

SIMULATION FACILITY LICENSE AGREEMENT

This Simulation Facility License Agreement (hereinafter the "License Agreement") is entered into by and **BETWEEN ON THE ONE HAND**

1. **EPEX SPOT SE ("EPEX")**, a company incorporated and existing under the laws of France in the form of a *societas europeae*, having its registered office at 5 boulevard Montmartre, 75002 Paris, registered in the commercial register of Paris (R.C.S. Paris) under the number 508 010 501 and VAT n° FR 10508010501;
2. **Gestore dei Mercati Energetici S.p.A. ("GME")**, a company duly organized and existing under the laws of the Italian Republic, with registered office at Viale Maresciallo Pilsudski, 122/124, 00197, Rome, Italy, registered with the Companies Register of Rome under number RM 953866, Italian tax code and VAT 06208031002;
3. **OMI, POLO ESPAÑOL, S.A. ("OMIE")**, a company incorporated and existing under the laws of Spain, having its registered office at Alfonso XI n° 6, 4th floor, 28014 Madrid, Spain, and registered in the commercial register of Madrid under section 8, Sheet: M-506799 and VAT n° A86025558;
4. **HELLENIC ENERGY EXCHANGE S.A. ("HEEx")**, a company incorporated under the laws of Greece, with V.A.T. number 801001623, having its registered office at 110, Athinon Avenue, 10442, Athens, Greece, registered in the commercial register at General Commercial Registry under number 146698601000;
5. **Operatorul Pieței de Energie Electrică și de Gaze Naturale "OPCOM" S.A. ("OPCOM")**, a company incorporated and existing under the laws of Romania, having its registered office at 16-18 Bd. Hristo Botev, 3rd District, Bucharest, PC.030236, Romania, and registered with Bucharest Trade Registry under the number J40/7542/2000 and VAT n° RO13278352;
6. **OTE, a. s. ("OTE")**, a company incorporated and existing under the laws of the Czech Republic, having its registered office at Sokolovská 192/79, 186 00 Prague, Czech Republic, and registered with the commercial register in municipal court of Prague, Section B 7260 under the number 264 63 318 and VAT n° CZ26463318; OTE's contract number: XXXXXXXXXX;
7. **Towarowa Giełda Energii S.A. ("TGE")**, a company incorporated under the laws of the Republic of Poland, with V.A.T. number PL 5272266714, having its registered office at Książęca 4, 00-498 Warszawa, Poland and registered in the commercial register at 12th Commercial Department of the National Court Register under number 0000030144 with the share capital paid in full in an amount of 14.500.000,00 PLN;
8. **Nasdaq Spot AB ("Nasdaq")**, a company incorporated under the laws of Sweden, with company registration no. 559280-7308, whose registered office address is Ullvaktsvägen 15, 105 78 Stockholm;

9. **European Market Coupling Operator AS**, previously named Nord Pool AS ("**EMCO**"), a company organised and existing under the laws of Norway, having its registered office at Lilleakerveien 2A - 0283 Oslo, Norway, and registered with the Register of Business Enterprises in Norway under the number 984 058 098 and VAT n° NO 984 058 098 MVA;

hereafter individually also referred to as "**Licensor**" and collectively also as "**Licensors**";

AND ON THE OTHER HAND

Autorità di Regolazione per Energia Reti e Ambiente ("ARERA"), the Italian Regulatory Authority for Energy, Networks and Environment, having its registered office at Corso di Porta Vittoria, 27 - 20122 Milan, Italy, and registered with the Fiscal code 97190020152,

hereafter referred to as the "**Licensee**";

the Licensors and the Licensee hereafter individually also referred to as "**Party**" and collectively also as the "**Parties**".

WHEREAS:

1. On June 2012 a cooperation for the development, implementation and operation of a single day-ahead coupling solution, based on the decentralised coordinated calculation of market results taking into account the available interconnection capacity, was established (the “**PCR Cooperation**”). The PCR Cooperation is currently governed by an agreement vesting a co-ownership on the matching algorithmic software (hereinafter “**Euphemia**”) and the other assets for the single day-ahead coupling solution and establishing the rights and obligations of the parties deriving from such co-ownership (the “**PCR Co-Ownership Agreement**”). The parties to the PCR Co-Ownership Agreement are: EMCO, EPEX, OMIE, GME, OTE, TGE, OPCOM, HEnEx and Nasdaq. The PCR Cooperation’s coupling solution has been acknowledged by the *Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management* (hereinafter “**CACM**”) as the day-ahead coupling solution upon which the completion and efficient functioning of the EU and EEA internal day ahead electricity market should be build. CACM has provided a mandatory framework for the single day ahead coupling (hereafter the “**SDAC**”) and single intraday coupling (hereinafter “**SIDC**”) describing the roles and responsibilities of the NEMOs and tasks to be jointly performed by the NEMOs.
2. In the context of the PCR Cooperation, EMCO, EPEX, OMIE (hereinafter the “**SF Developers**”) developed a web-based application embedding Euphemia, which allows the simulation of market coupling scenarios as further described in Annex II (hereinafter the “**Simulation Facility/SF**”);
3. On the 28th of March 2019, the Parties together with the other NEMOs (as defined in art 1) as well as with the TSOs (as defined in art 1) subject to the CACM implementation have entered into the Day Ahead Operational Agreement (hereinafter “**DAOA**”) to set forth i) the main principles of their cooperation in respect of SDAC, ii) the terms and conditions under which the relevant IT infrastructure will be developed and iii) the terms and conditions under which the SIDC shall be implemented, performed and operated among NEMOs and TSOs. Pursuant to Article 10 of the DAOA, the *SF Developers* make the Simulation Facility available - pursuant to the terms and conditions set in Annex VIII to the DAOA - to the parties to the DAOA which require the usage of the SF.
4. By virtue of Article 21 of ACER Decision 1/2020 on the Algorithm Methodology according to CACM Article 37, NRAs and ACER have the power to request the information and data used in the monitoring of the algorithm performance, as well as historical input data used by the algorithms in calculating SDAC and SIDC results. Furthermore, NEMOs shall provide to NRAs and ACER, following the signature of the relevant contractual arrangements, the possibility of simulating algorithm results and, if so required by said authorities, making the code auditable by third parties.;
5. On the 30th of January 2020, the parties to the DAOA, via a decision of the steering committee of the DAOA cooperation, agreed to allow the Licensors to provide the Licensee with the Historical Data for the purposes of the SF usage.
6. TGE hereby declares that it has the status of a large enterprise, as defined in Article 4 (6) of the Polish Act on counteracting excessive delays in commercial transactions (Dz.U. [Journal of Laws] from 2020, item 935, 1086, as amended). This status is also defined in Commission

Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty on the Functioning of the European Union (OJ EU L 187, 26 June 2014, as amended).

7. This License Agreement sets forth the terms and conditions under which the Licensors grants the Licensee such a license.

NOW THEREFORE, THE PARTIES HEREBY AGREE AS FOLLOWS: Table of contents

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ARTICLE 1 Interpretation

1.1 Definitions

The capitalized terms and expressions in this License Agreement shall have the following meanings:

Annex:	means any annex to this License Agreement;
Article:	means any article of this License Agreement;
Business Day:	means any day except Saturday, Sunday and except any day on which banks located in the respective place of the registered office of the Party(ies) concerned are not open for normal banking business;
CACM	shall have the meaning set forth in recital 1 of this License Agreement and shall include any future amendments to the aforementioned Regulation;
Confidential Information:	shall have the meaning set forth in Article 8 of this License Agreement;
DAOA	shall have the meaning set forth in recital 3 of this License Agreement;
Documentation:	means the supporting documentation, and information necessary to use the Licensed Material as described in Annex II;
Euphemia	shall have the meaning set forth in recital 1 of this License Agreement;
Functional Simulation Facility Operator/FSFO	shall have the meaning set forth in art 13.4.2 of this License Agreement;
External Representative	Shall have the meaning ascribed to it under Article 9.5 of this License Agreement;
ICC:	shall have the meaning set forth in Article 12 of this License Agreement;
Historical Data	shall have the meaning set forth in recital 3 of this License Agreement;
Intellectual Property Rights (“IPR”):	means any intellectual property rights or other (property) rights throughout the world, in all

media, now existing or created in the future, for all versions and elements, in all languages, and for the entire duration of such rights, arising under statutory or common law, contract, or otherwise, and whether or not registered, registrable or perfected, including (a) rights in all inventions, discoveries, utility models, patents, reissues of and re-examined patents, or patent applications (wherever filed and wherever issued, including continuations, continuations-in-part, substitutes, and divisions of such applications and all priority rights resulting from such applications) now existing or hereafter filed, issued or acquired; (b) rights associated with works of authorship, including database rights, copyrights, moral rights, copyright applications, copyright registrations, synchronization rights, mask work rights, applications and registrations; (c) rights in computer software and programs, source codes, or business methods; (d) rights in materials; (e) rights associated with trademarks, service marks, trade names, internet domain names, logos, trade dress and the applications for registration and the registrations thereof; (f) rights relating to the protection of trade secrets, know-how and/or other confidential information; (g) design rights, whether registered or unregistered; and (h) rights analogous to those in this definition and any and all other proprietary rights relating to intangible property;

- Internal Representative** Shall have the meaning ascribed to it under Article 9.5 of this License Agreement;
- Legal Provision:** means any type of legal provision of public order, proclaimed by any competent authority;
- License:** shall have the meaning set forth in Article 3 of this License Agreement;
- License Agreement:** shall mean this license agreement;
- Licensed Material:** shall have the meaning as set forth in Annex I, section I;

- License Term:** means the term for which the License is granted as set forth in Article 3.1 of this License Agreement;
- License Territory:** means the territory for which the License is granted as stipulated in Article 3.3 and further described in Annex I, section III of this License Agreement;
- Licensee:** means the Party to this License Agreement as identified in the parties' description at the beginning of this License Agreement, to whom is granted this License;
- Licensors:** means the Parties to this License Agreement as identified in the parties' description at the beginning of this License Agreement, who grants this License;
- Market Coupling:** means a coordinated day-ahead electricity implicit auction mechanism, performing the matching of the supply and demand curves of different power exchanges taking into account the cross-border capacity made available by the TSOs, using a software application embedding a matching algorithm; for the avoidance of doubt, for the purpose of this License Agreement, the term Market Coupling includes the concept known as Market Splitting;
- Market Splitting:** means a type of Market Coupling where the matching of the supply and demand curves of different power exchanges, taking into account the cross-border capacity made available by the TSOs, is performed by one power exchange instead of several;
- Modification:** means any change to the Simulation Facility, including any amendment of the Source Code, or any other update, upgrade of the Licensed Material carried out by the Licensors or by any third party through the Licensors' tools and/or the Licensors' IPR;
- PCR Cooperation** shall have the meaning set forth in recital 1 of this License Agreement;

PCR Co-Ownership Agreement	shall have the meaning set forth in recital 1 of this License Agreement;
Permitted Use:	means exploiting the Licensed Material as authorized pursuant to Article 3.2 and further described in Annex I, section II of this License Agreement;
Reference Coordinator	shall have the meaning set forth in Article 13.4 of this License Agreement;
SDAC	shall have the meaning set forth in recital 1 of this License Agreement;
SF Developer(s)	shall have the meaning set forth in recital 2 of this License Agreement;
SIDC	shall have the meaning set forth in recital 1 of this License Agreement;
Simulation Facility/SF	shall have the meaning set forth in recital 2 of this License Agreement;
Simulation Facility Services	means the services described under art 5.1 of this License Agreement
Simulation Results	means the results of any simulation performed using the Simulation Facility;
Software Provider	means the IT service provider of the Simulation Facility;
Source Code:	with respect to Euphemia and SF, means the software, or computer program provided in human readable form in such a manner that it enables to recreate and maintain the software or computer program including all updates and corrections to these;
Transfer:	means any transfer, assignment, or any other disposal of any asset, right or obligation by a Party, for value or gratuitous, in whatsoever form, including, but not limited to merger, demerger, transfer or contribution of universality or business divisions (whether or not by virtue of automatic transfer rules), exchanges or public sales, especially following an attachment or pledge;
TSO:	means a transmission system operator participating into any project to implement PCR Market Coupling.

Use: means using the processing, calculation or any other functions of the Licensed Material, and more generally load, run, access, employ (including by embedding in other systems), display, process the Licensed Material and/or make available its own data or data to which it has lawfully access through the Licensed Material.

User-defined Data means data (for example any constraint or new interconnector capacity), not being Historical Data, which a Licensee inputs into the Simulation Facility;

1.2 Interpretation

- 1.2.1** No provision of the License Agreement shall be interpreted adversely against a Party solely because that Party was responsible for drafting that particular provision.
- 1.2.2** Words denoting the singular shall include the plural and vice versa. Words denoting one gender shall include another gender.
- 1.2.3** The headings of Articles or Annexes are inserted for convenience only and do not affect their interpretation.
- 1.2.4** Any reference to any rule, enactment, Legal Provision, regulation or code or any subdivision or provision thereof shall be construed at the particular time as a reference to the text then in force, as it may have been amended, modified, consolidated, re-enacted or replaced.
- 1.2.5** All references to Articles or Annexes refer to the corresponding Articles or Annexes of this License Agreement as amended, supplemented or modified from time to time, in accordance with Article 12.2 of this License Agreement unless otherwise specified.
- 1.2.6** Any recitals or Annex referred to in the License Agreement forms an integral and inseparable part of this License Agreement being therefore binding upon the Parties. Any reference to the License Agreement includes a reference to its Annexes and vice versa.
- 1.2.7** In case of any discrepancy or contradiction between the provisions in the main body of this License Agreement and the contents of the Annexes, the wording of the main body shall prevail.
- 1.2.8** The rights conferred in Article 3 of the License Agreement to the Licensee shall be interpreted restrictively.
- 1.2.9** This License Agreement shall not be interpreted so that it limits the NRAs authority or legal basis to require data from Euphemia in accordance with other national or European legislation.
- 1.2.10** This License Agreement is without prejudice to the mandatory provisions of European Union law and/or national law on public access to official documents and secrecy.

ARTICLE 2 Subject matter

This License Agreement sets forth the terms and conditions under which the Licensors:

- i) grant to the Licensee certain limited rights to use the Licensed Material, and
- ii) provide the Licensee with the services described under art 5 below.

ARTICLE 3 License

3.1 Granted License

- 3.1.1** Subject to the terms and conditions of this License Agreement, the Licensors grant the Licensee a revocable, non-exclusive, non-sub licensable and non-transferable license to use the Licensed Material for the Permitted Use during the License Term and within the License Territory (hereafter the "License").
- 3.1.2** The Licensee acknowledges that the use of the License may require the additional software as described in Annex II Section "System Requirements". This additional software is not covered by this License Agreement and shall be purchased separately by the Licensee.

3.2 Permitted Use

- 3.2.1** The License granted by the Licensors entitles the Licensee to use the Licensed Material for the Permitted Use as further specified in Annex I, and in accordance with the provisions of this License Agreement.
- 3.2.2** The Licensee undertakes to:
- a. not use the Licensed Material (including the Historical Data and tool available through it or contained in it) for any other purpose than (a) simulations, and (b) any other purpose described in this License Agreement;
 - b. not modify or damage the Licensed Material in any way;
 - c. Refrain from making further copies or reproductions of the Licensed Material, except as necessary for the Permitted Use under this License Agreement (including for back up or archival purposes) in which case such copies or reproductions shall in all respects be subject to the terms hereof;
 - d. Refrain from distributing and commercializing the Licensed Material;
 - e. Assure that all copies of Licensed Material carry the same credits and copyright warning as the original from which the copy was made;
 - f. Refrain from translating, decompiling, doing any reverse engineering adapting, arranging or in any way changing or doing any Modification to the Licensed Material nor try to access/nor to be granted access to the Source Code;
 - g. not attempt to download Historical Data or decompile or reverse engineer any simulation results in order to reconstruct the Historical Data or so as to be able to discern the identity of, or trading pattern of, any individual market participant (unless permitted under mandatory law). In the event that any such Historical Data, for any reason or by error, should become available to the Licensee, the Licensee shall not use such Historical Data and shall inform the Service Providers of such occurrence without delay and immediately destroy such data;

- h. take appropriate precautions against the possibility that the Simulation Facility does not function properly by, for example, performing data back-up.
- i. Use the Licensed Material only internally and not allow it to be placed at any third party's disposal under no condition in whatever way, directly or indirectly, whether for remuneration or free of charge, unless explicitly agreed by Licensors via a decision of the PCR SC. It is understood that PCR SC is entitled to refuse any possible Licensors' request to place the Licensed Material at a third party's disposal only if the latter is a competitor of one or more Licensors, or there is an evidence of any other possible risk;
- j. Not disclose, sublicense, rent, assign, lease or transfer under any form the Licensed Material to any third party and, more generally, not take any action that would limit the Licensors' right to sell, transfer, license or use the Licensed Material and /or any of its Modifications;
- k. Not disclose nor publish any qualitative analysis or performance/benchmark test run results in respect of the Licensed Material without the express prior written consent of the Licensors;
- l. Install the Licensed Material only on such devices and make use of such ancillary software which comply with the specifications as described in the Documentation. In any case, the Licensee acknowledges and commits itself to use only the Licensed Material on equipment satisfying with the specifications as described in the Documentation and the Licensee shall not claim any compensation from the Licensors for any damage arising out of the use of the Licensed Material on/with such non-compliant software and devices;
- m. Not use the Licensed Material in a way that infringes the Intellectual Property Rights of any third party or of the Licensors or violates any Legal Provision (including, but not limited to the laws and regulations governing export/import control, unfair competition) nor to impair the institutional or corporate identity and reputation of the Licensors;
- n. Make aware its employees, agents, consultants, (sub-)contractors and other representatives, including affiliate and subsidiary companies about the commitments contained into this License Agreement and make the best efforts to guarantee their enforcement without prejudice of Article 8 of this License Agreement. For the avoidance of any doubt, the Licensors expressly permits the Licensee to employ or involve assistants, consultants, (sub-)contractors and/or agents for the performance of the License Agreement being agreed that the Licensee shall be held responsible for any breach caused by such persons;
- o. Give immediate notice to the Licensors of (1) any proven or potential infringement of this License Agreement by its employees, agents, consultants, (sub-)contractors and other representatives, including affiliate and subsidiary companies and (2) any taken interim or conservatory measures, judicial order or decision necessary to make such infringements cease;
- p. Ensure that the Licensed Material is protected at all times from access, use or misuse, damage and destruction by any person not legitimately authorized according to the terms and conditions of this License Agreement. In particular it shall ensure that any access credentials, such as access code and user name granted to it, as well as any password, are kept confidential and not disclosed

to any other person than the named user;

- q. Give immediate notice to the Licensors of any proven or potential unauthorized use of the Licensed Material, or portions thereof, and related IPR by any third party;
- r. Immediately inform the Licensors in writing about any claim or demand, even if only merely threatened, regarding the Licensed Material and related IPR. If legal proceedings against the Licensee and directly or indirectly concerning to the Licensed Material and related IPR occur, the Licensors and Licensees shall agree on either (i) assuming by the Licensors any legal proceeding in its own name with the reasonable assistance of the Licensee, each Party bearing its own costs or (ii) assisting the Licensee in its defense and bear the related expenses of this assistance, being understood that these expenses shall be taken into account for the calculation of the liability cap mentioned under Article 9. In any case, the Licensee shall not acknowledge any right of a third party on the Licensed Material without the Licensors prior written approval.
- s. Not rely on any representation made by the Licensors which has not expressly been cited or defined in this License Agreement.
- t. Submit explanations to regulators or market players of the Licensee concerning issues regarding the Licensed Material only upon such regulators or market players request and subject to a prior written approval of the Licensors on the content of such explanations.

3.2.3 The Licensors reserves all rights not explicitly granted. For the avoidance of any doubt, any exploitation of the Licensed Material and related IPR other than the Permitted Use, must be expressly authorized in writing.

3.2.4 Parties acknowledge that the characteristics described in Annex II are specific to the Licensed Material. The mere demonstration that another software, application or calculation engine than the Licensed Material uses any element of this selection method, shall be deemed sufficient proof of unpermitted reuse of the Licensed Material and unpermitted disclosure of the Licensed Material unless it is proven that such reuse and disclosure is compliant with this License Agreement.

3.3 License Territory

The License is granted for the geographical scope as described in Annex I, section III.

3.4 Modifications of the SF

3.4.1 The SF Developers shall in due time notify to the Licensee any Modification. Access to any Modification shall be provided by the SF Developers to the Licensee after having received a written request thereto of the Licensee and subject to the fulfilment of the conditions set forth in this Article 3.4 except where such conditions are not compatible with a mandatory Legal Provision, from which deviation is not possible.

3.4.2 The Licensors shall extend the present License to the Modifications, such as, but without limitation to future versions of the Licensed Material.

- 3.4.3** This License Agreement is open to the adherence of new parties to PCR Co-ownership Agreement and NRAs or ACER respectively as Licensors and Licensees. The adherence of any new party to this License Agreement shall be executed by sending an adherence form, substantially similar to the template provided in Annex VII, to each of the Parties.
- 3.4.4** Any Modification shall be delivered to the Licensee in accordance with the provisions of Article 4 of this License Agreement, which apply *mutatis mutandis*.
- 3.4.5** The Licensors have the sole and exclusive right to carry out Modifications. Moreover, The Parties agree that any modification to the Licensed Material, even if in breach of the License Agreement, shall remain the sole property of the Licensors. Therefore, the Licensee shall have no interest in such modification and no whereas – at any title – shall be due to the Licensee for such modification.

ARTICLE 4 Delivery

- 4.1** The SF Developers shall deliver the Licensed Material by providing the Licensee with web-access to the Simulation Facility.
- 4.2** The Documentation (user documentation) shall be in English and in pdf format;
- 4.3** The Licensors are not responsible for the installation of the Licensed Material on the IT environment of the Licensee.
- 4.4** The Licensee shall acknowledge receipt of the Licensed Material by sending a notice to this effect as soon as possible after delivery.

ARTICLE 5 Services

- 5.1** The Licensors provide the Licensee with the Simulation Facility Services consisting of:
- i) support services in connection with access to and use of the Simulation Facility limited to login, creating of a simulation instance, importing User-defined Data, exporting Simulation Results, altering data.
 - ii) such other reasonable service that legitimately makes use of the Simulation Facility as may be agreed between the Licensee and the Licensors related to the Simulation Facility.
- 5.2** The costs borne by the Licensors for the provision of the services described under 5.1 above shall be paid by the Licensee via the CACM's cost recovery mechanism, as further specified by the Licensee(s) in an ad hoc comfort letter signed by all NRAs involved in CACM implementation.
- 5.3** It is understood that no service levels are foreseen for the provision of the Simulation Facility Services

ARTICLE 6 Warranty

- 6.1** The Licensee acknowledges that, within the scope of this License Agreement, the License in respect of the Licensed Material is provided by the Licensors to the Licensee "*as is*" without any covenant nor warranty, whether express or implied except as indicated in Article 6.2. By way of example and without limitation, this License Agreement shall thus not be interpreted as providing:

- (i) any warranty with regards to infringement of any third party rights, except as indicated in Article 6.2,
- (ii) any warranty of merchantability nor fitness of the Licensed Material for a particular purpose,
- (iii) any warranty nor commitment regarding the functioning or defects of the Licensed Material
- (iv) any warranty nor commitment that the applications contained in the Licensed Material will meet the Licensee's business requirements.

- 6.2** The Licensors represent that at the time of entry into this License Agreement, the Licensors are co-owners of the rights, title and interest pertaining to the Licensed Material and that to the best of their knowledge, no third party has filed a claim in respect of the Licensed Material, in its then current state, for infringement of its (Intellectual) Property Rights. The Licensors also warrant that, to the best of their knowledge, the Licensors have, as co-owners of the Licensed Material, full right to grant this License to the Licensee under this License Agreement.
- 6.3** The Licensors are entitled to employ or involve assistants, consultants, (sub-)contractors and/or agents for the performance of the License Agreement.
- 6.4** The SF Developers commit to - on a best effort basis - make available a Simulation Facility which functions in compliance with the technical description set forth in Annex II.
- 6.5** The SF Developers and the other Licensors shall have no responsibility or liability for how the Licensee use the results of the simulations.

ARTICLE 7 Title and (Intellectual) Property Rights

- 7.1** The Licensee agrees and acknowledges that the Licensors are joint owners of the (Intellectual) Property Rights pertaining to the Licensed Material, and that it acquires no title, right nor interest on the Licensed Material or on any Modification other than the License granted by this License Agreement.
- 7.2** This License Agreement shall not be construed as entailing a transfer to the Licensee of ownership in any way.
- 7.3** The Licensee shall not remove any trademark, trade name, or copyright notice (if any) from the Licensed Material or copies thereof received under this License Agreement and from any back-up copy.
- 7.4** In the event the Licensed Material is in Licensors' reasonable opinion likely to become the subject of a claim based on the infringement of Intellectual Property Rights, Licensors shall inform Licensee thereof and the Licensee shall cooperate in good faith in respect of the measures to be taken to mitigate as much as possible any damage.

ARTICLE 8 Data Processing

- 8.1** The Licensors and the Licensee shall comply with their respective obligations under the law of their respective country as well as all applicable data protection and privacy laws such as the European Union data protection legislation (Regulation 2016/679, hereinafter referred to as GDPR). Each Party

may provide individual information concerning the processing of personal data in Annex VI (General Data Protection).

- 8.2** The Licensee accept and agree that certain personal data may be processed by the Licensors and/or the subcontractors whom the Licensors may appoint within the European Economic Area. The Licensors will safeguard and protect the relevant personal data against unauthorised access, accidental loss, improper use and unlawful disclosure, as required by applicable laws.

ARTICLE 9 Confidentiality

- 9.1** The Licensee acknowledges and agrees that the content of this License Agreement, the Licensed Material and any information in whatsoever form and of whatsoever nature in relation thereto or exchanged between the Parties pursuant to this License Agreement or before or after this Agreement is entered into force (hereafter "**Confidential Information**") are to be considered as (proprietary) business secrets, which must be appropriately protected against any disclosure to third parties.

- 9.2** In particular the Licensee undertakes to:

- i) hold in strict confidence and not to divulge nor disclose, at any time, any Confidential Information to any third party, unless expressly permitted under Articles 9.3 and 9.4 of this License Agreement;
- ii) safeguard any Confidential Information which has been disclosed to it using the same degree of care that it applies to safeguard its own respective confidential and proprietary information and at least to take all necessary measures to prevent unauthorized or accidental disclosure of the same, in particular (without being limited to) by keeping any copies thereof secure in such way so as to prevent unauthorized access by any third party. In this respect, the Licensee warrants that it has sufficient procedures and protections in place in order to enforce and maintain confidentiality and to prevent unauthorised use and unauthorised disclosure of such Confidential Information;
- iii) use Confidential Information for the exercise of its rights and obligations under this License Agreement and of its obligations under national and European law only.
- iv) immediately inform in writing the Licensors at the moment it discovers that a third party has (had) or is suspected to have (had) access to Confidential Information in its possession or that such information has been or is suspected to be disclosed to a third party. All reasonable measures shall be taken by the Licensee to prevent such disclosure or at least to minimise the effect of the disclosure and to prevent further disclosure;
- v) and at no time to cause or to allow Confidential Information to be sent, carried or transmitted to any foreign state which is not a party either to the Universal Copyright Convention or to the Bern Convention.

9.3 Article 9.2 of this License Agreement shall apply to all Confidential Information except to Confidential Information in respect of which the Licensee can demonstrate:

- i) that it was known publicly at the time of disclosure to it; or
- ii) that it became publicly known subsequently other than as a result of a breach of this License Agreement; or
- iii) that it had prior written consent of an authorized representative of the Licensors to disclose the Confidential Information to a third party.

In cases of doubt, confidentiality shall be maintained until written confirmation has been obtained from the Licensors that one of the above exclusions applies.

9.4 Article 9.1 and 9.2 of this License Agreement shall not prohibit the Licensee to disclose Confidential Information to any judicial, administrative, governmental or regulatory authority or body requiring such disclosure provided that: (a) such disclosure is required pursuant to a valid applicable law or regulation or pursuant to a valid, effective and final order issued by a competent judicial, administrative, governmental or regulatory authority or body and (b) the Licensee notifies such judicial, administrative, governmental or regulatory authority or body that the information is confidential

9.5 The Licensee shall be entitled to disclose Confidential Information to i) its directors, members of management, officers, employees, and to legal representatives of companies under its Control or of companies that Control such Party (hereafter the “**Internal Representative**”), and to ii) subcontractors, agents, professional advisors, external consultants and insurers and attorneys-at-law (hereafter the “**External Representative**”), only if the following conditions are met:

- a) Access to the Confidential Information may only be given to the Internal Representatives or External Representatives that have been indicated in the list of permitted access holders, indicated in Annex IV (List of Permitted Access Holders) to this License Agreement;
- b) The Internal Representative or External Representative has a definite need to know such information for the execution of its assignment which must be strictly related to the performance of this License Agreement.
- c) For an Internal Representative the Licensee shall inform, prior to any disclosure, the Licensors in writing (including by e-mail) of the identity of the Internal Representative(s);
- d) The Internal Representative is informed by the Licensee of the confidential nature of the Confidential Information and is bound to respect the confidential nature of the Confidential Information under terms at least equivalent to the terms of this License Agreement;
- e) The External Representatives to whom access is granted to Confidential Information, must prior to any access have signed a confidentiality declaration substantially similar to the standard form attached to this License Agreement as Annex V (Template confidentiality declaration);

- f) The Licensee undertakes to have sufficient procedures and protections in place in order to enforce and maintain confidentiality and prevent any unauthorized use and/or disclosure of such Confidential Information by its Internal Representatives and External Representatives to whom Confidential Information is disclosed;
- g) The necessary procedures and protections must have been put into place by the Licensee so as to prevent disclosure and further use of such Confidential Information in the event a natural or legal person is no longer an Internal Representative or External Representative of the disclosing Party;

The Licensee may decide to add, replace or remove its Internal Representative and External Representative mentioned on the list of permitted access holders provided that the conditions of this Article are complied with. In such event the Licensee shall provide the Licensors with a new list of permitted access holders which shall amend Annex IV (List of Permitted Access Holders).

9.6 The confidentiality obligations contained in this Article 9 shall survive the termination of this License Agreement for a period of ten (10) years.

ARTICLE 10 Liability

10.1.1 The Parties are responsible for any action or conduct of their employees, assistants, consultants, contractors and/or agents including any Internal Representative or External Representative,

10.1.2 If a breach of this License Agreement occurs, all Parties shall take reasonable steps to mitigate the damages caused by such breach.

ARTICLE 11 Entry into force, duration and termination

11.1 This License Agreement shall enter into force on the date it has been signed by the Parties. Should the Parties not sign it on the same date, the date of the last signature shall be considered as the date that this License Agreement comes into force.

11.2 This License Agreement shall be terminated on the 1st January 2023 with the possibility for the Parties to extend the duration of the License Agreement by successive one (1) year extensions. The Licensee shall notify the Licensors in writing its decision to extend the duration of the License Agreement within one month prior to the expiry of the relevant term.

11.3 Each Party shall be entitled to terminate the License Agreement subject to a three (3) months prior notice without any motivation, any court intervention and without any compensation being due.

11.4 Without any court intervention and without any compensation being due, Licensors and Licensees are entitled to terminate the License Agreement, with immediate effect in the following cases:

- (i) in the event of proven breach by the Licensee, or by any Licensors, without any prior notice;

- (ii) in the event that any of the Licensed Material shall become subject of a claim on the infringement of Intellectual Property Rights, without any prior notice.

11.5 To the extent compatible with applicable mandatory Legal Provision and without any court intervention and without any compensation being due, each of the Parties shall be entitled to terminate by registered letter with acknowledgement of receipt this License Agreement with immediate effect in respect to the Party which:

- i) enters into compromise and settlement with its creditors;
- ii) enters into an agreement or judicial order is made for the liquidation of the other party; or
- iii) has a receiver or administrative receiver or administrator or similar official appointed over all or part of its assets and such receiver or administrative receiver or administrator or similar official is not discharged within a period of thirty (30) days.

11.6 Upon termination of this License Agreement, the Licensee shall immediately cease the use of the Licensed Material and related IPR. Within thirty (30) days after the termination of the License Agreement in any way, the Licensee shall deliver to the Licensor or destroy all copies of the Licensed Material and related IPR in every form. The Licensee agrees to certify in writing that it would have performed the abovementioned delivery or destruction obligation within the above mentioned term.

11.7 The provisions which expressly or by their nature are intended to remain into force following the termination, shall survive the termination of the License Agreement, such as but not limited to Articles 1, 6, 7, 8 (as indicated therein), 9, 10, 11 and 12 of this License Agreement and without prejudice to the right of a Party to settle any dispute arising after termination out of or in connection with this License Agreement in accordance with all the provisions of the License Agreement.

ARTICLE 12 Governing law and disputes

12.1 This License Agreement shall be governed by and shall be construed in accordance with the laws of Belgium without regard to any of its conflict of law provisions.

12.2 Notwithstanding any translations that may be made, whether signed or not, the English version shall always prevail to the extent compatible with mandatory Legal Provisions. The use of the English language is however without prejudice to the fact that legal concepts in this License Agreement are to be understood as civil law concepts of Belgian law (and not as common law concepts).

12.3 In the event of a dispute, disagreement, claim or difference of any nature between the Parties arising under or in connection with this License Agreement (including its validity) the dispute, disagreement, claim or difference shall in first instance be subject to amicable settlement between the Parties through intervention of a representative of the daily management of the Licensors and the Licensee. The disputes which cannot be settled amicably within a period of thirty (30) Business Days as of the submission to the management shall be settled by arbitration in Brussels under the rules of arbitration of the ICC. The arbitration tribunal will be composed of three (3) arbitrators, one (1) to be appointed by the Licensors, one (1) to be appointed by the Licensee, and the third arbitrator to be appointed by the two arbitrators (2) appointed by respectively the Licensors and the Licensee. The proceedings shall be held in the English language. The award of the arbitration shall be final and binding upon the Parties concerned.

- 12.4** For the purposes hereof, the Parties elect domicile at the addresses set forth herein, or at a different address as may be designated by written notice.
- 12.5** Nothing in this Article 11 shall preclude the Parties from applying for injunctive relief in summary proceedings ("*kort geding*" / "*procédure en référé*") before the competent courts.

ARTICLE 13 Miscellaneous

13.1 Notices

- 13.1.1** Except as provided otherwise, all notices, requests, demands, instructions or other communications under this License Agreement shall be in writing including e-mail.
- 13.1.2** Service of notices requests, demands, instructions or other communications shall be deemed effective:
- a. at the time of delivery, if delivered by hand, registered post or courier;
 - b. in the case of notices sent by fax, on the date that transmission is received by the recipient in legible form (with the burden of proving receipt being upon the sender, by means of a regular fax transmission report issued by the dispatching fax machine);
 - c. in the case of notices to be recorded by e-mail, at the time when the e-mail is indicated to the sender as delivered to the recipient and/or the recipient acknowledges the receipt thereof;

provided that, if the notice is received on a Business Day after 5 p.m. or on a date which is not a Business Day, the notice shall be deemed given and effective on the first following day that is a Business Day.

- 13.1.3** In the event of difficulty in using fax or electronic means to send notices or other communications under this License Agreement, notices may be served in writing and delivered in person or by courier or by post, with such service deemed effective on the date of receipt, unless that date is not a Business Day in which case the notice shall be deemed given and effective on the first following day that is a Business Day.
- 13.1.4** All notices and communications shall be addressed to the respective addresses of the Parties set forth in Annex III.
- 13.1.5** Any change of address of a Party must be notified by e-mail or fax to the other Parties, the new address being considered the official address of this License Agreement as from the third (3rd) Business Day following the sending of such e-mail or fax.

13.2 Modification of the Agreement

- 13.2.1** Except if explicitly stipulated otherwise in this License Agreement, no amendment or modification hereof shall be effective and binding unless evidenced in writing and signed by the Parties. Notwithstanding the foregoing, Annex III – Contact Information- and Annex IV - List of Permitted Access Holders- may be amended by way of notification by the concerned Party.

13.2.2 Should any Legal Provision require an amendment or modification of this License Agreement or of any other document having an influence on this License Agreement, the Parties agree to examine together the possibilities and/or conditions for the amendment or modification of this License Agreement, at the request of the most diligent Party. If the Parties do not reach an agreement on such amendment or modification within a period of two (2) months as of the above mentioned request, the Licensors or any Licensee may terminate this License Agreement upon twenty (20) Business Days prior written notice to the Licensee or to the Licensors, respectively.

13.2.3 The Licensors shall provide their best efforts to assure the alignment of this Agreement with the relevant provisions of PCR Co-ownership Agreement or DAOA as well as with any relevant decision of the PCR steering committee or the DAOA steering committee. Therefore, the Licensee may object to an amendment or modification of this License Agreement proposed by the Licensors in order to assure such alignment only if a substantial unbalance of the Licensee's contractual position is proofed.

13.2.4 Any modification of this License Agreement shall include the Annexes and vice versa.

13.3 Severability

13.3.1 If one or more of the provisions of this License Agreement are declared to be invalid, illegal or unenforceable in any respect under any applicable mandatory Legal Provision the validity, legality and enforceability of the remaining provisions contained herein shall not in any way be affected and these provisions shall remain in full force and effect as long as the economic or legal substance of the present License Agreement is not affected in any material manner adverse to any Party. In such event the Parties shall use their reasonable efforts to immediately and in good faith negotiate a legally valid replacement provision with the same economic effect.

13.3.2 If no agreement on such provision has been reached within a period of two (2) months of such provision being declared invalid, illegal or unenforceable, the Parties can decide to terminate this License Agreement with twenty (20) Business Days prior written notice to the other Party.

13.4 Reference Coordinator

13.4.1 The Parties will appoint a formal Reference Coordinator (hereinafter: "**RC**") within ten (10) days from the entry into force of this License Agreement. The RC will be considered the reference person for all issues connected with the performance and the general implementation of the Licensed Material and related IPR. Each Party can replace the RC at any time. The replacing Party shall then inform the other counterparty via e-mail providing all relevant operational references of the new RC.

13.4.2 With respect to the SF services described under art 5 above, the SF Developers shall appoint one of them (the "**Functional Simulation Facility Operator**" or "**FSFO**") on a rotating basis for a period of 12 calendar months to provide the Simulation Facility Services and act as single point of contact of all SF Developers towards Licensee. The SF Developers shall nominate each successive FSFO and inform the Licensee thereof in writing before the expiry of the relevant 12 months term of such FSFO. Information regarding the change of FSFO shall be given in writing. Any request or enquiry regarding the Simulation Facility Services shall be forwarded to the FSFO in writing. The hours when the FSFO shall be reachable are stated in Annex II.

13.5 Waiver

13.5.1 No failure or delay of any Party to exercise any right or remedy under this License Agreement shall be considered a final waiver thereof, nor shall any single or partial exercise or any right or remedy preclude any other or further exercise thereof.

13.5.2 The rights and remedies provided under this License Agreement are cumulative and not exclusive of any rights or remedies provided by law.

13.6 Entire Agreement

This License Agreement, the Annexes and the documents referred to herein, contain the entire agreement of the Parties hereto with respect to the subject matter hereof, and therefore replaces and supersedes all previous understandings, arrangements, agreements or negotiations, whether oral or in writing, between the Parties relating to the same subject matter.

13.7 Relationship

No agency, partnership or joint venture relationship is created between the Parties as a result of this License Agreement.

13.8 Transfer of rights and obligations

This License Agreement shall be binding upon and inure to the benefit of the Parties hereto and their permitted assignees. The Licensee shall not be entitled to Transfer its rights and/or obligations arising out of this License Agreement, except with the prior written consent of the Licensors.

13.9 No Joint and Several Liability

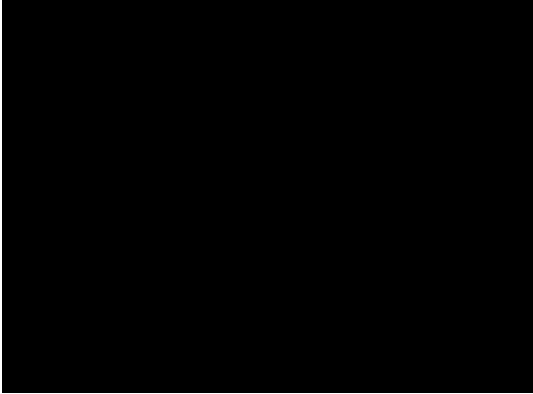
The Parties are each liable for their individual commitments only and do not bear any joint and several liability under this License Agreement.

13.10 Publication

The Parties are aware of the fact that OTE, irrespective of the law otherwise applicable to this License Agreement, has a national legal obligation within the meaning of Section 2 (1) of the Czech Act No. 340/2015 Coll. on special conditions for the effectiveness of certain contracts, the contract publishing and on the register of contracts, as amended (hereinafter the "Act on Register of Contracts") according to which this License Agreement shall only come into effect in relation to the rights and obligations of OTE subject to the prior publication of this License Agreement in the national contract registry of the Czech Republic. All Parties hereby acknowledge this publication obligation for OTE and accept that the validity and effectiveness of this License Agreement with respect to OTE is subject to fulfilment of the abovementioned publication obligation.

No Confidential Information shall be disclosed during the course of complying with such publication obligation, including by redacting all such Confidential Information from any materials or documents.

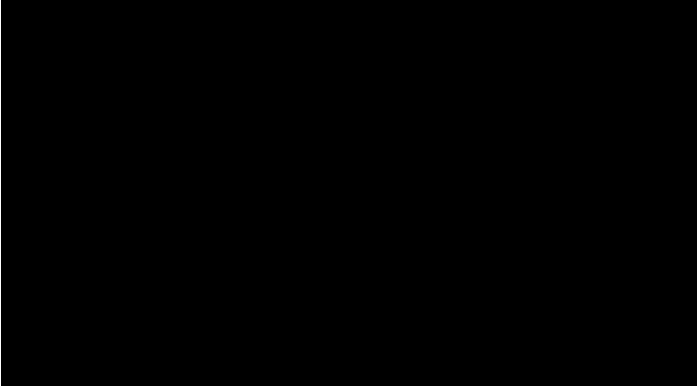
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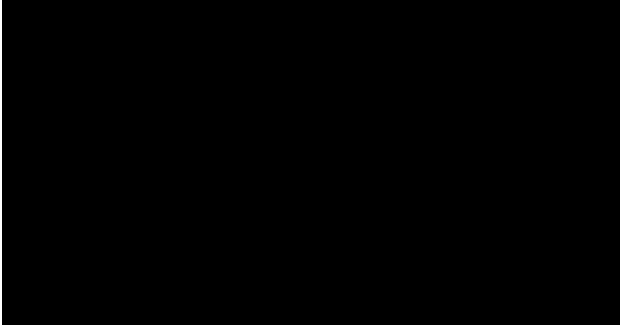
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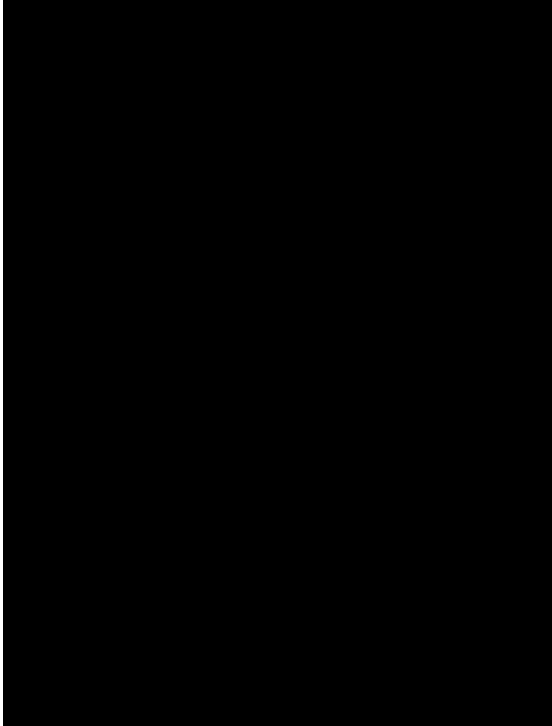
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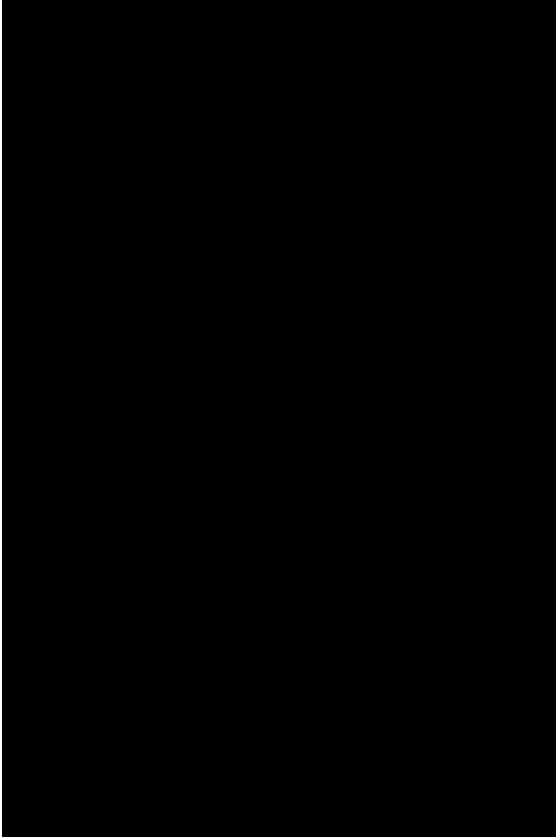
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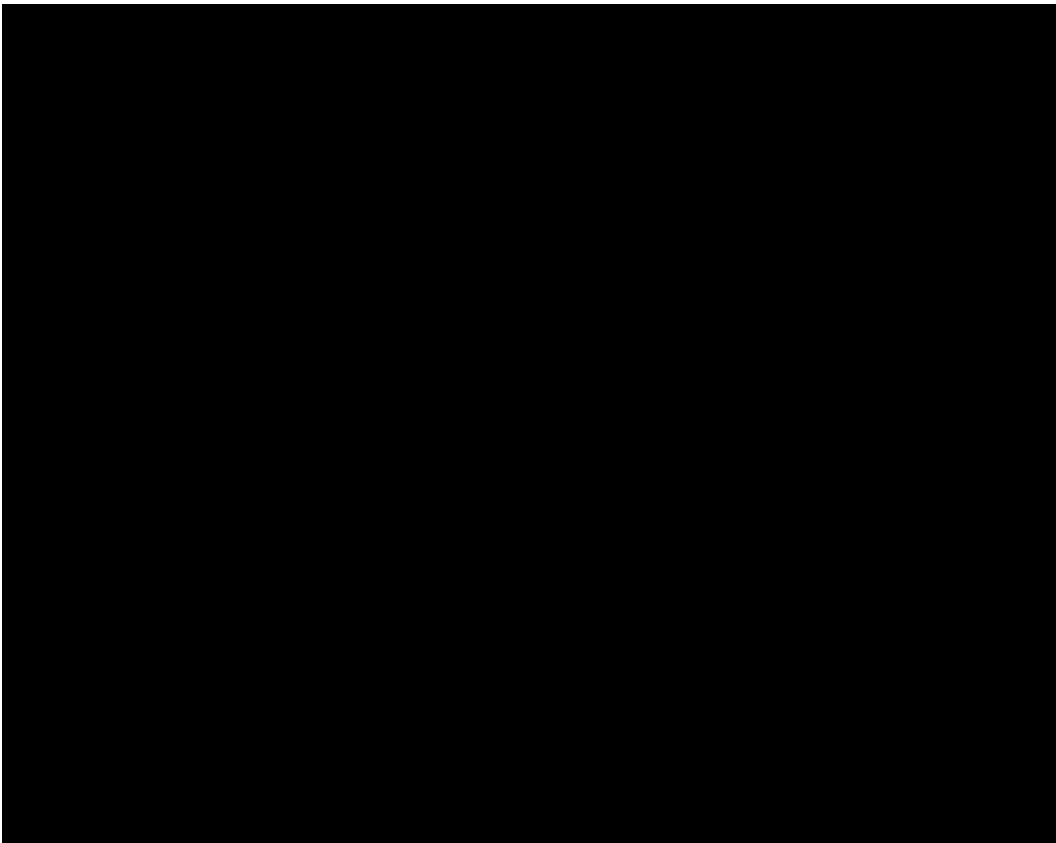
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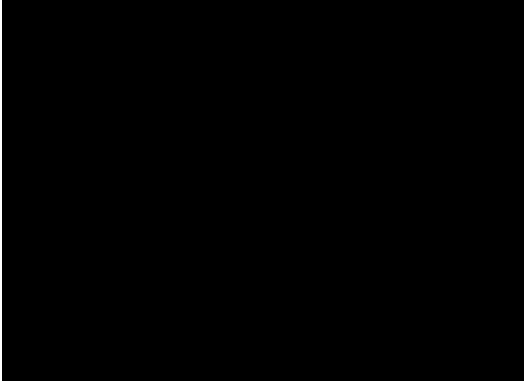
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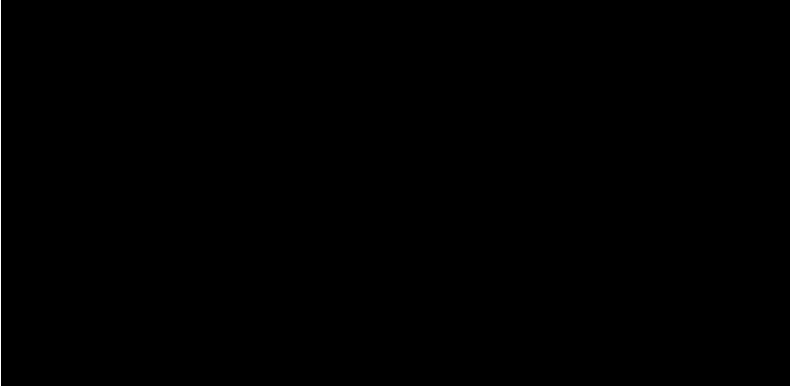
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Annex I: Scope of the License

I. Licensed Material

The Licensed Material consists of the **Simulation Facility which** is a web-based application embedding:

- Euphemia which allows the simulation of market coupling scenarios based on Historical Data and/or user-defined data, as well as the reporting on the Simulation Results;
- Historical Data. For the avoidance of doubt, the Simulation Facility does not (i) grant access to Historical Output Data as defined in Annex II Section 10, but only to Historical Input Data, as define in Annex II Section 10 and the Simulation Results or (ii) enable the Licensee to identify any individual market participant or individual order. Historical Data made available via the Simulation Facility Services is :
 - o exclusive property of the relevant parties to the DAOA,
 - o commercially sensitive information and is thus deemed Confidential Information.

The technical description of the Simulation Facility is set forth in Annex II hereto. The Licensee may select a date range over which he/she would like to run any simulation (and in respect of which obtain Simulation Results).

II. Permitted Use

The Simulation Facility shall, within the limitations regarding confidentiality, data publication and intellectual property rights set forth in this License Agreement:

- i) enable the Licensee to:
 - perform simulations on Historical Data and/or user-defined data
 - have access to all Historical Input Data, as defined in Annex II Section 10 and the Simulation Results;
 - download simulation results to perform operational and management reporting; and
 - create standard reports automatically.
- ii) provide a solution for hosting data and Simulation Results.

All Data attributable to simulation results and/or all user-defined data shall be erased from the Simulation Facility every three months.

III. License Territory

All countries in which CACM is in force.

Annex II: Licensed Material Documentation

Price Coupling of Regions Simulation

PCR Simulation Tool Requirements

Date	<i>17/03/2020</i>
Author	EPEX, NordPool, OMIE
Topic	PCR Simulation Tool – General requirements
Summary	This document lists the required functionalities of the simulation facility of the PCR market coupling project which allows to simulate various market coupling scenarios.
Version	0006

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Id	Reference	Version	Date
1	Euphemia Public Description	190410	10/04/2019
2	PCR Algorithm Interface Specifications	2.0	07/02/2019
3	Functional Specifications – CWE Simulation Facility Release 2	2.0	28/09/2009
4	Design Document – CWE SF	1.0	08/06/2009
5	File Interface Specification – CWE SF Files (Import/Export)	01.00	05/2009
6	Database Design – CWE SF (Draft)	1.0	26/02/2009
7	Architecture Document – CWE SF	1.10	10/09/2009

Document history	Author	Version	Date
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Formatted, split up to individual	MK	0002	26/01/2014
Addition of definitions at the end of the document. Polishing.	PG	0003	27/01/2014
Accepted revisions and removed comments.	All	0004	30/01/2014
SF functionalities update	All	0005	09/04/2018
Inclusion of MNA-related changes	FL	0006	17/03/2020

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1. Scope, context and generalities

In the framework of the PCR Market Coupling project, some project parties are requiring a Simulation Facility (SF). The aim of this document is to describe the high-level functional requirements related to this software tool.

All users will have individual access to this facility, which is a web-based secured application. The application may either be hosted centrally or locally by each Nominated Electricity Market Operator (NEMO) that would demand this. These technical aspects are however not yet considered in this document.

Section 2 describes the market coupling concept.

Section 3 describes the Simulation Facility.

Section 4 describes the “batch” concept and explains how to set up simulations.

Section 5 deals with the execution of the algorithm from the SF to run the batches.

Section 6 describes the possibilities facility should have in terms of analysis and reporting.

Section 7 discusses the general principle of data handling and users’ restrictions

Section 8 proposes a basic functional architecture.

Section 9 contains a short description of future requirements.

Section 10 gives definitions of expressions and acronyms that are used throughout the document.

2. The market coupling concept

2.1. Introduction

The Simulation Facility will be used to simulate one or more market coupling runs. This chapter explains the concept of market coupling as it is currently applied in the implementation area of Single Day Ahead Coupling set by CACM Regulation

2.2. The players and the context

Market coupling involves contributions from Nominated Electricity Market Operators (NEMOs) and Transmission System Operators (TSOs). It regards coupling of the wholesale electricity markets for day-ahead delivery of the participating NEMOs. These markets are run in the form of mid-day auctions involving central counterparties on every day of the year.

The geographical area being coupled is divided into several bidding areas, containing one or more scheduling areas. One or more NEMOs are involved in each scheduling area. A market participant submits orders through a NEMO in a given scheduling area (for one or more periods out of those in the next day), and the NEMO establishes the matching of these supply and demand orders to the extent possible. The orders may be either curve (historically called 'hourly' or 'limit') orders, block orders, complex orders or merit orders.

The TSOs involved are responsible for the security of power supply in these areas. They own the interconnectors (i.e. electricity cables) connecting bidding areas together and determine ahead of the auction the network capabilities for the energy transmission that will be released for day-ahead market coupling on every day of the year. They may impose Available Transfer Capacity (ATC) constraints over each connection, or define Flow-Based (FB) constraints over a set of bidding areas within a common balancing area.

Market participants always trade towards a central counterparty (CCP) in which they are registered, being the clearing house of the corresponding NEMO. As a result of market coupling, trades between clearing-houses do also occur: this allows supply registered in one NEMO to be matched by demand in another NEMO, possibly across countries.

The central software system involved is the matching algorithm, called Euphemia. Next to that, many other software systems are used both by NEMOs and by TSOs to take care of the various input and output data flows.

2.3. Data flows

Typically, a market coupling run goes as follows.

1. TSOs submit hourly or daily network constraints for all interconnectors in the coupled region. These constraints include the available transmission capacities (ATCs) on interconnectors for all periods of the following day.
2. NEMOs submit anonymized order books comprising the curve orders, block orders, complex orders and merit orders for all bidding areas in the coupled region over all periods of the following day.
3. The central coupling algorithm calculates the optimal matching of the orders taking into account the constraints within the authorized calculation time, as established in operational procedures.

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The market coupling results comprise: (a) the market clearing price per period and per bidding area, which determines the local matching of the curve orders, (b) the list of matched block, complex and merit orders per bidding area together with their associated accepted quantities, (c) the net (import/export) position of each bidding area, scheduling area and NEMO trading hub per period, and (d) the scheduled exchanges for each topology level per period.

4. Both NEMOs and TSOs validate the market results, which thereby become firm.

2.4. Static data

The following data (that does not change on a daily basis) is also input for the market coupling run.

The network topology, i.e. the set of bidding areas, scheduling areas and NEMO trading hubs that compose the coupled region and the set of their associated interconnectors, each with their relevant attributes (like type, owner etc.)

The algorithm configuration parameters used.

3. The Simulation Facility

3.1. Simulation Facility

The Simulation Facility (SF) is a tool that allows simulating market coupling runs based either on one's own input and configuration data or on historical data, which may or may not be altered. It can be used to simulate the impact of, for instance, extension of the region, introduction of new products, moving from ATC-based coupling to flow-based coupling, for performing resilience analyses and for many other purposes.

3.2. Input and output data formats

Input and output data formats are specified in the Interface Specifications file.

Note that these are the format which apply to the import and export of (CSV) files. The majority of the input data is expected to be the database containing the historical data.

3.3. Simulation Facility features

The Simulation Facility is expected to provide the functions mentioned in the following subsections.

Requirement – User management

User management shall be implemented, making as a minimum a separation between a Functional Administrator and a user. Users can perform simulations and inspect results, but not (necessarily) inspect input data. The administrator manages users, and priorities across pending simulation requests if applicable.

Requirement – Run single-day simulations

The option to run single-day simulations shall be implemented.

Requirement – Run batches

The option to run a batch containing any number of days (e.g. full years) shall be implemented.

Requirement – Run historical input data

The option to run on historical input data (see section 4.7) shall be implemented.

Requirement – Run artificial data

The option to run on artificial input data shall be implemented.

Requirement – Run historical and artificial input data

The option to run on any mix of the two historical and artificial data shall be implemented.

Requirement – Manipulate historical input data

The option to easily manipulate historical input data before running a simulation shall be implemented. This includes data whose direct access is not allowed to the user, both market and network data (for example, doubling the capacities on a specific ATC and increasing all block volume).

Requirement – Set configuration settings

The option to set the relevant configuration settings for any run shall be implemented. The relevant parameters are:

- Algorithm parameters
- Network topologies
- Network model

Requirement – Submit recurring batches

The option to submit recurring batches shall be implemented. Recurring can for example be daily computation of the resilience on the daily results.

Requirement – Run pre-defined or ad-hoc reports

The option to run pre-defined or ad-hoc reports on simulation results and production results (market and operational results) [REDACTED] shall be implemented.

4. Specifying a batch of simulations

4.1. Introduction

The basic operation with the SF application will consist of a user creating its own batches (mainly based on historical input data with some alterations), giving the batch to the SF tool to be run by the algorithm, and getting the results afterwards.

This process will be based on the concept of batch. Generally speaking, we call batch an object that specifies a set of similar sessions, and market results the output of a batch as computed by the algorithm

4.2. Batches

A batch essentially points to a set of other objects.

- Either one time period defined by a start date and an end date or a set of dates

- One set of algorithmic parameters

- One network configuration (topology)

- A set of network data (historical or newly uploaded, original or modified) matching the time period and the topology

- A set of market data (historical or newly uploaded, original or modified) matching the time period and the topology

A batch also contains its own attributes:

- Identification code

- User name (owner)

- Priority

- Frequency of execution (values: one-shot, daily at 12:00, Mondays at 18:00, etc.)

- Privacy (private or shared)

- Status

 - Unfinished*: the batch is under construction.

 - Pending*: the batch is in the queue and is awaiting execution.

 - Cancelled*: the user cancelled the batch during execution.

 - Running*: execution is on-going.

 - Finished*: execution terminated normally.

 - Failed*: execution terminated abnormally (for instance: algorithm could not find a valid solution or a technical problem was encountered during execution)

 - Paused*: execution is paused

 - Stopped*: execution is stopped by the user.

In the case of a recurring batch: time and date at which the next execution is supposed to happen.

4.3. Requirement – Create batches

Batches will be created by users and sent to the SF tool to be run using the PCR algorithm. Pending batches will be managed by the SF in a list according to their priority attribute (absolute, high, normal and low). Batches of the same priority will be managed as a FIFO list.

Requirement – Give batches priorities

Priorities will be given automatically by the SF according to some rules (e.g. yearly batches will be ranked as low priority). However this priority could be changed by authorized users (administrator).

Requirement – Time period

The user of the Simulation Facility shall be able to choose the days for a batch (either by giving a start and end day or by importing a set of individual days one by one).

Requirement – Allow flexible start and end data handling

The user shall be able to choose for a batch the time period by selecting set of non- consecutive days one by one.

Requirement - Algorithmic parameters, default mode

Pre-defined default algorithm parameters shall be used when running in default mode (batches run by users not authorized to change algorithm parameters, see section 0).

Requirement - Algorithmic parameters, alternative parameters

Only authorized users (see section 0) will be allowed to use alternative parameters than the default mode. If this is the case, the SF will provide the user with this possibility. In all other cases, the default parameters are applied (default mode).

Requirement – Create a batch

The batch data shall be initialized by default to historical data.

Requirement – Duplicate a batch

The user shall be able to create a new batch by “copy/pasting” an existing batch, and afterward change/apply queries on input data to modify the new batch.

Requirement – Modify batch

The user shall be able to modify his batch definition (session type, parameters, topology and all the corresponding hourly data) as long as the batch has not been run.

Requirement – Filter batch list

In the tabs where the batches are listed, the user shall be able to filter the batch list according to all column values. For example, in the batch results tab, he shall be able to filter batches with one session, a finished status and recurring he created.

Requirement – Change batch data

The user can change input data by applying queries. There shall be a functionality to run these queries (see section 4.5).

Requirement – Set batch priority

The system follows rules to prioritize batches. For instance, single-day batches have high priority because they run very quickly.

These rules cannot be defined by users, but administrators can override them by giving a different priority to a batch.

4.4. Network topology

A network configuration, which is a set of configuration settings, can be labelled as a network configuration object.

Examples of Network configuration objects:

- “PCR_ATC”
- “OMIE_ONLY_ATC”
- “CWE in FB”

Requirement – Save network configuration (topology)

The SF shall have the functionality to save several different network configurations.

Requirement – Upload network configuration (topology)

The SF shall have the functionality to upload network configurations.

4.5. Queries

A query is an alteration that can be applied on the input data. It can be applied when defining a batch or before exporting input data. Queries can be combined, which means they will be applied sequentially, one after the other.

The word query should be understood as a general term and does not necessarily refer to SQL-like queries.

Network data series and queries

Network data series are typically network historical data spanning the batch period¹.

Because simulations typically aim at altering some data to analyze its effects, the user will be able to modify the network data series by means of network queries. A network query allows changing a network data series in several ways. For instance, queries can be used to reduce or increase the available capacity by a given percentage.

Queries can be created, modified, saved, and deleted.

¹ Although this is the usual case, they can also be composed by new data included by the user.

Requirement – Network data queries

The SF tool will allow users to alter the network data series included in their batches by using queries (including but not limited to): modify ATC values (add a number, multiply by a number, set to a number), alter PTDF matrices (multiply by some matrix). It is possible to filter to a subset of hours and/or by ATC direction (up or down). Several queries can be defined per ATC line.

See more on queries in *Functional Specifications*.

4.6. Market data series and queries

Just like network data, market data (order books) can be retrieved and modified via queries by the users. The essential features of network queries and market queries will be identical, but the functionalities will be obviously different.

Requirement – Market data queries

The possible market data queries per market are, among others:

Hourly orders (aggregated curves)

Modify quantities (add a number, multiply by a number)

Modify prices (add a number, multiply by a number)

1. It is possible to combine both alterations in a query and to filter to a subset of hours and/or by order sense (supply or demand).
2. It is possible to define queries cumulatively

Block orders

Modify quantities (add a number, multiply by a number, set to a number)

Modify prices (add a number, multiply by a number)

Set the minimum acceptance ratio to a number

3. It is possible to combine all alterations in a query and to filter to a subset of hours or by order sense (supply or demand) or order volume or order price limit or order type (profile, linked, exclusive, flexible).

It is possible to define several queries per market.

4.7. Historical input data

The SF will have access to SDAC Historical Data copied from the production database (including the historical market results). [REDACTED]

4.8. Fresh input data

It is also possible to submit (i.e. upload) fresh data to the SF. Fresh data can be used in simulations in replacement of historical data or in addition to it. The SF will allow this functionality to the users.

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Whether fresh data is based on historical data or created by any other means remains unknown for the system, the only requirement being that this new data satisfy a particular format. Fresh input data will be stored within the simulation facility system (after verification of the input format and consistency), allowing to apply queries on this fresh data in exactly the same way as on the historical data.

When importing fresh input data, the user has to define the level of access right for the data (see section 7.3).

Requirement - Support different fresh data types

Handling of the following fresh data types shall be supported:

- Algorithm parameter data
- Network configuration data
- Network data series
- Market data series

Requirement - Upload and add fresh data to the SF

Implement a user-friendly method to upload fresh data to the SF, and then allow the user to add it in a new batch.

Example

If a user has fresh data for "Line A" capacities which he wants to use instead of the historical data, he should first upload these new capacities and give it a name.

Next, when creating a batch, he shall opt for a (default) network topology. In the next step, the user is asked to provide the correct hourly information for all the defined bidding areas (market products) and capacity information for all the lines: in this step he will change the "Line A capacity" entry from the default (historical) to fresh data with the name of the input he provided earlier.

Requirement - Verify the consistency of the uploaded fresh data

Controls to verify the input format and consistency of the uploaded data shall be implemented.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

5. Execution of the algorithm

5.1. Introduction

Once a user has created a batch, the batch is added to the list of pending batches managed by the SF tool. This list may have various entries (one per pending batch) belonging to different users. The list is ordered by priority. The first batch in the list is the first one to be given to the algorithm for execution.

5.2. Algorithm call

The SF will be able to create input data in the database schema used by the algorithm and call the algorithm executable.

The SF will launch the algorithm execution for the first pending session of the first batch in the list of pending batches. The SF tool runs sessions corresponding to batches in a sequential way (one by one).

5.3. Calculation management

In a first step, the application will run sessions corresponding to batches in a sequential way (one by one). The architecture of the application should be sufficiently flexible to change easily the sequential calculation by a parallel calculation (running several instances of the algorithm in parallel).

5.4. Pending batches list management

Requirement – Manage batches

Pending batches will be managed by the SF in a list according to their priority attribute (assigned by the SF according to the number of sessions in the batch) . Batches of the same priority will be managed as a FIFO list.

Requirement – Manage multiple batch sessions

As batches can have multiple sessions, it can happen that a low priority batch is running a session (using the algorithm) and in the middle of this execution a new batch is entered into the list with higher priority. In this case, the former batch shall stop its execution after the current session is finished, and the new batch will start running its sessions. Once the new batch ends, the first batch will continue its execution from the first still not run session.

Requirement – Manage batch priorities automatically

Priorities for batches will be given automatically by the SF depending on the number of sessions included in the batch (more sessions imply less priority).

Requirement – Manage recurring batches

Recurring batches (e.g. daily at 12:00, Mondays at 18:00, etc...) shall be added to the list periodically by the SF tool, in line with the specified frequency. These batches will usually be one-session data and will have high priority.

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Requirement – Manage batch priorities

Priority can only be changed by authorized users (administrator).

6. Using simulation results

6.1. Introduction

In chapter 4, we described how the users will be able to specify a batch of simulation in the SF tool, that is, how to specify what the user wants to simulate. This chapter describes the usage of the simulation results.

Apart from the results coming from the simulations, historical results as automatically uploaded from the production environment² will be available in the Simulation Facility and treated in the same way as simulation results (i.e. as the results of a batch). This will allow using the same reporting tools to analyse historical and simulation results and do comparisons.

6.2. Downloading or exporting raw results

As part of the SF tool functionalities, all the raw results from the algorithm can either be downloaded individually via files (csv or csv-like format) or exported to an FTP server. Access to the input data is managed per data type and per data series (restricted access depending on user rights).

6.3. Creating reports

Output data will also be provided by the SF tool in various types of reports, including tables or graphics. A user will not be able to generate a batch report containing data he is not permitted to “see” (see section 7.2).

Historical results are part of the accessible data, meaning that all the processing of simulated data into reports can be also used for historical data and vice-versa.

The SF tool will provide the user with the possibility of using pre-created reports (to be defined). The format of these reports (Excel-like vs PDF-like) is not yet settled.

[REDACTED]

[REDACTED]

Requirement – Run pre-defined and ad-hoc reports

The option to run pre-defined or ad-hoc reports [REDACTED] shall be implemented [REDACTED]

7. Data handling and user restrictions

7.1. Introduction

This section describes all the functionalities linked to management of data and of access restriction.

² Not to be done by the Simulation Facility provider

7.2. Users

Requirement – Use roles

The usage of the simulation tool will require login with a user ID. The accessibility to each feature of the simulation tool can be restricted by user or by group of users using roles.

Requirement – Administer access rights

The usage of the simulation tool will require login with a user-ID. The accessibility to each feature of the simulation tool is managed by user role. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Requirement – Link users to user groups and NEMO trading hubs

Next to the defined roles, there is another distinction for the users: user groups. Each user is linked to a defined group (usually a company). In turn a group is linked to the set of NEMO trading hubs (if any) owned by the group. While a user has to be linked to a group, this obligation does not exist for groups being linked to bidding areas. This allows the existence of groups not owning any market data (e.g. TSOs, NRAs, or NEMOs not yet operational in SDAC).

Requirement – Set group access

Besides the access to market data (orders), groups also define the access with regards to either fresh data which is uploaded as 'private' or a batch which is created with the 'private' setting. The access rights are always considered at a group level. Hence each user of the owners group has identical access to either the fresh data or the batch results.

Requirement – Create a User

Implement functionality to create users. A user must belong to at least one group. [REDACTED]
[REDACTED]

Requirement – Edit a User

Implement functionality to edit users.

Requirement – Create a Group

Implement functionality to create groups.

Requirement – Edit a Group

Implement functionality to edit groups.

Requirement – Set Group rights, roles

Implement functionality to set group rights and roles.

7.3. Data access rights

Requirement - Access to data

The accessibility to data shall be identified by user group. There shall be 3 access types. Data owned by a user group have either:

A private access: only users belonging to the group can view (download as such or after alteration with a query) and use the data (in a batch as such or after alteration with a query).

A protected access:

all users (belonging to any group) can use the data (in a batch as such or after alteration with a query)

only users belonging to the group can view (download the data)

A shared access: all users of any group can view (download as such or after alteration with a query) and use the data (in a batch as such or after alteration with a query)

Requirement - Access to historical data

There shall be a functionality to configure access rights to different type of data.

For example, for historical data:

Market data is owned by the group to which the corresponding NEMO trading hub is linked.

Network data is considered unrestricted and (fully) accessible by all groups/users.

Historical data cannot be removed/modified (read and use access only).

Example, for fresh data:

Market and network data imported by a user is owned by the user group and can have a private or protected or shared access.

Algorithm parameter and network configuration data imported by a user is owned by the user group and can have a private or shared access.

Fresh data can be removed by any user of the group the data belong to.

A batch is owned by the group of the user who defined the batch. Batch results can have 2 access types defined by the user:

Private access: only users belonging to the group can view the batch and download the data results the group has access to

Shared access:

only users belonging to the group can view the batch

any user (of any group) can download the results

A recap table of the applied rights are provided hereafter:

Input data	Input data type	Imp	Exp	Use
Fresh market or network data (Same group)	Private / protected / shared	Yes	Yes	Yes
Fresh market or network data (Other groups)	Private	NA	No	No
	Protected	NA	No	Yes
	Shared	NA	Yes	Yes
Historical market data (protected) (NEMO user)	For NTHs associated to the NEMO	NA	Yes	Yes
	For other NTHs	NA	No	Yes
Historical Market data (protected) (NRA user)	All NTHs	NA	Yes	Yes
Historical Network data Any user, any group		NA	Yes	Yes
Algorithm parameters or Network configuration (same group)	Private	Yes	Yes	Yes
	Shared	Yes	Yes	Yes
Algorithm parameters or Network configuration (other group)	Private	NA	No	No
	Shared	NA	Yes	Yes

Historical output data (i.e. market and network results) is not accessible by the Simulation Facility users.

	Batch access	View Batch description	Export batch input data	View/export batch results
Batch (same group)	Private or shared	Yes	Owned and shared input data only	Yes, except block order results of the not owned and protected block orders used in the batch.
Batch (other group)	Private	No	No	No
	Shared	No	Owned and shared input data only	Yes, except block order results of the not owned and protected block orders used in the batch

Access to private data will be granted only to its owner.

7.4. Historical and fresh data import

Historical and fresh input data will be subject to user access rights (see section 7.3).

Requirement - Data import

It will be possible to choose for all individual data series which user can create queries using this data or not:

NEMO Historical data is protected and TSO historical data is shared.

Fresh data can be shared, protected or private.

Once data has been defined as private, protected or shared, its access right cannot be changed.

7.5. Network and market queries

Requirement - Network and market queries

Network and market data queries can be created by all users. Users can apply network queries or market queries only on shared data, or protected data or their own private data. In other words, the only restriction is on private data from other groups specific data series (see previous section).

7.6. Download input data

Requirement - Download input data

Using the SF tool, input network and market data can be downloaded from the historical database (depending on the rights of the user), in individual files in a csv or csv-like format.

This file format is the same as the “Fresh input data” format. This is particularly convenient in case queries are not sufficient: the user will be then able to download the data, perform whichever change he needs (manual, scripts ...) and upload the modified files.

To perform downloading, the user has to provide a time period object, to specify the range to download. A user can only download data he has the right to see.

Requirement - Apply a query on input data before download

It is possible to apply a query on input data before downloading it. The input data of a batch can be downloaded once it has run.

7.7. Algorithm parameters

Requirement - Administer algorithm parameters

The Simulation facility comes with default values for the algorithm parameters. Every authorized user (see section 0) may create a new set of values for a specific batch by importing it as a CSV file.

7.8. Network configurations

Requirement - Select network configurations

A user can select a network configuration from a list of previously uploaded network configurations.

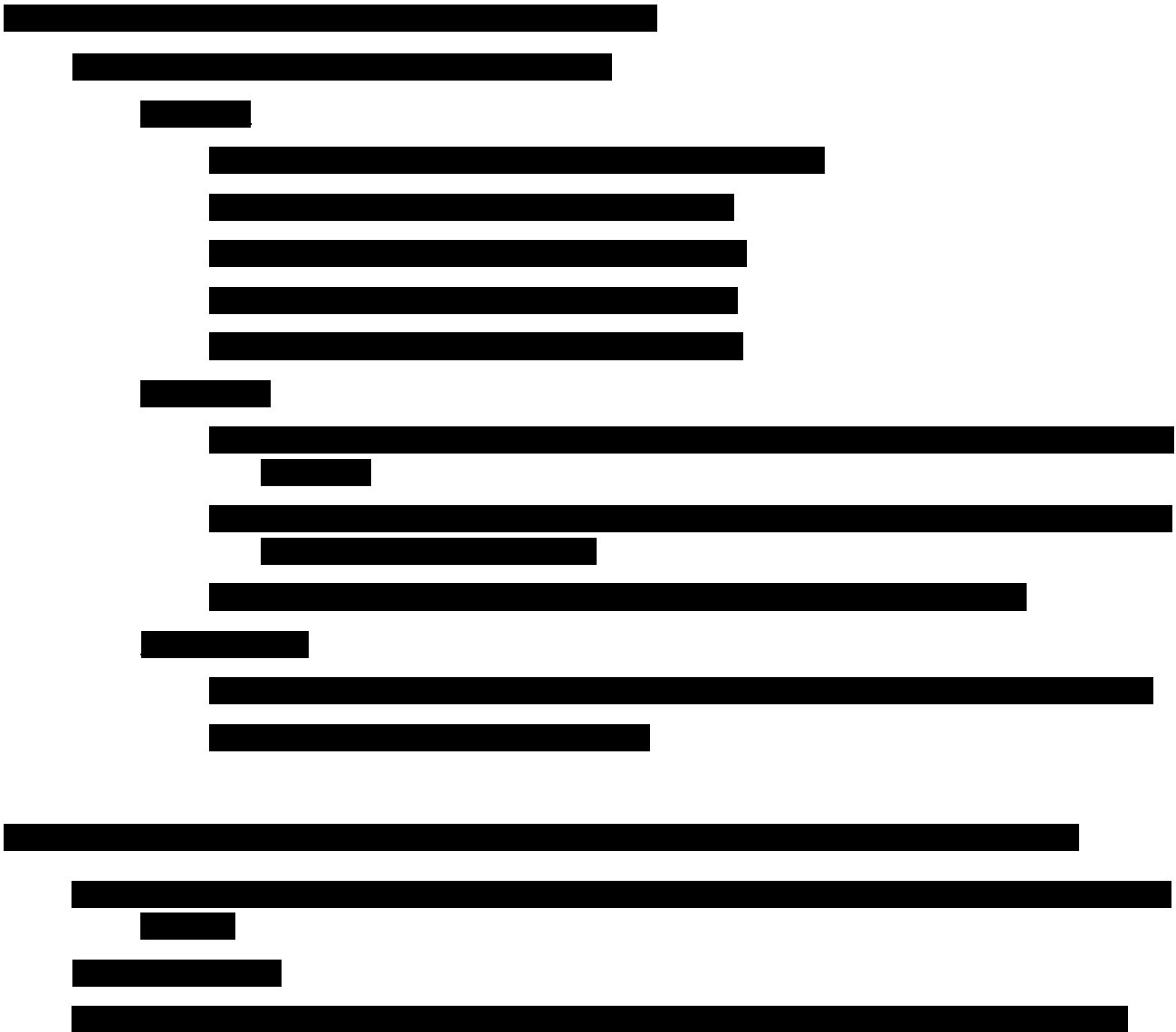
Only users authorized to change network configurations (see section 0) are allowed to create new network configurations.

8. Technicalities and IT issues

8.1. Functional architecture

The scheme hereunder shows the logical Simulation Facility components and its external interactions. Internal interactions are shown for clarity purpose, but as they require a technical analysis of the requirements, their design will be specified in a later stage.





Requirement - Simulation Facility interactions

The simulation facility can interact with

End users who can

Specify a simulation

Upload input data

Download output results (raw data or report)

An FTP server on which it can upload automatically output results

Administrator who administrate the application

Not shown in this scheme

8.2. DB sizing and maintainability and simulation audit

Requirement - Maintain DB

DB can grow up to the point of possibly reaching technical limits or reducing its efficiency.

The SF will envisage some kind of approach to avoid this kind of problems. Several solutions can be proposed, including but not limited to:

- Possibility to purge the oldest simulation results and fresh input data (keeping input and batch data would allow recreating the results anyway).

- Advanced DB archiving methods.

- Storage in files, complementing the DB.

8.3. System requirements

Requirement - Web application

The simulation Facility should consist in a web application³. [REDACTED]

Requirement - Use software environments

The facility should be accessible for external parties involved in the project; hence attention should be paid to be highly compatible with most secured IT infrastructures.

³ The existing Simulation Facility is already a web application.

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[REDACTED]

[REDACTED]

[REDACTED]

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10. Definitions

AC-connection	Alternating Current Connection
Algorithm	In this document, refers to PCR Matching Algorithm, called Euphemia. It corresponds to the algorithm solving the Market Coupling problem each day. It produces the market (order execution, market prices) and network results (scheduled exchanges).
Algorithm Session	For the Algorithm, a session is a run. If the calculation is restarted, a new session of the Algorithm is started. We are not completely sure yet how a new Algorithm session is created from existing data, but we do require this option. This also is true for receiving a second version of only one order book: this triggers a new Algorithm Session. See also Market Coupling Session.
ATC	Available Transfer Capacity. See Transmission Capacity.
ATC/DC line	ATC/DC line consists of a virtual trade interconnection between two bidding areas. This should not be confused with the physical lines crossing the border. In theory, an ATC/DC line could be defined between two non-adjacent bidding areas. In practice, ATC/DC lines are defined only between adjacent bidding areas. It can also happen that two adjacent bidding areas are not linked with any ATC/DC line.
Balancing Area	Subset of bidding areas for which the sum of the AC net positions should be zero.
Bid	Same as Order. See Order definition.
Bidding area	Represents a fully-connected geographical area in which electrical exchanges are considered infinite (i.e. distribution constraints are not considered). For this reason, all orders submitted within a same bidding area are subject to a same unique price per period of the day. Most countries are represented with a unique bidding area so that a unique price is determined. However, some countries are subdivided into several ones for congestion/dispatch management reasons.
Block order	Order defined using a profile (i.e. set of quantities) over a set of consecutive periods (block period) with a fixed price. Both sale and purchase block bids are allowed. Blocks are associated with a Minimum Acceptance Ratio (MAR), defining the minimum quantity ratio that can be accepted for each of the period. The block can either be accepted at an actual acceptance ratio higher or equal to its MAR, or be rejected. Sale block bids are accepted if the bid price is <i>lower</i> than the weighted average price of the corresponding periods. Purchase block bids are accepted if the bid price is <i>higher</i> than the weighted average price.
Central Counterparty (CCP)	Financial entity in charge of taking on counterparty credit risks, and providing clearing and settlement services either between members registered in the same CCP or with other CCPs.

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Cloud computing	Cloud computing is a general term for anything that involves delivering hosted services over the Internet. These services are broadly divided into three categories: Infrastructure -as- a-Service (IaaS), Platform-as-a-Service (PaaS) and Software- as-a-Service (SaaS). The name cloud computing was inspired by the cloud symbol that's often used to represent the Internet in flowcharts and diagrams.
Coordinator	Party coordinating and supervising the operation of PCR Market Coupling
CSV file	Text file constructed using Comma Separated Value formatting.
Curve order	An order consisting of a sequence of price/quantity pairs valid for a single period. The price/quantity pairs are regarded as points on a piecewise or stepwise linear curve and indicate a request to sell or buy various amounts of energy at different prices. Such orders are considered as fully curtailable (i.e. any portion of a submitted quantity may be practically executed). A curve order cannot not be paradoxically rejected.
External constraint	Constraint applied to a bidding zone to limit its net position (either in export or in import), defined per period.
Functional Administrator	The Functional Administrator administers user rights and can end user sessions. This typically is either an operations supervisor or an application manager.
Historical Data	Local copy of the actual production data of the Sessions of Market Coupling for a given set of dates. Historical Data are composed by i) Historical Input Data, and ii) Historical Output Data.
Historical Input Data	With respect to each Session of Market Coupling, means the local copy of the actual production data containing all market data (confidential to each related NEMO) and network constraints (as published on transparency platforms).
Historical Output Data	With respect to each Session of Market Coupling, means the local copy of the actual production data containing all market results (prices, accepted order quantities) and network results (scheduled exchanges).
Market-Clearing Price (MCP)	Reference price of a bidding area over a specific period, obtained in result of the Market Coupling.
Market coupling	A coordinated day-ahead electricity implicit auction mechanism, performing the matching of the supply and demand curves of different NEMOs, considering the cross-border capacity made available by the TSO's, using a software application embedding a matching algorithm.
NEMO	Nominated Electricity Market Operator. A company allowed (within a country) by regulation to operate an electricity market.
NEMO Trading Hub (NTH)	Functional area in which orders from a NEMO within a specific scheduling area are registered. A scheduling area contains one or more NEMO trading hub.
Network constraints	The set of network information provided by TSOs and reflecting the physical limitations of the network. They include cross-zonal capacities (either ATC constraints or flow-based constraints) and ramping

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	constraints, bidding zone external constraints.
Order	Discloses a participant's request to sell or buy energy. Different order types exist: curve orders, block orders, complex orders, and merit orders.
Period	Subdivision of a day, indexed from 1 and ranked incrementally. Euphemia currently being defined under hourly time resolution, period 1 refers to 00:00-00:59, period 2 refers to 01:00-01:59, ... and period 24 refers to 23:00-23:59. Daylight Saving Times contain 23 / 25 periods.
PCR	Price Coupling of Regions (PCR) is a distributed approach to price coupling between different bidding areas managed by several NEMOs.
PTDF	Power Transfer Distribution Factors, commonly referred to as PTDFs, express the percentage of a power transfer that flows on a transmission facility.
RAM	Remaining Available Margin, i.e. right-hand side factor associated to a PTDF constraint.
Ramping constraint	Constraint applied to a bidding area net position, transmission flow or complex order nomination which restricts the maximum value change between two consecutive periods of the session.
SDAC	Single Day-Ahead Coupling: the Day-Ahead coupling program (cooperation between all NEMOs and all TSOs across Europe) aiming at establishing a homogenized coupling of European electricity markets.
Scheduling Area	Sub-part of a bidding area, corresponding to a TSO network area. In practice, only Germany bidding area is sub-divided into several scheduling areas, to distinguish the 4 operating TSOs: Amprion, Tennet, 50 Hertz and TransnetBW.
Session	Relates to the set of input data information provided to Euphemia and corresponding to a run/execution. In practice, Euphemia is always executed over a session of one full day, i.e. the term "session" term may be employed in replacement for "day".
Topology level	In Euphemia, three network topologies are defined: the bidding area level (linked together via cross-zonal interconnections), the scheduling area level (linked together via lines over which thermal capacity ratio may be applied to distribute flows in case several lines co-exist for a same cross-zonal interconnection), and the NEMO trading hub level.
Transmission capacity	Capacity limit (expressed in power, i.e. MW) allowed for transporting electricity from one bidding area to another. The capacity values are set per period by the TSOs in charge of the corresponding interconnection.
TSO	Transmission system operator.

Annex III: CONTACT INFORMATION

1. Contact person for notifications in general

In case of adherence of new party, this Annex III (Contact Information) must be updated accordingly by Licensors.

Party	Name contact person	Contact address	Telephone	Email
EPEX Spot SE	[REDACTED]	[REDACTED]		[REDACTED]
European Market Coupling Operator AS	[REDACTED]	[REDACTED]		[REDACTED]
GME	[REDACTED]	[REDACTED]		[REDACTED]
OMI-Polo Español, S.A.	[REDACTED]	[REDACTED]		[REDACTED]
OPCOM	[REDACTED]	[REDACTED]		[REDACTED]
HELLENIC ENERGY EXCHANGE S.A.	[REDACTED]	[REDACTED]		[REDACTED]
OTE, a.s.	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

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Party	Name contact person	Contact address	Telephone	Email
	[REDACTED] [REDACTED]	[REDACTED]	[REDACTED] [REDACTED]	
TGE	[REDACTED] [REDACTED] [REDACTED]	[REDACTED] [REDACTED] [REDACTED]	[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]	[REDACTED] [REDACTED] [REDACTED] [REDACTED]
Nasdaq Spot AB	[REDACTED] [REDACTED]	[REDACTED] [REDACTED]	[REDACTED] [REDACTED]	[REDACTED] [REDACTED] [REDACTED]

ARERA	[REDACTED] [REDACTED]	[REDACTED] [REDACTED] [REDACTED] [REDACTED]	[REDACTED] [REDACTED]	[REDACTED]

ANNEX IV
List of Permitted Access Holders

ANNEX V
Template Confidentiality Declaration

Confidentiality Declaration

[External representative legal entity :]

with registered office in [_____] with company register number [____], hereafter “the Undersigned” represented by [____]

[External representative natural person:]

[____], with domicile at [____] with the passport/ID number [____] with domicile at [____]
[____], hereafter “the Undersigned”

Hereby represents and agrees, to the benefit of:

1. **EPEX SPOT SE (“EPEX”)**, a company incorporated and existing under the laws of France in the form of a *societas europeae*, having its registered office at 5 boulevard Montmartre, 75002 Paris, registered in the commercial register of Paris (R.C.S. Paris) under the number 508 010 501 and VAT n° FR 10508010501;
2. **Gestore dei Mercati Energetici S.p.A. (“GME”)**, a company duly organized and existing under the laws of the Italian Republic, with registered office at Viale Maresciallo Pilsudski, 122/124, 00197, Rome, Italy, registered with the Companies Register of Rome under number RM 953866, Italian tax code and VAT 06208031002;
3. **European Market Coupling Operator AS**, previously named Nord Pool AS (“**EMCO**”), a company organised and existing under the laws of Norway, having its registered office at Lilleakerveien 2A - 0283 Oslo, Norway, and registered with the Register of Business Enterprises in Norway under the number 984 058 098 and VAT n° NO 984 058 098 MVA,
4. **OMI, POLO ESPAÑOL, S.A. (“OMIE”)**, a company incorporated and existing under the laws of Spain, having its registered office at Alfonso XI n° 6, 4th floor, 28014 Madrid, Spain, and registered in the commercial register of Madrid under section 8, Sheet: M-506799 and VAT n° A86025558;
5. **HELLENIC ENERGY EXCHANGE S.A. (“HEEx”)**, a company incorporated under the laws of Greece, with V.A.T. number 801001623, having its registered office at 110, Athinon Avenue, 10442, Athens, Greece, registered in the commercial register at General Commercial Registry under number 146698601000 as it is legally represented by its Chief Executive Officer Michael Philippou;
6. **Operatorul Pieței de Energie Electrică și de Gaze Naturale “OPCOM” S.A. (“OPCOM”)**, a company incorporated and existing under the laws of Romania, having its registered office at 16-18 Bd. Hristo Botev, 3rd District, Bucharest, CP. 030236, Romania, and registered with the commercial register under the number J40/7542/2000 and VAT n° RO13278352;
7. **OTE, a.s. (“OTE”)**, a company incorporated and existing under the laws of the Czech Republic, having its registered office at Sokolovská 192/79, 186 00 Prague, Czech Republic, and registered with the commercial register in municipal court of Prague, Section B 7260 under the number 264 63 318 and VAT n° CZ26463318; OTE’s contract number: [REDACTED];

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8. **Towarowa Giełda Energii S.A. ("TGE")**, a company incorporated under the laws of the Republic of Poland, with V.A.T. number PL 5272266714, having its registered office at Książęca 4, 00-498 Warszawa, Poland and registered in the commercial register at 12th Commercial Department of the National Court Register under number 0000030144 with the share capital paid in full in an amount of 14.500.000,00 PLN;
9. **Nasdaq Spot AB ("Nasdaq")**, a company incorporated under the laws of Sweden, with company registration no. 559280-7308, whose registered office address is Ullvaktsvägen 15, 105 78 Stockholm

And

to any future Adhering party to the PCR Co-ownership Agreement, as defined below,

hereinafter individually also referred to as a "PCR Power Exchange" and collectively as the "PCR Power Exchanges".

1. it has been personally and specifically informed of the content of the confidentiality obligations of the PCR Power Exchanges contained in the PCR Co-Ownership Agreement signed between them on 13th of June 2012 (the "**PCR Co-Ownership Agreement**") and in particular (but not limited to) of the scope of the confidentiality obligations and obligations in respect of use of Confidential Information as defined in the PCR Co-Ownership Agreement, the PCR Power Exchanges are those persons that are party to the PCR Co-Ownership Agreement;
2. it acknowledges that the term "**Confidential Information**" used in this confidentiality declaration has the meaning set forth in the PCR Co-Ownership Agreement, that it has full understanding of the content of this term and its scope and that this Confidential Information contains business secrets and commercially sensitive know-how;
3. it shall not disclose, convey or transfer any of the Confidential Information in any form whatsoever, to which it may be privy to or to which it may have access, to any other persons not being an employee of the Company, without the express, prior written consent of the Company;
4. **[only to legal entities]**[it shall only disclose, convey or transfer any of the Confidential Information in any form whatsoever, to which it may be privy to or to which it may have access, to its "**Internal representative**" meaning the directors, members of management, officers, employees and legal representatives of the Company to the extent (i) such Internal representative has been entitled by the Company to use the Confidential Information and has a definite need to know such information for the execution of its assignment in that respect; (ii) such Internal representative has been informed by the Company of the confidential nature of the Confidential Information; (iii) such Internal representative(s) is bound towards *Undersigned* by confidentiality obligations substantially similar to those in force pursuant to this Confidentiality Declaration. The Undersigned shall provide evidence of such confidentiality obligations upon request of any PCR Power Exchange.]
5. it shall take the necessary measures to ensure strict compliance with this Confidentiality Declaration **[only to legal entities]** and shall be liable and hold the PCR Parties harmless against any claim (including third party claims) resulting from or in connection with a breach of this Confidentiality Declaration including any breach by its Internal representatives,
6. it shall not use any Confidential Information for any other purpose than for the execution of its assignment and only to the extent necessary for such assignment and for the term it has been

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entitled to by the Company (hereafter the “**Assignment**”); For the avoidance of doubt, the Undersigned hereby represents and agrees that the Assignment is strictly related to [_____]

7. In case of a breach by the Undersigned, included but not limited to its employees, advisors and subcontractors ("Defaulting Party") of any of its obligations under this Agreement, any Party [SHOULD BE ADAPTED TO FIT IN THE CD] suffering damage ("Damaged Party") by the breach shall be entitled to cease immediately the disclosure of any further Confidential Information to the Defaulting Party and to claim full compensation from the Defaulting Party for all losses, damages, charges, fees or expenses, expected and unexpected, which can be considered as a direct damage arising out, or resulting from, a breach of the terms of this Confidentiality Declaration. Indirect or consequential damages are excluded. This exclusion of liability for any indirect or consequential damages does not apply in the event of fraud or intentional breach.
8. In the event of any breach of this Confidentiality Declaration by any Defaulting Party, the Damaged Party shall notify in writing the Defaulting Party without undue delay setting out the details of such breach and the Defaulting Party shall immediately cease such breach or make such breach undone within five business days to the extent possible. The Defaulting Party shall immediately forfeit a lump sum indemnification of EUR [TO BE DETERMINED] for any such breach, which shall be immediately payable to the Damaged Party and which shall not have any prejudice over the Damaged Party's right to seek full compensation of all damages incurred as a result of, or in connection with, such breach as set forth in Article 1 of this Agreement.
9. it shall not make reference to the Confidential Information or its Assignment in any technical, commercial or other publication or presentation without all the PCR Power Exchanges' explicit prior written consent;
10. it undertakes to promptly stop using the Confidential Information and destroy or return to the Company all documents and other material in its possession, custody or control which bear or incorporate Confidential Information upon termination of its Assignment or of the PCR Co-Ownership Agreement;
11. it undertakes to comply with this Confidentiality Declaration throughout the entire period of its Assignment and for ten (10) years after its expiry or termination, it being understood that this article takes effect on the date that this Confidentiality Declaration is signed;
12. a copy of this Confidentiality Declaration will be provided to each PCR Power Exchanges;
13. this Confidentiality Declaration is governed by Belgian law and any dispute arising out of or in connection with this Confidentiality Declaration is subject to the exclusive competence of the courts of Brussels, Belgium.

Signed in seven originals, in _____, on _____.

[_____]

Signature :

ANNEX VI

Individual information concerning the processing of personal data

1) TGE: CONTROLLER INFORMATION CLAUSE

Information clause of TGE for persons authorised to represent the entity and persons indicated as business contacts Information concerning the processing of personal data by Towarowa Giełda Energii S.A. in connection with the requirements of Articles 13 and 14 of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation)(hereinafter "GDPR").

The controller of the data of the persons authorized to represent the entity and the persons indicated as business contacts is Towarowa Giełda Energii S.A. (TGE), ul. Książęca 4, 00-498 Warszawa, phone: +48 22 341 99 12, tge@tge.pl.

The controller has appointed a personal data protection officer, who can be contacted at: daneosobowe@tge.pl.

The scope of personal data to be processed by TGE includes the name and surname, business e-mail address, business telephone number and position, and in case of persons authorized to represent the entity – the name, surname, position and data contained in the current excerpt from the relevant register, or the data contained in the power of attorney.

The personal data of persons authorised to represent the entity and the data of persons indicated as business contacts will be processed by TGE according to Article 6(1)(f) GDPR, i.e. on the basis of a legitimate interest of the controller which is to verify the correct representation of the entity in connection with a declaration of will being made, exchanging communication in connection with the conclusion or performance of a contract, maintaining and developing business relations, or asserting, pursuing or defend oneself against possible claims.

The recipients of the data may include entities engaged in the processing of personal data on behalf of TGE in connection with the services provided to TGE, e.g. consulting and IT services.

The personal data will be processed during the term of the agreement between TGE and the counterparty, and then stored for the time required to finalise settlements and to assert, pursue or defend any claims. Every person has the right to request access to, rectification, erasure, restriction of processing and the transfer of his or her personal data.

Every person has the right to object to the processing of personal data to the extent that the processing of personal takes place on the basis of a legitimate interest of the Controller. Every person has the right to lodge a complaint against the processing of his/her data with the President of the Personal Data Protection Office. The indication of persons authorised to represent the entity is required as a condition to the execution of the contract. The provision of the data of persons indicated as business contacts is voluntary but a failure to

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provide such data will impede communication and contact with the counterparty in connection with the contract.

Any inquiries or requests related to the processing of personal data by TGE should be sent to the following e-mail address: daneosobowe@tge.pl.

ANNEX VII
Adherence form

This Accession Declaration is made on [SAME DATE OF THE SIGNATURE] by:

1., a company incorporated and existing under the laws of, with enterprise number, address,, (the “**Adhering Party**”),

towards:

2. **EPEX SPOT SE (“EPEX”)**, a company incorporated and existing under the laws of France in the form of a *societas europeae*, having its registered office at 5 boulevard Montmartre, 75002 Paris, registered in the commercial register of Paris (R.C.S. Paris) under the number 508 010 501 and VAT n° FR 10508010501;
3. **Gestore dei Mercati Energetici S.p.A. (“GME”)**, a company duly organized and existing under the laws of the Italian Republic, with registered office at Viale Maresciallo Pilsudski, 122/124, 00197, Rome, Italy, registered with the Companies Register of Rome under number RM 953866, Italian tax code and VAT 06208031002;
4. **OMI, POLO ESPAÑOL, S.A. (“OMIE”)**, a company incorporated and existing under the laws of Spain, having its registered office at Alfonso XI n° 6, 4th floor, 28014 Madrid, Spain, and registered in the commercial register of Madrid under section 8, Sheet: M-506799 and VAT n° A86025558;
5. **HELLENIC ENERGY EXCHANGE S.A. (“HEEx”)**, a company incorporated under the laws of Greece, with V.A.T. number 801001623, having its registered office at 110, Athinon Avenue, 10442, Athens, Greece, registered in the commercial register at General Commercial Registry under number 146698601000;
6. **Operatorul Pieței de Energie Electrică și de Gaze Naturale “OPCOM” S.A. (“OPCOM”)**, a company incorporated and existing under the laws of Romania, having its registered office at 16-18 Bd. Hristo Botev, 3rd District, Bucharest, PC.030236, Romania, and registered with Bucharest Trade Registry under the number J40/7542/2000 and VAT n° RO13278352;
7. **OTE, a. s. (“OTE”)**, a company incorporated and existing under the laws of the Czech Republic, having its registered office at Sokolovská 192/79, 186 00 Prague, Czech Republic, and registered with the commercial register in municipal court of Prague, Section B 7260 under the number 264 63 318 and VAT n° CZ26463318; OTE’s contract number: [REDACTED];
8. **Towarowa Giełda Energii S.A. (“TGE”)**, a company incorporated under the laws of the Republic of Poland, with V.A.T. number PL 5272266714, having its registered office at Książęca 4, 00-498 Warszawa, Poland and registered in the commercial register at 12th Commercial Department of the National Court Register under number 0000030144 with the share capital paid in full in an amount of 14.500.000,00 PLN;
9. **Nasdaq Spot AB (“Nasdaq”)**, a company incorporated under the laws of Sweden, with company registration no. 559280-7308, whose registered office address is Ullvaktsvägen 15, 105 78 Stockholm;
10. **European Market Coupling Operator AS**, previously named Nord Pool AS (“**EMCO**”), a company organised and existing under the laws of Norway, having its registered office at Lilleakerveien 2A -

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0283 Oslo, Norway, and registered with the Register of Business Enterprises in Norway under the number 984 058 098 and VAT n° NO 984 058 098 MVA;

11. *[Insert the name of first NRA signing the SF License]*

12. *[Insert the name, if any, Party/ies which has Adhered the License Agreement following its entering into force]*

hereinafter individually referred to also as an “**Existing Party**” and collectively as the “**Existing Parties**”.

WHEREAS:

- A. Pursuant to the terms of an initial contract dated *[insert date of SF LICENSE]*, EPEX SPOT SE, GME, HEnEx, EMCO, OMIE, OPCOM, OTE, NASDAQ ,TGE and *[insert name of the first NRA signing the SF License]* have entered into the Simulation Facility License Agreement, hereby enclosed as Attachment 1 (the “**License Agreement**”).
- B. On, *[insert the name, if any, of party/ies who entered in the Accession Declaration becoming Existing Party/ies]* has entered in to the Accession Declaration becoming Existing Party.
- C. On, the Adhering Party has expressed to the Existing Parties its wish to adhere to the License Agreement.
- D. On, the Adhering Party has been provided with a copy of the License Agreement by ...
- E. According to Article 3.4.3 of the License Agreement, all Existing Parties accept the adherence to the License Agreement of the Adhering Party provided that it has duly executed this Accession Declaration.

NOW THEREFORE THE NEW PARTY AGREES AND COMMITS TOWARDS THE EXISTING PARTIES AS FOLLOWS:

1. Accession to the License Agreement

- 1.1 The Adhering Party agrees to accede to the License Agreement, as *[Licensor / Licensee]* accepting all the terms and conditions with no exclusion whatsoever.
- 1.2 Pursuant to Article 3.4.3 of the License Agreement, it is understood that the Existing Parties agree that the accession of the Adhering Party shall be effected immediately upon the execution of this Accession Declaration.

2. Acknowledgement by the Adhering Party

Upon signature of this Accession Declaration, the Adhering Party declares to be fully aware of, all obligations of the License Agreement having received by the Parties full and complete access to the relevant documentation.

3. Entry into force and termination

3.1 This Accession Declaration shall enter into force with effect from the date on which all the Existing Parties have duly received the signed Accession Declaration by electronic mail at the relevant e-mail addresses listed in Annex III of the License Agreement. An original hard copy of this Accession Declaration duly signed by the Adhering Party shall be sent to each of the Existing Parties for record purposes.

3.2 This Accession Declaration is entered into for the duration of the License Agreement as set forth under Article 11 of the License Agreement. For the avoidance of doubt, should the License Agreement be earlier terminated, this Accession Declaration shall be terminated accordingly.

4. Miscellaneous

4.1 No provision of this Accession Declaration shall be interpreted adversely against any Existing Party solely because such Existing Party was responsible for drafting that particular provision.

4.2 Any change to this Accession Declaration can only be validly agreed upon in writing, duly signed by the legal representative of the Adhering Party and of all the Existing Parties.

4.3 If one or more of the provisions of this Accession Declaration is declared to be invalid, illegal or unenforceable in any respect under any Applicable Law or public policy, the validity, legality and enforceability of the remaining provisions contained herein shall not in any way be affected and these provisions shall remain in full force and effect as long as the economic or legal substance of this Accession Declaration is not affected in any material manner adverse to any Party. In such event, the Parties shall immediately and in good faith negotiate a legally valid replacement provision with the same economic effect.

4.4 The Parties agree that the working language for all notifications and for all matters relating to this Accession Declaration shall be English, to the extent compatible with the applicable provisions of mandatory law, if any. Any term used in this Accession Declaration with capital letter and not otherwise defined herein, shall have the same meaning described to it in the License Agreement.

4.5 The Attachment and the recitals to this Accession Declaration form an integral part thereof and any reference to this Accession Declaration shall include a reference to the Attachment and vice versa.

4.6 In case of contradiction or discrepancy between this Accession Declaration and the Agreement and/or any of its respective Annexes, the precedence shall be as follows:

1. Main text of the License Agreement;
2. Annexes to the License Agreement;
3. Main body of this Accession Declaration;

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- 4.7** The Adhering Party may not assign or transfer this Accession Declaration, partially or as a whole.
- 4.8** This Accession Declaration is governed by and construed in accordance with Belgian laws without regard to the conflict of laws principles of it.
- 4.9** Any dispute arising out of or in connection with this Accession Declaration shall be settled in accordance with Article 12 of the License Agreement.

Date and Place (same as the one indicated in the heading)

COMPANY NAME

Signature(s)

Name(s)

Title(s)

ATTACHMENT 1

Current in-force Version of Simulation Facility License Agreement

[In case of adherence of Adhering Party, the Annex III (Contact Information) of the License Agreement must be updated accordingly by Licensors.]