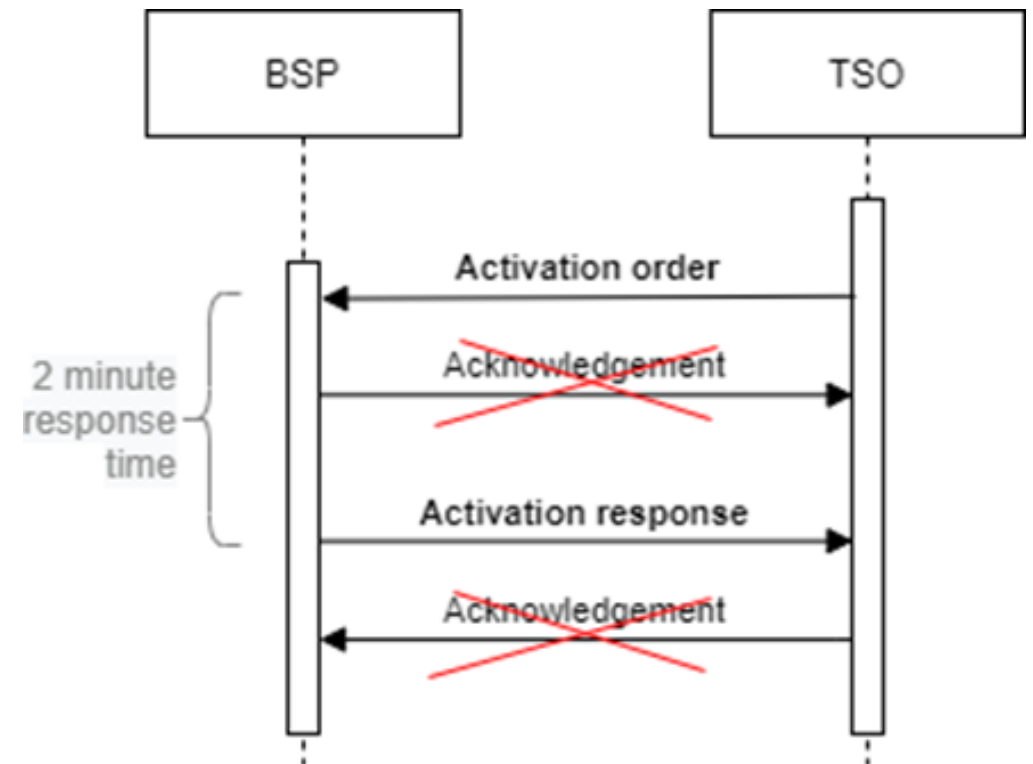
- Changes to the implementation guide may be needed as TSOs and BSPs get into the details of the implementation
- When errors or suggestions for improvement are identified an assessment will be made to whether the guide should be changed
- The assessment should include notification to BSP and system vendors as well as all four TSOs
- Updated version of the guide will be published on nordicbalancingmodel.net
- The objective is to minimise changes and to reach a stable guide before the test period

Three changes are currently drafted

- 3.3.6 Bid validation rules
 - *Time period* and *Resource object* cannot be changed when updating a bid
- 5.6 Update and cancellation principles
 - Same document period is not required when updating bids
- 6.5 Acknowledgement document
 - Added element: `received_MarketDocument.type`
 - Added element: `received_MarketDocument.process.processType`

Activation ordering, suggestion for improvement/simplification

- Remove both Acknowledgement messages
- The BSP can start activation as soon as the order is received
- The BSP must send the activation response to TSO as soon as possible and within 2 minutes
- The TSO will monitor activation responses. Missing or late response will affect the availability metric.



BSP Test - Svk and Statnett

Environments

Test environment – Tentative information

- Network: NEM-TEST ("The common ECP network")
- EDX Service: MFRREAM-SIM
- ECP MessageTypes (CIM):

Business/Message Type	Message	Producer	Consumer
NBM-MFRREAM-CIM-PTA47-MTA37	ReserveBid_MarketDocument (bid)	BSP	TSO (mfr-bid-coll)
NBM-MFRREAM-CIM-PTA47-MTA37-ACK	Acknowledgement_MarketDocument (ack bid)	TSO (mfr-bid-coll)	BSP
NBM-MFRREAM-CIM-PTA47-MTA39	Activation_MarketDocument (request)	TSO (mfr-order)	BSP
NBM-MFRREAM-CIM-PTA47-MTA39-ACK	Acknowledgement_MarketDocument (ack request)	BSP	TSO (mfr-order)
NBM-MFRREAM-CIM-PTA47-MTA41	Activation_MarketDocument (response)	BSP	TSO (mfr-order)
NBM-MFRREAM-CIM-PTA47-MTA41-ACK	Acknowledgement_MarketDocument (ack response)	TSO (mfr-order)	BSP

NB! This detailed information will be confirmed later

ECP Usage

For more information/help on ECP onboarding, installation, maintenance:

- [Market Actor onboarding – Ediel.org](#)
- ECP / EDX question directly related to the BSP Testing can be sent through support e-mail (information on separate page)
- For other generic ECP/EDX setup/config questions:
 - Statnett: ecp@statnett.no
 - Svenska Kraftnät: ecp@svk.se

BSP Test - Svk and Statnett

Process – how do we go along

Support or feedback

- E-mail based support or feedback from start:
 - Please use the following monitored e-mail addresses:
 - Statnett: bsp@statnett.no
 - Svenska Kraftnät: mfr@svk.se
- Based on the e-mail questions we receive a Frequently-Asked-Questions overview will be made available for all and updated with common questions and feedback.

Updated Information and examples

- Updated technical information will be made available for you:
 - Implementation guide / technical descriptions
 - Example messages
 - Frequently Asked Questions / feedback

<https://integration.fifty.eu/bsptesting> (on-the-air soon)

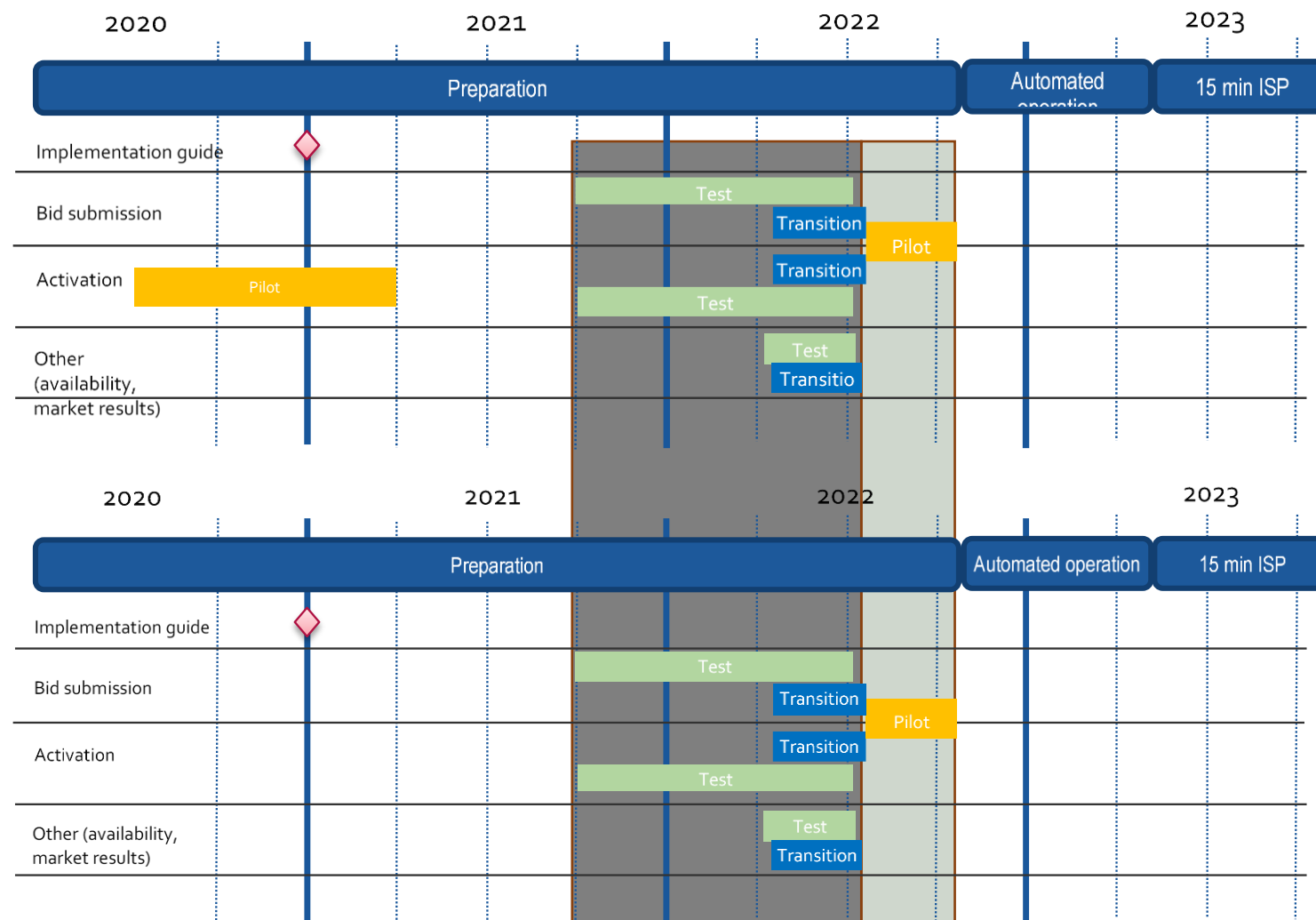
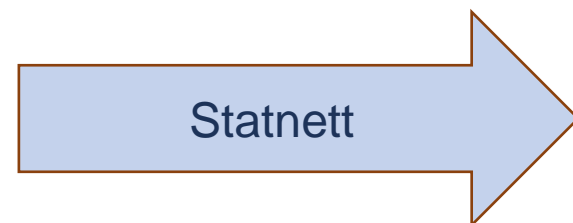
Transition and preparation for go-live

Per Otto Garsjø

Why a transition phase and not a clear cut at go-live automated operation

- Technical transition
 - Increase probability for successful go-live automated operation since one major change for BSPs is done before go-live, with the possibility for correcting errors without a need to postpone go-live.
 - Ease the change for BSPs since they can do the change at a time that suits them.
- Functional use
 - The NBM concept and described solutions is theoretically assessed for how it will function. This assessment rely on several assumption that is not possible to assess before we see automatic process with realistic use of new bid attributes.
 - Bids with realistic attributes and prices will enable TSO to analyze the automatic process and solutions before go-live automated operation. This can give an opportunity to adjust solutions, or give feedback to BSPs if there is "unwanted" combinations of attributes.
- Both Statnett and Svenska kraftnät will have meetings with BSP to discuss what is realistic to do, when it comes to "functional transition".

Transition



How to get experience with production like use of new bid attributes

- **Approaches:**
 - **Advanced end-to-end test:**
 - Support all new bid attributes
 - Support scheduled activation, and if possible, period shift. (Direct activation might be supported in shorter periods.)
 - Both TSO and BSP will use dedicated TEST-environment
 - Process steps
 - BSP send in bids with the same use of attributes as they will after go-live automated operation
 - TSO use the bids in the automated process
 - TSO returning selected bids to BSPs test systems (shall not be activated)
 - **No concurrent bid collection and bid selection with new attributes and several BSPs, before go-live automated operation**
 - Analyse concept: In dialog with one and one BSP get understanding of how you will use new attributes. Based on this understanding, create test dataset at each TSO that can be used to test and analyse concept.
 - Follow up BSPs progression: Follow up on milestones/steps that BSP should achieve at given time before go-live automated operation
 - **Other potential approaches – assessed not to be realistic**
 - **Pilot in production** for functional support for new attributes for bids
 - Support (some) new bid attributes when selecting bids in production before go-live automated operation

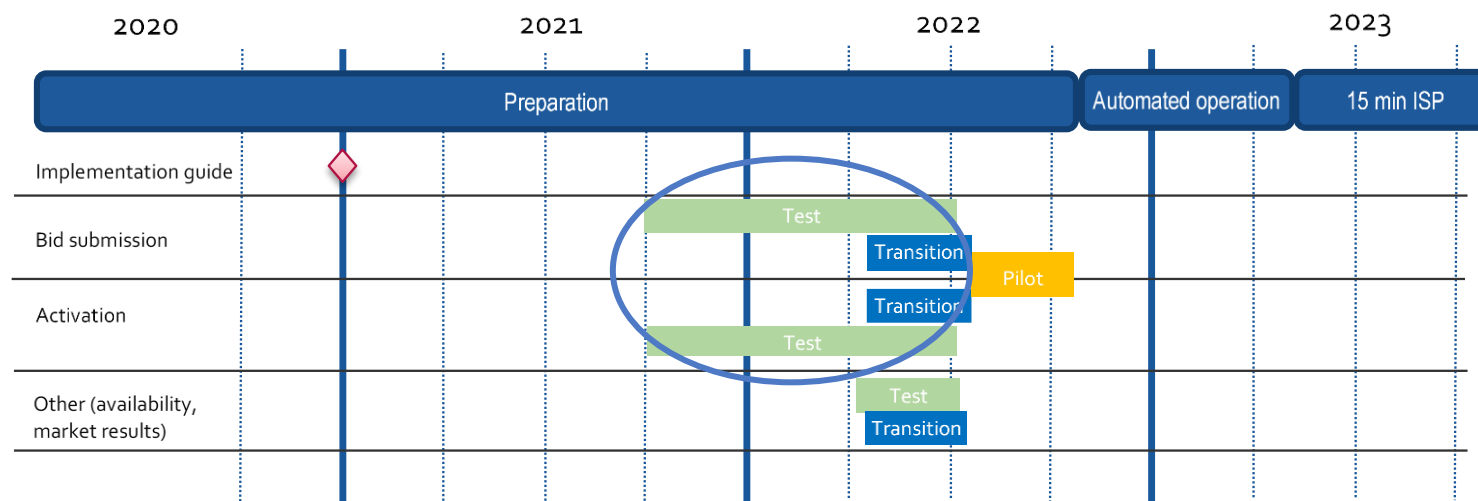
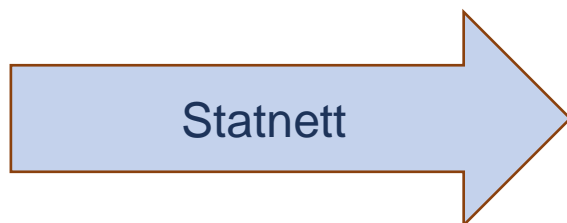
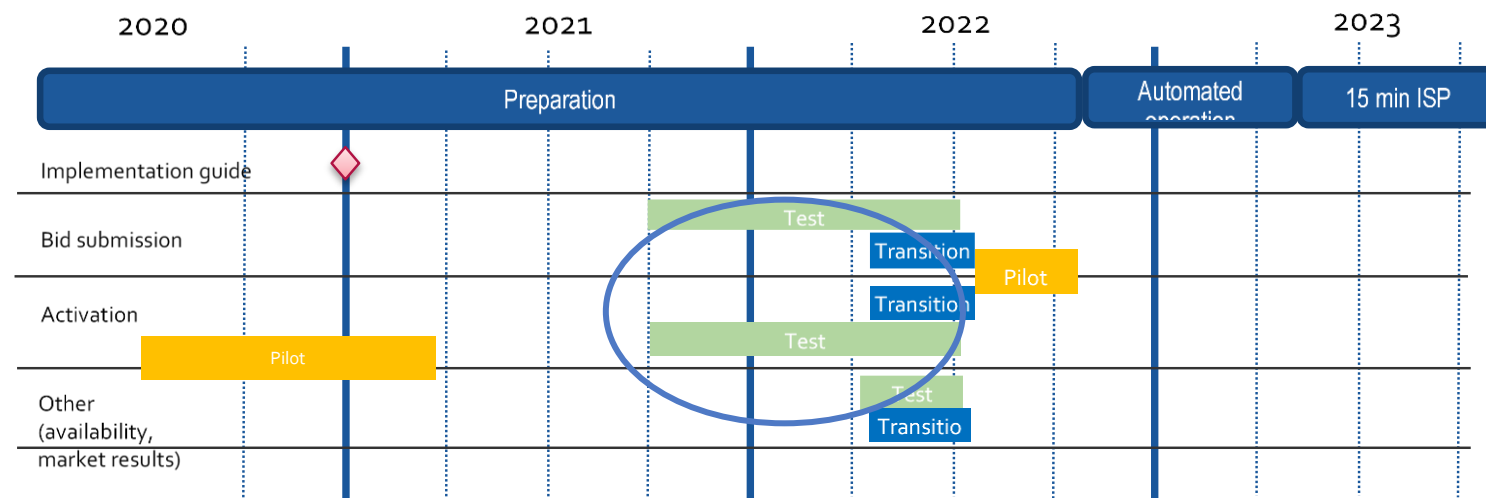
"Advanced end-to-end test"

- **Process**
 - BSP send in bids with the same use of attributes as they will after go-live automated operation. This should include attributes describing physical limitations and attributes used for modelling marginal cost
 - TSO use the bids in the automated process to select bids, with mFRR request and ATC as will be used after go-live
 - TSO returning selected bids to BSPs
 - Minimum requirement is that scheduled activation process is used.
- **Environment**
 - Test environment, but where all input is production like data
 - Selected bids shall NOT be activated
- **Bid attributes:**
 - **Physical limitations attributes contains information to secure that activations can be done.** These attributes are: Minimum offered volume, Indivisible Bids, Maximum duration, Resting time, Inclusive bids, Technically linked bids (avoid activation of same resource, i.e. if activated for DA in one QH same resource can't be activated for SA in next QH), Conditional bids (e.g. due to "impossible" ramping, avoid activation in one direction if resource in previous QH is activated in opposite direction)
 - **Model marginal cost.** These attributes are: Exclusive Group Order (support modelling start up cost within a MTU), Multipart (Parent/child) (is supported since it is supported in MARI), Conditional bids (support start-up cost between MTUs)
 - **Supported process.** At least scheduled activation will be part of this advanced end-to-end test. If direct activation and period shift also should be included must be assessed together with participating BSPs.

Q&A

Bonus material – not in meeting

BSP Test Svk and Statnett



Approach in brief

- BSP Test Agreement must be established between Fifty with TSO and Test Party
- BSP Self Service ECP Test environments hosted by Svk and Statnett respectively
- Best effort availability during Swedish/Norwegian office hours

Approach in brief – Process steps

- Process steps for scheduled activation
 - BSP submits bids according to Implementation Guide
 - TSO BSP Test validates submitted bids and provides acknowledgement
 - TSO BSP Test selects bids in a simplified bid selection process
 - TSO BSP Test sends activation order with selected bids to test systems at "BSP side"