



European High Performance Computing Joint Undertaking

Annex 2: Model Hosting Agreement

Model Hosting Agreement

Hosting Entities for Precursors to Exascale
Supercomputers

NUMBER – [to be completed]

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The present Hosting Agreement is concluded between the following parties:

The European High Performance Computing Joint Undertaking (hereinafter 'EuroHPC Joint Undertaking'), represented for the purposes of signature of this agreement by [its Executive Director, forename and surname],

on the one part, and

the "Hosting Entity", [full official name] [ACRONYM]

[official legal status or form]

[official registration No]

[official address in full]

[VAT number] ,

[appointed as the coordinator of the Hosting Consortium that has submitted a joint proposal and which comprises of the Hosting Entity, and the following other partners:]

[full official name — established in [country]

[full official name — established in [country]

[idem for each partner]

duly represented for the signature of this agreement by the leader of the Hosting Consortium by virtue of the mandate[s] included in Annex]

on the other part

.

HAVE AGREED

to the **terms and conditions** set out below and the following annexes:

Annex I – Technical Specifications of the Hosting site [to be annexed in the agreement - on the basis of the application of the selected hosting entity]

which forms an integral part of the present Hosting Agreement (hereinafter referred to as "Agreement").

I. **General Framework-Preamble**

Council Regulation (EU) 2018/1488 of 28 September 2018¹ (hereinafter 'Regulation') establishes the European High Performance Computing Joint Undertaking (hereinafter 'EuroHPC Joint Undertaking').

The EuroHPC Joint Undertaking shall acquire at least two precursors to exascale supercomputers (hereinafter *EuroHPC supercomputers*) and shall own them. The Union financial contribution shall cover up to 50 % of the acquisition costs plus up to 50 % of the operating costs of the EuroHPC supercomputers or up to the agreed ceiling for EuroHPC funding, whichever is lower.

In accordance with Article 8 of the Regulation, the EuroHPC launched a call for expression of interest for the selection of the hosting entities for Precursors to Exascale Supercomputers². On the basis of the criteria and process specified in the Regulation and above mentioned call for expression of interest, the Governing Board has selected [identification of the selected Hosting Entity or Hosting Consortium to be included accordingly] referred to above as the Hosting Entity.

The competent authorities of the Member State where the Hosting Entity is established [or of the competent authorities of the Participating States of the hosting consortium] shall cover the share of the total cost of ownership of the EuroHPC supercomputer that is not covered by the Union contribution, either until its ownership is transferred by the Joint Undertaking to that hosting entity or until the supercomputer is sold or decommissioned in case there is no transfer of ownership.

The purpose of this Hosting Agreement is to lay down the terms and conditions under which the Hosting Entity will host the EuroHPC supercomputer on the name and on behalf of the EuroHPC Joint Undertaking, including data storage equipment and associated services for the fulfilment and implementation of the EuroHPC Joint Undertaking tasks and activities as these are defined in the Regulation and the Statutes of the EuroHPC Joint Undertaking annexed thereto. The Hosting Entity shall operate the EuroHPC supercomputer on behalf of the EuroHPC Joint Undertaking and the present Agreement defines the rules and conditions of such operation.

II. **TERMS AND CONDITIONS**

II.1 **Subject matter**

1. The subject matter of the Agreement is to define the roles and responsibilities between the Joint Undertaking and the Hosting Entity regarding (a) the provision of the facilities to host and operate the supercomputer which is entrusted by the EuroHPC Joint Undertaking, being the sole owner of the EuroHPC supercomputer, to the Hosting Entity and (b) the operation of the EuroHPC supercomputer itself, and define the relevant terms and conditions of the long term collaboration between the Hosting Entity and the EuroHPC Joint Undertaking.
2. The Hosting Entity shall execute the tasks assigned to it in accordance with the Agreement, its Annexes and Appendices. The required hosting activities and applicable key performance indicators (KPIs) are set out in Section II Service Level Agreement, and the associated milestones and deliverables in Appendix 1.

¹ OJ L 252, 08.10.2018, p. 1-34,

² REF: EUROHPC-2019-CEI-PE-01.

II.2 *Definitions*

1. For the purposes of this Agreement the following definitions apply:
 - 1) "acquisition costs" means the cost of acquiring the system and includes shipping as well as the costs of installation and testing.
 - 2) "acceptance test" means a test conducted to determine if the requirements of the system specification of the supercomputing system are met.
 - 3) "access time" means the computing time of a EuroHPC supercomputer that is made available to a user or a group of users to execute their programmes.
 - 4) "Call for Expression of Interest (CEI)" means the procedure followed to select the Hosting Entities of the EuroHPC supercomputer.
 - 5) 'Force majeure': any unforeseeable, exceptional situation or event beyond the control of the parties that prevents either of them from fulfilling any of their obligations under the contract. The situation or event must not be attributable to error or negligence on the part of the parties or on the part of the subcontractors and must prove to be inevitable despite their exercising due diligence. Defaults, defects in equipment or material or delays in making them available, labour disputes, strikes and financial difficulties may not be invoked as force majeure, unless they stem directly from a relevant case of force majeure.
 - 6) 'Formal notification' (or 'formally notify'): form of communication between the parties made in writing by mail or email, which provides the sender with compelling evidence that the message was delivered to the specified recipient.
 - 7) "hosting consortium" means a group of Participating States that have agreed to contribute to the acquisition and operation of a EuroHPC supercomputer.
 - 8) "hosting entity" means the legal entity established in a Participating State to the Joint Undertaking that is a Member State which includes facilities to host and operate a EuroHPC supercomputer and which has been selected in accordance with the CEI.
 - 9) "hosting site" is used to refer to the physical facilities at which Hosting Entity shall host and operate the EuroHPC supercomputer and which is established in a Participating State that is a Member State.
 - 10) "IT infrastructure" means the set of IT equipment needed for hosting and operating the EuroHPC supercomputer. It includes storage for homes, long term storage, back-up and various auxiliary servers.
 - 11) "precursor exascale supercomputer" means a computing system with a performance level capable of executing more than 100 Petaflops and less than 1 Exaflop.
 - 12) "Regulation" means the Council Regulation (EU) No 2018/1488 of 28 September 2018 establishing the European High Performance Computing Joint Undertaking, and the statutes of the Euro HPC Joint Undertaking ('Statutes') annexed thereto.
 - 13) "Technical infrastructure" means the set of infrastructure equipment needed for hosting and operating the EuroHPC supercomputer and the IT infrastructure. It includes equipment related to cooling, power supply and distribution, fire security and physical security.
 - 14) 'total cost of ownership' of a EuroHPC supercomputer means the acquisition costs plus the operating costs, including maintenance.
 - 15) "user" or "users" means any natural or legal person, entity or international organisation that has been granted access time to use a EuroHPC supercomputer.
 - 16) "vendor" refers to the legal entity from which the EuroHPC Joint Undertaking will acquire the EuroHPC supercomputer or parts thereof.
2. Terms not defined herein shall have the same meaning as in the Regulation.

II.3 *Entry into force and duration*

1. The Agreement shall enter into force on the date on which it is signed by the last party and shall remain in force until 31.12.2026 or until either the ownership of the EuroHPC supercomputer is transferred by the Joint Undertaking to the Hosting Entity or until the EuroHPC supercomputer is sold or decommissioned in case there is no transfer of ownership, or until the last payment relating to this Agreement is made, whichever is later.
2. The extension of the duration of the present Agreement is subject to the express written agreement of both parties.

II.4 *Termination of the Agreement*

1. The Agreement shall be terminated by mutual consent of the parties, where the implementation of this Agreement is or becomes impossible.
2. The Agreement may be terminated by mutual consent of the parties in case the subject matter of this contract has been fulfilled or is impossible to fulfil.
3. One party must formally notify the other party of its intention to terminate the contract and the grounds for termination. The termination will become effective the date on which the EuroHPC supercomputer will no longer be hosted in the Hosting Entity's premises, unless otherwise agreed by the parties, taking into account the ground of termination.
4. At the request of the EuroHPC Joint Undertaking and regardless of the grounds for termination, the Hosting Entity must provide all necessary assistance, including information, documents and files, to allow the EuroHPC Joint Undertaking to complete, continue or transfer the EuroHPC supercomputer to a new hosting entity, with minimum interruption or adverse effect on the quality or continuity of the operation of the supercomputers. The parties may agree to draw up a transition plan detailing the transfer of the EuroHPC supercomputer. The Hosting Entity must provide such assistance at no additional cost, except if it can demonstrate that it requires substantial additional resources or means, in which case it must provide an estimate of the costs involved and the parties will negotiate an arrangement in good faith.
5. The Hosting Entity shall be liable for damage incurred by the EuroHPC Joint Undertaking as a result of the termination of the contract including the cost of appointing another hosting entity, unless the damage was caused by force majeure. The EuroHPC Joint Undertaking may claim compensation for such damage.
6. In any case, the parties must take all appropriate measures to minimise costs and prevent damage to the other party and to the EuroHPC supercomputer.
7. Within 90 days of the date of termination, the Hosting Entity must submit any report and any invoice required for any eligible costs that was incurred before the date of termination.

II.4.1 Termination by the EuroHPC Joint Undertaking of the agreement for specific reasons

The EuroHPC Joint Undertaking may terminate the Agreement, if:

1. if the Hosting Entity or any person that assumes unlimited liability for the debts of the Hosting Entity is in one of the situations provided for in points (a) and (b) of Article 136(1) of the EU Financial Regulation³;

³ Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council of 18 July 2018 on the financial rules applicable to the general budget of the Union, amending Regulations (EU) No 1296/2013, (EU) No 1301/2013, (EU) No 1303/2013, (EU) No 1304/2013,

2. if the Hosting Entity is subject to any of the situations provided for in points (c) to (f) of Article 136(1) or to Article 136(2) of the EU Financial Regulation.
3. if the procedure for selecting the Hosting Entity proves to have been subject to substantial errors, irregularities or fraud;
4. if the Hosting Entity does not comply with applicable obligations under environmental, social and labour law established by Union and Community law, national law, collective agreements or by the international environmental, social and labour law provisions listed in Annex X to Directive 2014/24/EU;
5. if the Hosting Entity is in a situation that could constitute a conflict of interest or a professional conflicting interest as referred to in Article II.8;
6. if a change to the Hosting Entity's legal, financial, technical, organisational or ownership situation is likely to substantially affect the implementation of the Agreement

II.5 Force majeure

1. If a party is affected by force majeure, it must immediately notify the other party, stating the nature of the circumstances, their likely duration and the foreseeable effects.
2. The party faced with force majeure may not be considered in breach of its obligations under the Agreement if it has been prevented from fulfilling them by force majeure. However, the Hosting Entity shall make sure that the insurance policy it has taken out in accordance with Article 21 of this Agreement shall also cover instances of force majeure. In all cases, the EuroHPC Joint Undertaking shall have the right to claim damages, which shall be covered by the relevant insurance policy taken out by the Hosting Entity for such purpose.
3. The parties must take all necessary measures to limit any damage due to force majeure. They must do their best to resume the implementation of the action as soon as possible.
4. In all cases, the EuroHPC Joint Undertaking shall have the right to proportionally reduce or recover amounts unduly paid to the Hosting Entity as appropriate in accordance with Article 20 of the agreement and on the basis of any other relevant agreement be signed between Parties regarding the acquisition and operations costs .

II.6 Amendments

1. Any amendment to the contract must be made by mutual agreement of the parties in writing.
2. Any amendment must not make changes to the Agreement that might alter its purpose.
3. Any request for amendment shall be duly justified and shall be sent to the other party in due time before it is due to take effect, except in cases duly substantiated by the party requesting the amendment and accepted by the other party.
4. Amendments shall enter into force on a date agreed by the parties or, in the absence of such an agreed date, on the date on which the last party signs the amendment.

II.7 Subcontracting and third parties

1. The Hosting Entity shall be allowed to subcontract certain activities to be performed to third parties, provided that this is either already indicated in the Technical Specifications of the Hosting site annexed hereto or that the Hosting Entity obtains prior written authorisation from EuroHPC Joint Undertaking. However, the Hosting Entity shall ensure that the percentage of subcontracting activities is proportionate and justifiable in accordance with the objective of the Agreement.

2. Even when the EuroHPC Joint Undertaking authorises the Hosting Entity to subcontract to third parties, the latter shall nevertheless remain bound by its contractual obligations and shall be solely responsible for the proper performance of this contract.
3. The contractor shall make sure that the subcontract does not affect rights and guarantees granted to the contracting authority by virtue of this contract.

II.8 Conflict of Interest

1. The Hosting Entity must take all measures to prevent any situation where the impartial and objective implementation of the tasks is compromised for reasons involving economic interest, political or national affinity, family or emotional ties or any other shared interest ('conflict of interests').
2. The Hosting Entity must formally notify to the EuroHPC Joint Undertaking without delay any situation constituting or likely to lead to a conflict of interests and immediately take all the necessary steps to rectify this situation.
3. The EuroHPC Joint Undertaking may verify that the measures taken are appropriate and may require additional measures to be taken by a specified deadline.
4. If the Hosting Entity breaches any of its obligations under this Article, the EuroHPC Joint Undertaking shall have the right to claim damages in accordance with Article II. 21.1. and shall have the right to terminate the Agreement.

II.9 Confidentiality obligation and non-disclosure

1. The EuroHPC Joint Undertaking and the Hosting Entity undertake to preserve the confidentiality of any document, information or other material directly related to the subject of the Agreement that is duly classified as confidential, if disclosure could cause prejudice to the other party.
2. The Parties shall not use confidential information and documents for any reason other than fulfilling the obligations under the Agreement, unless otherwise foreseen in writing.
3. A receiving party shall notify the disclosing party if it is legally required to disclose any confidential information, or learns of any unauthorized disclosure of confidential information.
4. The parties shall be bound by the obligation referred to in the above paragraphs during the implementation of the Agreement and for as long as the EuroHPC supercomputer remains in the Hosting Entity under the ownership of the EuroHPC Joint Undertaking and for a period of five years starting from the date of its termination, unless:
 - a) the concerned party agrees to release the other party from the confidentiality obligations earlier;
 - b) the confidential information becomes public through other means than in breach of the confidentiality obligation through disclosure by the party bound by that obligation;
 - c) the disclosure of the confidential information is required by law.

II.10 Processing of Personal data

1. The Hosting Entity shall provide access to the EuroHPC supercomputer, while ensuring the security of the supercomputer, the protection of personal data in accordance with Regulation (EU) 2016/679, the protection of privacy of electronic communications in accordance with Directive 2002/58/EC, the protection of trade secrets in accordance with Directive (EU) 2016/943 and the protection of confidentiality of other data covered by the obligation of professional secrecy.

1. The EuroHPC Joint Undertaking shall process personal data in accordance with Regulation (EU) 2018/1725.⁴ Such data shall be processed by the following data controller: The EuroHPC Joint Undertaking's Executive Director, solely for the purposes of the implementation, management and monitoring of the Agreement, without prejudice to possible transmission to the bodies charged with the monitoring or inspection tasks in application of the applicable rules.

II.11 *Applicable law and settlement of disputes*

2. The Agreement shall be governed by Union law, supplemented for any matter not covered by the Regulation or by other Union legal acts by the law of [the Member State where the Hosting Entity is located].
3. In case a dispute between the EuroHPC Joint Undertaking and the Hosting Entity relating to this Agreement cannot be settled amicably, it must be referred to arbitration to the Court of Justice of the European Union.
4. The arbitration proceedings shall take place in Luxembourg and the language used in the arbitral proceedings shall be English.
5. The arbitral award shall be binding upon the Parties, which hereby expressly agree to renounce any form of appeal or revision.
6. The costs, including all reasonable fees incurred by the Parties related to any arbitration, must be apportioned between the Parties by the Court of Justice of the European Union in its decision.

II.12 *General Obligations of the Hosting Entity*

1. The Hosting Entity shall perform the agreement to the highest professional standards respecting deadlines set by the EuroHPC Joint Undertaking, or mutually agreed by the Parties.
2. All activities and services shall be carried out by the Hosting Entity in respect of the applicable health and safety laws and regulations.
3. The Hosting Entity should ensure the functional separation, and to the extent possible, the physical separation of the EuroHPC supercomputer and any national or regional computing systems it operates.
4. The Hosting Entity must ensure that the personnel performing the Agreement possesses the professional qualifications and experience required for the execution of the tasks assigned to it. The Hosting Entity shall be solely responsible for the personnel who executes the tasks assigned to it.
5. The Hosting Entity shall:
 - a) ensure the proper operation of the EuroHPC supercomputer and the IT environment to enable users to access the resources and services for the total duration of the Agreement;
 - b) implement all the possible measures to ensure the security of the EuroHPC supercomputer, the technical and IT environments and of the Hosting Entity itself.
 - c) report to the EuroHPC Joint Undertaking through the production of documents and KPIs defined in Section III.2. The KPIs can be modified by the Hosting Entity and the EuroHPC Joint Undertaking by express written agreement of the Parties.
 - d) apply the access-time conditions and rules set up by the EuroHPC Joint Undertaking to the EuroHPC supercomputer by the decision of its Governing Board and to its IT environment

⁴ Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002, OJ L 295, 21.11.2018, p. 39–98.

- e) inform the EuroHPC Joint Undertaking and users about the incidents impacting the use of the EuroHPC supercomputer or the IT environment.
- f) provide any information to the EuroHPC Joint Undertaking that is relevant for the Joint Undertaking to perform its duties under the present Agreement and the Regulation.
- g) fulfil its financial obligations as defined in the Regulation, the Agreement and any subsequent agreement detailing the specific financial obligations and within set deadlines and/or deadlines agreed by the parties.
- h) Implement the energy efficiency and environmental sustainability measures defined as part of the Technical Specifications of the Hosting site on the basis of the application of the selected hosting entity.

II.13 *General Obligations of the EuroHPC Joint Undertaking*

1. The EuroHPC Joint Undertaking shall:
 - a) Be the sole owner of the EuroHPC supercomputer and the sole contractor with the vendor.
 - b) provide any information to the Hosting Entity that is relevant for the latter to perform its duties under the Regulation and the Agreement within the deadlines agreed by the parties.
 - c) fulfil its financial obligations as defined in the Regulation, the Agreement and any subsequent agreement detailing the specific financial obligations and within set deadlines and/or deadlines agreed by the parties.

II.14 *Obligations of the Parties during the Acquisition procedure*

1. The EuroHPC Joint Undertaking, supported by the Hosting Entity, shall launch the process for the acquisition of the EuroHPC supercomputer in accordance with the financial rules of the EuroHPC Joint Undertaking.
2. Throughout the acquisition process of the EuroHPC supercomputer, including the preparatory phase, the Parties shall work together in a spirit of collaboration for achieving the objective of acquiring the EuroHPC supercomputer.
3. For that purpose, the Parties shall have the following responsibilities:
 - a. The EuroHPC Joint Undertaking and the Hosting Entity shall work together in order to define (design) the main technical specifications of the EuroHPC supercomputer to be acquired.
 - b. The Hosting Entity shall identify and implement the hosting site requirements, including but not limited to the infrastructure, security rules and site regulation, for the proper installation and operation of the EuroHPC supercomputer. The Hosting Entity shall make sure that the hosting site is prepared on time for the installation of the EuroHPC supercomputer. Appendix 1 defines the milestones (M2 "Site preparation according to the acquisition procedures of the EuroHPC supercomputer", M3 "Site adaptation to host the EuroHPC supercomputer") required for the installation of the supercomputer. For considering the above 2 milestones met, the Hosting Entity shall provide to the EuroHPC Joint Undertaking:
 - i. Evidence of compliance with each requirement and specification as included in Technical Specifications of the hosting site annexed hereto.
 - ii. Evidence of readiness to provide the required services defined in this Agreement;
 - iii. Evidence of successful testing of all requirements defined in this Agreement;
 - iv. Demonstration of resilience of systems and components;
4. The EuroHPC Joint Undertaking or any mandated entity of the Joint Undertaking shall have the right to inspect the hosting site, data centre, documentation, certifications and test reports, where relevant, in order to sign off acceptance of the relevant milestones.

II.15 *Obligations of the parties during the contract performance*

1. Unless otherwise indicated, the Hosting Entity, shall be mandated to act in the name and on behalf of the EuroHPC Joint Undertaking in compliance with the agreement for the technical operations during the installation, the maintenance and, if necessary, the dismantling of the EuroHPC supercomputer. For the purpose of these technical operations, the Hosting Entity shall be the single point of contact of the vendor in the framework of the any agreement or contract to be signed between the EuroHPC Joint Undertaking and the vendor.

II.15.1 Delivery and installation of the EuroHPC supercomputer

1. The Hosting Entity shall monitor and supervise the proper delivery and installation of the EuroHPC supercomputer by the vendor.
2. The Hosting Entity shall provide report to the EuroHPC Joint Undertaking in that regard, and shall respond to any relevant question in a timely manner.
3. The Hosting Entity shall collaborate with the vendor during the installation to make sure that the installation of the EuroHPC supercomputer is done in time and according to the specified supercomputer requirements of the contract.
4. The Hosting Entity will supervise, monitor and check the compliance of the equipment/supplies provided by the vendor during the delivery and installation of the EuroHPC supercomputer with the requirements of the contract.

II.15.2 Acceptance of the EuroHPC supercomputer

1. The Hosting Entity shall check the compliance of the EuroHPC supercomputer with the requirements of the contract and perform the acceptance test in that regard.
2. In case of compliance, the Hosting Entity shall inform the EuroHPC Joint Undertaking accordingly, so that the Executive Director of the EuroHPC Joint Undertaking can proceed with the authorisation of the payments to the vendor.
3. In case of non-compliance, the Hosting Entity shall suggest to the EuroHPC Joint Undertaking some technical solutions identified following a risk management process. The EuroHPC Joint Undertaking supported by the Hosting Entity shall interact with the vendor in order to choose the most appropriate solution to be implemented.

II.15.3 Operations

1. The Hosting Entity shall be responsible for the operation and maintenance of the EuroHPC supercomputer.
2. The Hosting Entity must provide the services defined in Required Hosting Activities in Section III.1 of this Agreement.
3. The Hosting Entity must provide the EuroHPC Joint Undertaking regular Service, Utilisation and Performance reports as defined in Appendix 4. "Associated milestones and deliverables".
4. The Hosting Entity must implement the allocation of the EuroHPC Joint Undertaking's share of access time to the EuroHPC Supercomputer in accordance with the relevant Decision of the Governing Board as communicated to the Hosting Entity and in accordance with article II.18 of this Agreement.
5. The Hosting Entity must meet the KPIs defined in Section II of this Agreement.

II.16 *End of the operations of the EuroHPC supercomputer*

1. At the earliest four years after the successful acceptance test by the EuroHPC Joint Undertaking of the EuroHPC supercomputer installed in the Hosting Entity, the EuroHPC Joint Undertaking, upon decision

of the Governing Board may decide to transfer the ownership of the EuroHPC supercomputer to the Hosting Entity, or, sell it to another entity or decommission it.

2. If the EuroHPC Joint Undertaking decides transferring the ownership of the EuroHPC supercomputer at the end of its operation, the associated cost will be calculated at that moment in accordance with standard accounting practices for such assets in force at that time. Linear depreciation using a period of 5 years will be applied.
3. In the case of transfer of ownership before full depreciation of the EuroHPC supercomputer, the Hosting Entity shall reimburse the EuroHPC Joint Undertaking the residual value of the EuroHPC supercomputer that is transferred. The residual value shall be calculated taking into account the depreciation in accordance with standard accounting practices for such assets in force at that time. In the absence of commonly agreed standards, linear depreciation using a period of 5 years will be applied.
4. If there is no transfer of ownership to the Hosting Entity but a decision for decommissioning, the relevant costs shall be shared equally by the EuroHPC Joint Undertaking and the Hosting Entity. The relevant costs should be included as a provision in the overall budget of operating the supercomputer..
5. The EuroHPC Joint Undertaking shall not be liable for any costs incurred after the transfer of ownership of the EuroHPC supercomputer or after its sale or decommissioning. In case of decommissioning of the EuroHPC supercomputer:
 - a) The Hosting Entity shall be responsible of the dismantling operations, which shall be performed by the vendor in accordance with the relevant contract.
 - b) These operations will notably include:
 - i. The electrical and hydraulic disconnections of the equipment;
 - ii. The removal and evacuation of electrical wiring of the equipment;
 - iii. The removal and evacuation of network cables from the configuration;
 - iv. The disassembly of the disks;
 - v. The handling and evacuation of the equipment outside the Hosting site;
 - vi. The replacement of raised floor slabs.
 - c) The EuroHPC Joint Undertaking shall have the right to decide how to use the dismantled equipment.

II.17 Security

1. The Hosting Entity shall provide access to the EuroHPC supercomputer, while ensuring the security of this supercomputer and by all means prevent unauthorised use. These should include as a minimum physical and IT security measures described in Appendix 4. "Minimum requirements of the Hosting Site".
2. The Hosting Entity must adopt appropriate technical and organisational security measures having regard to the risks inherent to the hosting and operations of such machines. This shall include the functional separation, and to the extent possible, the physical separation of the EuroHPC supercomputer and any national or regional computing systems the Hosting Entity operates.
3. The security requirements shall be those defined in the Technical Specifications of the hosting site annexed hereto.

II.18 Allocation of access time to the EuroHPC supercomputer

1. The share of the Union's access time to the EuroHPC supercomputer shall be directly proportional to the financial contribution of the Union referred to in Article 4(1) of the Regulation to the total cost of ownership of the supercomputer and shall not exceed 50 % of the total access time of the EuroHPC supercomputer.

2. The Governing Board of the EuroHPC Joint Undertaking shall define the access rights to the Union's share of access time to the EuroHPC supercomputer and the EuroHPC Joint Undertaking shall inform the Hosting Entity of the relevant decision of the Governing Board in due course to allow the Hosting Entity to implement the necessary requirements, processes and arrangements. This shall apply also to the specific conditions for industrial users applying for the Union's access time to the EuroHPC supercomputer for commercial purposes.
3. The Participating State where the Hosting Entity is established or each Participating State in a hosting consortium shall be allocated a share of the remaining access time to the EuroHPC supercomputer. In the case of a hosting consortium, the Participating States shall agree among themselves the distribution of access time to the EuroHPC supercomputer and shall inform the EuroHPC Joint Undertaking accordingly.
4. The Hosting Entity must comply with the conditions of allocation of access time defined in Articles 12 and 13 of the Regulation and shall make all necessary arrangements to implement the decision of the EuroHPC Joint Undertaking's Governing Board regarding the Union's access time.
5. The Parties may agree that the implementation of the access rights to the Union's share of access time to the EuroHPC supercomputer shall be implemented by a third party.
6. The EuroHPC Joint Undertaking shall inform the Hosting Entity of the changes to the access rights to the Union's share of access time to the EuroHPC supercomputer decided by the EuroHPC Joint Undertaking's Governing Board at least 15 days before the start of the use period.
7. The Hosting Entity shall ensure the quality of the service and that the quality of service shall be the same for all users in accordance with the relevant SLAs.
8. In case of private or industrial use with incomes (not Open R&D access), a specific contract should be established between the private company and the Hosting Entity. On the basis of this contract the Hosting Entity should provide specific services (or Service Level Agreement – SLA) to the private company. The basic budget (except specific services or SLA) of this contract has to be validated with the EuroHPC Joint Undertaking and will contribute to decrease the TCO of the EuroHPC Supercomputer.
9. In accordance with Article 14 of the Regulation, the fees generated by the commercial use of the Union's access time shall constitute revenue to the EuroHPC Joint Undertaking's budget and shall be used to cover operational costs of the Joint Undertaking.

II.18.1 Accounting of Access time

1. The Hosting Entity must ensure that the access time and resource usage is registered in traceable and auditable way. The Hosting Entity must provide regular information of access time allocation and usage as part of the reports as indicated in Appendix 1.
2. The EuroHPC Joint Undertaking has the right to audit the allocation and usage of the EuroHPC supercomputer resources.

II.19 *Financial obligations*

II.19.1 Acquisition costs of the EuroHPC supercomputer

1. The Union financial contribution shall cover up to 50 % of the acquisition costs up to the maximum budget.
2. The remaining acquisition costs of the EuroHPC supercomputer shall be covered by the Participating State where the Hosting Entity is established or by the Participating States in the hosting consortium. The corresponding contribution should be transferred to the EuroHPC Joint Undertaking at least 2 months ahead of the respective payments to the vendor. These payments will be defined in the acquisition contract that will be signed with the vendor.

3. The specific terms and conditions for the acquisition costs of the EuroHPC supercomputer shall be subject to a separate agreement to be signed between Parties for that purpose on the basis of the applicable legal framework.

II.19.2 Operating costs of the EuroHPC supercomputer

1. The Union financial contribution shall cover up to 50 % of the operating costs of the EuroHPC supercomputer. The reimbursement of operating costs of the EuroHPC supercomputer from the Union contribution will be calculated on the basis of the declared costs up to the agreed ceiling for the Union financial contribution or up to a ceiling of 50% of the declared costs, whichever is lower.
2. The remaining operating costs of the EuroHPC supercomputer shall be covered by the Participating State where the hosting entity is established or by the Participating States in the hosting consortium.
3. The specific terms and conditions for the eligibility and reimbursement of the part of the operating costs of the EuroHPC supercomputer to be covered by the Union financial contribution shall be subject to a separate agreement to be signed between parties for that purpose on the basis of the applicable legal framework. Costs declared have to be in line with the provisions specified in the Regulation and the Agreement and any other relevant agreement signed for that purpose. The internal Funding Rules approved by the EuroHPC Joint Undertaking will be applied.
4. With regard to determining when the ceiling is reached, costs other than depreciation costs for equipment shall be regarded to have priority. This ceiling is based on the expected costs to be declared as shown in Appendix 6.
5. The reimbursement from the EuroHPC Joint Undertaking for each year will be calculated on the basis of the declared costs up to the agreed ceiling for the Union financial contribution or up to a ceiling of 50% of the declared costs, whichever is lower. The Hosting Entity will produce suitable supporting documentation (status reports, broken down in months) that proves that the agreed services have been provided and the KPIs stated in Appendix 2 have been met.
6. Payments will be made in accordance with the relevant agreement of the Parties and the applicable legal framework and will be done in relation to achieved deliverables only. The approval of a deliverable is subject to positive recommendation by the EuroHPC Joint Undertaking's Government Board for that deliverable.
7. In case a deliverable has not been achieved to the extent that a major deviation from the SLA is identified, the EuroHPC Joint Undertaking may decide not to fund the full amount related to this deliverable. The rules for determining the amount not to be funded are defined in section II.21 "Consequences of non-compliance with obligations"
8. Any change in the spending plan that requires shift of resources to another year or changes in the breakdown of costs shall be formally agreed with an amendment to the Agreement. Since it is not possible to transfer unused resources from Horizon 2020 to the next EU Framework Programme for Research and Innovation, the Hosting Entity shall inform the EuroHPC Joint Undertaking in due time in case of underspending of 2020-2021 resources.

II.20 *Checks and Audits*

II.20.1 General obligations

1. The EuroHPC Joint Undertaking may, during the implementation of the Agreement or afterwards, carry out technical and financial checks and audits to determine that the Hosting Entity is implementing the Agreement properly and is complying with the obligations under the Agreement. For that purpose, the Hosting Entity must provide any information, including information in electronic format, requested by the EuroHPC Joint Undertaking or by any other outside body authorised by the EuroHPC Joint Undertaking.
2. The Hosting Entity must put in place a certified audit procedure regarding the operating costs of the EuroHPC supercomputer. The specific terms and conditions including audit regarding the

reimbursement of operational costs of the EuroHPC supercomputer from Union financial contribution shall be defined in the separate agreement to be signed between parties for that purpose on the basis of the applicable legal framework.

3. The Hosting Entity must put in place an audit procedure covering the access of the users and allocation of access time in accordance with Article 14 of the Regulation. The controls must address but not limited to all user access and user identification linked to any changes to the system and data.
4. The Hosting Entity must submit by 31 January of each year to the EuroHPC Joint Undertaking's Governing Board an audit report and data on the use of access time in the previous financial year. This is indicated as a deliverable in Appendix 1 "Associated milestones and deliverables".
5. The checks and audit data must be protected, non-repudiated and restricted to authorized staff. Retention of the relevant records will be retained online for at least ninety (90) days and further preserve offline for a period of the contract or required by the EuroHPC Joint Undertaking.
6. Information and documents provided as part of checks or audits must be treated on a confidential basis.
7. The above checks and audits may be carried out either directly by the EuroHPC Joint Undertaking's own staff or by any other outside body authorised to do so on its behalf.
8. In addition to the EuroHPC Joint Undertaking, the European Commission, the European Anti-Fraud Office (OLAF) and the Court of Auditors may carry out checks and audit in accordance with their respective competences and the applicable legal framework.
9. The specific terms and conditions including audit regarding the acquisition cost and the reimbursement of operating costs of the EuroHPC supercomputer from Union financial contribution shall be defined in the separate agreement to be signed between parties for that purpose on the basis of the applicable legal framework. As a general rule, for actions funded from Horizon 2020, audits of recipients of Union funds under this Regulation should be carried out in compliance with Regulation (EU) No 1291/2013. For actions funded from CEF, audits of recipients of Union funds under this Regulation should be carried out in compliance with Regulation (EU) No 1316/2013.

II.20.2 On-the-spot visits

1. The EuroHPC Joint Undertaking shall have the right to perform on-the-spot visit to the hosting site and the premises of the Hosting Entity.
2. During an on-the-spot visit, the Hosting Entity shall allow the staff of the EuroHPC Joint Undertaking and outside personnel authorised by the EuroHPC Joint Undertaking to have access to the hosting site and premises of the Hosting Entity, and to all the necessary information related to the operation of the EuroHPC supercomputer, including information in electronic format.
3. The Hosting Entity must ensure that the information is readily available at the moment of the on-the-spot visit and that information requested is handed over in an appropriate form.

II.21 ***Consequences of non-compliance with obligations***

1. The Hosting Entity shall use its best endeavours to fulfil its obligations under this Agreement and provide the hosting site services under the highest professional standards and in a timely manner, within the deadlines agreed between the parties. This shall include meeting the deliverables and milestones in Appendix 1 and within the deadlines provided for therein.
2. The EuroHPC Joint Undertaking shall use its best endeavours to fulfil its obligations under this agreement in a timely manner, within the deadlines agreed between the parties.
3. The EuroHPC Joint Undertaking and the Hosting Entity shall use their best efforts to solve any non-compliance issue amicably and taking into account the best interest of the EuroHPC Joint Undertaking.
4. In case one of the Parties is not in position to fulfil its obligation under this Agreement on time for whichever reason, it shall notify the other party without delay, stating the nature of the

circumstances, their likely duration and effects and the measures taken to limit the effects and any damage.

5. In case a status report shows that the services provided by the Hosting Entity or the KPIs are not fully compliant, the EuroHPC Joint Undertaking shall evaluate the severity of the problem and its consequences, and discuss the conclusions of this evaluation with the Hosting Entity. The result of this process shall be presented by the EuroHPC Joint Undertaking's Executive Director to the EuroHPC Joint Undertaking's Governing Board for decision making. The decision of the EuroHPC Joint Undertaking's responsible service will include a statement on the severity of the deviation (major/minor) and potential remedial measures.
6. If the Agreement has not been implemented properly or if any obligation under the Agreement has been breached, the EuroHPC Joint Undertaking shall send a formal notification to the Hosting Entity requesting the Hosting Entity to rectify that situation or provide explanation and intended rectification or remedial actions. The Hosting Entity shall respond to this notification within ten (10) calendar days after the formal notification is sent.
If the Hosting Entity does not respond, the EuroHPC Joint Undertaking shall send a reminder by way of formal notification to the Hosting Entity, specifying the measures it intends to take if the Hosting Entity does not respond to its request or does not take appropriate measures to rectify the situation. The Hosting Entity shall respond to this notification within ten (10) calendar days after the formal notification is sent. If the Hosting Entity does not respond to this reminder, the EuroHPC Joint Undertaking shall have the right to take measures as described in paragraph 8 and in section II.21.1.1, notwithstanding any other legal rights of the EuroHPC Joint Undertaking.
7. In all cases, including cases of force majeure, the EuroHPC Joint Undertaking shall have the right to request from the Hosting Entity to comply with the Agreement, take remedial measures and/or proportionally reduce or recover amounts unduly paid to the Hosting Entity as appropriate.
8. Before the EuroHPC Joint Undertaking proceeds as described in par 7 and 8, it shall send a formal notification to the Hosting Entity informing it of:
 - a. the measures it intends to take
 - b. its intention to reduce any amount to be paid;
 - c. the reasons for reduction and/or measures ; and
 - d. inviting it to submit observations within 10 calendar days of receiving the formal notification.
9. In case of not-achieved KPIs or deliverables, the maximum amount of the EuroHPC Joint Undertaking's contribution for the period could be reduced proportionally to the impact (percentage of unavailability of the service defined in section III.4).

II.21.1.1 Liquidated Damages

1. If the Hosting Entity fails to perform its obligations within the applicable time limits set in this Agreement, and in cases of significant and/or recurring and/or persistent non-compliance or breach of the obligations under the Agreement, the EuroHPC Joint Undertaking may claim liquidated damages for each day or hour of delay using the following formula:

$$0,20 * (CH * h)$$

Where CH is the cost of the Computational Hour as defined in the Technical Specifications of the Hosting site

And h is the duration in hours of the non-compliance or breach of the obligations under the Agreement.

2. The amount of such liquidated damages that results from the application of the formula above may be reduced by the hosting entity if it is considered justified the seriousness of the breach and the specific character and circumstances of the non-compliance or breach.
3. Liquidated damages may be imposed together with other reductions in the Unions financial contribution.
4. The EuroHPC Joint Undertaking must formally notify the Hosting Entity of its intention to apply liquidated damages and the corresponding calculated amount.
5. The Hosting Entity shall have 30 calendar days following the date of receipt to submit observations. Failing that, the decision of the EuroHPC Joint Undertaking becomes enforceable the day after the time limit for submitting observations has elapsed.
6. If the Hosting Entity submits observations, the EuroHPC Joint Undertaking, taking into account the relevant observations, must notify the Hosting Entity:
 - (a) of the withdrawal of its intention to apply liquidated damages; or
 - (b) reduce the amount of the liquidated damages as appropriate or
 - (c) of its final decision to apply liquidated damages and the corresponding amount.
7. The parties expressly acknowledge and agree that any amount payable under this Article is not a penalty and represents a reasonable estimate of fair compensation for the damage incurred due to failure to provide the supplies within the applicable time limits set out in this agreement.
8. Any claim for liquidated damages does not affect the Hosting Entity's actual or potential liability or the EuroHPC JU's rights under other articles in this agreement, and any other separate agreement to be signed between parties regarding financial aspects.

II.22 *Liabilities and insurances*

1. The EuroHPC Joint Undertaking shall not be liable for any damage or loss caused by the Hosting Entity, including any damage or loss to third parties during or as a consequence of performance of the Agreement, and the operation of the EuroHPC supercomputer operated on its behalf, unless the loss or damage was caused by wilful misconduct or gross negligence of the EuroHPC Joint Undertaking.
2. The hosting entity shall assume full liability towards the EuroHPC JU for the performance of the agreement as a whole, including financial and operational liability. In case of a hosting consortium, only the Hosting Entity shall be fully liable towards the EuroHPC Joint Undertaking for the performance of the Agreement.
3. The Hosting Entity must take out an insurance policy to cover the operation of their hosting site and of the EuroHPC supercomputer and against risks and damage or loss relating to the performance of the EuroHPC supercomputer. Such insurance policy of the Hosting Entity shall also cover cases of force majeure. It must also take out supplementary insurance as reasonably required by standard practice in the industry. Upon request, the Hosting Entity must provide evidence of insurance coverage to the contracting authority.
4. The Hosting Entity shall be liable for any loss or damage caused to the EuroHPC Joint Undertaking during or as a consequence of performance of the Agreement, by the gross negligence or wilful misconduct of the Hosting Entity or of its personnel or subcontractors,
5. If a third party brings any action against the EuroHPC Joint Undertaking in connection with the performance of the Agreement, the Hosting Entity must assist the EuroHPC Joint Undertaking in the legal proceedings, including by intervening in support of the EuroHPC Joint Undertaking upon request.
6. If the liability of the EuroHPC Joint Undertaking towards the third party is established and such liability is caused by the Hosting Entity during or as a consequence of the performance of the contract, paragraph 2 and 3 apply.
7. Neither party will be liable for breach-of-contract damages that are remote or speculative, or that the breaching party could not reasonably have foreseen on entry into this Agreement.

III. *Service Level Agreement (SLA)*

III.1 *Required Hosting Activities*

The Hosting Entity is required to provide at least the following activities for the hosting of the EuroHPC supercomputer and its operation:

- 1) The Hosting Entity undertakes to provide the Technical Environment including all facility management necessary to the operation of the EuroHPC supercomputer according to the technical specifications of the supercomputer to be acquired.
- 2) The Hosting Entity undertakes to supervise, monitor and check the performance of the commitments of the vendor that relate to the maintenance of the EuroHPC supercomputer in full respect of the mandate given by the Joint Undertaking to the Hosting Entity.
- 3) Ensure the operation of the EuroHPC supercomputer and the IT environment to enable users to access the resources and services for the duration of the Agreement. Allowing users to execute code in the EuroHPC supercomputer, monitor its evolution and retrieve the results.
- 4) The Hosting Entity undertakes to provide at least the following user services:
 - a) Hotline/helpdesk and support: services, which allow users to have a contact point in order to get help for the use of the system and IT environment. This support should be organized as follows:
 - i) A single point of a two level support at least in English which can be contacted by phone and email should be set-up.
 - ii) This hotline/helpdesk should answer to requests about difficulties dealing with the use of the EuroHPC supercomputer and any information about this supercomputer.
 - iii) The unresolved incidents/requests by the hotline/helpdesk should be forwarded to a more experimented technical level through a ticketing management tool. This technical level should address system and user applications (porting and optimization until five person days)⁵.
 - b) Access to EuroHPC supercomputer resources by the users
 - c) User documentation (preferable in the form of an online knowledge base), including manuals and other information and tools that are required by the users.
 - d) Incident management
 - e) Users account management
 - f) Data storage services (scratch and related temporary storage services)
 - g) Data post-processing: this service shall provide software tools to post-process data
 - h) User support for code porting and optimization (in the terms agreed with the EuroHPC Joint Undertaking)
 - i) Data processing and visualization services (in the terms agreed with the EuroHPC Joint Undertaking)
 - j) Visualization services, including remote visualisation services when relevant
 - k) inform the users and the EuroHPC Joint Undertaking about the incidents impacting the use of the EuroHPC supercomputer or the IT environment
 - l) At least yearly measure the satisfaction of the users with the service offered by the Hosting Entity via a user survey
- 5) The Hosting Entity undertakes to provide support related to the EuroHPC supercomputer. This shall include:
 - a) On call service support teams for IT issues

⁵ in the case that porting and optimization exceeds five person days, the service is considered as a specific development request.

- b) Dedicated on-call service team for facilities issues
 - c) The hosting Entity shall have in place an escalation process (both functional and hierarchical) designed to bring appropriate authority and expertise in to play to resolve issues and problems in accordance with agreed service levels;
 - d) Once an incident has been raised, the Hosting Entity support team will do the utmost to resolve, repair and restore services to full operation within the defined Service Level Agreement time constraints.
- 6) Reporting from the Hosting Entity to the EuroHPC Joint Undertaking through the production of documents and KPIs reports defined in Appendix 1 (Associated deliverables and milestones).
 - 7) The Hosting Entity undertakes to monitor the IT infrastructure and technical infrastructure and equipment, including power electrical systems
 - 8) The Hosting Entity undertakes to monitor the capacity and operational load of the hosting site infrastructure providing services to the EuroHPC supercomputer.
 - 9) Cooling and other infrastructure services related to the operation of the EuroHPC supercomputer. It refers to the cooling and other services (fire detection, monitoring, security, etc.) at the hosting site of the EuroHPC supercomputer.
 - 10) Provision of electricity consumption of the EuroHPC supercomputer and other IT equipment and by the facility (cooling, heating losses ...) related to the operation of the EuroHPC supercomputer, taking into account the Power Usage Effectiveness (PUE).
 - 11) Provision of the hosting site infrastructure, including equipment required for operating the EuroHPC supercomputer. This involves network at the data centre level, different storage subsystems (e.g. high-performance and short-term storage tiers, backup systems and other IT equipment like licence servers etc.).
 - 12) Provision of External Network Connectivity: Connectivity for the EuroHPC supercomputer to any external site, including the rest of the Union will require access to an adequate physical networking infrastructure in conformity with the requirements of this hosting agreement.
 - 13) Provision of power back up and distribution items related to providing power to the EuroHPC supercomputer installed inside the data centre technical area according to the requirements of this hosting agreement.
 - 14) Provision of long term data storage to fulfil the requirements of the EuroHPC supercomputer during the duration of this hosting agreement.
 - 15) Implement all the possible measures to ensure the security of the Hosting Entity, the Technical and IT Environments and the EuroHPC supercomputer. As a minimum, the IT security shall include the security measures defined in Appendix 5 "Minimum requirements of the Hosting Site"
 - 16) Apply the access-time set up by the EuroHPC Joint Undertaking to the EuroHPC supercomputer and to its IT environment
 - 17) Put in place a certified audit procedure covering the operational expenses of the EuroHPC supercomputer and the access-times of the users and to submit an audit report and data on access time once a year to the EuroHPC Joint Undertaking's Governing Board.

III.2 **Key performance indicators (KPIs)**

The following KPIs apply for the services provided by the Hosting Entity to the EuroHPC Joint Undertaking and defined in this Agreement:

KPI	Description	Target value	Period for computing of figure	Resp. when operation
Availability of the EuroHPC supercomputer	Fraction of time the system is fully usable and available to users Includes: files systems, homes, login nodes, access network ...	> 95 % (monthly basis) for the first 3 months of operation >97% (monthly basis) for the remaining of the operational period	Monthly	Hosting Entity (HE)
Scheduled	Maintenance is considered as scheduled if	< 8 h per month and not more than	Monthly	HE

maintenance of the EuroHPC supercomputer	users are warned at least 1 week in advance	5 days per year		
Stability of performances of the EuroHPC supercomputer	Regular execution of a set of benchmarks	> 90 % of the performances measured after the installation of the supercomputer	Daily	HE
Availability of the critical auxiliary IT equipment	IT equipment necessary for the usage of the EuroHPC supercomputer (example: network access, homes...)	> 95 % (monthly basis) for the first 3 months of operation >97% (monthly basis) for the remaining of the operational period	Monthly	HE
Usage of the EuroHPC Supercomputer	(excluding unavailability and scheduled maintenance periods) In order to identify reasons for low usage (possibly bad tuning of queues for example), statistics on cumulated number of nodes of jobs in wait queue ready for execution are necessary	> 75 % on a monthly basis (% of core hours consumed)	Weekly	EuroHPC Joint Undertaking (JU)+HE
Available access time to the EuroHPC Joint Undertaking	Percentage of the total available access time.	50% of available access time dedicated to run the Joint Undertaking's access time.	Monthly	HE
Handling of tickets	A ticket is considered as solved only once the user agrees. Providing workaround is acceptable if the workaround has no major negative consequence Help desk on duty all business days from 8:00 to 18:00 (hosting Entity time zone)	70% should be solved in less than 2 working days, 20% in less than 5 working days, the remaining 10% in less than 1 month (if the number of ticket is less than xxx per month)	Monthly	HE
Availability of the facility	Cooling, power supply, fire security.	> 99 % on a monthly basis No more than 5 days of maintenance per year	Monthly	HE
Availability of external connectivity	External connectivity (GÉANT).	> 99 % on a monthly basis No more than 5 days of maintenance per year	Monthly	HE
Average number of Incidents affecting users (per type of active user)	This KPI will be measured during the first year of operation without committed SLA. After one year, based on the experience gathered, the target SLA could be reviewed.	Average must be lower than 0.5 per month. Based on the number of active users per month. 1 incident affecting several users is only accounted for 1	Monthly	HE
User Satisfaction	Measure of user satisfaction via user survey. The Survey will be jointly defined by the EuroHPC Joint Undertaking and the Hosting Entity.	Overall user satisfaction must be over 7 in an scale 0-10	Yearly	HE

When reported, along with the KPI values, the KPIs must indicate as a minimum:

- number of problems reported and scheduled or planned downtime experienced;
- any incidents or changes to the resources such as power failures, security incidents and network performance; and
- any other impact on normal operations of the resources

If a KPI is not met, the Hosting Entity has to provide an explanation of the reason together with the corrective action as part of the KPI report to the EuroHPC Joint Undertaking.

III.3 Service Hours

1. The EuroHPC supercomputer services provided to users must be available 24 hours, 7 days per week, except when there is maintenance. A service can be requested during support hours.
2. The Hosting Entity must provide support to users all business days from 8:00 to 18:00 (hosting Entity time zone)

III.4 Service Availability

1. For the provision of the Service covered by the Hosting Entity, availability is determined by the percent of the time fully usable and available to users. It must include at least the compute nodes, login nodes, network access, file systems and access to home directories.
2. The Hosting Entity will seek 100 % availability, and meeting the availability defined in the KPIs.
3. The Hosting Entity will calculate “Service Unavailability” in a calendar month. “Service Unavailability” consists of the number of minutes that the service was not available to Users, and includes unavailability associated with any maintenance at the hosting site other than Scheduled Maintenance. Outages will be counted as Service Unavailability even if users do not open an incident with support during or after the outage. Service unavailability will not include Scheduled Maintenance, or any unavailability resulting from:
 - acts or omissions of the EuroHPC Joint Undertaking or any use or user of the service authorised by the Joint Undertaking;
 - deliberate act of a User or an End User or reasons of Force Majeure.
4. In the case of a malfunction involving a total unavailability exceeding 24 hours of the EuroHPC supercomputer or its IT environment, the Hosting Entity must inform the EuroHPC Joint Undertaking no later than 48 hours after the commence of the incident and a crisis unit would be set up between Hosting Entity and the EuroHPC Joint Undertaking.

III.4.1 Availability of external connectivity

1. The Hosting Entity must ensure the EuroHPC supercomputer’s external connectivity through the GÉANT pan-European academic and research network. The Hosting Entity will seek 100 % availability for external connectivity and meet the availability defined in the KPIs.
2. The Hosting Entity must ensure that there are not more than 5 days of maintenance per year.

III.5 Performance Testing

1. The Hosting Entity must ensure the performance of the EuroHPC supercomputer. In order to review it, a set of benchmarks⁶ must be executed regularly (at least every 2 years) in the EuroHPC supercomputer, trying to minimise its service availability. Every time the set of benchmarks is executed, the benchmarks must achieve at least a 90 % of the performances measured after the installation of the EuroHPC supercomputer. These will be reviewed as part of the yearly reports.

III.6 Regression testing

1. The Hosting Entity must provide when possible regression testing. The regression testing should be applied when significant changes have been applied to the EuroHPC supercomputer to verify that previous applications still work with the new changes.

III.7 Support Hours

1. Support must be available from 8:00 AM to 6:00 PM (Hosting Site time), Monday through Friday, except when the facilities are closed due to holidays, administrative closings, or inclement weather. A service can be requested or an Incident reported by telephone during working hours, or by mail or by a Web Portal at any time. Incidents reported or services requested outside the working hours will be served at the next scheduled working day, unless a special procedure for Major Incident is invoked.

⁶ benchmarks measured using linpack benchmark

III.8 Incident Escalation

1. In case of operational issues affecting the availability of the services provided to users:
 - a) The Hosting Entity will inform without delay the EuroHPC Joint Undertaking's responsible and propose corrective actions.
 - b) The Hosting Entity will assess the severity of the issue and its impact on the users of the EuroHPC Joint Undertaking.
 - c) The EuroHPC Joint Undertaking and the Hosting Entity will agree on the actions to be implemented.
 - d) The Hosting Entity will monitor their implementation and provide feedback to the EuroHPC Joint Undertaking.

III.9 Usage of the EuroHPC supercomputer

1. The Hosting Entity must measure the usage of the EuroHPC supercomputer and provide the information in a monthly basis. The purpose is to ensure the maximum possible utilisation of the access time of the supercomputer. The usage does not include unavailability and scheduled maintenance periods. This is measured as part of the monthly KPIs.

III.10 Backups

1. The Hosting Entity must ensure that they have a properly backup policy that has been approved by the EuroHPC Joint Undertaking with onsite and offsite backup solutions that ensures that the functioning of the EuroHPC supercomputer can be restored to a state that can provide back service to customers in case of user or system error. The Hosting Entity must ensure a backup retention policy of at least 1 month to the users.

III.11 Monitoring

1. To verify the EuroHPC supercomputer and services availability, the Hosting Entity must have proper monitoring systems (active or passive or combination of both) that provide regularly feedback about the status of the EuroHPC supercomputer and related equipment and services. The monitoring system must be used to provide statistics about the service availability and downtimes.

III.12 Maintenance

1. Scheduled Maintenance shall mean any maintenance at the EuroHPC supercomputer that affects the users and that is notified at least one (1) week in advance. Notice of Scheduled Maintenance will be provided to users and the EuroHPC Joint Undertaking's designated point of contact via email and other communication systems (e.g. portal).
2. The maintenance program including their maintenance windows should be available to all users and the EuroHPC Joint Undertaking.
3. The Hosting Entity will use reasonable efforts to coordinate with possible impacted users when planning any maintenance to minimise impact to users.
4. "Emergency Maintenance" shall mean any maintenance by the Hosting Entity, its subcontractors or service providers that does not meet the definition of Scheduled Maintenance. No notice shall be required or provided for Emergency Maintenance.

III.13 Reporting

1. The Hosting Entity shall provide regularly reports as deliverables. The list of deliverables is indicated in Section 1 of Appendix 1. The Status Reports shall be submitted to the EuroHPC Joint Undertaking no later than the 15th of the subsequent month. The due dates for delivery of the Reports are indicated in the section 1 of Appendix 1.

2. Status reports shall allow assessing if the services provided by the Hosting Entity are compliant with specifications listed in Appendixes 3 and 5 and with the KPIs listed in Appendix 2. Each quarterly status report shall contain, broken down per month, at least the information requested in Appendix 1.
3. This report shall include KPIs and status of shared resources used by the EuroHPC supercomputer and its users. In case a KPI is not met, the reason should be documented, together with the actions implemented to solve it.
4. The annual report shall summarise at least the information above for one entire year.

IV. Appendix 1. Associated deliverables and milestones

The services provided by the Hosting Entity to the EuroHPC Joint Undertaking and the achievement of milestones (see the table below) will be reviewed based on monthly status reports provided by the Hosting Entity to the EuroHPC Joint Undertaking.

Service Reporting shall include at least:

- Performance against service targets (Including SLAs)
- Relevant information about significant events including at least major incidents, deployment of new or changed services.
- Access time allocation
- Detected non-conformities against the requirements
- Customer satisfaction measurements, service complaints and results of the analysis of satisfaction measurements and complaints.
- Workload characteristics including volumes and periodic changes in workload.
- Trend Information
- Information on commercial use of the supercomputer
- Performance and utilisation of the Supercomputer, including at least:

Indicator	Description	Period
Number of submitted Jobs	# per queue	Monthly
Number of completed jobs	# per queue	Monthly
Number of failed jobs	# per queue	Monthly
Number of jobs submitted per user (PIs)	# per queue per user	Monthly
Average job size	Cores per job	Monthly
Average job waiting time	Hrs per queue	Monthly
Average job completion time	Hrs per queue	Monthly
Core hours offered (available capacity)	Total core Hrs per month	Yearly
Core hours requested	Total core Hrs per month	Yearly
Project application requested vs Awarded	Number of projects	Yearly

The Hosting Entity must provide the following periodic deliverables:

Ref.	Periodicity	Title of deliverable	Due date
KPI_month	Monthly	Monthly KPI report for previous month	15 th of the next month
PR_month	Monthly	Monthly Performance and utilisation report for the previous month	15 th of the next month
AR_year	Yearly	Audit report and data on the use of access time in the previous financial year	31 st Jan
CR_year	Yearly	Audit report and data on the operation costs in the previous financial year. (Using agreed calculation method)	31 st Jan

In addition to the deliverables stated above, the Hosting Entity has to meet the following milestones:

Ref.	Milestone	Due date
M1	Nomination by the Hosting Entity of the team for collaboration with the EuroHPC Joint Undertaking on the acquisition process	[tbd]
M2	Site preparation accordingly to the acquisition procedures of the EuroHPC	[tbd]

	supercomputer	
M3	Site adaptation to host the EuroHPC supercomputer	[tbd]

In case a milestone is not reached on time, no further deliverable will be accepted by EuroHPC Joint Undertaking.

V. Appendix 2. Minimum requirements of the Hosting Site

The following list provides the minimum requirements for the Hosting Entity to host a EuroHPC supercomputer. The hosting site (current or upgraded) must be able to guarantee the following within the timeline for the installation of the EuroHPC supercomputer:

- a) Power capacity and power quality for hosting a system in the range of 10 to 15 MW total consumption for the pre-exascale supercomputer.
- b) UPS power available to cover the critical systems including storage and access to data of the JU system.
- c) Enough capacity of air or liquid cooling for hosting the system of the EuroHPC Joint Undertaking
- d) At least 700 m² of contiguous floor space available for the hosting of the EuroHPC supercomputer and its auxiliary systems
- e) Raised floor able to bear at least 2200 kg/m² distributed load
- f) Minimal requirements for physical access security:
 - i) Operated reception and ability to limit or restrict physical access to the EuroHPC supercomputer.
 - ii) badge access with differentiated access areas (Layered security zones)
 - iii) video surveillance
 - iv) intrusion detection
- g) Minimal requirements regarding fire mitigation:
 - i) fire detection
 - ii) fire extinguishing mechanism
 - iii) operational procedures to deal with fire and minimize damage to equipment and persons
- h) Minimum requirements regarding IT access security:
 - i) intrusion detection
 - ii) firewalling
 - iii) network segmentation
 - iv) activity / traffic monitoring and traceability
 - v) user authentication and user authorisation
 - vi) vulnerability scanning and monitoring
 - vii) security awareness and training
- i) Ability to perform at least a Level 1 measurement quality for a Top500 submission
- j) Existence of a dedicated on-call service team for IT issues
- k) Existence of a dedicated on-call service team for facilities issues
- l) At least 100 Gbit/s connectivity towards the rest of the GEANT Network (link capacity)
- m) A mechanism to regularly measure the satisfaction of your users with your service via a user survey (at least every year)

VI. Appendix 3: Indicative List of cost elements to consider in the calculation of the Operating costs

In-kind contributions are marked with coloured fields.

Supercomputer and maintenance

Cost item	Verification	Method	Provider
HPC system	N/A procured by EuroHPC	N/A	
High Performance disks/Scratch Storage	N/A procured by EuroHPC	N/A	

Equipment and commercial software

Cost item	Verification	Method	Provider	
Site preparation	Invoice /Balance sheet	Fraction committed to the EuroHPC Joint Undertaking (JU)	Hosting site only	Related equipment
Network at data centre level	Invoice /Balance sheet	Fraction committed to JU	Hosting site only	
High Performance disks/Home Storage	Invoice /Balance sheet	Fraction committed to JU	Hosting site / others	
Backup storage	Invoice /Balance sheet	Fraction committed to JU	Hosting site / others	
Level 2 storage/Long term Storage	Invoice /Balance sheet	Fraction committed to JU	Hosting site / others	
Other IT equipment	Invoice /Balance sheet	Fraction committed to JU	Hosting site only	
Supercomputers (SC) room	Invoice /Balance sheet	Fraction of the room occupied by the JU systems		Other infrastructure
Building	Invoice /Balance sheet	Fraction of the building occupied by the SC room		
Power supply to the facility	Invoice /Balance sheet	Fraction of MW used by JU	Hosting site only	
Power backup	Invoice /Balance sheet	Fraction of MW used by JU	Hosting site only	
Power distribution	Invoice /Balance sheet	Fraction of MW used by JU	Hosting site only	
Cooling	Invoice /Balance sheet	Fraction of MW used by JU	Hosting site only	
Fire detection and extinction	Invoice /Balance sheet	Fraction of the surface of the SC room occupied by the JU systems	Hosting site only	
CCTV, security, access control	Invoice /Balance sheet	Fraction of the surface of the SC room occupied by the JU systems	Hosting site only	
Monitoring, building and facility	Invoice /Balance sheet	Fraction of MW used by JU	Hosting site only	
File system software	Invoice	Fraction of sw used by JU	Hosting site only	

Accounting software	Invoice	Fraction of sw used by JU	Hosting site only
Compilers	Invoice	Fraction of sw used by JU	Hosting site only
Debuggers	Invoice	Fraction of sw used by JU	Hosting site only
Scientific software	Invoice	Fraction of sw used by JU	Hosting site only

Personnel

Cost item	Verification	Method	Provider
System administration, user support and training	Payroll, and/or invoice when part of the service is subcontracted	Timesheets to show dedication to the JU	Hosting site only
Application enablement	Payroll, and/or invoice when part of the service is subcontracted	Timesheets to show dedication to the JU	Hosting site / others
Facility	Payroll, and/or invoice when part of the service is subcontracted	Timesheets to show dedication to the JU	Hosting site only
Installation	Payroll, and/or invoice when part of the service is subcontracted	Timesheets to show dedication to the JU	Hosting site only
Security	Payroll, or invoice when the service is subcontracted	Fraction according to max. dedication	Hosting site only
Cleaning	Payroll, or invoice when the service is subcontracted	Fraction according to max. dedication	

Operations and maintenance

Cost item	Verification	Method	Provider
Electricity	Invoice/Meters	Fraction used by the JU	Hosting site only
Water	Invoice/Meters	Fraction used by the JU	
Gasoil	Invoice/Meters	Fraction used by the JU	
Network connection	Invoice /Balance sheet	Fraction committed to the JU	Hosting site only
Maintenance of HPC system and the high-performance disks/scratch storage	N/A procured by EuroHPC	N/A	
Maintenance of items under "Equipment and commercial software"	Invoice	According to method in "Equipment and commercial software"	Hosting site / others