SIDC_JOINT_OTH_07: Algorithm Monitoring

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1.   Introduction

This procedure describes the process of assessing the performance of the Continuous Trading Matching Algorithm for the intraday Market Timeframe and the process of determining and calculating the algorithm monitoring indicators (see the Annex 1 to this procedure). By 1 July of every year, the NEMOs and TSOs jointly have to develop and publish a report with the result of this assessment for the past year and upon request provide ACER with the data used for the reporting.

The report shall contain at least:
- all items listed in the Annex 1 of this procedure;
- all cases of performance deterioration or non-compliance with an implemented functionality;
- a description of the reasons of these occurrences and the used or suggested remedies or future improvements; and
- a presentation of the conclusions made in cooperation with the relevant stakeholder fora organized in accordance with Article 11 of the CACM Regulation.

This procedure also includes Non-algorithm Monitoring Indicators* in order to perform common regular reporting on the performance of SIDC project.

Please note:
- Capitalized terms used in the operational XBID Procedures have the meaning set forth in Exhibit 1 of the Intraday Operations Agreement (IDOA).
- NEMO OPSCOM is the operational committee composed of the NEMOs as established by the All NEMOs Intraday Operations Agreement (ANIDOA).

1.1.   Summary

This procedure describes the process of receiving on a monthly basis the algorithm monitoring indicators generated by the Service Provider of the XBID System, the assessment by the NEMOs and TSOs and finally the half-monthly reporting to the NRAs.

1.2.   Governed / Regulated by

- Methodology for the price coupling algorithm
- Intraday Operations Agreement (IDOA)
- Annex 4 to the Algorithm Methodology

1.3.   Tools and Communication protocols

1.4. Associated procedures

None

2. Procedure

2.1. Preconditions to start

None.

2.2. General overview

Table 1 – The reporting process

#	Process	Timings	From	To	Tool
1	Generate and deliver data	At the latest at the 10th of the next month	Service Provider	NEMOs and TSOs	XBID & SFTP E-mail
2	Download data	As soon as possible after the data is made available - At the latest 1 year after the reported month	NEMOs and TSOs	-	██████ ███████ ███████
3	Merge data with Historical Data	In the second half of the month after the reported month	NEMOs and TSOs	-	
4	Assess Continuous Trading Matching Algorithm	In the second half of the month after the reported month	NEMOs and TSOs	-	
5	Publish assessment result preceding half year	Within 6 month after the end of each half year	NEMOs and TSOs	NRAs and ACER	████
6	Deliver reported data preceding half year	Within 2 weeks after request	NEMOs and TSOs	ACER	

2.3. Process Clarification

1. Generate and deliver data within the agreed time

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Once the Service Provider has generated the data, the data is transferred to the ████ server of the XBID System.

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2. Download data within the agreed time

On receipt of the notification of the delivery of the data the NEMOs and TSOs download the data. The data remain available on the ▮▮▮▮ server at least one year after the end of the reported month.

The NEMOs and TSOs check completeness of the data. The workload to validate the data is spread amongst the members of the body indicated in the ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮.

Any supporting documentation to ensure consistency and completeness of the checks will be available on the SIDC project environment.

The data is transferred to the SIDC project environment by the members of body indicated in the ▮▮▮▮▮▮▮▮▮▮▮▮

3. Merge data downloaded within the agreed time with Historical Data

The data is merged with Historical Data to enable the assessment for a longer period and to trace changes in the performance of the Continuous Trading Matching Algorithm. The merge of data is performed by the members of body indicated in the ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ ▮▮▮▮.

In this step the following data sets are to be composed (for use during the assessment described in step 4 Assess Continuous Trading Matching Algorithm):

- Recent historical set comprising the period of 6 months preceding the current month;

- Rolling historical set comprising the period of 12 months preceding the current month;

- Near future set comprising the project growth of the rolling historical set for the following year;

- Distant future set comprising the project growth of the rolling historical set for the following three years.

See Annex 2: Data sets for more details.

Any supporting documentation to ensure consistent merging of the data will be available on the SIDC project environment.

4. Assess Continuous Trading Matching Algorithm

Once the data for the reported period is merged with Historical Data the assessment of the data is started. The indicators as specified in the ▮▮▮▮▮▮▮▮▮▮▮▮▮▮ are established by the members of OPSCOM with support of TWG ▮▮▮▮▮▮▮▮▮▮▮▮.

The assessment of the Continuous Trading Matching Algorithm concludes the following areas:

- Monitoring of operations and reporting;
- Request for Change impact assessment;
- Scalability assessment;
- Research and Development assessment.

See Annex 3: Types of assessment for more details.

Any supporting documentation to ensure consistent assessment of the data will be available on the SIDC project environment.

5. Publish assessment result preceding half year

At the latest at the end of each half year the results of the assessment for the preceding half year are delivered by ID SC (with support of OPSCOM) to the NRAs and is made public.

6. Deliver reported data preceding half year

On request of ACER the NEMOs and TSOs (ID SC with support of OPSCOM) deliver the reported data used for the published assessment to ACER.

3. Final State

The half-yearly reporting of indicators monitoring the Continuous Trading Matching Algorithm is published.

Annex 1: Required indicators monitoring the Continuous Trading Matching Algorithm

Indicators on the Continuous Trading Matching Algorithm performance

Indicators on the algorithm scalability				Responsible body	Frequency
1	Indicators of the time needed to process an Order execution, meaning the processing of an Order				
	Time for the execution of an Order	This indicator measures the time between the moment when an Order receives a timestamp from the system and the moment it is reported by the system as having been executed.		NEMO OPSCOM with support of TWG	Half yearly
	Rate of executed Orders	This indicator measures the number of executed Orders divided by a certain amount of time.		NEMO OPSCOM with support of TWG	Half yearly
2	Indicators of the time needed to process a Trade execution, meaning the Matching of Orders				
	Time for the execution of a Trade	This indicator measures the time between the moment when an aggressor Order receives a timestamp from the system and the moment it is reported by the system as having concluded a Trade.		NEMO OPSCOM with support of TWG	Half yearly
	Rate of executed Trade	This indicator measures the number of executed Trades divided by a certain amount of time.		NEMO OPSCOM with support of TWG	Half yearly
3	Indicator of the time needed to produce Post-Coupling output				
	Time for the generation of Post-Coupling files	This indicator measures the time between the moment the system is triggered to produce its Post-Coupling output (after Gate Closure Time) and the moment it sends this Post-Coupling output.		NEMO OPSCOM with support of TWG	Half yearly
4	Indicator of the time needed to process Order Book update				

	Time for processing an Order Book update	For each Order Book update, this indicator measures the longest time lapse between the moment that an Order receives a timestamp from the system and the moment that the system sends the Order Book update comprising that Order.		NEMO OPSCOM with support of TWG	Half yearly

Indicators on the Continuous Trading Matching Algorithm usage

Indicators to describe the usage of continuous SIDC products				Responsible body	Frequency
1	Indicators to describe the usage of continuous SIDC algorithm products				
	Total number of products	This indicator counts the number of available products in the Continuous Trading Matching Algorithm, as defined in Shared Order Book		OPSCOM	Monthly
	Total number of daily submitted Orders per product and per Bidding Zone	This indicator counts the total number of submitted Orders on a daily basis		OPSCOM	Monthly
	Total daily submitted Order volume per Bidding Zone	This indicator measures total submitted Order volume per Bidding Zone		OPSCOM	Monthly
2	Indicator to describe the usage of Explicit Capacity Allocation				
	Total number of Explicit Capacity Allocation request	This indicator counts on a daily basis the total number changes of Cross-Zonal Capacity, which do not derive from a Trade in the Shared Order Book.		OPSCOM	Monthly
Indicators to describe the geographical extension of continuous SIDC					

	Total number of NEMOs	This indicator counts the number of Member entities as defined in Shared Order Book	OPSCOM	Monthly
	Total number of Delivery Areas	This indicator counts the number of Delivery Areas as defined in Capacity Management Module	OPSCOM	Monthly
	Total number of Market Areas	This indicator counts the number of Market Areas as defined in Capacity Management Module	OPSCOM	Monthly
	Total number of Interconnectors	This indicator counts the number of Interconnectors as defined in Capacity Management Module	OPSCOM	Monthly
	Total number of Bidding Zone borders	This indicator counts the number of Bidding Zone borders as defined in Capacity Management module	OPSCOM	Monthly
Indicators to describe the network constraints				
	Total number of occurrences of Ramping Constraints on Interconnector level	- This indicator counts the occurrences (per DC Interconnector, per year, per MTU) of the constraint being a limiting one for the available transmission capacities	OPSCOM	Monthly
	Total number of occurrences of Bidding Zone Net Position volume constraints	This indicator counts the occurrences (per year, per Bidding Zone) of the Net Position volume constraint being a limiting one for the available transmission capacities	N/A yet	N/A yet

Monitoring of the Continuous Trading Matching Algorithm output

Indicators to describe the output of the Continuous Trading Matching Algorithm				Responsible body	Frequency
1	Indicators on the evolution of the number of Matched Orders of each contract, and the corresponding total volume				
	Total matched volume	aggregated volume of all Trades within the Intraday Market Timeframe, made per contract per combination of Bidding Zones		NEMO OPSCOM with support of TWG	Half yearly[1]
	Total matched volumes – hours to delivery	this indicator counts the traded volumes, grouped per contract with same "delivery time start-end", per combination of Bidding Zones and grouped according to the hours left to delivery and aggregated per month		NEMO OPSCOM with support of TWG	Half yearly
	Total number of Trades per contracts	This indicator counts the total number of Trades and per Bidding Zone		OPSCOM	Monthly
	Total number of Trades per contract – hours to delivery	This indicator counts the total number of Trades, grouped per contract with same "delivery time start-end", per Bidding Zone and grouped according to the hours left to delivery.		OPSCOM	Monthly
2	Indicators on the evolution of the number of Explicit Capacity Allocations				

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[1] In order to facilitate the monthly reporting by TSOs the information for this indicator is to be prepared by NEMO OPSCOM and handed over to the OPSCOM with a monthly frequency in the month following the reported month.

	Total number of Explicit Capacity Allocations	this indicator counts the total number of Explicit Allocations on a daily basis		OPSCOM	Monthly
3	Indicators on the prices				
	Volume-Weighted Average Intraday Prices	volume-weighted average price of all Trades per contract per Bidding Zone.		NEMO OPSCOM with support of TWG	Half yearly
	Volume-Weighted Average Intraday Prices-last trading hour	volume-weighted average price of all Trades per contract per Bidding Zone corresponding to the last trading hour.		NEMO OPSCOM with support of TWG	Half yearly
	Bid-Ask Spread	Average bid-ask spread of the active orders per contract per Bidding Zone, calculated as defined in the algorithm monitoring procedures.		NEMO OPSCOM with support of TWG	Half yearly
4	Indicators on the capacities				
	ATC utilization rate	ratio for each MTU calculated from the Allocated netted Intraday Capacity / offered Intraday capacity for each border in both directions		OPSCOM	Monthly
5	Indicators on Net Positions				
	Net Positions	This indicator counts (calculates) the Net Positions for each Bidding Zone per MTU level.		OPSCOM	Monthly

*Non Algorithm Monitoring Methodology indicators for monthly reporting

Indicators per month				Responsible body	Frequency
1a	Traded Volume per BZ per Month	Aggregated volume of all Trades within the Intraday Market Timeframe per Bidding Zone		NEMO OPSCOM with support of TWG	Monthly[2]
1b	Weighted Average prices per MTU per BZ	The indicators counts the volume-weighted average price of all Trades per contract per Bidding Zone		NEMO OPSCOM with support of TWG	Monthly[2]
1c	Overall volume traded across the coupled region (Overall volume traded in XBID)	Aggregated volume of all Trades within the Intraday Market Timeframe		NEMO OPSCOM with support of TWG	Monthly[2]
2	Total volume matched hours before delivery	This indicator counts the traded volumes, grouped per contract with same "delivery time start-end", per combination of Bidding Zones and grouped according to the hours left to delivery and aggregated per month		NEMOs OPSCOM with support of TWG	Monthly[2]
3	Volume fractions of products per BZ per Month (%)	This indicator counts for each Bidding Zone the traded volumes per products as a percentage of the total traded volume of the Bidding Zone.		NEMO OPSCOM with support of TWG	Monthly[2]

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[2] In order to facilitate the monthly reporting the information for this indicator is to be prepared by NEMO OPSCOM and handed over to the OPSCOM with a monthly frequency in the month following the reported month.

4	Share of cross-bidding zone trades vs. overall BZ volume	This indicator counts per Bidding Zone the traded volumes on Bidding Zone borders versus the aggregated volume of all Trades within the Intraday Market Timeframe		NEMO OPSCOM with support of TWG	Monthly[2]
5	Total availability of the central SIDC platform	This indicator represents the central SIDC platform aggregated availability in percentage.		OPSCOM	Monthly
6a	Net Positions	This indicator counts (calculates) the Net Positions for each Bidding Zone per MTU level.		OPSCOM with support of TSOs	Monthly
6b	Total amount of Explicit Capacity Allocation	This indicator counts on a daily basis the total amount of Intraday Cross-Zonal Capacity, which do not derive from a Trade in the Shared Order Book, per direction (import/export).		OPSCOM with support of TSOs	Monthly
6c	ATC utilization rate	ratio for each MTU calculated from the Allocated netted Intraday Capacity / offered Intraday capacity for each border in both directions		OPSCOM with support of TSOs	Monthly
6d	Explicit allocation share on total allocation	This indicator reports on share of Explicit allocation compared to total allocations per BZ border where explicit allocations are offered to the market.		OPSCOM with support of TSOs	Monthly
7	Evolution of the order events and trades	This indicator reports on daily Order Transactions and Trades since the first complete day of trading.		NEMO OPSCOM with support of TWG	Monthly

Annex 2: Data sets

The indicators specified in Annex 1 of this procedure are to be calculated on the basis of the following sets.

Recent historical set

The recent historical set comprises the period 6 months preceding the current month.

Rolling historical set

The rolling historical set comprises the period of 12 months preceding the current month.

Near future set

The near future set comprises the project growth of the rolling historical set for the following year.

Distant future set

The distant future set comprises the project growth of the rolling historical set for the following three years.

Annex 3: Types of assessment

Monitoring of operations and reporting

The monitoring of operations and reporting is to be based on the Recent Historical Set and the Rolling Historical Set.

- The effective usage of the scalability indicators in the recent historical set is to be compared against the maximum usage.

- For monitoring the scalability, the scalability indicators shall be calculated using the recent historical set and compared with the thresholds defined in the SLA with the service provider.

- For reporting all indicators shall be calculated using average values of the rolling historical set.

The operational reporting shall also provide a list of incidents and the application of backup procedures, including the reasoning of their occurrence and applied or anticipated remedies to prevent them in the future. In case any corrective measure is taken with the aim to maintain an adequate performance of the SIDC Algorithm, a report is to be published indicating the corrective measure applied and the reasons for applying it.

Request for Change impact assessment

The Request for Change impact assessment is to determine the impact on scalability by a Request for Change by calculation of the scalability indicators running simulation on the historical set and the near future set.

- For the run on the historical set the effective usage is to be observed over the rolling historical set, both with and without the change.

- For the run on the near future set the anticipated usage is to be observed over the near future set, both with and without the change. Where the change concerns an adaption of the algorithm with anticipated significant performance impact, the run with the change may be done with a prototype of the updated algorithm.

During this assessment the thresholds defined in the SLA with the service provider are to be applied.

The outcomes of the assessment of requests for change shall be included in an assessment report, containing all the relevant information on the process followed, including at least the following information:

- description of the requests for change, including all information from Article 15(2) of the Algorithm Methodology;

- proposal of prioritization of the requests for change with arguments when requests for change submitted for combined impact assessment breach the performance criteria; and

- results of the individual impact assessment, in case of the combined impact assessment breach the performance criteria

Scalability assessment

The scalability assessment is to determine the impact of the long-term anticipated growth on the SIDC algorithm, considering the maximum of usage of the functionalities. During this assessment the thresholds defined in the SLA with the service provider are to be applied.

The assessment compiles simulation of the run of the continuous SIDC algorithm on the near future set and the distant future set.

Research and Development assessment

The research and development assessment is to ensure the capability of the SIDC algorithm to support in the medium and long term the expected growth and the extension of requirements.

The assessment uses all scalability indicators specified in Annex 1.

The assessment compiles simulation of the run of the continuous SIDC algorithm on the distant future set. At least a predefined percentage of the resulting values shall be within the thresholds defined in the SLA with the service provider.