

Coordination between European and Nordic marketplaces

Reference group meeting September 2019
Helsinki

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Based on consultation feedback – the following 3 topics are considered as key

- Status update of MARI&PICASSO projects + Regulatory approvals + best guess of go-live
- Interaction between Nordics and European platforms
- Why Nordics need intermediate steps

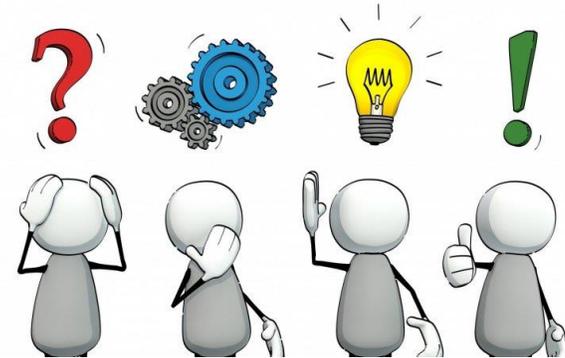
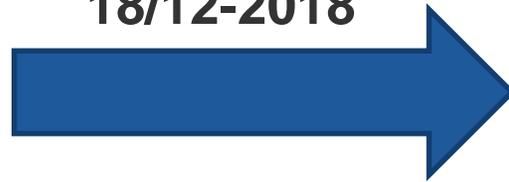
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TSO's delivered 6 proposals describing the coming European balancing market



18/12-2018



All TSO's agreed and handed over to the regulators 6 legal proposals together with corresponding explanatory documents and answers from the stakeholder consultations (+ 500 Pages)

Regulators have been discussing for 6 months – and now we know the outcome

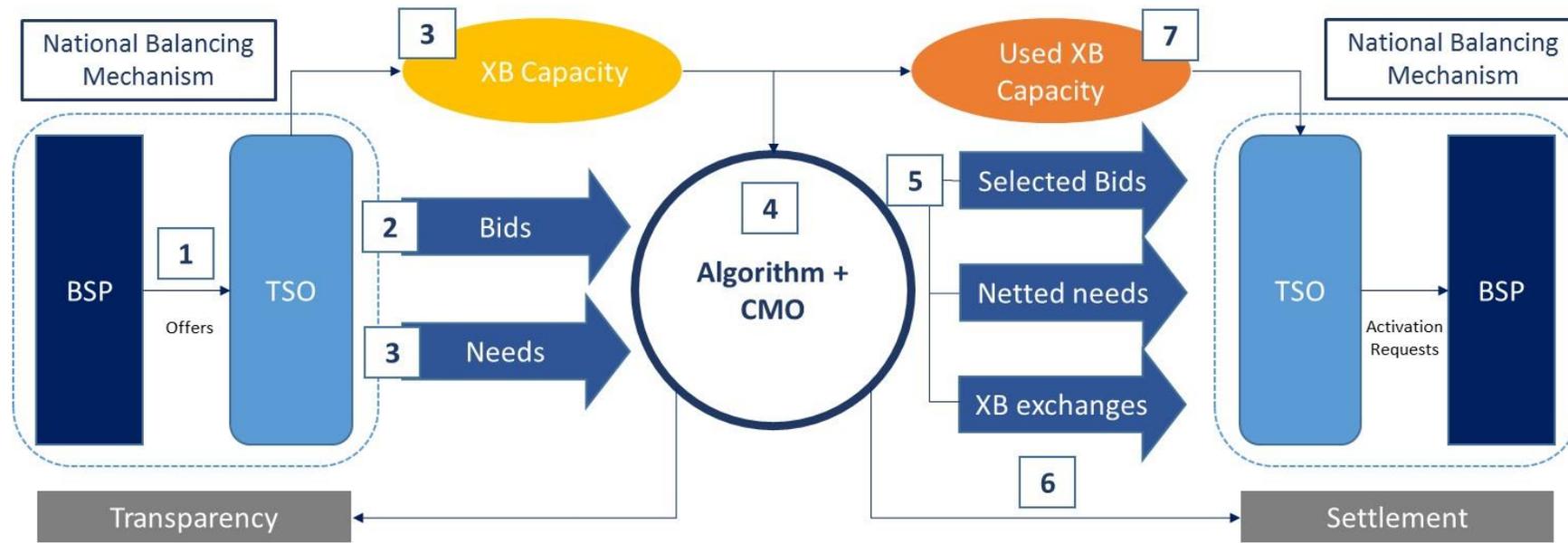
But first lets look at the content

The legal package as sent to NRA's



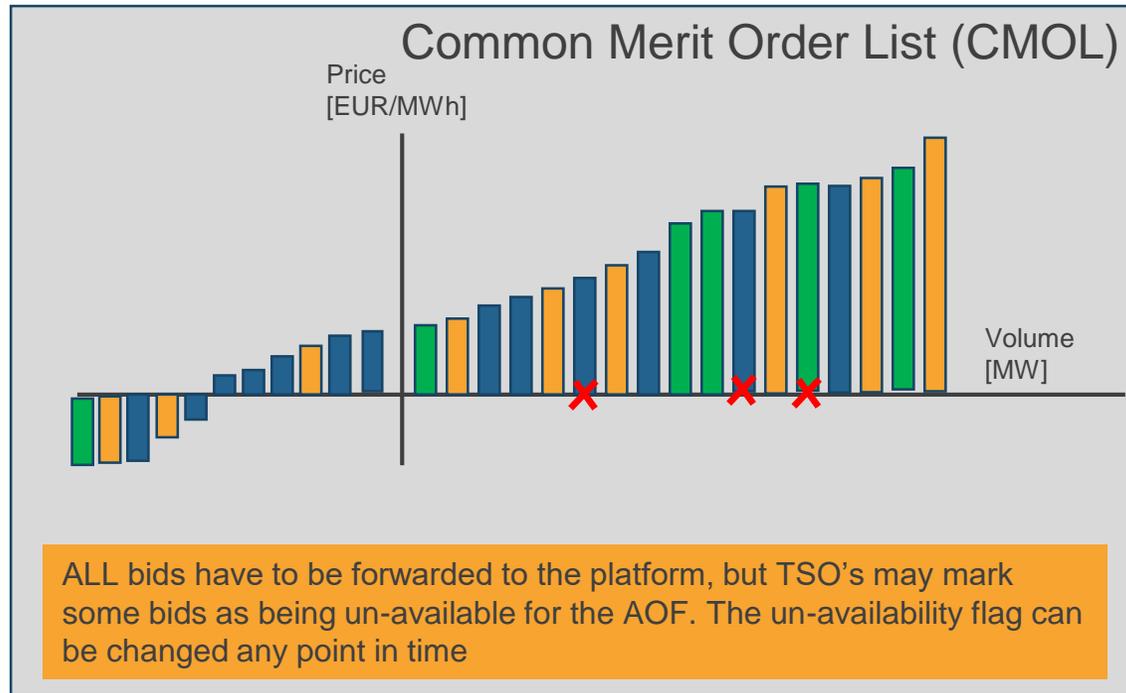
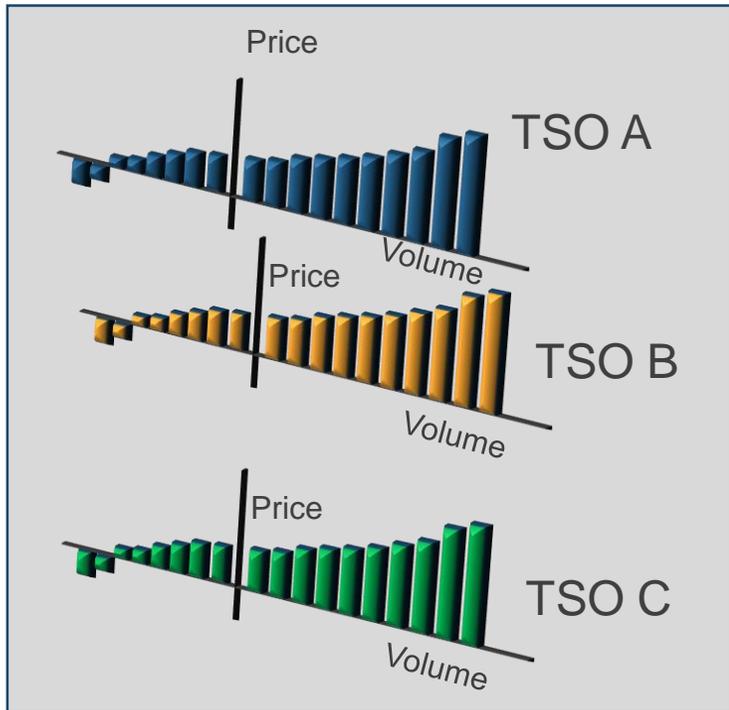
-  181218_01_ALL TSOs proposal_aFRRIF.pdf
-  181218_04_ALL TSOs proposal_mFRRIF.pdf
-  181218_07_ALL TSOs proposal_Pricing_proposal.pdf
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-  181218_12_ALL TSOs proposal_Activation_purposes_proposal.pdf
-  181218_15_ALL TSOs proposal_ISH_proposal.pdf

The Generic European Balancing Market design

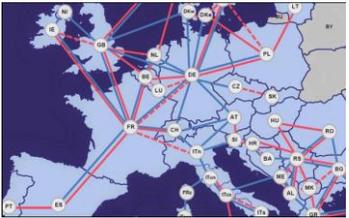


Local and common Merit order lists (TERRE, MARI and PICASSO)

- TSO's receives bids from connecting BSP's at the BE GCT (T-25 min)
- TSO's have 0-15 min to evaluate bids and forwards those to the CMOL

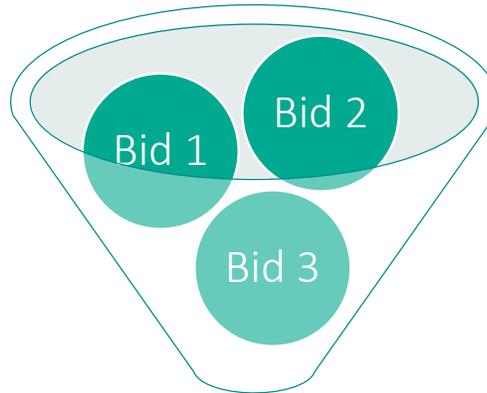


AOF – Activation Optimisation Function



Gridmodel, with transmission capacities

Balance need from the TSO's

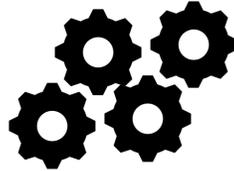


Bids from all areas, GCT T-25 min, 96 gates per day

- Price, Euro/MWh
- Volume, MW
- Location
- Potential constraints / links

Common Merit Order List

AOF



MARI/TERRE: Bids that shall be activated
PICASSO: delta ACE to local LFC controller

AOF objectives and constraints



Objective

- First Priority: Maximise the economic surplus
- Second Priority: Minimise the cross border flows

Constraints

- mFRR power balance equation of each bidding zone or LFC Area
- The sum of all mFRR power interchnages of all areas must be 0
- Cross border capacity limits
- Constraints related to indivisibility and links
- Any additional system constraints, like countertrading request

Status of the NRA process for approving the European platforms

-  181218_01_ALL TSOs proposal_aFRRIF.pdf → Not approved – but sent to ACER
-  181218_04_ALL TSOs proposal_mFRRIF.pdf → Not approved – but sent to ACER
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- ACER has 6 month to decide → Decision is expected end of January 2020
- TSO's has 2 months to modify the proposals according to the request for amendments



Deadline for MARI and PICASSO is 30 month after NRA approval, hence now go-live is expected to be summer 2022

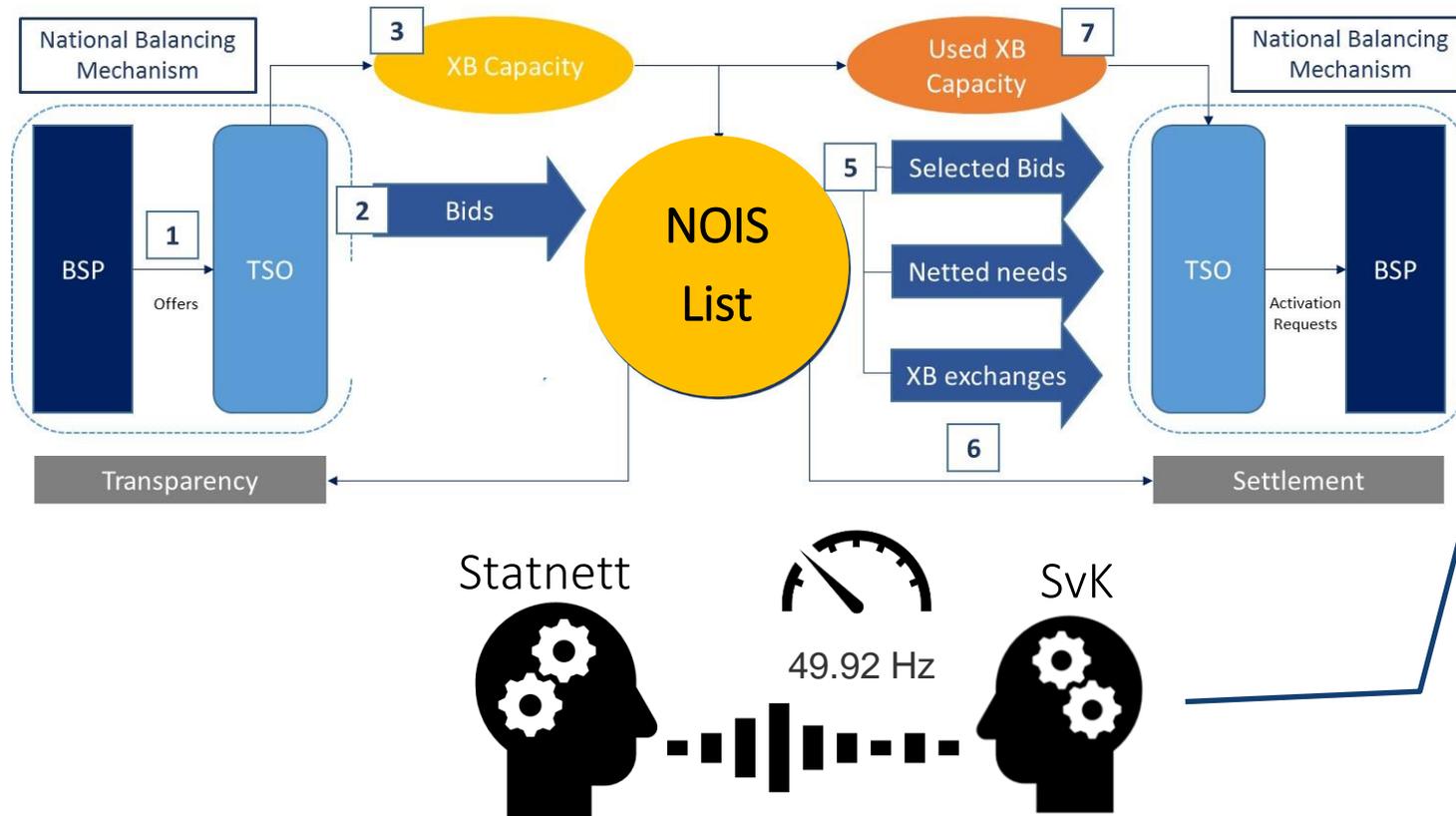
Why are the proposals not approved, main concerns ?

- aFRR (PICASSO)
 - Control Request Vs Control Demand
- mFRR (MARI)
 - Counter Activations, Guaranteed Volume
- Pricing Proposal
 - Pricing Period, 4 sec Vs 15 minutes for aFRR
 - Cross product Pricing, same price for aFRR and mFRR (and link between DA mFRR and SCH mFRR)
 - Pricing of bids activated for other purpose than balancing

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Today's operation in the Nordic part 1



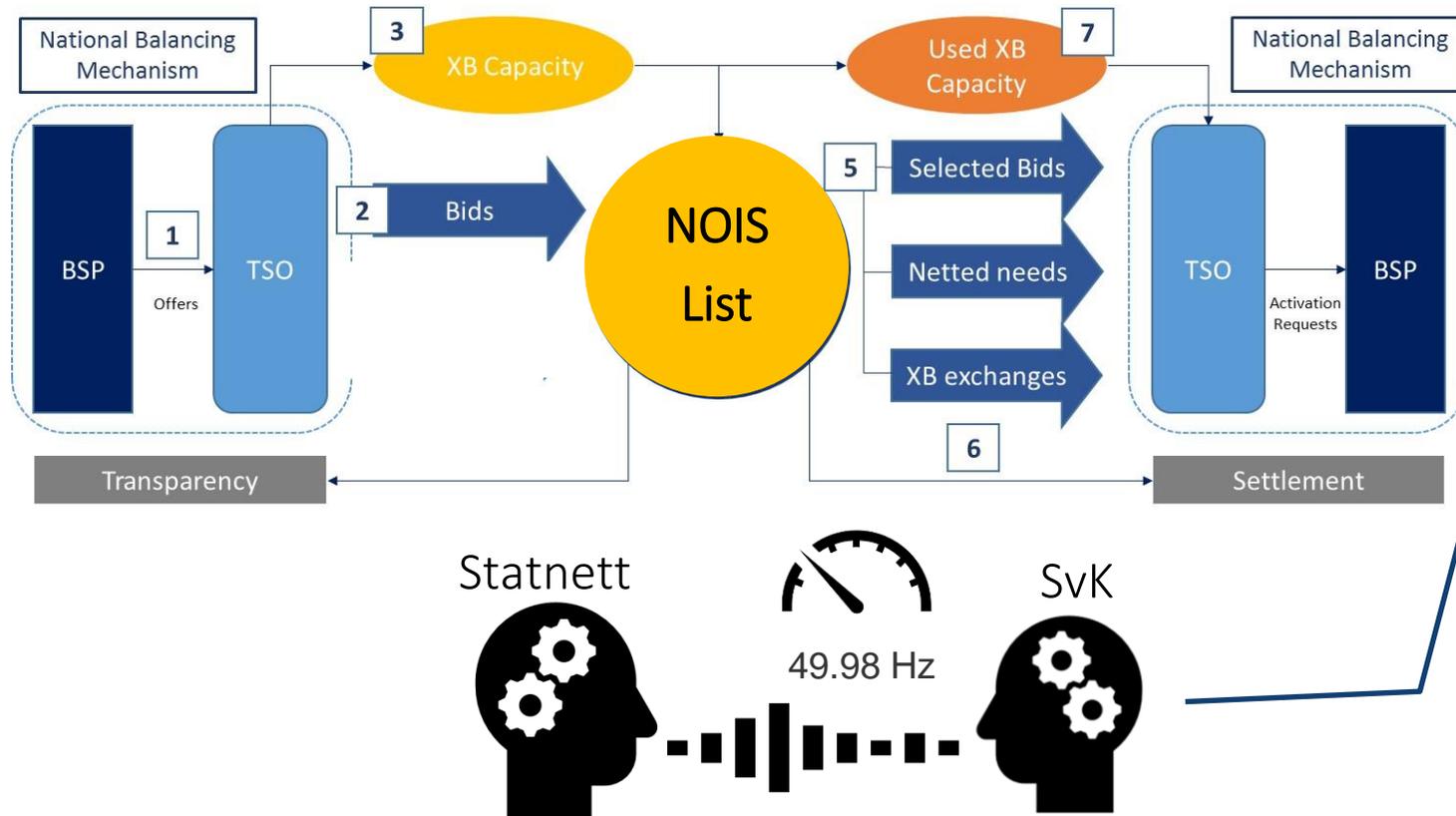
...The Frequency is low, we need to activate xx MW up for the next hour

...OK the cheapest bids on the NOIS list are located in NO2, NO5, SE2 and DK1...

....OK, but SE2 has internal congestions, we need to skip some bids, please activate 30 MW elsewhere...

....OK, we will inform Energinet to activate more bids in DK1...

Today's operation in the Nordic part 2



...From 08:00-09:00 I calculated the regulating price to be xx in NO1, xx in NO2.... And xx in DK2

...I do not agree, because bid no 5 was activated for internal congestions...

Yes but in area SE4, you activated more 10 min later.....

1hour later OK – now we agree the price was x,y, and z

A very Challenging Cocktail is arriving



- Nuclear and thermal powerplants are closing
- Much more wind
- Fast deployment of solar power
- Lower bid sizes – more bids to consider
- Shorter Gate Closure Time
- From 24 to 96 gates per day
- New borders and interconnectors
- Prices to be published after max 30 min



How to optimise activations
across 12 bidding zones ?

new tools are needed in order to avoid the headache among the operators

The solution is more digitalisation – and establishment of an AOF

New Nordic Balancing Model



The AOF is the key brick, and the one which generates most of the welfare

The AOF is able to optimize the bid selection, and can handle a very complex optimization problem.

Small bid sizes, more complex and linked bids and a fast calculation of prices

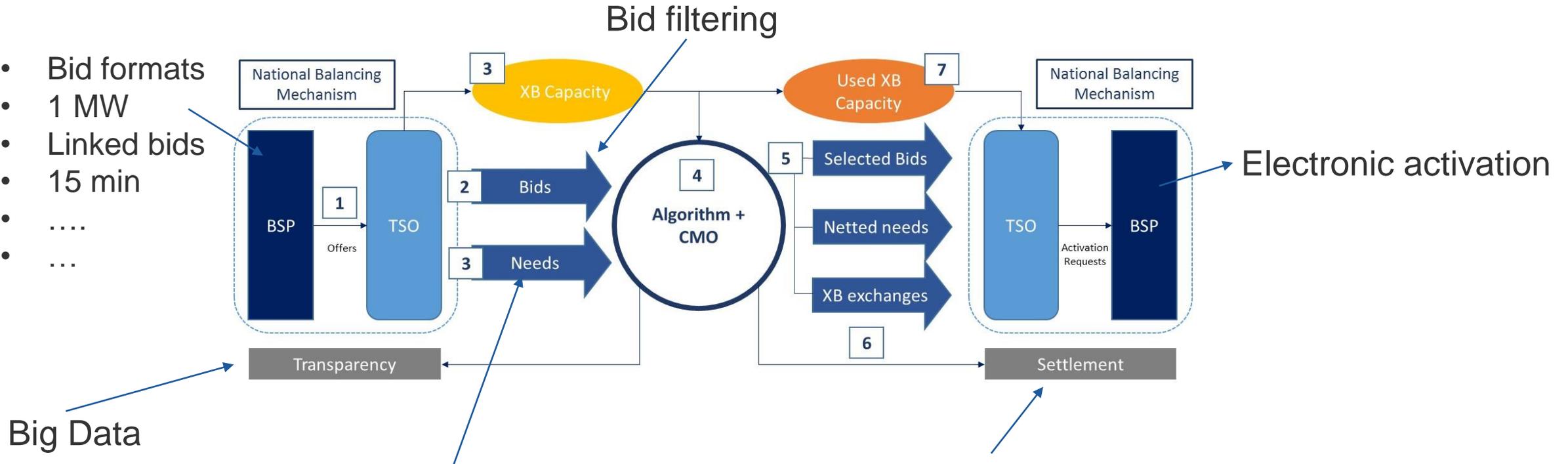
AOF uses 0100100 as input/output, hence other systems at the control center needs to be digitalized as well

Today's challenge of the operator is tomorrow's challenge of the IT-developer



Changes to be done in the Nordic

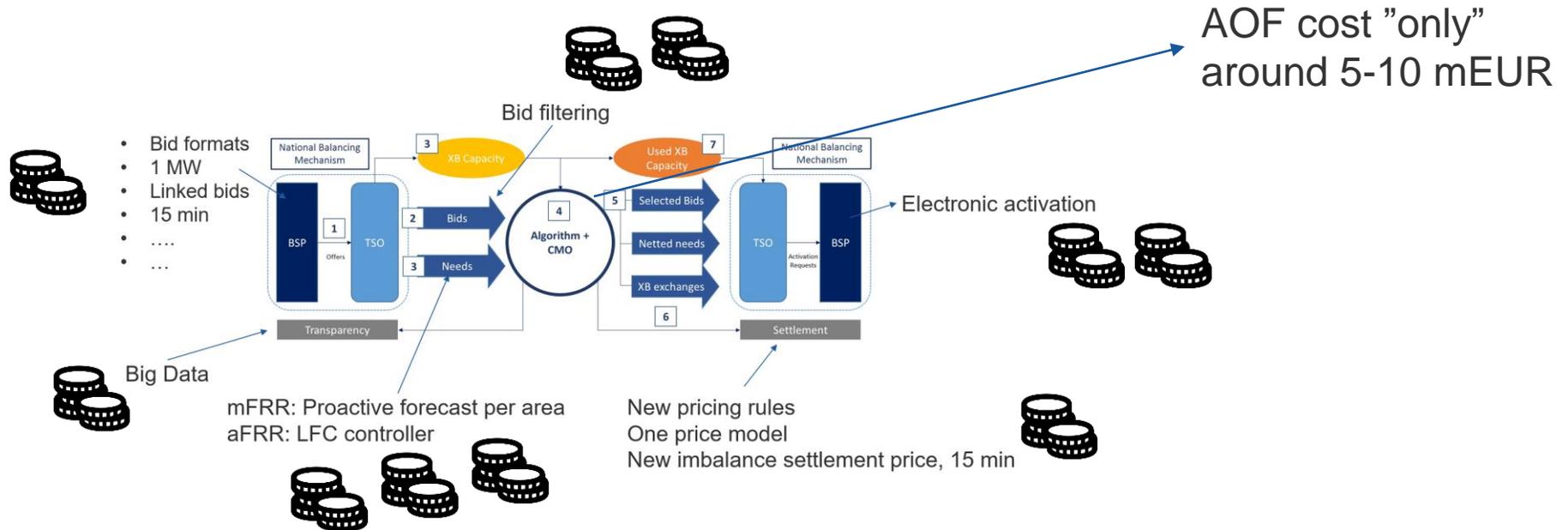
- Bid formats
- 1 MW
- Linked bids
- 15 min
-
- ...



From Frequency to ACE based input
mFRR: Proactive forecast per area
aFRR: LFC controllers

New pricing rules
One price model
New imbalance settlement price, 15 min

Implementation cost is mainly related to all the changes around the AOF – not the AOF itself



Top 3 topic's to adress

- Status update of MARI&PICASSO projects. Regulatory approvals + best guess of go-live
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How to move from today's practice to tomorrow's solution in a safe and economical way

Be careful not to "destroy" the existing Nordic welfare of +200 mEUR/year

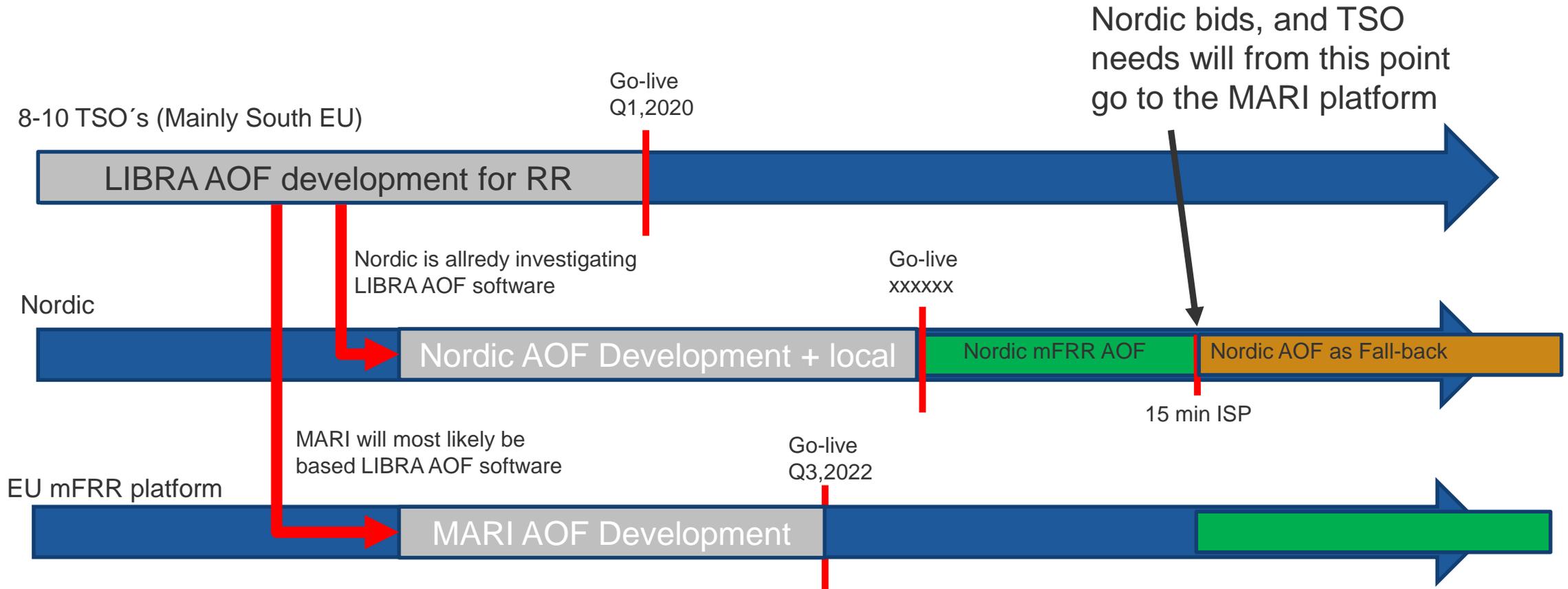
→ Nordic TSO's join the European Market, when all Nordic TSO's are ready – not one by one

Huge changes are being proposed - Stepwise approach reduces risks but also create a dilemma

→ Don't do all the changes at the same time, but one by one and always directing towards the target model – reduce the technical risk

→ be careful not to create "temporary" situations, with bad market design (recent examples from changes in the German Market)

Risk mitigation by starting with a Nordic AOF, that later will become a fall-back AOF



Will there be any difference between the Nordic and the MARI AOF – yes and no

Nordic is in fully control of a Nordic AOF development, and can tweak it to fit specific Nordic interim needs, so it can start assisting the operators already under the present market conditions

- ISP = 60 min
- Gate Closure Time = 45 min
- Utilize exiting settlement rules
- Utilize existing bid characteristic

Operators can learn how to send request to the AOF in a “safe” environment, where the system will not be affected by request coming from outside the Nordic region

Bid filtering can be tested in a “safe” environment

By this Market Participants will also gradually be introduced to the new activation patterns

Learning from other industries automation takes time

The idea of self-driving cars was launched already in the 1920's, when a radio controlled car was demonstrated

But

- Cruise Control: became standard on Cadillacs in 1960
- ABS (Anti Lock Breaking) Mercedes from around 1978
- Adaptive speed control, Mercedes from around 1999
- Lane keeping assistance, Nissan from around 2001
- Automatic parking, Toyota from around 2003
- Self driving cars, google from 2009 (prototypes)



Semi automation is the "easy" part – fully self driving cars are very difficult, both technical and legally

Question: How will the driver maintain his/hers driving capabilities if you never practice ?



NBM
Nordic Balancing
Model

More Questions ?