# DIRECTIVE 1/2022

# Monitoring and Control in information exchanges via API with OMIE

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### 1. PREAMBLE

In the context of carrying out its actions as a market operator, OMIE considers it appropriate and proper to facilitate the exchange of information with market agents, making a set of standardized message interfaces (APIs) available to them that allow them to develop their own applications to interact with one or more of the systems and/or markets operated by OMIE, thus enabling the exchange of information between remote systems (M2M).

Once this system has been put into operation, especially with the arrival of the Continuous Market (MC), an increase in operations and mass accesses by these agents' own applications has been seen recently; this entails a high volume of data that's transmitted and processed. This high volume could have harmful effects in the future, such as slowing down the system and delaying operations. This would affect all market agents, even if they are not responsible for these massive accesses and operations.

In order to avoid these potentially harmful effects, agents must comply with rational, proper use of OMIE platforms, ensuring the correct functioning of their applications, maintaining a reasonable number of accesses and operations, and avoiding any massive repetitive actions being carried out that unnecessarily impact the platforms' performance.

In order to monitor this proper use and stay in operation, OMIE will establish certain control measures that will be applied proportionally to the development, management, and performance of the applications developed by agents in accessing the market platforms, with the sole purpose of organizing these types of market actions and their improved functioning. These surveillance and control measures will be carried out at all levels (technical, organizational, awareness-raising) with the aim of preventing incidents that alter the normal functioning of market processes.

Since establishing very detailed controls could penalize the performance of the systems to be monitored, a model based on a complementary double control has been set up. On the one hand, online controls of the operations done by the agents will be implemented, which tend to limit the impact on performance that could cause abusive operations. On the other, ex-post reviews of the performance of the agents' applications will be carried out. These actions will be evaluated according to a set of pre-established indicators, and the agents will be notified and asked to take corrective measures in case they exceed the established thresholds.

## 2. DEVELOPMENT

### Data communications with OMIE platforms.

OMIE makes M2M access to its market platforms available to agents through the following APIs:

- *Access through the Web Services (WS) API.*

  The WS allow the market agents' systems to communicate directly with the OMIE systems. That way, all the operations necessary for participating in the Day-Ahead Market (DAM) and Intraday Market (IM) for auctions can be carried out, and information on the Continuous Market (CM) and the processes associated with managing collateral and settlements can be obtained.

  Access to these WSs does not require a special process of enabling the systems developed by the market agents; however, as indicated above, their operation must be within the margins of proper, reasonable use.

- *Access through the Continuous Marketplace (CM) API.*

  The CM API allows the market agents' systems to communicate directly with the local trading server (LTS), making it easier for them to obtain real-time information associated with the market operation and to carry out operations on the CM automatically.

  Given the CM's special performance requirements, and with the intention of ensuring that the behaviors of all applications developed by agents meet minimum standards of functionality and performance, these applications must pass a Qualification process to be able to operate in production in the CM. Malfunctions while using the application in production may cause the loss of the Qualification and the need to repeat the process.

Continuous adaptation to changes in requirements in the different markets, along with constant state of the art advancement, requires regular adaptation of these APIs for their proper functioning in light of new requirements. OMIE will strive to maintain continuity and compatibility with previous versions of the relevant API, as well as to provide market agents notices of any changes that may affect them with reasonable notice via market platforms. If compatibility is not possible (API discontinuity), the cessation of support for a discontinued version of the API will be communicated to agents with reasonable notice through the established communication mechanisms so that agents have sufficient time to adapt and test their applications before the new version is put into production.

**Obligations of the market agents.**

As a general rule, agents must ensure at all times that their applications do not have any impact on the proper functioning of the market and OMIE platforms, and they must take all proper, reasonable precautions to prevent abusive access to those platforms. Likewise, they must manage and resolve any situations and abusive behaviors caused by their applications that OMIE detects within the timeframes required.

In order to keep market agents informed of anomalous situations and/or behaviors that need to be corrected, it is mandatory for market agents to keep the information and contact details with OMIE on the Market Website up to date.

Agents will follow OMIE's instructions in the event of unexpected events caused by the applications they have developed, including the acceptance of ceasing to use those applications until the problem caused by their operation is solved.

Agents shall comply with the Terms of Use for access via the WS API and via the CM API as described below, as well as comply with the limits of the control measures and indicators set out in Appendices I and II.

*Terms of Use for access via the WS API*

Market agents are responsible for all accesses made by security certificates assigned to their company personnel and must constantly monitor the performance of their applications accessed through the WS API. More specifically, requests for information from those applications must comply with the following good practices:

- Calling the published file service instead of trying to download a file directly and repeatedly.
- Downloading information that's not relevant to market operations (such as invoices) outside critical hours (e.g. during auction matching processes).
- Avoiding consulting information that is already available or that can be easily calculated by the agent. For example, programs and invoices should be downloaded only once.
- Calling the services while waiting a reasonable time between requests.
- Not downloading information previously obtained through messages on the CM's LTS platform again through WS.
- Avoiding any repetitive access or sending of information that can be done in a simpler way by using the facilities provided by the WS API in a different way.
- And any other behavior that unjustifiably places a significant response burden on the market's platforms.

Apart from the considerations described above, it is considered a good practice to use only one certificate per connection to avoid overlapping requests.

*Terms of Use for access through the CM API*

As indicated above, access through the CM API requires going through an application enablement process that accesses the Continuous Market platform. Since this application may evolve, agents must inform OMIE of all changes and new versions that may have a significant impact on accesses made to the Continuous Market in operation prior to its entry into operation.

Likewise, agents must participate in authorization confirmation processes when they are required to do so by OMIE.

The agent must ensure that they have internal control methodologies to ensure their applications' proper functioning after their connection in production to the Continuous Market's trading platform. More specifically, their application must comply with the following good practices:

- It will refrain from using global (large volume) requests for information when such information has already been communicated to the application previously through the automatic mechanisms for disseminating incremental information provided by the CM API.
- Upon receipt of notices of violation of the limits established both at the business level (operating limit, unit power) and at the level of requests for information (described in Appendices I and II), the applications will adjust their behavior so as not to exceed them again. Requests for information must be continuously below the limits established for them.
- Agents shall ensure that an appropriate ratio of non-executed orders to executed transactions is maintained (see Annex I), specifically avoiding repeatedly sending orders to the continuous market where the possibility of execution is null or unlikely.
- The application must respond to situations of high negotiation by agilely consuming the messages that the CM trading platform makes available to it in its private message queue.
- Avoiding any repetitive access or sending of information that is either not necessary because the information is already available or which can be done in a simpler way using the facilities provided by the CM API in another way.
- And any other behavior that unjustifiably places a significant response burden on the CM trading platforms (LTS).

**Monitoring and control of agents' obligations.**

OMIE will implement a series of applications, procedures, and mechanisms to ensure that agents' applications comply with the Terms of Use and cannot generate anomalies in the trading conditions or contribute to such anomalies. Monitoring of the agents' behavior will be done both in real-time and a posteriori through performance indicators for the activity carried out.

*Real-time control mechanisms.*

OMIE will implement real-time monitoring mechanisms aimed at keeping agent request rates within certain limits. The control mechanisms are described in detail in Appendices I and II, and there are two types:

- Minimum time thresholds between calling actions and/or requests for information.
- Exclusion periods when some requests and/or actions may not be made.

In order to ensure the market platforms' proper continuous operation, the control mechanisms, as well as the thresholds and parameters used, may be modified by OMIE based on the accesses of existing agents and the platforms' behavior.

Agents who carry out actions that violate the above controls will receive an automatic response informing them of the event instead of the response to the required action.

OMIE will analyze subsequent processes to ensure that agents respect the time limits and consider the automatic notices sent to them. In the event that violations are repeated, OMIE shall take any such reasonable and proportionate measures it deems appropriate.

In addition to the control mechanisms, OMIE has systems for monitoring the use of APIs that provide real-time information on the activities carried out by the agents (number of queries made, breakdown by type of query, overall number of accesses to web services, number of messages sent to the CM, agents' AMQP performance, and others). If anomalies or abuses are detected on the basis of these statistics, OMIE will take any reasonable and proportionate measures it deems appropriate, as indicated in the subsequent section.

*Performance indicators.*

OMIE will establish a set of key performance indicators (KPIs) and limitations associated with them that allow monitoring the proper use of the access systems available. The selected KPIs are described in detail in Appendices I and II. Their calculation and monitoring will be carried out on a regular basis.

OMIE will send e-mail notifications whenever the limitation associated with any of the agents' performance indicators is exceeded. The agent must respond to the notification within a reasonable time, explaining the situation and the measures

taken to prevent it from continuing to occur, as well as providing any other type of additional information required by OMIE.

If the limitation for the same KPI is exceeded a certain number of times in a period of time, the agent will be sent a new notification by e-mail. In the event that corrective measures are not carried out by the responsible parties within a short period, OMIE will take any reasonable and proportionate measures it deems appropriate to correct and/or alleviate the situation, as indicated in the following section.

**Action in the event of any breach of the agents' obligations.**

In the event that an agent detects behavior of their application that does not follow the Terms of Use of access to the APIs or that violates the limits for control mechanisms or performance indicators, they will proceed to remedy this situation as soon as possible, and they will bring it to OMIE's attention through the corresponding communication channels.

If the incident is detected by OMIE, the agent will be notified through the contact persons the agent has listed on the OMIE market website. The agent must respond to OMIE's queries and instructions, and they will proceed to manage and resolve the behaviors indicated by OMIE within the required timeframes; possible actions may include, if necessary, the temporary disconnection of their applications.

In the event that the agent cannot be contacted through the given contact person, or if the effects of the anomaly or abuse could cause short-term damage to the trading platforms, OMIE may take all reasonable and proportionate measures it deems appropriate to correct and/or mitigate the situation detected that puts the stability or performance of its platforms at risk. These measures include but are not limited to:

- disconnecting the agent's application.
- preventing the agent responsible for the situation from accessing digital certificates.
- blocking access for the agent responsible for the situation.
- blocking access for applications responsible for the situation, including disabling third-party applications.

The above measures may also be applied in the event that the agent ignores OMIE's instructions, when they fail to comply with the deadlines given by OMIE for resolving the reported incidents, when they fail to comply with limitations for a certain performance indicator (beyond the times that said indicator is given as a limit), or when it is detected that the agent's application is endangering the stability or performance of the platforms.

## APPENDIX I

## CONTROL MECHANISMS AND PERFORMANCE INDICATORS.

### Real-time Control Mechanisms

*Minimum time between WS API queries*

The minimum times will be defined by query. The same query may not be called if the minimum time has not elapsed. Two threshold limits shall be established for each query, one per certificate and one per agent:

- Threshold per certificate: In the event that a certificate violates the threshold defined between requests for a given query, you will receive a message informing you of the event instead of receiving the requested information.
- Threshold per agent: In the event that two certificates from an agent violate the threshold defined between requests for a query when making a request regarding that query, the second certificate making the request will receive a message informing them of the event instead of receiving the requested information.

The threshold values to be applied to each query are defined in Appendix II.

*Exclusion periods during which the number of actions and accesses on the platform will be reduced.*

Due to the processes to be carried out in the market (auctions,...), there will be exclusion periods when agents must reduce accesses and/or actions on the platforms, avoiding introducing a load that can be carried out after the end of the period during these times.

Within these periods, the use of certain queries that may have a negative impact on the processes taking place in the market may be restricted.

Those periods of exclusion and queries subject to special restrictions are described in Appendix II.

*Minimum time between calling the CM API*

There will be a restriction on the minimum time that must elapse between successive requests to the CM API. The time limits will be defined by the type of message, applied to the requests made by each certificate. In case the established time threshold is breached for a certain type of message, the system will notify the agent's application of this situation, informing them of the event instead of responding to the request made.

The thresholds to be applied for each type of message are described in detail in Appendix II.

*Maximum action ratio (MAR) per unit of time in the CM.*

Maximum limit on the action ratio of management on orders (insertion, modification, cancellation) that can be performed per time interval. The actions that will be limited, as well as the minimum time interval, are defined in Appendix II.

*Values obtained in real-time from access to the WS API,*

OMIE will monitor a set of indicators that make it possible to detect behaviors in using the WS API that are considered inappropriate and that are not in line with those described in the Terms of Use. Those monitored include but are not limited to:

- The number of queries made per agent and certificate in the latest time period analyzed.
- The number of accesses to each query type in the latest time period analyzed.
- Repetitions of queries with the same input parameters in the latest time period analyzed.
- And as many other indicators OMIE deems necessary to monitor.

**Performance indicators.**

*Ratio of Orders to Trades by Bidding Unit and Contract* (RUC)

Proportion of the total number of orders sent by a bidding unit to the CM platform compared to the total number of orders that are matched (making one or more *trades*) per contract in order to effectively ensure that this proportion does not lead to excessive volatility.

$$RUC = \frac{\text{total number of orders sent}}{\text{total number of orders matched}}$$

- The RUC will be calculated on the CM contracts after they have expired.
- The orders and transactions made by each bidding unit in each contract will be accounted for independently.
- Total number of orders: the orders will be identified by the order identifiers assigned by the system. Modifying an order usually produces a new identifier.
- Total number of matched orders: these are the orders executed partially or in full. When there are no matches, the RUC will correspond to the orders sent by the agent to the contract.

A breach of the RUC shall be deemed to have occurred when a bidding unit strictly exceeds the threshold established (TRUC) in a contract (the TRUC value is set out

in Appendix II). If this limit is exceeded, the agent will be informed of the event electronically.

Within the same month, the TRUC threshold may be exceeded the number of times defined by the RRUC parameter (the RRUC value is established in Annex II). If this limit is exceeded, the agent shall be informed of the incident. In subsequent breaches of this limit, OMIE will apply the measures described in the section, "Action in the event of any breach of the agents' obligations."

*Ratio of Orders to Trades by Agent and Negotiated Day* (RAD)

Proportion of the total number of orders sent to the CM platform by an agent compared to the total number of orders matched (making one or more *trades*) for the set of all same-day contracts negotiated, in order to effectively ensure that this proportion does not lead to excessive volatility.

$$RAD = \frac{\text{total number of orders sent}}{\text{total number of orders matched}}$$

- The CM's RAD shall be calculated for the day once completed.
- Total number of orders: this will be the orders sent by the agent on the negotiated day. Orders will be identified by the order identifiers assigned by the system. Modifying an order usually produces a new identifier.
- Total number of matched orders: these are an agent's orders executed partially or fully on the negotiated day. When there are no variations in the bids sent in a contract belonging to the negotiated day, that contract will be included in the RAD with the total number of orders sent to it, and its contribution to the total number of matched orders (the denominator) will be one unit.

A breach in the RAD shall be deemed to have occurred when an agent strictly exceeds the set threshold (TRAD) for the trading day (the TRAD value is set out in Appendix II). If this limit is exceeded, the agent will be informed of the event electronically.

Within the same month, the TRAD threshold may be exceeded the number of times defined by the RRAD parameter (the RRAD value is established in Annex II). If this limit is exceeded, the agent shall be informed of the incident. In subsequent breaches of this limit, OMIE will apply the measures described in the section, "Action in the event of any breach of the agents' obligations."

## APPENDIX II

**(Appendix II can be consulted in the "Documentation and Help" section of the OMIE market website https://www.mercado.omie.es)**

## DESCRIPTION OF THE LIMITS APPLIED.

In order to ensure the market platforms' proper continuous operation, the control mechanisms, as well as the thresholds and parameters used, may be modified by OMIE based on the accesses of existing agents and the platforms' behavior. OMIE shall provide market participants with a notice of amendments to the APPENDIX through the market platforms.

### Maximum action ratio (MAR)

This mechanism will not be applied initially; its need will be assessed depending on market conditions.

### Minimum time between calling the CM API

The minimum times between calling the CM API can be found online through the API itself by consulting the message " MinimumTimeList".

### Ratio of Orders to Trades by bidding unit and contract (RUC)

Thresholds for calculating the RUC:

TRUC= 100 , RRUC= 4 times.

### Ratio of Orders to Trades (RAD) by agent and CM day

Thresholds for calculating the RAD:

TRAD= 100 , RRAD= 4 times.

### Minimum time between calling and exclusion periods on the WS API

| Code | Description | TMIN (ms) per certificate | TMIN (ms) per agent | Exclusion Periods |
|---|---|---|---|---|
| 3004 | Detail of bids and transactions reported | 5000 | 2500 | N/A |
| 4110 | Orders by contract | 1000 | 500 | N/A |
| 4111 | Matched orders | 2000 | 1000 | N/A |
| 4112 | Order history | 2000 | 1000 | N/A |
| 4113 | Orders per round | 1000 | 500 | N/A |
| 4120 | Agent contract transactions | 1000 | 500 | N/A |

| | | | | |
|---|---|---|---|---|
| 4121 | Transaction History | 2000 | 1000 | N/A |
| 4122 | Net Continuous Market position per unit | 1000 | 500 | N/A |
| 4124 | Transactions per round | 1000 | 500 | N/A |
| 4126 | Net Continuous Market position by agent | 5000 | 2500 | N/A |
| 4127 | Full list of transactions per contract | 1000 | 500 | N/A |
| 4141 | PIBCIC energies per agent. Increases [+] and decreases [-] in position | 1000 | 500 | N/A |
| 4144 | PHFC Energies per Unit | 1000 | 500 | N/A |
| 5120 | State of collateral for the next session of the Day-Ahead Market | 1000 | 500 | N/A |
| 5209 | Total energy per Bidding Unit and hour in each market and program | 2000 | 1000 | N/A |
| 5220 | PBC energies per agent | 2000 | 1000 | N/A |
| 5350 | PVD energies per agent | 2000 | 1000 | N/A |
| 5377 | Electronic invoices and documents per day | 10000 | 5000 | N/A |
| 5383 | Downloading an invoice in PDF format (Daily and Monthly) | 10000 | 5000 | N/A |
| 5390 | Downloading an invoice in XML format (Daily and Monthly) | 10000 | 5000 | N/A |
| 5397 | Invoices and documents related to OMIE's compensation | 10000 | 5000 | N/A |
| 5399 | Downloading an invoice in XML format (OMIE Compensation) | 10000 | 5000 | N/A |
| 5404 | Downloading an invoice in PDF format (OMIE Compensation) | 10000 | 5000 | N/A |
| 5407 | Data on Settlements | 10000 | 5000 | N/A |
| 5413 | PHF considered for the purposes of OMIE's compensation | 10000 | 5000 | N/A |
| 5472 | Invoices for a period | 5000 | 2500 | N/A |
| 5474 | Detail of transferred collection rights | 10000 | 5000 | N/A |
| 5602 | PIBCI energies per bidding unit | 1000 | 500 | N/A |
| 5603 | Prices Resulting from Matching | 1000 | 500 | N/A |
| 5606 | PHF energies per programming unit | 1000 | 500 | N/A |
| 5620 | PIBCI energies per agent. Increases [+] and decreases [-] in position | 2000 | 1000 | N/A |
| 7201 | PDBF file | 5000 | 2500 | N/A |
| 7208 | PDBC file | 5000 | 2500 | N/A |
| 7302 | PDVD file | 5000 | 2500 | N/A |
| 7608 | PHF file | 5000 | 2500 | N/A |
| 7609 | CURVA_PIBC file | 5000 | 2500 | N/A |
| 7703 | PIBCIE file | 5000 | 2500 | N/A |
| 8044 | REMIT documents and invoices | 5000 | 2500 | N/A |
| 8046 | Downloading an invoice in PDF format (REMIT) | 5000 | 2500 | N/A |
| 8047 | Downloading an invoice in XML format (REMIT) | 5000 | 2500 | N/A |
| 8048 | Monthly REMIT documents and invoices | 10000 | 5000 | N/A |
| 9200 | PDBF File (XML Format) | 10000 | 5000 | N/A |

| | | | | |
|---|---|---|---|---|
| 9201 | PIBCA File (XML Format) | 5000 | 2500 | N/A |
| 9205 | PDVD File (XML Format) | 5000 | 2500 | N/A |
| 9206 | PIBCI File (XML Format) | 5000 | 2500 | N/A |
| 9244 | PIBCIC File (XML Format) | 5000 | 2500 | N/A |
| 9246 | PHFC File (XML Format) | 5000 | 2500 | N/A |
| 3004 | Detail of bids and transactions reported | 5000 | 2500 | N/A |