EuroHPC JOINT UNDERTAKING

DECISION OF THE GOVERNING BOARD OF THE EuroHPC JOINT UNDERTAKING No 62/2024

Amending the Joint Undertaking's Work Programme and Budget for the year 2024 (Amendment no 6)

THE GOVERNING BOARD OF THE EUROHPC JOINT UNDERTAKING,

Having regard to Council Regulation (EU) 2021/1173 of 13 July 2021 on establishing the European High Performance Computing Joint Undertaking and repealing Regulation (EU) 2018/1488[1], (hereinafter, "JU Regulation"),

Having regard to the Statutes of the European High Performance Computing Joint Undertaking annexed to the Regulation (thereinafter "JU Statutes") and in particular to Articles 1(o), 7(3)(d), 7(5)(b), 7(7)(b) and (c), 9(4)(b) and (c) and 18 of thereof,

Having regard to the Council Regulation (EU) 2024/1732 of 17 June 2024 amending Regulation (EU) 2021/1173 as regards a EuroHPC initiative for start-ups in order to boost European leadership in trustworthy artificial intelligence[2],

Having regard to Decision of the Governing Board of the EuroHPC Joint Undertaking No 3/2020, approving the Financial Rules of the EuroHPC Joint Undertaking[3],

Having regard to Decision of the Governing Board of the EuroHPC Joint Undertaking No 44/2023 adopting the Joint Undertaking's Work Programme and Budget for the year 2024,

Having regard to Decision of the Governing Board of the EuroHPC Joint Undertaking No 57/2024 of 14 October 2024 amending the Joint Undertaking's Work Programme and Budget for the year 2024 (Amendment No 5),

WHEREAS

(1) The Joint Undertaking's Work Programme and Budget for the year 2024 has been amended by means of Decision of the Governing Board No 11/2024 of 21 March 2024, Decision of the Governing Board No 20/2024 of 13 May 2024, Decision

[1] OJ L 256, 19.7.2021, p. 3–51.
[2] OJ L, 19.6.2024, p. 1-5.
[3] Readopted by Decision of the Governing Board of the EuroHPC Joint Undertaking No 17/2021, approving the re-adoption of Governing Board Decisions adopted under the framework of Regulation (EU) 2018/1488 and its updated Rules of Procedure in the view of Regulation (EU) 2021/1173.

41/2024 of 25 July 2024, Decision of the Governing Board No 50/2024 of 10 September 2024, and most recently Decision of the Governing Board No 57/2024 of 14 October 2024 (Work Programme and Budget Amendments No 1 to 5).

(2) The annual Work Programme needs to be amended for the sixth time in 2024 to reflect the following changes:
- An additional call on EuroHPC International Cooperation (HORIZON-EUROHPC-JU-2024-INCO-06)
- A cancellation of a call for expression of interest for Deployment of European quantum computers
- A cancellation of a call for proposals on HPC/Cybersecurity/AI
- An update in HR Section to reflect the upcoming increased workload linked to the AI pillar.

(3) The Statutes of the EuroHPC JU confer on the Governing Board the powers to adopt the annual work programme and its annual budget including the staff establishment plan.

(4) The Executive Director of the EuroHPC Joint Undertaking submitted the amended Work Programme to the Governing Board.

(5) In the interest of legal certainty and clarity, an amended Work Programme and Budget of the EuroHPC Joint Undertaking for the year 2024 shall be adopted by the Governing Board.

HAS ADOPTED THIS DECISION:

Article 1

The amended Annual Work Programme and Budget of the EuroHPC Joint Undertaking for the year 2024 is adopted.

Article 2

The Executive Director shall make the amended Annual Work Programme and Budget 2024 publicly available on the website of the EuroHPC Joint Undertaking.

Article 3

This Decision shall enter into force on the date of its adoption.

Done at Luxembourg, on 8 November 2024.

For the Governing Board

Rafal Duczmal

The Chair

Annex: WP 2024 Amendment no 6

WORK PROGRAMME and BUDGET

EuroHPC JOINT UNDERTAKING (JU)

2024

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ANNUAL WORK PROGRAMME YEAR 2024

INTRODUCTION

The EuroHPC Joint Undertaking (hereinafter "EuroHPC JU" or "JU"), will contribute to the ambition of value creation in the Union with the overall mission to develop, deploy, extend and maintain in the Union an integrated world class supercomputing and quantum computing infrastructure and to develop and support a highly competitive and innovative High Performance Computing (HPC) ecosystem, extreme scale, energy-efficient, environmentally sustainable and highly resilient HPC and data technologies.

In July 2021, Council Regulation (EU) 2021/1173 (EuroHPC JU Regulation) was adopted, repealing Council Regulation (EU) 2018/1488, and provides the basis of the Work Programmes of the Joint Undertaking.

The Annual Work Programme 2024 contains the actions to be implemented in 2024. Calls to be launched in 2024 will be prepared by the JU and presented for adoption by the Governing Board by separate Governing Board Decisions.

For all activities implemented by the EuroHPC JU that are funded from the Horizon Europe (HE) budget, the Governing Board may decide to limit in the calls for proposals the eligibility of participants according to Horizon Europe Article 22(5).

For all activities implemented by the EuroHPC JU that are funded from the Digital Europe Programme (DEP) budget, the Governing Board may decide to limit in the calls for proposals or procurements the eligibility of participants according to Digital Europe Articles 12(6) and 18(4).

For all activities implemented by the EuroHPC JU that are funded from the Connecting Europe Facility (CEF) budget, the Governing Board may decide to limit in the calls for proposals or procurements the eligibility of participants according to Connecting Europe Facility Article 11(4).

All actions with Union contribution below 100% are EU Synergy calls. Grants and procurements can be linked with another grant funded from any other EU funding programme, provided that there is no double funding and that such support does not cover the same cost.

OPERATIONS

The key objective of the EuroHPC JU as set out in Regulation (EU) 2021/1173 is to further deploy and provide access in the Union to a world leading service and data infrastructure with high-end supercomputers which are indispensable to run the most demanding and strategic applications, such as climate change and personalised medicine

This action builds on the previous infrastructure activities undertaken by the EuroHPC JU since its creation in 2018. The Operational section of this Work Programme will be organised using the Pillars of activity as set out in Regulation

Furthermore, on 9 July 2024, the Council Regulation (EU) 2024/1732 of 17 June 2024 amending Regulation (EU) 2021/1173 as regards a EuroHPC initiative for start-ups in order to boost European leadership in trustworthy artificial intelligence came into force. This work programme will now include calls related to this new activity.

Context of the AI Factories:

On 13 September 2023, as part of a comprehensive approach to support responsible research and innovation in AI, the Commission announced a new strategic initiative to make the Union's high-performance computing capacity available to innovative European startups in trustworthy AI in order to train their models. That initiative complements work on setting guardrails for AI through the AI Act, establishing governance structures and supporting innovation through the Coordinated Plan on Artificial Intelligence. It was accordingly necessary to add a seventh objective to the existing six objectives of the JU, concerning the contribution made by its supercomputers to the new AI initiative of the Union.

The new objective would allow the JU to perform activities in the domains of acquiring and operating AI-optimised supercomputers or partitions of supercomputers to enable machine learning and training of general purpose AI models. The JU will create a new access mode to its computing resources for the AI startup ecosystem and the research and innovation ecosystem and to develop dedicated AI applications that are optimised to run on its supercomputers.

The JU will appoint existing European High Performance Computing hosting entities as AI factories if the hosting entity can demonstrate that its supercomputer has enough computing resources for training large scale and general-purpose AI models and emerging AI applications, and provided that the hosting entity implements the full range of additional activities necessary to develop and support the AI ecosystem.

The JU will offer computing power and services to nurture large-scale AI training, development and uptake in the Union. AI factories should interact with one another and with relevant AI initiatives of the Union, and, where applicable, AI factories can interact with relevant national AI ecosystems and national AI initiatives

EuroHPC Strategy: Seven Pillars of Action

The Annual Work Programme will follow the different pillars of actions as set out in the Founding Regulation (2021/1173) and Regulation (2024/1732)

Since most actions are ongoing over more than one year, this work programme will summarise ongoing actions in each Pillar (if any) and then in a separate section introduce the Calls to be launch in 2024.

Table of 2024 Actions with budget allocation (estimated amounts in EUR)

Pillar	**Actions**	**Funding source**	**Type of action/ Funding rate**	**Planned EU Contribution**	**Total planned Budget**
CFEI on an AI Factory to deploy an AI dedicated supercomputing and service infrastructures for Europe's AI start-up and research ecosystem	**AI-optimised and upgraded EuroHPC supercomputers**	**DEP**	**See call texts for applicable funding rate**	**Up to 800 Million until 2027 of which 400 Million to be committed from 2025**	**Up to 1.6 Billion until 2027 of which 800 Million to be committed from 2025**
	Experimental Platform	**HE**	**EU 50%** **PS 50%**	**Up to 60 Million until 2027**	**Up to 120 Million until 2027**
	AI Factories	**HE**	**EU 50%** **PS 50%**	**Up to 120 Million until 2027**	**Up to 240 Million until 2027**
Infrastructure ***Call cancelled***	~~3rd CFEI Quantum Computing~~	~~DEP~~	~~EU 50%~~ ~~PS 50%~~	~~10 Million~~	~~20 Million~~
	Procurement for Peer Review Platform	DEP	EU 100%	1.8 Million	1.8 Million
Connected and Federated	Connected HPC infrastructure and services	CEF-2	EU 100 %	60 Million	60 Million
Technology ***Call postponed to 2025***	Enhancing competitive European microprocessor technology for HPC	Horizon Europe	EU 50% PS 50%	48.6 Million	97.3 Million
Call postponed to 2025	Enabling Universal Access and Integration of Quantum Resources	Horizon Europe	EU 50% PS 50%	10 Million	20 Million
Call in preparation, to be launched in 2025	Development of new benchmarks for HPC, Quantum Computing, and AI	Horizon Europe	EU 50% PS 50%	10 Million	20 Million

Call postponed to 2025	HPC/QC Middleware technologies	Horizon Europe	EU 50% PS 50%	20 Million	40 Million
	Specific Grant Agreement on RISC-V	Horizon Europe	EU 50% PS 50%	120 Million (committed in 2023)	120 Million
Applications ***Call postponed to 2026***	Quantum application prizes	Horizon Europe	EU 100%	300,000 EUR	300,000 EUR
Call to be reformulated and launched in 2025	HPC for AI Software Ecosystem	Horizon Europe	EU 50% PS 50%	8 Million	16 Million
Call to be reformulated and launched in 2025	HPC Applications	Horizon Europe	EU 50% PS 50%	10 Million	20 Million
Call to be reformulated launched in 2025	Centres of Excellence to support the development of exascale applications	Horizon Europe	EU 50% PS 50%	10 Million	20 Million
Call cancelled	~~HPC/Cybersecurity/ AI~~	~~DEP~~	~~EU 50%~~ ~~PS 50%~~	~~5 Million~~	~~10 Million~~
Call in preparation, to be launched in 2025	Continuous integration and deployment platform (CI/CD)	DEP	EU 100%	5 Million	5 Million
Competences and Skills	EuroHPC Masters Programme (2nd call)	DEP	100%	10 Million	10 Million
	2nd National Competence Centre Call	DEP	EU 50% PS 50%	5 Million	10 Million
	EuroHPC Summit 2025	DEP	100%	700,000	700,000
	User Day 2024	DEP	100%	150,000	150,000
International ***Placeholder replaced (see below)***	~~Support EU Digital Partnership activities~~	~~HE~~	~~100%~~	~~10 Million~~	~~10 Million~~

	Collaboration Quantum with third countries (Japan)	HE	100%	4 Million	4 Million

To cover all JU activities in 2024, the JU will count on the annual EU contribution of EUR 201 Million, which includes EUR 74 Million from DEP and EUR 127 Million from Horizon Europe, and re-activated credits from past years for an additional amount of EUR 87 Million.

AI OPTIMISED SUPERCOMPUTERS FOR AI FACTORIES PILLAR

Context and Background

The European High Performance Computing Joint Undertaking (hereinafter referred to as 'EuroHPC JU) was established by Council Regulation (EU) 2021/1173 of 13 July 2021[4] amended by Council Regulation (EU) **2024/1732 of 17 June 2024 amending Regulation (EU) 2021/1173 as regards a EuroHPC initiative for start-ups in order to boost European leadership in trustworthy artificial intelligence** which entered into force on 9 July 2024[5] (hereinafter referred to as 'Regulation').

According to Article 3 of the Regulation, the mission of the EuroHPC JU is to develop, deploy, extend and maintain in the Union a federated, secure hyperconnected supercomputing, quantum computing, service and data infrastructure ecosystem; to support the development and uptake of demand-oriented and user-driven innovative and competitive supercomputing systems based on a supply chain that will ensure components, technologies and knowledge limiting the risk of disruptions and the development of a wide range of applications optimised for these systems; and, to widen the use of that supercomputing infrastructure to a large number of public and private users, and to support the twin transition and the development of key skills for European science and industry. **As per the recent amendment to the EuroHPC JU Regulation, Art 3 (h) has introduced a new objective to be pursued by the EuroHPC JU which is "to develop and operate the Artificial Intelligence Factories in support of the further development of a highly competitive and innovative Artificial Intelligence ecosystem in the Union".**

The illustration below indicates the two possible 'branches of action' that future applicants can opt for in order to implement this objective:

AI Factories will be used primarily for the development, testing, evaluation and validation of large scale, general purpose AI training models and emerging AI applications, as well as for the further development of AI solutions in the Union requiring High Performance Computing and the execution of large-scale AI algorithms for the resolution of science problems.

4 Council Regulation (EU) 2021/1173 of 13 July 2021 on establishing the European High Performance Computing Joint Undertaking and repealing Regulation (EU) 2018/1488, OJ L 256, 19.7.2021, p. 3.

5 OJ L, 19.6.2024, ELI: http://data.europa.eu/eli/reg/2024/1732/oj.

It becomes clear that AI Factories need **to deploy timely so that an AI dedicated supercomputing and service infrastructures for Europe's AI start-up and research ecosystem can be operational**.

Three complementary tracks can be considered:

1. **"AI Factories" Track**

This track is foreseen for those Hosting Entities that are already hosting a EuroHPC Supercomputer which can demonstrate enough computing resources for training large scale, general-purpose artificial intelligence models and emerging artificial intelligence applications can be appointed as AI Factory.

This track will be implemented through a permanently Open EuroHPC JU Call for Expression of Interest of Hosting Entities to appoint existing EuroHPC Supercomputing systems as an AI Factory. The hosting entity commits to undertake AI Factories activities (i.e., the full range of AI factory services).

Further to the appointment of an existing EuroHPC Supercomputing system as an AI Factory, an implementation grant may be awarded to cover for the AI Factories activities (i.e., services). An amendment to the existing Hosting Agreement should be introduced.

2. **AI-optimised supercomputers or existing hosting entities to upgrade existing EuroHPC supercomputers with AI capabilities Track**

The overall objective of this call is to select hosting entities for AI-optimised supercomputers or existing hosting entities to upgrade existing EuroHPC supercomputers with AI capabilities, to acquire Advanced Experimental AI-optimised Supercomputing Platforms (optional), as well as to establish an associated AI Factory which will be undertaken by the EuroHPC JU.

It should be noted that these 2 AI Factories Implementation tracks can be implemented in parallel

For both tracks, the Calls for Expressions of Interest can be found in their complete form in the annex to this Work Programme. These Calls are open to entities or consortia of entities fulfilling the conditions as defined in Article 9 of the EuroHPC Regulation. Each call text will set out the eligibility criteria. **The calls shall be continuously open until 31st December 2025, with pre-defined cut-off dates that will trigger the evaluation of the applications submitted up to each respective cut-off date or until the depletion of available funds.**

The table below sets out the indicative timetable:

Selection of HE milestones	Date and time or indicative period
Call for Expression of Interest Publication	
Publication of Call for Expressions of Interest	**09 September 2024**
Submission of applications	
Call Deadline / Cut-off dates	**04 November 2024 – 17:00** **01 February 2025 – 17:00**

	02 May 2025 – 17:00 **(Luxembourg times)** **and subsequently every 3 months with last cut-off date being the 31st of December 2025**

Track 1: AI Factories

In line with Article 9(5a) of the Regulation, an existing hosting entity may apply to become an AI factory, following a call for expression of interest, and shall be selected by the Governing Board provided that **the hosting entity can demonstrate that its EuroHPC supercomputer has enough computing resources for training large scale, general-purpose AI models and emerging AI applications** (referred to hereinafter as an "*AI-ready EuroHPC supercomputer"*).

The aim of AI factories is to provide the European startups as well as the industrial and the scientific community at large with enhanced access to AI optimised computing capabilities for the large-scale training and development of general-purpose AI models, and for the development, validation and running of emerging AI applications. In this context it becomes essential that AI Factories are established swiftly.

One of the targets of EuroHPC JU is also promoting the further development of European technologies and thus contributing to developing a competitive European technology supply industry. As part of this objective, **interested hosting entities may also include in their application an optional system/partition targeting the development of an advanced experimental AI-optimised supercomputing platform**. The goal of such a platform shall be to develop an exploratory supercomputing infrastructure for the development, integration, testing, and co-design of a wide range of European technologies suitable to be part of their AI-ready EuroHPC supercomputer.

The hosting entity of an AI-ready EuroHPC supercomputer shall create a one-stop shop for the users, including startups, small and medium-sized enterprises and scientific users, to facilitate access to its support services, the so called "AI Factory". The Union's contribution shall cover up to 50 % of the operational costs of the AI Factories.

The present Call for Expressions of Interest is launched for the selection of an entity hosting an AI-ready EuroHPC supercomputer for establishing an AI Factory, on the basis and in accordance with the Regulation, taking into account the EU Financial Regulation[6] and where relevant on the basis of Financial Rules of the EuroHPC JU[7]. The present Call

[6] 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, (EU) No 1309/2013, (EU) No 1316/2013, (EU) No 223/2014, (EU) No 283/2014, and Decision No 541/2014/EU and repealing Regulation (EU, Euratom) No 966/2012, OJ L 193, 30.7.2018, p. 1 (hereinafter referred to as 'FR').(https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32018R1046).

[7] Decision of the Governing Board of the EuroHPC JU No 3/2020 Approving the Financial Rules of the EuroHPC Joint Undertaking readopted by Decision of the Governing Board of the EuroHPC JU No 17/2021 approving the re-adoption of Governing Board Decisions adopted under the framework of Regulation (EU) 2018/1488 and its updated Rules of Procedure in the view of Regulation (EU) 2021/1173.

for Expressions of Interest includes also an optional part on the development and operation of an Advanced Experimental AI-optimised Supercomputing Platform.

The present Call for Expressions of Interest is open to entities or consortia of entities fulfilling the conditions as defined in Article 9 of the EuroHPC Regulation. Section 6 below presents the eligibility criteria. **The call shall be continuously open until 31st December 2025, with pre-defined cut-off dates that will trigger the evaluation of the applications submitted up to each respective cut-off date or until the depletion of available funds.**

Annex 1 provides the structure and the contents to be provided by an application to be submitted under the present Call for Expressions of Interest.

Objectives

The overall objective of this call is to select existing hosting entities of AI-ready EuroHPC supercomputers for acquiring Advanced Experimental AI-optimised Supercomputing Platforms (optional), as well as for establishing an associated AI Factory which will be undertaken by the EuroHPC JU.

The specific objective of this call is as follows:

The selection of an existing hosting entity of an AI-ready EuroHPC supercomputer by the EuroHPC JU that will establish an associated "AI Factory": The EuroHPC JU will amend the existing hosting agreement between the EuroHPC JU and the hosting entity that will permit to establish a new stable and structured partnership between the EuroHPC JU and the hosting entity for:

- the development and operation of an Advanced Experimental AI-optimised Supercomputing Platform – this part of the call is optional,
- and the establishment and operation of the associated "AI Factory".

By submitting the application, applicant hosting entities provide their prior acceptance of the terms and conditions set out in the model hosting agreement. **Such model hosting agreement will be made available in due time, before the first call cut-off date.**

The amended hosting agreement will be approved by the Governing Board before signature.

The EuroHPC JU will evaluate, with the help of external experts, the received applications to the call for expression of interest and will draw up a ranking list of candidate hosting entities (or their hosting consortia) for acquiring an Advanced Experimental AI-optimised Supercomputing Platform and for setting up an AI Factory around the existing AI-ready EuroHPC supercomputer. From this ranking list, the EuroHPC JU, by decision of its Governing Board, will select the hosting entities. Inclusion in the list does not in and as of itself entail an obligation on the part of the EuroHPC JU to conclude the hosting agreement or any other contract with the selected hosting entity.

Following this selection:

- **The existing hosting agreement between the EuroHPC JU and the selected hosting entity or hosting consortium will be amended**, laying down the terms and conditions for establishing and operating an associated "AI Factory" around the

existing AI-ready EuroHPC supercomputer on behalf of the EuroHPC JU, including a service level agreement (Article 10(2)(c) of the Regulation). The time limit for signing the amended hosting agreement is 1 month after the Governing Board decision to accept the proposal for funding of the AI Factory.

- **A contractual arrangement between the EuroHPC JU and the selected Hosting Entity shall be signed to cover the funding of the "Advanced Experimental AI-optimised Supercomputing Platform" eligible costs** (specifying among others and if applicable any pre-financing of the hosting entity by the EuroHPC JU), which will be covered up to 50 % by the Union contribution. This third contractual arrangement will be awarded only if the selection concerns also the optional part of the application on "Advanced Experimental AI-optimised Supercomputing Platform.
- **A second contractual arrangement between the EuroHPC JU and the selected Hosting Entity shall be signed to cover the funding of the "AI Factory" eligible costs** (specifying among others and if applicable any pre-financing of the hosting entity by the EuroHPC JU), which will be covered up to 50 % by the Union contribution.

Budget available

The Union financial contribution to the EuroHPC JU shall cover up to 50 % of the development and operation costs of an Advanced Experimental AI-optimised Supercomputing Platform, and up to 50% of the costs associated with the setting up and operation of the "AI Factories". The remaining total cost related to the Advanced Experimental AI-optimised Supercomputing Platform and to the "AI Factories" shall be covered by the Participating State where the hosting entity is established or by the Participating States in the hosting consortium[8].

The Union's total financial contribution to the EuroHPC JU for the setting up and operation of the 'AI Factories' and for the **development and deployment** of **advanced experimental AI-optimised supercomputing platform** is estimated at a maximum of **EUR 180 million**[9] depending on budget availability (Horizon Europe funds).

The maximum EU contribution for the establishment and running per 'AI Factory' is set at **EUR 15 million** for a maximum period of 3 years.

Grants will be established to cover the development and operating costs of an advanced experimental AI-optimised supercomputing platform, and the setting up and operation of the 'AI Factory'. The reimbursement from the EuroHPC JU will be calculated on the basis of the declared costs up to the maximum total contribution of the EuroHPC JU or up to a ceiling of 50 % of the declared eligible costs, whichever is lower.

The costs related to the construction of the hosting site per se (i.e., costs related to the potential extension of the building infrastructure that will host the advanced experimental AI-optimised supercomputing platform, etc.) shall not be covered by the EuroHPC JU.

[8] 'hosting consortium' means a group of Participating States or a consortium of private partners that have agreed to contribute to the acquisition and operation of a EuroHPC supercomputer, including any organisations representing these Participating States.

[9] A total budget of up to EUR 120 million is foreseen for the setting up and operation of the 'AI Factories' and a total budget of up to EUR 60 million is foreseen for the development and deployment of advanced experimental AI-optimised supercomputing platform. However, a different budget combination may be applied according to the received submissions, in particular increasing the share dedicated to the AI Factories.

However, the costs of the preparation and adaptation of the hosting site incurred by the hosting entity that can be directly accounted to the installation of the advanced experimental AI-optimised supercomputing platform, may be considered as part of the Total Cost of Ownership (TCO) and may thus be considered as eligible costs that can be covered by the EuroHPC JU.

This action is an EU Synergy call. Grants and procurements can be linked with another grant funded from any other EU funding programme. The grants under both calls will be managed as linked actions.

Track 2: AI-optimised supercomputers or existing hosting entities to upgrade existing EuroHPC supercomputers with AI capabilities

Two different possibilities are enabled to establish an AI factory: one that is to develop it around a newly acquired AI-optimised supercomputer (hereinafter "new AI EuroHPC supercomputer") or to develop it around an upgrade of an existing EuroHPC supercomputer with AI capabilities (hereinafter "upgraded AI EuroHPC supercomputer").

The acquisition of new AI EuroHPC supercomputers is based on Article 12a of the Regulation, whereby **the EuroHPC JU shall acquire them and shall own them**. An AI-optimised supercomputer means a supercomputer that is primarily designed for training large scale, general-purpose Artificial Intelligence models and emerging artificial intelligence applications. In accordance with Article 12a(2) of the Regulation, the Union's contribution should cover up to 50 % of the acquisition costs plus up to 50 % of the operating costs of these AI-optimised supercomputers. The EuroHPC JU will be the owner of the AI optimised supercomputers it has acquired.

The acquisition of an upgraded AI EuroHPC supercomputers is based on Articles 4(1)(h) and 15(1) of the Regulation. According to Article 15(4) of the Regulation, the EuroHPC JU shall acquire, jointly with the contracting authorities of the Participating State where the selected hosting entity is established or with the contracting authorities of the Participating States in the selected hosting consortium, the upgrade of the supercomputer and shall own it under the same conditions of ownership of the original EuroHPC supercomputer. In accordance with Article 15(5) of the Regulation, the percentage of the Union's financial contribution for the acquisition costs of the upgrade shall be the same as the percentage of the Union's financial contribution for the original EuroHPC supercomputer, depreciated over the expected remaining lifetime of the original supercomputer. For the petascale supercomputers acquired during the time of application of Regulation (EU) 2018/1488 the Union financial contribution for the upgrade shall cover up to 35 % of the additional operating costs.

Pursuant to Article 12(a) of the Regulation, the EuroHPC JU shall own the new AI EuroHPC supercomputers for a duration of at least five years. Pursuant to Article 15 of the Regulation, the EuroHPC JU shall own the upgraded AI EuroHPC supercomputer under the same conditions of ownership of the original EuroHPC supercomputer.

The aim of AI factories is to provide the European startups as well as the industrial and the scientific community at large with enhanced access to AI optimised computing capabilities for the large-scale training and development of general-purpose AI models, and for the development, validation and running of emerging AI applications. In this context it becomes essential that AI Factories are established swiftly, therefore Hosting Entities or Hosting Consortia must act

swiftly and avoid delays in acquiring and deploying the relevant new and/or upgraded supercomputers and setting up AI Factories.

One of the targets of EuroHPC JU is also promoting the further development of European technologies and thus contributing to developing a competitive European technology supply industry. As part of this objective, **interested hosting entities may also include in their application an optional system/partition targeting the development of an advanced experimental AI-optimised supercomputing platform**. The goal of such a platform shall be to develop an exploratory supercomputing infrastructure for the development, integration, testing, and co-design of a wide range of European technologies suitable to be part of a newly acquired or upgraded EuroHPC supercomputer.

For the newly acquired or upgraded AI EuroHPC supercomputer, **the hosting entity shall create a one-stop shop for the users, including startups, small and medium-sized enterprises and scientific users, to facilitate access to its support services, the so called "AI Factory".** The Union's contribution shall cover up to 50 % of the operational costs of the AI Factories.

Pursuant to Article 9(3) of the Regulation, the EuroHPC JU shall entrust to a hosting entity the operation of each individual new or upgraded AI EuroHPC supercomputer it owns in accordance with Articles 10 and 15 of the Regulation. The hosting entity shall be selected by the Governing Board of the EuroHPC JU (hereinafter referred to as 'Governing Board') following a Call for Expression of Interest evaluated by independent experts.

The present Call for Expression of Interest is launched for the selection of hosting entities of new AI EuroHPC supercomputers or for upgraded AI EuroHPC supercomputers, and the establishment of associated AI Factories the EuroHPC JU will acquire and operate as mandated, on the basis and in accordance with the Regulation, taking into account the EU Financial Regulation[10] where relevant on the basis of the Financial Rules of the EuroHPC JU[11]. The present Call for Expression of Interest includes also an optional part on the development and operation of an Advanced Experimental AI-optimised Supercomputing Platform.

The present Call for Expressions of Interest is open to entities or consortia of entities fulfilling the conditions as defined in Article 9 of the EuroHPC Regulation. Section 6 below presents the eligibility criteria. **The call shall be continuously open until 31st December 2025, with pre-defined cut-off dates that will trigger the evaluation of the applications submitted up to each respective cut-off date or until the depletion of available funds.**

Annex 1 provides the structure and the contents to be provided by an application to be submitted under the present Call for Expressions of Interest.

10 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, (EU) No 1309/2013, (EU) No 1316/2013, (EU) No 223/2014, (EU) No 283/2014, and Decision No 541/2014/EU and repealing Regulation (EU, Euratom) No 966/2012, OJ L 193, 30.7.2018, p. 1 (hereinafter referred to as 'FR').(https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32018R1046).

11 Decision of the Governing Board of the EuroHPC JU No 3/2020 Approving the Financial Rules of the EuroHPC Joint Undertaking readopted by Decision of the Governing Board of the EuroHPC JU No 17/2021 approving the re-adoption of Governing Board Decisions adopted under the framework of Regulation (EU) 2018/1488 and its updated Rules of Procedure in the view of Regulation (EU) 2021/1173.

Objectives

The overall objective of this call is to select hosting entities for AI-optimised supercomputers or existing hosting entities to upgrade existing EuroHPC supercomputers with AI capabilities, to acquire Advanced Experimental AI-optimised Supercomputing Platforms (optional), **as well as to establish an associated AI Factory which will be undertaken by the EuroHPC JU.**

The specific objective of this call is as follows:

Selection of a new hosting entity and conclusion of a new hosting agreement in the case where an applicant targets the acquisition of a new AI EuroHPC supercomputer or selection of an existing hosting entity for an upgraded AI EuroHPC supercomputer in the case the applicants intend to upgrade an existing EuroHPC supercomputer with AI capabilities. The EuroHPC JU will select such hosting entities as well as the associated "AI Factories" and will conclude a hosting agreement, which will permit to establish a stable and structured partnership between the EuroHPC JU and the hosting entity for:

- the acquisition, integration and operation of the new or the upgraded AI EuroHPC supercomputer,
- the development and operation of an Advanced Experimental AI-optimised Supercomputing Platform – this part of the call is optional,
- and the establishment and operation of the associated "AI Factory".

By submitting the application, applicant hosting entities provide their prior acceptance of the terms and conditions set out in the model hosting agreement. **Such model hosting agreement will be made available in due time before the first cut-off date.**

The hosting agreement will be approved by the Governing Board before signature.

The EuroHPC JU will evaluate, with the help of external experts, the received applications to the call for expression of interest and will draw up a ranking list of candidate hosting entities (or their hosting consortia) for new AI EuroHPC supercomputers or for upgraded AI EuroHPC supercomputers, for Advanced Experimental AI-optimised Supercomputing Platforms (optional), and for setting up an AI Factory around the new or the upgraded AI supercomputers. From this ranking list, the EuroHPC JU, by decision of its Governing Board, will select the hosting entities. Inclusion in the list does not in and as of itself entail an obligation on the part of the EuroHPC JU to conclude the hosting agreement or any other contract with the selected hosting entity.

Following this selection, the following procedures will apply:

- In the case where an applicant targets the acquisition of a new AI EuroHPC supercomputer: a **hosting agreement between the EuroHPC JU and the selected hosting entity or hosting consortium will be signed**, laying down the terms and conditions for hosting and operating the new AI EuroHPC supercomputer and establishing and operating an associated "AI Factory" around this supercomputer on behalf of the EuroHPC JU, including a service level agreement (Article 10(2)(c) of the Regulation). The time limit for signing the hosting agreement is 1 month after the Governing Board decision to accept the proposal for funding of the AI Factory.

  For the case where an applicant intends to upgrade their existing EuroHPC Supercomputer with AI capabilities, the existing hosting agreement between the EuroHPC JU and the selected hosting entity (or hosting consortium) will be amended, to account for the upgrading, hosting and operation of the upgraded AI EuroHPC supercomputer, and for establishing and operating an associated "AI

Factory" around this upgraded supercomputer on behalf of the EuroHPC JU, including a service level agreement (Article 10(2)(c) of the Regulation). The time limit for signing the amended hosting agreement is 1 month after the Governing Board decision to accept the proposal for funding of the AI Factory.

The new or amended hosting agreement shall specify the timing of the transfer to the EuroHPC JU of the financial contribution of the selected hosting entity covering the acquisition costs of the upgrade of the EuroHPC supercomputer with AI capabilities. The amended hosting agreement is part of the outcome of the Call for Expression of Interest. **It is the first contractual arrangement to be signed.**

The publication of the Call for Tender for the acquisition or upgrade of an AI optimised supercomputer should be published no later than 3 months after the notification of the selection decision to the successful hosting entity or hosting consortium by the EuroHPC GB.

- **A second contractual arrangement between the EuroHPC JU and the Hosting Entity shall be signed to cover the funding of the new or the upgraded AI EuroHPC supercomputer's operating costs** (specifying among others and if applicable any pre-financing of the hosting entity by the EuroHPC JU), which will be covered up to 50 % by the Union contribution. The operating costs must follow a well-defined, jointly agreed (with the hosting entity) and auditable model, which will be part of the contractual arrangement. There will be no transfer of funds from the hosting entity to the EuroHPC JU for the operating costs: the EuroHPC JU will cover its share of the eligible costs, while the hosting entity (or hosting consortium) will cover the remainder of the eligible costs.
- **A third contractual arrangement between the EuroHPC JU and the Hosting Entity shall be signed to cover the funding of the "Advanced Experimental AI-optimised Supercomputing Platform" eligible costs** (specifying among others and if applicable any pre-financing of the hosting entity by the EuroHPC JU), which will be covered up to 50 % by the Union contribution. This third contractual arrangement will be awarded only if the selection concerns also the optional part of the application on "Advanced Experimental AI-optimised Supercomputing Platform.
- **A fourth contractual arrangement between the EuroHPC JU and the Hosting Entity shall be signed to cover the funding of the "AI Factory" eligible costs** (specifying among others and if applicable any pre-financing of the hosting entity by the EuroHPC JU), which will be covered up to 50 % by the Union contribution.
- In close cooperation with and supported by the selected hosting entity, **the EuroHPC JU shall launch the procedures for the acquisition of the new or the upgraded AI EuroHPC supercomputer**. These procedures will, amongst other, aim at ensuring, where possible a diversity in the technologies and architectures of the different EuroHPC supercomputers. The EuroHPC JU will be responsible for implementing the acquisition process, however, the hosting entity will be associated to the process, e.g. for verification of the technical specifications to be met by the suppliers. The procurement procedure will be managed by EuroHPC JU as owner of the system. However, in accordance with the relevant provisions of the EU Financial Regulation, the EuroHPC JU may delegate the procurement to a selected hosting entity. In such a case, the EuroHPC JU shall have a supervisory role in the implementation of the procurement, i.e. be involved in

drafting the tender specifications, the drafting of the evaluation criteria, organize the evaluation committee, and participate in the award decision. Where the EuroHPC JU delegates the procurement, it shall conclude a Joint Procurement Agreement with the hosting entity implementing the procurement.

Budget available

The Union financial contribution to the EuroHPC JU shall cover up to 50 % of the acquisition costs plus up to 50 % of the operating costs of the new AI EuroHPC supercomputer, up to 50 % of the development and operation costs of an Advanced Experimental AI-optimised Supercomputing Platform, and up to 50% of the costs associated with the setting up and operation of the "AI Factories". The remaining total cost of ownership of the AI-optimised supercomputer and those cost related to the Advanced Experimental AI-optimised Supercomputing Platform and to the "AI Factories" shall be covered by the Participating State where the hosting entity is established or by the Participating States in the hosting consortium[12].

The percentage of the Union's financial contribution for the acquisition costs of an upgraded AI EuroHPC supercomputer shall be the same as the percentage of the Union's financial contribution for the original EuroHPC supercomputer, depreciated over the expected remaining lifetime of the original supercomputer. The percentage of the Union's financial contribution for the additional operational costs of the upgrade shall be the same as the percentage of the Union's financial contribution for the original EuroHPC supercomputer. For the petascale supercomputers acquired during the time of application of Regulation (EU) 2018/1488 the Union financial contribution for the upgrade shall also cover up to 35 % of the additional operating costs.

The Union financial contribution to the EuroHPC JU shall cover up to 50 % of the development and operation costs of an Advanced Experimental AI-optimised Supercomputing Platform, and up to 50% of the costs associated with the setting up and operation of the "AI Factories".

The remaining total cost of ownership of the upgraded AI EuroHPC supercomputer and those costs related to the Advanced Experimental AI-optimised Supercomputing Platform and to the "AI Factories" shall be covered by the Participating State where the hosting entity is established or by the Participating States in the hosting consortium[13].

The Union's financial contribution both for to the EuroHPC JU for the acquisition of new or upgraded AI EuroHPC supercomputers is estimated at **EUR 400 million**[14] depending on budget availability (DEP funds).

The maximum unitary EU contribution per a new or per an upgraded AI EuroHPC supercomputer is set at **EUR 200 million**. This amount may be increased in due time as

[12] 'hosting consortium' means a group of Participating States or a consortium of private partners that have agreed to contribute to the acquisition and operation of a EuroHPC supercomputer, including any organisations representing these Participating States.

[13] 'hosting consortium' means a group of Participating States or a consortium of private partners that have agreed to contribute to the acquisition and operation of a EuroHPC supercomputer, including any organisations representing these Participating States.

[14] The Union's financial contribution of EUR 400 million is based on the availability of funds in the EuroHPC JU Work Programme 2024. The overall Union's financial contribution to the EuroHPC JU for the acquisition of new or upgraded AI-EuroHPC supercomputers is estimated at EUR 800 million depending on the final budget availability (DEP funds).

regards the number of already submitted and approved applications, and remaining Union's funds.

The Union's total financial contribution to the EuroHPC JU for the setting up and operation of the 'AI Factories' and for the **development and deployment** of **advanced experimental AI-optimised supercomputing platform** is estimated at a maximum of **EUR 180 million**[15] depending on budget availability (Horizon Europe funds).

The maximum EU contribution for the establishment and running per 'AI Factories' is set at **EUR 15 million** for a maximum period of 3 years.

For newly acquired AI EuroHPC supercomputers, grants will be established to cover the operating costs of the supercomputer[16] and for existing to be upgraded EuroHPC supercomputers, existing grants will be amended to cover **the additional operating costs of the upgraded AI EuroHPC supercomputers.** New grants will be established in both cases for the development and operating costs of an advanced experimental AI-optimised supercomputing platform (optional), and the setting up and operation of the 'AI Factories'. The reimbursement from the EuroHPC JU will be calculated on the basis of the declared costs up to the maximum total contribution of the EuroHPC JU or up to a ceiling of 50 % of the declared eligible costs, whichever is lower.

The costs related to the construction of the hosting site per se (i.e., costs related to the building infrastructure that will host the new or the upgraded AI EuroHPC supercomputer shall not be covered by the EuroHPC JU. However, the costs of the preparation and adaptation of the hosting site incurred by the hosting entity that can be directly accounted to the installation of the new or the upgraded AI EuroHPC supercomputer, and/or the advanced experimental AI-optimised supercomputing platform, may be considered as part of the Total Cost of Ownership (TCO) and may thus be considered as eligible costs that can be covered by the EuroHPC JU.

This action is an EU Synergy call. Grants and procurements can be linked with another grant funded from any other EU funding programme. The grants under both calls will be managed as linked actions.

The full call texts for the two branches with annexes can be found annexed to this Work Programme

INFRASTRUCTURE PILLAR

Ongoing activities:

The JU's Infrastructure strategy will continue to be implemented in 2024.

- The first exascale supercomputer to be located in Jülich Supercomputing Centre in Germany will be operational in 2024 in time for the TOP 500 ranking to be announced in late 2024.

[15] A total budget of up to EUR 120 million is foreseen for the setting up and operation of the 'AI Factories' and a total budget of up to EUR 60 million is foreseen for the development and deployment of advanced experimental AI-optimised supercomputing platform. However, a different budget combination may be applied according to the received submissions, in particular increasing the share dedicated to the AI Factories.

[16] The EuroHPC JU Model Grant Agreement can be found on the EuroHPC JU website: https://eurohpc-ju.europa.eu/

- The JU will continue to provide technical guidance and administrative support to the four designated hosting entities (Greece, Ireland, Hungary and Poland) to procure a midrange supercomputer each.
- The JU will provide technical guidance and administrative support on the procurements of the two upgraded systems (Lisa/Leonardo and Discoverer +)
- In 2024, the JU will finalise the procurements of the six quantum computers.
- The JU will launch a procurement for a second exascale supercomputer, to be located in France, based on the selection of a Hosting Entity, presented by the Jule Verne Consortium and subsequently agreed by the Governing Board in 2023.
- In 2024, the JU will evaluate proposals to select hosting entities for the third set of mid-range supercomputers based on calls for expression of interest launched in 2023.
- The JU will evaluate proposals to select hosting entities for the second call for expression of interest of quantum computers launched in 2023 and will procure them in 2024.
- In order to develop a fully operational access capacity for users of EuroHPC Systems, the JU will update its access procedures in line with the amended access policy adopted in 2023.

Calls 2024

Procurement for Peer Review Platform

Objective:

To date, EuroHPC JU has procured eight supercomputers hosted and operated by respective Hosting Entities:

- MeluXina, hosted by LuxProvide in Bissen, Luxembourg
- Vega, hosted by IZUM in Maribor, Slovenia
- Karolina, hosted by IT4Innovations in Ostrava, Czech Republic
- Discoverer, hosted by the consortium Petascale Supercomputer Bulgaria in Sofia, Bulgaria
- Deucalion, hosted by MACC in Minho, Portugal
- LUMI, hosted by CSC in Kajaani, Finland
- Leonardo, hosted by CINECA in Bologna, Italy and
- MareNostrum 5 (MN5), hosted by BSC in Barcelona, Spain

EuroHPC JU implements an international peer-review process for the distribution of the Union's share on the access time to the above-mentioned supercomputers (hereinafter, "Peer-Review Process"). This is a process that ensures open, fair, and unbiased access to EuroHPC Supercomputers. This Peer-Review Process is also applicable to future EuroHPC supercomputers that will become operational in the coming years.

EuroHPC JU has relied until now on the peer-review platform that has been developed and maintained by the Partnership for Advanced Computing in Europe (hereinafter, 'PRACE'). Currently this platform hosts all data regarding EuroHPC's Access calls during the past two years. As this platform has been developed to support the specific peer-review process implemented by PRACE, EuroHPC wishes to procure and evolve its own private platform, tailor-made for the requirements, the specific processes, and peer-review workflows implemented for the Joint Undertaking.

In particular, within this procurement will:

- Procure the license of an existing, operational peer-review platform software.
- Deploy an instance of the platform to be operationally supported by the contractor for the period of the procurement contract.
- Migrate data from the existing PRACE portal to the new instance, ensuring service continuation and undisrupted execution of the peer-review processes.
- Evolve the platform code to match its functionality with the requirements of the EuroHPC processes especially in regards to new requirements stemming from HPC applications domains like Generative AI, Machine Learning etc.
- Procure the necessary services for hosting and operational support of the service.
- Ensure support and maintenance services based on specific SLAs that will ensure quick resolution of operational issues, bug fixes and implementation of new features, following the evolution of the EuroHPC peer-review processes as defined in the current and future versions of the Access Policy.

Nature of the Procedure:

The subject of this call for tenders is "Development, Hosting and Support of the EuroHPC JU Access Calls peer-review platform".

- Legal basis:

This call for tenders is governed by the provisions of the EU Financial Regulation.

EuroHPC JU will award the contract resulting from this call for tenders through an open procedure pursuant to Article 164(1) (a) of the EU Financial Regulation. Period of execution of the tasks:

The contract will last a period of 36 months with the possibility of being renewed twice for an additional period of 12 months per renewable. The maximum contract duration including the renewables shall be no longer than 60 months.

- Price and Terms of Payment

The maximum price payable under this contract is set at EUR 1.8 Million.

The first contract with a duration of three years will have a maximum price of EUR 1.2 Million to be paid as follows:

- EUR 600,000 for the first year of the contract. Payment covers software licence, system deployment, data migration, operational costs, support and evolution of the software for this year.
- EUR 300,000 for the second year of the contract, covering operational costs, support and evolution of the software for this year.
- EUR 300,000 for the third year of the contract, covering operational costs, support and evolution of the software for this year.
- In case EuroHPC wishes to renew the contract the price is payable as follows:
- EUR 300,000 for each year of contract renewal, up to two years, covering operational costs, support and evolution of the software

SPECIFIC CONDITIONS FOR THE PROCUREMENT OF THE "DEVELOPMENT, HOSTING AND SUPPORT OF THE EUROHPC JU ACCESS CALLS PEER-REVIEW PLATFORM" (PROCUREMENT 2024)	
Expected EuroHPC JU contribution per project	The EuroHPC JU estimates that an EU contribution of EUR 1.8 Million would allow for this procurement

Indicative budget	The total indicative budget for the EU contributions to the topic is up to EUR 1.8 Million from the Digital Europe Programme
Type of Action	Procurement
Eligibility conditions	The eligibility conditions are those established in EU Financial Regulation and Regulation 2021/1173

~~***3rd Deployment of European quantum computers***~~

~~This is a follow-up to the EuroHPC Work Programme 2022 and 2023 actions on the procurement and operation of the quantum computers for integration into HPC supercomputers.~~

~~The overarching goal is to establish in Europe a world-leading hyper-connected quantum computing service and data infrastructure ecosystem, and to enable the research community and European industry produce world-class outputs and to accelerate the broad exploitation and uptake of European research and technology across the Union.~~

~~The primary objective of this action is to make European quantum computers integrated with EuroHPC Participating States supercomputers, in a hybrid configuration, available to users in order to address a growing demand from European industry and academia for applications with industrial, scientific and societal relevance for Europe. The activities should leverage European technology, in particular quantum computing technologies developed within the Quantum Flagship, other European initiatives and national Quantum research programmes of the EuroHPC Participating States. The action should foster the emergence of real use case applications, and mature large-scale quantum computing in Europe. This will contribute to the development of an ecosystem of quantum programming facilities, application libraries and skilled workforce.~~

~~The action will cover the acquisition of the quantum computers, their integration with the HPC supercomputing infrastructure, and their operations. The aim is to support multiple proposals with diverse technologies to give European HPC users access to as many different quantum technologies as possible. The focus should be on technology approaches that are not addressed by the successful hosting entities of the EuroHPC 2022 and 2023 Calls for Expression of interest.~~

~~The action should look for synergies and cooperation with the relevant projects at European or national level developing or testing the different layers of the software stack, quantum applications, or use cases, notably the projects resulting from previous EuroHPC Quantum Computer procurements and calls (EUROHPC-2022-CEI-QC-01, EUROHPC-2023-CEI-QC-01 and H2020-JTI-EUROHPC-2020-01) and the Quantum Flagship call HORIZON-CL4-2021-DIGITAL-EMERGING-02-10 Strengthening the quantum software ecosystem for quantum computing platforms, HORIZON-CL4-2021-DIGITAL-EMERGING-02-15: Framework Partnership Agreement for developing the first large-scale quantum computers (FPA)~~

~~Grants will be established, on the basis of Article 195 (f) of the Financial Regulation (EU, Euratom) 2018/1046, to cover costs for the integration of the quantum computer with the hosting entity's supercomputer based on solutions already developed in previous and~~

ongoing calls. The reimbursement from the EuroHPC JU will be calculated on the basis of the declared costs up to the maximum total contribution of the EuroHPC JU or up to a ceiling of 50 % of the declared eligible costs, whichever is lower.

EUROHPC-2024-CEI-QC-01: Call for expression of interest for the hosting and operation of European quantum computers integrated in EuroHPC supercomputers

The EuroHPC Joint Undertaking (JU) will launch a call for expression of interest to identify hosting entities for the procurement and operation of quantum computers, their integration with HPC supercomputers and the development of a quantum software stack. Applicants could be either single European entities or consortia of European entities. The EuroHPC JU will initiate and manage the Calls for Expression of Interest for hosting quantum computers and evaluate the applications received, with the support of independent external experts. The hosting entities will be selected by the Governing Board of the Joint Undertaking following the call for expression of interest.

Following the selection of the hosting entities the EuroHPC JU will initiate the procurement of the quantum computers. The specific conditions of the procurement will be defined in a call for tender. For security related reasons and as the action is directly related to the Union's strategic autonomy, the participation of suppliers in the acquisition of the quantum computers will be subject to conditions in accordance with Article 12(6) of Regulation (EU) 2021/694, and in accordance with Article 18(4) of that Regulation.

The selected hosting entities will sign a hosting agreement with the EuroHPC JU, in accordance with Article 10 of the EuroHPC Regulation, and sign with the EuroHPC JU a grant to cover the Union’s share of the operational costs. Pursuant to Article 10 of the Regulation 2021/1173, the EuroHPC JU will be the owner of the quantum computers.

The quantum computers should be hosted in national Supercomputer Centres already established in Member States that are Participating States of the Joint Undertaking. The selection will aim at ensuring a diversity in the technologies and architectures of the different quantum computers to be acquired. Preference shall be given to technology approaches not already part of or foreseen for the EuroHPC QC infrastructure.

The applications submitted to the call for expression of interest should enable the development of real use cases supporting the adoption of applications with scientific, industrial and societal relevance for Europe. Although identified applications do not need to provide a definite quantum advantage, they must allow the development of libraries for quantum computers/simulators in a HPC environment based on solutions already developed in previous and ongoing calls.

Furthermore, the applications submitted to the call for expression of interest should support the implementation and testing of quantum software stacks, libraries etc. that facilitate the link from a high-level description of algorithms to a low-level implementation on the hardware, for solving concrete problems and applications expected to demonstrate quantum advantage.

The Quantum/HPC integration should, whenever possible, rely on existing solutions developed, for example, by other EuroHPC initiatives or national projects.

The Union financial contribution to the EuroHPC JU shall cover up to 50 % of the acquisition costs, up to 50 % of the operating costs of the quantum computer, and up to 50% of the

integration costs. The remaining total cost of ownership of the quantum computer (including VAT if applicable) shall be covered by the Participating State where the hosting entity is established or by the Participating States in the hosting consortium.

Grants will be established to cover the operating costs of the quantum computer. The reimbursement from the EuroHPC JU will be calculated on the basis of the declared costs up to the maximum total contribution of the EuroHPC JU or up to a ceiling of 50 % of the declared eligible costs, whichever is lower.

Grants will be established to cover costs for the integration of the quantum computer with the hosting entity's supercomputer based on solutions already developed in previous and ongoing EuroHPC or national initiatives. The reimbursement from the EuroHPC JU will be calculated on the basis of the declared costs up to the maximum total contribution of the EuroHPC JU or up to a ceiling of 50 % of the declared eligible costs, whichever is lower.

The costs related to the adaptation of the hosting site per se (e.g. costs related to the building infrastructure that will host the quantum computer) shall not be covered by the EuroHPC JU. However, the costs of the preparation of the hosting site incurred by the hosting entity that can be directly accounted to the installation of the quantum computer may be considered as part of the Total Cost of Ownership (TCO) and may thus be considered as eligible costs that can be covered by the EuroHPC JU.

The quantum computers can range from pilots and experimental systems to prototypes and operational systems. There is no restriction on the type of quantum computer to be included in the proposal. However, proposals should clearly identify the technical features of the targeted quantum computer including the quantum processing unit (qubits, entanglement capability, control etc.) and the integration (type interface, interconnection, software stack etc.) between the quantum computer/simulator and the rest of the HPC infrastructure based on solutions already developed in previous and ongoing calls.

The quantum computers should have at least 10 qubits, with an average of 2-qubit gate error rate of less than 1%, or equivalently with a 2-qubit gate fidelity at least above 99%, and allow for a maximum circuit depth and number of entangled qubits by the installation date. The quantum computers should integrate EU technologies and uptake research outputs emanating from Quantum Flagship projects or from national research programmes of the EuroHPC Participating States. Applications to the call for expression of interest should clearly identify the technical features of the targeted quantum computer, including the quantum processing unit (qubits / individual quantum units, entanglement capability, control etc.) and the integration (type interface, interconnection, software stack etc.) between the quantum computer and the rest of the EuroHPC infrastructure.

Therefore, the application to the call for expression of interest should include the request for a grant to cover the integration of the quantum computer with the supercomputer of the hosting entity, including the necessary developments of quantum hardware and the software stack. The grant for the integration of the EuroHPC quantum computers awarded to hosting entities should achieve the objective of a standardised application programming interface for software libraries and applications which is independent of the quantum computing technology. This will require coordination and collaboration with previous selected proposals. Moreover, proposals should build on or seek collaboration with existing projects and develop synergies with other relevant European, national or regional initiatives, funding programmes and platforms.

The application should also explain how access to the quantum computer integrated in the HPC system of the hosting entity will be implemented in agreement with the EuroHPC JU Access Policy. This is of particular importance for applications from entities where the

ownership of the HPC system and the quantum computer will be different and the EuroHPC JU does not own HPC resources.

The selected hosting entities should ensure to the extent possible cooperation with complementary projects launched, notably in the area of the EuroHPC-2020-01-b: "Pilot on quantum simulator, EUROHPC-2022-CEI-QC-01 and EUROHPC-2023-CEI-QC-01. Successful applicants", should establish from the beginning of this cooperation appropriate IP exploitation agreements. They should also contribute to spreading excellence across Europe, notably through the involvement of participants from EuroHPC Participating States currently developing their HPC/quantum infrastructure and incorporating results emanating from the Quantum Flagship projects or national research programmes of the EuroHPC Participating States.

This action is an EU Synergy call. Grants and procurements can be linked with another grant funded from any other EU funding programme. The grants under both calls will be managed as linked actions.

Procurement and operation of the quantum computers for integration into HPC supercomputers

The EuroHPC JU will launch the procurement for the acquisition and operation of the quantum computers. The quantum computers will be hosted in the Hosting Entity selected in the Call for Expression of Interest EUROHPC-2024 - CEI-QC-01. The quantum computers should aim to incorporate to the maximum extent competitive European technology. The aim is to support multiple proposals with diversity in technology and applications, in order to give European HPC users access to as many different quantum technologies and applications as possible.

Pursuant to Article 12 of the EuroHPC JU Regulation, the EuroHPC JU will be the owner of the quantum computers. The Union's contribution from Digital Europe Programme (DEP) funds should cover up to 50% of the acquisition costs plus up to 50% of the operating costs of the quantum computer. The EuroHPC JU estimates that an EU contribution of up to EUR 10 Million and an equivalent EUR 10 Million MS contribution would allow for the acquisition, operation and integration of at least one quantum computer.

For security reasons and as the action is directly related to the Union's strategic autonomy, the participation of suppliers in the acquisition of the quantum computers should be conditioned in accordance with Article 12(6) of Regulation (EU) 2021/694, and in accordance with Article 18(4) of that Regulation. The quantum computers will be hosted in the hosting entities selected in the Call for Expression of Interest. The action should cover: (i) the acquisition of the quantum computers/simulators, (ii) their installation in the supercomputer environment of the hosting entity, (iii) the hardware and software integration with the HPC supercomputing infrastructure, (iv) the operation, maintenance and dismantling of the quantum computers.

Expected Outcome: Acquisition, installation, operation and maintenance of at least three quantum computers, and provision and management of access to these systems for a wide range of public and private users.

SPECIFIC CONDITIONS

~~Expected EuroHPC JU contribution per project~~	~~The EuroHPC JU estimates that an EU contribution of between EUR 8 – 10 Million matched by a MS contribution of EUR 8 – 10 Million per quantum computer would allow for the acquisition and operation of at least one quantum computer covering different qubit technologies. Applications must ensure the operation of the quantum computer for at least 4 years after successful acceptance.~~
~~Indicative budget~~	~~The total indicative EU budget for the topic is EUR 10 Million. The total contribution will be EUR 20 Million.~~
~~Type of Action~~	~~Call for expression of interest~~
~~Eligibility conditions~~	~~The eligibility conditions are those established in the EuroHPC JU Council Regulation (EU) 2021/1173. The JU will act as first user and acquire quantum computers or simulators that integrate technology primarily developed in the Union or Norway and Iceland. Article 12.6 of the Digital Europe Programme will apply, whereby, in order to achieve the expected outcomes, and safeguard the Union's strategic assets, interests, autonomy, and security, it is important to avoid a situation of technological dependency on a non-EU source, in a global context that requires the EU to take action to build on its strengths, and to carefully assess and address any strategic weaknesses, vulnerabilities and high-risk dependencies which put at risk the attainment of its ambitions. Therefore, participation is limited to legal entities established in Member States that are members of the EuroHPC Joint Undertaking or Participating States Norway and Iceland. Proposals including entities established in countries outside the scope specified in the call/topic/action will be ineligible.~~

CONNECTED AND FEDERATED SUPERCOMPUTERS PILLAR

Ongoing activities:

Procurement of connected HPC infrastructure and services

On HPC connectivity, the JU will ensure that the Connectivity study procured in 2022 will be delivered in 2024. The results will be presented to the Governing Board and on the basis of this, the Governing Board will determine the type of action and funding in order to launch the implementation initiative before the end of 2023. On the basis of the study, the JU will procure Connected HPC infrastructure and services in 2024. The EuroHPC JU estimates that an EU contribution of EUR 60 Million from the CEF-2 funds allocated in Work Programme 2021 would allow for the procurement of a Connected HPC infrastructure and services.

SPECIFIC CONDITIONS: CALL FOR TENDER FOR THE DEVELOPMENT AND IMPLEMENTATION OF A CONNECTED HPC INFRASTRUCTURE AND SERVICES ACROSS ALL THE EUROHPC JU SUPERCOMPUTERS (CFEI 2023; CALL IN 2024)

Expected EuroHPC JU contribution to the tender is 100%.	The EuroHPC JU estimates that an EU contribution of up to EUR 60 Million for the development of and implementation of a Connected HPC infrastructure and services across all the EuroHPC JU supercomputers.
Indicative budget	The total indicative budget for this initiative is EUR 60 Million
Type of Action Eligibility conditions	Procurement The eligibility conditions are those established in the EuroHPC JU Council Regulation (EU) 2021/1173 and the rules of the Connected Europe Facility Regulation (EU) 2021/1153. In order to achieve the expected outcomes, and safeguard the Union's strategic assets, interests, autonomy, or security, participation is limited, as stated in Article 11.4 of the Connected Europe Facility Regulation (EU) 2021/1153. Legal entities established in the Union but directly or indirectly controlled by third countries or nationals of third countries or by entities established in third countries, are not eligible to participate in all or some of the actions under the specific objectives set out in Article 3(2), point (c), for duly justified security reasons. In such cases, calls for proposals and calls for tenders shall be restricted to entities established, or deemed to be established, in Member States and directly or indirectly controlled by Member States or by nationals of Member States.

Procurement of Federating Supercomputers and services

In 2023, the JU launched a call for tender for the deployment and operation of a platform for federating resources (including high performance computing, quantum computing and data management resources) providing Union-wide, cloud-based secure services for a wide range of public and private users across Europe. This procurement was launched in 2023 and will be fully operational across all EuroHPC Hosting Entities by 2025.

TECHNOLOGY PILLAR

"HPC Technologies research and innovation must be state-of-the art and reinforce strategic sovereignty (as indicated in Council Regulation (2021/1173). Furthermore, they must guarantee early access to European technologies and lead in development of European IP. … The JU shall invest in HPC technologies, including General Purpose Processors, accelerators and networks/interconnects, that are developed through EuroHPC JU calls must pursue energy efficiency goals, be innovative, be able to perform and compete globally, be production ready and whenever feasible be ready to be deployed in industrial settings" MASP 2023

Ongoing Activities in 2024

EuroHPC JU is currently managing 20 grants which have been selected in call H2020-JTI-EuroHPC-2019-1 and focus mostly on technology. The portfolio includes, for example, the development of software for future European supercomputer architectures, a European high-speed interconnect and a RISC-V based processor. Most of these projects will end in early 2024. A review of the different results and activities that have been delivered will be undertaken in 2024, in order to determine progress to delivering the objectives as set out in Regulation 2021/1173 and planning for future work programmes.

The JU launched a ***FPA RISC-V call*** *in 2023.*

A Pre-Commercial Procurement (PCP) focused on the development of European technology and their integration in pilot systems that demonstrate a significantly reduced energy footprint for typical expected workloads on EuroHPC systems. The action addresses R&D towards a technology readiness level (TRL) which delivers tangible solutions ready for procurement on a larger scale and within a timeframe of 2 years by the end of the action. Central selection criterion will be the expected benefits of the developed technology after scale-up to at least the size of current mid-range supercomputers. The PCP will be followed by a Public Procurement of Innovative solutions (PPI) to procure a system using the best developed solutions.

A call was launched **on *Innovation Action in Low Latency and High Bandwidth Interconnects*** which will, efficiently exploit the increasing available computation capabilities, inter-node networking (interconnect between compute nodes) in exascale and post-exascale systems.

The JU launched the ***HPC Energy efficiency R&I Call*** to develop new technologies that will reduce the energy consumption of future EuroHPC supercomputers.

Calls 2024:

Specific Grant Agreement (SGA) for the 1st Phase of the Framework Partnership Agreement with the DARE consortium for developing a large-scale European initiative for High Performance Computing ecosystem based on RISC-V

HORIZON-EUROHPC-JU-2024-DARE-SGA-04

Scene Setter:

In line with its mission[17] and strategic programme[18], the EuroHPC JU addresses European microprocessor technologies for HPC. The EuroHPC JU has selected the DARE consortium in 2023 to establish a Framework Partnership Agreement (FPA) for developing a large-scale European initiative for a High-Performance Computing (HPC) ecosystem based on RISC-V (HORIZON-EUROHPC-JU-2022-TECH-03). This FPA represents a stable and structured long-term partnership with the DARE consortium for implementing a European strategic and ambitious R&I initiative focusing on the development of an innovative HPC hardware and software, processor and accelerator technology, and ecosystem based on the RISC-V open standard instruction set architecture. The development of European processors and accelerators should prepare the technology for its future integration in post-exascale supercomputers to be acquired at a later stage by the EuroHPC JU targeting systems incorporating European technologies.

The FPA ensures the implementation of the initiative through Specific Grant Agreements (SGAs) that will implement the different proposed technology roadmap activities. The DARE consortium is invited within the FPA to submit a Research and Innovation Action (RIA) for the 1st phase of research activities and roadmap defined in the FPA.

Expected Outcome:

- European capabilities in designing, developing, and producing IP related to high-end processors and accelerators based on RISC-V.
- A family of energy efficient high-end processors and accelerators for HPC based on RISC-V hardware and chiplet solutions, testbeds, and at least one prototype/pilot integrating these processors/accelerators.
- A vertically integrated software stack, including key elements such as programming models and runtimes (e.g. languages, compilers, programming environments, communication), libraries (e.g. mathematical, data analytics, AI frameworks), tools (e.g. debuggers, performance, system monitoring), operating system components (e.g. schedulers, workflows, software management, firmware, drivers, security), and other elements (e.g. for networking, software deployment, system-level composability and modularity of software, etc.).
- A small set of critical HPC applications ported and optimised for the new RISC-V based environment, based on a co-design approach.
- Interface specifications for the software and hardware stack, with clear definition of standardization and licensing schemes of the developed Intellectual Property (IP), with mechanism to guarantee that this IP remains in the EU.
- An agile product roadmap with a critical timeline, milestones and all the necessary activities that would be needed to guide the beneficiaries towards building and deploying post-exascale systems in Europe, using predominantly European technology.

Scope: The DARE consortium is invited to submit a Research and Innovation Action (RIA) proposal for the 1st phase of research activities and roadmap defined in the FPA.

[17] Council Regulation (EU) 2021/1173 of 13 July 2021 on establishing the European High Performance Computing Joint Undertaking and repealing Regulation (EU) 2018/1488, http://data.europa.eu/eli/reg/2021/1173/oj

[18] EuroHPC JU Decision No 8/2023 https://eurohpc-ju.europa.eu/system/files/2023-06/Decision%2008_2023_%20Amendment%20MASP%202021-2027_0.pdf

1. The proposal for the 1st phase of DARE will cover the design and development of European processors, accelerators and related technologies for extreme-scale, high-performance big-data, and emerging applications, in accordance with the research roadmap defined in the FPA. The proposal should leverage software/hardware co-design to achieve the next levels of performance and efficiency in RISC-V based HPC. The proposed work should target performance levels, supported by appropriate KPIs, competitive to non-EU solutions by the end of the DARE initiative.
2. The aim of this SGA is to design and deliver energy efficient high-end tape-outs of a general-purpose processor and of two accelerators, an Artificial Intelligence (AI) Accelerator and a Vectorial Accelerator, for HPC based on RISC-V silicon and chiplet solutions with advanced memory interfaces.
3. The proposed action should cover the design, testing and development of these three high-end processors and their integration in a pilot system in view of their roll-out, uptake and use in world-class competitive supercomputers.
4. The proposed action should also develop a functional RISC-V software stack, including key elements such as programming models, runtimes, libraries, tools, and operating system components.

The different lines of activity under consideration must be aligned, interact between themselves, and ensure reinforced cooperation and integration that result in continuous enhancements.

In particular, the proposal should cover the following points:

1) <u>Hardware development Technical Areas:</u>

a) General-Purpose CPU: Design and development of a high-end general-purpose CPU based on RISC-V. The design should represent an evolution of already existing European RISC-V designs. The target of the design should be to provide scalable and customisable high-performance RISC-V multi-core and multi-cluster CPU implementations delivering feature and cost competitive power-performance-area metrics. The CPU ought to deliver high performance over a wide range of HPC applications featuring combinations of both parallel and sequential code. Special attention should be given to the optimisation of the memory system bandwidth at all levels. The proposed work must target KPIs comparable to non-EU solutions and be feature and price competitive and energy efficient. A detailed comparison with other solutions including monolithic CPUs, chiplet-based CPUs, and closed-source proprietary CPU IP from non-EU providers should be presented.

b) Artificial Intelligence (AI) Accelerator: Design and development of a high-end RISC-V based accelerator designed for the efficient processing of AI workloads and applications. The design should be an evolution of existing European AI accelerator designs. Examples of applications that should be covered are AI-driven approximations of computationally expensive simulations (trained on existing data from full-scale HPC simulations), large transformer-based language models, massive neural networks, etc. A key challenge is to balance computational performance with energy efficiency. The proposed work must target KPIs comparable to non-EU solutions and be competitive on price/performance and energy efficiency.

c) Vectorial Accelerator: Design and development of a high-end RISC-V based vectorial accelerator. The design should be an evolution of existing European vectorial accelerator designs. Capabilities should include high floating-point density, long vector and matrix architecture and wide data path. The applications targeted should include current and future HPC workloads requiring operations using 64-bit double precision floating-point support and other data types. The proposed work must target KPIs comparable to non-EU solutions and be competitive on price/performance and energy efficiency.

All software and hardware development technical areas should be industrially/commercially driven and use chiplet-based approaches providing mix-and-match customisation capabilities to address varying high-end computing workload requirements. They should target the realisation of initial tape-outs of at least 7nm withing the timeframe of the first RIA. The node selection should be done based on a thorough cost/benefit analysis and corresponding industrial and market perspectives. Moreover, the consortium should indicate the advantages and disadvantages of using the target fabrication processes, assess the availability of relevant IP, availability of design tools, licenses, and also their resources and capabilities. The required EDA tools and IP should be described in detail and the timeline of the obtained licenses and cost should be detailed. EDA training requirements, availability, and experience of relevant engineering resources, etc should be taken into account.

RTL-freeze should be targeted for month 18. At this point, before moving to tape-out, the EuroHPC JU will assess the KPI19 achievements/projections including a competitive assessment with regards to non-EU solutions worldwide for each hardware development activity and decide whether a particular technological development should be continued or halted. A single mask-set for all chiplets should be considered to reduce tape-out costs. A detailed plan to synchronise the chiplets resulting from the hardware developments should be provided and a private shuttle with a single mask set should be preferably created.

2) **Applications and Software Technical Area**:

- Develop an optimised HPC software stack for the hardware development technical areas. The software stack should support single nodes as well as large configurations.
- Develop a hardware-software co-design simulation framework to facilitate native hardware support to application requirements.
- Port at least 3 realistic applications to the new hardware platforms. The selection of applications should be justified in detail with respect to coverage of projected future HPC workloads.

3) Pilots Technical Area

- Build / Upgrade Software Development Vehicles to support the Applications and Software technical area until actual silicon from the project is available.
- Once the projects' silicon is available, integrate the results from the hardware development technical areas in testbeds and at least one prototype/pilot in pre-

[19] The EuroHPC JU and the Consortium at the beginning of the action will define the KPIs and acceptance criteria in each technical area according to industrial standards.

operational environments in supercomputing centres for user testing and validation.
- Pilots with non-EU RISC-V off-the-shelf components are explicitly out of the scope of this initiative.

Management and Coordination: The proposal should implement a professional industrial project management approach. It should include an industry technical coordination group, consisting of the key industrial partners in the SGA, for closely overseeing technical progress in all the industrial activities related to the development of the proposed project's hardware solutions, tightly coordinating these activities and assisting the coordinator with the strategic decisions and orientations of the proposed project, including the R&I roadmap to implement the activities. The industry technical coordination group should maintain an up-to-date risk register with clear mitigation actions and escalation procedures.

In particular:

- The proposal should give a full product roadmap of how the HPC hardware developed through DARE will be competitive with current and future hardware coming from the worldwide competitors. This roadmap should be updated dynamically as necessary. The roadmap should include a description of all the activities that will be needed to build and deploy post-exascale systems in Europe based on the technology developed in the project.
- The proposal should demonstrate the capacity and industrial commitment of the partners for carrying out and sustaining the technical development and maintenance as well as effective marketing and business development. It should include convincing plans for industrial exploitation of the targeted technology developments and long-term market perspectives.
- The role of each partner in the proposed project should be described in detail. The number of the partners should be limited to the ones necessary for the achievements of the goals of the SGA. The partners should describe how soon after signing the SGA they would be able to allocate resources to the project and how many additional resources would need to be recruited, and what is the estimated onboarding process timeline. The potential for long-term cooperation among partners should be described.
- The proposal should include a preliminary analysis of barriers to market entry and appropriate mitigation procedures. Additionally, it should provide the potential impact to the project.
- The proposal should include an end-user advisory board, consisting of a representative set of private and public end users, to provide the user requirements and additional guidance to the proposed project on its co-design activities related to the targeted processor and accelerator technology.
- The proposal should provide for appropriate progress control mechanisms by establishing meaningful common milestones and KPIs to monitor the progress of the different work streams towards the goals of the overall initiative, and continuously monitor the current state-of-the art and comparing it with the state of the RISC-V General Purpose Processor (GPP), Vector Accelerator, and AI Accelerator. In particular, the proposal should foresee an intermediate major milestone at month 18 (before tape-out) for a critical assessment of the project's progress against the objectives and time-plan. The proposal should plan monthly monitoring meetings between the JU and the project's management team.

- The proposal should describe in detail the mechanisms to guarantee that all IP generated in the initiative will stay in the EU. IP management should be submitted with a clear plan of how key IP would remain in EU and not shared with non-European entities.
- The proposal should give a detailed description of preceding work in European projects by the partners, in particular the baseline of the technology developed in those prior projects, how the outputs from those projects will impact upon the proposal, and the will to license such technology to the FPA partners under reasonable terms and conditions.
- The synergies with the ETP4HPC Strategic Research Agenda and the HiPEAC Vision should be provided.
- The proposal should provide a plan on how the consortium will establish interaction with the relevant stakeholders and RISC-V projects of the Chips JU to coordinate work on horizontal issues common to both communities and exploit synergies where relevant.

Form of Funding: Grants not subject to calls for proposals

Type of Action: Specific grant agreement awarded without call for proposals in relation to a Framework Partnership Agreement

Indicative timetable: Second quarter of 2024

Indicative budget: up to EUR 240 million with 50% EU funding rate (up to EUR 120 million EU funds)

HORIZON-EUROHPC-JU-2024-DARE-SGA-04

Specific Grant Agreement (SGA) for the 1st Phase of the Framework Partnership Agreement with the DARE consortium. The DARE consortium is invited to submit a proposal to the following topic:

Topic	Type of Action	Budgets (EUR million)	Expected EU contribution (EUR million)[20]	Indicative number of projects expected to be funded
		2024		
Opening: XX YY 2024 Deadline(s): ZZ WW 2024				
HORIZON-EUROHPC-JU-2024-SGA- XXX-YY:	HORIZON-JU-RIA	240.00	Up to 120.00	1
Overall indicative EU budget		240.00		

[20] Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

Specific Grant Agreement (SGA) for the 1st Phase of the Framework Partnership Agreement with the DARE consortium	
General conditions	
	The call, including evaluation and award procedures, will be managed according to and the proposals should comply with the call conditions below and with the General Annexes to the Horizon Europe Work Programme 2023-2025 that shall apply mutatis mutandis to this call (with the exceptions introduced in the specific topic conditions). The conditions are described in Annex A of the General Annexes to the Horizon Europe Work Programme 2023-2025 which apply mutatis mutandis to the actions covered in this Work Programme. Eligibility conditions: The conditions are described in General Annex B. Financial and operational capacity and exclusion: The criteria are described in General Annex C. Award criteria: The criteria are described in General Annex D. Documents: The documents are described in General Annex E. Evaluation Procedure: The procedure is described in General Annex F. Legal and financial set-up of the Grant Agreements: The rules are described in General Annex G. If a topic deviates from the general conditions or includes additional conditions, this is explicitly stated under the specific conditions for the topic.
Specific conditions	
Expected EU contribution per project	There will be only one SGA project. The EuroHPC JU estimates that an EU contribution of maximum EUR 120 million would allow these outcomes to be addressed appropriately. The expected duration of this action is 3 years. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Type of Action	Research and Innovation Actions
Admissibility conditions	The conditions are described in Annex A. The following exception applies:

	The page limit of the application is 100 pages.
Eligibility conditions	Partners of the SGA proposal must be members of the DARE FPA
Legal and financial set-up of the Grant Agreements	As an exception from General Annex G of the Horizon Europe Work Programme, the EU-funding rate for eligible costs in grants awarded by the JU for this topic will be up to 50% of the eligible costs. In case a Participating State decided to entrust the EuroHPC Joint Undertaking with the management of its national contributions, this funding rate will be increased by the additional national funding rate for the eligible entities of this country. Beneficiaries will be subject to the following additional dissemination obligations: Beneficiaries will be subject to the additional exploitation obligations requiring that first exploitation of the results takes place in the European Union and the Participating States of the EuroHPC Joint Undertaking. Applicants must acknowledge this requirement in the proposal and Annex I to the Grant Agreement. Where justified, the grant agreement shall provide for the right for the EuroHPC JU to object to transfers of ownership of results, or to grants of an exclusive licence regarding results, if: (a) the beneficiaries which generated the results have received Union funding; (b) the transfer or licensing is to a legal entity established in a non-associated third country; and (c) the transfer or licensing is not in line with Union interests.

Enhancing competitive European microprocessor technology for HPC

The support for a sustainable and competitive exascale HPC ecosystem in Europe requires further action on the technology supply to develop extreme scale, power-efficient and highly resilient HPC and data technologies, contributing to the European digital autonomy and independent access to critical technology. This action should ensure complementarity to the Framework Partnership Agreement (FPA) for developing a large-scale European initiative for High Performance Computing (HPC) ecosystem based on RISC-V.

Proposals should be based on worldwide state-of-the-art processor developments which are a credible alternative to existing non-EU solutions for processors (and accelerators). Proposals are expected to be industry driven and deliver by the end of the project competitive solutions/systems proven in operational environments.

The objective is to provide scalable and customisable high-performance multi-core and multi-cluster processors implementations delivering competitive power-performance-area metrics. Expected work should build and rely on existing EU achievements and initiatives like for example the European Processor Initiative. The proposed action should cover the design and testing of and development of a high-end processors and integration in pilot systems in view of their roll-out, uptake and use in world-class competitive supercomputers.

The proposed work should target KPIs that will outperform non-EU solutions. A key aspect is to ensure that all the IP necessary to produce the solutions remains in the EU, effectively creating an independent European source of critical technology.

Indicative Budget:

An indicative budget will be allocated from the Horizon Europe of EUR 48.6 Million

An EU contribution of EUR 48.6 Million (50% of total funding) will be matched by a PS contribution of EUR 48.6 Million (50% of total funding).

SPECIFIC CONDITIONS	
Expected EuroHPC JU contribution per project	The EuroHPC JU estimates that an EU contribution of 48.6 Million matched by a MS contribution of EUR 48.6 Million
Indicative budget	The total indicative EU budget for the topic is EUR 48.6 Million. The total contribution will be EUR 97.3 Million.
Type of Action	Grant, Horizon Europe.
Eligibility conditions	In accordance with article 22.5 of the Horizon Europe Programme, and in order to achieve the expected outcomes, and safeguard the Union's strategic assets, interests, autonomy, and security, it is important to avoid a situation of technological dependency on a non-EU source, in a global context that requires the EU to take action to build on its strengths, and to carefully assess and address any strategic weaknesses, vulnerabilities and high-risk dependencies which put at risk the attainment of its ambitions. Therefore, participation is limited to legal entities established in Member States that are members of the EuroHPC Joint Undertaking or Participating States Norway and Iceland. Proposals including entities established in countries outside the scope specified in the call/topic/action will be ineligible.

Broadening EuroHPC's Quantum Ecosystem: Enabling Universal Access and Integration of Quantum Resources (local and remote) as HPC Accelerators

Background: This call for proposals targets emerging paradigms in quantum computing and high-performance computing integration. It introduces enhanced concepts of

'Universal Quantum Access' and 'Quantum Accelerators in HPC', with the aim of ensuring all-encompassing integration, operation, and access to diverse quantum computing resources within and beyond the EuroHPC network, using all possible means of access.

Objectives:

- To facilitate global access and utilization of diverse quantum computing resources within the EuroHPC framework, using all possible means of access.
- To enable seamless integration of quantum computers as accelerators in HPC workloads.
- To foster innovation and efficiency in leveraging quantum resources for advanced computational tasks, ensuring that EuroHPC facilities are used as effectively as possible.
- Mature cloudified access to quantum computing resources.

1. Implement universal access to local and remote QCs through resource managers/schedulers:

- Enable supercomputers to launch activities employing one or multiple local or remote quantum computers, enhancing the diversity and efficiency of computational tasks.
- Integrate advanced scheduling capabilities within resource managers/schedulers to efficiently allocate and utilize local or remote quantum resources in computational workloads.
- Develop and implement standardized interfaces and protocols for integrating quantum resources as accelerators in HPC workloads.

2. Expand secure quantum cloud platform:

- Widen access to quantum computers through a robust and secure cloud platform, enhancing accessibility and utilization.
- Further enhance the EuroHPC Quantum Cloud platform for secure and seamless access to diverse quantum computing resources.
- Establish secure and efficient communication networks and collaboration platforms for leveraging distributed quantum resources.
- Ensure that the expanded quantum ecosystem maintains the highest standards of security and operational efficiency.

3. Focus on specific applications:

- Identify and prioritize applications (such as quantum simulation, cryptography, and optimization) that may not require extensive classical computing resources but can significantly benefit from access to quantum computing resources.

Expected Outcomes:

- Universal access and integration of diverse local or remote quantum computing resources within the EuroHPC network.
- Enhanced efficiency, performance, and innovation in leveraging quantum resources for advanced HPC workloads.
- Strengthened and secure quantum ecosystem, promoting collaborative advancements and applications.

For security reasons and as the action is directly related to the Union's strategic autonomy, the action should be conditioned in accordance with Article 22.5 of Horizon Europe of Regulation.

One single grant will be selected.

SPECIFIC CONDITIONS	
Expected EuroHPC JU contribution per project	The EuroHPC JU estimates that an EU contribution of 10 Million matched by a MS contribution of EUR 10 Million
Indicative budget	The total indicative EU budget for the topic is EUR 10 Million. The total contribution will be EUR 20 Million.
Type of Action	Grant, Horizon Europe.
Eligibility conditions	In accordance with article 22.5 of the Horizon Europe Programme, and in order to achieve the expected outcomes, and safeguard the Union's strategic assets, interests, autonomy, and security, it is important to avoid a situation of technological dependency on a non-EU source, in a global context that requires the EU to take action to build on its strengths, and to carefully assess and address any strategic weaknesses, vulnerabilities and high-risk dependencies which put at risk the attainment of its ambitions. Therefore, participation is limited to legal entities established in Member States and Norway, Iceland and Israel. Proposals including entities established in countries outside the scope specified in the call/topic/action will be ineligible.

Development of new benchmarks for HPC, Quantum Computing, and AI

Expected Outcome:

The action will provide three sets of well documented, generally hardware agnostic benchmarks for exascale HPC, quantum computers and AI specific technology. The benchmarks will be application oriented, reflecting real use patterns to ensure the real capabilities and limitations of advanced HPC systems are captured. Based on the set of standardised tests, aggregated performance indicators can be defined to link system performance with real value for the targeted user communities.

Scope:

- Identification of suitable applications and algorithms in the three areas
- Selection of a representative set of applications and algorithms reflecting real use cases
- Develop reference implementations of algorithms where necessary
- Provide the required input and output data to run benchmarks
- Provide documentation for developers and users of the resulting benchmarks
- Coordinate with international collaborators as appropriate to establish common and objective benchmarking standards
- In Quantum, benchmarks will take into account specific problems covering optimization, machine learning, cryptography, material science, and should span various levels of quantum computing readiness, from NISQ to fault-tolerant quantum computing regimes.

Indicative Budget:

An indicative budget will be allocated from the Horizon Europe of EUR 10 Million. An EU contribution of EUR 10 Million (50% of total funding) will be matched by a PS contribution of EUR 10 Million (50% of total funding).

HPC/Quantum Computing Middleware technologies

Expected Outcome:

This action should build upon the HPC-QC integration efforts carried out in the HPCQS project and by the EuroHPC Hosting Entities of quantum computers.

Scope:

The developed reference software stack should, as far as technically feasible, expose a common and technology agnostic interface to developers of applications, resource management software and system management and monitoring tools, in line with existing and established standards and contribute to the European standardization efforts.

The Action will implement mechanisms to establish a dialogue between the relevant European suppliers of QC technology, HPC operators and software developers.

The activities developed in this Action should also address in particular the challenges of scheduling of QC tasks, HPC-QC application development, system and user management and monitoring.

Indicative Budget:

HE (WP24): A total EU budget of EUR 20 Million to fund projects with a duration of 3 years.

An EU contribution of EUR 20 Million (50% of total funding) will be matched by a PS contribution of EUR 20 Million (50% of total funding).

APPLICATIONS PILLAR

Ongoing Activities:

The EuroHPC JU Centres of Excellence selected in early 2023 will have their first review in 2024. The latest HPC Centres of Excellence selected in 2023 will begin operations in 2024. The European Quantum Excellence Centres (QECs) in applications for science and industry, launched in 2023 and the evaluations will take place in 2024. The EuroHPC Inducement Prize for Quantum Computing and Simulation Applications, which appears in Work Programme 2023, will be launched in 2024.

Calls 2024

As announced in President Von der Leyen in her State of the Union speech on 13 September 2023, Europe should lead global efforts on artificial intelligence. To do this, the EU will leverage one of its biggest assets: its public high-performance computing infrastructure.

In order to promote innovation in AI responsibly, EuroHPC computing power will be used to train and finetune the most advanced foundation models, as well as advances applications and software. The EU's mission is to lead global efforts on artificial intelligence and guide innovation. Access to Europe's supercomputing infrastructure will help start-ups, researchers and other users bring down the training time for their newest AI models from months or years to days or weeks. And it will help them lead the development and scale-up of AI responsibly and in line with European values. EuroHPC JU's strategy in 2024 will therefore include development of applications and software tools and techniques to support the Hosting Entities and of course, users.

AI Software Ecosystem for HPC

Expected Outcome:

Methodologies, programming environments and software stack (libraries, tools, workflows, etc.) facilitating the coupling of HPC with AI training processes and big data (e.g. for LLM), including:

- Development of HPC workflows supporting the parallelisation of AI applications for optimising the use of HPC capabilities, and their deployment in HPC systems
- Dynamically supporting scalability of AI and AI Data
- Generic reusable and transversal solutions across domains (no ad-hoc)
- Architecture agnostic and reflecting performance optimisation and energy efficiency in HPC systems
- Supporting AI-friendly features (e.g. interactivity, access to different large data sets, HPC elasticity, aggregation of many small jobs, etc.)
- Integration in EuroHPC federated services
- Complementary to the AI-oriented Support Centre

Indicative Budget:

An EU contribution from the Horizon Europe Programme of EUR 8 Million (50% of total funding) will be matched by a PS contribution of EUR 8 Million (50% of total funding).

HPC Applications

Expected Outcome:

- Applications to support the efficient use of exascale resources. The developed application targets real needs and use cases of significant impact where exascale supercomputers are required, e.g., AI, big data, machine learning, cybersecurity, conflict simulations, social sciences, challenges in transport and logistics, construction.
- Pooled expertise to support application development in Europe by providing common library and software components, frameworks and tools which facilitate and optimise the development and execution of complex and computationally intensive tasks at exascale.
- Enhanced performance, scalability, reliability and efficiency of HPC applications while reducing the development effort by development and adoption of common software libraries
- Significant improvements in the target software and codes, in terms of e.g. efficiency, scalability, refactoring, adaptation to new software engineering and programming environments and tools, and optimisation for novel HPC hardware and system software.
- Contribution to the adoption of modular design principles and to the interoperability of software components across applications

Scope:

This Action will focus on HPC applications and software libraries for the exascale era. Proposals should:

- Demonstrate advances of the targeted HPC applications towards highly scalable, optimised flagship codes and exascale performance (both computing and extreme data). This includes developing, maintaining, porting, optimising (if needed re-designing) and scaling HPC application codes, addressing the full scientific/industrial workflow, particularly covering data aspects; testing and validating codes and quality assurance.
- Develop HPC libraries, software components, frameworks and tools using state-of-the art programming models to achieve unprecedented performance, robustness and reliability. Extract, collect, adapt and consolidate common code from European HPC applications into a common library promoting modular design principles and standardisation for both scientific and industrial applications.
- Present a detailed software development plan and management plan with clear timeline for the implementation including quantitative KPIs, milestones and deliverables demonstrating the achieved improvements. This also includes acceptance test after every significant development part. The software development plan with concrete scaling targets, covering the identified application and codes, should be central to the proposed work and most resources should be allocated to these activities.

- The software should be deployed at all EuroHPC systems. The continuous deployment and continuous integration of the software on EuroHPC machines should be included as soon as possible in collaboration with the EuroHPC CI/CD platform.
  This action provides complementary grants to other initiatives such as HORIZON-EUROHPC-JU-2021-COE-01, HORIZON-EUROHPC-JU-2023-COE-01, HORIZON-EUROHPC-JU-2023-COE-03. Applications and codes funded by these actions are excluded from funding.

Indicative Budget:

An EU contribution from the Horizon Europe Programme of EUR 10 Million (50% of total funding) will be matched by a PS contribution of EUR 10 Million (50% of total funding).

Centres of Excellence to support the development of exascale applications

Scope

Adapting applications to exascale and future post-exascale performance is a major challenge that requires significant changes in application codes, in some cases involving a complete rethink or substantial code re-engineering and rewrite. Action at European level is needed to support this transition in collaboration with the relevant communities that are key for the evolution of the codes. Changes to support the exascale transition have to take into consideration the heterogeneity of most architectures, code scalability and resilience, and the management of complex workflows at exascale.

Centres of Excellence are advancing specific Lighthouse Exascale Applications, at the frontier of technology and relevant for the communities of HPC users, that enable and promote the use of upcoming exascale and post exascale computing capabilities in collaboration with other High Performance Computer (HPC) stakeholders**.** The action will address topics of strategic importance for the Union, which will be identified by the JU in 2024 and could address elements such as**:**

- Combustion
- Aeronautical Design
- Virtual Pre-clinical trials:
- Foundation Models for Science

Other topics could also be considered as long as there is no overlap with topics already covered in ongoing projects being undertaken in EuroHPC JU Centres of Excellence.

Indicative Budget:

An EU contribution from the Horizon Europe Programme of EUR 10 Million (50% of total funding) will be matched by a PS contribution of EUR 10 million (50% of total funding).

~~**Call on HPC/Cybersecurity/AI**~~

~~Scope~~

~~High-Performance Computing (HPC) is no longer a niche for compute-intensive simulations. Instead, we are witnessing an era where users leverage HPC to process large amounts of data, train highly complex artificial intelligence (AI) models, and anywhere where HPC plays a vital role along the compute continuum. The convergence of HPC and AI has expanded the HPC domain into a comprehensive ecosystem, creating opportunities~~

and challenges for various industries such as engineering or the automotive sector. As a consequence, the previously manageable domain of HPC enfolds into an entire ecosystem precisely due to the convergence with AI. There is no longer solely the risk that an attack gains access to the computing power but also gets access to privacy-sensitive data stored more often within the HPC ecosystem. There is also the need to integrate HPC next to Cloud and Edge along the compute continuum to seamlessly execute complex workflows.

While the risks and vulnerabilities of HPC systems are often under-represented in today's security conversations, the convergence of HPC and AI increases the importance of HPC systems as critical infrastructures as more diverse user communities exploit and integrate with HPC systems. However, with the convergence of HPC and AI comes an increased concern for security. The European HPC infrastructure will be prone to a cyber-attack's target. Proposals for this topic shall therefore investigate cybersecurity requirements for secure access and usage of HPC systems while strengthening the security of the European HPC landscape.

Expected Impact

Companies from sectors such as finance, healthcare, manufacturing, and energy are utilizing HPC to tackle data-driven challenges, optimize processes, and gain valuable insights from large-scale data analysis. The support from these industries underscores the growing importance of HPC across the compute continuum, and thus requires to guarantee highest security policies.

Projects funded under this topic will therefore contribute to the EU Cybersecurity Strategy by increasing cybersecurity for critical infrastructures supporting "protection of data and networks aspiring to technological sovereignty in this field, while respecting privacy and other fundamental rights; this should contribute to secure services, processes and products, as well as to robust digital infrastructures capable to resist and counter cyber-attacks and hybrid threats. This action will be implemented in line with relevant EU cybersecurity legislation.

More specifically, proposals shall contribute to one or more of the following impacts:

- Enhance risk reduction of cyber-attacks on critical EuroHPC infrastructures.
- Resist and counter cyber-attacks and hybrid threats on EuroHPC infrastructures.
- Improve methods for HPC cybersecurity testing, certification, and standards.
- Shared cybersecurity management in supercomputing Centres and culture among HPC users

Expected Outcome

Current and future HPC ecosystems must therefore guarantee cybersecurity requirements across several layers: hardware, software, applications, data, internal staff (e.g., system administrators and performance engineers), and users. Thus, projects will assess and implement instruments (e.g., technologies, policies, tools) and derive solutions to secure the HPC ecosystems.

Projects' results are expected to contribute to some or all of the following outcomes:

- Awareness and training of HPC users on security-related topics such as security-aware software development

- ~~Seamless integration of security into typical HPC applications to increase robustness against threats without or minimally affecting the applications' performance~~
- ~~Demonstrate secure interoperability and integration of HPC into the compute continuum~~
- ~~Actively engage industry stakeholders, and fostering collaboration, to pave the way towards secure and resilient critical European HPC infrastructures~~
- ~~Secure mechanisms addressing authentication and authorization, secure data transfer, processing and storage of privacy-sensitive data~~
- ~~Mechanisms to securely continue or resume production after attack detection~~
- ~~Real-time threat prediction and identification (e.g., unauthorized access, data breaches, viruses, malicious workloads or insider threats)~~

~~Proposals shall make of use of latest technologies including artificial intelligence (e.g., smart and automatic prediction and identification of threats), cryptography (e.g., on-the-fly encryption), cloud computing (e.g., virtualization or containerization), or quantum computing, to achieve the expected outcomes.~~

~~In accordance with article 12.6 of the Digital Europe Programme, and in order to achieve the expected outcomes, and safeguard the Union's strategic assets, interests, autonomy, and security, it is important to avoid a situation of technological dependency on a non-EU source, in a global context that requires the EU to take action to build on its strengths, and to carefully assess and address any strategic weaknesses, vulnerabilities and high-risk dependencies which put at risk the attainment of its ambitions. Therefore, participation is limited to legal entities established in Member States that are members of the EuroHPC Joint Undertaking or Participating States Norway and Iceland. Proposals including entities established in countries outside the scope specified in the call/topic/action will be ineligible.~~

~~Indicative Budget:~~

~~An EU contribution of EUR 5 Million over 3 years from the Digital Europe Programme (50% of total funding) will be matched by a PS contribution of EUR 5 Million (50% of total funding).~~

Continuous integration and deployment platform (CI/CD)

Expected Outcome:

This Action will provide users with access to a continuously updated, with improved efficiency, software stack. This Action will boost R&I, contribute to the reliability of numerical results, save energy and resources and ensure the security of the EuroHPC infrastructure. The use of the CI/CD platform will also contribute to establishing best practices in software development and overall better visibility of the investments in HPC applications by the Union. By the end of the action, a broad and representative portfolio of HPC applications developed by the European HPC communities will be available to users at all EuroHPC systems, enabling the execution of computations on any system using the same version of an application and, hence, a seamless and reliable transfer of workflows.

Scope:

This Action will develop an HPC Software Stack in the form of a common platform.

It will build on the pilot for a EuroHPC CI/CD platform for HPC applications which is currently developed by the European Centres of Excellence for HPC Applications. The

technical implementation should ensure the most efficient use, in terms of application performance and energy consumption, of the available hardware by the deployed software.

The development and operation of a common continuous integration and deployment platform to deploy for applications to EuroHPC systems will ensure all users have access to the latest releases and experimental development versions of software. This action is complementary to the Application Support Teams funded by EuroHPC (call DIGITAL-EUROHPC-JU-2022-APPSUPPORT-01) who are expected to provide system specific support at the EuroHPC Hosting Entities for the integration of the CI/CD platform in the local system environment and related deployment, testing and benchmarking workflows.

Indicative Budget:

An EU contribution from the Digital Work Programme of EUR 5 Million (100% funding rate) over 5 years with the option to award small grants (up to EUR 60k) to application development teams for onboarding on the platform.

COMPETENCES AND SKILLS PILLAR

Ongoing activities:

In 2023, the new Competence Centres were established. The EUMaster4HPC Master programme will be in its 3rd year. More institutions will take part in the courses and more students will be recruited. In the summer of 2023, the first cohort of students (17 students) will have completed their first year.

Two calls, EuroHPC International HPC Summer School and the EuroHPC Training Platform addressing training and skills in HPC in academia and job placements in HPC sector were launched in 2023, and two proposals were selected. They will become operational in 2024.

EuroHPC Virtual Training Academy was launched in 2023.

The first User Day took place in December 2023.

Calls in 2024

Renewal of the EuroHPC Masters Programme

Expected Outcome:

The Purpose of this call is to continue and further develop the European MSc programme in High Performance Computing.

Scope:

The MSc programme should focus on academic excellence and bridge the gap to professional career paths by collaborating with the European HPC industry and academia.

Proposals should adopt the existing modular training portfolio and contribute to its standardization, certification and systematic extension. A central objective is to significantly increase the visibility of the programme among target groups and attract outstanding students with a geographically balanced intake. The programme should support the graduation of at least 100 students, provide financial support for mobility and compensation of differences in living costs. Students should change university and country as they enter the programme.

Indicative Budget:

An EU contribution from the Digital Europe Programme of EUR 10 Million for a duration of 4 years (100% EU funded)

2nd National Competence Centre Call:

DIGITAL-EUROHPC-JU-2024-NCC-02-01: National Competence Centres for High Performance Computing

Call - National Competence Centres for High Performance Computing: DIGITAL-EUROHPC-JU-2024-NCC-02

Overview of this call

Proposals are invited against the following Destinations and topic(s):

Topics	Type of Action	Budgets (EUR Million)	Expected EU contribution per project (EUR Million)	Indicative number of projects expected to be funded
Opening: 20 Mar 2024 Deadline(s): 23 Apr 2024				
DIGITAL-EUROHPC-JU-2024-NCC-02-01: National Competence Centres for High Performance Computing	DIGITAL-JU-SIMPLE	Up to 10	Up to 5	1
Overall indicative budget		Up to 10		

General conditions relating to this call

Proposals are invited against the following topic(s):

DIGITAL-EUROHPC-JU-2024-NCC-02-01: National Competence Centres for High Performance Computing

SPECIFIC CONDITIONS	
Type of Action	DIGITAL JU Simple Grants
Expected EuroHPC JU contribution per project	The EuroHPC JU estimates that an EU contribution of up to EUR 5 Million matched by a PS contribution of up to EUR 5 Million (50% EU funding rate) would to allow these outcomes to be addressed appropriately. The expected duration of this action is up to 21 months with an EU contribution of up to EUR 600,000 per National Competence Centre.

Expected Outcome: This action will extend the existing network of National Competence Centres for HPC (NCCs) currently funded by the EuroHPC JU in the EuroCC 2 project by additional National Competence Centres in EuroHPC Participating States that currently do not receive financial support for a NCC. The NCCs will be fully aligned with and integrated into the EUROCC 2 network, its management structure, reporting lines and the CASTIEL 2 Coordination and Support Action. By the end of the action, an effective support network in the field of HPC will have been established providing services to local communities from the public and private sector with a specific focus on SMEs. Through cooperation with other European initiatives the network will provide a knowledge hub for HPC offering a comprehensive support infrastructure from basic training and initial uptake of HPC to specialist knowledge covering the entire HPC value chain including related topics such as intellectual property.

In the course of the action, the NCCs will have demonstrated their significant impact on the innovation capacity of the European HPC ecosystem supported by quantitative key performance indicators measuring the specific impact of individual NCCs with respect to the baseline established on the basis of common criteria for all NCCs.

A detailed competence map of the European HPC ecosystem will be available to identify expertise, monitor and assess the evolution HPC competences in the constituencies of the individual NCCs and in a European context.

The NCCs will address the following areas:

- Contribution to the realisation of the EuroHPC overall and specific objectives
- Promoting the use of HPC at national level by identifying relevant users and matching their needs with the available expertise in the HPC Competence Centres
- Effective establishment of a wide range of HPC services (as referred in the scope of the call)
- Support the development of leading-edge, innovative solutions by targeted regional/national stakeholders in the private and public sector
- Provision of support to interested end users that are/will use HPC and HPDA in their daily business.
- Contribute in ensuring European technological autonomy in this field

Objective: The aim is to support existing or the creation of up to one new NCC in EuroHPC JU Participating States that are currently not funded by the EuroHPC JU. The NCCs funded by the this call should extend the current network of NCCs of the EuroCC 2 initiative to additional countries. The NCCs will provide HPC services to industry (in particular to SMEs), academia and public administrations, delivering tailored/modular solutions for a wide variety of users, with an aim to ease and foster the transition towards wider uptake of HPC in Europe. NCCs will be a focal point of HPC in the respective country, liaising with national initiatives in the area of HPC, facilitating access of national stakeholders to European HPC competences and opportunities in different industrial sectors and domains. SMEs will be central to the NCC's activities. Academic institutions and stakeholders may be addressed only to a limited extent and most of the resources of an NCC will be dedicated to support local SMEs, industry and public services with the uptake of HPC

Scope: Set-up and/or operate NCC in a EuroHPC JU Participating States that do currently not have a NCC funded by the EuroHPC JU. The NCC will represent the focal point of national competences in HPC and provide leading-edge knowledge to enable the development of innovative solutions in their constituency, taking into account national HPC needs and requirements emanating from different user communities (industry, academia, public administrations) and application domains. The NCC will establish and maintain a network of national HPC users, promote HPC use in the private and public sector, reach out to potential new users and develop the necessary expertise for HPC applications close to the relevant national and, in collaboration with other NCCs, European communities. Each NCC will act as an access point to the European network of NCCs and other European HPC initiatives such as the Centres of Excellence for HPC applications to ensure that local stakeholders have access to the best available support in Europe if the required expertise cannot be provided by the NCC or is out of scope of the NCC's activities. In return, NCCs will support stakeholders from other regions and countries that need their expertise coordinated through the NCC network and the complementary Coordination and Support

Action CASTIEL 2. NCCs will implement a flexible and modular approach in the services to be provided, taking into account the degree of maturity of the national HPC ecosystem and in close coordination and collaboration with the other NCCs to achieve the highest possible impact and the widest possible spread of knowledge, ensure the most efficient use of NCC resources and to avoid duplication of effort among the NCCs and with other initiatives. Proposals should demonstrate the implementation of effective measures to close the gap between advanced and less developed NCCs.

HPC Competence Centres will, for example, engage in the following activities:

- Facilitate access to the HPC ecosystem including testbeds, hands-on sessions on HPC, HPC application optimising and scaling by connecting national communities with other initiatives such as the European Centres of Excellence for HPC applications.

- Facilitate uptake of HPC applications by different users, including SMEs (e.g. promoting locally relevant success stories), academia and public administrations.

- Provide scientific/technical expertise/consulting through application-oriented HPC knowledge/focus (e.g. HPC and High Performance Data Analytics (HPDA)), as well as access to advanced simulation and modelling algorithms, software codes and tools.

- Contribute with the expertise to the development activities (TRL 4-6) of SMEs and the public services to enable their efficient use of HPC resources (e.g., software porting and customization, deployment of advanced simulation and modelling algorithms, methods, and tools etc.).

- Provide on-site evaluations of new technologies, experimenting, proofs of concept as well as enable validation and demonstration of HPC technologies, software codes, tools, and algorithms in relevant environments.

- Facilitate access to supercomputing and data management for exploring innovation solutions of interest to end users, including SME user industries.

- Local and national training and skills development in the area of HPC and related subjects (e.g. HPDA, parallel programming, etc.), through face-to-face as well as online training (e.g. MOOC platforms).

- Awareness raising and outreach on the benefits of HPC to potential user industries, including SMEs.

- Raise awareness and support national and local communities in identifying and protecting intellectual property in an HPC context and provide advice on licensing policies in collaboration with the pan-European network of NCCs.

- Implement technology transfer activities at local/national level and the Digital Single Market.

It is required that the NCC – hosted by either one or several national organisations - is formally designated and mandated by the national authorities of the EU Member State or the EuroHPC JU Participating State. The NCC must be established as an organisation with appropriate visibility to the national communities and an independent organisational structure. The NCC must ensure that the NCC's activities are clearly identifiable and distinct from activities of the institution(s) hosting the NCC. In general, NCCs should employ HPC specialists, primarily full time, with expertise in areas most relevant for the

national communities and NCC staff should not work under external supervision. The designated NCC leader should be directly involved in the management of the NCCs operations and is expected to report directly to the coordinator and the funding authority on all aspects of the centre's activities. Applicants are encouraged to implement a pan-European collaboration scheme together with EuroCC 2 for talent management including the identification and recruitment of HPC experts by the NCCs. Moreover, proposals should clearly set out an effective governance structure and decision making process within the consortium and the complementary Coordination and Support Action CASTIEL 2.

Individual NCCs will focus on activities where local support is most effective such as communication, consultation services, support specific to the relevant national and local communities and necessary co-development to fulfil the mission of NCC. Co-development activities with SMEs should be limited to SMEs and a maximum of 5% of the personnel resources of an NCC may be used for all direct development activities by the NCC. Moreover, development work of NCC staff must not overlap with activities pursued by other NCCs or initiatives and must be duly justified and formally endorsed by the coordinator of the NCC network and/or linked Coordination and Support Action. Actions of potentially broader scope will be coordinated with or transferred to the pan-European network of NCCs and complementary initiatives such as the European Centres of Excellence for HPC. Research activities as well as operation, administration or procurement of HPC systems are not within the scope the NCCs, but NCCs are expected to advise on such activities and support knowledge transfer e. g. from relevant European R&D initiatives to the local HPC ecosystem.

Proposals should clearly describe the mechanisms for exchange of information on the NCCs activities with the coordinator of the EUROCC 2 network and the CASTIEL 2 Coordination and Support Action to ensure the identification of synergies, take into account lessons learned in preceding similar activities, prevent redundant work and strengthen collaboration and cohesion. The NCCs will further support the coordinator of the pan-European NCC network and the relevant Coordination and Support Action in the development, implementation and reporting of common standards such as assessment criteria for NCCs, competence mapping, key performance indicators, measures on the impact of the NCCs on the European HPC ecosystem and a strategic roadmap for the further development of the NCC network.

The JU considers that proposals requesting a contribution from the JU of up to EUR 600,000 per national HPC Competence Centres[1] matched by the Participating States with a similar amount, and a duration of up to 21 months would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals with another duration or requesting other amounts. In line with the NCCs of the EUROCC 2 network, each NCC may include up to five partners with estimated personnel resources of up to 10 full-time equivalents (FTEs) for the duration of the grant. The resource distribution in the proposed work plan should reflect the main focus of the NCC network, i. e. local support services for SMEs and industry, and be generally aligned with the common work package and organisational structure of the NCCs in the EUROCC 2 network. Applicants are expected to conclude a collaboration agreement, preferably before submission of the proposal, with the EUROCC 2 and CASTIEL 2 consortia which will allow participation under the same terms and conditions as NCCs of the EUROCC 2 consortium.

INTERNATIONAL COOPERATION PILLAR

The EuroHPC JU Regulation gives a mandate to the EuroHPC JU to implement cooperation and collaboration with third countries advancing the work on HPC applications in domains of common interest, including facilitating access for researchers to EuroHPC JU resources and co-development of HPC applications. EuroHPC JU will align its activities with the European Commission strategy on EU Digital Partnerships in order advance cooperation on digital issues with like-minded third countries.

Ongoing Activities

- In 2022 EuroHPC JU launched the call on collaboration on HPC with Japan
- In 2023, EuroHPC JU launched a call for collaboration on HPC with India
- EuroHPC JU will implement the HPC elements of EU-Japan Digital Partnership
- EuroHPC JU will allocate EUR 10 Million from Horizon Europe to follow-up activities linked to the EU's Digital Partnership Strategy or similar actions

Call 2024:

Scientific collaboration on HPC and Quantum Computing with third countries

Call - EuroHPC International Cooperation

HORIZON-EUROHPC-JU-2024-INCO-06

Overview of this call[21]

Proposals are invited against the following Destinations and topic(s):

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million)[22]	Indicative number of projects expected to be funded
		2024		
Opening: Indicative XXX 2024 Deadline(s): Indicative XX Feb 2025				
HORIZON-EUROHPC-JU-2024-INCO-06: EuroHPC International Cooperation	HORIZON-JU-RIA	4.00	3.00 to 4.00	1
Overall indicative budget		4.00		

General conditions relating to this call

[22] Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.

Proposals are invited against the following topic(s):

HORIZON-EUROHPC-JU-2024-INCO-06: EuroHPC International Cooperation

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of between EUR 3.00 and 4.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 4.00 million.
Type of Action	HORIZON JU Research and Innovation Actions
Admissibility conditions	The page limit of the application is 70 pages.
Eligibility conditions	The following exceptions apply: In order to achieve the expected objectives of the action, namely to support the implementation of the Japan-EU Digital Partnership in the area quantum computing R&D, the consortium must include a team of Japanese cooperation partners. Since this is a coordinated call with the third term of the Cross-ministerial Strategic Innovation Promotion Program (SIP) of the Cabinet Office, Government of Japan, on "*Promoting Application of Advanced Quantum Technologies to Social Challenges*"[23], only Japanese entities which have been selected for one or several grants funded under the sub-programme "Quantum Computing" which are linked to this call. Legal entities from these countries must take part in the project as associated partners.
Procedure	The granting authority can fund a maximum of one project.
Legal and financial set-up of the Grant Agreements	Grants awarded under this topic will be linked to the following action: • Research Theme A-1a Research and development of quantum/classical hybrid basic algorithm construction and testbed utilization environment • Research Theme A-2b Strategic initiatives to build a business ecosystem with quantum computing solutions • Research Theme A-3 Development of quantum algorithm Platform through establishment of standard benchmarks and global challenge • Research Theme A-4 A technology overview and roadmap for large-scale quantum computer systems and their supply chain resilience

[23] https://www.qst.go.jp/site/sip3-en/13-ryousi.html

Exceptional funding rates	The funding rate is 100%

Expected Outcome: To strengthen the European quantum computing R&D ecosystem through cooperation with the Japanese ecosystem, proposals are expected to contribute to the following outcomes:

- Enhanced quantum computing and/or hybrid Quantum-High Performance Computing (HPC) algorithms and codes in advanced academic and industrial applications of interest for Europe and Japan in the identified priority domains described in the scope section below.
- Improved sharing of information and expertise to solve common societal problems with the use of advanced hybrid quantum-HPC and/or quantum computing.
- An effective exchange of researchers and engineers between Japan and the EU and their access to advanced Japanese and EuroHPC quantum computing and/or hybrid Quantum-HPC resources.
- A roadmap for an improved cooperation of EU-Japan quantum computing research communities on quantum computing and/or hybrid Quantum-HPC algorithmic development in targeted application areas.

Objective: The objective of this call is to support the implementation of the Japan-EU Digital Partnership[24] in order to strengthen cooperation with Japan in quantum computing R&D.

Scope: Strengthening research cooperation between Europe and Japan in quantum computing collaboration topics under the EU-Japan Digital Partnership. The focus is on cooperation activities for optimising hybrid Quantum-HPC algorithms and codes in advanced academic and industrial applications of common interest including applications related to biomedical, material science, seismic/tsunami and/or weather and climate modelling.

Proposals should address the below identified priority domains of mutual interest, with activities in quantum computing and/or hybrid Quantum-HPC applications (including quantum-inspired computing):

- Developing algorithms and codes for material and biomedical sciences including drug discovery, electronic structure problem, crystal structures of organic molecules, quantum chemistry/quantum physics, optimization, and efficiently coupling classical machine learning (ML) or artificial Intelligence with quantum ML.
- Developing algorithms and codes for seismic/tsunami and/or weather and climate modelling, such as climate change/earthquake forecasting, energy transition (e.g., chemistry and material simulations), decentralized grid energy distribution, emergency, post disaster and logistics management, Earth observation;

Proposals should address one or more of the above application areas, and consider at the same time all of the following:

[24] https://digital-strategy.ec.europa.eu/en/news/eu-japan-summit-strengthening-our-partnership

- Addressing the software stack as well as error mitigation approaches, including sharing and exchange of use-cases, testbeds, and libraries;

- Benchmarking and pre-standardisation[25], such as establishing specific benchmarks for technology advancements (e.g., qubit stability, error rates, or processing speed) and application development in the identified priority domains, including performance measuring, testing and optimisation.

Proposals should promote the exchange of researchers and engineers between Japan and the EU and elaborate a roadmap for future R&I actions that would enhance cooperation in all the above. Proposals should also demonstrate a clear link with the existing European quantum computing and/or hybrid Quantum-HPC centres active in the identified priority domains, and possibly include benchmarks related to the efficient use of shared resources, like computing time on shared infrastructures (e.g., EU/EuroHPC supercomputers, JP/ABCI-Q hybrid infrastructure in AIST).

Finally, proposals should also describe the facilitation of reciprocal access for European and Japanese researchers and engineers to advanced Japanese and EuroHPC quantum computing resources (notably the utilisation of the JP/ABCI-Q hybrid infrastructure in AIST and the EU's EuroHPC quantum computers), in conformity with the respective access policies. It is expected that the EuroHPC JU and the Japanese quantum computing entities will provide dedicated computing time in their respective infrastructure to run quantum computing and/or hybrid Quantum-HPC applications of European and Japanese users in the frame of this action.

For any selected projects under this call, Japanese partners will participate with their own funding, while EU partners will be funded by Horizon Europe.

[25] Preliminary efforts to establish uniform technical standards, benchmarks, and methodologies before formal standardization processes take place.

ADMINISTRATION

Communication and stakeholder engagement

In 2024, the EuroHPC will further develop and consolidate its public image.

- **Online Dissemination of EuroHPC JU Activities and Opportunities**

In 2024, the JU will upgrade its online presence thanks to an improved website, becoming the single gateway to find information on EuroHPC JU activities, calls, opportunities and request access EuroHPC supercomputers. It will also add features to support EuroHPC public and private members to provide funding information.

- **Organisation of workshops to support and promote operational EuroHPC JU activities**

The JU will organise a number of workshops in order to engage with stakeholders in the HPC and Quantum communities in order to promote operational activities.

The JU will host a regular monthly online meetings of the EuroHPC Hosting Entities. Up to two in person meetings may take place and be hosted, with support from the JU, in a Hosting Entity.

In addition, the JU will fund up to two in person RIAG and INFRAG meetings in 2024 in Luxembourg, Brussels and/or during the annual EuroHPC Summit.

- **EuroHPC Summit 2024**

The EuroHPC Summit 2024 will take place in Belgium on 18-21 March 2024, during the Belgian EU Presidency. The organisation of this event will be based on the best practice and experience of the past **EuroHPC Summit 2023.** An estimated budget of EUR 700,000 is allocated from DEP operational activities.

The event will gather key European HPC stakeholders from providers to scientific and industrial users, to policy makers. As in 2023, particular attention will be given to the students of the EUMaster4HPC and to the R&I projects of the JU.

The Summit will be an important moment to showcase the latest achievements and opportunities in the European supercomputing ecosystem, but also to discuss and reflect on the current and future challenges in HPC, quantum, and Artificial Intelligence computing. The event will provide also a great opportunity for attendees to network and connect with the European HPC and quantum community

- **EuroHPC Summit 2025**

The EuroHPC Summit 2025 will take place in Poland, during the Polish EU Presidency. An estimated budget of EUR 700,000 will be allocated from DEP operational activities.

- **Other Conferences in 2024**

    - **ISC High Performance 2024**

The EuroHPC JU will participate again in the event ISC 2024 as exhibitor. It will also support the ISC organisers to promote TOP 500 communication activities. In 2024, the event will take place from May 12 to May 16 2024 in Hamburg, Germany. ISC is the largest forum in Europe for high performance computing, high performance data analytics and AI/machine learning and brings together vendors, public institutions, and startups. It is also one of the two moments in the year where the TOP 500 and Top Green 500 ranking lists to benchmark HPC systems are communicated to the HPC community.

Following a successful cooperation with around 30 EuroHPC R&I projects and 2 EuroHPC hosting entities to develop and showcase a joint EuroHPC stand of 40 sqm at ISC 2023, the JU aims to reiterate the invitation to its partners to develop a coordinated EuroHPC village showcasing European achievements.

The event is a great opportunity for the EuroHPC JU to showcase its opportunities, its supercomputers and R&I projects. ISC 2024 is also critical for the JU to consolidate its public image while increasing its network and its European users base. An estimated budget of EUR 150,000 will be allocated from DEP operational activities.

- **Supercomputing Conference (SC24)**

The JU aims to promote its activities and achievements at SC24, the largest annual international HPC fora. SC24 will take place in the United States in November 2024. An estimated budget of EUR 150,000 will be allocated from DEP operational activities.

- **User Day 2024**

Following the successful User Day event organised in 2023, User Day 2024 will be organised in order to disseminate results of projects that have had access to EuroHPC JU systems. An estimated budget of EUR 150,000 will be allocated from DEP operational activities.

Other Communication activities

In addition, the EuroHPC JU will also ensure the following activities:

- Regular in-person meetings between key EuroHPC stakeholders (GB, RIAG, INFRAG, EuroHPC Users, the Hosting Entities, R&I partners) to ensure efficient and coordinated collaboration develop synergies and reach potential new EuroHPC users
- Inauguration of new EuroHPC supercomputers such as JUPITER in Germany
- Interactive publications of JU reports such as the Annual Activity Report, the Systems Report, to improve the attractiveness of the documents.

Legal

The JU is dependent on excellent legal support in order to do its work. It will procure, where necessary, external legal counsel to support it in implementing its operational activities.

Internal Control

The JU's Internal control system was fully set up and implemented in 2023. In 2024, it will be further strengthened to ensure that all internal control activities are implemented across the JU. The JU will finalise its EuroHPC Control strategy for beneficiaries of EU funded projects and oversee that adequate controls are carried out. The JU will also revise its ex-ante and ex-post controls and obtain a balanced and integrated control approach.

IT and Office activities

EuroHPC JU will benefit from the shared IT services, provided on the basis of the Framework Contract signed between the Joint Undertakings and the contractor – Real Dolmen.

The JU will also cooperate with the network of JUs in sharing expertise between IT JU professionals in the context of the back-office arrangement, mainly in the following areas:

- Inter-JU IT governance,
- Management of ICT tools, services and contracts EC applications, tools and services, EC FWCs Other tools and services (TBC),
- Security and compliance management.

Finance, audit and budgetary discharge

The 2024 administrative budget structure of the JU was updated with the initial Decision of the 2024 Annual Work Programme to better accommodate the various budget chapters and articles (also known as budget lines) to a more mature, agile and structured administration. The changes approved by the GB in the initial Annual Work Programme 2024 did not alter the budgetary envelope and perimeter of neither Title I nor Title II.

Chapter 11 (Salaries and allowances of staff) is as from 2024 subdivided into 3 articles for better clarity and reporting (Temporary agents, Contract agents, and thirdly SNEs, interims and trainees). A chapter 15 was also created, to gather under one line all HR administrative services (SLAs, BOAs, external HR legal advice).

In Title 2, the Postage and Telecommunications chapter was merged with chapter 23 (Current administrative expenditure), considering the small volume of that former Postage and Telecommunications line. Chapter 25 was renamed to Internal Meetings, in order to clarify and separate internal corporate meetings, such as the GB, from other operational related events booked under Chapter 27 (Communication, Information and Events). Chapter 26 was also renamed (Legal Services), as it is the case with Chapter 28 (Experts and associated costs). Finally, a new Chapter 24 was created to concentrate in one single line all auditing and external consultancy costs linked strictlto administrative matters (External administrative consultancy and auditing). All in all, the budget chapters better reflect the internal organisation structure, with clear internal budget owners per chapter and better monitoring and planning of the expenditure.

The expenditure tables 3 and 4, which can be found in the below section, already incorporate the updated budget structure of 2024, even if it applies also to the past 2023 and 2022 financial years.

In addition, the JU successfully presented a positive performance and compliance of its 2022 financial year at the Budgetary Control Committee of the European Parliament. As a result, and judging by the draft available report from the European Parliament, it is expected that the Executive Director will be granted discharge during 2024 of the 2022 financial year.

During 2024, ex-post financial audits of grant beneficiaries will continue to be organised, along the guidelines of the various programmes the JU is operating.

BUDGET 2024

1. Revenue

In accordance with the provisions of the legal framework applicable to the EuroHPC JU, the contributors to the budget of the JU are defined in article 5, 6, 7 and 8 of Council Regulation (EU) 2021/1173.

The 2024 budget presented below includes revenues allocated under Horizon 2020 and the Multi Annual Programmes 2021-2027 which are Digital Europe Programme, Horizon Europe and Connected Europe Facility.

The revenue budget is, in total, EUR 299,794,506, and it includes EUR 80,960,688 re-activated in 2024 budget amendment no. 1.

Table 1 Revenue Commitment Appropriations

REVENUE (EUR)	Executed Budget 2022 (C1+ C2 credits)	Executed Budget 2023 (C1+ C2 credits)	2024	2024 AMD NO.3		
			Last Approved Budget (C1 + C2 credits)	C1 Credits	C2 Credits	Total Amended Budget (C1 + C2 Credits)
1. Fees and Charges						
2. EU Contribution with EFTA included	709,766,750	623,398,655	269,794,506	-	7,721,723	277,516,229
of which Regulation (EU) 2021/1173 Administrative (Title 1 and Title 2)	1,477,022	3,447,160	7,804,155		288,723	8,092,878
of which old Regulation (EU) 2018/1488 Administrative (Title 1 and Title 2)	2,218,610	2,279,982	1,280,000			1,280,000
of which Regulation (EU) 2021/1173 Operations (Title 3)	623,366,120	617,652,201	260,696,663		7,433,000	268,129,663
of which old Regulation (EU) 2018/1488 Operations (Title 3)	82,704,999	19,312	13,688			13,688
3. Third Country Contribution		-	-	-	-	-
4. Other Contributions	377,705,000	270,850,000	30,000,000	-	-	30,000,000
Participating States						-
Contribution to the procurement MN5, Leonardo & Lumi	*75,705,000*	-				-
PT contribution to procurement of petascale	-	-				-
Contribution to the call of the high-end (exascale) supercomputers	250,000,000	270,850,000				-
Contribution to the call of the quantum computers	52,000,000		30,000,000			30,000,000
Private Members		-				-
Total REVENUE (EU + 3rd Countries + Participating States Contributions)	1,087,471,750	894,248,655	299,794,506	-	7,721,723	307,516,229

Table 2 Revenue Payment Appropriations

REVENUE (EUR)	Executed Budget 2022 (C1+ C2 credits)	Executed Budget 2023 (C1+ C2 credits)	2024	2024 AMD NO.3		
			Last Approved Budget (C1 + C2 credits)	C1 Credits	C2 Credits	Total Amended Budget (C1 + C2 Credits)
1. Fees and Charges						
2. EU Contribution with EFTA included	101,179,401	157,429,603	566,672,387	-	288,723	566,961,110
of which Regulation (EU) 2021/1173 Administrative (Title 1 and Title 2)	2,528,650	3,447,160	7,804,155		288,723	8,092,878
of which old Regulation (EU) 2018/1488 Administrative (Title 1 and Title 2)	2,218,610	1,965,743	2,035,108			2,035,108
of which Regulation (EU) 2021/1173 Operations (Title 3)	36,479,076	60,262,383	456,344,323			456,344,323
of which old Regulation (EU) 2018/1488 Operations (Title 3)	59,953,066	91,754,318	100,488,802			100,488,802
3. Third Country Contribution		-	-	-	-	-
4. Other Contributions	54,694,803	48,407,346	152,140,158	-	-	152,140,158
Participating States						-
Contribution to the procurement MN5, Leonardo & Lumi	49,803,454	9,529,627	79,176,821			79,176,821
PT contribution to procurement of petascale	4,891,349	2,240,734	1,791,701			1,791,701
Contribution to the call of the high-end (exascale) supercomputers		36,636,985	37,130,136			37,130,136
Contribution to the call of the quantum computers	-		34,041,500			34,041,500
Private Members	-					-
Total REVENUE (EU + 3rd Country + Participating States Contributions)	155,874,204	205,836,949	718,812,546	-	288,723	719,101,269

Budget Expenditure

Titles 1 and 2: In the 2024 opening budget decision, the Governing Board approved an administrative allocation (titles 1 and 2) of EUR 7.8 Million (C1 budget credits). In the amendments no. 1 and 3 of the 2024 budget, the JU has re-activated credits from past years (C2 credits) for an amount of EUR 1.4 Million, in terms of commitment appropriations, and of EUR 2.3 Million, in terms of payment appropriations.

The overall administrative budget remains aligned with the maximum foreseen amount under the JU Regulation of EUR 92 Million, under the current 2021-2027 Multi-Annual Financial Framework.

Title 3: The operational expenditure will be used for grants and procurements of the EuroHPC JU supercomputers, reflecting the priorities of the amended Annual Work Programme 2024. More details regarding commitment and payment appropriations are shown in tables 3, 4, 5a, 5b, 5c and 5d. With the amendment no. 1 of the 2024 Annual Work Programme and Budget, the JU has re-activated commitment credits from past years

(C2) for an amount of EUR 79.7 Million, and payment credits from past years (C2) of EUR 428.1 Million.

With amendment no.3 of the 2024 Annual Work Programme and Budget, the JU has re-activated EUR 7.7 Million in commitment credits and EUR 288k in payment credits to optimise the budget. Adjustments were performed between titles 1, 2 and 3. A new AI pillar was added under the budget tables 3 and 4.

Table 3 Expenditure Commitment Appropriations (in EUR)

EXPENDITURES (EUR)	Executed Budget 2022 (C1+ C2 credits)	Executed Budget 2023 (C1+C2 credits)	2024	2024 AMD NO.3		
			Last Approved Budget (C1 + C2 credits)	C1 Credits	C2 Credits	Total Amended Budget (C1 + C2 credits)
Title 1. Staff Expenditure	2,483,871	4,278,053	6,465,868	- 342,720	- 53,397	6,069,751
11 Salaries & Allowances	2,081,956	3,728,086	5,366,868	- 13,164	- 100,000	5,253,704
1100 - Temporary Agents	887,096	2,305,544	3,256,928	435,929		3,692,857
1110 - Contractual Agents	1,194,860	1,422,541	1,809,940	- 290,508	- 100,000	1,419,432
1120 - Interim, Trainees & SNEs			300,000	- 158,585		141,415
12 Expenditure relating to recruitment	1,501	25,718	32,000	- 11,426		20,574
13 Missions and travel expenses	90,752	201,695	270,000		92,000	362,000
14 Socio-medical and training	309,662	322,554	297,000	- 14,331	- 45,397	237,272
1400 - CAS & EU School transports			82,837	4,603		87,440
1410 - Trainings			139,464	- 4,992	- 45,397	89,075
1420 - Social measures for Staff			74,700	- 13,942		60,758
1500 - HR administrative services			500,000	- 303,800		196,200
Title 2. Building, Equipment and Operating Costs	1,211,761	1,449,089	2,598,287	342,720	259,120	3,200,127
20 Buildings and associated costs	21,111	93,901	80,000	- 10,000		70,000
21 Information Technology	228,991	333,344	500,000	26,351		526,351
22 Movable property	-	2,549	37,000	- 4,808		32,192
23 Current administrative expenditure	166,230	120,051	325,000	- 52,060	- 117,400	155,540
24 External consultancy & auditing	5,313	5,201	270,000	118,906		388,906
25 Internal Meetings	34,779	71,122	100,000	-	- 25,175	74,825
26 Legal services	248,338	306,986	150,000	39,782		189,782
27 Comm, Information & Events	-	90,250	365,000	- 138,904		226,096
28 Experts and associated costs	507,000	425,684	771,287	363,453	401,695	1,536,434
Total ADMIN (Tilte I and II)	3,695,631	5,727,142	9,064,155	-	205,723	9,269,878

EXPENDITURES (EUR)	Executed Budget 2022 (C1+ C2 credits)	Executed Budget 2023 (C1+ C2 credits)	2024	2024 AMD NO.3		
			Last Approved Budget (C1 + C2 credits)	C1 Credits	C2 Credits	Total Amended Budget (C1 + C2 credits)
Total ADMIN (Tilte I and II)	**3,695,631**	**5,727,142**	**9,064,155**	-	**205,723**	**9,269,878**
Title 3. Operational Expenditure						
30 Grants, HPC Operations, R&I Activities	**80,866,561**	**225,019,312**	**202,578,637**	-	**7,516,000**	**210,094,637**
Regulation (EU) 2018/1488 Calls	**6,999,999**	**19,312**	**33,688**	-	**83,000**	**116,688**
EuroHPC-2019-1	-	19,312	33,688		83,000	116,688
EuroHPC-2019-2	-	-	-		-	-
EuroHPC-2019-3	-	-	-		-	-
EuroHPC-2020 -1	-	-	-		-	-
EuroHPC-2020 -2	-	-	-		-	-
EuroHPC-2020 -3	6,999,999	-	-		-	-
Opex Grants (LUMI, LEONARDO, MN5)	-	-				-
Regulation (EU) 2021/1173 Calls	**73,866,562**	**225,000,000**	**202,544,949**	-	**7,433,000**	**209,977,949**
c. Federation Pillar			-			-
d. Technologies Pillar		185,000,000	88,677,949			**88,677,949**
e. Applications Pillar	39,907,650	30,000,000	88,867,000		- **52,567,000**	**36,300,000**
f. Compentences & Skills Pillar	33,958,912		15,000,000			**15,000,000**
g. International Cooperation Pillar		10,000,000	10,000,000			**10,000,000**
h. AI pillar					**60,000,000**	**60,000,000**
31 HPC Infrastructure Activities	**1,002,909,558**	**663,502,201**	**88,151,714**	-	-	**88,151,714**
Regulation (EU) 2018/1488	**151,400,000**	-	-	-	-	-
LUMI - PreExscale	-	-				-
LEONARDO - PreExscale	-	-				-
MN5 5 - PreExscale	151,400,000	-				-
Deucalion - Petascale	-	-				-
Regulation (EU) 2021/1173	**851,509,558**	**663,502,201**	**88,151,714**	-	-	**88,151,714**
High-end (Exascale) supercomputer (2nd	500,000,000	541,700,000	-			-
Mid-range supercompter(s)	114,000,000	64,597,000	-			-
Hyperconnectivity for HPC Resources call & Federation Call	100,000,000	-	-			-
Upgrading EuroHPC supercomputers	33,000,000	-	-			-
Quantum computers (1/2/3 calls)	104,000,000	20,000,000	40,000,000			40,000,000
Access and allocation of EuroHPC computing resources and services	-	120,000	1,800,000			1,800,000
Industrial HPC (1) // 2nd call de-prioritised for AI pillar		12,260,601	45,651,714			45,651,714
EuroHPC Summit + Communications	509,558	719,304	700,000			700,000
Experimental Platform for European Technology		24,044,496	-			-
User Forum		60,800	-			-
Total OPERATIONAL (Title III)	**1,083,776,119**	**888,521,513**	**290,730,351**	-	**7,516,000**	**298,246,351**
TOTAL	**1,087,471,750**	**894,248,655**	**299,794,506**	-	**7,721,723**	**307,516,229**

Notes: 1) 83,000 Euro under the BL3000 reactivated from the unused administrative budget appropriations

2) The transfers between budget lines to optimise the adminstrative budget

Table 4 Expenditure Payment Appropriations (in EUR)

EXPENDITURES (EUR)	Executed Budget 2022 (C1+ C2 credits)	Executed Budget 2023 (C1+C2 credits)	2024	2024 AMD NO.3		
			Last Approved Budget (C1 + C2 credits)	C1 Credits	C2 Credits	Total Amended Budget (C1 + C2 credits)
Title 1. Staff Expenditure	4,051,713	4,055,875	6,715,656	- 342,720	- 53,397	6,319,539
11 Salaries & Allowances	3,863,897	3,664,102	5,398,003	- 13,164	- 100,000	5,284,839
1100 - Temparary Agents	121,423	2,305,544	3,256,928	435,929		3,692,857
1110 - Contractual Agents	618,475	1,358,558	1,841,075	- 290,508	- 100,000	1,450,567
1120 - Interim, Trainees & SNEs			300,000	- 158,585		141,415
12 Expenditure relating to recruitment	1,335	16,646	32,000	- 11,426		20,574
13 Missions and travel expenses	45,693	180,581	321,159		92,000	413,159
14 Socio-medical and training	140,788	194,546	297,000	- 14,331	- 45,397	237,272
1400 - CAS & EU School transports			82,837	4,603		87,440
1410 - Trainings			139,464	- 4,992	- 45,397	89,075
1420 - Social measures for Staff			74,700	- 13,942		60,758
15 - HR administrative services			667,494	- 303,800		363,694
Title 2. Building, Equipment and Operating Costs	695,546	1,357,028	3,103,606	342,720	259,120	3,705,446
20 Buildings and associated costs	18,011	83,851	91,055	- 10,000		81,055
21 Information Technology	192,932	380,922	522,901	26,351		549,252
22 Movable property	-	2,549	37,000	- 4,808		32,192
23 Current administrative expenditure	108,480	109,675	357,158	- 52,060	- 117,400	187,698
24 External consultancy & auditing	1,274	5,919	277,676	118,906		396,582
25 Internal Meetings	25,699	53,988	120,454	-	- 25,175	95,279
26 Legal services	198,819	192,004	344,335	39,782		384,117
27 Comm, Information & Events	-	35,000	365,000	- 138,904		226,096
28 Experts and associated costs	150,331	493,119	988,027	363,453	401,695	1,753,174
Total ADMIN (Tilte I and II)	4,747,259	5,412,903	9,819,263	-	205,723	10,024,986

EXPENDITURES (EUR)	Executed Budget 2022 (C1+ C2 credits)	Executed Budget 2023 (C1+ C2 credits)	2024	2024 AMD NO.3		
			Last Approved Budget (C1 + C2 credits)	C1 Credits	C2 Credits	Total Amended Budget (C1 + C2 credits)
Total ADMIN (Tilte I and II)	**4,747,259**	**5,412,903**	**9,819,263**	-	**205,723**	**10,024,986**
Title 3. Operational Expenditure						
30 Grants, HPC Operations, R&I Activities	**49,017,749**	**29,706,292**	**353,893,359**	-	**83,000**	**353,976,359**
Regulation (EU) 2018/1488 Calls	**12,538,673**	**19,908,134**	**55,576,023**	-	**83,000**	**55,659,023**
EuroHPC-2019-1	390,500	5,015,453	5,848,021		83,000	5,931,021
EuroHPC-2019-2	3,993,504		3,993,504			3,993,504
EuroHPC-2019-3	515,000		515,000			515,000
EuroHPC-2020 -1		3,129,855	9,239,771			9,239,771
EuroHPC-2020 -2	3,906,336	4,164,937	9,033,956			9,033,956
EuroHPC-2020 -3	3,733,333		10,419,282			10,419,282
Opex Grants (LUMI, LEONARDO, MN5)		7,597,889	16,526,489			16,526,489
Regulation (EU) 2021/1173 Calls	**36,479,076**	**9,798,157**	**298,317,335**	-	-	**298,317,335**
c. Federation Pillar			4,000,000			4,000,000
d. Technology Pillar			171,028,014			171,028,014
e. Applications Pillar	18,501,054	8,798,273	58,500,673			58,500,673
f. Compentences & Skills Pillar	17,978,022	999,884	48,788,648			48,788,648
g. International Cooperation Pillar	-		16,000,000			16,000,000
h. AI Pillar						
31 HPC Infrastructure Activities	**102,109,196**	**170,717,754**	**355,099,924**	-	-	**355,099,924**
Regulation (EU) 2018/1488	**102,109,196**	**83,616,544**	**125,901,301**	-	-	**125,901,301**
LUMI - PreExscale		68,510,638	4,433,829			4,433,829
LEONARDO - PreExscale	49,803,454	11,067,434	17,487,903			17,487,903
MN5 - PreExscale Supercomputer	47,414,393	1,797,739	102,187,868			102,187,868
Deucalion & Meluxina - Petascale	4,891,349	2,240,734	1,791,701			1,791,701
Regulation (EU) 2021/1173	-	**87,101,210**	**229,198,624**	-	-	**229,198,624**
High-end (exascale) supercomputer		86,636,985	133,219,302			133,219,302
Mid-range supercompter(s)			-			-
Hyperconnectivity for HPC Resources call & Federation Call			10,775,084			10,775,084
Upgrading EuroHPC supercomputers			4,153,875			4,153,875
Quantum computers			55,641,500			55,641,500
Access and allocation of EuroHPC computing resources and services			1,000,000			1,000,000
Industrial HPC (1) // 2nd call de-prioritised for AI pillar			16,495,514			16,495,514
EuroHPC Summit + Communications		464,225	700,000			700,000
Experimental Platform for European Technology			7,213,349			7,213,349
User Forum			-			-
Total OPERATIONAL (Title III)	**151,126,945**	**200,424,046**	**708,993,283**	-	**83,000**	**709,076,283**
TOTAL	**155,874,204**	**205,836,949**	**718,812,546**	-	**288,723**	**719,101,269**

Notes: 1) 83,000 Euro under the BL3000 reactivated from the unused administrative budget appropriation

2) The transfers between budget lines to optimise the adminstrative budget

3) A clerical correction of the PA executed in 2023 (EU Payment Approriations)

Tables 5a and 5b Cash Flow Operational Budget – Title III – EuroHPC grants (Chapter 30)

In the following two tables 5a and 5b a cashflow overview is presented, divided by the actions under the 2021 Regulation, and the on-going actions under the past Horizon 2020 programme.

Table 5a – Cashflow overview Chapter 30 under 2021 Regulation (in EUR)

FY2024	Type of payment*	Funding Programme	C1 Credits (EUR)	C2 Credits (EUR)	Total C1+C2 Credits
c. Federation Pillar			-	4,000,000	4,000,000
Epicure	PP	DEP		4,000,000	4,000,000
d. Technology Pillar			38,000,564	133,027,450	171,028,014
HORIZON-EUROHPC-JU-2022-TECH-03	PP	HE		93,027,450	93,027,450
HORIZON-EUROHPC-JU-2023-ENERGY-04				16,000,000	16,000,000
HORIZON-EUROHPC-JU-2023-INTER-02				24,000,000	24,000,000
d) HPC/QC Middleware technologies			10,000,000	-	10,000,000
d) Integration of technologies from European Processing Initiative in HPC systems (EPI3)			18,000,564	-	18,000,564
d) Development of new benchmarks for HPC, Quantum Computing, and AI			5,000,000	-	5,000,000
d) Enabling Universal Access and Integration of Quantum Resourses			5,000,000	-	5,000,000
e. Applications Pillar			19,500,000	39,000,673	58,500,673
DIGITAL-EUROHPC-JU-2023-AISC-03	PP/IP	DEP/HE		3,900,000	3,900,000
e) Applications Excellence				16,000,000	16,000,000
HORIZON-EUROHPC-JU-2023-QEC-05				8,000,000	8,000,000
e) Continuous integration and deployment platform (CI/CD)			1,500,000	-	1,500,000
e) HPC for AI Software Ecosystem			4,000,000	-	4,000,000
e) HPC Applications			10,000,000	-	10,000,000
e) HPC/Cybersecurity/AI			4,000,000	-	4,000,000
HORIZON-EUROHPC-JU-2023-COE-03				11,100,673	11,100,673
f. Compentences & Skills Pillar			8,000,000	40,788,648	48,788,648
EuroCC 2	PP/IP	DEP		11,021,978	11,021,978
Castiel 2				2,400,000	2,400,000
f) Digital Opportunity Traineeships project				4,000,116	4,000,116
HPC SPECTRA				1,000,000	1,000,000
HPCTRAIN				2,000,000	2,000,000
DIGITAL-EUROHPC-JU-2023-SME-01				17,966,554	17,966,554
DIGITAL-EUROHPC-JU-2023-ACADEMY				2,400,000	2,400,000
f) EuroHPC Masters Programme			8,000,000	-	8,000,000
g.International Cooperation Pillar			8,000,000	8,000,000	16,000,000
HANAMI	PP/IP	HE		4,000,000	4,000,000
HORIZON-EUROHPC-JU-2023-INCO 06-01				4,000,000	4,000,000
Support EU Digital Partnership activities			8,000,000		8,000,000
Regulation (EU) 2021/1173 Total PA FY2024			73,500,564	224,816,771	298,317,335

** FP - Final Payments, IP - Interim Payments, PP - Pre-financing*

Table 5b – Cashflow overview Chapter 30 (Grants) of Horizon2020 on-going actions (in EUR)

FY 2024	Type of payment*	C1 Credits (EUR)	C2 Credits (EUR)	Total C1+C2 Credits
EFLOW S4HPC -H2020-JTI-EuroHPC-2019-1	IP/FP	357,666		**357,666**
SCALABLE H2020-JTI-EuroHPC-2019-1			141,533	**141,533**
LIGATE H2020-JTI-EuroHPC-2019-1			261,206	**261,206**
ACROSS H2020-JTI-EuroHPC-2019-1		399,912		**399,912**
OPTIMA H2020-JTI-EuroHPC-2019-1			174,248	**174,248**
NextSim H2020-JTI-EuroHPC-2019-1		188,470		**188,470**
DComEX H2020-JTI-EuroHPC-2019-1		135,938		**135,938**
RED-SEA H2020-JTI-EuroHPC-2019-1		399,686		**399,686**
IO-SEA H2020-JTI-EuroHPC-2019-1		399,798		**399,798**
MICROCARD H2020-JTI-EuroHPC-2019-1		277,705		**277,705**
SPARCITY H2020-JTI-EuroHPC-2019-1		130,274		**130,274**
DEEP-SEA H2020-JTI-EuroHPC-2019-1		753,474		**753,474**
REGALE H2020-JTI-EuroHPC-2019-1		330,929		**330,929**
eProcessor H2020-JTI-EuroHPC-2019-1		399,999		**399,999**
ADMIRE H2020-JTI-EuroHPC-2019-1		398,164		**398,164**
MAELSTROM H2020-JTI-EuroHPC-2019-1		215,621		**215,621**
TIME-X H2020-JTI-EuroHPC-2019-1		151,213		**151,213**
EXAFOAM H2020-JTI-EuroHPC-2019-1		240,180	240,180	**480,361**
TEXTAROSSA H2020-JTI-EuroHPC-2019-1		205,138		**205,138**
EuroHPC-2019-1		**4,984,165**	**817,168**	**5,801,332**
Late interest payments PA available		20,000	109,688	**129,688**
Total late interest		**20,000**	**109,688**	**129,688**
951745 - FF4EUROHPC - H2020-JTI-EUROHPC-2019-2	IP/FP		999,848	**999,848**
951740 - CASTIEL - H2020-JTI-EUROHPC-2019-2 -			199,988	**199,988**
951732 - EUROCC - H2020-JTI-EUROHPC-2019-2			2,793,668	**2,793,668**
EuroHPC-2019-2		**0**	**3,993,504**	**3,993,504**
946002 - MEEP - H2020-JTI-EUROHPC-2019-3	IP/FP		515,000	**515,000**
EuroHPC-2019-3		**0**	**515,000**	**515,000**
LUMI - OPEX	IP/FP	4,967,793	2,412,111	**7,379,904**
LEONARDO - OPEX		5,396,955		**5,396,955**
MN5 - OPEX			3,749,631	**3,749,631**
Opex Grants		**10,364,748**	**6,161,741**	**16,526,489**
Eupex_EuroHPC-2020-01a	IP/FP	3,057,005	1,759,928	**4,816,933**
The European Pilot_EuroHPC-2020-01a		2,333,328	222,844	**2,556,171**
HPCQS_EuroHPC-2020-01b		266,667	1,600,000	**1,866,667**
H2020-JTI-EuroHPC-2020-01		**5,656,999**	**3,582,772**	**9,239,771**
EPI EuroHPC-2020-02	IP/FP	8,552,615	9,033,956	**17,586,571**
H2020-JTI-EuroHPC-2020-02		**8,552,615**	**9,033,956**	**17,586,571**
EU Masters4HPC_EuroHPC-2020-03	IP/FP		1,866,667	**1,866,667**
H2020-JTI-EuroHPC-2020-03		**0**	**1,866,667**	**1,866,667**
Regulation (EU) 2018/1488 Total PA (Horizon2020 funds)		**29,578,527**	**26,080,496**	**55,659,023**

** FP - Final Payments, IP - Interim Payments, PP - Pre-financing*

Tables 5c and 5d Cash Flow Operational Budget – Title III – EuroHPC Infrastructure activities (Chapter 31)

In the following two tables 5c and 5d, a cashflow overview is presented, divided by the actions under the 2021 Regulation, and the on-going actions under the past 2018 Regulation, now superseded by the 2021 Regulation.

Table 5c – Cashflow overview Chapter 31 under 2021 Regulation

FY 2024	Type of payment *	Funding	Type of Procurement **	C1 Credits (EUR)		C2 Credits (EUR)	
				EU	PS***	EU	PS
b) Infrastructure Pillar				76,154,543	32,000,000	63,884,011	39,171,636
High-end / Exascale supercomputers							
Jupiter Project	PP/IP	DEP	EHPC			37,130,136	37,130,136
Jules Verne Project				58,959,029			
Upgrading EuroHPC supercomputers							
Discoverer+ Project	PP/IP	DEP	Joint		n/a	364,875	n/a
Lisa Project						3,789,000	
Quantum computers							
EuroQCS-France Project						3,600,000	
EuroQCS-Italy Project						3,600,000	
EuroQCS-Spain Project	PP/IP	DEP	EHPC			3,600,000	
EuroQCS-Poland Project						3,600,000	
Lumi-Q Project						3,600,000	2,041,500
Euro-Q-Exa Project					32,000,000	3,600,000	
Acces IT Platform Project	PP/IP	DEP	EHPC		n/a	1,000,000	n/a
EuroHPC Summit 2024/2025	PP/IP	DEP	EHPC	700,000	n/a		n/a
Industrial HPC							
Industrial HPC 1st Call	PP/IP	DEP	Joint	3,400,000	n/a		n/a
2nd Call de-prioritised for AI pillar				13,095,514	n/a		n/a
c. Federation Pillar						10,775,084	
Hyperconnectivity for HPC Resources call (with INFRAG and GEANT)							
EuroHPC/LUX/2022/OP/01					n/a	775,084	n/a
c7) Federation of supercomputing and data resources call	PP/IP	CEF2	EHPC		n/a	10,000,000	n/a
EUROHPC/2023/CD/0003					n/a		n/a
d. Technology Pillar						7,213,349	
d6)Experimental Platform for European Technology	PP/IP	HE	EHPC		n/a	7,213,349	n/a
Regulation (EU) 2021/1173 Total PA FY2024				76,154,543	32,000,000	81,872,444	39,171,636

** FP - Final Payments, IP - Interim Payments, PP - Pre-financing*

*** Joint Procurement : Participation States contributions is managed by NFA, not entered in EuroHPC budget*

**** Participating States contributions entered in EuroHPC Budget*

Table 5d – Cashflow overview Chapter 31 for actions initiated before the 2021 Regulation

FY 2024	Type of payment*	C1 Credits (EUR)		C2 Credits (EUR)	
		EU	PS	EU	PS
LUMI - PreExscale	IP/FP	1,878,888	2,183,617		371,324
LEONARDO - PreExscale	IP/FP	921,880	921,880	15,644,143	
MN5 - PreExscale	IP/FP		63,779,976	26,487,868	11,920,024
Deucalion - Petascale	IP/FP				1,791,701
Regulation (EU) 2018/1488 Total PA		2,800,768	66,885,473	42,132,011	14,083,049

** FP - Final Payments, IP - Interim Payments, PP - Pre-financing*

Table 6: Reactivated Budget in budget amendment no. 1 of 2024 (Administrative) - Titles 1 and 2 (in EUR)

Budget to be Reactivated in 2024 (Administrative) (of which)	Commitment Appropriations (CA)	Payment Appropriations (PA)
Reactivation of Available Credits from the year 2023	288,723	288,723
n-1 - Credits (C1 from FY2023)		
n-2 - Credits (C1 from FY2022)	288,723	288,723
n-3 - Credits (C1 from FY2021)		

Note: 1) 2nd reactivation of unused appropriations

Table 7: Reactivated Budget in budget amendment no. 1 of 2024 (Operational) - Title 3 (in EUR)

Budget to be Reactivated in 2024 (Operational) (of which)	Commitment Appropriations (CA)	Payment Appropriations (PA)
Reactivation of Available Credits from the year 2023	7,433,000	-
n-1 - Credits (C1 from FY2023)	7,433,000	
n-2 - Credits (C1 from FY2022)		
n-3 - Credits (C1 from FY2021)		

Note: 1) 2nd reactivation of unused appropriations

Table 8: Reactivated Administrative and Operational Budget Structure (in EUR)

Administrative and Operational Budget Structure (C2 Credits)	Commitment Appropriations to be reactivated	Payment Appropriations to be reactivated
EHPC-B2024-1110	- 100,000	- 100,000
EHPC-B2024-1300	92,000	92,000
EHPC-B2024-1410	- 45,397	- 45,397
EHPC-B2024-2300	- 117,400	- 117,400
EHPC-B2024-2500	- 25,175	- 25,175
EHPC-B2022-2800	401,695	401,695
EHPC-B2024-3000	83,000	83,000
EHPC-B2024-3010	7,433,000	35,100,673
EHPC-B2024-3020		- 35,100,673
Grand Total	**7,721,723**	**288,723**

2. Information of the use of EuroHPC JU financial resources

a) Title 1: Staff Expenditure

Chapter 11 – Salaries and Allowances

This chapter covers the expenditure for salaries, social security, pension contributions and other related allowances of staff. It covers the remuneration cost of establishment plan posts (temporary staff) and external personnel (contract staff, Seconded National Experts, interim agents and trainees), in accordance with the Staff Regulations.

Chapter 12 – Expenditure relating to recruitment

This chapter covers the expenditure regarding the recruitment process of new staff and the associated administrative costs.

Chapter 13 – Mission and travel expenses

This chapter covers travel agency fees and the reimbursements of costs of staff having to go on mission / travel for business. It covers travel expenses, daily subsistence allowances and ancillary or exceptional expenditure incurred by staff, whilst on mission, in the interest of the service. As part of its duties the JU staff will have to travel to various conferences, meetings and workshops related to the activities of the Joint Undertaking and to the actions funded.

Chapter 14 – Socio-medical expenditure and professional development

This chapter covers the JU contribution to the costs of the Comité des Activités Sociales, (e.g. the "crèche", the "garderie/centre d'études", the school bus), the medical service, the policy linked to financial assistance to disabled persons, the complementary health insurance, contribution of the home office (as per European Commission guidelines), and other related activities. It also covers the cost for professional development and training programme

Chapter 15 – HR administrative services

This chapter covers costs of all SLAs and working arrangements with other EU bodies for HR matters, together with specialised external HR legal costs, when required.

b) Title 2: Building, Equipment and Operating Costs

Chapter 20 – Building and associated costs

This Chapter covers costs related to the infrastructure including e.g. office overheads and insurance, cleaning and maintenance, security and surveillance (where not covered by the SLA with DG HR) and others. The office premises are provided by the JU hosting country.

Chapter 21 – Information Technology

This Chapter covers costs related to the purchase of computer equipment, video conference equipment, the cost of software and also software package maintenance, user support, and others. It includes the procurement and maintenance of programme packages and software licenses necessary for the effective operation of the JU, the expenditure on services contracts for analysis, programming and technical assistance necessary for the JU, the cost of external services contracts to manage and maintain the data and systems, training and other support activities.

Chapter 22 – Movable property and associated costs

This Chapter covers the necessary resources to cover the costs of the organisation of the office e.g. office furniture needs.

Chapter 23 – Current administrative expenditure

This Chapter covers the costs of miscellaneous services related to the agreements signed with other Commission offices/services e.g. the CdT (translations) DG BUDG (ABAC & treasury), BOA for Accounting Services, S.G. (HAN), EFSA (EUAN SSO), and others.

It also covers of office supplies, stationery, badges, office material and other consumables necessary for the operation of the office. It also includes all correspondence, postage, delivery services costs and telecommunication costs (fixed, mobile telephony).

Chapter 24 – External administrative consultancy and auditing

This chapter covers the costs for external audit, external consultancies linked to administrative matters & outsourced support.

Chapter 25 – Internal meetings

This Chapter covers any expenditure linked to formal and internal events and meetings. It covers necessary catering costs and any additional costs regarding the organisation.

Chapter 26 – Legal services

This Chapter covers the costs for legal assistance, data protection and other legal obligations.

Chapter 27 – Communication, Information & Events

This Chapter covers the costs regarding Communication activities, events organization, dissemination and publication activities in connection with operational activities. It will also cover the costs of internal communication expenses.

Chapter 28 – Experts and associated costs

This Chapter covers the fees for the work done by experts, travel expenses and daily allowances if applicable. It also includes the reimbursement of expenses (travel and

accommodation) for experts invited by the Euro HPC to meetings/events. (e.g. INFRAG/RIAG members and other experts).

c) Title 3: Operational Expenditure

The main purpose of the Joint Undertaking is the indirect implementation of EU budget in the field of High-Performance Computing. Detailed description of the operational activities undertaken in 2021 are presented in the Work Programme below.

Chapter 30 – Grants, R&I Activities

In 2024, this appropriation related to all expenses linked to the EuroHPC JU R&I activities.

Table 5a above sets out contributions made to HPC R&I activities established under Regulation 2018/1488 and Regulation 2021/1173.

Chapter 31 – HPC Infrastructure Activities

In 2024, this appropriation relates to the ongoing procurement in exascale, the mid-range systems, the quantum systems and upgrades and the industrial supercomputers.

Supercomputer maintenance is also foreseen to be paid annually from 2022.

Table 5b above sets out contributions made to HPC Infrastructure activities established under Regulation 2018/1488 and Regulation 2021/1173.

HUMAN RESOURCES

In 2024, the JU should be fully staffed (with only standard turnover rates), and the last pending selection procedures should be finalised.

In 2023 tools and processes have been put in place in order to successfully integrate newly recruited colleagues within the teams and ensure their contribution to the JU's objectives as soon as possible. This process will continue in 2024, to create team coherence and clarity in terms of roles and responsibilities, in line with individual, unit and JU objectives.

The implementation of the HR tools, policies and procedures, in line with the Implementing Rules adopted by the Governing Board will continue. Effort will be made to consolidate the competencies and know-how within the JU, as well as identify and address any potential gaps. Efforts will also be made to stimulate cross-functional interaction and knowledge sharing between colleagues, as well as maintain good team spirit.

Internal communication will be further strengthened in the area of Human Resources, in particular by means of Intranet pages and dedicated info sessions.

The HR strategy of the JU will be finalised and rolled out in 2024.

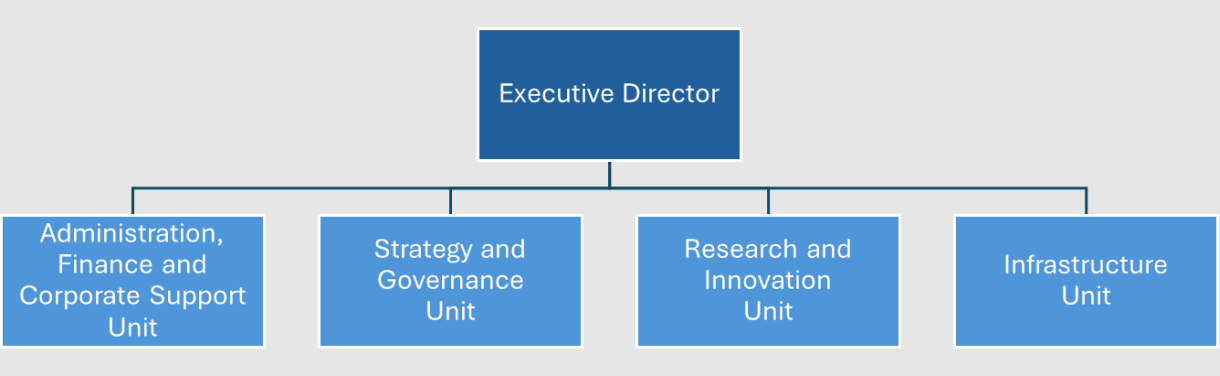
Emphasis will be put on providing sustainable working environment, as well as policies favouring staff well-being, personal and professional development and work/life balance.

The JU will also benefit from the shared expertise in the area of HR via the inter-agency network of HR professionals, as well as the Back Office Arrangement (BOA) with other JUs.

The JU will also benefit from sharing best practices via the EU Agencies network.

Official organigramme of the JU

The organigramme below presents the proposed organisational structure of the JU, up to the Head of Unit level**.**



Priorities for the 2024 recruitments

The remaining vacant posts should be filled in the course of 2024.

Human resources planning for the period of 2021-2027

	2021	2022	2023	2024	2025	2026	2027
Establishment plan posts Temporary Agents (TA)	4	22	27	27	27	27	27
Contract Agents (CA)	11	25	27	27	27	27	27
Seconded National Experts (SNE)	1	0	0	0	0	0	0
Total Staff	**16**	**47**	**54**	**54**	**54**	**54**	**54**

Breakdown of Temporary Staff by grade in 2023 and 2024

The total 2024 posts represent the posts approved by the Governing Board in the initial Annual Work Programme 2024.

Temporary Agents (TA) by grade	2023 TA posts	Filled-in posts as of 31/12/2023	2024 TA posts
AD 16			
AD 15			
AD 14	1	1	1
AD 13			
AD 12	1	1	1

AD 11			1
AD 10	2	1	1
AD 9	2	2	2
AD 8	10	4	10
AD 7	4	10	4
AD 6	5	3	5
AD 5			
Total (ADs)	**25**	**22**	**25**
AST 4	2	2	2
Total (ASTs)	**2**	**2**	**2**
Total TA	**27**	**24**	**27**

Breakdown of external staff by Function Group in 2023 and 2024

The JU remains within the planned maximum full-time equivalents (FTEs) in terms of contract agents, as foreseen in the Legislative Financial Statement (LFS), with 27 FTEs. While keeping the same maximum FTEs at 27 contract agents, the JU needs to hire more Function Group IV agents to better support the upcoming workload linked to the AI pillar, which requires more officers and less assistants. Therefore, the number of Function Group III agents (assistants) is reduced to allow the growth in officers.

Contract Agents (CA) Staff	**2023 approved FTEs**	**Filled-in posts as of 31/12/2023**	**2024 approved FTEs**	**2024 amended FTEs**
Function Group IV	12	2	12	~~17~~ 22
Function Group III	14	9	14	~~9~~ 4
Function Group II	1	1	1	1
Total CA staff	**27**	**12**	**27**	**27**

ANNEX: AI FACTORIES

TRACK 1: CALL FOR EXPRESSION OF INTEREST for the selection of existing Hosting Entities of EuroHPC supercomputers to acquire an advanced Experimental AI-optimised Supercomputing Platform (optional) and to establish an AI Factory

(1)

European High Performance Computing Joint Undertaking

REF: EUROHPC-2024-CEI-AI-01

CALL FOR EXPRESSION OF INTEREST

for the selection of existing Hosting Entities of EuroHPC supercomputers to acquire an advanced Experimental AI-optimised Supercomputing Platform (optional) and to establish an AI Factory

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1. INTRODUCTION – CONTEXT AND BACKGROUND

The European High Performance Computing Joint Undertaking (hereinafter referred to as 'EuroHPC JU) was established by Council Regulation (EU) 2021/1173 of 13 July 2021[26] amended by Council Regulation (EU) **2024/1732 of 17 June 2024 amending Regulation (EU) 2021/1173 as regards a EuroHPC initiative for start-ups in order to boost European leadership in trustworthy artificial intelligence** which entered into force on 9 July 2024[27] (hereinafter referred to as 'Regulation').

According to Article 3 of the Regulation, the mission of the EuroHPC JU is to develop, deploy, extend and maintain in the Union a federated, secure hyperconnected supercomputing, quantum computing, service and data infrastructure ecosystem; to support the development and uptake of demand-oriented and user-driven innovative and competitive supercomputing systems based on a supply chain that will ensure components, technologies and knowledge limiting the risk of disruptions and the development of a wide range of applications optimised for these systems; and, to widen the use of that supercomputing infrastructure to a large number of public and private users, and to support the twin transition and the development of key skills for European science and industry. **As per the recent amendment to the EuroHPC JU Regulation, Art 3 has introduced a new objective to be pursued by the EuroHPC JU which is "to develop and operate the Artificial Intelligence Factories in support of the further development of a highly competitive and innovative Artificial Intelligence ecosystem in the Union".**

In line with Article 9(5a) of the Regulation, an existing hosting entity may apply to become an AI factory, following a call for expression of interest, and shall be selected by the Governing Board provided that **the hosting entity can demonstrate that its EuroHPC supercomputer has enough computing resources for training large scale, general-purpose AI models and emerging AI applications** (referred to hereinafter as an "*AI-ready EuroHPC supercomputer"*).

The aim of AI factories is to provide the European startups as well as the industrial and the scientific community at large with enhanced access to AI optimised computing capabilities for the large-scale training and development of general-purpose AI models, and for the development, validation and running of emerging AI applications. In this context it becomes essential that AI Factories are established swiftly.

One of the targets of the EuroHPC JU is also promoting the further development of European technologies and thus contributing to developing a competitive European technology supply industry. As part of this objective, **interested hosting entities may also include in their application an optional system/partition targeting the development of an advanced experimental AI-optimised supercomputing platform**. The goal of such a platform shall be to develop an exploratory supercomputing infrastructure for the development, integration, testing, and co-design of a wide range of European technologies suitable to be part of their AI-ready EuroHPC supercomputer.

The hosting entity of an AI-ready EuroHPC supercomputer shall create a one-stop shop for the users, including startups, small and medium-sized enterprises and scientific users, to facilitate access to its support services, the so called "AI Factory". The Union's contribution shall cover up to 50 % of the operational costs of the AI Factories.

The present Call for Expressions of Interest is launched for the selection of an entity hosting an AI-ready EuroHPC supercomputer for establishing an AI Factory, on the basis and in accordance with the Regulation, taking into account the EU Financial Regulation[28] and where relevant on the basis of

[26] Council Regulation (EU) 2021/1173 of 13 July 2021 on establishing the European High Performance Computing Joint Undertaking and repealing Regulation (EU) 2018/1488, OJ L 256, 19.7.2021, p. 3.

[27] OJ L, 19.6.2024, ELI: http://data.europa.eu/eli/reg/2024/1732/oj.

[28] 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, (EU) No 1309/2013, (EU) No 1316/2013, (EU) No

Financial Rules of the EuroHPC JU[29]. The present Call for Expressions of Interest includes also an optional part on the development and operation of an Advanced Experimental AI-optimised Supercomputing Platform.

The present Call for Expressions of Interest is open to entities or consortia of entities fulfilling the conditions as defined in Article 9 of the EuroHPC Regulation. Section 6 below presents the eligibility criteria. **The call shall be continuously open until 31st December 2025, with pre-defined cut-off dates that will trigger the evaluation of the applications submitted up to each respective cut-off date or until the depletion of available funds.**

Annex 1 provides the structure and the contents to be provided by an application to be submitted under the present Call for Expressions of Interest.

2.OBJECTIVES

The overall objective of this call is to select existing hosting entities of AI-ready EuroHPC supercomputers for acquiring Advanced Experimental AI-optimised Supercomputing Platforms (optional), as well as for establishing an associated AI Factory which will be undertaken by the EuroHPC JU.

The specific objective of this call is as follows:

> The selection of an existing hosting entity of an AI-ready EuroHPC supercomputer by the EuroHPC JU that will establish an associated "AI Factory": The EuroHPC JU will amend the existing hosting agreement between the EuroHPC JU and the hosting entity that will permit to establish a new stable and structured partnership between the EuroHPC JU and the hosting entity for:
>
> - the development and operation of an Advanced Experimental AI-optimised Supercomputing Platform – this part of the call is optional,
> - and the establishment and operation of the associated "AI Factory".

By submitting the application, applicant hosting entities provide their prior acceptance of the terms and conditions set out in the model hosting agreement. Such model hosting agreement will be made available in due time, before the first call cut-off date.

The amended hosting agreement will be approved by the Governing Board before signature.

The EuroHPC JU will evaluate, with the help of external experts, the received applications to the call for expression of interest and will draw up a ranking list of candidate hosting entities (or their hosting consortia) for acquiring an Advanced Experimental AI-optimised Supercomputing Platform and for setting up an AI Factory around the existing AI-ready EuroHPC supercomputer. From this ranking list, the EuroHPC JU, by decision of its Governing Board, will select the hosting entities. Inclusion in the list does not in and as of itself entail an obligation on the part of the EuroHPC JU to conclude the hosting agreement or any other contract with the selected hosting entity.

Following this selection:

223/2014, (EU) No 283/2014, and Decision No 541/2014/EU and repealing Regulation (EU, Euratom) No 966/2012, OJ L 193, 30.7.2018, p. 1 (hereinafter referred to as 'FR').(https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32018R1046).

[29] Decision of the Governing Board of the EuroHPC JU No 3/2020 Approving the Financial Rules of the EuroHPC Joint Undertaking readopted by Decision of the Governing Board of the EuroHPC JU No 17/2021 approving the re-adoption of Governing Board Decisions adopted under the framework of Regulation (EU) 2018/1488 and its updated Rules of Procedure in the view of Regulation (EU) 2021/1173.

- **The existing hosting agreement between the EuroHPC JU and the selected hosting entity or hosting consortium will be amended**, laying down the terms and conditions for establishing and operating an associated "AI Factory" around the existing AI-ready EuroHPC supercomputer on behalf of the EuroHPC JU, including a service level agreement (Article 10(2)(c) of the Regulation). The time limit for signing the amended hosting agreement is 1 month after the Governing Board decision to accept the proposal for funding of the AI Factory.

- **A contractual arrangement between the EuroHPC JU and the selected hosting entity shall be signed to cover the funding of the "Advanced Experimental AI-optimised Supercomputing Platform" eligible costs** (specifying among others and if applicable any pre-financing of the hosting entity by the EuroHPC JU), which will be covered up to 50 % by the Union contribution. This third contractual arrangement will be awarded only if the selection concerns also the optional part of the application on "Advanced Experimental AI-optimised Supercomputing Platform.

- **A second contractual arrangement between the EuroHPC JU and the selected hosting entity shall be signed to cover the funding of the "AI Factory" eligible costs** (specifying among others and if applicable any pre-financing of the hosting entity by the EuroHPC JU), which will be covered up to 50 % by the Union contribution.

3.BUDGET AVAILABLE

The Union financial contribution to the EuroHPC JU shall cover up to 50 % of the development and operation costs of an Advanced Experimental AI-optimised Supercomputing Platform, and up to 50% of the costs associated with the setting up and operation of the "AI Factories". The remaining total cost related to the Advanced Experimental AI-optimised Supercomputing Platform and to the "AI Factories" shall be covered by the Participating State where the hosting entity is established or by the Participating States in the hosting consortium[30].

The Union's total financial contribution to the EuroHPC JU for the setting up and operation of the 'AI Factories' and for the **development and deployment** of **advanced experimental AI-optimised supercomputing platform** is estimated at a maximum of **EUR 180 million**[31] depending on budget availability (Horizon Europe funds).

For a given AI Factory to be set up around an AI optimised EuroHPC supercomputer, the maximum EU contribution for establishing and running it is set at EUR 15 million for a period of 3 years. This amount concerns the hosting entity, or its consortium of different partners, located in the hosting Member State.

In the case of a hosting consortium, the EU contribution may be increased by up to EUR 5 million per Participating State in the hosting consortium. Participation in more than one AI Factory should be duly justified in the respective applications to avoid overlapping of activities and double funding.

The maximum amount of the EU contribution that may be allocated to an AI Factory with multiple Participating States is subject to EU budget availability.

Grants will be established to cover the development and operating costs of an advanced experimental AI-optimised supercomputing platform, and the setting up and operation of the 'AI Factory'. The

[30] 'hosting consortium' means a group of Participating States or a consortium of private partners that have agreed to contribute to the acquisition and operation of a EuroHPC supercomputer, including any organisations representing these Participating States.

[31] A total budget of up to EUR 120 million is foreseen for the setting up and operation of the 'AI Factories' and a total budget of up to EUR 60 million is foreseen for the development and deployment of advanced experimental AI-optimised supercomputing platform. However, a different budget combination may be applied according to the received submissions, in particular increasing the share dedicated to the AI Factories.

reimbursement from the EuroHPC JU will be calculated on the basis of the declared costs up to the maximum total contribution of the EuroHPC JU or up to a ceiling of 50 % of the declared eligible costs, whichever is lower.

The costs related to the construction of the hosting site per se (i.e., costs related to the potential extension of the building infrastructure that will host the advanced experimental AI-optimised supercomputing platform, etc.) shall not be covered by the EuroHPC JU. However, the costs of the preparation and adaptation of the hosting site incurred by the hosting entity that can be directly accounted to the installation of the advanced experimental AI-optimised supercomputing platform, may be considered as part of the Total Cost of Ownership (TCO) and may thus be considered as eligible costs that can be covered by the EuroHPC JU.

This action is an EU Synergy call. Grants and procurements can be linked with another grant funded from any other EU funding programme. The grants under both calls will be managed as linked actions.

4.CONTENT OF THE EXPRESSIONS OF INTEREST

The expressions of interests must be submitted using the application form included as a separate Annex 1 to this call (EuroHPC HE Application Form). Annex 1 of this document provides information on how to fill in the Application Form.

5.ADMISSIBILITY REQUIREMENTS

In order to be admissible:

a) Applications must be sent no later than **the 4th of November 2024 at 17:00 Luxembourg time**. This date is the first cut-off date of this continuously open call. Further cut-off dates are provided in section 10 Timetable.

b) Applications must be submitted in writing (see section 11 "Procedure for the submission"), using the application form in the Annex 1 (EuroHPC HE Application Form) and available at [*https://eurohpc-ju.europa.eu/current-calls.]*

c) Applications must be submitted in the English language in three paper copies and on a USB stick.

Failure to comply with those admissibility requirements will lead to the rejection of the application.

6.ELIGIBILITY CRITERIA

The call is open to entities or consortia of entities fulfilling cumulatively the following conditions as defined in Article 9 of the EuroHPC Regulation[32]:

[32] The action covering the funding of the "Advanced Experimental AI-optimised Supercomputing Platform" eligible costs and the action covering the funding of the "AI Factory" eligible costs will be implemented by way of grants which will be awarded on the basis of Article 195 (f) of the Financial Regulation (EU, Euratom) 2018/1046 to Hosting Entities of EuroHPC AI oriented or AI upgraded supercomputers according to Governing Board Decision No xx/2024. The activities associated with the development of the Advanced Experimental AI-optimised Supercomputing Platform require a high degree of technical competence and specialisation in developing exploratory supercomputing infrastructure for the development, integration, testing and co-design of a wide range of European technologies being part of the AI supercomputer infrastructure. The activities associated with the AI factory require a high degree in specialisation bringing together AI computing infrastructure and storage facilities, data, support tools, AI algorithms and talent. These actions can only be implemented alongside with the procurement for the

a) The applicant hosting entity shall be already hosting an AI-ready EuroHPC supercomputer suitable for setting up an 'AI factory' in a Participating State to the EuroHPC JU that is a Member State of the EU. The applicant hosting entity shall represent one Participating State that is a Member State or a hosting consortium of Participating States that have agreed to contribute to setting up an 'AI Factory' (which may include several different legal entities from the same Participating State and/or from different Participating States). The applicant hosting entity and the competent authorities of the Participating State or Participating States in a hosting consortium shall enter into an agreement to this effect.

b) The coordinating applicant hosting entity has to be registered as a legal entity in one of the Participating States that is a Member State.

c) The applicant(s) must have a legal personality on the date of the deadline for submission of applications and must be able to demonstrate their existence as a legal person. In case the application is submitted by several different legal entities from the same Participating State and/or from different Participant States working together (consortium), this criterion (c) applies to all entities.

d) Applications should include the provision of appropriate supporting documentation proving the commitment of the Member State where the hosting entity is established and, in the case of a hosting Consortium, of the competent authorities of the Participating States of the hosting consortium to cover the share of the total cost of the AI Factory that is not covered by the Union contribution as set out in Article 5 of the Regulation or any other Union contribution as set out in Article 6 of the Regulation.

In case of a hosting consortium, the hosting agreement shall take the form of a partnership of the legal entities from the same Participating State and/or from different Participating States, of which the hosting entity will take the lead and act as coordinator of the hosting consortium. The co-ordinator will act as an intermediary for all communications between the EuroHPC JU and the partners. However, partners are jointly responsible for implementing the action(s) resulting from the awarded hosting agreement. To implement the action(s) properly, they must make appropriate internal arrangements.

The hosting entity or hosting consortium shall assume full liability towards the EuroHPC JU for the performance of the agreement as a whole, including financial and operational liability.

In accordance with Article 9 of the Regulation, after the selection of the hosting entity, the Participating State where the selected hosting entity is established (in the case of an application including only one Participating State) or the corresponding hosting consortium may decide to invite, subject to the prior agreement of the Commission, additional Participating States, or a consortium of private partners, to join the hosting consortium. The financial or in-kind contribution or any other commitment of the joining Participating States, or Private Members, shall not affect the Union's financial contribution and the corresponding ownership rights and percentage of access time allocated to the Union with regard to that AI-ready EuroHPC supercomputer.

In the case of a joint application by a hosting consortium, the hosting entity must be given power of attorney to represent the other parties to sign and administrate the hosting agreement (consortium leader).

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acquisition and the operation activities of a new or upgraded AI EuroHPC supercomputer by the awarded Hosting Entities identified in this call (EUROHPC-2024-CEI-AI-02)), or the awarded Hosting Entity of an existing EuroHPC supercomputer evaluated as AI ready in this call. After the award of a grant under Article 195 (f) of the Financial Regulation (EU, Euratom) 2018/1046, it is not possible to change the Hosting Entity or the composition of a Hosting Consortium anymore, further entities will not be able to join the Hosting Entity or Hosting Consortium throughout the implementation of the grant.

In order to assess the applicants' eligibility, the following supporting documents are requested:

- The legal entity identification form[33] duly completed and signed by the person authorised to enter into legally binding commitments on behalf of the applicant organisation(s) to be submitted in original;

- Hosting consortium: in addition to the supporting documents referring to their legal status, the hosting consortium members will submit a signed declaration based on the model Consortium Agreement/Power of Attorney, appointing a consortium leader and giving a mandate to him (included as Annex 1B).

- Each applicant and Participating State in a hosting consortium must fill-in and provide the duly signed Declaration of Honour (included as Annex 1A).

The following entities will be considered as non-eligible:

a) natural persons;

b) entities without legal personality.

7.EXCLUSION CRITERIA

7.1.Exclusion[34]

The Executive Director of the EuroHPC JU shall exclude an applicant from participating in this call for expression of interest where:

(a) the applicant is bankrupt, subject to insolvency or winding-up procedures, its assets are being administered by a liquidator or by a court, it is in an arrangement with creditors, its business activities are suspended, or it is in any analogous situation arising from a similar procedure provided for under EU or national laws or regulations;

(b) it has been established by a final judgment or a final administrative decision that the applicant is in breach of its obligations relating to the payment of taxes or social security contributions in accordance with the applicable law;

(c) it has been established by a final judgment or a final administrative decision that the applicant is guilty of grave professional misconduct by having violated applicable laws or regulations or ethical standards of the profession to which the applicant belongs, or by having engaged in any wrongful intent or gross negligence, including, in particular, any of the following:

(i) fraudulently or negligently misrepresenting information required for the verification of the absence of grounds for exclusion or the fulfilment of eligibility or selection criteria or in the performance of a contract, a grant agreement or a grant decision;

(ii) entering into agreement with other applicants with the aim of distorting competition;

(iii) violating intellectual property rights;

(iv) attempting to influence the decision-making process of the EuroHPC JU during the award procedure;

(v) attempting to obtain confidential information that may confer upon it undue advantages in the award procedure;

(d) it has been established by a final judgment that the applicant is guilty of any of the following:

[33] http://ec.europa.eu/budget/contracts_grants/info_contracts/legal_entities/legal_entities_en.cfm

[34] Article 136 FR

(i) fraud, within the meaning of Article 3 of Directive (EU) 2017/1371 of the European Parliament and of the Council and Article 1 of the Convention on the protection of the European Communities' financial interests, drawn up by the Council Act of 26 July 1995;

(ii) corruption, as defined in Article 4(2) of Directive (EU) 2017/1371 or Article 3 of the Convention on the fight against corruption involving officials of the European Communities or officials of Member States of the European Union, drawn up by the Council Act of 26 May 1997, or conduct referred to in Article 2(1) of Council Framework Decision 2003/568/JHA, or corruption as defined in the applicable law;

(iii) conduct related to a criminal organisation, as referred to in Article 2 of Council Framework Decision 2008/841/JHA;

(iv) money laundering or terrorist financing within the meaning of Article 1(3), (4) and (5) of Directive (EU) 2015/849 of the European Parliament and of the Council;

(v) terrorist offences or offences linked to terrorist activities, as defined in Articles 1 and 3 of Council Framework Decision 2002/475/JHA, respectively, or inciting, aiding, abetting or attempting to commit such offences, as referred to in Article 4 of that Decision;

(vi) child labour or other offences concerning trafficking in human beings as referred to in Article 2 of Directive 2011/36/EU of the European Parliament and of the Council;

(e) the applicant has shown significant deficiencies in complying with main obligations in the performance of a contract, a grant agreement or a grant decision financed by the Union's budget, which has led to its early termination or to the application of liquidated damages or other contractual penalties, or which has been discovered following checks, audits or investigations by an authorising officer, OLAF or the Court of Auditors;

(f) it has been established by a final judgment or final administrative decision that the applicant has committed an irregularity within the meaning of Article 1(2) of Council Regulation (EC, Euratom) No 2988/95;

(g) it has been established by a final judgement or final administrative decision that the applicant has created an entity in a different jurisdiction with the intent to circumvent fiscal, social or any other legal obligations of mandatory application in the jurisdiction of its registered office, central administration or principal place of business;

(h) it has been established by a final judgement or final administrative decision that an entity has been created with the intent referred to in point (g);

(i) for the situations referred to in points (c) to (h) above, the applicant is subject to:

(i) facts established in the context of audits or investigations carried out by European Public Prosecutor's Office after its establishment, the Court of Auditors, the European Anti-Fraud Office or the internal auditor, or any other check, audit or control performed under the responsibility of an authorising officer of an EU institution, of a European office or of an EU agency or body;

(ii) non-final judgments or non-final administrative decisions which may include disciplinary measures taken by the competent supervisory body responsible for the verification of the application of standards of professional ethics;

(iii) facts referred to in decisions of persons or entities being entrusted with EU budget implementation tasks;

(iv) information transmitted by Member States implementing Union funds;

(v) decisions of the Commission relating to the infringement of Union competition law or of a national competent authority relating to the infringement of Union or national competition law; or

(vi) decisions of exclusion by an authorising officer of an EU institution, of a European office or of an EU agency or body.

7.2.Remedial measures[35]

If an applicant declares one of the situations of exclusion listed above, it should indicate the measures it has taken to remedy the exclusion situation, thus demonstrating its reliability. This may include e.g. technical, organisational and personnel measures to prevent further occurrence, compensation of damage or payment of fines. The relevant documentary evidence which illustrates the remedial measures taken must be provided in annex to the declaration. This does not apply for situations referred in point (d) of section 7.1.

7.3.Rejection from the call

The Executive Director of the EuroHPC JU shall not conclude a hosting agreement with an applicant who:

a. is in an exclusion situation established in accordance with section 7.1;

b. has misrepresented the information required as a condition for participating in the procedure or has failed to supply that information.

The same exclusion criteria apply to affiliated entities.

Administrative sanctions (exclusion) may be imposed on applicants, or affiliated entities where applicable, if any of the declarations or information provided as a condition for participating in this procedure prove to be false.

7.4.Supporting documents

Applicants and affiliated entities must provide a declaration on their honour certifying that they are not in one of the situations referred to above under 7.3., by filling in the relevant form attached to the application form accompanying the Call for Expression of Interest and available at [*https://eurohpc-ju.europa.eu/participate.html*].

8.EVALUATION CRITERIA

The following sets of evaluation criteria will be used for the different parts of an eligible application submitted under the present Call for Expressions of interest:

- *Evaluation criteria for the existing "AI-ready EuroHPC supercomputer".*
- *Evaluation criteria for the "Advanced Experimental AI-optimised Supercomputing Platform".*
- *Evaluation criteria for the "AI Factory".*

The above sets of evaluation criteria are described below.

8.1.Evaluation criteria for the existing "AI-ready EuroHPC supercomputer"

Applicants should describe the main features of their existing supercomputer and associated facilities and demonstrate that this supercomputer has enough computing resources for training large scale, general-purpose AI models and emerging AI applications:

a. EuroHPC supercomputing features (0-10 points)

- Quality and pertinence of the general system features (including compute, storage, connectivity, etc.), taking into account the needs of the AI users, and demonstrating the

[35] Article 136 (7) FR.

existence of enough computing resources for training large scale and general-purpose AI models and emerging AI applications.

- Quality and pertinence of the AI/ML benchmarks (e.g., HPL-MxP, MLPerf) used for the evaluation of the computing capacity of the existing EuroHPC supercomputer. Inclusion of pertinent examples of training large AI models, if available.

- Pertinence of and extent to which the proposed AI/HPC software ecosystem (including software stacks, platforms, libraries, workflows, etc.) available at the hosting entity is comprehensive, suitable for AI development and is preparing the next generation of complex AI applications.

b. Proximity with an established datacentre, or connection to it via very high-speed networks (0-10 points)

- Demonstration that the connectivity of the data centre is sufficient for ultra-fast data access by the existing EuroHPC supercomputer.

Points will be allocated out of a total of 20 on the basis of the above-specified weighting. A minimum threshold of 5 points for each criterion and 12 points for the total will be applied. Applications below these thresholds will be rejected. For each criterion, if appropriate, applicants must provide detailed information about the role and tasks to be carried out by each consortium member.

8.2. Evaluation criteria for the "Advanced experimental AI-optimised supercomputing platform" (Optional)

Applicants may include in their application an optional system/partition targeting the development of an advanced experimental AI-optimised supercomputing platform. The goal of such a platform shall be to provide an exploratory supercomputing infrastructure for the development, integration, testing, and co-design of a wide range of European technologies suitable to be part of the existing AI-ready EuroHPC supercomputer.

This optional part will be evaluated according to the following evaluation criteria (based, *inter alia*, on the list of criteria provided for in Article 28 of the Horizon Europe Regulation):

a. Excellence (0-5 points)

- Clarity and pertinence of the project's objectives, and the extent to which the proposed work is ambitious, and goes beyond the state of the art.

- Soundness of the proposed methodology.

b. Impact (0-5 points)

- Credibility of the pathways to achieve the expected outcomes and expected impacts.

- Suitability and quality of the measures to maximise expected outcomes and impacts.

c. Quality and efficiency of the implementation (0-5 points)

- Quality and effectiveness of the work plan, assessment of risks, and appropriateness of the effort assigned to work packages, and the resources overall.

- Capacity and expertise of the consortium.

Points will be allocated out of a total of 15 on the basis of the above-specified weighting. A minimum threshold of 3 points for each criterion and 10 points for the total will be applied. For this optional part, applications below these thresholds will be rejected.

The evaluation of this optional part will not have any impact on the overall score of the application, i.e., the evaluation of this part will be considered separately and will not affect the final ranking or selection of applications regarding the other parts of this Call for Expression of Interest.

8.3.Evaluation criteria for the "AI Factory"

Since AI Factories will further reinforce the EU's AI ecosystem by bringing together computing infrastructure and storage facilities, data, support tools, AI algorithms, and talent in a 'one stop shop'[36], which will become essential for AI startups, researchers, and innovators, it becomes necessary that applicants describe i) the AI ecosystem they aim to target, as well as ii) what features their 'AI Factories' will have in terms of activities and services.

The evaluation criteria for this part of the application are based, *inter alia*, on the list of criteria in Article 9(5) of the Regulation, as well as the additional criteria that are presented in the concept paper on "AI Factories" described in Annex 3 of this Call for Expressions of Interest. The evaluation criteria are as follows:

a. **Vision, plans and capability of the hosting entity to address the challenges of the Artificial Intelligence start-up ecosystem, and research and innovation ecosystem and the Artificial Intelligence user community and providing a supportive centralised or distributed Artificial Intelligence-oriented supercomputing service *(0-10 points)***

   - Clarity and pertinence of the AI Factory overall concept, in terms of vision, rationale, objectives, development roadmap, targeted key industry sectors and stakeholders, internal or external cloud solutions planned to bridge the needs towards an end-to-end computing continuum and networking with other initiatives.
   - Clarity and pertinence of the AI Factory data facilities, access to data, confidentiality and integrity of data.
   - Pertinence of the links of the AI Factory to a national AI Strategy, national data and access policies to computing and data, and to a national strategy for investing in startups/SMEs.
   - Quality and efficiency of the Implementation Roadmap, including its deliverables and milestones, the risk management approach and the Key performance Indicators.
   - Clarity and pertinence of the plans to invest in physical and virtual infrastructure required for the AI Factory.
   - Soundness of the budget of the AI Factory.

[36] The provision of AI factories services may be implemented in a distributed manner by different partners from the selected hosting entity/consortium of Participating States.

- Credibility of the pathways to achieve the expected outcomes and expected impacts.
- Suitability and quality of the measures to maximise expected outcomes and impacts.

b. Quality and pertinence of experience and know-how available at the intended team that would be in charge for the supportive Artificial Intelligence-oriented supercomputing service environment (0-10 points)

- Quality and pertinence of experience and know-how available at the intended team that would be in charge for the supportive Artificial Intelligence-oriented supercomputing service environment.
- Quality and pertinence of the AI Factory user support services, including the quality and efficiency of the plan for offering professional services.
- Quality and pertinence of the AI Factory tools and software and application development environments.

c. Plans for interaction and cooperation with other Artificial Intelligence Factories, with EuroHPC Competence Centres and EuroHPC Centres of Excellence and with relevant Artificial Intelligence activities such as the hubs of Artificial Intelligence start-ups, the Artificial Intelligence and data ecosystems, the Artificial Intelligence Testing and Experimentation Facilities, the European central Artificial Intelligence platform, the Artificial Intelligence-oriented Digital Innovation Hubs and other related initiatives (0-10 points)

- Quality and pertinence of the AI Factory Hub.
- Clarity and pertinence of the networking activities of the AI Factory with existing European and national initiatives and with other EuroHPC AI Factories.
- Soundness of the plans for developing Trustworthy AI.

d. Existing capabilities and future plans of the hosting entity to contribute to the development of the talent pool (0-10 points)

- Pertinence and effectiveness of existing capabilities and future plans of the hosting entity to contribute to the development of the talent pool.
- Quality and pertinence of structured training facilities and training programmes highlighting relevant courses, activities, and learning pathways tailored to meet the diverse needs of potential users.
- Quality and pertinence of strategy to foster collaboration and engagement with universities, research centres and other training providers to train and equip students at all levels with the necessary in-demand AI skills.

Points will be allocated out of a total of 40 on the basis of the above-specified weighting. A minimum threshold of 5 points for each criterion and 25 points for the total will be applied. Applications below these thresholds will be rejected.

9.OVERVIEW OF THE EVALUATION AND SELECTION PROCEDURE

The EuroHPC JU is responsible for the implementation of the evaluation of the received expressions of interest. It shall organise the submission and evaluation procedures and communicates with the applicants.

9.1.Evaluation procedure

The submitted applications will be evaluated by a panel of a minimum of three and a maximum of five experts, depending on the number of applications received. These experts will be appointed by the EuroHPC JU on the basis of the procedures followed under Digital Europe Programme and Horizon Europe. For the applications considered admissible according to the section 5 above, the EuroHPC JU will assess the eligibility and exclusion criteria according to the sections 6 and 7 above. Only eligible applications will be evaluated.

- **Individual evaluations**: In the first step, the experts that sit on the panel shall carry out individually the evaluation of eligible expressions of interest on the basis of the evaluation criteria described in section 8 above. They give a score for each criterion, with explanatory comments. These individual reports form the basis of the further evaluation.

- **Consensus meetings**: After carrying out their individual assessment, all the experts that evaluated the application shall convene in a consensus meeting, to agree on a common position, including comments and scores, and prepare a consensus report. The consensus meetings shall be moderated by a Senior Officer of the EuroHPC JU who shall seek consensus, impartially, and ensure that all applications are evaluated fairly, in line with the relevant evaluation criteria.

- **Panel review:** The review panel shall be chaired by the Executive Director of the EuroHPC JU. The panel will review the scores and comments for all applications to check for consistency across the evaluations. If necessary, it will propose a new set of marks or revise comments, and resolve cases where evaluators were unable to agree. The panel will prepare an evaluation summary report. Only applications above threshold will be ranked by the review panel according to the evaluation criteria total score. If necessary, a priority order for applications with the same score will be determined in the ranked list, according to the following approach:

  Applications with the same score: Applications with the same total score will be prioritised according to the scores they have received for the evaluation criterion "AI Factory" (see section 8.3 above).

9.2.Selection

The Executive Director of the EuroHPC JU will review the results of the evaluation panel and will draw up a final ranking list based on the list proposed by the panel.

This final ranking list shall consist of a ranked list with the applications to be selected as hosting entities as proposed by the panel complemented by any suggestion for deviation from this list as proposed by the Executive Director. In addition, the EuroHPC JU will prepare a list with applications that did not pass the evaluation thresholds or were found to be ineligible.

The Executive Director will submit the final ranking list, together with the Evaluation Summary Reports, to the Governing Board of the EuroHPC JU with a proposal for selection of the Hosting Entities for their approval.

The Governing Board will make the final selection of the Hosting Entities, which will be invited to amend their existing hosting agreement with the EuroHPC JU.

After the decision of the Governing Board, all applicants will be informed in writing by the EuroHPC JU of the outcome of the evaluation in the form of an Evaluation Summary Report (ESR). The EuroHPC JU will also inform about the final selection or rejection of applications.

The EuroHPC JU will invite the selected applicant for the signature of the amended hosting agreement, but the invitation is not a commitment that the EuroHPC JU will sign the amended hosting agreement. The amendment to the hosting agreement shall be approved by the Governing Board before its signature by the respective parties.

9.3.Communication

The information contained in the present call document provides all the information required to submit an application. Please read it carefully before doing so, paying particular attention to the priorities and objectives of the present call.

All enquiries must be made by e-mail only to: info@eurohpc-ju.europa.eu

Questions shall be sent to the above address no later than the **6 days before the respective and subsequent cut off dates - 13:00 Luxembourg time –** as defined in Section 10.

The EuroHPC JU has no obligation to provide clarifications to questions received after this date.

Replies will be given/published no later than the "Publication of the last answers to questions" defined in the timeline in section 10.

To ensure equal treatment of applicants, the EuroHPC JU will not give a prior opinion on the eligibility of applicants, or affiliated entity(ies), an action or specific activities.

No individual replies to questions will be sent but all questions together with the answers and other important notices will be published (FAQ in EN) at regular intervals on the website under the relevant call: [*https://eurohpc-ju.europa.eu/participate/calls_en.]*

The EuroHPC JU may, on its own initiative, inform interested parties of any error, inaccuracy, omission or clerical error in the text of the Call for Expression of Interest on the mentioned website. It is therefore advisable to consult this website regularly in order to be informed of any updates and of the questions and answers published.

No modification to the applications is allowed once the deadline for submission has elapsed. If there is a need to clarify certain aspects or to correct clerical mistakes, the EuroHPC JU may contact the applicant for this purpose during the evaluation process. This is generally done by e-mail. It is entirely the responsibility of applicants to ensure that all contact information provided is accurate and functioning.

In case of any change of contact details, please send an email with the application reference and the new contact details to info@eurohpc-ju.europa.eu

In the case of hosting consortia, all communication regarding an application will be done with the lead applicant only, unless there are specific reasons to do otherwise, where the consortium coordinator should be in copy.

Applicants will be informed in writing about the results of the selection process at the latest 2 months after the cut-off date. Unsuccessful applicants will be informed of the reasons for rejection. No information regarding the award procedure will be disclosed until the notification letters have been sent to the relevant applicants.

10.TIMETABLE

The steps and indicative times for the procedure from publication to expected start of the mandate for the selected Hosting Entities are in the table below:

Selection of HE milestones	Date and time or indicative period
Call for Expression of Interest Publication	

Publication of Call for Expressions of Interest	**10 September 2024**
Information session	**Calendar week 39**
Submission of applications	
Deadlines to submit questions about the Call	**25 October 2024 – 16:00** **(Luxembourg time)** **and subsequently 6 days before the further cut-off dates**
Call Deadline / Cut-off dates	**04 November 2024 – 17:00** **01 February 2025 – 17:00** **02 May 2025 – 17:00** **(Luxembourg times)** **and subsequently every 3 months with last cut-off date being the 31st of December 2025**
Notification of the selection decision	**Within 2 months of the cut-off date**

11. PROCEDURE FOR THE SUBMISSION OF APPLICATIONS

Applications for the first call must be sent no later than the 4 November 2024 at 17:00 Luxembourg time, and subsequently every 3 months (see table in section 10).

Application forms are available at [*https://eurohpc-ju.europa.eu/participate/calls_en]*

Applications must be submitted in the correct form, duly completed and dated. They must be submitted in 3 (three) copies (one original clearly identified as such, plus two copies, and an electronic copy on USB stick) and signed by the person authorised to enter into legally binding commitments on behalf of the applicant organisation. The electronic version must contain only the pdf versions of the application presented in paper. Other electronic files will not be considered.

Applications must be submitted in a sealed envelope itself enclosed within a second sealed envelope, addressed as indicated below. The inner envelope must bear, in addition to the address indicated below, the words, "CALL FOR EXPRESSION OF INTEREST - **EUROHPC-2024-CEI-AI-01** – Not to be opened by the mail service". If self-adhesive envelopes are used, they must be sealed with adhesive tape and the sender must sign across that tape.

Where applicable, all additional information considered necessary by the applicant can be included on separate sheets.

Applications must be sent to the following address:

European High Performance Computing Joint Undertaking
Drosbach Building (DRB) - Wing E – 1st floor
12E rue Guillaume Kroll
L-2920 Luxembourg

- by post, date of postmark as proof of timely submission;
- in person, date of receipt, to the address above.

– by courier service[37], date of receipt by the courier service as proof.

Applications sent by fax or e-mail will not be accepted.

Contact point for any questions is[38] *info@eurohpc-ju.europa.eu*

All applications will be treated confidentially, as well as any submitted related information, data, and documents. The EuroHPC JU will ensure that the process of handling and evaluating applications is carried out in a confidential manner.

External experts are also bound by an obligation of confidentiality.

Applicants should avoid taking any actions that could jeopardise confidentiality. They must not attempt to discuss their application with persons they believe may act as expert evaluator for the EuroHPC JU.

Your application should not contain any information that is 'EU classified' under the rules on security of information in the Commission security rules for protecting EU classified information (see also Classification of Information in DEP projects).

The EuroHPC JU will process personal data in accordance with Regulation (EU) 2018/1725 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/EC[39].

Once the coordinator (or sole applicant) has submitted an expression of interest, an acknowledgement of receipt will be sent by the JU. No other interaction will take place with the EuroHPC JU until the application has been evaluated, unless:

– The EuroHPC JU needs to contact you (usually through the coordinator) to clarify matters such as eligibility or to request additional information.

The list of Annexes included as part of this call is:

– Annex 1: Application form (please fill in the application form, including its annexes, and provide the relevant supporting documents – all listed below) which includes the checklist for applicants at the end of the application form and the following annexes:
    - Annex 1A Declaration of honour
    - Annex 1B Mandate letters (if applicable)
    - Other supporting documents to be provided where applicable: see checklist for applicants
– Annex 2: Indicative List of cost elements to consider in the calculation of the operating costs
– Annex 3: "AI Factories" Concept Paper
– *Annex 4: Model Hosting Agreement – when available*
– Template for Advanced Experimental AI-optimised Supercomputing Platform

[37] When using the courier service, please use the following postal code: L-1882 Luxembourg.

[38] Questions on submission must be sent before the deadline indicated in section 10.

[39] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018R1725

Regarding the compilation of the application file, it is recommended to:

- follow the order of documents as listed in the checklist (and attach a ticked checklist as below to the application);
- print the documents double-sided;
- use 2-hole folders (do not bind or glue; stapling is acceptable).

12. ANNEX 1: CONTENT OF THE APPLICATION

12.1. Structure of the Application

Applicants must use the application form template for their applications (designed to highlight important aspects and facilitate the assessment against the evaluation criteria).

The application form is structured in two main sections.

In the first section, "Information on the applicants", the application must provide administrative details about the applicants and the consortium, including contact details and legal representatives.

The second section "Information on the Action" is divided in six subsections:

- In the first subsection "***overall description of the application***", the Applicants should provide an overall description of their proposal for developing an AI Factory and its different constituent parts. In particular they should demonstrate that their existing EuroHPC supercomputer is an AI-ready EuroHPC supercomputer.
- In the second subsection "***Description of the "advanced experimental AI-optimised platform***" (optional), the Applicants may decide to include in their application an optional system/partition targeting the development of an advanced experimental AI-optimised supercomputing platform.
- Finally, in the third and last subsection "***Description of the AI Factory***", the Applicants should present a comprehensive overview of the AI ecosystem they would serve and enhance through the AI Factory and the detailed of services they would offer to this ecosystem.

All the above are further detailed in the following subsections.

Should an applicant apply for an advanced AI-optimised experimental platform, they should fill in the enclosed Horizon Europe template (See Annex X).

The application form includes a guide on how to fill it for all sections.

Character and page limits:

- page limit: 200 pages
- minimum font size — Arial 8 points
- page size: A4
- margins (top, bottom, left and right): at least 15 mm (not including headers & footers).
- pagination instructions: each document from the application must be individually numbered in the bottom right corner.

12.2.Overall description of the application

In this section of their application, the Applicants should provide a comprehensive overall description of their proposal and its constituent parts. The application should first demonstrate that the existing EuroHPC supercomputer around which the AI Factory is to be established is an AI-ready supercomputer, how the AI Factory will advance AI capabilities in Europe, support innovation and deliver significant value to AI stakeholders, while respecting ethical and regulatory standards.

The following are expected to be described with the required level of detail – please also refer to Annex 3 of this Call for Expression of Interest, "AI Factories" concept paper:

a. A comprehensive description of the concept of the proposal and the needs for an AI Factory

1) *Description of the existing AI-ready EuroHPC supercomputer*

   a) description of the main features of the existing EuroHPC supercomputer and demonstration that it is an AI-ready EuroHPC supercomputer, i.e., it has enough computing resources for training large scale, general-purpose AI models and emerging AI applications.

   b) Description of relevant AI/ML benchmarks used for the evaluation of the computing capacity of the supercomputer. Inclusion of examples of training large AI models (if available).

   c) Description of the AI/HPC software ecosystem (including software stacks, platforms, libraries, workflows, etc.) available at the hosting entity and its suitability for AI development and for preparing the next generation of complex AI applications.

   d) Description of the proximity to the EuroHPC supercomputer data centre and its connectivity with the supercomputer.

2) *Concept of the AI Factory*

   a) *Vision, Rationale and Objectives* of the proposed AI Factory.

   b) *A roadmap* for developing the national AI ecosystem(s) and how that would be served, justifying the need for setting up the AI Factory.

3) *Targeted key Industrial sectors and Applications and targeted Stakeholders and their needs*:

   a) description of the *key industrial/application sectors* as well as of the key obstacles to overcome to further develop the AI innovation ecosystem in these sectors.

   b) description of a convincing plan for attracting such key AI stakeholders from these sectors.

   c) Description of any plans the Applicants may have to include *internal or external cloud solutions* to bridge the needs towards an end-to-end computing continuum.

4) *Overall plan for investing in physical and virtual infrastructure required for the AI factory*, including an overall description of the computing, networking and data resources as well as investments in human capital that will be required to address the needs of the AI ecosystem.

5) *Links to a national AI strategy, and national data and access policies to computing and data*:

a) description of how the AI Factory proposal is linked to the national AI Strategy / Strategies or equivalent[40] of the Applicant(s).

b) Description of how the AI Factory is linked to a current *National Data Policy* of the hosting entity or the hosting consortium, enabling access to large datasets. If this does not exist, description of a plan to make available large data sets to the AI Factory ecosystem.

c) Description of an *AI user-friendly access policy of the AI Factory* to the national share of computing time of the EuroHPC supercomputer and how it will contribute to the development of the national AI Ecosystem.

6) Overall plan for networking the AI Factory with existing European and national AI initiatives and with other EuroHPC AI Factories.

7) *Overall plan for linking the AI Factory to a national strategy for startups/SMEs:* description of the plans the Applicants have for linking the AI Factory ecosystem with relevant national/regional investment measures targeted at startups and SMEs.

12.3.Description of the "advanced experimental AI-optimised platform" (optional)

One of the targets of EuroHPC JU is also promoting the further development of European technologies and thus contributing to developing a competitive European technology supply industry. As part of this objective, it is proposed that interested hosting entities may also include in their application an optional system/partition targeting the development of an advanced experimental AI -optimised supercomputing platform.

The goal of such a platform shall be to operate an exploratory supercomputing infrastructure for the development, integration, testing, and co-design of a wide range of European technologies suitable to be part of the existing AI-ready EuroHPC supercomputer.

In case the hosting entity decides to include such optional part in its application, the hosting entity should include:

1) A description of the advanced experimental AI-optimised platform

2) How it complements the existing AI-ready EuroHPC supercomputer

3) The development targets (milestones)

4) The time plan as well as a detailed work plan

5) The cost breakdown

The potential of the advanced experimental AI-optimised platform, as well as its duration, should be duly justified in the application and will be evaluated on its own merits for receiving or not financial support. This evaluation shall not affect the overall evaluation of the other aspects of the application.

12.4.Description of the "AI Factory"

In this section the Applicants should provide a detailed description of the AI Factory and the services it will offer, complementing the general description of their proposal as presented in Section 12.2 above.

[40] In the absence of a formal national AI strategy, the Applicants will need to describe the strategic national (or Consortium) character of their AI Factory approach.

Applicants should at least address the following – for more detailed information, Applicants should refer to the Concept Paper found in Annex 3 of this Call for Expressions of Interest:

a. A detailed description of the AI Factory data facilities and services and its networking with other AI Factories:

1) *AI Factory tools and services*

   - *Overview of the user support services*: This includes: (i) Description of the range of services that the AI Factory will provide to the AI ecosystem (e.g., guidance for using the HPC environment, adapting the computational tasks associated to the training and fine- tuning of the AI models and related inference activities to the HPC environment, etc.). (ii) Description of a plan for servicing private and public national users as well as users from other EuroHPC Participating States, which do not host an AI Factory. (iii) Description of the foreseen professional user support plan, describing the range of user support activities (i.e., how the AI Factory plans to engage with and serve the broader AI community – from startups, SMEs and large industry to academia and research institutions – and how will these professional services be provided). (iv) Description of the resources required for the AI Factory to provide a well-functioning user support service.

   - *Software and application development environments*: description of the software environment that the AI Factory will deliver, including ready-to-use set of AI-oriented tools containerized workloads and workflows, etc.

2) *Data facilities, access to data, confidentiality and integrity of data*

   - *Data facilities:* Description of the data repositories and data assets that the AI Factory plans to make available to the AI ecosystem.

   - *Access to Common European Data Spaces*, including preliminary agreements on the principles of an access and use, establishing relevant data repositories (e.g., Hugging Face).

   - *Plans for establishing secure and trusted environments,* for guaranteeing the confidentiality and integrity of sensitive data and for ensuring the integrity of computational processes.

3) *Trustworthy AI*: description of the plans the Applicants have for developing of robust guidelines and standards for AI algorithmic development aligned with the principles and requirements of the AI Act.

4) *AI Factory Hub facilities*

   - *co-working space facilities:* description of the plans the Applicants have for making available co-working space physical facilities, possibly complemented also by virtual working spaces.

   - *hosting facilities for AI students*: and description of the Applicants Plans for making available a physical campus hosting AI students located nearby or associated to the foreseen AI Factory.

5) *AI Factory training facilities*

   - *Skills plan*: Description of the AI Factory Skills Plan outlining the skills needed for the targeted AI stakeholders, including a description of a diverse range of training courses, complementary training facilities and activities and timelines tailored to the varying needs of potential users.

- *Access to human capital*: in house and external direct access to the necessary human capital and talent to provide the necessary education/training activities planned. This includes plans for collaboration and engagement with universities to train and equip students at all levels with the necessary in-demand AI skills.

6) *Detailed plans for networking the AI Factory with existing European and national initiatives and with other EuroHPC AI Factories.*

   - *Networking with other existing European and national AI & HPC initiatives:* Detailed plans for linking the AI Factory with European and national AI and HPC initiatives such as TEFs, EDIH, National HPC Competence Centres, ALT-EDIC, or others, and to engage with them while avoiding duplication of efforts.

   - *Networking with other AI Factories*: Detailed plans for linking the AI Factory with other EuroHPC AI factories once they become operational in order to network, exchange best practice, share experiences, and avoid duplication of efforts.

b. A comprehensive description of the AI Factory Implementation Plan:

1) *Implementation Plan and risk management*: Applicants should provide an indicative implementation plan, an organisational structure and roles for the management of the AI Factory, and a project timeline with phases for the establishment of the AI Factory. Applicants should also include a risk management approach by identifying potential risks and mitigation strategies.

2) *Key performance indicators (KPIs)*: Description of a set of KPIs and metrics that the Applicant(s) will use to measure the contributions to the success of their AI Factory and associated AI ecosystem.

3) *Budget estimate of the proposal*: Applicants should provide an estimated budget the establishment of the AI Factory, including development, implementation and expected operational costs.

c. A comprehensive description of the expected Impacts of the AI Factory:

Applicants should describe the pathways to achieve the expected outcomes and expected impacts and the measures they will take for maximising these expected outcomes and impacts.

13. ANNEX 2: 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 JU	N/A	
High Performance disks/Scratch Storage	N/A procured by EuroHPC JU	N/A	

Equipment and commercial software

Cost item	Verification	Method	Provider	
Site preparation	Invoice /Balance sheet	Fraction committed to the EuroHPC JU (JU)	Hosting site only	
Network at data centre level	Invoice /Balance sheet	Fraction committed to JU	Hosting site only	Related equipment
High Performance disks/Home Storage	Invoice /Balance sheet	Fraction committed to JU	Hosting site / others	Related equipment
Backup storage	Invoice /Balance sheet	Fraction committed to JU	Hosting site / others	Related equipment
Level 2 storage/Long term Storage	Invoice /Balance sheet	Fraction committed to JU	Hosting site / others	Related equipment
Other IT equipment	Invoice /Balance sheet	Fraction committed to JU	Hosting site only	Related equipment
Supercomputers (SC) room	Invoice /Balance sheet	Fraction of the room occupied by the JU systems		
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	Other infrast

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-	N/A procured by EuroHPC	N/A	

performance disks/scratch storage			
Maintenance of items under "Equipment and commercial software"	Invoice	According to method in "Equipment and commercial software"	Hosting site / others

14. ANNEX 3: "AI FACTORIES" CONCEPT PAPER

Version 4.0, 25 July 2024

This concept paper addresses the EuroHPC Governing Board Members. It defines the way to implement the AI Factories[41]. It describes how the EuroHPC JU and Member States and consortia are to establish AI Factories and outlines their key features and activities. These will be reflected in the EuroHPC Call for Expression of Interest to host AI Factories.

Section 1 of this concept paper provides a description of what is an AI Factory. Thereafter a set of eligibility conditions for Member States to implement AI Factories are presented in Section 2. Section 3 provides a summary of the technical specifications that are expected to be addressed in Member States proposals on AI Factories. The Appendix I to this paper provides an overview of the different implementation modes to establish AI Factories across the EU through the EuroHPC JU.

1. What are AI Factories?

The Commission launched the AI Innovation Package in January 2024 to support European startups, and SMEs in the development of trustworthy AI. The AI Package proposed a limited number of targeted amendments to the EuroHPC JU Regulation for implementing the AI Factories around the EuroHPC supercomputers, which were largely endorsed by the Competitiveness Council on May 23, 2024.

The amended EuroHPC Regulation, so called the "AI Factories Act", expanded its objectives to include the development and operation of 'AI Factories'. AI Factories are entities which provide an AI supercomputing service infrastructure and will build open AI ecosystems formed around EuroHPC supercomputing facilities (hosting entities[42]). The activities covered by AI Factories will be open to public and private users, and with privileged access conditions for startups and small and medium-sized enterprises (SMEs). The amended regulation brings together the necessary resources around these supercomputers – namely computing power, data, and talent, to offer a wide and exhaustive range of services to public and private users, AI startups and SMEs, AI companies and researchers needed for the development of European general purpose AI models and other emerging AI applications or data driven applications, as well as subsequent targeted inferencing activities.

AI Factories in each Member State or a hosting consortium of Participating States will be connected to those in other Member States and to other relevant AI initiatives, such as Testing and Experimentation

[41] According to the AI Factories Act (Council Regulation (EU) 2024/1732 of 17 June 2024 amending Regulation (EU) 2021/1173 as regards a EUROHPC initiative for start-ups in order to boost European leadership in trustworthy artificial intelligence), an AI Factory is a centralised or distributed entity providing an Artificial Intelligence supercomputing service infrastructure which is composed of: 1) an Artificial Intelligence-optimised supercomputer or Artificial Intelligence partition of supercomputer, 2) an associated data centre, dedicated access and artificial intelligence-oriented supercomputing services and attracting and pooling talent to provide the competences required in using the supercomputers for Artificial Intelligence. AI Factories should include the following features:

i. Acquiring, upgrading, and operating AI-optimised supercomputers to enable fast machine learning and training of large General Purpose AI (GPAI) models;
ii. Facilitating access to the AI dedicated supercomputers, contributing to the widening of the use of AI to a large number of public and private users, including startups and SMEs;
iii. Offering a one-stop shop for startups and innovators, supporting the AI startup and research ecosystem in algorithmic development, testing evaluation and validation of large-scale AI models, providing supercomputer-friendly programming facilities and other AI enabling services;
iv. Enabling the development of a variety of emerging AI applications based on GPAI models;
v. Attracting, pooling, and training talent to develop their competences and skills in using the EuroHPC supercomputers for AI.

[42] 'hosting entity' refers to a legal entity which includes facilities to host and operate a EuroHPC supercomputer and which is established in a Participating State that is a Member State.

Facilities, Digital Innovation Hubs, EDICs, etc., thus creating a closely interconnected AI ecosystem across the whole Europe.

The different elements of an AI Factory should not be seen in isolation but rather aligned and mutually reinforce each other. **The AI Factories** should cover **two main components namely i) the AI optimised Supercomputer and ii) the associated "AI Factories" activities and services**.

It is expected that a number of AI Factories will be established in a few Member States or consortia of Participating States around existing, upgraded or new AI optimised supercomputers. These AI Factories will serve the European and national AI communities.

The **AI Factories will be serving public and private users from all the EuroHPC Participating States**, including those which are not eligible or do not wish to host an AI Factory. Such users may be granted access to the share of EU's access time and necessary services provided by any of the EuroHPC AI Factories.

In order to serve users from Participating States, which do not host an AI Factory, the EuroHPC JU will act as first entry point. The JU will then dispatch the request to the appropriate AI Factory/Factories based on a number of selection criteria. These criteria as well as the access policy concerning the EU access time will be defined and agreed in due time by the EuroHPC Governing Board.

AI startups, which are supported through the EIC Acceleration Challenge of Horizon Europe, will be given a priority access to the AI optimised supercomputers and services offered by an AI Factory.

The EuroHPC Participating States, which do not host an AI Factory, can collaborate with one or more AI Factories through a strategic agreement with a hosting entity, similar to many of the current EuroHPC systems.

The provision of services by the AI Factories should be without prejudice to the EU **state aid rules**. The European Commission will provide guidelines in due time on this matter. In principle, provision of (free) services to startups and SMEs should be covered by the General Block Exemption Regulation[43]. On the other hand, provision of services to big industry should be fee-based.

2. AI Factories - Key Features to consider from a national perspective

The following section outlines a set of key policy features and technical activities that a Member State or a consortium of Participating States should undertake to support the development of an AI Factory that is to be co-funded by the EuroHPC JU. These are further summarised in Appendix II and will be further expanded in the relevant Calls for Expression of Interest.

Investing in AI optimised supercomputers

AI Factories should be developed around AI optimised supercomputers to address and serve the needs of national users, their AI ecosystem and potential AI European and national AI stakeholders and serve the needs of their targeted AI ecosystem. There are three possibilities that a Member State or a Consortium of Participating States and the corresponding hosting entity can consider here – these are presented in detail in the Appendix I.

Creating a national AI Ecosystem

Hosting entities should define and justify their needs and design choices in the context of their targeted AI usages and national/local ecosystems. Hosting entities should therefore present a comprehensive

[43] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014R0651.

assessment of the users and AI Ecosystems they would like to serve and enhance through the AI Factory, ensuring a minimum critical mass justifying the need for an AI Factory. The assessment should include at least the following aspects:

i. National AI Strategy

To what extent the establishment and deployment of an AI Factory is linked and contributes to the implementation of the national AI strategy of the hosting country/countries of the hosting consortium.

ii. National Data Policies and access strategies to the AI optimised supercomputers

Applicants would need to describe the current National Data Policies in place (including possible access to data spaces that are available through their participation to EU initiatives such as EDICs) for enabling the access to large datasets, as well as the availability of knowledge corpus. In cases where such National Data Policy does not exist, applicants would need to provide a plan of how they will make available large data sets to the AI Factory ecosystem.

In both the above cases, Applicants should describe how they will implement policies facilitating the access to open / FAIR[44] data and proprietary data (including if necessary different fee schemes depending on the use of data for AI training/fine-tuning/inference).

iii. National Access Policy to AI Community

To ensure a cohesive HPC for AI approach and foster the national and local ecosystem, it is expected that Applicants would put in place an AI user-friendly access policy to the national share of computing time of the EuroHPC supercomputer and describe how it will contribute to the development of the national AI Ecosystem.

iv. Stakeholders

To build a thriving AI ecosystem, Applicants should clearly identify and be capable of attracting key stakeholders which can contribute to their success of their AI ecosystem. These should include:

a. AI Companies/AI Developers/AI Startups and SMEs.
b. AI Technology solution providers.
c. Potential Data providers which can supply high-quality data for AI training and analysis.
d. AI Users that will benefit from AI Factories generated AI-driven applications and solutions.
e. AI communities, including academia and students.
f. Private investors / incubators.

v. AI Ecosystem needs and challenges

Applicants should identify the needs and challenges of the AI ecosystem they intend to serve. Each AI Factory should preferably focus on selected applications/domains that are aligned with the strategic vision and strategic specialisation areas of the hosting country and/or the consortium of Participating States. They should identify the key barriers and obstacles that may hinder the creation of a thriving AI ecosystem, and the extent to which the deployment of the AI Factory can overcome these obstacles to create an AI ecosystem that harnesses the full potential of AI for the benefit of the relevant stakeholders.

Applicants may include internal or external cloud solutions to bridge the needs towards an end-to-end computing continuum spanning model development, training, fine-tuning, and inference.

[44] Findable, accessible, interoperable, and reusable

vi. Strategy for AI startups/SMEs

To foster a thriving AI ecosystem, a proactive startups / SMEs policy at a national/regional level plays a vital role in fostering and attracting investment in the AI sector. By facilitating access to capital to startups/SMEs and/or implementing targeted tax incentives, governments can encourage investment and support startups/SMEs to ensure the success and growth of businesses. Hosting entities are encouraged to link the AI Factory ecosystem with relevant national/regional investment measures targeted at startups and SMEs.

vii. AI Factories – KPIs

Applicants should propose key performance indicators (KPIs) and metrics to measure the contributions to the success of their AI Factory and associated AI ecosystem, such as (but not limited to):

- Number of private AI users served annually, notably start-ups and SMEs;
- Number of public AI users served annually.
- Number of participants in the AI Factory ecosystem, including European ones, served.
- Number and quality of services provided by the AI Factory
- Number of AI training sessions provided.
- Number/quality/size of GenAI open models released.
- Number/volume of available quality databases annually.
- Number of AI science applications served/released.
- Number of industrial/SME/startup applications served/released.
- Number of AI dedicated researchers in the AI Factory.
- Number of students participating in AI Factory activities.
- Usage of the AI optimised supercomputer.
- Degree of oversubscription to the AI access calls.

Applicants may propose other relevant KPIs.

3. Overview of the Technical Specifications / Activities of AI Factories

This section provides a succinct overview of the main technical aspects that are expected to be included in the forthcoming AI Factory Calls for Expression of Interest.

a. Compute

AI Factories should deliver a minimum computing capacity to address the needs of users and their AI ecosystem, including potential AI European model developers and serve the needs of their targeted AI ecosystem.

Their targeted compute requirement should be ideally justified through the use AI/HPC benchmarks. These may include, e.g. (indicative)**:**

- **HPL-MxP benchmark:** The high-performance Linpack mixed precision benchmark seeks to address the convergence of HPC and AI workloads.

- **MLPerf Training HPC benchmark:** Benchmark, targeted at supercomputers, measuring the performance of training machine learning models for scientific applications and data**.** Minimum time-to-solution (e.g., training a 10 billion parameter language model in 45 days).

Applicants may propose further benchmarks, including inference related benchmarks where appropriate.

b. Storage

AI Factories must ensure enough storage capacity to handle large and numerous databases, as well as providing the necessary flexibility to increase their capacity according to the evolution of needs of users. **The storage should be collocated with the supercomputer or connected through a high speed (terabit) connection to maximize data throughput and minimise latency.**

- **High-capacity storage:** Adequate storage capacity to manage vast datasets**.**

- **High-speed storage**: Availability of fast storage to ensure rapid data access and transfer.

Applicants are expected to propose I/O[45] benchmarks to test the performance of proposed storage systems.

To strike a balance between capacity and speed, a tiering storage approach that combines different technologies, from fast disks to tapes, may be considered.

c. Data

The availability and accessibility to large data repositories with high quality curated data is fundamental for the AI community to flourish. AI Factories must guarantee high-speed connectivity and unrestrained access to European Data Spaces and relevant data repositories.

- **Data facility:** Co-located or very high-speed connection to (at least) one associated data facility linked to the supercomputer. Data centres to host large volumes of data necessary for AI Factories and associated data facilities must be operational within 12 months of being selected to host an AI Factory.

- **Access to Common European Data Spaces[46]:** Hosting entities should clearly identify interaction with and access to which Common European Data Spaces they wish to interact and have access to, provided that these correspond to their targeted / selected applications / domains that are aligned with the strategic vision and strategic specialisation areas of the hosting country / hosting Consortium. Hosting Entities should also describe the principles of an eventual access to and use of agreement with such Common European Data Spaces. Complementary and relevant data repositories (e.g., Hugging Face) should also be considered, as well as readiness to integrate into the future EuroHPC Federation Platform, which will be federating EuroHPC JU supercomputers and European HPC resources.

- **Security:** AI Factories should guarantee the confidentiality and integrity of sensitive data and ensure the integrity of computational processes. Users of computing capacity could for example be authenticated using the EU eID Wallet, once available.

- **Secure and Trusted environments**: Where justified, AI factories should establish secure and trusted (research) environments for both industry and scientific research ensuring the confidentiality and integrity of data.

d. Connectivity

AI factories should ensure a high-bandwidth, low-latency secure networking to support rapid data transfer between nodes and storage systems. In addition, AI Factories should ensure secure connection to the forthcoming EuroHPC Hyper-connectivity network. Indicative references are described below:

[45] Input/output operations.

[46] Common European Data Spaces | Shaping Europe's digital future (europa.eu)

- **High-bandwidth, low-latency internal networking**

- **Hyper-connectivity** (e.g. minimum of 100 Gbps, expandable to 1 Tbps).

e. Software and application development

AI Factories should provide a rich software environment including a ready-to-use set of AI-oriented tools (e.g., Pytorch, TensorFlow, etc.) with clear use-cases and examples for efficient use at large-scale, enabling new users to adapt quickly to the environment, as well as to facilitate the use of containerized workloads and workflows. It should be noted that most software tools at the core of AI development and execution are open source and should be supported; otherwise, AI Factories should establish adequate licensing mechanisms.

f. User Support for national users and users from the EuroHPC Participating States

Each hosting entity should present their foreseen HPC/AI professional support plan, describing the range of support activities to be offered and provided to users. This may include providing guidance for using the HPC environment, adapting the computational tasks associated to the training and fine-tuning of the models and related inference activities to the HPC environment. User support should be primarily targeting MLOps (machine learning operations). For example, users support activities should include assessing the HPC needs of the users' tasks, providing guidance on missing elements for implementation in HPC environments, parallelization techniques for optimising the memory and computing usage of the hosting supercomputer to speed up (pre-) training, fine-tuning the models for specific datasets and tasks (training or inference), or optimising the final model for efficient deployment and use. The number of required FTEs should be well justified and the user support team should provide a well-functioning service (below 4h response time where possible).

Applicants should also describe the way they plan to serve public and private users from the EuroHPC Participating States. Such users shall be granted the share of EU's access time to the AI optimised supercomputers and AI Factory services. For such users, hosting entities should propose an appropriate access policy that respects a number of conditions for access (such as for example those in relation to the handling of sensitive information, security, confidentiality, unethical use, etc.).

AI services, including User Support, should be provided in a consistent and professional manner following industrial standards.

g. Co-working and entrepreneurial AI Factory Hubs

Applicants would need to provide a plan for making available physical facilities located nearby or associated to the foreseen AI Factory, such as sufficient large and well-adapted co-working spaces, possibly complemented by virtual working spaces. These will serve startups and SMEs, scientific communities/ talented students and HPC/AI support teams, as well as incubators and accelerators to meet and work on common ideas and projects and get access to capital and to community support that are critical to developing the AI ecosystem.

Hosting entities should also include and/or identify the availability of a physical campus facility located nearby or associated to an AI Factory for hosting talented AI students working or trained in the AI Factory. Such facility would stimulate the relationship between the AI Factory and the local universities to create an environment that can attract the necessary talented human capital and build vibrant, attractive, and dynamic communities of practice along the AI Factory region.

h. Skills/Education

Hosting entities should present a comprehensive AI Factory Skills Plan outlining the skills required for the AI stakeholders they intend to target/serve and how to achieve them. This plan should include the offer of a structured training program highlighting relevant courses, activities, and learning pathways tailored to meet the diverse needs of potential users. Similarly hosting entities

should convincingly demonstrate that they have direct access to the necessary human capital and talent and, provide a strategy as to how they intend to collaborate and engage with universities, research centers and other training providers to train and equip students at all levels with the necessary in-demand AI skills. The availability of adequate training facilities (such as for example small GPU sandboxes) at universities or research centers could help them attract and train talent.

Hosting entities should demonstrate capacity to put in place training on advanced subjects such as AI for HPC, Deep Learning, AI Programming environments, etc. Additionally, they should show extensive experience in using different delivery modes to provide advanced training in subject areas that require intensive hands-on experience (on-site, online, hybrid) and capacity to deliver a variety of training actions other than courses such as workshops, hackathons, summer-schools, etc. It is crucial that Hosting Entities also demonstrate the capacity to collaborate with other institutions to deliver training. It will be the responsibility of each AI Factory to design and present a robust and comprehensive set of training/education actions to be implemented.

i. Engagement/ Interacting with the AI community

AI Factories should professionally engage with and serve the broader AI community – from academia and research institutions, to startups, SMEs, and industry – liaising with existing initiatives like TEFs, EDICs, EDIHs and National HPC Competence Centres. AI Factories need to identify the main stakeholders at regional and national level and establish connections through networking events and conferences, sharing knowledge and working together on joint projects. Strategic formal partnerships, talent exchange, and joint initiatives can further strengthen these collaborations. It should be noted that national and local ecosystems should be the starting point for building AI Factories. The organisation and coordination of AI, data and HPC initiatives at the European level is important and ensuring to avoid national silos.

Hosting entities may consider the use and support of external professional service companies to optimise their offering and engagement with the AI ecosystem.

j. AI Factories networking

AI Factories should establish a collaborative framework to ensure effective networking and resource optimisation among themselves (e.g., knowledge sharing, specialisation, assets reutilisation, support, training, staff exchange, etc.). The collaboration between AI factories is very important to enable a thriving European AI ecosystem. This activity will be developed more extensively at a later stage when several AI Factories are operational.

A particular collaboration use case are HPC/AI projects spanning across two or more AI Factories, where users should have a homogeneous end-to-end experience. The collaboration framework must envisage different formal and informal collaboration mechanisms, including the allocation of resources for this purpose, in order to benefit from synergies and avoid duplication of efforts across the ensemble of AI Factories.

k. Developing trustworthy AI

The AI Factories will cooperate with the AI Office and the TEFs to develop robust guidelines and standards for AI development within AI Factories, aligned with the principles and requirements of the AI Act. These guidelines should cover among other, areas such as data protection, transparency, and accountability. This will help create a unified approach to AI development across Europe and different entities and promote trustworthiness and compliance.

The AI Factories will furthermore work closely with the Testing and Experimentation facilities (TEFs), and the national AI supervision agencies, to test and validate AI solutions developed in the AI Factories to ensure they are considered trustworthy and compliant with the AI Act and robust enough to be used in real world settings.

APPENDIX I
AI OPTIMISED SUPERCOMPUTERS FOR AI FACTORIES

It becomes clear that AI Factories need **to deploy timely so that an AI dedicated supercomputing and service infrastructures for Europe's AI start-up and research ecosystem can be operational**.

Three complementary tracks can be considered:

1. "AI Factories" Track

This track is foreseen for those Hosting Entities that are already hosting a EuroHPC Supercomputer which can demonstrate enough computing resources for training large scale, general-purpose artificial intelligence models and emerging artificial intelligence applications can be appointed as AI Factory.

This track will be implemented through a permanently Open EuroHPC JU Call for Expression of Interest of Hosting Entities to appoint existing EuroHPC Supercomputing systems as an AI Factory. The hosting entity commits to undertake AI Factories activities (i.e., the full range of AI factory services).

Further to the appointment of an existing EuroHPC Supercomputing system as an AI Factory, an implementation grant may be awarded to cover for the AI Factories activities (i.e., services). An amendment to the existing Hosting Agreement should be introduced.

2. Upgraded AI Optimised Supercomputer Track

This track is foreseen for those Hosting Entities that are willing to upgrade their current EuroHPC supercomputer towards an AI Factory.

This track will be implemented through permanently Open EuroHPC JU Call for Expression of Interest of Hosting Entities to deploy and operate an AI Factory (Upgrade supercomputer to AI + AI Factory (Services, Skill development, User support)).

Further to the selection of Hosting entities, a Call for Tender (e.g., procurement) for the acquisition of the upgrade will be launched in addition to one accompanying grant to cover for the AI Factories activities (e.g. services). The existing grant for operational costs will be adapted in consequence. An amendment to the existing Hosting Agreement should be introduced.

3. New AI Optimised Supercomputer Track

This track is foreseen for those Hosting Entities that are willing to acquire a new AI Factory optimised Supercomputer.

Permanently Open EuroHPC JU Call for Expression of Interest of Hosting Entities to deploy and operate an AI Factory (AI new system + AI Factory (Services, Skill development, User support).

Further to the selection of Hosting entities, a Call for Tender (e.g., procurement) for the acquisition of the new supercomputer will be launched in addition to 2 accompanying grants to cover for the operational costs of the supercomputer and another one to cover for the AI Factories activities (e.g. services).

It should be noted that these 3 AI Factories Implementation tracks can be implemented in parallel.

APPENDIX 2

AI Ecosystem Key Features

Key Feature	Key Feature Description	How address it
AI optimised supercomputers	• Is the application developed around an AI optimised supercomputer (existing, upgraded, or new)?	Provision by the Applicants of the description of an AI-optimised supercomputer.
National AI Strategy	• To what extent the establishment and deployment of an AI Factory is linked and contributes to the implementation of the national AI strategy of the hosting country/countries of the hosting consortium?	Provision by the Applicants of the description of the National AI Strategy or equivalent, clearly showing the strategic character of the AI Factory proposal. **NB:** In the absence of a formal national AI strategy, applicants will need to describe the strategic national (or Consortium) character of their AI Factory approach.
National Data Policies	• Is there a current National Data Policy enabling the access to large datasets, availability of knowledge corpus, etc., and if not, is there a plan included describing how the proposal will make available large data sets to the AI Factory ecosystem? • Does the proposal include a plan on how to implement policies facilitating the access to open data and proprietary data (including if necessary different fee schemes depending on the use of data for training/fine-tuning/inference)?	Provision by the Applicants of the description of: 1. National Data policy or equivalent. 2. Meaningful implementation policy for access to large data sets **NB:** the access to available "data" is key to facilitate the functioning of any AI Factory.
Access Policy	• Does the proposal include an AI user-friendly national access policy?	Provision by the Applicants of a description of the access policy to the nationally owned computing time of the EuroHPC supercomputer. NB: This is an essential requirement for a part of the application on an AI Factory proposal to provide
Stakeholder participation	• Does the application include a plan on how to attract key national AI stakeholders?	Provision by the Applicants of a description of a convincing plan for attracting such key AI stakeholders.

		NB: This is an essential requirement for an AI Factory.
AI Ecosystem needs and challenges	• Does the proposal describe its strategic focus industrial / application sectors and how it would help develop further the AI ecosystem in these sectors? • Does the proposal include any plans for provision of cloud solutions?	Provision by the Applicants of the description of the key industrial/application sectors as well as of the key obstacles to overcome to further develop the AI innovation ecosystem in these sectors. Provision by the Applicants of any internal or external cloud solutions to bridge the needs towards an end-to-end computing continuum. **NB:** The identification of the above is essential for justifying the need of building an AI Factory that corresponds to the strategic national priorities.
Strategy for startups and SMEs	• Does the proposal include plans for linking to an existing or developing a new national/regional strategy for helping investment in the AI startups and SMEs?	Provision by the Applicants of the description of any plans they have on linking to an existing or developing a new investment strategy for AI start-ups and SMEs. **NB:** While not an essential requirement for an AI Factory, it would help a lot to further grow the national AI innovation ecosystem.
KPIs	• Does the proposal include key performance indicators (KPIs) and targets to measure the contributions to the success of the AI Factory and associated AI ecosystem?	Inclusion by the Applicants of a set of meaningful KPI indicators and realistic targets. **NB:** These are critical to monitor progress and identify where/when needed corrective action.

European High Performance Computing Joint Undertaking

REF: EUROHPC-2024-CEI-AI-02

CALL FOR EXPRESSION OF INTEREST

for the selection of Hosting Entities for the acquisition of an AI-optimised supercomputer or the upgrade of an existing EuroHPC supercomputer with AI capabilities, an advanced Experimental AI-optimised Supercomputing Platform (optional), and the establishment of an AI Factory

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4. INTRODUCTION – CONTEXT AND BACKGROUND

The European High Performance Computing Joint Undertaking (hereinafter referred to as 'EuroHPC JU) was established by Council Regulation (EU) 2021/1173 of 13 July 2021[47] amended by Council Regulation (EU) **2024/1732 of 17 June 2024 amending Regulation (EU) 2021/1173 as regards a EuroHPC initiative for start-ups in order to boost European leadership in trustworthy artificial intelligence** which entered into force on 9 July 2024[48] (hereinafter referred to as 'Regulation').

According to Article 3 of the Regulation, the mission of the EuroHPC JU is to develop, deploy, extend and maintain in the Union a federated, secure hyperconnected supercomputing, quantum computing, service and data infrastructure ecosystem; to support the development and uptake of demand-oriented and user-driven innovative and competitive supercomputing systems based on a supply chain that will ensure components, technologies and knowledge limiting the risk of disruptions and the development of a wide range of applications optimised for these systems; and, to widen the use of that supercomputing infrastructure to a large number of public and private users, and to support the twin transition and the development of key skills for European science and industry. **As per the recent amendment to the EuroHPC JU Regulation, Art 3 has introduced a new objective to be pursued by the EuroHPC JU which is "to develop and operate the Artificial Intelligence Factories in support of the further development of a highly competitive and innovative Artificial Intelligence ecosystem in the Union".**

Two different possibilities are enabled to establish an AI factory: one that is to develop it around a newly acquired AI-optimised supercomputer (hereinafter "new AI EuroHPC supercomputer") or to develop it around an upgrade of an existing EuroHPC supercomputer with AI capabilities (hereinafter "upgraded AI EuroHPC supercomputer").

The acquisition of new AI EuroHPC supercomputers is based on Article 12a of the Regulation, whereby the EuroHPC JU shall acquire them and shall own them. An AI-optimised supercomputer means a supercomputer that is primarily designed for training large scale, general-purpose Artificial Intelligence models and emerging artificial intelligence applications. In accordance with Article 12a(2) of the Regulation, the Union's contribution should cover up to 50 % of the acquisition costs plus up to 50 % of the operating costs of these AI-optimised supercomputers. The EuroHPC JU will be the owner of the AI optimised supercomputers it has acquired.

The acquisition of an upgraded AI EuroHPC supercomputers is based on Articles 4(1)(h) and 15(1) of the Regulation. According to Article 15(4) of the Regulation, the EuroHPC JU shall acquire, jointly with the contracting authorities of the Participating State where the selected hosting entity is established or with the contracting authorities of the Participating States in the selected hosting consortium, the upgrade of the supercomputer and shall own it under the same conditions of ownership of the original EuroHPC supercomputer. In accordance with Article 15(5) of the Regulation, the percentage of the Union's financial contribution for the acquisition costs of the upgrade shall be the same as the percentage of the Union's financial contribution for the original EuroHPC supercomputer, depreciated over the expected remaining lifetime of the original supercomputer. For the petascale supercomputers acquired during the time of application of Regulation (EU) 2018/1488 the Union financial contribution for the upgrade shall cover up to 35 % of the additional operating costs.

Pursuant to Article 12(a) of the Regulation, the EuroHPC JU shall own the new AI EuroHPC supercomputers for a duration of at least five years. Pursuant to Article 15 of the Regulation, the EuroHPC JU shall own the upgraded AI EuroHPC supercomputer under the same conditions of ownership of the original EuroHPC supercomputer.

The aim of AI factories is to provide the European startups as well as the industrial and the scientific community at large with enhanced access to AI optimised computing capabilities for the large-scale

[47] Council Regulation (EU) 2021/1173 of 13 July 2021 on establishing the European High Performance Computing Joint Undertaking and repealing Regulation (EU) 2018/1488, OJ L 256, 19.7.2021, p. 3.

[48] OJ L, 19.6.2024, ELI: http://data.europa.eu/eli/reg/2024/1732/oj.

training and development of general-purpose AI models, and for the development, validation and running of emerging AI applications. In this context it becomes essential that AI Factories are established swiftly, therefore Hosting Entities or Hosting Consortia must act swiftly and avoid delays in acquiring and deploying the relevant new and/or upgraded supercomputers and setting up AI Factories.

One of the targets of the EuroHPC JU is also promoting the further development of European technologies and thus contributing to developing a competitive European technology supply industry. As part of this objective, **interested hosting entities may also include in their application an optional system/partition targeting the development of an advanced experimental AI-optimised supercomputing platform**. The goal of such a platform shall be to develop an exploratory supercomputing infrastructure for the development, integration, testing, and co-design of a wide range of European technologies suitable to be part of a newly acquired or upgraded EuroHPC supercomputer.

For the newly acquired or upgraded AI EuroHPC supercomputer, **the hosting entity shall create a one-stop shop for the users, including startups, small and medium-sized enterprises and scientific users, to facilitate access to its support services, the so called "AI Factory".** The Union's contribution shall cover up to 50 % of the operational costs of the AI Factories.

Pursuant to Article 9(3) of the Regulation, the EuroHPC JU shall entrust to a hosting entity the operation of each individual new or upgraded AI EuroHPC supercomputer it owns in accordance with Articles 10 and 15 of the Regulation. The hosting entity shall be selected by the Governing Board of the EuroHPC JU (hereinafter referred to as 'Governing Board') following a Call for Expression of Interest evaluated by independent experts.

The present Call for Expression of Interest is launched for the selection of hosting entities of new AI EuroHPC supercomputers or for upgraded AI EuroHPC supercomputers, and the establishment of associated AI Factories the EuroHPC JU will acquire and operate as mandated, on the basis and in accordance with the Regulation, taking into account the EU Financial Regulation[49] where relevant on the basis of the Financial Rules of the EuroHPC JU[50]. The present Call for Expression of Interest includes also an optional part on the development and operation of an Advanced Experimental AI-optimised Supercomputing Platform.

The present Call for Expressions of Interest is open to entities or consortia of entities fulfilling the conditions as defined in Article 9 of the EuroHPC Regulation. Section 6 below presents the eligibility criteria. **The call shall be continuously open until 31st December 2025, with pre-defined cut-off dates that will trigger the evaluation of the applications submitted up to each respective cut-off date or until the depletion of available funds.**

Annex 1 provides the structure and the contents to be provided by an application to be submitted under the present Call for Expressions of Interest.

[49] 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, (EU) No 1309/2013, (EU) No 1316/2013, (EU) No 223/2014, (EU) No 283/2014, and Decision No 541/2014/EU and repealing Regulation (EU, Euratom) No 966/2012, OJ L 193, 30.7.2018, p. 1 (hereinafter referred to as 'FR').(https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32018R1046).

[50] Decision of the Governing Board of the EuroHPC JU No 3/2020 Approving the Financial Rules of the EuroHPC Joint Undertaking readopted by Decision of the Governing Board of the EuroHPC JU No 17/2021 approving the re-adoption of Governing Board Decisions adopted under the framework of Regulation (EU) 2018/1488 and its updated Rules of Procedure in the view of Regulation (EU) 2021/1173.

5. OBJECTIVES

The overall objective of this call is to select hosting entities for AI-optimised supercomputers or existing hosting entities to upgrade existing EuroHPC supercomputers with AI capabilities, to acquire Advanced Experimental AI-optimised Supercomputing Platforms (optional), **as well as to establish an associated AI Factory which will be undertaken by the EuroHPC JU.**

The specific objective of this call is as follows:

Selection of a new hosting entity and conclusion of a new hosting agreement in the case where an applicant targets the acquisition of a new AI EuroHPC supercomputer or selection of an existing hosting entity for an upgraded AI EuroHPC supercomputer in the case the applicants intend to upgrade an existing EuroHPC supercomputer with AI capabilities. The EuroHPC JU will select such hosting entities as well as the associated "AI Factories" and will conclude a hosting agreement, which will permit to establish a stable and structured partnership between the EuroHPC JU and the hosting entity for:

- the acquisition, integration and operation of the new or the upgraded AI EuroHPC supercomputer,
- the development and operation of an Advanced Experimental AI-optimised Supercomputing Platform – this part of the call is optional,
- and the establishment and operation of the associated "AI Factory".

By submitting the application, applicant hosting entities provide their prior acceptance of the terms and conditions set out in the model hosting agreement. Such model hosting agreement will be made available in due time, before the first call cut-off date.

The hosting agreement will be approved by the Governing Board before signature.

The EuroHPC JU will evaluate, with the help of external experts, the received applications to the call for expression of interest and will draw up a ranking list of candidate hosting entities (or their hosting consortia) for new AI EuroHPC supercomputers or for upgraded AI EuroHPC supercomputers, for Advanced Experimental AI-optimised Supercomputing Platforms (optional), and for setting up an AI Factory around the new or the upgraded AI supercomputers. From this ranking list, the EuroHPC JU, by decision of its Governing Board, will select the hosting entities. Inclusion in the list does not in and as of itself entail an obligation on the part of the EuroHPC JU to conclude the hosting agreement or any other contract with the selected hosting entity.

Following this selection, the following procedures will apply:

- In the case where an applicant targets the acquisition of a new AI EuroHPC supercomputer: a **hosting agreement between the EuroHPC JU and the selected hosting entity or hosting consortium will be signed**, laying down the terms and conditions for hosting and operating the new AI EuroHPC supercomputer and establishing and operating an associated "AI Factory" around this supercomputer on behalf of the EuroHPC JU, including a service level agreement (Article 10(2)(c) of the Regulation). The time limit for signing the hosting agreement is 1 month after the Governing Board decision to accept the proposal for funding of the AI Factory.

  For the case where an applicant intends to upgrade their existing EuroHPC Supercomputer with AI capabilities, **the existing hosting agreement between the EuroHPC JU and the selected hosting entity (or hosting consortium) will be amended**, to account for the upgrading, hosting and operation of the upgraded AI EuroHPC supercomputer, and for establishing and operating an associated "AI Factory" around this upgraded supercomputer on behalf of the EuroHPC JU, including a service level agreement (Article 10(2)(c) of the Regulation). The time limit for signing the amended hosting agreement is 1 month after the Governing Board decision to accept the proposal for funding of the AI Factory.

The new or amended hosting agreement shall specify the timing of the transfer to the EuroHPC JU of the financial contribution of the selected hosting entity covering the acquisition costs of the upgrade of the EuroHPC supercomputer with AI capabilities. The amended hosting agreement is part of the outcome of the Call for Expression of Interest. **It is the first contractual arrangement to be signed.**

The publication of the Call for Tender for the acquisition or upgrade of an AI optimised supercomputer should be published no later than 3 months after the notification of the selection decision to the successful hosting entity or hosting consortium by the EuroHPC GB.

- **A second contractual arrangement between the EuroHPC JU and the hosting entity shall be signed to cover the funding of the new or the upgraded AI EuroHPC supercomputer's operating costs** (specifying among others and if applicable any pre-financing of the hosting entity by the EuroHPC JU), which will be covered up to 50 % by the Union contribution. The operating costs must follow a well-defined, jointly agreed (with the hosting entity) and auditable model, which will be part of the contractual arrangement. There will be no transfer of funds from the hosting entity to the EuroHPC JU for the operating costs: the EuroHPC JU will cover its share of the eligible costs, while the hosting entity (or hosting consortium) will cover the remainder of the eligible costs.

- **A third contractual arrangement between the EuroHPC JU and the hosting entity shall be signed to cover the funding of the "Advanced Experimental AI-optimised Supercomputing Platform" eligible costs** (specifying among others and if applicable any pre-financing of the hosting entity by the EuroHPC JU), which will be covered up to 50 % by the Union contribution. This third contractual arrangement will be awarded only if the selection concerns also the optional part of the application on "Advanced Experimental AI-optimised Supercomputing Platform.

- **A fourth contractual arrangement between the EuroHPC JU and the hosting entity shall be signed to cover the funding of the "AI Factory" eligible costs** (specifying among others and if applicable any pre-financing of the hosting entity by the EuroHPC JU), which will be covered up to 50 % by the Union contribution.

- In close cooperation with and supported by the selected hosting entity, **the EuroHPC JU shall launch the procedures for the acquisition of the new or the upgraded AI EuroHPC supercomputer**. These procedures will, amongst other, aim at ensuring, where possible a diversity in the technologies and architectures of the different EuroHPC supercomputers. The EuroHPC JU will be responsible for implementing the acquisition process, however, the hosting entity will be associated to the process, e.g. for verification of the technical specifications to be met by the suppliers. The procurement procedure will be managed by EuroHPC JU as owner of the system. However, in accordance with the relevant provisions of the EU Financial Regulation, the EuroHPC JU may delegate the procurement to a selected hosting entity. In such a case, the EuroHPC JU shall have a supervisory role in the implementation of the procurement, i.e. be involved in drafting the tender specifications, the drafting of the evaluation criteria, organize the evaluation committee, and participate in the award decision. Where the EuroHPC JU delegates the procurement, it shall conclude a Joint Procurement Agreement with the hosting entity implementing the procurement.

6. BUDGET AVAILABLE

The Union financial contribution to the EuroHPC JU shall cover up to 50 % of the acquisition costs plus up to 50 % of the operating costs of the new AI EuroHPC supercomputer, up to 50 % of the development and operation costs of an Advanced Experimental AI-optimised Supercomputing Platform, and up to 50% of the costs associated with the setting up and operation of the "AI Factories". The remaining total cost of ownership of the AI-optimised supercomputer and those cost related to the

Advanced Experimental AI-optimised Supercomputing Platform and to the "AI Factories" shall be covered by the Participating State where the hosting entity is established or by the Participating States in the hosting consortium[51].

The percentage of the Union's financial contribution for the acquisition costs of an upgraded AI EuroHPC supercomputer shall be the same as the percentage of the Union's financial contribution for the original EuroHPC supercomputer, depreciated over the expected remaining lifetime of the original supercomputer. The percentage of the Union's financial contribution for the additional operational costs of the upgrade shall be the same as the percentage of the Union's financial contribution for the original EuroHPC supercomputer. For the petascale supercomputers acquired during the time of application of Regulation (EU) 2018/1488 the Union financial contribution for the upgrade shall also cover up to 35 % of the additional operating costs.

The Union financial contribution to the EuroHPC JU shall cover up to 50 % of the development and operation costs of an Advanced Experimental AI-optimised Supercomputing Platform, and up to 50% of the costs associated with the setting up and operation of the "AI Factories".

The remaining total cost of ownership of the upgraded AI EuroHPC supercomputer and those costs related to the Advanced Experimental AI-optimised Supercomputing Platform and to the "AI Factories" shall be covered by the Participating State where the hosting entity is established or by the Participating States in the hosting consortium[52].

The Union's financial contribution both for to the EuroHPC JU for the acquisition of new or upgraded AI EuroHPC supercomputers is estimated at **EUR 400 million**[53] depending on budget availability (DEP funds).

The EuroHPC JU considers that a unitary EU contribution per a new or per an upgraded AI EuroHPC supercomputer of around EUR 200 million would allow this action to be addressed appropriately. Nonetheless, this does not preclude the submission and selection of a proposal requesting different amounts. The unitary EU contribution for this new or upgraded AI EuroHPC supercomputer will then be adapted (increased or decreased) to the requested EU contribution amount of the application, by also considering the number of already submitted and approved applications, and the remaining Union's funds.

The Union's total financial contribution to the EuroHPC JU for the setting up and operation of the 'AI Factories' and for the **development and deployment** of **advanced experimental AI-optimised supercomputing platform** is estimated at a maximum of **EUR 180 million**[54] depending on budget availability (Horizon Europe funds).

For a given AI Factory to be set up around an AI optimized EuroHPC supercomputer the maximum EU contribution for the establishing and running it is set at EUR 15 million for a period

[51] 'hosting consortium' means a group of Participating States or a consortium of private partners that have agreed to contribute to the acquisition and operation of a EuroHPC supercomputer, including any organisations representing these Participating States.

[52] 'hosting consortium' means a group of Participating States or a consortium of private partners that have agreed to contribute to the acquisition and operation of a EuroHPC supercomputer, including any organisations representing these Participating States.

[53] The Union's financial contribution of EUR 400 million is based on the availability of funds in the EuroHPC JU Work Programme 2024. The overall Union's financial contribution to the EuroHPC JU for the acquisition of new or upgraded AI-EuroHPC supercomputers is estimated at EUR 800 million depending on the final budget availability (DEP funds).

[54] A total budget of up to EUR 120 million is foreseen for the setting up and operation of the 'AI Factories' and a total budget of up to EUR 60 million is foreseen for the development and deployment of advanced experimental AI-optimised supercomputing platform. However, a different budget combination may be applied according to the received submissions, in particular increasing the share dedicated to the AI Factories.

of 3 years. This amount concerns the hosting entity or its consortium of different partners located in the hosting Member State.

In the case of a hosting consortium the EU contribution may be increased by up to EUR 5 million per each Participating State in the hosting consortium. Participation in more than one AI Factory should be duly justified in the respective applications to avoid overlapping of activities and double funding .

The maximum amount of the EU contribution that may be allocated to an AI Factory with multiple Participating States is subject to EU budget availability.

For newly acquired AI EuroHPC supercomputers, grants will be established to cover the operating costs of the supercomputer[55] and for existing to be upgraded EuroHPC supercomputers, existing grants will be amended to cover **the additional operating costs of the upgraded AI EuroHPC supercomputers.** New grants will be established in both cases for the development and operating costs of an advanced experimental AI-optimised supercomputing platform (optional), and the setting up and operation of the 'AI Factories'. The reimbursement from the EuroHPC JU will be calculated on the basis of the declared costs up to the maximum total contribution of the EuroHPC JU or up to a ceiling of 50 % of the declared eligible costs, whichever is lower.

The costs related to the construction of the hosting site per se (i.e., costs related to the building infrastructure that will host the new or the upgraded AI EuroHPC supercomputer shall not be covered by the EuroHPC JU. However, the costs of the preparation and adaptation of the hosting site incurred by the hosting entity that can be directly accounted to the installation of the new or the upgraded AI EuroHPC supercomputer, and/or the advanced experimental AI-optimised supercomputing platform, may be considered as part of the Total Cost of Ownership (TCO) and may thus be considered as eligible costs that can be covered by the EuroHPC JU.

This action is an EU Synergy call. Grants and procurements can be linked with another grant funded from any other EU funding programme. The grants under both calls will be managed as linked actions.

7. CONTENT OF THE EXPRESSIONS OF INTEREST

The expressions of interests must be submitted using the application form included as a separate Annex 1 to this call (EuroHPC HE Application Form). Annex 1 of this document provides information on how to fill in the Application Form.

8. ADMISSIBILITY REQUIREMENTS

In order to be admissible:

a) Applications must be sent no later than **the 4th of November 2024 at 17:00 Luxembourg time**. This date is the first cut-off date of this continuously open call. Further cut-off dates are provided in section 10 Timetable.
b) Applications must be submitted in writing (see section 11 "Procedure for the submission"), using the application form in the Annex 1 (EuroHPC HE Application Form) and available at [*https://eurohpc-ju.europa.eu/current-calls.]*
c) Applications must be submitted in the English language in three paper copies and on a USB stick.

Failure to comply with those admissibility requirements will lead to the rejection of the application.

[55] The EuroHPC JU Model Grant Agreement can be found on the EuroHPC JU website: https://eurohpc-ju.europa.eu/

9. ELIGIBILITY CRITERIA

The call is open to entities or consortia of entities fulfilling cumulatively the following conditions as defined in Article 9 of the EuroHPC Regulation[56]:

d) The applicant hosting entity shall include the facilities to host and operate a new or an upgraded AI EuroHPC supercomputer and to set up an 'AI factory' in a Participating State to the EuroHPC JU that is a Member State of the EU. The applicant hosting entity shall represent one Participating State that is a Member State or a hosting consortium of Participating States that have agreed to contribute to the acquisition or the upgrade and to the operation of the supercomputer, and to set up an 'AI Factory', (which may include several different legal entities from the same Participating State and/or from different Participating States). The applicant hosting entity and the competent authorities of the Participating State or Participating States in a hosting consortium shall enter into an agreement to this effect.

e) The coordinating applicant hosting entity has to be registered as a legal entity in one of the Participating States that is a Member State.

f) The applicant(s) must have a legal personality on the date of the deadline for submission of applications and must be able to demonstrate their existence as a legal person. In case the application is submitted by several different legal entities from the same Participating State and/or from different Participant States working together (consortium), this criterion (c) applies to all entities.

g) Applications should include the provision of appropriate supporting documentation proving the commitment of the Member State where the hosting entity is established and, in the case of a hosting Consortium, of the competent authorities of the Participating States of the hosting consortium to cover the share of the total cost of ownership of the new or the upgraded AI EuroHPC supercomputer, and the cost of the AI Factory that are not covered by the Union contribution as set out in Article 5 of the Regulation or any other Union contribution as set out in Article 6 of the Regulation, either until its ownership is transferred by the EuroHPC JU to that hosting entity or until the supercomputer is sold or decommissioned in case there is no transfer of ownership.

h) As the participation of suppliers in the acquisition of the new or the upgraded AI supercomputer is conditioned in accordance with Article 12(6) of Regulation (EU) 2021/694 and limited for security reasons or actions directly related to the Union's strategic autonomy, in accordance with Article 18(4) of that Regulation, applications should provide a first

[56] The action covering the funding of the "Advanced Experimental AI-optimised Supercomputing Platform" eligible costs and the action covering the funding of the "AI Factory" eligible costs will be implemented by way of grants which will be awarded on the basis of Article 195 (f) of the Financial Regulation (EU, Euratom) 2018/1046 to Hosting Entities of EuroHPC AI oriented or AI upgraded supercomputers according to Governing Board Decision No xx/2024. The activities associated with the development of the Advanced Experimental AI-optimised Supercomputing Platform require a high degree of technical competence and specialisation in developing exploratory supercomputing infrastructure for the development, integration, testing and co-design of a wide range of European technologies being part of the AI supercomputer infrastructure. The activities associated with the AI factory require a high degree in specialisation bringing together AI computing infrastructure and storage facilities, data, support tools, AI algorithms and talent. These actions can only be implemented alongside with the procurement for the acquisition and the operation activities of a new or upgraded AI EuroHPC supercomputer by the awarded Hosting Entities identified in this call (EUROHPC-2024-CEI-AI-02)), or the awarded Hosting Entity of an existing EuroHPC supercomputer evaluated as AI ready in this call. After the award of a grant under Article 195 (f) of the Financial Regulation (EU, Euratom) 2018/1046, it is not possible to change the Hosting Entity or the composition of a Hosting Consortium anymore, further entities will not be able to join the Hosting Entity or Hosting Consortium throughout the implementation of the grant.

indication on whether the applicant would consider conditioning or limiting the participation of suppliers for security reasons and/or reasons related to the Union's strategic autonomy.

In case of a hosting consortium, the hosting agreement shall take the form of a partnership of the legal entities from the same Participating State and/or from different Participating States, of which the hosting entity will take the lead and act as coordinator of the hosting consortium. The co-ordinator will act as an intermediary for all communications between the EuroHPC JU and the partners. However, partners are jointly responsible for implementing the action(s) resulting from the awarded or amended hosting agreement. To implement the action(s) properly, they must make appropriate internal arrangements.

The hosting entity or hosting consortium shall assume full liability towards the EuroHPC JU for the performance of the agreement as a whole, including financial and operational liability.

In accordance with Article 9 of the Regulation, after the selection of the hosting entity, the Participating State where the selected hosting entity is established (in the case of an application including only one Participating State) or the corresponding hosting consortium may decide to invite, subject to the prior agreement of the Commission, additional Participating States, or a consortium of private partners, to join the hosting consortium. The financial or in-kind contribution or any other commitment of the joining Participating States, or Private Members, shall not affect the Union's financial contribution and the corresponding ownership rights and percentage of access time allocated to the Union with regard to the new or the upgraded AI EuroHPC supercomputer as defined in Articles 12a and 15 of the Regulation.

In the case of a joint application by a hosting consortium, the hosting entity must be given power of attorney to represent the other parties to sign and administrate the hosting agreement (consortium leader).

In order to assess the applicants' eligibility, the following supporting documents are requested:

- The legal entity identification form[57] duly completed and signed by the person authorised to enter into legally binding commitments on behalf of the applicant organisation(s) to be submitted in original;

- Hosting consortium: in addition to the supporting documents referring to their legal status, the hosting consortium members will submit a signed declaration based on the model Consortium Agreement/Power of Attorney, appointing a consortium leader and giving a mandate to him (included as Annex 1B).

- Each applicant and Participating State in a hosting consortium must fill-in and provide the duly signed Declaration of Honour (included as Annex 1A).

The following entities will be considered as non-eligible:

c) natural persons;

d) entities without legal personality.

10. EXCLUSION CRITERIA

7.1. Exclusion[58]

The Executive Director of the EuroHPC JU shall exclude an applicant from participating in this call for expression of interest where:

[57] http://ec.europa.eu/budget/contracts_grants/info_contracts/legal_entities/legal_entities_en.cfm

[58] Article 136 FR

(a) the applicant is bankrupt, subject to insolvency or winding-up procedures, its assets are being administered by a liquidator or by a court, it is in an arrangement with creditors, its business activities are suspended, or it is in any analogous situation arising from a similar procedure provided for under EU or national laws or regulations;

(b) it has been established by a final judgment or a final administrative decision that the applicant is in breach of its obligations relating to the payment of taxes or social security contributions in accordance with the applicable law;

(c) it has been established by a final judgment or a final administrative decision that the applicant is guilty of grave professional misconduct by having violated applicable laws or regulations or ethical standards of the profession to which the applicant belongs, or by having engaged in any wrongful intent or gross negligence, including, in particular, any of the following:

(i) fraudulently or negligently misrepresenting information required for the verification of the absence of grounds for exclusion or the fulfilment of eligibility or selection criteria or in the performance of a contract, a grant agreement or a grant decision;

(ii) entering into agreement with other applicants with the aim of distorting competition;

(iii) violating intellectual property rights;

(iv) attempting to influence the decision-making process of the EuroHPC JU during the award procedure;

(v) attempting to obtain confidential information that may confer upon it undue advantages in the award procedure;

(d) it has been established by a final judgment that the applicant is guilty of any of the following:

(i) fraud, within the meaning of Article 3 of Directive (EU) 2017/1371 of the European Parliament and of the Council and Article 1 of the Convention on the protection of the European Communities' financial interests, drawn up by the Council Act of 26 July 1995;

(ii) corruption, as defined in Article 4(2) of Directive (EU) 2017/1371 or Article 3 of the Convention on the fight against corruption involving officials of the European Communities or officials of Member States of the European Union, drawn up by the Council Act of 26 May 1997, or conduct referred to in Article 2(1) of Council Framework Decision 2003/568/JHA, or corruption as defined in the applicable law;

(iii) conduct related to a criminal organisation, as referred to in Article 2 of Council Framework Decision 2008/841/JHA;

(iv) money laundering or terrorist financing within the meaning of Article 1(3), (4) and (5) of Directive (EU) 2015/849 of the European Parliament and of the Council;

(v) terrorist offences or offences linked to terrorist activities, as defined in Articles 1 and 3 of Council Framework Decision 2002/475/JHA, respectively, or inciting, aiding, abetting or attempting to commit such offences, as referred to in Article 4 of that Decision;

(vi) child labour or other offences concerning trafficking in human beings as referred to in Article 2 of Directive 2011/36/EU of the European Parliament and of the Council;

(e) the applicant has shown significant deficiencies in complying with main obligations in the performance of a contract, a grant agreement or a grant decision financed by the Union's budget, which has led to its early termination or to the application of liquidated damages or other contractual penalties, or which has been discovered following checks, audits or investigations by an authorising officer, OLAF or the Court of Auditors;

(f) it has been established by a final judgment or final administrative decision that the applicant has committed an irregularity within the meaning of Article 1(2) of Council Regulation (EC, Euratom) No 2988/95;

(g) it has been established by a final judgement or final administrative decision that the applicant has created an entity in a different jurisdiction with the intent to circumvent fiscal, social or any other legal obligations of mandatory application in the jurisdiction of its registered office, central administration or principal place of business;

(h) it has been established by a final judgement or final administrative decision that an entity has been created with the intent referred to in point (g);

(i) for the situations referred to in points (c) to (h) above, the applicant is subject to:

(i) facts established in the context of audits or investigations carried out by European Public Prosecutor's Office after its establishment, the Court of Auditors, the European Anti-Fraud Office or the internal auditor, or any other check, audit or control performed under the responsibility of an authorising officer of an EU institution, of a European office or of an EU agency or body;

(ii) non-final judgments or non-final administrative decisions which may include disciplinary measures taken by the competent supervisory body responsible for the verification of the application of standards of professional ethics;

(iii) facts referred to in decisions of persons or entities being entrusted with EU budget implementation tasks;

(iv) information transmitted by Member States implementing Union funds;

(v) decisions of the Commission relating to the infringement of Union competition law or of a national competent authority relating to the infringement of Union or national competition law; or

(vi) decisions of exclusion by an authorising officer of an EU institution, of a European office or of an EU agency or body.

7.2. Remedial measures[59]

If an applicant declares one of the situations of exclusion listed above, it should indicate the measures it has taken to remedy the exclusion situation, thus demonstrating its reliability. This may include e.g. technical, organisational and personnel measures to prevent further occurrence, compensation of damage or payment of fines. The relevant documentary evidence which illustrates the remedial measures taken must be provided in annex to the declaration. This does not apply for situations referred in point (d) of section 7.1.

7.3. Rejection from the call

The Executive Director of the EuroHPC JU shall not conclude a hosting agreement with an applicant who:

c. is in an exclusion situation established in accordance with section 7.1;

d. has misrepresented the information required as a condition for participating in the procedure or has failed to supply that information.

The same exclusion criteria apply to affiliated entities.

Administrative sanctions (exclusion) may be imposed on applicants, or affiliated entities where applicable, if any of the declarations or information provided as a condition for participating in this procedure prove to be false.

7.4. Supporting documents

Applicants and affiliated entities must provide a declaration on their honour certifying that they are not in one of the situations referred to above under 7.3., by filling in the relevant form attached to the

[59] Article 136 (7) FR.

application form accompanying the Call for Expression of Interest and available at [*https://eurohpc-ju.europa.eu/participate.html*].

11. EVALUATION CRITERIA

The following sets of evaluation criteria will be used for the different parts of an eligible application submitted under the present Call for Expressions of interest:

- *Evaluation criteria for the "new or the upgraded AI EuroHPC supercomputer".*
- *Evaluation criteria for the "Advanced Experimental AI-optimised Supercomputing Platform".*
- *Evaluation criteria for the "AI Factory".*

The above sets of evaluation criteria are described below.

8.1. Evaluation criteria for the "new or the upgraded AI EuroHPC supercomputer"

Applicants should describe in detail the targeted specifications and features of their new or their upgraded AI EuroHPC supercomputer and associated facilities. This part of the application will be evaluated according to the evaluation criteria listed, *inter alia*, in Articles 9(5) and 15(3) of the Regulation:

a. General system specifications (0-10 points)

- Quality and pertinence of new or upgraded supercomputer's general system specifications (including compute, storage, connectivity, etc. as set out in detail in the Concept Paper appended as Annex 3 to this call) targeted in the application, taking into account the needs of the AI users. As specifically per the upgrade, justification for the pertinence of this upgrade when considering the needs of the AI users, the compatibility with the original EuroHPC supercomputer, and indicating how this will increase the operational capacity performance of the supercomputer.

- Soundness and maturity of the system architecture concept, and credibility of the application.

- Quality and pertinence of the proposed AI/ML benchmarks (e.g., HPL-MxP, MLPerf) to be used for the evaluation of the computing capacity of the supercomputer.

- Pertinence of and extent to which the proposed AI/HPC software ecosystem (including software stacks, platforms, libraries, workflows, etc.) to be provided by the hosting entity is comprehensive, scalable for AI development and for HPC and is preparing the next generation of complex AI applications.

b. Proximity with an established datacentre, or connection to it via very high-speed networks (0-10 points)

- Demonstration that the connectivity of the data centre is sufficient for ultra-fast data access by the supercomputer.

c. Estimation of total cost of ownership (TCO) of the supercomputer (0-10 points)

- Clarity and effectiveness of the estimated TCO of the acquisition and operational costs of the supercomputer.

- Quality and pertinence of the methodology to calculate the TCO.

d. Experience of the hosting entity in installing and operating similar systems (0-10 points)

- Quality and pertinence of experience of the hosting entity in installing and operating similar systems.
- Extent to which the provided experience is sufficient for supporting the system targeted.

e. Quality of the hosting facility's physical and IT infrastructure, its security and its connectivity with the rest of the Union (0-10 points)

- Quality and credibility of the implementation plan for acquiring and deploying the supercomputer.
- Quality and pertinence of the current and proposed hosting facility's physical and IT infrastructure, its security and its connectivity with the rest of the Union.
- Quality and effectiveness of the proposed plan for the readiness of the site to host the supercomputer.

f. Quality of service to the users, namely capability to comply with the service level agreement provided among the documents accompanying this selection procedure (0-10 points)

- Quality and pertinence of service to the users, namely capability to comply with the service level agreement provided in the application.
- Quality of the proposed coordination and/or support measures to ensure requested service level towards EuroHPC JU users.

Points will be allocated out of a total of 60 on the basis of the above-specified weighting. A minimum threshold of 5 points for each criterion and 35 points for the total will be applied. Applications below these thresholds will be rejected.

For each criterion, if appropriate, applicants must provide detailed information about the role and tasks to be carried out by each consortium member.

8.2. Evaluation criteria for the "Advanced experimental AI-optimised supercomputing platform" (Optional)

Applicants may include in their application an optional system/partition targeting the development of an advanced experimental AI-optimised supercomputing platform. The goal of such a platform shall be to provide an exploratory supercomputing infrastructure for the development, integration, testing, and co-design of a wide range of European technologies suitable to be part of the new or the upgraded AI EuroHPCsupercomputer.

This optional part will be evaluated according to the following evaluation criteria (based, *inter alia*, on the list of criteria provided for in Article 28 of the Horizon Europe Regulation):

a. Excellence (0-5 points)

- Clarity and pertinence of the project's objectives, and the extent to which the proposed work is ambitious, and goes beyond the state of the art.
- Soundness of the proposed methodology.

b. Impact (0-5 points)

- Credibility of the pathways to achieve the expected outcomes and expected impacts.
- Suitability and quality of the measures to maximise expected outcomes and impacts.

c. Quality and efficiency of the implementation (0-5 points)

- Quality and effectiveness of the work plan, assessment of risks, and appropriateness of the effort assigned to work packages, and the resources overall.
- Capacity and expertise of the consortium.

Points will be allocated out of a total of 15 on the basis of the above-specified weighting. A minimum threshold of 3 points for each criterion and 10 points for the total will be applied. For this optional part, applications below these thresholds will be rejected.

The evaluation of this optional part will not have any impact on the overall score of the application, i.e., the evaluation of this part will be considered separately and will not affect the final ranking or selection of applications regarding the other parts of this Call for Expression of Interest.

8.3. Evaluation criteria for the "AI Factory"

Since AI Factories will further reinforce the EU's AI ecosystem by bringing together computing infrastructure and storage facilities, data, support tools, AI algorithms, and talent in a 'one stop shop'[60], which will become essential for AI startups, researchers, and innovators, it becomes necessary that applicants describe i) the AI ecosystem they aim to target, as well as ii) what features their 'AI Factories' will have in terms of activities and services.

The evaluation criteria for this part of the application are based, *inter alia*, on the list of criteria in Article 9(5) of the Regulation, as well as the additional criteria that are presented in the concept paper on "AI Factories" described in Annex 3 of this Call for Expressions of Interest. The evaluation criteria are as follows:

a. **Vision, plans and capability of the hosting entity to address the challenges of the Artificial Intelligence start-up ecosystem, and research and innovation ecosystem and the Artificial Intelligence user community and providing a supportive centralised or distributed Artificial Intelligence-oriented supercomputing service *(0-10 points)***

- Clarity and pertinence of the AI Factory overall concept, in terms of vision, rationale, objectives, development roadmap, targeted key industry sectors and stakeholders, internal or external cloud solutions planned to bridge the needs towards an end-to-end computing continuum, and networking with other initiatives.
- Clarity and pertinence of the AI Factory data facilities, access to data, confidentiality

[60] The provision of AI factories services may be implemented in a distributed manner by different partners from the selected hosting entity/consortium of Participating States.

and integrity of data.

- Pertinence of the links of the AI Factory to a national AI Strategy, national data and access policies to computing and data, and to a national strategy for investing in startups/SMEs.

- Quality and efficiency of the Implementation Roadmap, including its deliverables and milestones, the risk management approach and the Key performance Indicators.

- Clarity and pertinence of the plans to invest in physical and virtual infrastructure required for the AI Factory.

- Soundness of the budget of the AI Factory.

- Credibility of the pathways to achieve the expected outcomes and expected impacts.

- Suitability and quality of the measures to maximise expected outcomes and impacts.

b. Quality and pertinence of experience and know-how available at the intended team that would be in charge for the supportive Artificial Intelligence-oriented supercomputing service environment (0-10 points)

- Quality and pertinence of experience and know-how available at the intended team that would be in charge for the supportive Artificial Intelligence-oriented supercomputing service environment.

- Quality and pertinence of the AI Factory user support services, including the quality and efficiency of the plan for offering professional services.

- Quality and pertinence of the AI Factory tools and software and application development environments.

c. Plans for interaction and cooperation with other Artificial Intelligence Factories, with EuroHPC Competence Centres and EuroHPC Centres of Excellence and with relevant Artificial Intelligence activities such as the hubs of Artificial Intelligence start-ups, the Artificial Intelligence and data ecosystems, the Artificial Intelligence Testing and Experimentation Facilities, the European central Artificial Intelligence platform, the Artificial Intelligence-oriented Digital Innovation Hubs and other related initiatives (0-10 points)

- Quality and pertinence of the AI Factory Hub.

- Clarity and pertinence of the networking activities of the AI Factory with existing European and national initiatives and with other EuroHPC AI Factories.

- Soundness of the plans for developing Trustworthy AI.

d. Existing capabilities and future plans of the hosting entity to contribute to the development of the talent pool (0-10 points)

- Pertinence and effectiveness of existing capabilities and future plans of the hosting entity to contribute to the development of the talent pool.

- Quality and pertinence of structured training facilities and training programmes highlighting relevant courses, activities, and learning pathways tailored to meet the diverse needs of potential users.

- Quality and pertinence of strategy to foster collaboration and engagement with universities, research centres and other training providers to train and equip students at all levels with the necessary in-demand AI skills.

Points will be allocated out of a total of 40 on the basis of the above-specified weighting. A minimum threshold of 5 points for each criterion and 25 points for the total will be applied. Applications below these thresholds will be rejected.

12. OVERVIEW OF THE EVALUATION AND SELECTION PROCEDURE

The EuroHPC JU is responsible for the implementation of the evaluation of the received expressions of interest. It shall organise the submission and evaluation procedures and communicates with the applicants.

9.1. Evaluation procedure

The submitted applications will be evaluated by a panel of a minimum of three and a maximum of five experts, depending on the number of applications received. These experts will be appointed by the EuroHPC JU on the basis of the procedures followed under Digital Europe Programme and Horizon Europe. For the applications considered admissible according to the section 5 above, the EuroHPC JU will assess the eligibility and exclusion criteria according to the sections 6 and 7 above. Only eligible applications will be evaluated.

- **Individual evaluations**: In the first step, the experts that sit on the panel shall carry out individually the evaluation of eligible expressions of interest on the basis of the evaluation criteria described in section 8 above. They give a score for each criterion, with explanatory comments. These individual reports form the basis of the further evaluation.

- **Consensus meetings**: After carrying out their individual assessment, all the experts that evaluated the application shall convene in a consensus meeting, to agree on a common position, including comments and scores, and prepare a consensus report. The consensus meetings shall be moderated by a Senior Officer of the EuroHPC JU who shall seek consensus, impartially, and ensure that all applications are evaluated fairly, in line with the relevant evaluation criteria.

- **Panel review:** The review panel shall be chaired by the Executive Director of the EuroHPC JU. The panel will review the scores and comments for all applications to check for consistency across the evaluations. If necessary, it will propose a new set of marks or revise comments, and resolve cases where evaluators were unable to agree. The panel will prepare an evaluation summary report. Only applications above threshold will be ranked by the review panel according to the evaluation criteria total score. If necessary, a priority order for applications with the same score will be determined in the ranked list, according to the following approach:

  Applications with the same score: Applications with the same total score will be prioritised according to the scores they have received for the evaluation criterion "AI Factory" (see section 8.3 above).

9.2. Selection

In order to consider that applicants may target a new or an upgraded AI EuroHPC supercomputer; two separate ranking lists will be established respectively. In each of these ranking lists, the evaluation of the new or the upgraded AI EuroHPC supercomputer will consist of the weighted addition of the “new or upgraded AI EuroHPC supercomputer” evaluation criterion (50% weighting) and of the “AI Factories” evaluation criteria (50% weighting).

The Executive Director of the EuroHPC JU will review the results of the evaluation panel and will draw one final ranking list that merges the two above mentioned ranking lists based on the two separate lists proposed by the panel.

This final ranking list shall consist of a ranked list with the applications to be selected as hosting entities as proposed by the panel complemented by any suggestion for deviation from this list as proposed by the Executive Director. In addition, the EuroHPC JU will prepare a list with applications that did not pass the evaluation thresholds or were found to be ineligible.

The Executive Director will submit the final ranking list, together with the Evaluation Summary Reports, to the Governing Board of the EuroHPC JU with a proposal for selection of the Hosting Entities for their approval.

The Governing Board will make the final selection of the Hosting Entities, which will be invited to establish or amend a hosting agreement with the EuroHPC JU.

After the decision of the Governing Board, all applicants will be informed in writing by the EuroHPC JU of the outcome of the evaluation in the form of an Evaluation Summary Report (ESR). The EuroHPC JU will also inform about the final selection or rejection of applications.

The EuroHPC JU will invite the selected applicant for the signature of the new or amended hosting agreement, and the preparation of the acquisition of the new or upgraded AI EuroHPC supercomputer, but the invitation is not a commitment that the EuroHPC JU will launch the acquisition procedure. The hosting agreement or its amendment shall be approved by the Governing Board before its signature by the respective parties.

9.3. Communication

The information contained in the present call document provides all the information required to submit an application. Please read it carefully before doing so, paying particular attention to the priorities and objectives of the present call.

All enquiries must be made by e-mail only to: info@eurohpc-ju.europa.eu

Questions shall be sent to the above address no later than the **6 days before the respective and subsequent cut off dates - 13:00 Luxembourg time –** as defined in Section 10.

The EuroHPC JU has no obligation to provide clarifications to questions received after this date.

Replies will be given/published no later than the "Publication of the last answers to questions" defined in the timeline in section 10.

To ensure equal treatment of applicants, the EuroHPC JU will not give a prior opinion on the eligibility of applicants, or affiliated entity(ies), an action or specific activities.

No individual replies to questions will be sent but all questions together with the answers and other important notices will be published (FAQ in EN) at regular intervals on the website under the relevant call: [*https://eurohpc-ju.europa.eu/participate/calls_en.]*

The EuroHPC JU may, on its own initiative, inform interested parties of any error, inaccuracy, omission or clerical error in the text of the Call for Expression of Interest on the mentioned website. It is therefore advisable to consult this website regularly in order to be informed of any updates and of the questions and answers published.

No modification to the applications is allowed once the deadline for submission has elapsed. If there is a need to clarify certain aspects or to correct clerical mistakes, the EuroHPC JU may contact the applicant for this purpose during the evaluation process. This is generally done by e-mail. It is entirely the responsibility of applicants to ensure that all contact information provided is accurate and functioning.

In case of any change of contact details, please send an email with the application reference and the new contact details to info@eurohpc-ju.europa.eu

In the case of hosting consortia, all communication regarding an application will be done with the lead applicant only, unless there are specific reasons to do otherwise, where the consortium coordinator should be in copy.

Applicants will be informed in writing about the results of the selection process at the latest 2 months after the cut-off date. Unsuccessful applicants will be informed of the reasons for rejection. No information regarding the award procedure will be disclosed until the notification letters have been sent to the relevant applicants.

13. TIMETABLE

The steps and indicative times for the procedure from publication to expected start of the mandate for the selected Hosting Entities are in the table below:

Selection of HE milestones	Date and time or indicative period
Call for Expression of Interest Publication	
Publication of Call for Expressions of Interest	**10 September 2024**
Information sessions	**Calendar week 39**
Submission of applications	
Deadlines to submit questions about the Call	**25 October 2024 – 16:00 (Luxembourg time) and subsequently 6 days before the further cut-off dates**
Call Deadline / Cut-off dates	**04 November 2024 – 17:00** **01 February 2025 – 17:00** **02 May 2025 – 17:00** **(Luxembourg times)** **and subsequently every 3 months with last cut-off date being the 31st of December 2025**
Notification of the selection decision	**Within 2 months of the cut-off date**

14. PROCEDURE FOR THE SUBMISSION OF APPLICATIONS

Applications for the first call must be sent no later than the 4 November 2024 at 17:00 Luxembourg time, and subsequently every 3 months (see table in section 10).

Application forms are available at [*https://eurohpc-ju.europa.eu/participate/calls_en]*

Applications must be submitted in the correct form, duly completed and dated. They must be submitted in 3 (three) copies (one original clearly identified as such, plus two copies, and an electronic copy on USB stick) and signed by the person authorised to enter into legally binding commitments on behalf of the applicant organisation. The electronic version must contain only the pdf versions of the application presented in paper. Other electronic files will not be considered.

Applications must be submitted in a sealed envelope itself enclosed within a second sealed envelope, addressed as indicated below. The inner envelope must bear, in addition to the address indicated below, the words, "CALL FOR EXPRESSION OF INTEREST - **EUROHPC-2024-CEI-AI-02** – Not to be opened by the mail service". If self-adhesive envelopes are used, they must be sealed with adhesive tape and the sender must sign across that tape.

Where applicable, all additional information considered necessary by the applicant can be included on separate sheets.

Applications must be sent to the following address:

European High Performance Computing Joint Undertaking
Drosbach Building (DRB) - Wing E – 1st floor
12E rue Guillaume Kroll
L-2920 Luxembourg

- by post, date of postmark as proof of timely submission;
- in person, date of receipt, to the address above.
- by courier service[61], date of receipt by the courier service as proof.

Applications sent by fax or e-mail will not be accepted.

Contact point for any questions is[62] *info@eurohpc-ju.europa.eu*

All applications will be treated confidentially, as well as any submitted related information, data, and documents. The EuroHPC JU will ensure that the process of handling and evaluating applications is carried out in a confidential manner.

External experts are also bound by an obligation of confidentiality.

Applicants should avoid taking any actions that could jeopardise confidentiality. They must not attempt to discuss their application with persons they believe may act as expert evaluator for the EuroHPC JU.

Your application should not contain any information that is 'EU classified' under the rules on security of information in the Commission security rules for protecting EU classified information (see also Classification of Information in DEP projects).

The EuroHPC JU will process personal data in accordance with Regulation (EU) 2018/1725 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/EC[63].

Once the coordinator (or sole applicant) has submitted an expression of interest, an acknowledgement of receipt will be sent by the JU. No other interaction will take place with the EuroHPC JU until the application has been evaluated, unless:

[61] When using the courier services, please use the following postal code: *L-1882 Luxembourg.*

[62] Questions on submission must be sent before the deadline indicated in section 10.

[63] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018R1725

- The EuroHPC JU needs to contact you (usually through the coordinator) to clarify matters such as eligibility or to request additional information.

The list of Annexes included as part of this call is:

- Annex 1: Application form (please fill in the application form, including its annexes, and provide the relevant supporting documents – all listed below) which includes the checklist for applicants at the end of the application form and the following annexes:
    - Annex 1A Declaration of honour
    - Annex 1B Mandate letters (if applicable)
    - Other supporting documents to be provided where applicable: see checklist for applicants
- Annex 2: Indicative List of cost elements to consider in the calculation of the operating costs
- Annex 3: "AI Factories" Concept Paper
- *Annex 4: Model Hosting Agreement – when available*
- Template for Advanced Experimental AI-optimised Supercomputing Platform

Regarding the compilation of the application file, it is recommended to:

- follow the order of documents as listed in the checklist (and attach a ticked checklist as below to the application);
- print the documents double-sided;
- use 2-hole folders (do not bind or glue; stapling is acceptable).

15. ANNEX 1: CONTENT OF THE APPLICATION

12.1. Structure of the Application

Applicants must use the application form template for their applications (designed to highlight important aspects and facilitate the assessment against the evaluation criteria).

The application form is structured in two main sections.

In the first section, "Information on the applicants", the application must provide administrative details about the applicants and the consortium, including contact details and legal representatives.

The second section "Information on the Action" is divided in six subsections:

- In the first subsection "***overall description of the application***", the Applicants should provide an overall description of their proposal for developing an AI Factory and its different constituent parts.
- In the second subsection "***Description of the General system specifications***", the Applicants should spell out how the general system specifications will be met, for both the new or the upgraded AI EuroHPC supercomputer and the site, including the associated data centre. This subsection is further including the following:

- "***Description of the Total Cost of Ownership***", the Applicants should include an estimation of the total cost of the acquisition and operations of the new or the upgraded AI EuroHPC supercomputer that the applicant has in mind to host and that has been described in the previous section "general system specifications". Applicants should provide a clear breakdown of system acquisition and operational costs summarising them in two respective tables. Provided cost estimates should not include VAT.

- "***Description of the Experience of the hosting entity in installing and operating similar systems***", the Applicants should provide information on their experience in installing and operating similar systems.

- "***Description of the quality of the hosting facility's physical and IT infrastructure, its security and its connectivity with the rest of the Union***" the Applicants should describe their plans for acquiring and deploying the supercomputer, as well as information on the hosting physical and IT infrastructure, including security and connectivity that the site can provide for this supercomputer. In the next subsection, applicants should describe all their necessary AI factories related aspects.
- "***Description of the Quality of service to the users, namely capability to comply with the service level agreement***", the Applicants should provide information on the benchmarks and/or deliverables they will employ to achieve the required quality of service and targets set to serve the users of the supercomputer.

- In the third subsection "***Description of the "advanced experimental AI-optimised platform***" (optional), the Applicants may decide to include in their application an optional system/partition targeting the development of an advanced experimental AI-optimised supercomputing platform.

- Finally, in the fourth and last subsection "***Description of the AI Factory***", the Applicants should present a comprehensive overview of the AI ecosystem they would serve and enhance through the AI Factory and the detailed of services they would offer to this ecosystem.

All the above are further detailed in the following subsections.

Should an applicant apply for an advanced AI-optimised experimental platform, they should fill in the enclosed Horizon Europe template (See Annex X).

The application form includes a guide on how to fill it for all sections.

Character and page limits:

- page limit: 200 pages

- minimum font size — Arial 8 points

- page size: A4

- margins (top, bottom, left and right): at least 15 mm (not including headers & footers).

- pagination instructions: each document from the application must be individually numbered in the bottom right corner.

12.2. Overall description of the application

In this section of their application, the Applicants should provide a comprehensive overall description of their proposal and its constituent parts. The application should demonstrate how the AI Factory will

advance AI capabilities in Europe, support innovation and deliver significant value to AI stakeholders, while respecting ethical and regulatory standards.

The following are expected to be described with the required level of detail – please also refer to Annex 3 of this Call for Expression of Interest, "AI Factories" concept paper:

a. A comprehensive description of the concept of the proposal and the needs for an AI Factory

1) *Concept of the AI Factory*
   a) *Vision, Rationale and Objectives* of the proposed AI Factory.

   b) *A roadmap* for developing the national AI ecosystem(s) and how that would be served, justifying the need for setting up the AI Factory.

2) *Targeted key Industrial sectors and Applications and targeted Stakeholders and their needs*:
   a) description of the *key industrial/application sectors* as well as of the key obstacles to overcome to further develop the AI innovation ecosystem in these sectors.

   b) description of a convincing plan for attracting such key AI stakeholders from these sectors.

   c) Description of any plans the Applicants may have to include *internal or external cloud solutions* to bridge the needs towards an end-to-end computing continuum.

3)Overall plan for investing in a new or an upgraded AI EuroHPC supercomputer and in physical and virtual infrastructure required for the AI factory, including an overall description of the computing, networking and data resources as well as investments in human capital that will be required to address the needs of the AI ecosystem.

4) *Links to a national AI strategy, and national data and access policies to computing and data*:

   a) description of how the AI Factory proposal is linked to the national AI Strategy / Strategies or equivalent[64] of the Applicant(s).

   b) Description of how the AI Factory is linked to a current *National Data Policy* of the hosting entity or the hosting consortium, enabling access to large datasets. If this does not exist, description of a plan to make available large data sets to the AI Factory ecosystem.

   c) Description of an *AI user-friendly access policy of the AI Factory* to the national share of computing time of the EuroHPC supercomputer and how it will contribute to the development of the national AI Ecosystem.

5) Overall plan for networking the AI Factory with existing European and national AI initiatives and with other EuroHPC AI Factories.

6) *Overall plan for linking the AI Factory to a national strategy for startups/SMEs:* description of the plans the Applicants have for linking the AI Factory ecosystem with relevant national/regional investment measures targeted at startups and SMEs.

[64] In the absence of a formal national AI strategy, the Applicants will need to describe the strategic national (or Consortium) character of their AI Factory approach.

12.3. Description of the "General system specifications"

The application should provide detailed architectural description of the targeted system, analysing the rationale behind the system design. This concerns both the new and the upgraded AI EuroHPC supercomputer. The analysis should include the expected aggregated performance of the proposed system, describing the benchmarks to be used for its evaluation, providing justification for their selection.

The proposed architecture is expected to rely on mature technology solutions which are either already available in the market **or foreseen for public availability within a timeframe of 6 months from the day of application submission**.

The application should also analyse the security and confidentiality requirements of the application domain and incorporate in the system architecture the technology solutions, coupled with the necessary procedures and policies, that together will ensure that these security requirements are met.

The hosting site should comply with at least the following requirements:

- Power capacity and power quality appropriate for the operation of the proposed supercomputing system. UPS power available to cover the critical systems including storage and access to data of the proposed system.
- Adequate capacity of air or liquid cooling for hosting the proposed system.
- 100 Gbit/s connectivity towards the rest of the GEANT Network (link capacity).
- Co-location or high-speed connectivity to at least one associated data facility.
- Hosting physical security.
- Hosting fire mitigation equipment/procedures.
- Hosting IT access security.
- On call service support teams for IT issues.
- Dedicated on-call service team for facilities issues.
- Regularly measure the satisfaction of the users with the service via a user survey.

A detailed description of the proposed system and hosting site, covering features such as:

- Detailed description of the site hosting the system.
- Description of the main features of the targeted supercomputer system, including, e.g.:
    - Number of partitions.
    - Main processing elements (CPU, GPUs, IPUs, FPGAs, etc).
    - AI-optimised architecture and features.
    - Type of nodes and their configuration (e.g., accelerated, CPU-only, High memory, etc.).
    - Memory and storage capacities and architecture (e.g., high-capacity storage, high-speed storage, etc.).

- Ratio of different node types within the system (accelerator/CPU, memory size, etc.).
- Network capacities and architecture (e.g., interconnect, external connectivity, etc.).

- Expected sustained performance per partition and aggregated (AI-oriented benchmark and/or other performance indicators).
- Acceptance tests and benchmarks to be used for the acceptance of the supercomputer.
- Description of how management of specific needs of users for their owned software licenses, for example hosting a dedicated license server, license transfer or channelling of already in-use software licenses will be addressed.
- Other related software/services (containers, virtualisation, support of workflows, workflow management…), in particular:
  - frameworks to allow the automation of AI model training lifecycle.
  - resource provisioning mechanisms to provide multi-tenancy environments.

Description of the "Total Cost of Ownership (TCO)"

The applicant should include an estimation of the cost of the new or the upgraded AI EuroHPC supercomputer that the applicant has in mind to host and that has been described in the previous section "general system specifications".

The estimation of the TCO will be based on an estimation of the acquisition costs of a potential system that complies with the general system specifications and on an estimation of its operating costs. The costs related to the construction of the hosting site per se (i.e., the costs related to the building infrastructure that will host the supercomputer, etc.) shall not be covered by the EuroHPC JU. The costs of the preparation and adaptation of the hosting site incurred by the hosting entity that can be directly accounted to the supercomputer may be considered as part of the TCO.

Applicants must provide their intention with regards to the duration of the operations of the supercomputer in the hosting entity. This should include not only their proposal for the duration of the operations, but their preference for the ownership of the supercomputer once the operations are finished (e.g. buy it, decommissioning it …).

Site preparation

The hosting entity must be able to meet the baseline requirements set out herein in time for the anticipated timeline for the delivery of the supercomputer. The applicant must provide a plan of how and in what timeline the applicant intends to realise the construction of a new or the upgrade of an existing site, including costs of each action (indicating the ones that will be considered as in-kind contribution) and the definitive date at which the site will be ready for the installation of the EuroHPC system.

Acquisition Costs

Applicants must detail the estimation for the cost of the acquisition of the supercomputer. Applicants must indicate clearly what costs will be included in this category, how they will calculate them and who will pay for those.

Operating Costs

Applicants must provide an auditable methodology to calculate and to verify the operating costs of the supercomputer for the duration of the action. Applicants must describe the model that will be used for

calculating the costs of the Operational expenditures (OPEX), detailing the cost elements included in the model and providing estimates for each cost.

The hosting entity should be in position to provide an accurate estimate and to verify the operating costs of the supercomputer, by ensuring, for example, the functional separation, and to the extent possible, the physical separation of the supercomputers and any national or regional supercomputing systems it operates. The applicants must explain the way the supercomputer shares its IT environment and storage.

The method should be used in the grant to calculate the operating costs and the amount that will be covered by Union's contribution. Applicants can use the indicative list of cost elements provided in Annex 2 to consider in the calculation of the operating costs.

Applications must include at least the following information and/or estimations:

1. Average power usage effectiveness (PUE) for the current data centre over the last 12 months[65]. And, in the case that the applicant would be upgrading the site to host the supercomputer, what is the planned (design specification) PUE for your upgraded data centre[66].

2. Depreciation time for the building, technical building infrastructure and IT investments and method used for the depreciation of the assets (e.g. linear).

3. Average cost of IT on-call service (internal or outsourced) over the last 12 months.

4. Current electricity price in EUR/kWh (all taxes included) and if available, electricity price in EUR/kWh (all taxes included) at the expected installation time of the supercomputer.

5. Number of system administrators (FTE) expected to dedicate to the running of the supercomputer service (including critical auxiliary services such as storage, scheduling system, etc.), including average Person Month cost.

6. Number of user support staff (FTE) expected to dedicate to the running of the users of the supercomputer and application support including average Person Month cost.

7. Number of technical support staff (FTE) expected to dedicate for an Application Support Team including average Person Month cost.

8. IT environment including storage (disks, tapes ...) architecture, capacities and their ability to be extended to serve the supercomputer.

Description of the "Experience of the hosting entity in installing and operating similar systems"

Applicants must provide information of their experience in installing and operating supercomputers and dedicated high performance storage facilities, including at least:

[65] The calculation of the PUE provided must be based on the method defined by ASHRAE Technical Committee 9.9 as set out in their publication "PUE: A Comprehensive Examination of the Metric". PUE = Total Facility Energy / IT Equipment Energy (Note: JU reserves the right to check this value).

[66] The estimated of the PUE provided must be based on the method defined by ASHRAE Technical Committee 9.9 as set out in their publication "PUE: A Comprehensive Examination of the Metric". PUE = Total Facility Energy / IT Equipment Energy.

1) Previous experience with installing and operating supercomputers. Provide information in case the applicant's site has experience in hosting very early releases of new systems. If relevant, applicants must provide documentation of their experience in having installed systems in the last 5 years (especially systems that ranked in the top 50 positions of the Top500 at the time of their first listing).

2) In the case of installing and operating a supercomputer for a 3rd party (the supercomputer is owned by a 3rd party and operated for them as agreed in the relevant Service Level Agreement, SLA) or operating a supercomputing service or equivalent major infrastructure for a 3rd party (3rd party pays for a service based on a SLA, the supercomputer is owned by the hosting entity); applicants must provide a description of the service provided as well as at least one contact person from the 3rd party from whom the JU may request a reference for this service.

3) Description of the current organizational structure and the teams of people responsible for the supercomputer operation and management (including user support and specialist support of the HPC systems). If available, include current procedures and tools for system management, help desk project management, configuration management, training and education put in place.

4) Description of the current procedures adopted by the supercomputing operation and management team to monitor HPC systems. Please indicate which of these are these are in-house and which are 3rd party solutions; how they have been integrated and customized. List any current Quality Control certifications your organization has obtained for system management, help desk project management, configuration management, training and education.

5) Description of the current procedures adopted by the supercomputing operation and management team to trace and resolve issues and communicate them to users and other stakeholders. Include description of current procedures adopted by the supercomputing operation and management team to ensure that service level agreements are met.

6) Description of any current continuity procedures the operations team or the Network Operations Centre (NOC) has in place and description of current workload management software and methodology (bonus/malus; backfill; etc.) in place.

7) Description of previous experience in providing supercomputer access and other related services to users from other Member States or pan European environments.

Description of the "Quality of the hosting facility's physical and IT infrastructure, its security and its connectivity with the rest of the Union"

Applicants must provide information of the hosting physical and IT infrastructure, including security and connectivity that the site can provide for the new or the upgraded AI EuroHPC supercomputer. JP/JC

Applicants must also provide a detailed plan of how and in what timeline they intend to realise the upgrade of the site, including the planned date at which the site will be ready for the installation of the supercomputer. This may include, but is not limited to Gantt charts, contractual timelines, construction permits and work contracts status.

For the preparation of the hosting site and the launch of the procurement and delivery of the new or the upgraded AI EuroHPC supercomputer, the hosting entity must be able to meet the baseline requirements set out herein in time for an accelerated delivery of the new or the upgraded AI supercomputer that will be used for the AI Factory. For this, the procurement of the new or the upgraded AI supercomputer shall be launched at the latest within three months after the date of notification of the selection decision by the JU to the hosting entity or hosting Consortium under this call and begin installation of the procured

system at the latest six months after its procurement date, and swiftly start operations of the full procured system.

Applicants should include (at least) the following information related to the current and proposed capacities of the hosting facility and how to achieve them:

1) Description of the intended hosting entity site and facility, including cooling methods and experience on cooling systems, power measurement facilities, accessibility, possibility to accommodate visitors, courses, possible extendibility of the site (m² and KW) and description of physical security concept, including access control, CCTV, etc.

2) Power measurement facilities in place at infrastructure level and where (device type, location of measurement at rack, PDU, centre) and maximum levels of energy measurement according to the EE HPC Power Measurement Methodology. If available, reference to any memberships of energy efficiency interest groups or codes of conduct (e.g. EE HPC WG, EU Code of Conduct, EMAS, or other); certifications for energy efficiency and sustainability (e.g. ISO / IEC 13273).

3) Information about the connection to the power grid, including maximum capacity of connection to the power grid and other characteristics such as redundant connection to the power grid. Information about power grid quality (number of outages from supplier in last 48 months,) and energy procurement method (e.g., long-term contracts, annual market-based purchases, other).

4) Information about availability of the data centre: expressed as a minimum percentage of uptime or in maximum number of hour's downtime that the hosting entity deem are acceptable per year. Average availability of data centre infrastructure (cooling, power, etc.) (over the last 24 months for current)[67].

5) Information about connectivity towards the rest of the GEANT Network (link capacity) and the Network Operating Centre (NOC) and its reachability (e.g. 24/7).

6) Facility managers (in-house or outsourced) involved in ensuring the operation of the data centre, and their specialization.

7) Total memory and storage capacities of the centre, defining what part would be dedicated to the supercomputer.

Description of the "Quality of service to the users, namely capability to comply with the service level agreement"

The applicant should specify the benchmarks or deliverables which the applicant intends to employ to achieve the expected results and targets and how they will be used. These should include at least the SLAs in the Hosting Agreement and information related to:

1) Access time accounting model that will be used to control the allocation time of the supercomputer. Provide historic system uptake and usage for recent HPC systems.

2) Availability of main HPC systems over last 12 months if the system has been operational for at least 18 months. If the system has been operational for less, please provide availability numbers

[67] Facility is deemed available when no facility issues are affecting the running of the supercomputing service. Availability = total hours – (scheduled + unscheduled downtime).

based on the duration for which the system has been in full production. This should include hours of scheduled maintenance and hours of unscheduled maintenance.

3) Availability of helpdesk; number of active projects currently supported. Description of services provided by user support (e.g. 1st level, 2nd level, application support) and of policy regarding response times for level 1, 2 and 3 tickets[68].

4) Description of how the on-call service for the supercomputing service and infrastructure facilities are set up and work. Include, if available, results from the user satisfaction surveys for your site for the last 5 years.

5) Fraction of time for which the current supercomputing service (supercomputer + all necessary auxiliary services like storage, network, login nodes, etc. + main software services like scheduler, access to file systems, etc.) has been available over the last 12 months[69].

6) Do you perform regular regression tests to assess the stability of performance of your current supercomputer service? If yes, please provide a description of the regression test used and the frequency at which it is run.

7) Does your site provide any additional services that may not be critical to running the supercomputing service but may provide an additional benefit to the end user? If yes, please provide a description of these services.

Applicants must provide details on how these tasks are currently done and how they propose to achieve them for the hosting of the supercomputer. Applicants must indicate subcontracted action tasks (if any) and explain the reasons why (as opposed to direct implementation).

12.4. Description of the "advanced experimental AI-optimised platform" (optional)

One of the targets of EuroHPC JU is also promoting the further development of European technologies and thus contributing to developing a competitive European technology supply industry. As part of this objective, it is proposed that interested hosting entities may also include in their application an optional system/partition targeting the development of an advanced experimental AI -optimised supercomputing platform.

The goal of such a platform shall be to operate an exploratory supercomputing infrastructure for the development, integration, testing, and co-design of a wide range of European technologies suitable to be part of the supercomputer.

<u>In case the hosting entity decides to include such optional part in its application, the hosting entity should include:</u>

a. A description of the advanced experimental AI-optimised platform
b. How it complements the new or the upgraded AI EuroHPC supercomputer
c. The development targets (milestones)
d. The time plan as well as a detailed work plan

[68] Level 1 => simple request, can be solved in 1 day; Level 2 => more complex request, requires some research, can take up to 5 working days to resolve, Level 3 => request that requires vendor response to resolve, may take longer than 5 working days.

[69] Available = fully up and running and reachable by the users and at least 98% of compute nodes available.

e. The cost breakdown

The potential of the advanced experimental AI-optimised platform, as well as its duration, should be duly justified in the application and will be evaluated on its own merits for receiving or not financial support. This evaluation shall not affect the overall evaluation of the other aspects of the application.

12.5. Description of the "AI Factory"

In this section the Applicants should provide a detailed description of the AI Factory and the services it will offer, complementing the general description of their proposal as presented in Section 12.2 above.

Applicants should at least address the following – for more detailed information, Applicants should refer to the Concept Paper found in Annex 3 of this Call for Expressions of Interest:

a. A detailed description of the AI Factory data facilities and services and its networking with other AI Factories:

1) *AI Factory tools and services*

- *Overview of the user support services*: This includes: (i) Description of the range of services that the AI Factory will provide to the AI ecosystem (e.g., guidance for using the HPC environment, adapting the computational tasks associated to the training and fine- tuning of the AI models and related inference activities to the HPC environment, etc.). (ii) Description of a plan for servicing private and public national users as well as users from other EuroHPC Participating States, which do not host an AI Factory. (iii) Description of the foreseen professional user support plan, describing the range of user support activities (i.e., how the AI Factory plans to engage with and serve the broader AI community – from startups, SMEs and large industry to academia and research institutions – and how will these professional services be provided). (iv) Description of the resources required for the AI Factory to provide a well-functioning user support service.

- *Software and application development environments*: description of the software environment that the AI Factory will deliver, including ready-to-use set of AI-oriented tools containerized workloads and workflows, etc.

2) *Data facilities, access to data, confidentiality and integrity of data*

- *Data facilities:* Description of the data repositories and data assets that the AI Factory plans to make available to the AI ecosystem.

- *Access to Common European Data Spaces*, including preliminary agreements on the principles of an access and use, establishing relevant data repositories (e.g., Hugging Face).

- *Plans for establishing secure and trusted environments*, for guaranteeing the confidentiality and integrity of sensitive data and for ensuring the integrity of computational processes.

3) *Trustworthy AI*: description of the plans the Applicants have for developing of robust guidelines and standards for AI algorithmic development aligned with the principles and requirements of the AI Act.

4) *AI Factory Hub facilities*

- *co-working space facilities:* description of the plans the Applicants have for making available co-working space physical facilities, possibly complemented also by virtual working spaces.

- *hosting facilities for AI students*: and description of the Applicants Plans for making available a physical campus hosting AI students located nearby or associated to the foreseen AI Factory.

5) *AI Factory training facilities*

- *Skills plan*: Description of the AI Factory Skills Plan outlining the skills needed for the targeted AI stakeholders, including a description of a diverse range of training courses, complementary training facilities and activities and timelines tailored to the varying needs of potential users.

- *Access to human capital*: in house and external direct access to the necessary human capital and talent to provide the necessary education/training activities planned. This includes plans for collaboration and engagement with universities to train and equip students at all levels with the necessary in-demand AI skills.

6) *Detailed plans for networking the AI Factory with existing European and national initiatives and with other EuroHPC AI Factories*.

- *Networking with other existing European and national AI & HPC initiatives:* Detailed plans for linking the AI Factory with European and national AI and HPC initiatives such as TEFs, EDIH, National HPC Competence Centres, ALT-EDIC, or others, and to engage with them while avoiding duplication of efforts.

- *Networking with other AI Factories*: Detailed plans for linking the AI Factory with other EuroHPC AI factories once they become operational in order to network, exchange best practice, share experiences, and avoid duplication of efforts.

b. A comprehensive description of the AI Factory Implementation Plan:

1) *Implementation Plan and risk management*: Applicants should provide an indicative implementation plan, an organisational structure and roles for the development, deployment and management of the AI Factory. They should also describe how the AI Factory will be developed, deployed, tested and running, with regards to the acquisition and deployment phases of the new or the upgraded AI EuroHPC supercomputer. Applicants should also include a risk management approach by identifying potential risks and mitigation strategies.

2) *Key performance indicators (KPIs)*: Description of a set of KPIs and metrics that the Applicant(s) will use to measure the contributions to the success of their AI Factory and associated AI ecosystem.

3) *Budget estimate of the proposal*: Applicants should provide an estimated budget the establishment of the AI Factory, including development, implementation and expected operational costs.

c. A comprehensive description of the expected Impacts of the AI Factory:

Applicants should describe the pathways to achieve the expected outcomes and expected impacts and the measures they will take for maximising these expected outcomes and impacts.

16. ANNEX 2: 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 JU	N/A	
High Performance disks/Scratch Storage	N/A procured by EuroHPC JU	N/A	

Equipment and commercial software

Cost item	Verification	Method	Provider	
Site preparation	Invoice /Balance sheet	Fraction committed to the EuroHPC JU (JU)	Hosting site only	
Network at data centre level	Invoice /Balance sheet	Fraction committed to JU	Hosting site only	Related equipment
High Performance disks/Home Storage	Invoice /Balance sheet	Fraction committed to JU	Hosting site / others	Related equipment
Backup storage	Invoice /Balance sheet	Fraction committed to JU	Hosting site / others	Related equipment
Level 2 storage/Long term Storage	Invoice /Balance sheet	Fraction committed to JU	Hosting site / others	Related equipment
Other IT equipment	Invoice /Balance sheet	Fraction committed to JU	Hosting site only	Related equipment
Supercomputers (SC) room	Invoice /Balance sheet	Fraction of the room occupied by the JU systems		
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	Other infrast

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-	N/A procured by EuroHPC	N/A	

performance disks/scratch storage			
Maintenance of items under "Equipment and commercial software"	Invoice	According to method in "Equipment and commercial software"	Hosting site / others

17. ANNEX 3: "AI FACTORIES" CONCEPT PAPER

Version 4.0, 25 July 2024

This concept paper addresses the EuroHPC Governing Board Members. It defines the way to implement the AI Factories[70]. It describes how the EuroHPC JU and Member States and consortia are to establish AI Factories and outlines their key features and activities. These will be reflected in the EuroHPC Call for Expression of Interest to host AI Factories.

Section 1 of this concept paper provides a description of what is an AI Factory. Thereafter a set of eligibility conditions for Member States to implement AI Factories are presented in Section 2. Section 3 provides a summary of the technical specifications that are expected to be addressed in Member States proposals on AI Factories. The Appendix I to this paper provides an overview of the different implementation modes to establish AI Factories across the EU through the EuroHPC JU.

1. What are AI Factories?

The Commission launched the AI Innovation Package in January 2024 to support European startups, and SMEs in the development of trustworthy AI. The AI Package proposed a limited number of targeted amendments to the EuroHPC JU Regulation for implementing the AI Factories around the EuroHPC supercomputers, which were largely endorsed by the Competitiveness Council on May 23, 2024.

The amended EuroHPC Regulation, so called the "AI Factories Act", expanded its objectives to include the development and operation of 'AI Factories'. AI Factories are entities which provide an AI supercomputing service infrastructure and will build open AI ecosystems formed around EuroHPC supercomputing facilities (hosting entities[71]). The activities covered by AI Factories will be open to public and private users, and with privileged access conditions for startups and small and medium-sized enterprises (SMEs). The amended regulation brings together the necessary resources around these supercomputers – namely computing power, data, and talent, to offer a wide and exhaustive range of services to public and private users, AI startups and SMEs, AI companies and researchers needed for the development of European general purpose AI models and other emerging AI applications or data driven applications, as well as subsequent targeted inferencing activities.

AI Factories in each Member State or a hosting consortium of Participating States will be connected to those in other Member States and to other relevant AI initiatives, such as Testing and Experimentation

[70] According to the AI Factories Act (Council Regulation (EU) 2024/1732 of 17 June 2024 amending Regulation (EU) 2021/1173 as regards a EUROHPC initiative for start-ups in order to boost European leadership in trustworthy artificial intelligence), an AI Factory is a centralised or distributed entity providing an Artificial Intelligence supercomputing service infrastructure which is composed of: 1) an Artificial Intelligence-optimised supercomputer or Artificial Intelligence partition of supercomputer, 2) an associated data centre, dedicated access and artificial intelligence-oriented supercomputing services and attracting and pooling talent to provide the competences required in using the supercomputers for Artificial Intelligence. AI Factories should include the following features:

vi. Acquiring, upgrading, and operating AI-optimised supercomputers to enable fast machine learning and training of large General Purpose AI (GPAI) models;
vii. Facilitating access to the AI dedicated supercomputers, contributing to the widening of the use of AI to a large number of public and private users, including startups and SMEs;
viii. Offering a one-stop shop for startups and innovators, supporting the AI startup and research ecosystem in algorithmic development, testing evaluation and validation of large-scale AI models, providing supercomputer-friendly programming facilities and other AI enabling services;
ix. Enabling the development of a variety of emerging AI applications based on GPAI models;
x. Attracting, pooling, and training talent to develop their competences and skills in using the EuroHPC supercomputers for AI.

[71] 'hosting entity' refers to a legal entity which includes facilities to host and operate a EuroHPC supercomputer and which is established in a Participating State that is a Member State.

Facilities, Digital Innovation Hubs, EDICs, etc., thus creating a closely interconnected AI ecosystem across the whole Europe.

The different elements of an AI Factory should not be seen in isolation but rather aligned and mutually reinforce each other. **The AI Factories** should cover **two main components namely i) the AI optimised Supercomputer and ii) the associated "AI Factories" activities and services**.

It is expected that a number of AI Factories will be established in a few Member States or consortia of Participating States around existing, upgraded or new AI optimised supercomputers. These AI Factories will serve the European and national AI communities.

The **AI Factories will be serving public and private users from all the EuroHPC Participating States**, including those which are not eligible or do not wish to host an AI Factory. Such users may be granted access to the share of EU's access time and necessary services provided by any of the EuroHPC AI Factories.

In order to serve users from Participating States, which do not host an AI Factory, the EuroHPC JU will act as first entry point. The JU will then dispatch the request to the appropriate AI Factory/Factories based on a number of selection criteria. These criteria as well as the access policy concerning the EU access time will be defined and agreed in due time by the EuroHPC Governing Board.

AI startups, which are supported through the EIC Acceleration Challenge of Horizon Europe, will be given a priority access to the AI optimised supercomputers and services offered by an AI Factory.

The EuroHPC Participating States, which do not host an AI Factory, can collaborate with one or more AI Factories through a strategic agreement with a hosting entity, similar to many of the current EuroHPC systems.

The provision of services by the AI Factories should be without prejudice to the EU **state aid rules**. The European Commission will provide guidelines in due time on this matter. In principle, provision of (free) services to startups and SMEs should be covered by the General Block Exemption Regulation[72]. On the other hand, provision of services to big industry should be fee-based.

2) AI Factories - Key Features to consider from a national perspective

The following section outlines a set of key policy features and technical activities that a Member State or a consortium of Participating States should undertake to support the development of an AI Factory that is to be co-funded by the EuroHPC JU. These are further summarised in Appendix II and will be further expanded in the relevant Calls for Expression of Interest.

Investing in AI optimised supercomputers

AI Factories should be developed around AI optimised supercomputers to address and serve the needs of national users, their AI ecosystem and potential AI European and national AI stakeholders and serve the needs of their targeted AI ecosystem. There are three possibilities that a Member State or a Consortium of Participating States and the corresponding hosting entity can consider here – these are presented in detail in the Appendix I.

Creating a national AI Ecosystem

[72] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014R0651.

Hosting entities should define and justify their needs and design choices in the context of their targeted AI usages and national/local ecosystems. Hosting entities should therefore present a comprehensive assessment of the users and AI Ecosystems they would like to serve and enhance through the AI Factory, ensuring a minimum critical mass justifying the need for an AI Factory. The assessment should include at least the following aspects:

i. **National AI Strategy**

To what extent the establishment and deployment of an AI Factory is linked and contributes to the implementation of the national AI strategy of the hosting country/countries of the hosting consortium.

ii. **National Data Policies and access strategies to the AI optimised supercomputers**

Applicants would need to describe the current National Data Policies in place (including possible access to data spaces that are available through their participation to EU initiatives such as EDICs) for enabling the access to large datasets, as well as the availability of knowledge corpus. In cases where such National Data Policy does not exist, applicants would need to provide a plan of how they will make available large data sets to the AI Factory ecosystem.

In both the above cases, Applicants should describe how they will implement policies facilitating the access to open / FAIR[73] data and proprietary data (including if necessary different fee schemes depending on the use of data for AI training/fine-tuning/inference).

iii. **National Access Policy to AI Community**

To ensure a cohesive HPC for AI approach and foster the national and local ecosystem, it is expected that Applicants would put in place an AI user-friendly access policy to the national share of computing time of the EuroHPC supercomputer and describe how it will contribute to the development of the national AI Ecosystem.

iv. Stakeholders

To build a thriving AI ecosystem, Applicants should clearly identify and be capable of attracting key stakeholders which can contribute to their success of their AI ecosystem. These should include:

a. AI Companies/AI Developers/AI Startups and SMEs.
b. AI Technology solution providers.
c. Potential Data providers which can supply high-quality data for AI training and analysis.
d. AI Users that will benefit from AI Factories generated AI-driven applications and solutions.
e. AI communities, including academia and students.
f. Private investors / incubators.

v. AI Ecosystem needs and challenges

Applicants should identify the needs and challenges of the AI ecosystem they intend to serve. Each AI Factory should preferably focus on selected applications/domains that are aligned with the strategic vision and strategic specialisation areas of the hosting country and/or the consortium of Participating States. They should identify the key barriers and obstacles that may hinder the creation of a thriving AI ecosystem, and the extent to which the deployment of the

[73] Findable, accessible, interoperable, and reusable

AI Factory can overcome these obstacles to create an AI ecosystem that harnesses the full potential of AI for the benefit of the relevant stakeholders.
Applicants may include internal or external cloud solutions to bridge the needs towards an end-to-end computing continuum spanning model development, training, fine-tuning, and inference.

vi. Strategy for AI startups/SMEs

To foster a thriving AI ecosystem, a proactive startups / SMEs policy at a national/regional level plays a vital role in fostering and attracting investment in the AI sector. By facilitating access to capital to startups/SMEs and/or implementing targeted tax incentives, governments can encourage investment and support startups/SMEs to ensure the success and growth of businesses. Hosting entities are encouraged to link the AI Factory ecosystem with relevant national/regional investment measures targeted at startups and SMEs.

vii. AI Factories – KPIs

Applicants should propose key performance indicators (KPIs) and metrics to measure the contributions to the success of their AI Factory and associated AI ecosystem, such as (but not limited to):

- Number of private AI users served annually, notably start-ups and SMEs;
- Number of public AI users served annually.
- Number of participants in the AI Factory ecosystem, including European ones, served.
- Number and quality of services provided by the AI Factory
- Number of AI training sessions provided.
- Number/quality/size of GenAI open models released.
- Number/volume of available quality databases annually.
- Number of AI science applications served/released.
- Number of industrial/SME/startup applications served/released.
- Number of AI dedicated researchers in the AI Factory.
- Number of students participating in AI Factory activities.
- Usage of the AI optimised supercomputer.
- Degree of oversubscription to the AI access calls.

Applicants may propose other relevant KPIs.

3) Overview of the Technical Specifications / Activities of AI Factories

This section provides a succinct overview of the main technical aspects that are expected to be included in the forthcoming AI Factory Calls for Expression of Interest.

a. Compute

AI Factories should deliver a minimum computing capacity to address the needs of users and their AI ecosystem, including potential AI European model developers and serve the needs of their targeted AI ecosystem.

Their targeted compute requirement should be ideally justified through the use AI/HPC benchmarks. These may include, e.g. (indicative)**:**

- **HPL-MxP benchmark:** The high-performance Linpack mixed precision benchmark seeks to address the convergence of HPC and AI workloads.

- **MLPerf Training HPC benchmark:** Benchmark, targeted at supercomputers, measuring the performance of training machine learning models for scientific applications and data**.** Minimum time-to-solution (e.g., training a 10 billion parameter language model in 45 days).

Applicants may propose further benchmarks, including inference related benchmarks where appropriate.

b. Storage

AI Factories must ensure enough storage capacity to handle large and numerous databases, as well as providing the necessary flexibility to increase their capacity according to the evolution of needs of users. **The storage should be collocated with the supercomputer or connected through a high speed (terabit) connection to maximize data throughput and minimise latency.**

- **High-capacity storage:** Adequate storage capacity to manage vast datasets**.**

- **High-speed storage**: Availability of fast storage to ensure rapid data access and transfer.

Applicants are expected to propose I/O[74] benchmarks to test the performance of proposed storage systems.

To strike a balance between capacity and speed, a tiering storage approach that combines different technologies, from fast disks to tapes, may be considered.

c. Data

The availability and accessibility to large data repositories with high quality curated data is fundamental for the AI community to flourish. AI Factories must guarantee high-speed connectivity and unrestrained access to European Data Spaces and relevant data repositories.

- **Data facility:** Co-located or very high-speed connection to (at least) one associated data facility linked to the supercomputer. Data centres to host large volumes of data necessary for AI Factories and associated data facilities must be operational within 12 months of being selected to host an AI Factory.

- **Access to Common European Data Spaces[75]:** Hosting entities should clearly identify interaction with and access to which Common European Data Spaces they wish to interact and have access to, provided that these correspond to their targeted / selected applications / domains that are aligned with the strategic vision and strategic specialisation areas of the hosting country / hosting Consortium. Hosting Entities should also describe the principles of an eventual access to and use of agreement with such Common European Data Spaces. Complementary and relevant data repositories (e.g., Hugging Face) should also be considered, as well as readiness to integrate into the future EuroHPC Federation Platform, which will be federating EuroHPC JU supercomputers and European HPC resources.

- **Security:** AI Factories should guarantee the confidentiality and integrity of sensitive data and ensure the integrity of computational processes. Users of computing capacity could for example be authenticated using the EU eID Wallet, once available.

[74] Input/output operations.

[75] Common European Data Spaces | Shaping Europe's digital future (europa.eu)

- **Secure and Trusted environments**: Where justified, AI factories should establish secure and trusted (research) environments for both industry and scientific research ensuring the confidentiality and integrity of data.

d. Connectivity

AI factories should ensure a high-bandwidth, low-latency secure networking to support rapid data transfer between nodes and storage systems. In addition, AI Factories should ensure secure connection to the forthcoming EuroHPC Hyper-connectivity network. Indicative references are described below:

- **High-bandwidth, low-latency internal networking**

- **Hyper-connectivity** (e.g. minimum of 100 Gbps, expandable to 1 Tbps).

e. Software and application development

AI Factories should provide a rich software environment including a ready-to-use set of AI-oriented tools (e.g., Pytorch, TensorFlow, etc.) with clear use-cases and examples for efficient use at large-scale, enabling new users to adapt quickly to the environment, as well as to facilitate the use of containerized workloads and workflows. It should be noted that most software tools at the core of AI development and execution are open source and should be supported; otherwise, AI Factories should establish adequate licensing mechanisms.

f. User Support for national users and users from the EuroHPC Participating States

Each hosting entity should present their foreseen HPC/AI professional support plan, describing the range of support activities to be offered and provided to users. This may include providing guidance for using the HPC environment, adapting the computational tasks associated to the training and fine-tuning of the models and related inference activities to the HPC environment. User support should be primarily targeting MLOps (machine learning operations). For example, users support activities should include assessing the HPC needs of the users' tasks, providing guidance on missing elements for implementation in HPC environments, parallelization techniques for optimising the memory and computing usage of the hosting supercomputer to speed up (pre-) training, fine-tuning the models for specific datasets and tasks (training or inference), or optimising the final model for efficient deployment and use. The number of required FTEs should be well justified, and the user support team should provide a well-functioning service (below 4h response time where possible).

Applicants should also describe the way they plan to serve public and private users from the EuroHPC Participating States. Such users shall be granted the share of EU's access time to the AI optimised supercomputers and AI Factory services. For such users, hosting entities should propose an appropriate access policy that respects a number of conditions for access (such as for example those in relation to the handling of sensitive information, security, confidentiality, unethical use, etc.).

AI services, including User Support, should be provided in a consistent and professional manner following industrial standards.

g. Co-working and entrepreneurial AI Factory Hubs

Applicants would need to provide a plan for making available physical facilities located nearby or associated to the foreseen AI Factory, such as sufficient large and well-adapted co-working spaces, possibly complemented by virtual working spaces. These will serve startups and SMEs, scientific communities/ talented students and HPC/AI support teams, as well as incubators and accelerators

to meet and work on common ideas and projects and get access to capital and to community support that are critical to developing the AI ecosystem.

Hosting entities should also include and/or identify the availability of a physical campus facility located nearby or associated to an AI Factory for hosting talented AI students working or trained in the AI Factory. Such facility would stimulate the relationship between the AI Factory and the local universities to create an environment that can attract the necessary talented human capital and build vibrant, attractive, and dynamic communities of practice along the AI Factory region.

h. Skills/Education

Hosting entities should present a comprehensive AI Factory Skills Plan outlining the skills required for the AI stakeholders they intend to target/serve and how to achieve them. This plan should include the offer of a structured training program highlighting relevant courses, activities, and learning pathways tailored to meet the diverse needs of potential users. Similarly hosting entities should convincingly demonstrate that they have direct access to the necessary human capital and talent and, provide a strategy as to how they intend to collaborate and engage with universities, research centers and other training providers to train and equip students at all levels with the necessary in-demand AI skills. The availability of adequate training facilities (such as for example small GPU sandboxes) at universities or research centers could help them attract and train talent.

Hosting entities should demonstrate capacity to put in place training on advanced subjects such as AI for HPC, Deep Learning, AI Programming environments, etc. Additionally, they should show extensive experience in using different delivery modes to provide advanced training in subject areas that require intensive hands-on experience (on-site, online, hybrid) and capacity to deliver a variety of training actions other than courses such as workshops, hackathons, summer-schools, etc. It is crucial that Hosting Entities also demonstrate the capacity to collaborate with other institutions to deliver training. It will be the responsibility of each AI Factory to design and present a robust and comprehensive set of training/education actions to be implemented.

i. Engagement/ Interacting with the AI community

AI Factories should professionally engage with and serve the broader AI community – from academia and research institutions, to startups, SMEs, and industry – liaising with existing initiatives like TEFs, EDICs, EDIHs and National HPC Competence Centres. AI Factories need to identify the main stakeholders at regional and national level and establish connections through networking events and conferences, sharing knowledge and working together on joint projects. Strategic formal partnerships, talent exchange, and joint initiatives can further strengthen these collaborations. It should be noted that national and local ecosystems should be the starting point for building AI Factories. The organisation and coordination of AI, data and HPC initiatives at the European level is important and ensuring to avoid national silos.

Hosting entities may consider the use and support of external professional service companies to optimise their offering and engagement with the AI ecosystem.

j. AI Factories networking

AI Factories should establish a collaborative framework to ensure effective networking and resource optimisation among themselves (e.g., knowledge sharing, specialisation, assets reutilisation, support, training, staff exchange, etc.). The collaboration between AI factories is very important to enable a thriving European AI ecosystem. This activity will be developed more extensively at a later stage when several AI Factories are operational.

A particular collaboration use case are HPC/AI projects spanning across two or more AI Factories, where users should have a homogeneous end-to-end experience. The collaboration framework must

envisage different formal and informal collaboration mechanisms, including the allocation of resources for this purpose, in order to benefit from synergies and avoid duplication of efforts across the ensemble of AI Factories.

k. Developing trustworthy AI

The AI Factories will cooperate with the AI Office and the TEFs to develop robust guidelines and standards for AI development within AI Factories, aligned with the principles and requirements of the AI Act. These guidelines should cover among other, areas such as data protection, transparency, and accountability. This will help create a unified approach to AI development across Europe and different entities and promote trustworthiness and compliance.

The AI Factories will furthermore work closely with the Testing and Experimentation facilities (TEFs), and the national AI supervision agencies, to test and validate AI solutions developed in the AI Factories to ensure they are considered trustworthy and compliant with the AI Act and robust enough to be used in real world settings.

APPENDIX I
AI OPTIMISED SUPERCOMPUTERS FOR AI FACTORIES

It becomes clear that AI Factories need **to deploy timely so that an AI dedicated supercomputing and service infrastructures for Europe's AI start-up and research ecosystem can be operational**.

Three complementary tracks can be considered:

1. "AI Factories" Track

This track is foreseen for those Hosting Entities that are already hosting a EuroHPC Supercomputer which can demonstrate enough computing resources for training large scale, general-purpose artificial intelligence models and emerging artificial intelligence applications can be appointed as AI Factory.

This track will be implemented through a permanently Open EuroHPC JU Call for Expression of Interest of Hosting Entities to appoint existing EuroHPC Supercomputing systems as an AI Factory. The hosting entity commits to undertake AI Factories activities (i.e., the full range of AI factory services).

Further to the appointment of an existing EuroHPC Supercomputing system as an AI Factory, an implementation grant may be awarded to cover for the AI Factories activities (i.e., services). An amendment to the existing Hosting Agreement should be introduced.

2. Upgraded AI Optimised Supercomputer Track

This track is foreseen for those Hosting Entities that are willing to upgrade their current EuroHPC supercomputer towards an AI Factory.

This track will be implemented through permanently Open EuroHPC JU Call for Expression of Interest of Hosting Entities to deploy and operate an AI Factory (Upgrade supercomputer to AI + AI Factory (Services, Skill development, User support)).

Further to the selection of Hosting entities, a Call for Tender (e.g., procurement) for the acquisition of the upgrade will be launched in addition to one accompanying grant to cover for the AI Factories activities (e.g. services). The existing grant for operational costs will be adapted in consequence. An amendment to the existing Hosting Agreement should be introduced.

3. New AI Optimised Supercomputer Track

This track is foreseen for those Hosting Entities that are willing to acquire a new AI Factory optimised Supercomputer.

Permanently Open EuroHPC JU Call for Expression of Interest of Hosting Entities to deploy and operate an AI Factory (AI new system + AI Factory (Services, Skill development, User support).

Further to the selection of Hosting entities, a Call for Tender (e.g., procurement) for the acquisition of the new supercomputer will be launched in addition to 2 accompanying grants to cover for the operational costs of the supercomputer and another one to cover for the AI Factories activities (e.g. services).

It should be noted that these 3 AI Factories Implementation tracks can be implemented in parallel.

APPENDIX 2

AI Ecosystem Key Features

Key Feature	Key Feature Description	How address it
AI optimised supercomputers	• Is the application developed around an AI optimised supercomputer (existing, upgraded, or new)?	Provision by the Applicants of the description of an AI-optimised supercomputer.
National AI Strategy	• To what extent the establishment and deployment of an AI Factory is linked and contributes to the implementation of the national AI strategy of the hosting country/countries of the hosting consortium?	Provision by the Applicants of the description of the National AI Strategy or equivalent, clearly showing the strategic character of the AI Factory proposal. **NB:** In the absence of a formal national AI strategy, applicants will need to describe the strategic national (or Consortium) character of their AI Factory approach.
National Data Policies	• Is there a current National Data Policy enabling the access to large datasets, availability of knowledge corpus, etc., and if not, is there a plan included describing how the proposal will make available large data sets to the AI Factory ecosystem? • Does the proposal include a plan on how to implement policies facilitating the access to open data and proprietary data (including if necessary different fee schemes depending on the use of data for training/fine-tuning/inference)?	Provision by the Applicants of the description of: 3. National Data policy or equivalent. 4. Meaningful implementation policy for access to large data sets **NB:** the access to available "data" is key to facilitate the functioning of any AI Factory.
Access Policy	• Does the proposal include an AI user-friendly national access policy?	Provision by the Applicants of a description of the access policy to the nationally owned computing time of the EuroHPC supercomputer. NB: This is an essential requirement for a part of the application on an AI Factory proposal to provide

Stakeholder participation	• Does the application include a plan on how to attract key national AI stakeholders?	Provision by the Applicants of a description of a convincing plan for attracting such key AI stakeholders. **NB:** This is an essential requirement for an AI Factory.
AI Ecosystem needs and challenges	• Does the proposal describe its strategic focus industrial / application sectors and how it would help develop further the AI ecosystem in these sectors? • Does the proposal include any plans for provision of cloud solutions?	Provision by the Applicants of the description of the key industrial/application sectors as well as of the key obstacles to overcome to further develop the AI innovation ecosystem in these sectors. Provision by the Applicants of any internal or external cloud solutions to bridge the needs towards an end-to-end computing continuum. **NB:** The identification of the above is essential for justifying the need of building an AI Factory that corresponds to the strategic national priorities.
Strategy for startups and SMEs	• Does the proposal include plans for linking to an existing or developing a new national/regional strategy for helping investment in the AI startups and SMEs?	Provision by the Applicants of the description of any plans they have on linking to an existing or developing a new investment strategy for AI start-ups and SMEs. **NB:** While not an essential requirement for an AI Factory, it would help a lot to further grow the national AI innovation ecosystem.
KPIs	• Does the proposal include key performance indicators (KPIs) and targets to measure the contributions to the success of the AI Factory and associated AI ecosystem?	Inclusion by the Applicants of a set of meaningful KPI indicators and realistic targets. **NB:** These are critical to monitor progress and identify where/when needed corrective action.