

# 2<sup>ND</sup> ANNUAL CONFERENCE

Starts at 12:00

19 SEPTEMBER 2024 | ATHENS



# 2<sup>ND</sup> ANNUAL CONFERENCE

# WELCOME

19 SEPTEMBER 2024 | ATHENS



# 2<sup>ND</sup> ANNUAL CONFERENCE

## WELCOME

**Yovka IVANOVA**

All NEMO Committee

Reporting and Communication Task Force Leader

19 SEPTEMBER 2024 | ATHENS



# 2<sup>ND</sup> ANNUAL CONFERENCE

Questions under Q&A sessions in person or via Zoom chat

**The event is being recorded**

**19 SEPTEMBER 2024 | ATHENS**



# 2<sup>ND</sup> ANNUAL CONFERENCE

## WELCOME

**Rafael GÓMEZ-ELVIRA GONZÁLEZ**  
Chairman of the All NEMO Committee

19 SEPTEMBER 2024 | ATHENS



# 2<sup>ND</sup> ANNUAL CONFERENCE

## POLICY SESSION

**Moderators:** Lara **VISONE**, Senior Market Coupling expert at Nord Pool  
Davide **ORIFICI**, Director of Public & Regulatory Affairs and Communications  
of EPEX SPOT

19 SEPTEMBER 2024 | ATHENS



# 2<sup>ND</sup> ANNUAL CONFERENCE

## POLICY SESSION: MARKET COUPLING IN BETWEEN EMD AND CACM 2.0: CURRENT CHALLENGES AND PROSPECTS

- Speakers:
- Jérôme Le Page, Chair of the Electricity Committee, Energy Traders Europe
  - Márk Alföldy-Boruss, Deputy State Secretary at Ministry for Energy of Hungary
  - Kjell Arne Barmsnes, ENTSO-E Market Committee Chair
  - Mathieu Fransen, Team Leader Market Codes, ACER
  - Donia Peerhossaini, Advisor- Wholesale markets, Eurelectric
- Moderators:
- Lara Visone, Senior Market Coupling Expert at Nord Pool
  - Davide Orifici, Director of Public & Regulatory Affairs and Communications of EPEX SPOT

19 SEPTEMBER 2024 | ATHENS



**ACER** 

European Union Agency for the Cooperation  
of Energy Regulators

# Priorities for European Electricity markets

Mathieu Fransen

NEMO Conference, 20 September 2024, Athens



## FULL EU DA&ID coverage in 2022

- SDAC&SIDC EU wide coverage in 2022

## CONTINUOUS MONITORING

- ACER to engage in detailed implementation monitoring & progress reports on the IEM.
- Prioritization provides direction

## INCENTIVES & ENFORCEMENT

Energy regulators commit to develop (further) **incentive frameworks for TSOs, NEMOs** and other entities for **earlier implementation of integration projects** and to **improve the enforcement** of compliance in case of delays.<sup>2</sup>

## IEM target model since 2015

- EU legislation defined the EU target model
- Legal obligations on TSOs and NEMOs to implement
- ECA report(2023)<sup>1</sup> signaled overall slow implementation

## URGENT: complete IEM implementation projects

- NEMOs to improve allocative efficiency linked to time & spatial granularity
- TSOs to Improve levels of Cross zonal capacity to at least 70%
- TSOs to Urgently ensure all TSOs accession to EU-wide balancing platforms

<sup>1</sup> – [ACER's reply to ECA's report | www.acer.europa.eu](https://www.acer.europa.eu), 31.1.2023

<sup>2</sup> – [Challenges of the future electricity system \(europa.eu\)](https://www.europa.eu), 11.7.2024



# Thank you. Any questions?



The contents of this document do not necessarily reflect the position or opinion of the Agency.



European Union Agency for the Cooperation  
of Energy Regulators

✉ [info@acer.europa.eu](mailto:info@acer.europa.eu)  
🖱 [acer.europa.eu](http://acer.europa.eu)

✂ @eu\_acer  
🌐 [linkedin.com/company/eu-acer](https://www.linkedin.com/company/eu-acer)



# Qualitative Prioritisation of IEM projects

Project name	Project pipeline	Qualitative project priority
Nordic DA flow-based CA	CACM SDAC	High
Pan-EU IDAs	CACM SIDC	High
Core advanced hybrid coupling for DA	CACM SDAC	High
Co-optimisation R&D	CACM SDAC	High
Flow-based allocation in ID (intraday auctions)	CACM SIDC	High
ID CZGCT $\leq$ 30 min*	CACM SIDC	High
15' MTU implementation ID	CACM SIDC	Medium
15' MTU implementation DA	CACM SDAC	Low
Flow-based allocation in ID (continuous)	CACM SIDC	Low
Border and NEMO additions in SDAC	CACM SDAC	Baseload project to be organised in go-live windows
Border and NEMO additions in SIDC	CACM SIDC	Baseload project to be organised in go-live windows



# 2<sup>ND</sup> ANNUAL CONFERENCE

**POLICY SESSION**

**Q&A**

**19 SEPTEMBER 2024 | ATHENS**



# 2<sup>ND</sup> ANNUAL CONFERENCE

**CEO SESSION**

**Moderator: Alexandros Papageorgiou**  
CEO of HEnEx

**19 SEPTEMBER 2024 | ATHENS**



# 2<sup>ND</sup> ANNUAL CONFERENCE

## CEO PANEL SESSION

- Speakers:
- Ralph Danielski, CEO of EPEX
  - Gyorgy Istvanffy, Market Director of HUPX
  - Konstantin Konstantinov, CEO of IBEX
  - Tom Darell, CEO of Nord Pool

Moderator: Alexandros Papageorgiou, CEO of HEnEx

19 SEPTEMBER 2024 | ATHENS



# 2<sup>ND</sup> ANNUAL CONFERENCE

CEO SESSION

Q&A

19 SEPTEMBER 2024 | ATHENS



# 2<sup>ND</sup> ANNUAL CONFERENCE

**COFFEE BREAK**

**Next session at 15:00**

**19 SEPTEMBER 2024 | ATHENS**



# 2<sup>ND</sup> ANNUAL CONFERENCE

CACM Annual Report 2023- Key insights

**Speakers:** Christoforos Zoumas and Chiara Vitelli  
All NEMO Committee Technical Task force co-leaders

19 SEPTEMBER 2024 | ATHENS



# CACM Annual Report 2023



2nd NEMO Committee  
Annual Conference



# Index

Letter to stakeholders

Regulatory framework

NEMOs & NEMO Committee

Executive summary

## Chapter 1: SDAC

- SDAC main features
- High level market data
- Operations report
- Performance Monitoring report
- Scalability report
- R&D report

## Chapter 2: SIDC

- SIDC main features
- High level market data
- Operations report
- Performance Monitoring report
- Scalability report
- R&D report

## Annexes

- Annex 1: Monitoring parameters
- Annex 2: Notes



# Index

Letter to stakeholders

Regulatory framework

NEMOs & NEMO Committee

Executive summary

## Chapter 1: SDAC

- SDAC main features
- High level market data
- Operations report
- Performance Monitoring report
- Scalability report
- R&D report

## Chapter 2: SIDC

- SIDC main features
- High level market data
- Operations report
- Performance Monitoring report
- Scalability report
- R&D report



2023  
Outlook



# SDAC main features

## Geographical scope

PT, ES, FR, IT, DE, BE, NL, LUX, IE\*, NI\*, AT, SI, HR, BG, GR, PL, LT, LV, EE, FI, SE, DK, NO, HU, CZ, SK, RO



SDAC members (operational\*)  
\* SEM bidding zone: operation in isolation

### NEMO requirements

- Block products (simple, linked, exclusive)
- PUN & merit orders
- Complex Orders
- Aggregated MTUs orders (curves)

### TSO requirements

- ATC and Flow based (PTDF constraints)
- Network constraints: Ramping, losses, minimum stable flows...

### CACM requirements

- Adequate optimality
- Adequate scalability
- Adequate repeatability
- MNA
- MTU: 60 min

### Systems release(s)

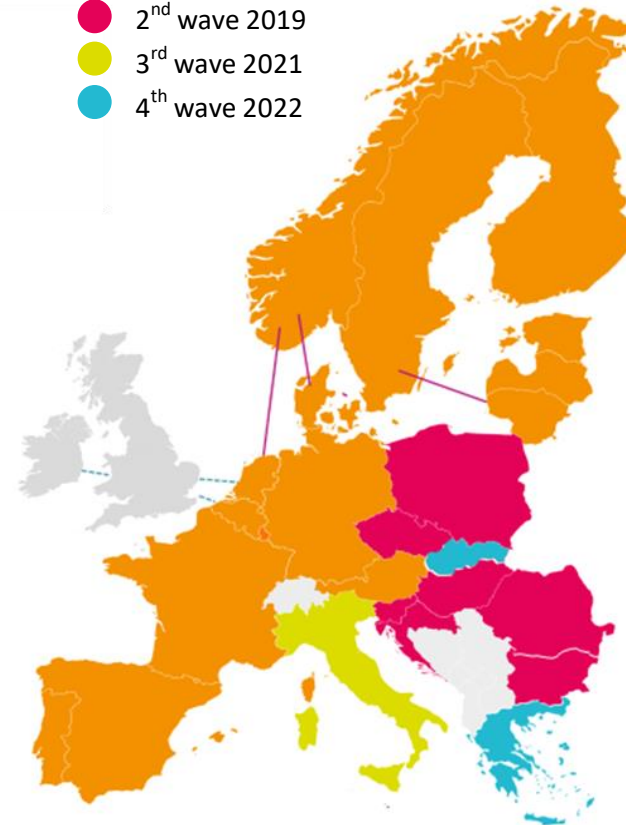
- PMB12.0 and Euphemia 11.1 implemented from 23 March 2023 (first version to support 15 MTU)
- PMB12.1 and Euphemia 11.2 implemented from 14 November 2023 (fallback solution of Core region)

# SIDC main features

## Geographical scope

5<sup>th</sup> wave (inclusion of ETPA in SIDC)

- 1<sup>st</sup> wave 2018
- 2<sup>nd</sup> wave 2019
- 3<sup>rd</sup> wave 2021
- 4<sup>th</sup> wave 2022



### NEMO requirements

- MTU: 15, 30, 60 mins without cross-matching
- Regular orders
- Linked orders
- Iceberg Orders

### TSO requirements

- ATC (including possibility to set a global constrain for set of cross-zonal interconnectors)
- Ramping constraints
- Explicit capacity requests

### CACM requirements

- Adequate scalability
- MNA
- MTU: 15-60 mins

### Systems release(s)

- Deployment of XBID version 3.3, 18<sup>th</sup> January 2023
- R3.3.15 release (firmware upgrade on physical servers and hotfixes) deployed on 28 June 2023
- Major release of R4.0.26 deployed on 13 May 2024



# High level market data

In 2023, the SDAC covered most of the EU, in a fully integrated Pan-European day-ahead power market.

The «topology» of the coupling included 27 Countries, 30 TSOs and 16 operational NEMOs.

The welfare managed by the algorithm was, on average, around 10.9B€ per session (+10% wrt 2022).

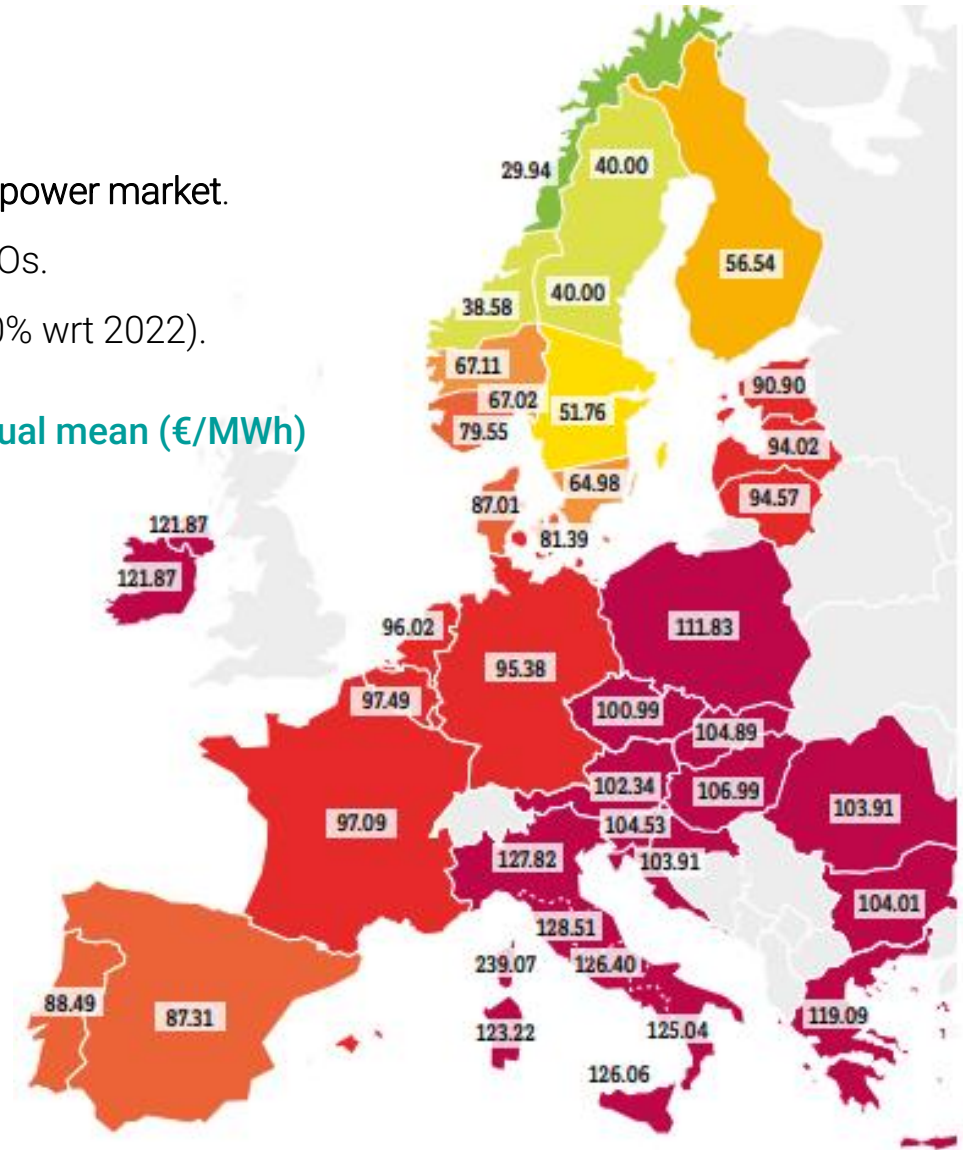
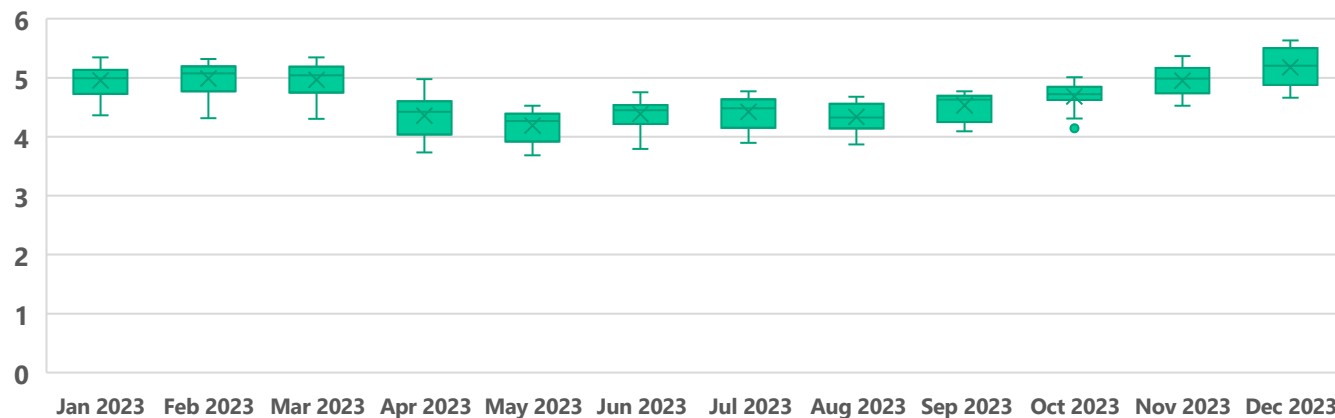
## TRADED VOLUMES (TWh)

Annual	Daily average	Daily minimum	Daily maximum
1 696.14	4.66	3.69	5.64

## CLEARING PRICES– Annual mean (€/MWh)

Hourly minimum	Hourly maximum
-500	1 750

2023 Monthly traded volumes (TWh)





# High level market data

In last five years, the trading in the SIDC continuous market has shown **steady growth**. 2023 shows another record year.

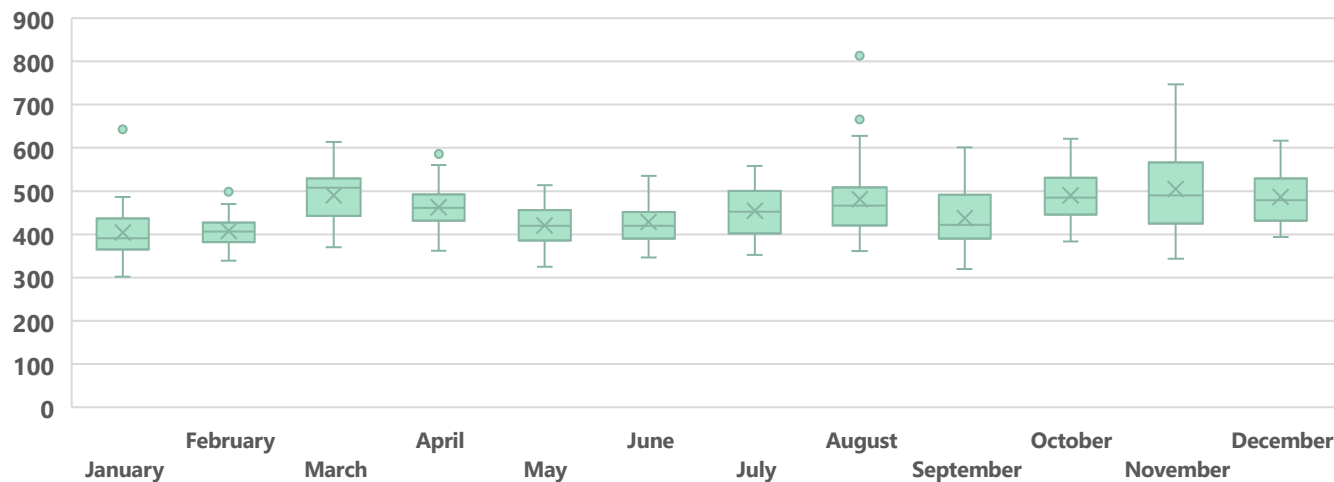
The SIDC market includes 25 countries, 56 borders and 14 NEMOs.

The coupled SIDC continuous-trading grew to 166.45 TWh traded - representing 150 million trades.

## TRADED VOLUMES (GWh)

Annual	Daily average	Daily minimum	Daily maximum
166 450	456.03	302.34	812.66

2023 Monthly traded volumes (GWh)



## CLEARING PRICES – Annual mean (€/MWh)

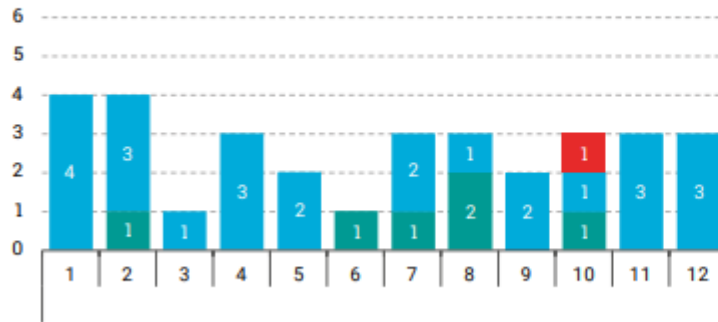




# Operations report

## INCIDENTS

Monthly



Annual

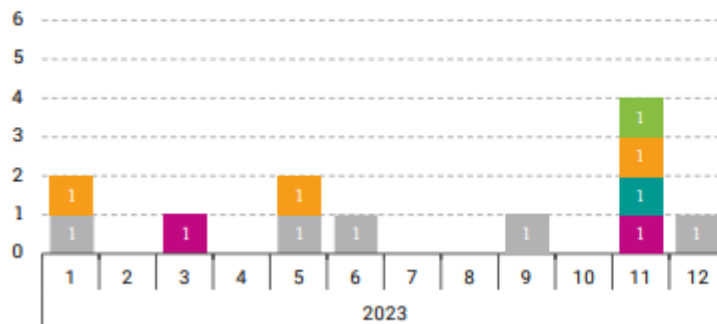


- Severity 1**  
Incidents that led to decoupling
- Severity 2**  
Incidents where message of risk of decoupling was sent
- Severity 3**  
Incidents that were visible to market participants, but risk of partial decoupling message was not sent
- Severity 4**  
Incidents that were not visible to market participants

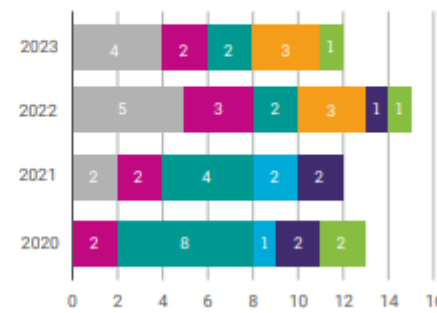
All the incidents fell in the category “Non-MCO”, mainly related to technical issues belonging to NEMO Local Trading Systems (Decoupling incident at HEnEx included).

## REQUESTS FOR CHANGE (RfC)

Monthly



Annual



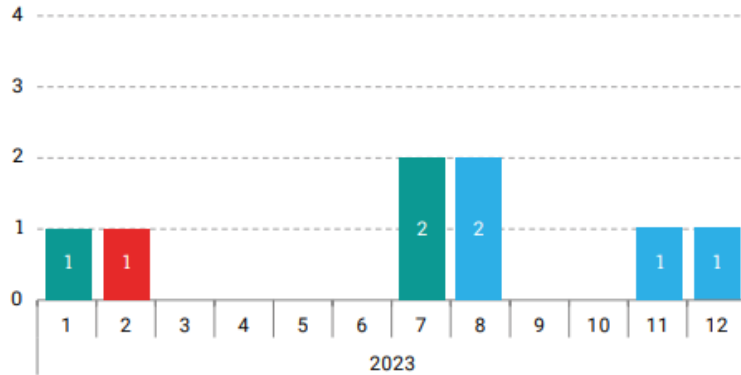
- Other
- System Release**
- Network topology**
- Geographical extension**
- Products extension**
- MNA implementation**
- Flow based**

Among the many important RfCs : the introduction of Scalable Complex Orders in Ireland, and the introduction of profile and linked blocks in Bulgaria. Two system releases for PMB and EUPHEMIA

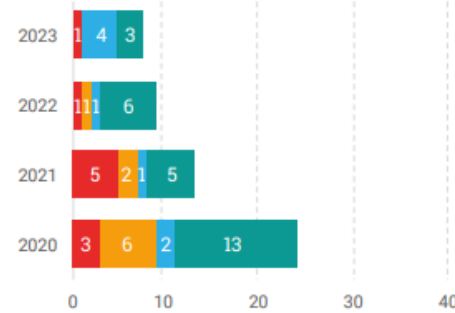
# Operations report

## INCIDENTS

Monthly



Annual



**Severity 1**

Incidents that lead to stopping ID trading

**Severity 2**

Incidents that lead to closing interconnector(s)/area(s)

**Severity 3**

Incidents that were visible to participants

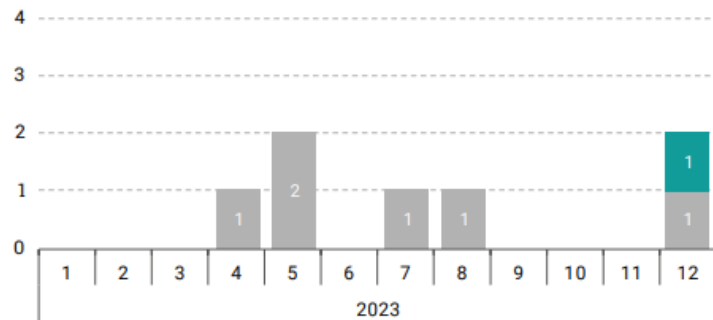
**Severity 4**

Incidents that caused the breach of a critical deadline or any other major incident

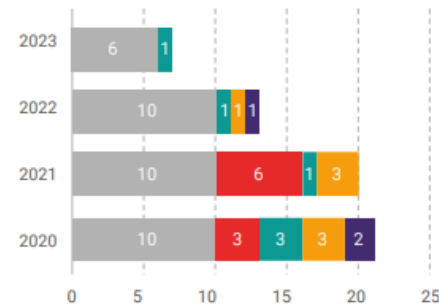
Almost the totality of the incidents was “Non-MCO”, mainly related to technical issues belonging to NEMOs Local Trading Systems, 1 incident was MCO related and lead to a Market Halt

## REQUESTS FOR CHANGE (RfC)

Monthly



Annual



Other

**System Release**

**Network topology**

**Geographical extension**

**Products extension**

**MNA implementation**

**Flow based**

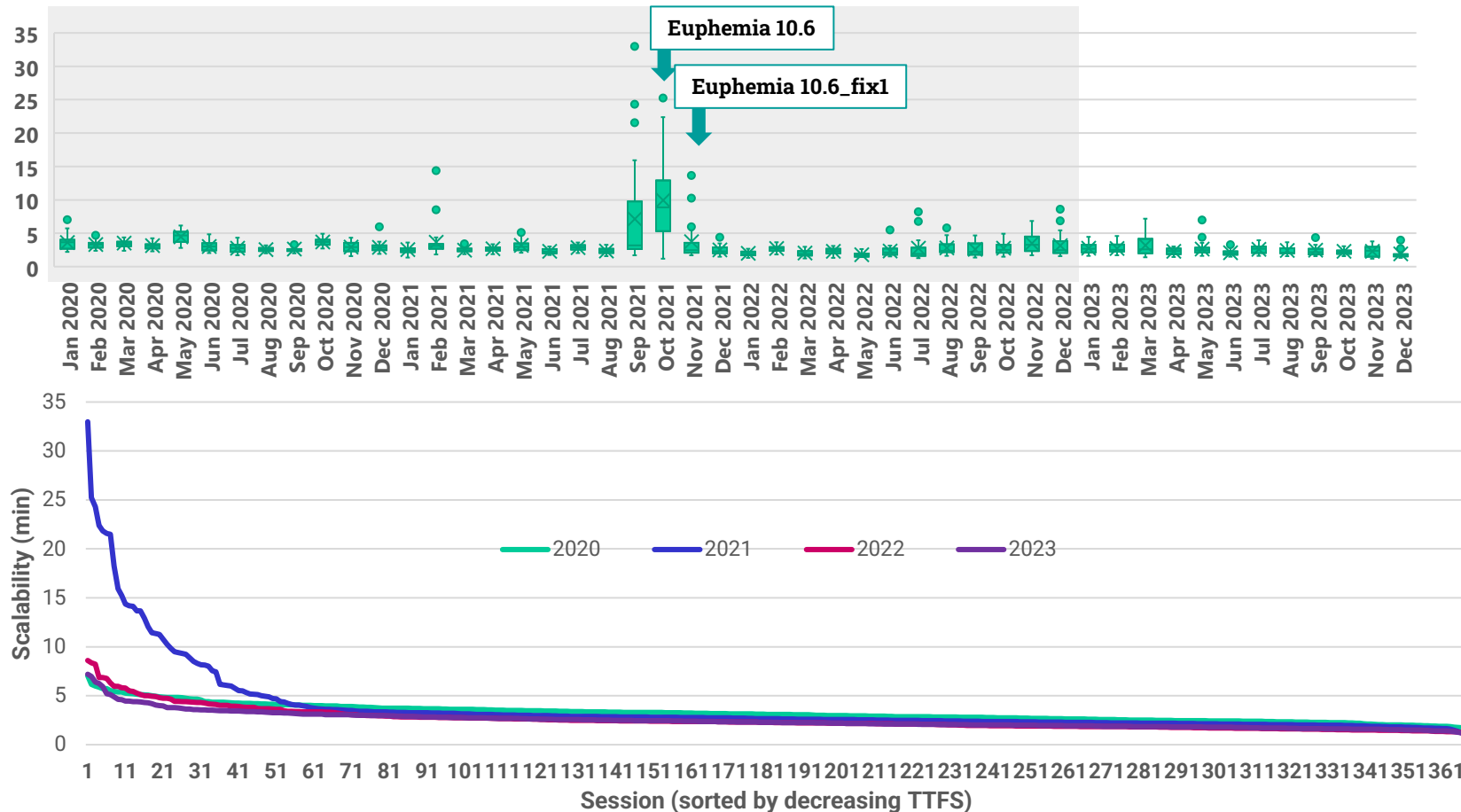
Among the RfCs: the successful go-live for ETPA’s trading platform, improving usability and update of interconnector.



# Performance monitoring report

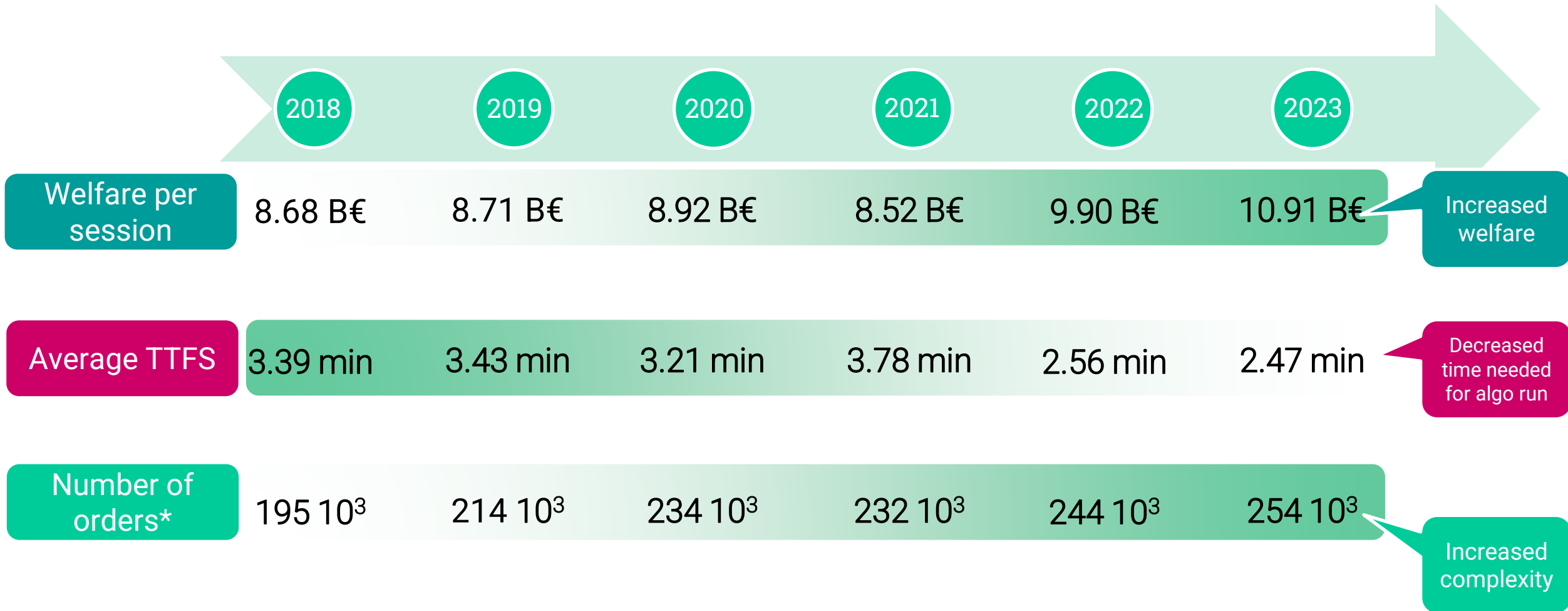
During 2023 the performance of the SDAC has been better than previous years despite that the usage of products has increased in average.

## Performance - Algorithm scalability TTFS (min)



*“The performance of the SDAC algorithm continued to be highly reliable, ensuring yearly average TTFS of 2.5 mins, well below the maximum the 17 mins allowed.”*

INCREASED SCOPE OF SDAC





## Performance monitoring report: analysis on the usage of each product and its impact on algorithm performance

The **individual impact on performance** of each product is assessed: the analysis, performed against a historical dataset from Q4 2023, is performed for all the products included in the DA product methodology, apart from Stepwise Curves, Simple Blocks and merit orders.

	Products	Reference Scenario		Impact on performance*		
		Actual values		AVG TTFS (s) E11.3	ΔTTFS (s) E11.3	ΔTTFS (%) E11.3
		Orders submitted (#)	Traded volumes (GWh)			
Reference	Reference scenario			105.0	-	-
Scenarios in which products are replaced	Stepwise Curves	195 177	6 553	Not estimated		
	Piecewise Curves			82.5	-22.5	-21.4%
	Merit orders	42 088	673	Not estimated		
	Block Orders	4 854	355	Not estimated		
	Smart Block Orders (exclusive groups + linked blocks)	2 847	Not available	89.0	-15.9	-15.2%
	MIC/MP and load gradient orders (BO and curves)	57	30	87.1	-17.9	-17.0%
	MIC/MP and load gradient orders (Scalable MIC/MP)	22	35	92.7	-12.3	-11.7%
	PUN Orders	22 539	736	80.6	-24.3	-23.2%
	PUN and Merit Orders	64 627	1 409	75.5	-29.5	-28.1%

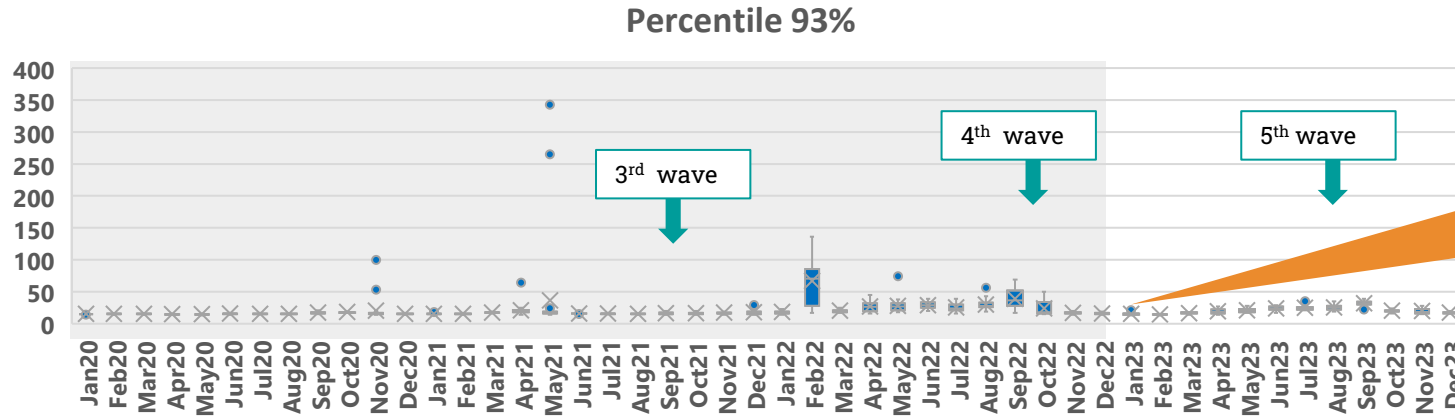
A negative value means that when the product is replaced, the TTFS is shorter than in the reference scenario.

**Overestimated impact on performance:** the conversion eliminates not only the individual impact of each product but also the combined effect linked to the interaction with the remaining products

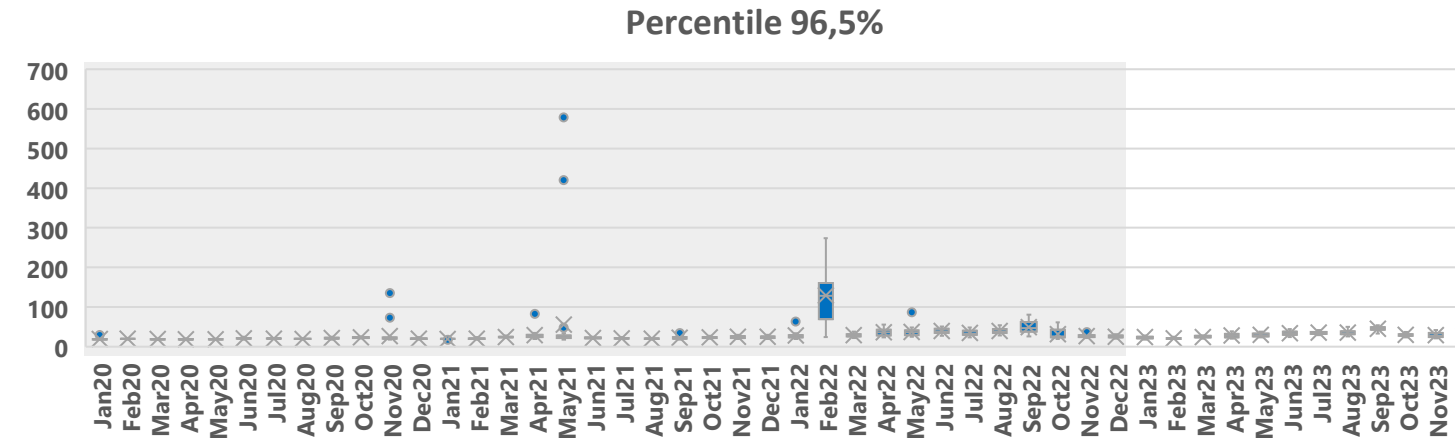
**Outcome heavily depending on the methodology used:** The conversions done in this study may not reflect a realistic behaviour of market participants in case one product is replaced by another one.

# Performance monitoring report

Time for the execution of an order/trade (milliseconds)



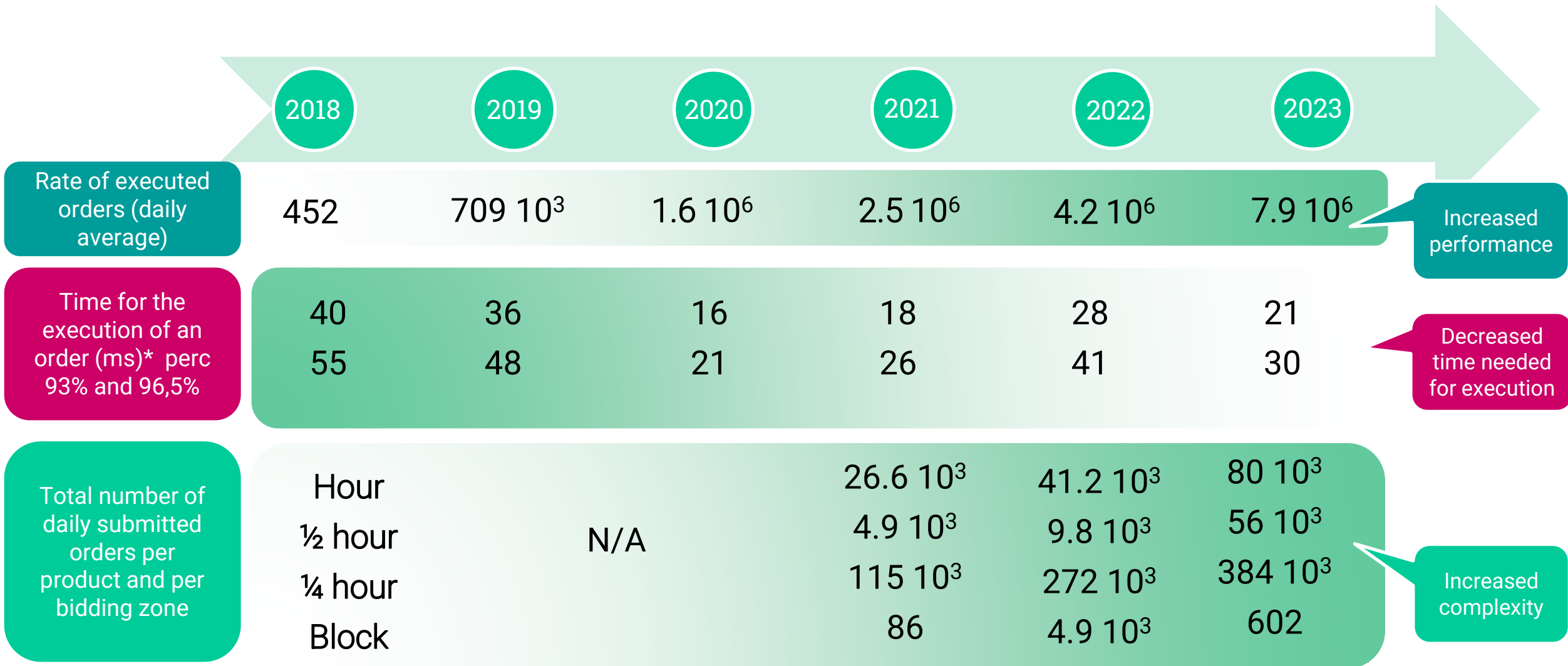
Improvement after the deployment of XBID version 3.3 in early 2023



“With significant increase in activity, number of orders and trades; the performance of the system has remained stable throughout 2023”



INCREASED SCOPE OF SIDC



\* This indicator measures the time between the moment that an order receives a timestamp from the system and the moment that it is reported by the system as executed.

# Index

Letter to stakeholders

Regulatory framework

NEMOs & NEMO Committee

Executive summary

## Chapter 1: SDAC

SDAC main features  
High level market data  
Operations report  
Performance Monitoring report  
Scalability report  
R&D report

## Chapter 2: SIDC

SIDC main features  
High level market data  
Operations report  
Performance Monitoring report  
Scalability report  
R&D report

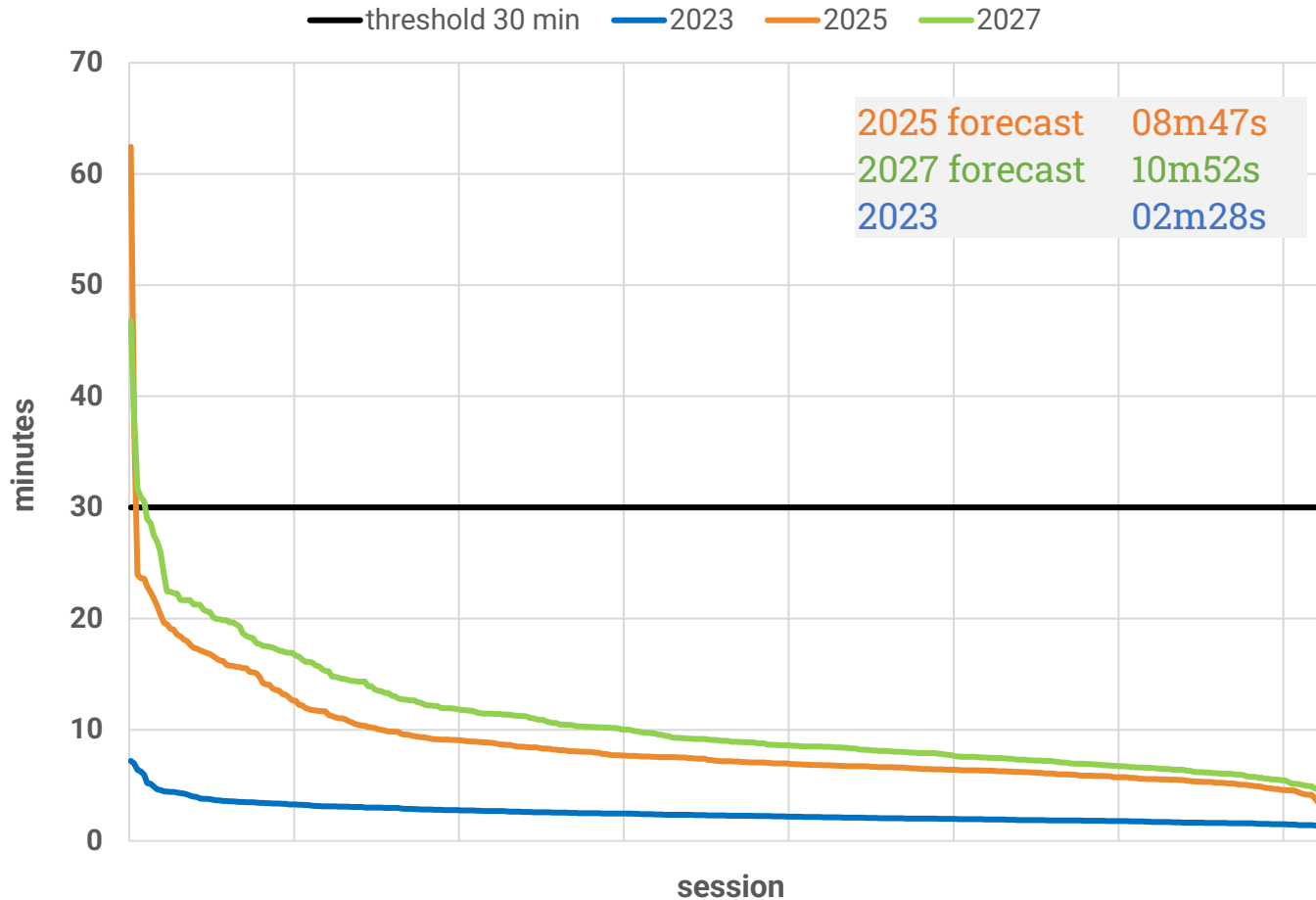


Evolution



# Scalability report

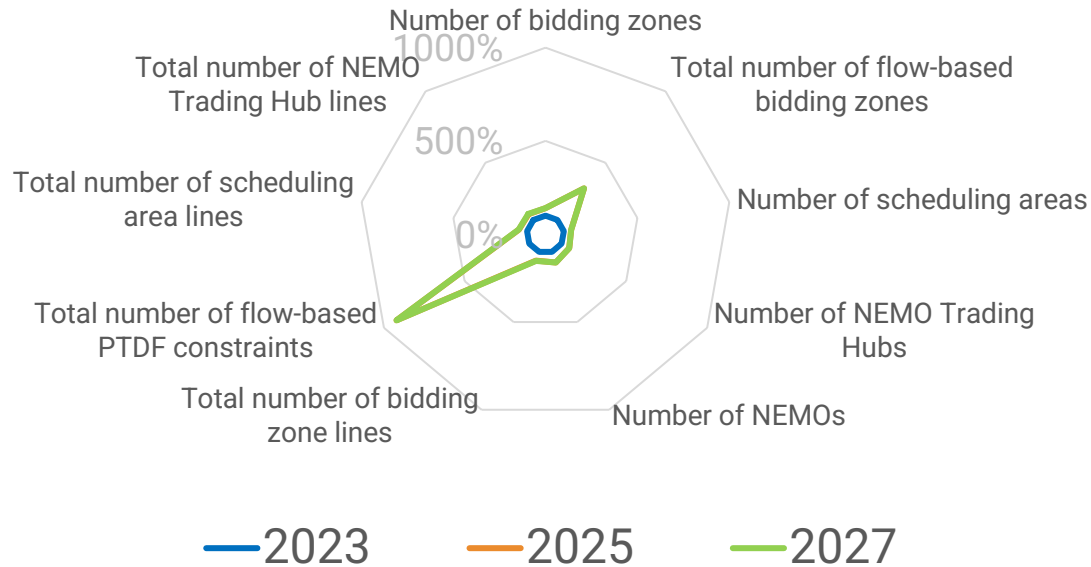
Scalability assessment - duration curves



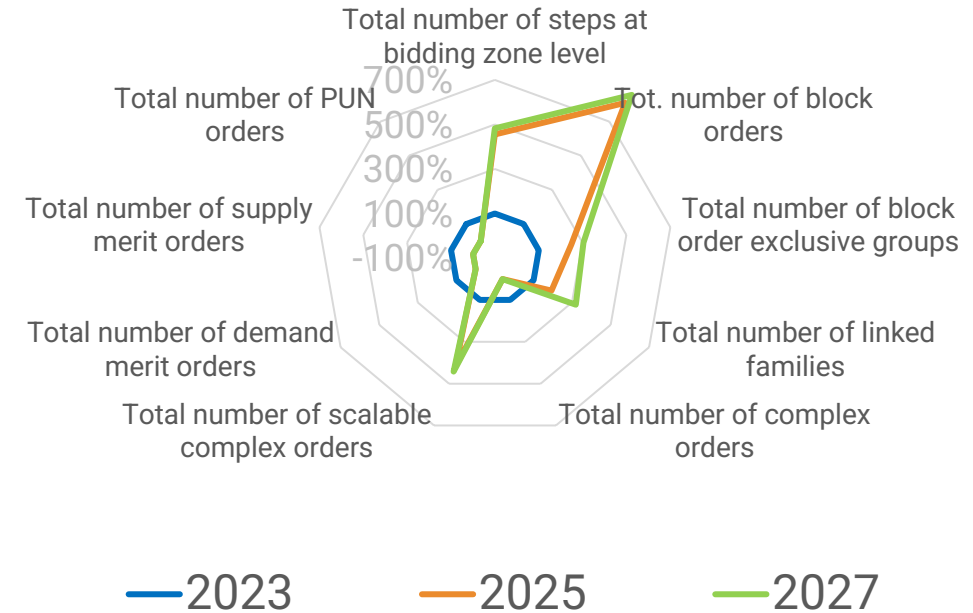
*“Thanks to the accomplished R&D, the 15 min MTU go-live can be supported by the algorithm starting from 2025”*

The scalability thresholds are respected for both the scenarios. For the only session with no solution, the Algorithm Provider identified mitigations to manage the issue.

Topology statistics as percentage of 2023 figures



Usage as percentage of 2023 usage



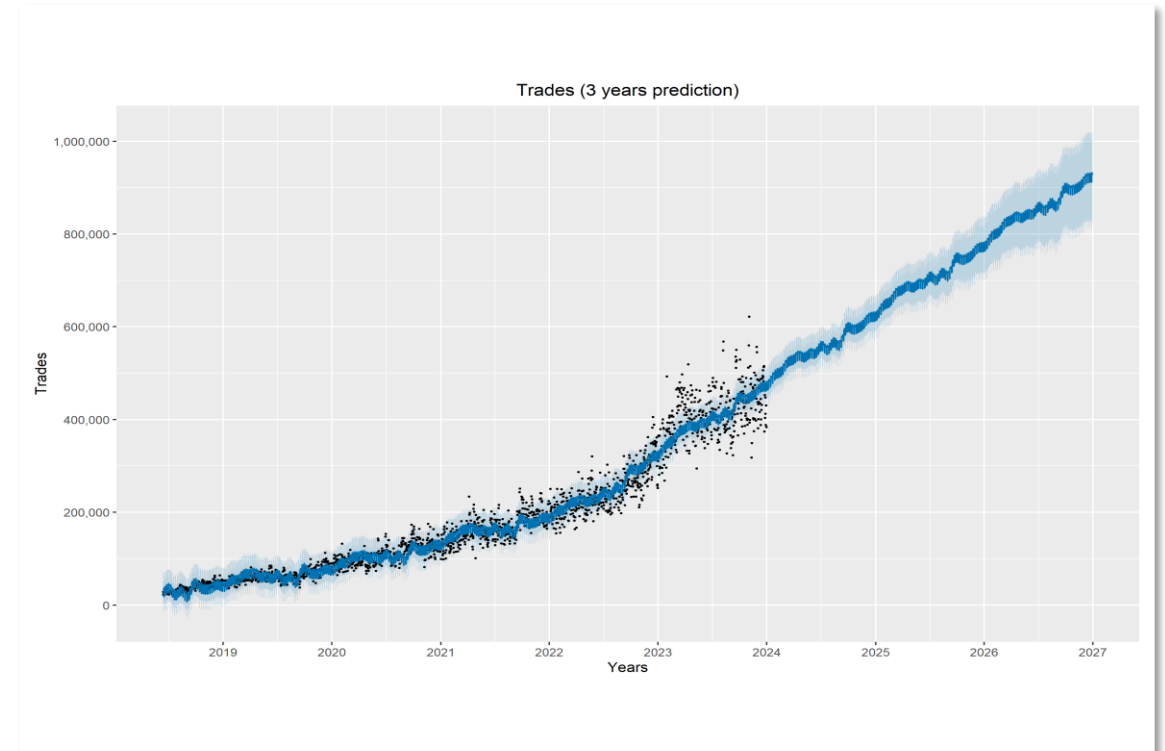
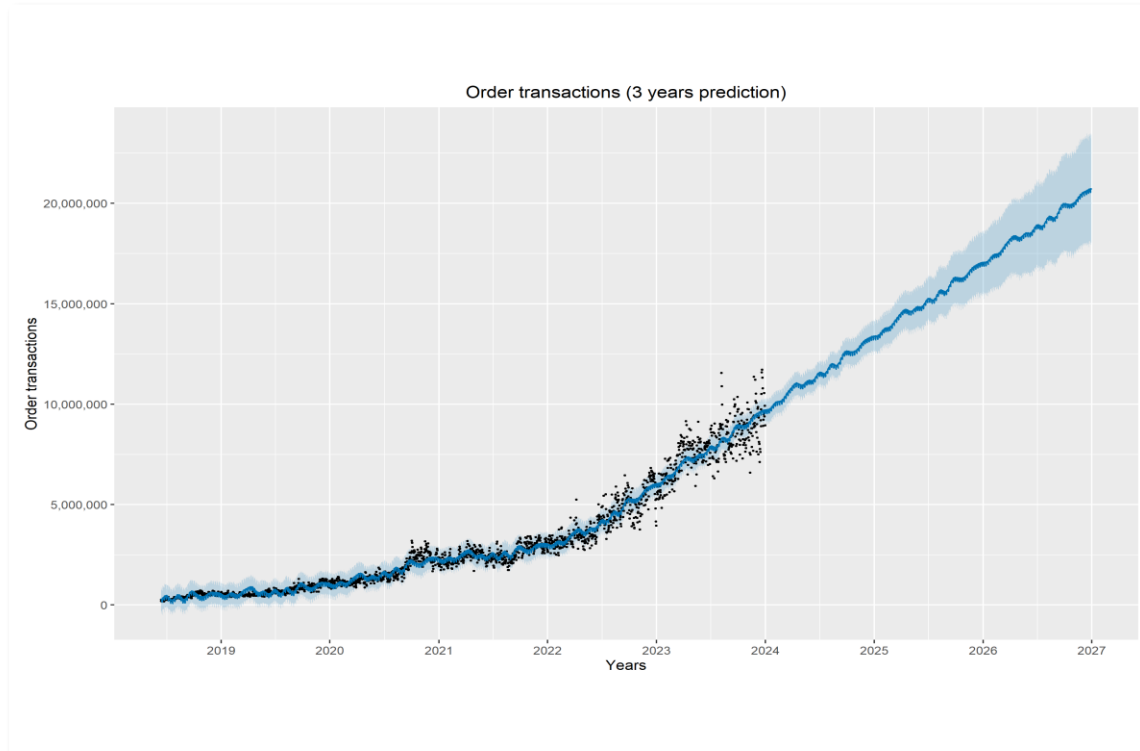
The most notable increase in topology data relates to **FB constraints**:

- Both scalability scenarios consider Nordic FB as well as Core FB
- The 15 minute MTU change introduces 4x as many network constraints.

- Both scenarios reflect the phase out of MOs, PUN and COs
- The number of (curve) steps increase due to the 15-minute implementation / the replacement of the Merit Orders.
- The number of blocks increased beyond the organic market growth reflects expected Product Usage of new RfCs.



# Scalability report, SIDC CT

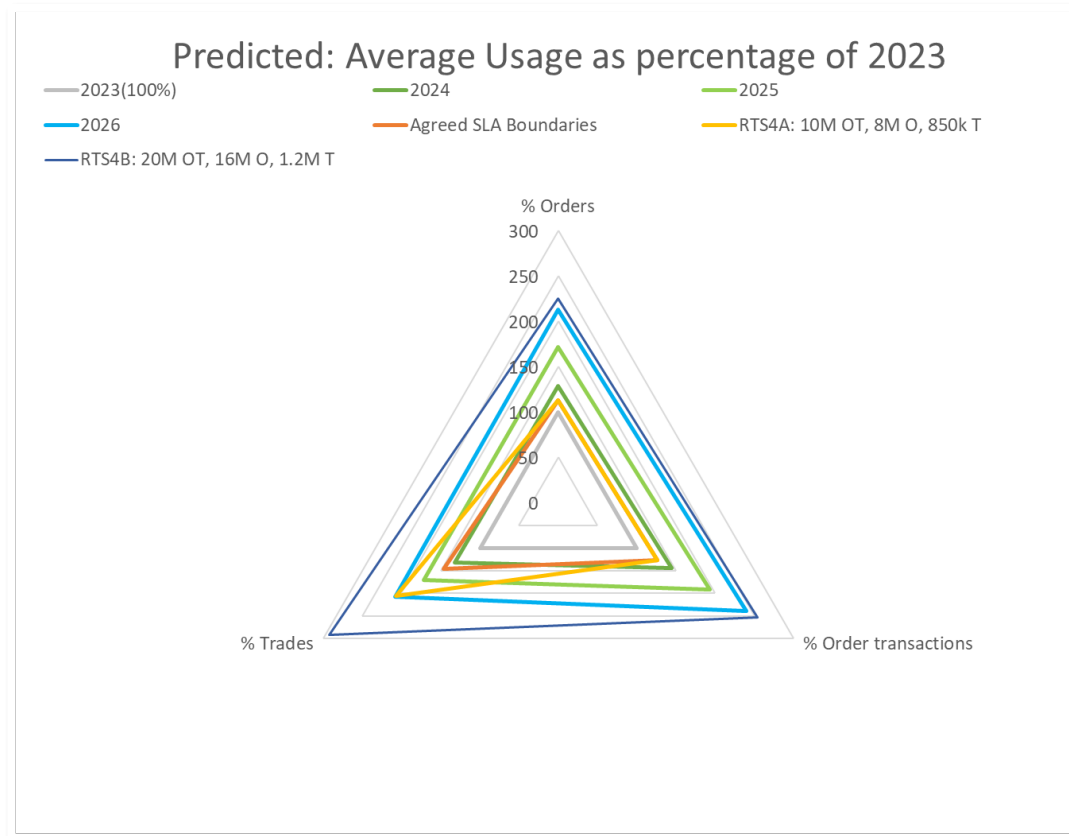


The System boundaries are already breaching currently contractually agreed SBs (10 million for order transaction; 600 thousand trades) for order transactions, for trades in H2 2025. This shall be mitigated by new SBs (20 million for order transaction; 1,2 million trades).

## Development of key system boundaries

Synthetic chart showing growth prediction, tested system performance and agreed SLAs via triangular chart:

- The simulation is based on the average 2023 data (applicable for order transactions, orders and trades), applying a growth factor based on trends.
  - The 2023 data are the basis of a triangle.
  - The predictions for 2024, 2025, 2026 are expressed as green and blue triangles. The applied ratio between order transactions and orders is identical with the ratio from 2023.
  - The agreed systems boundaries, which are applicable since R3.3 deployment (18th of January 2023), are expressed as the red triangle. The performance optimisation for the new system boundaries was a key development in 2022.
  - The yellow triangle, describes the theoretical situation in which the contractually agreed ratio between trades and order transactions would follow real 2023 data (the number of order transactions form the basis, and the number of trades is derived by the ratio).
  - Dark blue triangle reflects foreseen system boundaries after implementation of optimisation measures based on RTS4 Slice B analysis
- Summary
  - The triangle indicates that with the application of above-mentioned assumptions in combination with the prediction based on technical time series, the System Boundaries are now reaching the contractually System Boundaries (10 million for order transaction; 600 thousand trades). Therefore, a further extension of the system boundaries, including implementation of necessary optimisation measures, is initiated.





SCALABILITY FOR SIDC IDA

Scalability scenarios for IDAs is examined on an ad-hoc basis due to lack of explicit historical data for IDAs. Six scenarios have been tested based on SDAC projected volumes and products usage for the period 2021-2022. Simulations performed for multiple sessions covering IDA1 and IDA2.

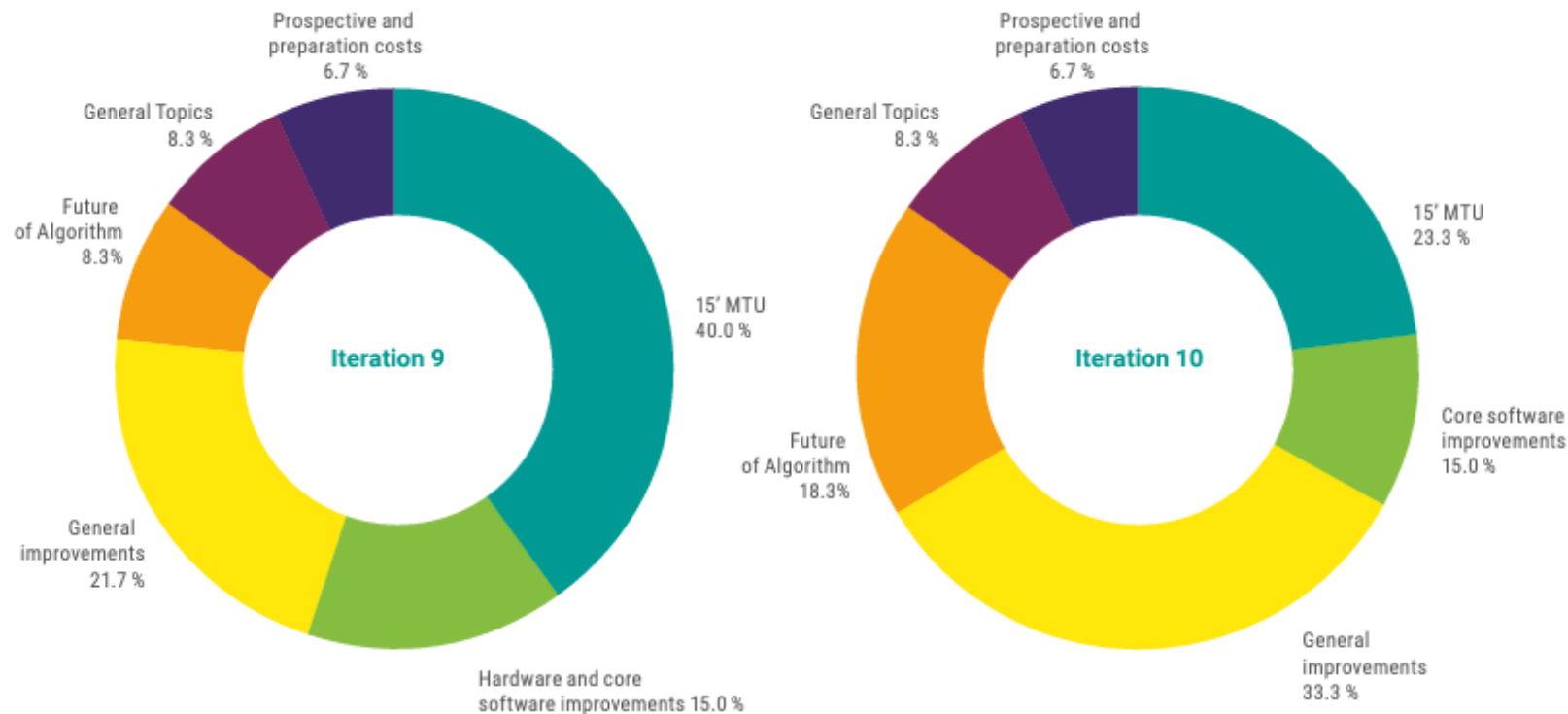
- **Scenario 1 - 3:** including the foreseen IDA go-live topology and MTUs restrictions for individual borders and BZs and 3 levels of anticipated usage of selected products and order types (growth factor equal to 125%, 50%, 5%).
- **Scenario 4 - 6:** including the topology and MTUs restrictions for individual borders and BZs foreseen to be in place in 2025 and 3 levels of anticipated usage of selected products and order types (growth factor equal to 125%, 50%, 5%).

Scenario	Results: average TTFS
Scenario 1	5 minutes and 08 seconds, never more than 8 minutes and 2 seconds.
Scenario 2	2 minutes and 59 seconds, never more than 4 minutes and 30 seconds.
Scenario 3	1 minutes and 28, never more than 2 minutes and 13 seconds
Scenario 4	7 minutes and 01 seconds, never more than 13 minutes and 37 seconds. Re-executed with pre-release of Euphemia 11.3 reducing the max calculation time from 13 minutes and 37 seconds to 8 minutes and 19 seconds.
Scenario 5	4 minutes and 15 seconds, never more than 6 minutes and 56 seconds
Scenario 6	1 minutes and 57seconds, never more than 3 minutes and 51 seconds

# R&D report

Since the beginning of Euphemia Lab in 2019, the program has been pivotal in developing and integrating several innovative solutions into future EUPHEMIA releases.

Key activities for performance assessments with new 15' MTU batches, finalization of fallback procedures, and SIDC IDAs simulations using the latest EUPHEMIA Prototype Features. Performance improvements expected to be included in EUPHEMIA 11.3 and subsequent releases.



*“The development and finalization of 15-minute MTU support have been at the forefront of this year’s R&D activities.”*



# Future plans for R&D

## SHORT-2-MID TERM

- Technology updates and code improvements targeting performance and efficiency
- Fine tuning of 15-min MTU implementation for scalability enhancements
- Core advanced Hybrid Coupling simulations and MCO EnC Integration Plan
- Conceptual/market-design impacts for introducing co-optimisation (energy and balancing capacity) in SDAC

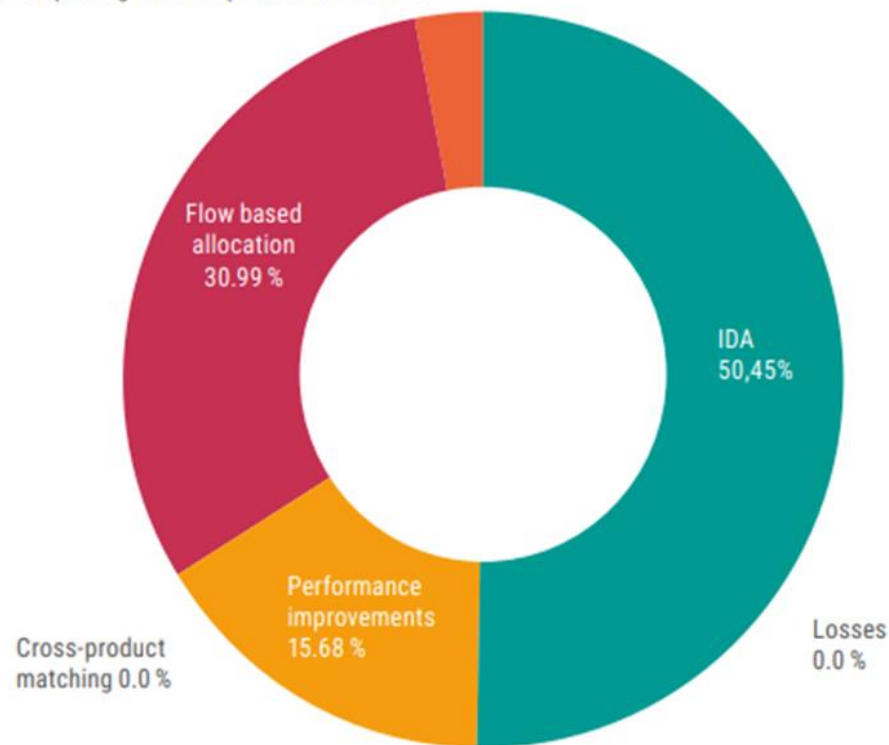
## MID-2-LONG TERM

- Support for Storage Orders implementation
- HVDC links operational requirements modelling
- Off-Shore BZs Wind-Parks
- R&D for algorithmic implementation and industrialization of co-optimisation design and requirements in SDAC

# R&D report

The R&D focus in 2023 was mainly on the principal functional extension of the SIDC functionalities, for Intraday Auctions and Flow-Based Allocation which covered more than 80% of the R&D budget. Certain activities also targeted functionality/performance improvements.

REMIT Reporting & PMI Improvements 2.87 %



**IDAs:** Functional and non-functional testing both for EUPHEMIA, XBID Capacity Module, PMB, and CIP performed allowing successful go-live implementation for 2024. CPM for IDAs is already supported in EUPHEMIA and forward improvements now target the 15-min MTU era.

**RTS4-Slice A and Slice B:** Considerable improvements in performance already in place by early 2023.

**FB for ICT:** Results for the “Minimum Viable Product” design concept illustrate high-impact on the ICT performance. R&D now targeting alternative designs for mitigating performance impacts.

**CPM for ICT:** On hold for CPM Minimum Viable Product and NRAs recommendation.

**Losses for ICT:** On hold due to prioritization of R&D activities for IDAs and FB allocation.



TEID # TAK # EYXAPICTO # DANKE # PALDIES # GRAZIE # KITOS # DAN  
JE # OBRIGADO # KÖSZÖNÖM # TACK # THANK  
YOU # ĐAKUJEM # TĀNAN # TEID DZIEKUJE # GRACIAS # MERCI # MULTUMESC # BJALOTAPPA  
BI # HVIA # GO  
PĀIBH MAITH AGAT # AČIŪ # DĚKUJI VĀM # TĀNAN

ALL  
**NEMO**  
COMMITTEE



# 2<sup>ND</sup> ANNUAL CONFERENCE

CACM Annual Report 2023- Key  
insights  
Q&A

19 SEPTEMBER 2024 | ATHENS



# 2<sup>ND</sup> ANNUAL CONFERENCE

ENERGY COMMUNITY SESSION

**Moderator: Anže PREDOVNIK**  
CEO of ADEX and BSP

19 SEPTEMBER 2024 | ATHENS



# 2<sup>ND</sup> ANNUAL CONFERENCE

**ENC PANEL SESSION: 20 YEARS OF INTEGRATED MARKETS IN EUROPE:  
WHAT COMES NEXT?**

- Speakers:
- Artur Lorkowski, Director of Energy Community
  - Miloš Mladenovic, CEO of SEEPEX
  - Dejan Draskovic, CEO of MEPX
  - Sokol Dishnica, CEO of ALPEX
  - Zoran Gjorgjievski, CEO of MEMO
  - Oleksandr Havva, CEO of UMO
  - Irakli Galdava, Director General, GENEX
  - Ondrej Maca, NEMO Intraday Steering Committee Chair

Moderator: Anže Predovnik, CEO of ADEX and BSP

**19 SEPTEMBER 2024 | ATHENS**



---

# Implementation of market coupling

## *EU-EnC NEMOs cooperation*

---

Oleksandr Havva

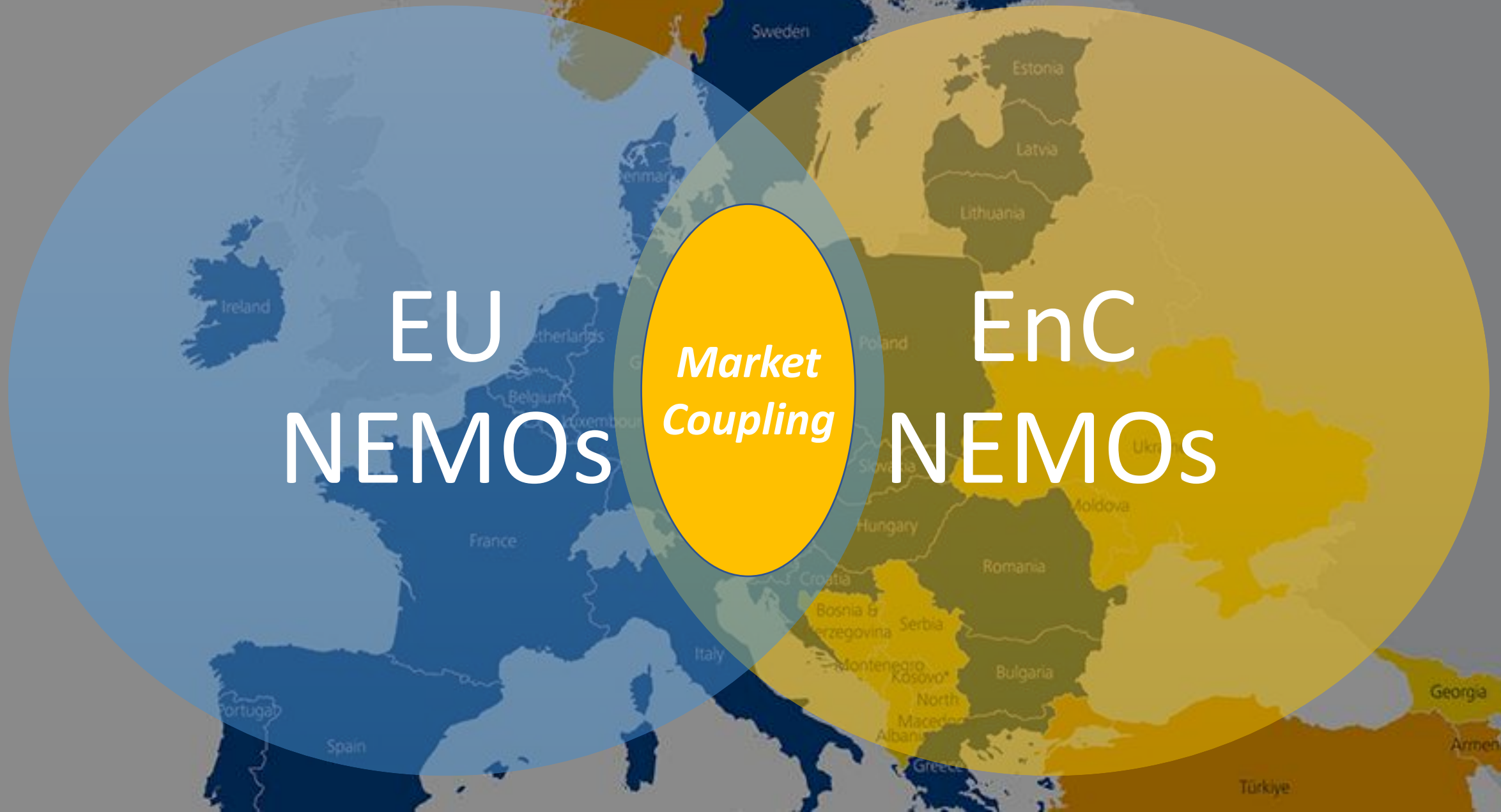
CEO

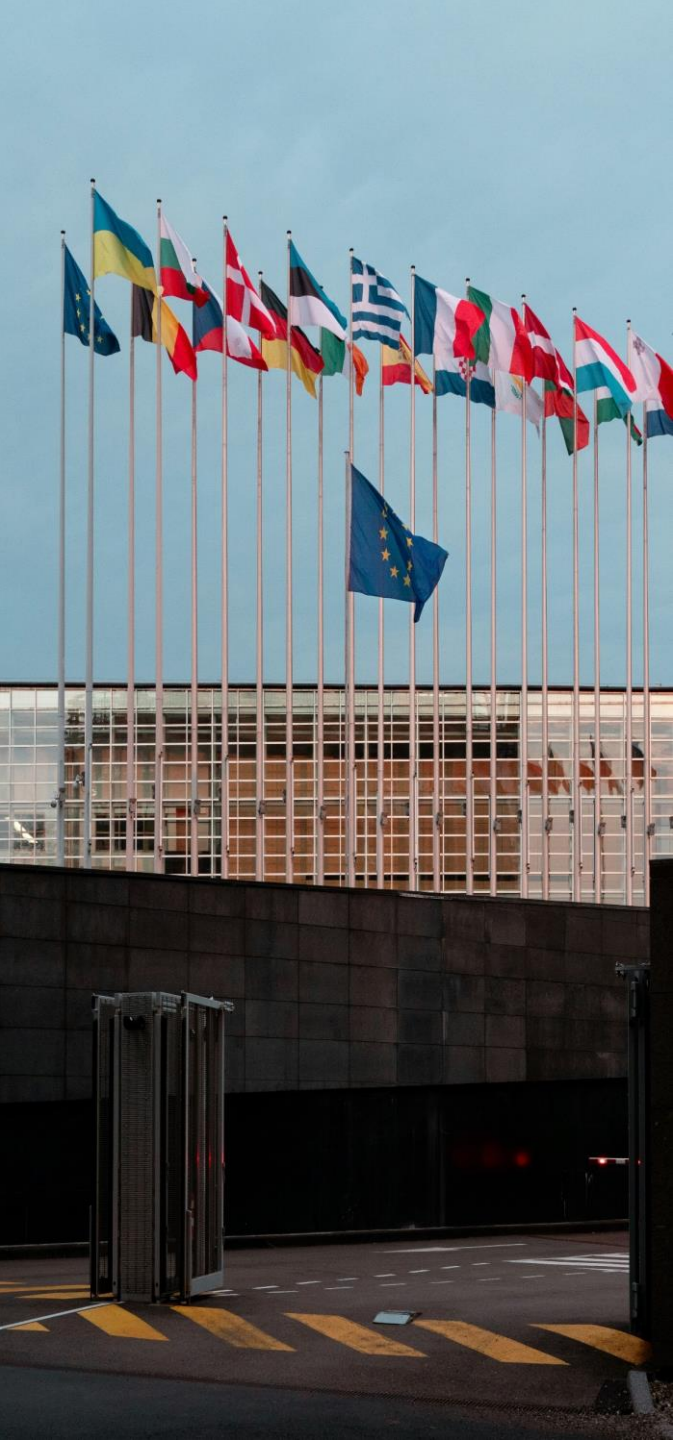
JSC “Market operator”

---



*Successful market coupling is possible only in case of close EU-EnC cooperation*





## EU side has the same amount of work as EnC side

---

### MCO IP submission

---

- Outstanding issues of the current MCO Integration Plan draft:
  - there is no clarity whether EnC NEMOs are entitled to carry out the MCO Function
  - discrepancies in voting rights between EU and EnC NEMOs
- 

### TCM application by EnC CPs

---

- TCM apply only to Member States' market participants  
*Each TCM includes the list of participants it relates to*
  - there is no clear procedure on how does it apply existing TCM  
*in case SDAC/SIDC extension*
-





# EU-EnC legislation gap analysis

## Fixed issues:

### Specifics of the grid

The peculiarities of the grid to be analyzed  
*excluding lines from coupling or changing topology of the network*

- *for example:*  
Ukrainian Dobrotvir-Zamosc line which connects Ukrainian TPP with Polish grid

### CBAM

Since 2026 MS shall apply CBAM when importing carbon-intensive goods into the customs territory of the EU from third countries

- derogation from CBAM for EnC CPs until 2030;
- since 2030 applying GOs;
- market coupling is not a single precondition for derogation

### Tax & Custom regime

Each MS and EnC CP has own specific rules regarding custom and tax

- apply it on a contractual basis

### Critical infrastructure security rules

GDPR

### Technical, organizational issues

*other challenges*

- apply it on a contractual basis



# 2<sup>ND</sup> ANNUAL CONFERENCE

ENERGY COMMUNITY SESSION

Q&A

19 SEPTEMBER 2024 | ATHENS



# 2<sup>ND</sup> ANNUAL CONFERENCE

## CLOSING REMARKS

19 SEPTEMBER 2024 | ATHENS



# 2<sup>ND</sup> ANNUAL CONFERENCE THANK YOU

TO ALL OUR SPEAKERS, MODERATORS AND ATTENDEES