EuroHPC JOINT UNDERTAKING

DECISION OF THE GOVERNING BOARD OF THE EuroHPC JOINT UNDERTAKING

No 10/2023

Amending the Joint Undertaking's Work Programme and Budget for the year 2023

(Work Programme and Budget Amendment no. 2)

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, "the Regulation"),

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

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[2],

Having regard to Decision of the Governing Board of the EuroHPC Joint Undertaking No 3/2023 of 1 March 2023, amending the Joint Undertaking's Work Programme and Budget for the year 2023 (Work Programme and Budget Amendment no. 2),

WHEREAS

(1) Governing Board Decision No 3/2023 of 1 March 2023, amending the Joint Undertaking's Work Programme and Budget for the year 2023 (Work Programme and Budget Amendment no. 2).

(2) 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.

[1] OJ L 256, 19.7.2021, p. 3–51

[2] 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

(3) The annual Work Programme and Budget for the year 2023 needs to be amended for the second time in 2023 to:

a) To include a new call to support HPC adoption by SMEs
b) To include a full call document and a security clause (Article 22.6 Horizon Europe) in the interconnect technologies call
c) To include a security clause (Article 11.4 CEF) in the federated access services call
d) To correct three budget lines (both commitments and payments appropriations) as follows:
    1) Remove legacy H2020 credits from budget line 2300 that were unspent in agreement with the Commission (DG CNECT)
    2) Reduce payment appropriation on H2020 legacy operational revenues and on PS contributions, due to the decrease of the maintenance costs of the LUMI supercomputer in line with the amended administrative agreement. This reduction will be reflected on budget line 3100
    3) Reflect the cancellation of the Energy Crisis call (releasing EUR 12 Million) and the inclusion of the new action to support HPC adoption by SMEs (committing EUR 15 Million in Pillar Competence and Skills) under the title "30 Grants, HPC Operations, R&I Activities".

(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 annual Work Programme and Budget of the EuroHPC Joint Undertaking for the year 2023 should be adopted by the Governing Board.

(6) During 33rd Governing Board meeting, the Governing Board agreed on the amended annual Work Programme and

HAS ADOPTED THIS DECISION:

Article 1

The amended annual Work Programme and Budget of the EuroHPC Joint Undertaking for the year 2023 annexed to this decision is adopted.

Article 2

The Executive Director shall make the amended Annual Work Programme and Budget 2023 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 15 June 2023.

For the Governing Board

[e-signed]

Herbert Zeisel

The Chair

WORK PROGRAMME and BUDGET

EuroHPC JOINT UNDERTAKING (JU)

2023

In accordance with the Statutes of the EuroHPC JU annexed to Council Regulation (EU) 2021/1173 and with the Financial Rules of the EuroHPC JU.

The annual work programme will be made publicly available after its adoption by the Governing Board.

TABLE OF CONTENTS

Contents

ANNUAL WORK PROGRAMME YEAR 2023

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 Programme of the Joint Undertaking in 2022.

The Annual Work Programme 2023 contains the actions to be implemented in 2023. Calls to be launched in 2023 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. The grants under both calls will be managed as linked actions.

OPERATIONS

The key objective of the EuroHPC JU 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, personalised medicine etc. 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

Pillars of Action (Regulation 2021/1173)

The following work programme will follow the different pillars of actions as set out in the Founding Regulation (2021/1173).

Since most actions are ongoing over more than one year, this work programme will summarise ongoing actions in each Pillar and then in a separate section introduce the Calls to be launch in 2023.

Table of Actions with budget allocation:

Pillar	**Actions**	**Programme**	**EU Contribution in 2022 (EUR)**	**EU Contribution in 2023 (EUR)**	**Total Contributions (EUR)**
Infrastructure	2nd Exascale system procurement	DEP (WP23)		Up to 300 Million	600 Million
	2nd Mid-Range system joint procurements	DEP (WP22)	48 Million		139 Million
	3rd Call for mid-range Supercomputers CFEI	DEP (WP22)	22 Million		63 Million
	Access IT Platform	DEP (WP23)		600k	600k
	~~Energy~~	~~DEP(WP22)~~	~~12 Million~~		~~12 Million~~

	2nd Quantum CFEI (Capex +Opex)	DEP (WP23)		20 Million	40 Million
	Industrial HPC CFEI	DEP (WP23)		12.2 Million	35 Million
Connected and Federated	Federated HPC	CEF2 (WP21)	40 Million		40 Million
Technology	Experimental Platform for European Technology (PCP)	Horizon Europe (WP23)		24 Million	48 Million
	HPC Energy efficiency R&I Call	Horizon Europe (WP23)		29 Million	58 Million
	Interconnect technologies (Innovation Action)	Horizon Europe (WP23)		30 Million	86 Million See technology section
Applications	HPC Centres of Excellence (2nd call)	Horizon Europe (WP23)		20 Million	40 Million
	Quantum Excellence Centres	Horizon Europe (WP23)		10 Million	20 Million
	Quantum application prizes	Horizon Europe (WP23)		300k	300k
Competences and Skills	EuroHPC Virtual Academy	DEP SO4 (WP22) +DEP WP22	3 Million	3 Million	6 Million
	Action to support HPC adoption by SMEs	DEP (WP22)	15 Million		15 Million
	EuroHPC Summit 2024	DEP (WP23)		700K	700K

	User Forum	DEP (WP22)	1 Million		1 Million
International	Support EU Digital Partnership activities	Horizon Europe WP23)		10 Million	10 Million

In 2023, the Legislative Financial Statement (LFS) provides the JU with **EUR 331,342 Million from DEP and EUR 122, 8 Million** from Horizon Europe. This includes the deduction introduced by the Chip Act'.

In line with the LFS forecast for 2023, this Work Programme commits the credits as indicated in the LFS**.** All other projects will be funded from unused appropriations carried forward from 2021 and 2022.

INFRASTRUCTURE PILLAR

Ongoing activities:

The JU's Infrastructure strategy will continue to be implemented in 2023.

- The Call for Tender for the acquisition of the first exascale supercomputer to be located in Jülich Supercomputing Centre in Germany will be launched in 2023, The target is for the system to become operational in 2024 in time for the TOP 500 ranking in late 2024.
- The JU will 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 evaluate proposals to select a hosting entity for the acquisition and operation of a second exascale supercomputer based on calls for expression of interest launched in late 2022.
- The JU will evaluate proposals to select hosting entities for the second set of mid-range supercomputers based on calls for expression of interest launched in 2022.
- The JU will provide technical guidance and administrative support to designated hosting entities in Bulgaria and Italy for the procurement of the upgrading of the supercomputers
- The JU will procure quantum computers based on the outcome of the call for expression of interest launched in 2022.
- In order to develop a fully operational access capacity for users of EuroHPC Systems, the JU will set up peer review process including an IT platform and services. The service will be managed by the JU and will be designed to ensure open, fair, and unbiased access to the recently acquired Euro HPC supercomputers.
- Furthermore, with support from INFRAG and the EuroHPC Hosting Entities, the JU will assess the EuroHPC JU Access Policy to ensure that all EuroHPC systems are fully used and present its recommendations to the Governing Board by mid-2023.
- A plan for the communication and dissemination of the results of the projects that have been given EuroHPC access time will be developed and implemented.
- In Q2 2023, the petascale HPC Deucalion based in Portugal will be operational.
- In mid-2023, the pre-exascale HPC Mare Nostrum 5 will be inaugurated.
- The JU will organise reviews on the operational activities and expenditure of the two pre-exascale systems (LUMI, LEONARDO) in 2023.

Calls 2023

Access and allocation of EuroHPC computing IT platform services

Scope: Access to a world-class pan-European High Performance Computing (HPC) and quantum computing infrastructure to provide state-of-the-art services accessible by users independently of their location, by pooling, integrating and rationalising HPC resources at EU level.

The JU intends to procure peer review process platform and operational services designed to ensure open, fair, and unbiased access to the EuroHPC supercomputers.

Outcome: The JU plans to have a fully operational access and allocation of EuroHPC computing IT platform services in 2023.

SPECIFIC CONDITIONS: ACCESS AND ALLOCATION OF EUROHPC COMPUTING IT PLATFORM SERVICES	
Expected EuroHPC JU contribution for the procurement	The EuroHPC JU estimates that an EU contribution of up to EUR 600k would allow these outcomes to be addressed appropriately. Only one proposal will be retained. The expected duration of this action is 5 years.

Call for Expression of Interest for the selection of a Hosting Entity to acquire and operate an industrial grade EuroHPC Supercomputer

Scope: With the growing dependence on supercomputers to process ever increasing amounts of data, the JU will launch a Call for Expression of Interest to procure HPC systems to be co-owned and used by the industrial sector based in the European Union.

Article 13 of Regulation (EU) 1173/2021 states that the system should be at least a mid-range level system and should be hosted in existing EuroHPC Hosting Entity. EuroHPC JU will fund 35% of acquisition costs.

Outcome: The Joint Undertaking shall acquire, together with a consortium of private partners, at least mid-range level supercomputers, or partitions of EuroHPC supercomputers, primarily destined for use by industry, and shall own them or co-own them with a consortium of private partners.

The Union financial contribution shall cover up to 35 % of the acquisition costs of the EuroHPC supercomputers, or the partitions of the EuroHPC supercomputers. The remaining total cost of ownership of the EuroHPC supercomputers, or the partitions of the EuroHPC supercomputers, shall be covered by the consortium of private partners.

The selection of the supplier of an industrial-grade EuroHPC supercomputer shall be based on tender specifications that shall take into account the user requirements and the general system specifications provided by the selected hosting entity in its application for the call for expression of interest. The selection shall also address the security of the supply chain.

The Governing Board may decide in the work programme, if duly justified for security reasons, to condition the participation of suppliers in the acquisition of the industrial grade EuroHPC supercomputers in accordance with Article 12(6) of Regulation (EU) 2021/694 or to limit the participation of suppliers for security reasons or actions directly related to the Union's strategic autonomy, in accordance with Article 18(4) of that Regulation.

The EuroHPC supercomputers or the EuroHPC supercomputer partitions for industrial use shall be hosted in a hosting entity of a EuroHPC supercomputer.

The Call for Expression of Interest will be launched in 2023 and the expected procurement will take place in 2024.

Budget: An indicative budget from DEP of EUR 12.2 million (procurement of 1 industrial EuroHPC supercomputer in 2024)

SPECIFIC CONDITIONS: CALL FOR EXPRESSION OF INTEREST FOR THE ACQUISITION AND INDUSTRIAL EUROHPC SUPERCOMPUTERS (CFEI 2023; PROCUREMENT 2024)	
Expected EuroHPC JU contribution per project	The EuroHPC JU estimates that an EU contribution of up to EUR 12.2 million towards an industrial HPC would allow for the acquisition of one EuroHPC JU industrial supercomputers. Industry would contribute 65% of the procurement which is the equivalent of approximately EUR 22.8 million
Indicative budget	The total indicative budget for one EuroHPC JU industrial supercomputers is up to EUR 35 million.
Type of Action Eligibility conditions	Call for expression of interest The eligibility conditions are those established in the EuroHPC JU Council Regulation (EU) 2021/1173, and in particular Article 13 of this Regulation. In order to achieve the expected outcomes, and safeguard the Union's strategic assets, interests, autonomy, or security, participation is limited to legal entities established in Member States and in the following Associated Countries to Horizon Europe: Iceland, Norway. Proposals including entities established in countries outside this scope specified in the topic/call/action will be ineligible. For the duly justified and exceptional reasons listed in the paragraph above, in order to guarantee the protection of the strategic interests of the Union and its Member States, legal entities established in a Member State or in OECD countries, that are directly or indirectly controlled by third countries that are not OECD countries or by legal entities of third countries that are not OECD countries are not eligible to participate.

Third call for expression of interest for the acquisition and operation of mid-range supercomputers.

The EuroHPC JU will initiate a third Call for Expression of Interest for hosting mid-range supercomputers. 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.

These supercomputers will be hosted in national Supercomputing Centres (as a hosting entity or as a support to the hosting entity, depending on the national organization) already established in Member States that are a Participating State of the Joint Undertaking. The procurement of these supercomputers is foreseen for late 2024. The supercomputers should strive to incorporate to the maximum extent available European technology and a minimum of 25 Petaflops computing performance is expected for each installed supercomputer.

The EuroHPC JU and the Participation States will procure jointly the mid-range supercomputers. Pursuant to Article 14 of the EuroHPC Regulation, the EuroHPC JU will be the co-owner of these supercomputers it will acquire. The Union's contribution from DEP funds should cover up to 35% of the acquisition costs, plus up to 35% of the operating costs of these supercomputers.

The eligibility conditions are those established in the EuroHPC JU Regulation. The Governing Board may decide in the Work Programme, if duly justified for security reasons, to condition the participation of suppliers in the acquisition of the high-end supercomputers in accordance with Article 12(6) of Regulation (EU) 2021/694 or to limit the participation of suppliers for security reasons or actions directly related to the Union's strategic autonomy, in accordance with Article 18(4) of that Regulation. Applications to the call for expression of interest should therefore provide a first indication if the hosting entity would consider conditioning or limiting the participation of suppliers for security reasons and/or reasons related to the Union's strategic autonomy.

SPECIFIC CONDITIONS FOR THE THIRD CALL FOR EXPRESSION OF INTEREST FOR THE ACQUISITION AND OPERATION OF MID-RANGE SUPERCOMPUTERS (CFEI 2023; PROCUREMENT 2024)	
Expected EuroHPC JU contribution per project	The EuroHPC JU estimates that an EU contribution of between EUR 7 million and EUR 15 million matched by a MS contribution of between EUR 13 million and EUR 28 million per supercomputer would allow for the acquisition and operation of one or several mid-range supercomputers of various performance levels
Indicative budget	The total indicative budget for the EU contributions to the topic is up to EUR 22 million.
Type of Action	Call for expression of interest

Eligibility conditions	The eligibility conditions are those established in Article 14 of the EuroHPC JU Council Regulation (EU) 2021/1173.

~~***Possible grants to cover Union's share of energy costs on operational costs of EuroHPC Supercomputers***~~

~~Subject to confirmation from the European Commission's Legal Service, grants will be established to cover the operating costs of EuroHPC supercomputers related to the Union's share of energy costs for the running of operational EuroHPC JU supercomputers where the hosting entity has submitted an application to become a hosting entity before 24 February 2022 (beginning of Russia's invasion to Ukraine) and which was successful. Following a formal and justified request from a Hosting Entity, EuroHPC JU will assess whether the request is fully justified. Potential evaluation criteria include a) increase in cost of energy bill, b) degree of energy bill deviation from original forecast, and c) a formal commitment from the Hosting Entity consortium members and Hosting Member States to match the EuroHPC JU contribution.~~

~~The JU contribution will be calculated on the basis of the declared increased and incurred energy costs up to the maximum total contribution of the EuroHPC JU (35% for petascale and 50% for pre-exascale) whichever is lower from 24 February 2022 onwards until the 'Force Majeure' comes to an end.~~

~~The Governing Board Decision will take into account the specificities of each EuroHPC supercomputer.~~

~~The action is pending legal assessment by the Commission of the possibility for such an action, the implementation modalities and the eligibility for the Hosting Entities,~~

~~**SPECIFIC CONDITIONS: Grants to cover Union's share of energy costs on operational costs of EuroHPC Supercomputers**~~	
~~Expected EuroHPC JU contribution for the grant for operational costs~~	~~The EuroHPC JU estimates that an EU contribution of up to EUR 12 million in 2023 would allow these outcomes to be addressed appropriately. Only one proposal per hosting entity will be retained.~~

Deployment of European quantum computers

This is a follow-up to the EuroHPC Work Programme 2022 action on the *procurement and operation of the quantum computers for integration into HPC supercomputers* EUROHPC-2022-CEI-QC-01.

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 Call 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 calls (EUROHPC-2022-CEI-QC-01 and H2020-JTI-EUROHPC-2020-01) and the Quantum Flagship call HORIZON-CL4-2021-DIGITAL-EMERGING-02-10 and HORIZON-CL4-2021-DIGITAL-EMERGING-02-15: Strengthening the quantum software ecosystem for quantum computing platforms.

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. 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-2023-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 retained by the successful hosting entities of the call EUROHPC-2022-CEI-QC-01.

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.

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 follow a co-design approach with the applications that will run on the quantum computers, thus contributing to the development of new quantum software and applications, or improving their performances. The applications, software and the high-level implementation should, to the extent possible, be independent of the underlying qubit platforms and they should be run/tested on as many quantum computing platforms as possible within the EuroHPC infrastructure.

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. 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. 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 the proposals selected in call EUROHPC-2022-CEI-QC-01. 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 and EUROHPC-2022-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-2023-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 40 million and an equivalent EUR 40 million MS contribution would allow for the acquisition, operation and integration of at least three quantum computers.

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 two quantum computers covering different qubit technologies
Indicative budget	The total indicative EU budget for the topic is EUR 20 million. The total contribution will be EUR 40 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. 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:

On HPC connectivity, the JU will ensure that the Connectivity study procured in 2022 will be delivered in 2023. 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

Calls 2023

Federating Supercomputers

The JU will launch 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.

A solution will be deployed on top of specific dedicated resources in order to create a federated EuroHPC infrastructure.

Objective: Development and implementation of Federated Access Services across all the EuroHPC JU supercomputers

Scope: The call for tender for the development and implementation of federated access services across all the EUROHPC JU supercomputers

The initiative would provide:

- A platform to be deployed in data and supercomputing centres, providing a secure, harmonised and evolvable set of federated infrastructure services to manage the distributed and heterogeneous resources
- Interoperability of EuroHPC systems
- Interfacing EuroHPC systems and other EU data spaces or digital infrastructures
- Authentication and Authorization Infrastructure (AAI) Service
- User and Resource management, including mechanisms to implement flexible/evolving resource allocation schemes and helpdesk services

- Access to advanced data and computing services (e.g. Interactive computing, Data Management, Virtual Machines, etc.)
- Access to the sectoral data repositories and data discovery.
- Common security practices across EuroHPC systems

EU Budget: up to EUR 40 Million (allocated in CEF in WP21)

SPECIFIC CONDITIONS: CALL FOR TENDER FOR THE DEVELOPMENT AND IMPLEMENTATION OF FEDERATED ACCESS 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 40 million for the development of and implementation of Federated Services across all the EuroHPC JU supercomputers.
Indicative budget	The total indicative budget for this initiative is EUR 40 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.

TECHNOLOGY PILLAR

Ongoing Activities

"HPC technologies that are developed through the EuroHPC JU calls must be energy efficient, innovative and able to perform and compete globally, be production ready and ready to be deployed in industrial and SME settings. These technologies need to take into account new usage models such as hybrid computing and the European Digital Twin initiatives. Technologies will need to take into account big data analytics, AI, Neuromorphic and quantum computing." MASP 2021

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.

EuroHPC JU's Expert Groups, RIAG and INFRAG, will update the MASP in 2023.

Furthermore, with the support of RIAG and INFRAG, a dialogue with the Private Members and the HPC Community will be launched to develop a Future Lab for New HPC Technologies in order to identify Technology Calls for 2024 and later.

Calls 2023

Experimental Platform for European Technology Pre-Commercial Procurement (PCP)

The JU will launch 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.

Proposals are expected to build on and include as much European research and technology as possible as well as new approaches which will be developed to the proof-of-concept stage. R&D must be aligned with technology developed in other European initiatives, for example, by the European Processor Initiative and R&D carried out within the proposals selected in call EuroHPC-2020-01-a and EuroHPC-01-2019. The call specifically invites R&I focused European small and medium-size enterprises to propose innovative solutions for the challenge set out by the call. This could include, but is not limited to, the tight integration of low-power CPU and GPU chips, low-power interconnect and storage solutions, innovative power management and cooling solutions, workload and resource management software to significantly increase the system utilisation and energy efficiency, as well as monitoring solutions to analyse and optimize energy consumption of HPC systems. The PCP targets a TRL of 8 after the work has been completed and aims to cover gaps in the European HPC supply chain. The JU intends to procure complementary R&D which can be combined in a subsequent procurement (PPI) of an experimental platform by the end of the action.

The JU will work with its advisory groups and possibly external experts with domain specific knowledge to define the PCP and the PPI.

Budget: A total EU contribution of EUR 24 million is allocated to this action.

Specific conditions	
Expected EuroHPC JU contribution per project	The EuroHPC JU estimates that an EU contribution of between EUR 5 – 10 million matched by a PS contribution of EUR 5 – 10 million per proposal. The remaining budget would be allocated to the PPI.
Indicative budget	The total indicative EU budget for these actions is EUR 24 million. The total budget will be up to EUR 48 million.
Type of Action	Pre-Commercial Procurement followed by a Public Procurement of Innovative solutions
Eligibility conditions	The eligibility conditions are those established in the EuroHPC JU Council Regulation (EU) 2021/1173. Given the critical nature of high end energy efficient HPC technologies and since the EU needs to avoid a situation of technological dependency on a non-EU source for these technologies, participation is limited to legal entities established in Member States and legal entities established in countries associated to Horizon Europe that are members of the EuroHPC Joint Undertaking. Proposals including entities established in countries outside the scope specified in the call/topic/action will be ineligible. To guarantee protection of the strategic interests of the EU and its Member States, legal entities directly or indirectly controlled from non-associated third countries are ineligible for participation (Art 22.5 Regulation (EU) 2021/695) The place of performance of the procured activities is limited to the territory of the Member States and of Associated Countries

HPC Energy efficiency R&I Call

The JU will launch actions to develop new technologies that will drastically reduce the energy consumption of future EuroHPC supercomputers. The activities should address the development of pilot systems that demonstrate significantly reduced energy footprint for typical expected workloads on post-exascale EuroHPC systems.

The JU will consult widely to develop this call and will come up with proposals to the Governing Board in 2023.

Budget: A total of EU contribution of EUR 29 million is allocated to these actions

ENERGY EFFICIENCY R&I CALL	
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 2023-2024 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 2023-2024 which shall 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 EuroHPC JU contribution per project	The EuroHPC JU estimates that an EU contribution of between EUR 5 million matched by a PS contribution of EUR 5 million per demonstrator for a project duration of 2 years.
Indicative budget	The total indicative EU budget for these actions is EUR 29 million. The total budget will be EUR 58 million.
Type of Action	Grant
Eligibility conditions	Given the critical nature of high-end energy efficient technologies and since the EU needs to avoid a situation of technological dependency on a non-EU source for these technologies, participation is limited to legal entities established in Member States and legal entities established in countries associated to Horizon Europe that are members of the EuroHPC Joint Undertaking. Proposals including entities established in countries outside the scope specified in the call/topic/action will be ineligible.

Innovation Action in Low Latency and High Bandwidth Interconnects

Call - Innovation Action in Low Latency and High Bandwidth Interconnects

HORIZON-EUROHPC-JU-2023-INTER-02

Conditions for the Call

Indicative budget(s)

Topics	Type of Action	Budgets (EUR million)	Expected EU contribution per project (EUR million)[3]	Indicative number of projects expected to be funded
		2024		
Opening: 01 Aug 2023				

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

Deadline(s): 31 Jan 2024				
HORIZON-EUROHPC-JU-2023-INTER-02	HORIZON-JU-IA	30.00	20.00 to 30.00	1
Overall indicative budget		30.00		

General conditions relating to this call

In the era of exascale and post exascale supercomputing, in order to efficiently exploit the increasing available computation capabilities, inter-node networking (interconnect between compute nodes) becomes an even more critical component of exascale and post-exascale systems, which must be able to dynamically support the increasing number of heterogeneous computing devices in their operations. Advanced interconnection networks are required to dynamically support multiple applications, to scale efficiently and reliably at exascale level and beyond, cope with new heterogeneous accelerators and processing elements, and support datacentric and heterogeneous applications. Proposals are invited against the following topic(s):

HORIZON-EUROHPC-JU-2023-INTER-02: Innovation Action in Low Latency and High Bandwidth Interconnects

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of between EUR 20.00 and 30.00 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 30.00 million.
Type of Action	HORIZON JU Innovation Actions
Admissibility conditions	The page limit of the application is 70 pages.
Eligibility conditions	The following additional eligibility criteria apply: All partners of a consortium should contribute with at least 10% of the overall personnel resources. 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

	legal entities established in countries associated to Horizon Europe that are members of the EuroHPC Joint Undertaking. Proposals including entities established in countries outside the scope specified in the call/topic/action will be ineligible. For the duly justified and exceptional reasons listed in the paragraph above, in order to guarantee the protection of the strategic interests of the Union and its Member States, entities established in an eligible country listed above, but which are directly or indirectly controlled by a non-eligible country or by a non-eligible country entity, may not participate in the action unless it can be demonstrated, by means of guarantees approved by the eligible country of establishment, that their participation to the action would not negatively impact the Union's strategic, assets, interests, autonomy, or security. (Art 22.5 Regulation (EU) 2021/695)
Technology Readiness Level	Activities are expected to achieve TRL 8 by the end of the project – see General Annex B. Activities may start at any TRL.
Documents	Applicants are not required to include in their proposal a plan for the dissemination of the results as the action focuses on the development of an industrial grade high-bandwidth interconnect system for supercomputers. The dissemination and promotion of the final product are not necessary to achieve the objectives of the action.
Procedure	The granting authority can fund a maximum of one project. If funding for projects funded under topic is coming from more than one EU programme, this action is an EU Synergy grant.
Legal and financial set-up of the Grant Agreements	Grants award under this topic will have to submit the following deliverable(s): • a development roadmap with a sufficient number of control points (milestones, deliverables, etc.) that provide the granting authority with a detailed assessment of the project progress, at least every six months • fully functional prototype (tape-out) of inter-node interconnect hardware capable of delivering competitive performance for exascale and post-exascale supercomputers • regular reports on latency, power efficiency, virtualisation, scalability, reliability, security as soon as a suitable testing environment is available • software stack, including configuration, installation and management tools

	• fully functional pilot for the developed inter-node interconnect hardware and software stack, demonstrated by relevant benchmarks and acceptance tests The EuroHPC Joint Undertaking is only funding up to 35% of eligible costs for Innovation Actions (except for non-profit legal entities, where a rate of 50% applies). Applicants are invited to contact the competent national funding agencies to inquire about the availability of matching national funds and specific national eligibility conditions before submitting a proposal. Beneficiaries will be subject to the additional access rights. Access rights relating to Participating States refer to EuroHPC Participating States as defined in the eligibility conditions of the call.

Expected Outcome:

- Contribution towards European technological sovereignty, by establishing, maintaining and implementing a strategic R&I roadmap that fosters the European capabilities to design, develop and produce inter-node interconnects.
- Delivering scalable energy efficient inter-node interconnect for exascale and post exascale supercomputers. The development of European interconnect should prepare the technology for its future uptake and integration in post-exascale supercomputers to be acquired at a later stage by the EuroHPC JU targeting systems incorporating European technologies.
- A suitable software stack, including configuration, installation and management tools.

Scope: The aim is to support the R&I technology development of innovative and competitive European HPC inter-node interconnect technology.

- Develop a roadmap for European scalable inter-node interconnects targeting HPC exascale and post-exascale systems. The roadmap should take into account the EuroHPC supported work in this area such as the components being developed in the EUROHPC RED-SEA project as well as in the area of processors and accelerators.
- Develop the inter-node interconnect hardware addressing design, development, testing and tape-out as well as integration in test-beds. The work should foster synergies with the EuroHPC supported work in the area of processors and accelerators.
- Develop the software, installation, configuration and management tools for the developed interconnect, driven by the needs of relevant HPC workflows and application requirements.
- Address issues like high bandwidth, low latency, power efficiency, virtualisation, scalability, reliability, security, etc.

Proposals should clearly demonstrate that all partners in the consortium have a significant and justified role, including appropriate deliverables under their responsibility which cover the specific contributions of each partner. Due to the specific focus of the action, the consortium is expected to include not more than five partners to ensure an efficient and effective implementation and delivery of the objectives. The expected duration of this action is 3 years.

APPLICATIONS PILLAR

Ongoing Activities:

The EuroHPC JU Centres of Excellence will begin work in 2023. The first reviews will take place in 2024.

Calls 2023

Call on Centres Of Excellence For Exascale HPC Applications

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.

Expected Outcome: Centres of Excellence 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. They should implement concrete actions to increase the performance of applications and exploit these advanced computing capabilities. The goal is to develop or scale up existing application codes towards exascale performance, resulting into tangible benefits mainly for scientific challenges. Proposals for Centres of Excellence - Exascale Lighthouse applications will exploit existing federated resources around Europe, developing available competences, and ensuring multidisciplinary (combining application domain and HPC system, software and algorithm expertise).

Scope: This topic builds and complements the HORIZON-EUROHPC-JU-2021-COE-01-01: Centres of Excellence preparing applications in the Exascale era call.

Proposals should focus on the development of specific and clearly identified applications (i. e. codes), convincingly demonstrate their exascale capabilities and needs, and present a detailed software development plan with clear timeline for the implementation including quantitative KPIs, milestones and deliverables. This includes codes and tools that support the analysis and assessment of academic or industrial applications with potential for performance optimisation that can exploit the current and future advanced computing capabilities. Research activities on the basis of use cases are not

within the scope of the action and use cases should be limited to test runs required for development purposes such as regression tests.

Proposals for Centres of Excellence in Topic HORIZON-EUROHPC-JU- 2023-COE-01-01 must clearly identify one of the following the Exascale Lighthouse application areas:

1. Personalised Medicine/ Digital twin of the human body
2. Human Brain research & neurological disorders
3. Energy: optimising energy consumption and supporting the transition to a reliable and low carbon and clean energy society;
4. Performance optimisation: analysis and assessment, tools and optimisation and productivity services for HPC academic and industrial code(s) (including support to selected Centres of Excellence)

Only one proposal will be selected per Exascale Lighthouse applications topic identified above. Proposals should also be able to articulate clearly the scientific grand challenge(s) which will be addressed by the applications and why the exascale performance is needed.

Targeted applications should be relevant for communities of HPC users as well as for future EuroHPC JU systems to be acquired. Proposals should be inherently committed to co-design activities to ensure that future HPC architectures are well suited for the applications and their users.

Requirements for CoEs:

- Clear identification of the targeted applications and related codes, including their user basis and the global impact in their domain. The ownership and license of each code must be listed in the proposal. Only applications (software) which are owned or controlled[4] by the consortium members are eligible.
- Describe the European user communities of the targeted applications, the current and predicted use on EuroHPC infrastructure as well as the impact of the planned developments on the European users.
- Demonstrable 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. This also includes horizontal tools and services that can be applied to parallel codes in any application domain to analyse and improve their performance.
- Addressing the exascale and post exascale related technical challenges, such as load balancing; resilience; heterogeneity programming models, in particular accelerator-based architecture programming; run-time systems; workflow management tools; development environments and production environments.

[4] This may include software owned by third parties which is provided under a permissive license. In such a case the consortium must demonstrate in the proposal the ability to develop the software independently of the owner (for example, demonstrate sufficient knowledge of critical software components).

- Involvement in co-design activities (hardware, software, codes), including the collaboration with HPC vendors and the identification of suitable applications relevant to the development of European HPC technologies towards exascale and collaboration with European initiatives (e.g. EPI, RISC- V, EuroHPC JU Pilots).
- Activities to improve the energy efficiency of applications, algorithms, methods, libraries and/or tools.
- Enlarging and expanding HPC applications development and use, in particular for new user communities in EU countries and countries associated to Horizon Europe that are members of the EuroHPC Joint Undertaking currently developing and advancing their HPC infrastructure and ecosystem.
- Federating capabilities and integrating communities around exascale computing in Europe.
- Include clear KPIs on the optimal employment of current and/or emerging HPC technologies, allowing the assessment of the progress towards the objectives, both in terms of outputs and ultimate impact.
- Coordinate within the European ecosystem, including Competence Centres, to address the skills gap in the targeted exascale applications and codes, by specialised training and capacity building measures to develop the human capital resources for increased adoption of exascale solutions.
- Coordinate with Competence Centres to ensure wider access to codes and foster their uptake by scientific user communities.
- Proposals should ensure the cooperation with complementary projects launched specifically in the area of the "EuroHPC-2020-01-a: Advanced Pilots towards the European Supercomputers" including also the need to establish from the beginning of this cooperation appropriate IP exploitation agreements and should provide preliminary benchmarking data on new and emerging HPC technologies.

In addition, proposals should ensure collaboration with other Centres of Excellence for HPC applications, and other national and EU funded activities that focus on similar or complementary objectives for HPC codes and applications, in order to maximise the synergies and optimise such codes and applications for current and future architectures of EuroHPC supercomputers. This includes participation in the common continuous integration and deployment platform developed by Centres of Excellence for HPC applications selected in call HORIZON-EUROHPC-JU-2021-COE-01 and the associated Coordination and Support Action CASTIEL 2. Selected proposals are expected to accede the collaboration agreement between existing Centres of Excellence and CASTIEL 2. Proposals should also clearly demonstrate that all partners in the consortium have a significant and justified role, including appropriate deliverables under their responsibility which cover the specific contributions of each partner.

Overall budget: up to EUR 40 million with 50% EU funding rate (up to EUR 20 million EU funds)

Call on Centres Of Excellence For Exascale HPC Applications	
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 2023-2024 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 2023-2024 which shall 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	The EuroHPC JU estimates that an EU and Participating State contribution of between EUR 3 - 6 million per project 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
Additional Admissibility conditions	The page limit of the application is 70 pages.
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: 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. Moreover, the HPC Applications Centres of Excellence (CoEs) will cover advances of targeted HPC applications towards highly scalable, optimised flagship codes and exascale performance, which are highly sensitive from a security and digital autonomy perspective, as they are part of Europe's critical European HPC infrastructure and ecosystem whereby their integrity, resilience and security have to be duly safeguarded from cyber-attacks and other security threats, and given their key role in the functioning of EU's data infrastructures and, given the potential sensitivity of the data processed (including for instance in drug discovery testing and/or clean energy research simulations) In addition, as the actions implemented by the CoE might address real time critical applications during emergency situations using dedicated supercomputing resources (meant to, for example, save lives by promptly forecasting and mitigating the impacts triggered by pandemics) the EU needs to avoid a situation of technological dependency on a non-EU source for close-to-market critical technologies. Therefore, participation is limited to legal entities established in Member States and legal entities established in countries associated to Horizon Europe that are members of the EuroHPC Joint Undertaking. Proposals including entities established in countries outside the scope specified in the call/topic/action will be ineligible.
	Only one proposal will be selected per Exascale Lighthouse applications topic identified above

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: - Dissemination of training activities in collaboration with linked grants and relevant Coordination and Support Actions as a coordinated training programme 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 Commission or the relevant funding body 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. Grants awarded under this topic will have to submit the following deliverable(s): - Collaboration Plan Beneficiaries will be subject to the following additional obligations regarding open science practices: - Provision of software, algorithms and relevant information to use and validate applications without undue delay to the wider European HPC

	user community and in collaboration with linked actions Grants awarded under this topic will be linked to the following action(s): HORIZON-EUROHPC-JU-2021-COE-01 DIGITAL-EUROHPC-JU-2022-NCC-01-02 (CASTIEL 2)

European Quantum Excellence Centres (QECs) in applications for science and industry (RIA):

Quantum computers have the potential to solve some of the major challenges of our time, whether that is by tracking future pandemics or finding new pharmaceutical solutions, modelling extreme weather patterns in an era of climate change, protecting critical infrastructures from cyber-attacks, enhancing the ability to detect movement below ground and underwater, and other functionalities that may not even have been imagined yet. In order to unlock this potential, there is a strong need not only to develop advanced quantum hardware but also to bring European users of quantum technologies together and facilitate the development of quantum applications and use cases. European Quantum Excellence Centres (QECs) will play a key role in this. They will foster the development of an ecosystem of quantum programming facilities, application libraries, and a skilled workforce, ultimately the discovery of new quantum-oriented applications, fostering knowledge and uptake for these new technologies.

Scope:

The applications and software to be developed should be platform-agnostic, with plans to test their correct functioning on as many EuroHPC quantum computing platforms as possible. Proposals should include a strategy for skills development, associating required stakeholders when relevant, and plans to allow users from different backgrounds to register and receive support for their issues while experimenting with different quantum computing platforms.

Proposals should include the enhancement of existing quantum applications and their integration with HPC/classical applications towards highly scalable, optimised codes. Moreover, they should set out a streamlined development, collaboration, automated testing and deployment processes throughout the application development and maintenance cycle, for example, by provisioning and using state-of-the-art quantum computing development tools, platforms and software management models.

Proposals should describe envisaged collaborations with the EuroHPC quantum computing infrastructure to implement a robust and reliable automated deployment process for quantum applications, in order to make novel developments timely available to the European quantum user communities.

Proposals should show how the QECs will ensure wider access to codes and foster their uptake by user communities, in particular scientific community, industry, SMEs, and policy-makers. Whenever

possible, participants in the QECs should work together to apply for patents for the developed QCS systems and accompanying and/or embedded software.

Finally, proposals should include clear KPIs for the optimal employment of current and/or emerging quantum technologies, allowing the assessment of the progress towards the objectives, both in terms of outputs and ultimate impact.

Proposals should build on or seek collaboration with existing European projects, in particular from the Quantum Technologies Flagship initiative and develop synergies with other relevant European, national or regional initiatives, funding programmes and platforms.

Proposals for QECs should clearly identify their target community (science or industry).

Expected Outcome:

The creation of two European Quantum Excellence Centres in applications, covering science and industry, will establish a one-stop-shop for industry, academia, and the wider quantum technology user community. This in turn will accelerate the discovery of new quantum-oriented applications and foster their knowledge and uptake. The QECs should be technology-agnostic with a focus on quantum applications for end-users in science and industry. They should also be user-driven and inherently committed to co-designing activities, to ensure that future quantum computing architectures are well-suited for the applications and their users, providing them with a high performance and scalable application base.

QECs should contribute to a library of new quantum applications and open source software platforms used for building quantum computing and simulation applications for specific areas. QECs should provide services supporting different usage models for the community needs, including developing, maintaining, optimising (if needed re-designing) and scaling quantum applications, addressing the full scientific/industrial workflow, testing and validating codes and quality assurance.

QECs should also create meeting places for users and organisations working on similar nascent technologies, and offer specialised training and capacity building measures to develop the human capital resources for increased adoption of quantum computing in industry and academia. This should lead in the end to a quantum-literate ecosystem with the training of a generation of quantum engineers and scientists within a program of focussed research, as well as engagement with community.

Finally, QECs should federate capabilities around Europe, exploiting available competences, and ensuring multi-disciplinarity (and synergies with national/local programmes.

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.

Specific conditions	
Expected EU contribution per project	The EuroHPC JU estimates that an EU contribution of between EUR 4 – 5 million matched by a similar amount of the Participating States 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 EU contribution to this action will be up to EUR 10 million. A total indicative budget for the topic is EUR 20 million.
Type of Action	Research and Innovation Action
Technology Readiness Level	Activities are expected to start at TRL 4-5 and achieve TRL 6-7 by the end of the project – see General Annex B.
Legal and financial set-up of the Grant Agreements	The conditions are described in General Annex B. The following exceptions apply: 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. Moreover, the Quantum Excellence Centres (QECs) will cover advances of targeted quantum applications in various fields including quantum encryption and life sciences, which are highly sensitive from a security and digital autonomy perspective, whereby their integrity, resilience and security have to be duly safeguarded from cyber-attacks and other security threats, and given their key role in the functioning of EU's data infrastructures and, given the potential sensitivity of the data processed (including for instance drug discovery testing and/or clean energy research simulations). In addition, the EU needs to avoid a situation of technological dependency on a non-EU source for close-to-market critical technologies. Therefore, participation is limited to legal entities established in Member States and legal entities established in countries associated to Horizon Europe that are members of the EuroHPC Joint Undertaking. Proposals including entities established in countries outside the scope specified in the call/topic/action will be ineligible.

EuroHPC Inducement Prize for Quantum Computing and Simulation Applications

In its Communication "2030 Digital Compass: the European way for the Digital Decade" (COM(2021) 118 final), the Commission has set 2025 as the target date by which the EU should have its first computer with quantum acceleration, paving the way for being at the cutting edge of quantum capabilities by 2030. With these goals in mind, and with quantum computers becoming available in the EuroHPC supercomputing infrastructure for experimentation and testing, a dedicated effort is now needed to accelerate the discovery of the applications making the case for a quantum computing

architecture, rather than a classical HPC or other classical parallel computing architecture, for certain use cases.

With this prize the EU intends to incentivise young researchers, inventors and entrepreneurs to develop an application demonstrating a path towards quantum advantage, addressing a concrete problem. The call will identify specific challenge(s) to be solved by a quantum computer, possibly ranked by difficulty.

Scope:

Participants will first develop and implement in a EuroHPC supercomputer the solution to the specific challenge to be solved. This will constitute the reference benchmark to assess the quantum advantage. Then the participants will develop the quantum application on a EuroHPC quantum computer and demonstrate the validity of the results.

The call will be implemented in two stages: In a first step, applicants will be selected on the basis of a reference implementation, the anticipated quantum advantage, potential impact and other criteria. Successful applicants will be awarded access to EuroHPC quantum computers to develop and verify the proposed implementation. The prize will subsequently be awarded in a second selection process and after independent validation of the reported results.

Participants should be citizens of any of the EuroHPC Participating States and perform their work in any of the Participating States. The prize will be granted to individuals, not to institutions or companies, and the results will be made available as open source / public domain.

Expected outcomes:

In principle, the solutions shall:

- Solve a concrete computing challenge;
- Provide a practical quantum application;
- Contribute to the benchmarking of quantum computers and simulators for practical applications.

Available budget

The prize budget is 300 000 EUR (indicative). The first three ranked solutions will share the prize, with amounts depending on the challenge addressed. A Call may be agreed by the Governing Board in 2023.

COMPETENCES AND SKILLS PILLAR

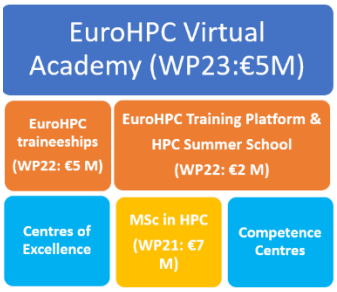
Ongoing activities:

The initial Competence Centres are ending their activities in 2022. In 2023, the new Competence Centres will be established.

The EUMaster4HPC Master programme will be in its second 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.

Call in 2023

EuroHPC Virtual Training Academy



Objective: EuroHPC JU will establish a virtual European HPC Academy that will build and consolidate actions launched 2021 and 2022 for all training and education coordination activities

This Academy will develop a future thinking strategy on the different HPC training needs of users of HPC and quantum systems and applications. It will coordinate a number of activities in training and skills to increase competences in HPC technology, software and applications. EuroHPC JU intends to develop a virtual structure that will:

- Coordinate training/education activities of National Competence Centres
- Coordinate training / education activities offered by Centres of Excellence
- Coordinate with the European HPC MSc programme
- Develop a EuroHPC training platform launched in 2022
- Coordinate EuroHPC International Summer School funding (see Work Programme 2022)
- Develop EuroHPC traineeships in Hosting Entities, SMEs and Industry
- Integrate existing HPC training and HPC traineeships initiatives
- Coordinate the development of a EuroHPC training curricula and develop an EU ''qualification' in HPC skills
- Coordinate new areas of HPC training for AI, machine learning etc...
- Promote new courses that will encourage users to develop 'energy-efficient' behaviour when using HPC systems.
- Develop quality control criteria on the different courses provided and funded by EuroHPC
- Develop in collaboration with other EuroHPC JU initiatives a common modular framework for HPC skills, including quality control and certification, to achieve transferability of acquired qualifications within the European HPC ecosystem and across domains such as professional training and academic education. The framework should build on and collaborate with existing initiatives, namely the HPC Certification Forum[5].
- Coordinate and support all EuroHPC JU initiatives with the implementation of a common framework for standardisation and certification of training activities.
- Design and implement world-class, innovative training programmes to foster skills development in challenging areas such as extreme scale, energy-efficient, environmentally sustainable and highly resilient HPC and data technologies,

Outcome: The outcome of this initiative is to have a well-designed and coordinated set of training activities (including traineeships) that will increase the competence of European HPC users and develop further the ecosystem in R&D and industrial HPC. A quality controlled qualification and certification framework will be established and adopted by all EuroHPC JU training and education

[5] https://www.hpc-certification.org/

activities. Participants in EuroHPC JU training activities will be able to transfer HPC qualifications across countries and different training programmes.

Funding: An EU contribution of EUR 3 million will come from Digital Europe Programme Strategic Objective 4 which was allocated to EuroHPC JU in Work Programme 2022 and EUR 3 million will come from DEP WP22.

SPECIFIC CONDITIONS FOR THE CALL ON EUROHPC VIRTUAL TRAINING ACADEMY	
Expected EuroHPC JU contribution	The EuroHPC JU estimates that an EU contribution of 6 million Only one project will be retained
Indicative budget	The total indicative budget for the EU contribution is up to EUR 6 million.
Type of Action	Grant from DEP SO4 (WP2022) and DEP WP22
Length of Action	5 years
Eligibility conditions	The eligibility conditions are those established in the EuroHPC JU Council Regulation (EU) 2021/1173.

Call to support HPC adoption by SMEs

- Supporting competitiveness and innovation potential of SMEs DIGITAL-EUROHPC-JU-2023-SME-01

High-Performance Computing (HPC) provides great potential to drive innovations by SMEs and thus driving their growth, competitiveness, and resilience in a rapidly evolving business landscape. However, stimulating HPC innovation among SMEs requires a strategic approach to create a supportive ecosystems that addresses the specific challenges of creating an effective mechanism to facilitate the entry of innovative, agile SMEs and small actors to enter the HPC-enabled market and exploit new business opportunities through the use of HPC.

Expected Outcome:

Stimulating the HPC innovation potential of SMEs will lead to:

Enhanced European competitiveness in the market by enabling SMEs to perform efficiently using HPC, e.g. simulations, computational modelling and data-intensive analytics.

Accelerated innovation by novel ideas, in-depth research and development of cutting-edge solutions through faster prototyping, optimisation and experimentation etc. enabled by HPC.

Improved productivity and efficiency by reducing production cycles as complex computations can be completed in significantly less time and resources can be allocated more efficiently.

Expanded business opportunities and opening new markets by the uptake of services enabled for instance by large-scale simulations, data analysis or machine learning utilising HPC resources

Widening the HPC user base by attracting new users of HPC in different application domains

Objective:

Central objective of the action is to empower SMEs with advanced computational capabilities on the basis of HPC, enabling them to drive innovation, enhance competitiveness, and overcome challenges in the digitisation of R&D and business processes. By promoting HPC adoption, the action will unlock new opportunities, accelerate growth, and foster economic development for SMEs. Stimulating the HPC innovation potential of SMEs aims to position SMEs as technology leaders, fuel their success, and contribute to the overall advancement of industries and economies.

Scope:

Proposals are expected to define an outreach approach for identifying and attracting SMEs whose innovation potential and competitiveness will be significantly increased by the uptake of advanced HPC services. A mechanism involving financial support to third parties through open calls will adequately stimulate such innovation potential of SMEs participating in the action. The action supports SMEs to solve specific business challenges through uptake of HPC.

SPECIFIC CONDITIONS FOR THE CALL ON COMPETITIVENESS AND INNOVATION POTENTIAL OF SMES	
Expected EuroHPC JU contribution	The EuroHPC JU estimates that an EU contribution of 15 million Only one project will be retained
Indicative budget	The total indicative budget for the EU contribution is up to EUR 15 million.
Type of Action	DIGITAL Coordination and Support Actions (Grant from DEP WP22)
Length of Action	4 years
Eligibility conditions	The eligibility conditions are those established in the EuroHPC JU Council Regulation (EU) 2021/1173.

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

- EuroHPC JU will launch the call on collaboration with Japan agreed in Work Programme 2022
- EuroHPC JU will implement the HPC and Quantum computing 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 (e.g. Intent of cooperation with India on HPC, Extreme weather and Quantum Computing, Digital Partnership with South Korea).

ADMINISTRATION

Multi Annual Strategic Programme 2021-2027 (MASP)

The Multi Annual Strategic Programme 2021-2027 sets out the long-term strategy for the work of the JU will be reviewed by INFRAG and RIAG. In early 2023, both Advisory Committees will review and propose amendments which will be considered by the Governing Board. The Governing Board may decide to incorporate these amendments into a revised MASP.

Communication

In 2023, the EuroHPC JU will continue to strengthen its public image.

The JU will continue to develop and improve its website, while providing up-to-date information and promoting its new calls, actions or achievements. The JU will further engage with the public at large by re-enforcing its press and social media activities and taking part in various public events.

In 2023, the EuroHPC JU will specifically use some key highlights to boost its public visibility:

- **Inauguration of EuroHPC supercomputers :**
  - **Deucalion** in Portugal, inauguration is planned in Spring 2023.
  - **MareNostrum 5** in Spain, inauguration is planned for mid-2023, to coincide with the Spanish EU Presidency.

- **EuroHPC Summit 2023**

The EuroHPC Summit 2023 will take place in Gothenburg, Sweden on 20-23 March 2023. This event is being organised in collaboration with the Swedish Research Council during the Swedish EU Presidency. In 2022, EUR 1 Million was allocated to this project.

The theme of this year's conference will be European Supercomputing Excellence in the Exascale Era. The event will gather key European HPC stakeholders from providers, to scientific and industrial users, to policy makers. Particular attention will be given in 2023 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. The event will provide also a great opportunity for attendees to network and connect with the European HPC community.

- **EuroHPC Summit 2024**

The EuroHPC Summit 2024 will take place in Belgium, during the Belgian EU Presidency. The organisation of this event will begin in 2023 and will base itself on the best practice and experience of **EuroHPC Summit in 2023.** A budget of 700,000 Euros will be allocated from DEP operational activities.

- **Building a "EuroHPC village" at ISC High Performance 2023**

Based on a successful first participation in the exhibition ISC 2022, in Hamburg, Germany, the EuroHPC JU will participate again in the event ISC 2023 as exhibitor. The event will take place from May 21 to May 25, 2023 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.

The event is a great opportunity for the EuroHPC JU to showcase its achievements, its supercomputers and its R&I projects. ISC 2023 is also critical for the JU to consolidate its public image while increasing its network and its European user base. To boost the synergies with its R&I projects, the JU will have a bigger exhibition space (40sqm) to host around 15 of its projects on its booth. The projects have been selected following their expressions of interest, while covering a wide range of the HPC ecosystem. Moreover, several key partners of the EuroHPC JU will have their booths located in close proximity of the JU's booth allowing the development of a EuroHPC "village" inside the exhibition area.

- **Small EuroHPC JU Booth at Supercomputing Conference (SC23)**

The JU would like to promote its activities and achievements at SC23, the largest annual international HPC fora. SC23 will take place in Denver, CO on 12-17 November 2023. This first experience will inform the JU's future engagements at the Supercomputing Conference (SC). The JU will allocate 150 k to this activity by having a small booth in the exhibition area, close to other European partners.

- **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 User Forum, the Hosting Entities, R&I partners) to ensure efficient and coordinated collaboration and to develop synergies.
- Interactive publications of JU reports such as the Annual Activity Report, the Systems Report, to improve the attractiveness of the documents.
- Update of the Cordis brochure presenting the JU "Leading the way in European supercomputing" whose a first version has been published in May 2022,
- Increased use of visuals and animations on social media.

Legal and Internal Control

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. Furthermore, Internal Control activities of the JU will be prioritised.

IT and Office activities

In 2023, the JU will expand into the new wing of its existing offices in the Drosbach building, Cloche D'Or in Luxembourg. The office will increase in size and the new areas will be refurbished to meet the JU's growing needs (whilst respecting post-COVID 19 working arrangements.) New meeting

rooms will also be added in order to have collaborative work areas for visitors and staff. With the growth of the JU and the subsequent recruitments, IT resources will grow accordingly.

Finance, audit and budgetary discharge

The JU will prepare to defend its first European Parliament discharge on 2022 activities.

BUDGET 2023

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 2023 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.

Table 1 Revenue Commitment Appropriations

Table 1: Revenue Commitment Appropriations

REVENUE (EUR)	Final Budget 2021 (Amd Nov. in GB 22/2021)	Final Budget 2022 (Amd. no. 4 in GB 33/2022, including C1+ C2 credits)*	2023				
			Budget 2023 adopted - C1 Credits (Amd. no.1 GB Dec. 02/2023)	Re-activation of C2 credits from 2022 (Amd. no.1 GB Dec. 02/2023)	Proposal for C1 modification - Amd no.2 (GB Dec.10/2023)	Proposal for C2 modification - Amd no.2 (GB Dec.10/2023)	Total Budget 2023 after approval of Amd no.2 and reactivation
1. Revenue from Fees and Charges							
2. EU Contribution with EFTA included	503,401,818.84	996,751,640.65	464,802,987.00	286,700,329.21	- 5,632.29	-	751,497,683.92
of which Regulation (EU) 2021/1173 Administrative (Title 1 and Title 2)		3,469,079.38	6,200,906.00	2,071,658.06	- 1.00		8,272,563.06
of which old Regulation (EU) 2018/1488 Administrative (Title 1 and Title 2)	5,202,542.83	4,747,644.80	1,696,984.00	2,659,019.68	- 5,631.29		4,350,372.39
of which Regulation (EU) 2021/1173 Operations (Title 3)	469,367,000.00	905,345,771.32	456,905,097.00	281,969,651.47			738,874,748.47
of which old Regulation (EU) 2018/1488 Operations (Title 3)	28,832,276.01	83,189,145.15					-
3. Third Country Contribution	-		-	-	-	-	-
of which EEA/EFTA							-
supplementing Title 1 & 2							-
supplementing Title 3							-
of which Non-EEA							-
4. Other Contributions	250,000,000.00	377,705,000.00	320,000,000.00	-	-	-	320,000,000.00
Participating States							-
contribution to the procurement MN5, Leonardo & Lumi		*75,705,000.00*					-
PT contribution to procurement of petascale		-	-				-
contribution to the call of the 2nd high-end (exascale) supercomputer	250,000,000.00	250,000,000.00	300,000,000.00				300,000,000.00
contribution to the call of the quantum computers		52,000,000.00	20,000,000.00				20,000,000.00
Private Members							-
Total REVENUE (EU + 3rd Countries + Participating States Contributions	753,401,818.84	1,374,456,640.65	784,802,987.00	286,700,329.21	- 5,632.29	-	1,071,497,683.92

Table 2 Revenue Payment Appropriations

Table 2: Revenue Payment Appropriations

REVENUE (EUR)	Final Budget 2021 (Amd Nov. in GB 22/2021)	Final Budget 2022 (Amd. no. 4 in GB 33/2022, including C1+ C2 credits)*	2023				
			Budget 2023 adopted - C1 Credits (Amd. no.1 GB Dec. 02/2023)	Re-activation of C2 credits from 2022 (Amd. no.1 GB Dec. 02/2023)	Proposal for C1 modification - Amd no.2 (GB Dec.10/2023)	Proposal for C2 modification - Amd no.2 (GB Dec.10/2023)	Total Budget 2023 after approval of Amd no.2 and reactivation
1. Revenue from Fees and Charges							
2. EU Contribution with EFTA included	256,826,040.16	506,849,818.65	488,985,194.00	404,780,449.34	- 369,326.32	-	893,396,317.02
of which Regulation (EU) 2021/1173 Administrative (Title 1 and Title 2)		3,469,079.38	6,200,906.00	2,544,050.73	- 1.00		8,744,955.73
of which old Regulation (EU) 2018/1488 Administrative (Title 1 and Title 2)	5,259,323.55	4,716,458.63	1,696,984.00	2,628,971.70	- 5,631.29		4,320,324.41
of which Regulation (EU) 2021/1173 Operations (Title 3)		334,654,339.71	413,394,660.00	335,602,585.33			748,997,245.33
of which old Regulation (EU) 2018/1488 Operations (Title 3)	251,566,716.61	164,009,940.93	67,692,644.00	64,004,841.58	- 363,694.03		131,333,791.55
3. Third Country Contributions	-		-	-	-	-	
of which EEA/EFTA							-
supplementing Title 1 & 2							-
supplementing Title 3							-
of which Non-EEA							-
4. Other Contributions	91,419,829.68	123,037,425.26	171,552,304.81	70,967,334.07	- 371,323.97	-	242,148,314.91
Participating States Contributions							-
contribution to the procurement MN5, Leonardo & Lumi*	84,494,829.68	57,520,787.76	61,919,870.31	7,717,334.07	- 371,323.97		69,265,880.41
PT contribution to procurement of petascale	6,925,000.00	2,266,637.50	4,032,434.50				4,032,434.50
contribution to the call of the high-end (exascale) supercomputer		63,250,000.00	90,000,000.00	63,250,000.00			153,250,000.00
contribution to the call of the quantum computers		-	15,600,000.00				15,600,000.00
Private Members		-	-				-
Total REVENUE (EU + 3rd Country + Participating States Contributions	348,245,869.84	629,887,243.91	660,537,498.81	475,747,783.41	- 740,650.29	-	1,135,544,631.92

reflecting the changes of LUMI Administrative Agreement, as amended

Budget Expenditure

Titles 1&2: The EU funding share to these appropriations will be released according to the JU needs during the period of 2023–2027. The maximum foreseen amount under the current regulation is EUR 92.000.000. The currently available (and unspent) commitment credits will be re-activated in 2023 and the following years.

Title 3: The operational expenditure will be used for grants and procurements of the EuroHPC JU supercomputers. More details regarding commitment and payment appropriations are shown in tables 3 and 4. Tables 5a and 5b shows more details regarding the JU cash needs (expected pre-financings, interim and final payments).

Table 3 Expenditure Commitment Appropriations

Table 3: Expenditure Commitment Appropriations

COMMITMENT Appropriations (EUR)	Final Budget 2021 (Amd Nov. in GB 22/2021)	Final Budget 2022 (Amd. no. 4 in GB 33/2022, including C1+ C2 credits)*	2023				
			Budget 2023 adopted - C1 Credits (Amd. no.1 GB Dec. 02/2023)	Re-activation of C2 credits from 2022 (Amd. no.1 GB Dec. 02/2023)	Proposal for C1 modification - Amd no.2 (GB Dec.10/2023)	Proposal for C2 modification - Amd no.2 (GB Dec.10/2023)	Total Budget 2023 after approval of Amd no.2 and reactivation
Title 1. Staff Expenditure	**2,478,297.93**	**4,699,801.29**	**5,795,141.23**	**2,376,614.56**	-	-	**8,171,755.79**
11 Salaries & Allowances	2,105,734.68	3,854,003.77	4,922,143.53	1,801,471.32	-	-	6,723,614.85
of which Establishment plan posts	749,152.33	2,058,140.48	*3,041,972.19*	*1,171,044.80*			*4,213,016.99*
of which External personnel	1,356,582.34	1,795,863.29	*1,880,171.35*	*630,426.52*			*2,510,597.87*
12 Expenditure relating to recruitment	40,000.00	66,329.14	29,548.62	64,828.17			94,376.79
13 Mission and travel expenses	130,000.00	211,970.88	91,483.27	128,265.50			219,748.77
14 Socio-medical infrastructure and training	202,563.25	567,497.50	751,965.82	382,049.57			1,134,015.39
Title 2. Building, Equipment and Operating Costs	**2,724,244.89**	**3,516,922.88**	**2,102,748.77**	**2,341,063.18**	- **5,632.29**	-	**4,438,179.66**
20 Buildings and associated costs	132,561.00	270,805.92	146,359.05	250,726.13			397,085.18
21 Information Technology	543,495.29	580,979.72	239,048.78	368,290.86			607,339.64
22 Movable property and associated costs	87,454.80	17,161.84	16,064.08	17,161.84			33,225.92
23 Current administrative expenditure	294,835.00	694,962.11	617,947.32	682,122.91	- 5,632.29		1,294,437.94
24 Postage and Telecommunications	13,656.00	32,448.92	8,032.04	28,064.42			36,096.46
25 Expenditure of formal and other meetings	625,216.10	812,832.15	81,121.37	618,662.37			699,783.74
26 Running costs in connection with operational activities	290,931.00	251,213.78	120,480.59	14,366.19			134,846.78
27 Information and Publishing	10,189.30	150,037.67	46,279.84	150,037.67			196,317.51
28 Expert contracts and meetings *	725,906.38	706,480.79	827,415.70	211,630.79			1,039,046.49
Total ADMIN (Tilte I and II)	**5,202,542.83**	**8,216,724.18**	**7,897,890.00**	**4,717,677.74**	- **5,632.29**	-	**12,609,935.45**
Title 3. Operational Expenditure							
30 Grants, HPC Operations, R&I Activities	**15,772,276.18**	**294,999,999.03**	**99,300,000.00**	**214,146,438.15**	-	**12,000,000.00**	**325,446,438.15**
Regulation (EU) 2018/1488 Calls	*15,772,276.18*	*6,999,999.03*	-	*13,000.00*	-	-	*13,000.00*
EuroHPC-2019-1		-		13,000.00			13,000.00
EuroHPC-2019-2		-					-
EuroHPC-2019-3		-					-
EuroHPC-2020-1		-					-
EuroHPC-2020-2		-					-
EuroHPC-2020-3	15,772,276.18	6,999,999.03					-
Opex Grants (LUMI, LEONARDO, MN5)		-					-
Regulation (EU) 2021/1173 Calls	-	*288,000,000.00*	*99,300,000.00*	*214,133,438.15*	-	12,000,000.00	*325,433,438.15*
c. Federation Pillar		45,000,000.00		45,000,000.00			45,000,000.00
d. Technologies Pillar		135,000,000.00	59,000,000.00	135,000,000.00			194,000,000.00
e. Applications Pillar		50,000,000.00	30,300,000.00	10,092,350.45			40,392,350.45
f. Competences & Skills Pillar *		53,000,000.00		19,041,087.70		12,000,000.00	31,041,087.70
g. International Cooperation Pillar		5,000,000.00	10,000,000.00	5,000,000.00			15,000,000.00
31 HPC Infrastructure Activities	**732,426,999.83**	**1,071,239,917.44**	**677,605,097.00**	**67,836,213.32**	-	- **12,000,000.00**	**733,441,310.32**
Regulation (EU) 2018/1488	*13,059,999.83*	*151,894,146.12*	-	-	-	-	-
LUMI - PreExscale Supercomputer		-					-
LEONARDO - PreExscale Supercomputer		-					-
MN5S - PreExscale Supercomputer	13,059,999.83	151,894,146.12					-
Deucalion - Petascale Supercomputer		-					-
Meluxina - Petascale Supercomputer		-					-
Regulation (EU) 2021/1173	*719,367,000.00*	*919,345,771.32*	*677,605,097.00*	*67,836,213.32*	-	- *12,000,000.00*	*733,441,310.32*
High-end (Exascale) supercomputer (2nd	500,000,000.00	500,000,000.00	600,000,000.00	-			600,000,000.00
Midrange supercompters (1-3)	119,367,000.00	168,345,771.32		54,336,213.32			54,336,213.32
Hyperconnectivity for HPC Resources call	100,000,000.00	100,000,000.00		-			-
Upgrading EuroHPC supercomputers		33,000,000.00		-			-
Quantum computers (2nd call)		104,000,000.00	40,000,000.00	-			40,000,000.00
Access and allocation of EuroHPC computing resources and services		-	600,000.00				600,000.00
Industrial HPC			12,260,601.00	-			12,260,601.00
EuroHPC Summit 2023 + Communications		1,000,000.00		500,000.00			500,000.00
EuroHPC Summit 2024 + Communications			700,000.00	-			700,000.00
Experimental Platform for European Technology			24,044,496.00	-			24,044,496.00
Energy Crisis Call - cancelled*		12,000,000.00		12,000,000.00		- 12,000,000.00	-
User Forum		1,000,000.00		1,000,000.00			1,000,000.00
Total OPERATIONAL (Title III)	**748,199,276.01**	**1,366,239,916.47**	**776,905,097.00**	**281,982,651.47**	-	-	**1,058,887,748.47**
TOTAL	**753,401,818.84**	**1,374,456,640.65**	**784,802,987.00**	**286,700,329.21**	- **5,632.29**	-	**1,071,497,683.92**

**The Energy Crisis Call cancelled (releasing EUR 12 Million) and a new action to support HPC adoption by SMEs (EUR 15 Million in Pillar Competence and Skill) will be launched*

Table 4 Expenditure Payment Appropriations

Table 4: Expenditure Payment Appropriations

PAYMENT Appropriations (EUR)	Final Budget 2021 (Amd Nov. in GB 22/2021)	Final Budget 2022 (Amd. no. 4 in GB 33/2022, including C1+ C2 credits)*	2023				
			Initial Budget 2023 adopted - C1 Credits (GB 40/2022)	Re-activation of C2 credits from 2022 (Amd. no.1 GB Dec. 02/2023)	Proposal for C1 modification - Amd no.2 (GB Dec.10/2023)	Proposal for C2 modification - Amd no.2 (GB Dec.10/2023)	Total Budget 2023 after approval of Amendment and reactivation
Title 1. Staff Expenditure	**2,483,049.02**	**4,802,209.85**	**5,795,141.23**	**2,554,328.39**	-	-	**8,349,469.62**
11 Salaries & Allowances	2,085,335.77	3,863,897.45	4,947,143.53	1,843,171.32	-	-	6,790,314.85
of which Establishment plan posts	738,952.88	2,058,140.48	*3,066,972.19*	*1,171,044.80*			*4,238,016.99*
of which External personnel	1,346,382.89	1,805,756.97	*1,880,171.35*	*672,126.52*			*2,552,297.87*
12 Expenditure relating to recruitment	42,540.00	66,329.14	4,548.62	64,828.17			69,376.79
13 Mission and travel expenses	137,610.00	221,847.88	91,483.27	175,644.60			267,127.87
14 Socio-medical infrastructure and training	217,563.25	650,135.38	751,965.82	470,684.30			1,222,650.12
Title 2. Building, Equipment and Operating Costs	**2,776,274.53**	**3,383,328.15**	**2,102,748.77**	**2,605,694.04**	- **5,632.29**	-	**4,702,810.52**
20 Buildings and associated costs	243,235.48	270,805.92	146,359.05	249,695.13			396,054.18
21 Information Technology	461,459.46	687,273.43	239,048.78	474,200.34			713,249.12
22 Movable property and associated costs	97,194.47	17,161.84	16,064.08	17,161.84			33,225.92
23 Current administrative expenditure	321,673.95	694,962.11	617,947.32	745,622.91	- 5,632.29		1,357,937.94
24 Postage and Telecommunications	10,259.89	32,080.92	8,032.04	30,391.51			38,423.55
25 Expenditure of formal and other meetings	624,263.90	573,311.71	81,121.37	365,854.93			446,976.30
26 Running costs in connection with operational activities	300,931.00	306,190.28	120,480.59	78,084.78			198,565.37
27 Information and Publishing	20,000.00	150,037.67	46,279.84	150,037.67			196,317.51
28 Expert contracts and meetings	697,256.38	651,504.29	827,415.70	494,644.93			1,322,060.63
Total ADMIN (Title I and II)	**5,259,323.55**	**8,185,538.01**	**7,897,890.00**	**5,160,022.43**	- **5,632.29**	-	**13,052,280.14**
Title 3. Operational Expenditure							
30 Grants, HPC Operations, R&I Activities	**100,343,434.80**	**250,398,387.50**	**104,708,355.59**	**196,229,426.90**	-	**4,800,000.00**	**305,737,782.50**
Regulation (EU) 2018/1488 Calls	*100,343,434.80*	*52,617,447.79*	*19,868,355.59*	*34,927,563.37*	-	-	*54,795,918.97*
EuroHPC-2019-1	38,668,652.64	5,316,281.25	609,821.84	4,938,780.97			5,548,602.81
EuroHPC-2019-2	2,993,656.07	6,987,159.67	999,847.50	2,993,656.10			3,993,503.60
EuroHPC-2019-3	515,000.00	1,030,000.00		515,000.00			515,000.00
EuroHPC-2020 -1	23,662,557.58	4,310,564.37	2,679,768.08	4,310,564.36			6,990,332.44
EuroHPC-2020 -2	24,406,068.50	15,075,942.50	2,029,287.50	11,169,606.30			13,198,893.80
EuroHPC-2020 -3	5,600,000.00	5,600,000.00		1,866,667.18			1,866,667.18
Opex Grants (LUMI, LEONARDO, MN5)	4,497,500.00	14,297,500.00	13,549,630.68	9,133,288.46			22,682,919.14
Regulation (EU) 2021/1173 Calls	-	**197,780,939.71**	*84,840,000.00*	*161,301,863.53*	-	*4,800,000.00*	*250,941,863.53*
c. Federation Pillar		31,110,811.70	47,200,000.00	31,110,811.70			78,310,811.70
d. Technologies Pillar		85,870,128.01	24,240,000.00	85,870,128.01			110,110,128.01
e. Applications Pillar		38,400,000.00	2,400,000.00	19,898,945.74			22,298,945.74
f. Competences & Skills Pillar *		42,400,000.00	11,000,000.00	24,421,978.08		4,800,000.00	40,221,978.08
g. International Cooperation Pillar		-	-				
31 HPC Infrastructure Activities	**242,643,111.49**	**371,303,318.40**	**547,931,253.21**	**274,358,334.08**	- **735,018.00**	- **4,800,000.00**	**816,754,569.29**
Regulation (EU) 2018/1488	*242,643,111.49*	*171,179,918.40*	*113,776,593.21*	*74,234,934.08*	- *735,018.00*	-	*187,276,509.29*
LUMI - PreExscale Supercomputer	120,124,970.00	63,304,262.33	4,062,504.83	63,304,262.32	- 735,018.00		66,631,749.15
LEONARDO - PreExscale Supercomputer	55,337,170.68	55,337,170.68	23,978,628.57	5,533,717.04			29,512,345.61
MN5 - PreExscale Supercomputer	28,580,525.00	47,647,136.27	81,703,025.32	5,396,954.72			87,099,980.03
Deucalion - Petascale Supercomputer	13,850,000.00	2,266,637.50	4,032,434.50	-			4,032,434.50
Meluxina - Petascale Supercomputer	10,498,846.50	2,624,711.62		-			-
EURO-IT4I - Petascale Supercomputer	5,130,000.00			-			-
Vega - Petascale Supercomputer	5,900,000.00			-			-
Dicoverer - Petascale Supercomputer	3,221,599.31			-			-
Regulation (EU) 2021/1173		**200,123,400.00**	*434,154,660.00*	*200,123,400.00*	-	- *4,800,000.00*	*629,478,060.00*
High-end (exascale) supercomputer		113,250,000.00	282,500,000.00	113,250,000.00			395,750,000.00
Midrange supercompter(s) (1-3)		25,395,800.00	55,786,663.20	25,395,800.00			81,182,463.20
Hyperconnectivity for HPC Resources call		30,000,000.00	50,000,000.00	30,000,000.00			80,000,000.00
Upgrading EuroHPC supercomputers		9,900,000.00		9,900,000.00			9,900,000.00
Quantum computers		15,600,000.00	21,600,000.00	15,600,000.00			37,200,000.00
Access and allocation of EuroHPC computing resources and services		-	600,000.00	-			600,000.00
Industrial HPC		-	3,400,000.00	-			3,400,000.00
EuroHPC Summit 2023 + Communications		377,600.00	622,400.00	377,600.00			1,000,000.00
EuroHPC Summit 2024 + Communications			210,000.00				210,000.00
Experimental Platform for European Technology			19,235,596.80				19,235,596.80
Energy Crisis Call - cancelled*		4,800,000.00		4,800,000.00		- 4,800,000.00	-
User Forum		800,000.00	200,000.00	800,000.00			1,000,000.00
Total OPERATIONAL (Title III)	**342,986,546.29**	**621,701,705.90**	**652,639,608.80**	**470,587,760.98**	- **735,018.00**	-	**1,122,492,351.78**
TOTAL	**348,245,869.84**	**629,887,243.91**	**660,537,498.80**	**475,747,783.41**	- **740,650.29**	-	**1,135,544,631.92**

Table 5 Cash Flow Operational Budget – Title III

5a) EuroHPC Grants - 3000

FY 2023	Type of payment*	2023 - C1 Credits	2023 - C2 Credits	Total Credits 2023
EFLOWS4HPC -H2020-JTI-EuroHPC-2019-1	IP		-	-
SCALABLE H2020-JTI-EuroHPC-2019-1	IP	141,533.33	141,533.33	283,066.66
LIGATE H2020-JTI-EuroHPC-2019-1	IP	261,206.09	261,206.09	522,412.18
ACROSS H2020-JTI-EuroHPC-2019-1	IP		399,911.59	399,911.59
OPTIMA H2020-JTI-EuroHPC-2019-1	IP	174,247.75	174,247.75	348,495.50
NextSim H2020-JTI-EuroHPC-2019-1	IP		188,470.46	188,470.46
DComEX H2020-JTI-EuroHPC-2019-1	IP		135,937.50	135,937.50
RED-SEA H2020-JTI-EuroHPC-2019-1	IP		399,685.50	399,685.50
IO-SEA H2020-JTI-EuroHPC-2019-1	IP		399,797.63	399,797.63
MICROCARD H2020-JTI-EuroHPC-2019-1	IP		-	-
SPARCITY H2020-JTI-EuroHPC-2019-1	IP		130,273.63	130,273.63
DEEP-SEA H2020-JTI-EuroHPC-2019-1	IP		753,473.82	753,473.82
REGALE H2020-JTI-EuroHPC-2019-1	IP		330,929.23	330,929.23
eProcessor H2020-JTI-EuroHPC-2019-1	IP		399,998.75	399,998.75
ADMIRE H2020-JTI-EuroHPC-2019-1	IP		398,164.31	398,164.31
MAELSTROM H2020-JTI-EuroHPC-2019-1	IP		215,620.63	215,620.63
TIME-X H2020-JTI-EuroHPC-2019-1	IP		151,212.69	151,212.69
HEROES H2020-JTI-EuroHPC-2019-1	IP	32,834.67	-	32,834.67
EXAFOAM H2020-JTI-EuroHPC-2019-1	IP		240,180.46	240,180.46
TEXTAROSSA H2020-JTI-EuroHPC-2019-1	IP		205,137.64	205,137.64
EuroHPC-2019-1		609,821.84	4,925,781.00	5,535,602.84
951745 - FF4EUROHPC - H2020-JTI-EUROHPC-2019-2	IP	999,847.50	-	999,847.50
951740 - CASTIEL - H2020-JTI-EUROHPC-2019-2 -	IP		199,988.13	199,988.13
951732 - EUROCC - H2020-JTI-EUROHPC-2019-2	IP		2,793,667.94	2,793,667.94
EuroHPC-2019-2		999,847.50	2,993,656.07	3,993,503.57
946002 - MEEP - H2020-JTI-EUROHPC-2019-3	IP		515,000.00	515,000.00
EuroHPC-2019-3		-	515,000.00	515,000.00
LUMI - CSC OPERATING GRANT - EUROHPC JU	IP	5,005,000.00	5,005,000.00	10,010,000.00
LEONARDO- EUROHPC GRANT AGREEMENT WITH CINECA FOR PRE-EXACALE SUPERCOMPUTERS	IP	4,795,000.00	4,128,288.46	8,923,288.46
MN% Opex	IP	3,749,630.68		3,749,630.68
Opex Grants		13,549,630.68	9,133,288.46	22,682,919.14
Eupex_EuroHPC-2020-01a		346,460.57	2,710,544.38	3,057,004.95
The European Pilot_EuroHPC-2020-01a		2,333,307.51	19.99	2,333,327.50
HPCQS_EuroHPC-2020-01b			1,600,000.00	1,600,000.00
H2020-JTI-EuroHPC-2020-01		2,679,768.08	4,310,564.37	6,990,332.45
EPI EuroHPC-2020-02		2,029,287.50	11,169,606.30	13,198,893.80
H2020-JTI-EuroHPC-2020-02		2,029,287.50	11,169,606.30	13,198,893.80
EU Masters4HPC_EuroHPC-2020-03			1,866,667.18	1,866,667.18
H2020-JTI-EuroHPC-2020-03			1,866,667.18	1,866,667.18
Regulation (EU) 2018/1488		19,868,355.59	34,914,563.39	54,782,918.98
c6) High Level support Teams for EuroHPC systems	PP		4,000,000.00	4,000,000.00
c7) Federation of supercomputing and data resources call	PP		27,110,811.70	27,110,811.70
d8) HPC Open Hardware Technologies (Risk V)	PP		51,270,128.01	51,270,128.01
d9) HPC Open Software Stack Technologies	PP		16,098,945.74	16,098,945.74
e10) Centres of Excellence	PP		34,500,000.00	34,500,000.00
e11) New algorithms for applications on European exascale supercomputers	PP/IP		3,900,000.00	3,900,000.00
f12) HPC Competence Centres	PP		11,021,978.08	11,021,978.08
f13) Networking and coordination of national HPC Competence Centres and Centres of Excellence	PP		2,400,000.00	2,400,000.00
f16) Digital Opportunity Traineeships project	PP		8,000,000.00	8,000,000.00
f17) A new action to support HPC adoption by SMEs	PP		7,800,000.00	7,800,000.00
g14) International Cooperation (WP22+WP23)	PP	11,000,000.00		11,000,000.00
d7) HPC Energy Efficiency R&D	PP	23,200,000.00		23,200,000.00
d8) Interconnect technologies	PP	24,000,000.00		24,000,000.00
e9)Applications Excellence	PP	16,000,000.00		16,000,000.00
e10)Quantum Excellence Centres	PP	8,000,000.00		8,000,000.00
e11)Quantum Aplication prizes	PP	240,000.00		240,000.00
f12)EuroHPC Virtual Academy	PP	2,400,000.00		2,400,000.00
Regulation (EU) 2021/1173 Calls		84,840,000.00	166,101,863.53	250,941,863.53
Total		**104,708,355.59**	**201,016,426.92**	**305,724,782.51**

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

5b) EuroHPC Infrastructure Activities - 3100

FY 2023	Type of payment*	2023- C1 Credits		2023- C2 Credits		2023- Total Credits	
		EU Contribution	PS Contribution	EU Contribution	PS Contribution	EU Contribution	PS Contribution
LUMI - PreExscale Supercomputer	IP	1,515,193.77	1,812,293.06	61,120,645.29	2,183,617.03	62,635,839.06	3,995,910.09
LEONARDO - PreExscale Supercomputer	IP	23,056,748.42	921,880.15		5,533,717.04	23,056,748.42	6,455,597.19
MN5 - PreExscale Supercomputer	IP	22,888,652.19	58,814,373.13	5,396,954.72		28,285,606.91	58,814,373.13
Deucalion - procurement by EuroHPC	IP		4,032,434.50			-	4,032,434.50
Regulation (EU) 2018/1488		*47,460,594.38*	*65,580,980.84*	*66,517,600.01*	*7,717,334.07*	*113,978,194.39*	*73,298,314.91*
High-end / Exascale supercomputer (2) - 1 in 2022	PP	192,500,000.00	90,000,000.00	50,000,000.00	63,250,000.00	242,500,000.00	153,250,000.00
Midrange supercomputer (1-3)	PP	55,786,663.20		25,395,800.00		81,182,463.20	-
Hyperconnectivity for HPC Resources call (working with INFRAG and GEANT)	PP	50,000,000.00		30,000,000.00		80,000,000.00	-
Upgrading EuroHPC supercomputers - between 2022 and 2027	PP			9,900,000.00		9,900,000.00	-
Quantum computers	PP	6,000,000.00	15,600,000.00	15,600,000.00		21,600,000.00	15,600,000.00
Acces IT Platform	PP	600,000.00		-		600,000.00	-
EuroHPC Summit 2023 + Communications	PP	622,400.00		377,600.00		1,000,000.00	-
f16) USER Forum Project	PP	200,000.00		800,000.00		1,000,000.00	-
EuroHPC Summit 2024 + Communications	PP	210,000.00				210,000.00	-
Industrial HPC	PP	3,400,000.00				3,400,000.00	-
d6)Experimental Platform for European Technology	PP	19,235,596.80				19,235,596.80	-
Regulation (EU) 2021/1173		*328,554,660.00*	*105,600,000.00*	*132,073,400.00*	*63,250,000.00*	*460,628,060.00*	*168,850,000.00*
Total EU Contribution/ PS Contribution		**376,015,254.38**	**171,180,980.84**	**198,591,000.01**	**70,967,334.07**	**574,606,254.39**	**242,148,314.91**
Total			**547,196,235.22**		**269,558,334.08**		**816,754,569.30**

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

2. Information of the use of EuroHPC JU financial resources

a) Title 1: Staff Expenditure

Chapter 11 – Salaries and Allowances

The Joint Undertaking will organise the recruitment of new staff and covers the expenditure for salaries, social security and other related allowances of active staff. This appropriation is to cover the remuneration cost of establishment plan posts (temporary staff) and external personnel (contract staff, Seconded National Experts, interim agents), in accordance with the Staff Regulations.

It includes the cost for basic salaries, promotions, family allowances, expatriation and foreign residence allowances. It is also intended to cover the employers' social security contributions and employer pension contributions requested by the European Commission, insurance against sickness, accidents and occupational disease, unemployment insurance, birth and death allowances, annual travel costs from the place of employment to the place of origin, in accordance with the Staff Regulations of Officials of the European Union and the Conditions of Employment of Other Servants of the Union. This chapter also covers the costs for the SLA signed with PMO which is the Commission organisation that handles salaries and staff benefits.

Chapter 12 – Expenditure relating to recruitment

This appropriation covers the expenditure arising from the search for suitable candidates (publishing vacancies) and subsequent administration costs of the recruitment of new staff members (installation, resettlement and daily subsistence allowances, removal and travel expenses).

Chapter 13 – Mission and travel expenses

As part of its duties and once the sanitary situation permits, the staff of the Joint Undertaking will have to travel to various conferences, meetings and workshops related to the activities of the Joint Undertaking and to the actions funded. The mission appropriations cover travel expenses, daily subsistence allowances and ancillary or exceptional expenditure incurred by statutory staff in the interest of the service.

Chapter 14 – Socio-medical infrastructure and Training

This appropriation covers the costs of the annual medical check-up of staff and associated analyses required, complementary health insurance and schooling allowances. This chapter also covers the cost for training of staff and the SLAs signed with the Commission's DG HR.

b) Title 2: Building, Equipment and Operating Costs

Chapter 20 – Buildings and associated costs

The JU has to ensure that the working conditions of its staff comply with the standards of the EU institutions. The office premises are provided by the JU hosting country. This appropriation includes costs related to the infrastructure including insurance, water, electricity and heating, cleaning and

maintenance, security and surveillance (where not covered by the SLA with DG HR). The SLA from OIL is also covered in this chapter.

Chapter 21 – Information Technology

To allow its staff to perform its work, especially now that activities will be undertaken both virtually and physically, the Joint Undertaking is equipped with state-of-the-art and where possible hybrid office equipment and networking facilities, allowing to use the standard IT toolchain of the EU programmes provided by the EU institutions. This appropriation is intended to cover the purchase of computing and other similar electronic office equipment and hardware as well as the installation, configuration and maintenance of this equipment. The procurement and maintenance of programme packages and software licences necessary for the normal 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.

It covers the cost of SLAs with a number of Commission departments, necessary for the provision of IT equipment/services (SLA with the Commission DGs: DIGIT, REA, RTD and/or CNECT) to allow for the smooth running of the JU. It also includes costs specific to the secure data communication needs of the JU and to access the JU's accounting and auditing systems.

Chapter 22 – Movable property and associated costs

This chapter includes the necessary resources to cover the costs of the organisation of the office enlargement which will allow the EuroHPC JU to increase the number of offices, the addition and refurbishment of meeting rooms (with teleconferencing facilities), staff and visitor spaces, IT room and archive spaces.

Chapter 23 – Current administrative expenditure

This chapter includes costs of office supplies, stationery, badges, office material and other consumables necessary for the operation of the office as well as any costs incurred for any mandatory translations). It also covers the costs related to the SLAs signed with CdT and the costs for the SLA with DG BUDG (treasury) and Europe's Rail Joint Undertaking (BOA regarding Accounting Officer).

Chapter 24 – Postage and Telecommunications

This chapter covers all correspondence, postage, delivery services and telecommunication (fixed, mobile telephony and devices and videoconference equipment/licencing) costs of the JU.

Chapter 25 – Expenditure of formal events and other meetings

As the sanitary situation due to COVID-19 improved, and as part of the activities of the Joint Undertaking, some meetings (like Governing Board / Advisory Groups such as INFRAG, RIAG meetings and community workshops) are likely to require conference facilities that are not available at the JU premises. These appropriations will finance meetings that will take place inside or outside of the JU premises. These appropriations will also be used to fund travel expenses for external

stakeholders who may advise the JU in the interest of accomplishing its mandate. Funds will also be used to prepare the 'access' policy implementation activities.

Chapter 26 – Running costs in connection with operational activities

Auditing and legal assistance are key elements to ensure that the JU complies with the legal framework. This appropriation is covering all audit related expenditure: the costs for internal audit capability, external auditors and ex-post audits.

In addition, the communication policy of the Joint Undertaking is an important element to ensure public awareness and understanding of the programme. This appropriation will also cover the activities related to communications and publications, and in particular:

- Communication material for conferences, info days and workshops,

- Website development and consolidation,

- General public relations and publicity.

- Travel meeting expenses for external stakeholders who may be required to support communication activities of the JU.

Chapter 27 – Information, Studies and Publishing

This appropriation is intended to cover costs of the communication activities of the Joint Undertaking, to ensure public awareness and understanding of the scopes. It is also covering the activities related to production and printing the Annual Activity and other Reports. It will cover the costs of studies that the JU may wish to undertake.

Chapter 28 – Expert contracts and meetings

This chapter includes the costs related to the evaluation, selection and review of projects, as well as the costs incurred for evaluators and reviewers.

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 2023, this appropriation related to all expenses linked to the EuroHPC JU R&I activities. In 2023, this appropriation will cover payments on:

- H2020-JTI-EuroHPC -2019-1 projects (SCALABLE, LIGATE, OPTIMA and HEROES);
- H2020-JTI-EuroHPC -2019-2 projects (FF4EUROHPC);
- Operating grants for LUMI, LEONARDO and MARE NOSTRUM 5

- H2020-JTI-EuroHPC -2020-1 projects (EUPEX, European PILOT, HPCQS)
- H2020-JTI-EuroHPC -2020-2 projects (EPI)
- Regulation 2021/1173 calls: Algorithms; and the new calls to be launched in late 2022 and 2023

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

Chapter 31 – HPC Infrastructure Activities

In 2023, this appropriation relates to the procuring of the first exascale system, the mid-range systems, and to the final acquisition costs of the Mare Nostrum 5 exascale supercomputers and the Deucalion petascale supercomputer.

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

In addition, it will also include appropriations related to the acquisition of the upgrades, and quantum computers.

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

HUMAN RESOURCES

In January 2023, the JU will almost double the number of staff.

In 2022 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.

In 2023 the selection procedures will be continued with the aim of filling the key posts, consolidating the teams, and further strengthening the organisation structure of the JU. It will be achieved by reinforcing the leadership, in particular by filling the middle management posts and thus enlarging the management team of the JU, in order to provide support to the Executive Director and further guidance to staff in the key areas of the JU's activities.

With the arrival of the Internal Control and Audit Officer in 2023, internal control processes will be further developed, in order to ensure compliance, reinforce risk management and continuous learning of the whole organisation.

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 strengthen the existing and develop new competencies. Efforts will also be made to stimulate cross-functional interaction and knowledge sharing between colleagues, as well as maintain good team spirit.

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.

Priorities for the 2023 recruitments:

Priority will be given to reinforcing the JU's management team and ensuring that leadership and guidance is strengthened across the organisation. Subject-matter expertise will be further consolidated in the area of programme management, finance and stakeholder management, as well as governance and dissemination of results.

Human resources planning for the period of 2022-2027:

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

*Decrease in number of staff due to Chip Act

*Reduction in total staff from 2023 (adoption of the Chip Act)

** Posts allocated under Regulation (EU) 2018/1488

Breakdown of Temporary Staff by grade in 2022 and 2023

Category and grade	2022 posts TA	Actually filled as of 31/12/2022	2023 posts TA
AD 16			
AD 15			
AD 14	1	1	1
AD 13			
AD 12	1		1
AD 11			
AD 10	2	1	2
AD 9	1		2*
AD 8	13	2	10
AD 7	2	3	4**
AD 6	1		5
AD 5			
Total AD	21	7***	25
AST 4	1		2
Total AST/SC	1	0****	2
TOTAL	22	7	27

* Modification based on art. 38 of the COMMISSION DELEGATED REGULATION (EU) 2019/715 of 18 December 2018 on the framework financial regulation for the bodies set up under the TFEU and Euratom Treaty and referred to in Article 70 of Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council

** POs - entry into service – 1 January 2023

*** Two additional contracts are signed and one recruitment is being finalized, i.e. 10 TA AD posts to be filled by January/February 2023

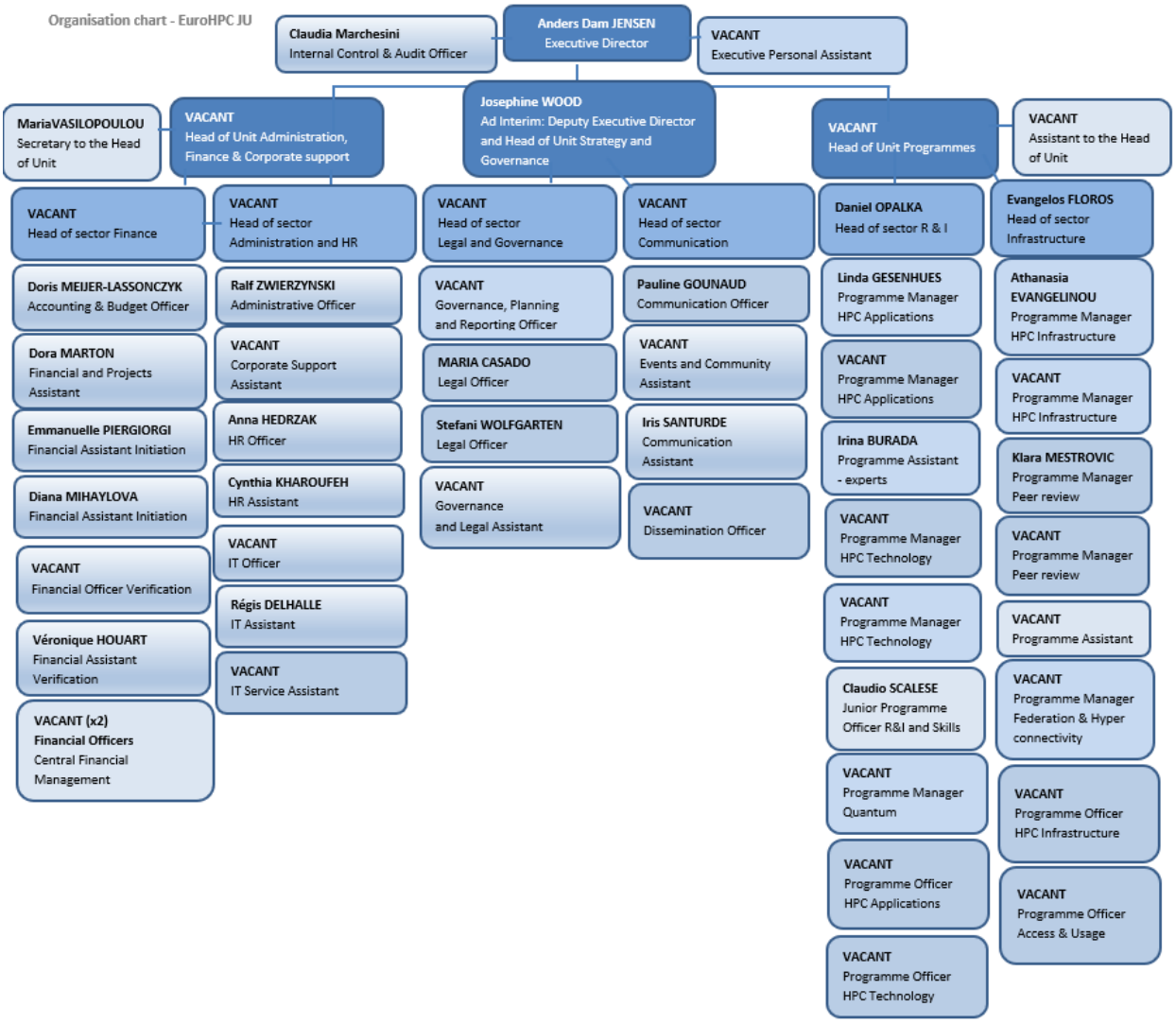
**** Contract signed – TA AST post to be filled in Q1 2023

Breakdown of external staff by Function Group in 2022 and 2023

External Personnel – Contract Agents	2022 posts	Actually filled as of 31/12/2022	2023 posts
Function Group IV	9	6*	12
Function Group III	13	9	14
Function Group II	3	1	1
SNE	0	0	0
Total Staff	25	16	27

* One additional contract signed – post to be filled in January 2023, i.e. 7 posts filled in total in January 2023

Organisation Chart of the EuroHPC JU – 2023



Executive Director

The Executive Director is the chief executive responsible for the day-to-day management of the EuroHPC Joint Undertaking, providing leadership at the strategic and operational level ensuring the achievement of the Joint Undertaking's objectives. The Executive Director is its legal representative and performs his tasks with independence. He is accountable to the Governing Board.

Executive Personal Assistant – VACANT

The Executive Secretary provides the secretarial support to the Executive Director, and the Deputy Executive Director. She/he organises the activities of the Executive Director's Office. She/he provides administrative support in relations with the ED and Deputy ED's external meetings. She/he does the general coordination with the JU Units of tasks which concern the whole JU such as meeting

organisation, support to the Governing Board, document management etc. She/he registers and dispatches the incoming correspondence for the ED office.

Internal Control and Audit Officer – VACANT

The Internal Control and Audit Officer provides advice on risk management and internal control and ensures that risks are appropriately and continuously identified and managed.

She/he maintains and keeps up to date the Internal Control System of the JU. She/he evaluates the effectiveness of the internal control strategy and related system and provides advice to the management on improving the sound financial management and compliance.

She/he acts as a coordinator of risk assessment process, provides advice and guidance on the implementation of corrective/preventive actions and contributes to defining, maintaining and improving of the JU's procedures, processes and systems, in collaboration with different units.

She/he acts as contact point and coordinator with regard to the implementation of the internal audit function. She/he coordinates of audit implementation with all the relevant actors, monitors the audit reporting and the implementation of audit plan in view of audit related KPIs and follows-up on the implementation of the audit/findings/Action plan.

She/he draws up the annual audit plan of the internal audit capability taking into consideration inter alia the Executive Director's assessment of risk in the JU.

Deputy Executive Director and Head of Unit Strategy and Governance – VACANT

The Deputy Executive Director supports the Executive Director in his work and decisions. She/he acts on behalf of the Executive Director during his absence. She/he supports the Executive Director in day-to-day management and overall coordination of the JU.

In his/her capacity as the Head of Unit, she/he oversees the governance, legal, strategic coordination, stakeholder relations and communication activities of the JU. She/he supports the ED in the coordination of the Governing Board and other Advisory Committees, ensuring the optimal outreach of the JU messages, as well as the dissemination of results, in line with JU's objectives. She/he oversees the governance aspects of the JU and relations with stakeholders. The HoU oversees the planning and reporting of the JU, as well as the activities of the legal team which include procurement activities and support to the Operational teams in the JU. She/he coordinates the preparation of the Annual Strategic Plans and the Multi-Annual Strategic Plans.

Head of Sector Legal and Governance - VACANT

The Head of Sector Legal and Governance coordinates the day-to-day work of the team. She/he coordinates the legal advice in all aspects related to the functioning of the JU, such as procurement, HR, governance etc. She/he oversees the documentation related to the grants and procurement procedures, as well as governance of the JU. She/he contributes to JU reporting documents.

Governance, Planning and Reporting Officer - VACANT

The Governance, Planning and Reporting Officer manages the secretariat of the Governing Board of the JU. She/he plans and organizes meetings of the Governing Board, including all required documentation and voting procedures. She/he works with the legal team on all Decisions of the GB and other legal or procedural documents.

She/he coordinates drawing up of the key planning and reporting documents of the JU, such as the Annual Activity Reports. She/he provides input into the Annual Work Programmes.

She/he provides input into the definition of JU's objectives and performance monitoring tools. She/he monitors progress in planning and programming and reports on it. She/he ensures systematic monitoring and follow-up of strategic decisions and actions.

Legal Officer

The Legal Officer provides the Executive Director and the JU Team with all relevant legal advice and support for the smooth operation of the activities of the JU, monitors the implementation of contractual obligations of the JU, drafts legal documents of the JU and is the JU's Data Protection Officer. She assists in the implementation of the staff policy and ensures compliance with EU and JU rules and regulations. She supports the Planning and Reporting Officer in preparing decisions for the Governing Board. She supports the Operational teams on legal aspects of procurement and grants. She provides liaises with external lawyers (where required) and provides input to the legal procedures and litigations.

Legal Officer

The Legal Officer provides advice on the legality and compliance of the grant agreements and procurement procedures. She/he supports Programme Officers and other units in drafting tender documents (invitations to tender, technical specifications, contracts). She/he provides support for contract activities including drafting and reviews of contract and amendment templates.

She/he contributes to preparation of manuals, vade-mecums and internal procedures. She/he provides legal advice related to the implementation of procurement contracts and grant agreements.

Governance and Legal Assistant - VACANT

Governance and Legal Assistant provides support with updating templates, checklists, and any other documents related to the procurement and Model Grant Agreement cycles. She/he supports the communication with the members of the JU's Governing Board, assist in preparation of the supporting documents, and oversees the correspondence, including invitations, voting etc.

She/he creates templates and repository of legal advice and supports the team with drafting replies to new requests. She/he supports Programme Officers in performing administrative verification of received offers.

Head of Sector Communication – VACANT

The Head of Sector coordinates the work of the sector. She/he supports the Head of Unit in defining effective communication policy and strategy, in order to increase the visibility and positioning of JU as an important actor in the HPC ecosystem. She/he will oversee the design and implementation of communication campaigns, press relations and events.

She/he oversees the production of online and offline materials to convey and disseminate key messages of the JU. She/he will support the Head of Unit in providing relevant KPIs and other data demonstrating that the objectives of the JU are reached. She/he ensures adequate outreach and dissemination of information related to the JU's initiatives and results.

Communication Officer

The Communication Officer is responsible for the JU's communication, press activities, including managing the JU website, developing and overseeing the execution of a communications activity plan implementing the Communications Strategy of the JU. She is responsible for media relations. In collaboration with the Programme Officers and Director's Office, she/he reports on the HPC projects and procurement stories and best practice.

Dissemination Officer – VACANT

The Dissemination Officer works closely with the Programmes unit, collaborating with relevant stakeholder groups, academia and other external partners. She/he creates communication actions with the aim of raising awareness of the EuroHPC JU's projects, activities and results achieved, thus contributing to raising the profile of the EuroHPC JU and its visibility among the HPC communities, including potential EU funding applicants.

Events and Community Assistant – VACANT

The Events and Community Assistant supports the organization of internal and external meetings and events and community-building activities of the JU. In collaboration with the Programme Officers and Director's Office, she/he identifies the speaking opportunities for the JU representatives at external events and coordinates JUs presence at such events.

She/he works closely with other units, in particular the Programmes Unit, in order to deliver on the stakeholder needs and position the JU as an important actor of the HPC community.

She/he assists other team members in providing the tools and platforms supporting effective communication and community building, such as newsletters, online discussion fora, expert groups, networking events etc.

Communication Assistant

The Communication Assistant supports the team in the implementation of the communication strategy, and in particular drafting texts, information gathering, press monitoring and dissemination of clippings, managing social media, providing input to newsletters etc., maintaining databases of

press contacts, preparation of contracts for external support to organise events such as EuroHPC Summit. She/he supports the team in the organization of internal and external events.

Head of Unit Programmes - VACANT

The Head of Programmes is central to the implementation of the JU's Programmes, overseeing the work the procurement and R&I activities. She/he seeks to enhance the quality, efficiency and effectiveness of the programmes managed by the JU, overseeing the work performed within the projects implementing the JU Programme to achieve its objectives. She/he gives scientific and technical direction to the unit and coordinate the scientific input of the JU's Advisory Boards into the planning activities of the JU. She/he provides direction to the Programmes Unit and its staff including the HR management aspects.

Assistant to the Head of Unit - VACANT

The Assistant to the Head of Unit provides the administrative support to the Unit. She/he assists the Head of Unit with ensuring the follow-up and respect of deadlines in the Unit activities. She/he coordinates the document management of the Unit, assists in preparation of missions, prepares / copies documents for transmission and maintains files, provides administrative and logistical support for the organisation of internal and external events such as meetings, workshops, conferences and public events; participates in the planning of logistical needs of the unit.

Head of Sector R & I

The Head of Sector coordinates the activities related to the R & I. He provides input to the yearly Work Programme. He coordinates the work of the team in the R&I sector.

He organises and is involved in the evaluation of proposals (selection of experts, logistics etc.), manages the process of selection of projects, monitors and reviews the execution of grant agreements, carries out project reviews and ensures compliance with the prevailing rules and regulations. He works with the other Programme Officers and also negotiates strategic, scientific, managerial and financial aspects of research contracts and amendments.

He liaises with relevant JU stakeholders and communities of experts.

Head of Sector Infrastructure

The Head of Sector coordinates the activities related to the Infrastructure. He provides input to the yearly Work Programme. He coordinates the work of the team in the Infrastructure sector.

He organises and is involved in the evaluation of public tenders (publication, opening, selection of experts, logistics etc.), manages the selection process, monitors and reviews the execution of associated contracts, monitors the allocation of supercomputer access times and ensures compliance with the prevailing rules and regulations.

He liaises with relevant JU stakeholders and communities of experts.

Programme Manager – peer review – 2 posts - 1 VACANT

The Programme Managers will contribute to the preparation and implementation of the technical and administrative activities necessary to accomplish the mission and objectives of the Joint Undertaking, in particular to develop and support the European integrated world-class supercomputing and data infrastructure and a highly competitive and innovative HPC ecosystem.

The Programme Managers organise and are involved in the evaluation of public tenders and grants (publication, opening, selection of experts, logistics etc.), manage the selection process, monitor and reviews the execution of associated contracts and grant agreements, monitor the allocation of supercomputer access times and ensure compliance with the prevailing rules and regulations. They also negotiate strategic, scientific, managerial and financial aspects of research contracts and amendments.

The Programme Managers will focus on the access policy implementation and the peer-review process for accessing the EuroHPC supercomputers.

The Programme Managers may also participate in other activities, which to contribute to the EuroHPC JU's mission and objectives.

Programme Manager HPC Infrastructure –2 posts

The Programme Manager organises and is involved in the evaluation of public tenders (publication, opening, selection of experts, logistics etc.), contributes to the development of tender and technical specifications, manages the selection process, monitors and reviews the execution of associated contracts, monitors the allocation of supercomputer access times and ensures compliance with the prevailing rules and regulations.

She/he liaises with relevant JU stakeholders and communities of experts.

Programme Officer HPC Infrastructure – VACANT

The Programme Officer organises and is involved in the evaluation of public tenders (publication, opening, selection of experts, logistics etc.), contributes to the development of tender and technical specifications, manages the selection process, monitors and reviews the execution of associated contracts, monitors the allocation of supercomputer access times and ensures compliance with the prevailing rules and regulations.

She/he liaises with relevant JU stakeholders and communities of experts.

Programme Manager Federation & Hyper connectivity - VACANT

The Programme Manager organises and is involved in the evaluation of public tenders (publication, opening, selection of experts, logistics etc.), manages the selection process, monitors and reviews the execution of associated contracts, monitors the allocation of supercomputer access times and ensures compliance with the prevailing rules and regulations.

The Programme Manager F&H contributes to the Federation and Hyperconnectivity pillar of the JU overviewing the implementation of actions and policies necessary to establish the relevant services within the pan-European HPC infrastructure deployed and operated by the JU.

Programme Officer Access and Usage – VACANT

The Programme Officer organises and is involved in the definition and implementation of the EuroHPC JU Access Policy. He aids in the definition of the various calls for Access published by the JU and the implementation of the various Peer-review processes and evaluations organized as part of the Access Policy implementation. She/he monitors the allocation of supercomputer access times, ensures compliance of the Hosting Entities activities in terms of access provision and user support as defined in the respective Hosting Agreements.

Programme Assistant – VACANT

The Programme Assistant provides support to the implementation of the JUs programme management activities, such as evaluation of proposals for R&D grants and public tenders, grant preparation, monitoring the technical execution of the grants and provides any technical support to the Programme Officers. She/he also supports the auditing activities including KPIs related to grants and procurement activities and ensures compliance with applicable rules and regulations.

She/he provides administrative support to the Programme Officers.

Programme Manager Quantum Computing - VACANT

The Programme Manager organises and is involved in the evaluation of public tenders (publication, opening, selection of experts, logistics etc.), and grants, manages the selection process, monitors and reviews the execution of associated contracts, monitors and reviews the execution of grant agreements, carries out project reviews and ensures compliance with the prevailing rules and regulations.

The Programme Manager Quantum contributes to the delivery of strategic goals and the implementation of mandate of the JU in what concerns the development of Quantum technologies and the procurement and deployment of Quantum computers in Europe.

Programme Manager HPC Applications - 2 posts - 1 VACANT

The Programme Manager organises and is involved in the evaluation of proposals (selection of experts, logistics etc.), manages the process of selection of projects, with the prevailing rules and regulations. She/he works with the other Programme Manager and also negotiates strategic, scientific, managerial and financial aspects of research contracts and amendments.

Programme Officer HPC Applications - VACANT

The Programme Officer organises and is involved in the evaluation of proposals (selection of experts, logistics etc.), manages the process of selection of projects, with the prevailing rules and regulations. She/he works with the other Programme Officers and also negotiates strategic, scientific, managerial and financial aspects of research contracts and amendments.

Programme Manager HPC Technology – 2 posts – 2 VACANT

The Programme Manager organises and is involved in the evaluation of proposals (selection of experts, logistics etc.), manages the process of selection of projects, monitors and reviews the execution of grant agreements, carries out project reviews and ensures compliance with the prevailing rules and regulations. She/he works with the other Programme Manager and also negotiates strategic, scientific, managerial and financial aspects of research contracts and amendments.

Programme Officer HPC Technology – VACANT

The Programme Officer organises and is involved in the evaluation of proposals (selection of experts, logistics etc.), manages the process of selection of projects, monitors and reviews the execution of grant agreements, carries out project reviews and ensures compliance with the prevailing rules and regulations. She/he works with the other Programme Officer and also negotiates strategic, scientific, managerial and financial aspects of research contracts and amendments.

Junior Project Officer

The Junior Project Officer organises and is involved in the evaluation of proposals (selection of experts, logistics etc.), manages the process of selection of projects, monitors and reviews the execution of grant agreements, carries out project reviews and ensures compliance with the prevailing rules and regulations. She/he works with the other Programme Officers and also negotiates strategic, scientific, managerial and financial aspects of research contracts and amendments.

Programme Assistant – experts

The Programme Assistant – experts supports the team in all aspects related to experts' management: selection, communication and planning, contract preparation, reimbursement of costs, payments etc.

She/he supports the Programme Officers in the logistical aspects of the organization of evaluation panels.

Head of Unit Administration, Finance and HR – VACANT

The Head of Administration is responsible for managing the human and financial resources of the JU according to the principle of sound financial management and in compliance with underlining regulations. She/he will also be responsible for implementing internal controls aiming at providing

reasonable assurance regarding the achievement of objectives relating to operations, reporting, and compliance.

She/he contributes to the development of the budgetary and financial resource management procedures of the JU. She/he ensures the follow-up of recommendations issued by the IAS and the Court of Auditors. She/he ensures the effective management of the IT infrastructure and specific applications needed to support the activities of the JU

Secretary to the Head of Unit

The Secretary to the Head of Unit provides the secretarial support to the Unit. She assists the Head of Unit with ensuring the follow-up and respect of deadlines in the Unit activities. She coordinates the document management of the Unit, assists in preparation of missions, prepares / copies documents for transmission and maintains files, provides administrative and logistical support for the organisation of internal and external events such as meetings, workshops, conferences and public events; participates in the planning of logistical needs of the unit.

Head of Sector Administration and HR – VACANT

The Head of Sector Administration and HR coordinates the logistical, administrative, human resources and IT/infrastructure aspects of the JU operations. She/he coordinates the work of the team. She/he ensures that measures are in place to provide a safe working environment, tailored to the JU's business needs and compliant with applicable rules and requirements. She/he oversees the recruitment, training and wellbeing of JU staff, stimulating the collaborative working methods and team spirit.

She/he ensures that the adequate tools and procedures are in place, in order to guarantee the efficiency of administrative processes and effective functioning of the JU.

Administrative Officer

The Administrative Officer maintains the Unit activity plans and ensures follow-up and respect of deadlines of the JU activities, provides support to the activities of the Governing Board, contributes to administrative quality checks on files for signature, participates in the planning of JU's infrastructure and logistics needs.

He implements relevant Service Level Agreements and framework and other procurement contracts, ensuring effective and efficient operations of the JU.

Corporate Support Assistant – VACANT

Corporate Support Assistant supports the Administration and HR Unit in preparation and implementation of relevant contracts and agreements, such as SLAs and Framework and other procurement contracts with external service providers/suppliers.

She/he is involved in office supplies planning, in coordination with other units. She/he supports Unit in organization of internal events.

She/he will liaise with building administration and other internal and external services in order to ensure compliance with applicable Health & Safety rules. She/he provides support to the organization of the office move and preparation of the office space for newcomers.

HR Officer

The HR Officer is responsible for the design and implementation of the Human Resources Management strategy and the HR policies and procedures of the JU, in line with applicable rules and regulations and JU's mission and objectives.

She implements the necessary IT tools, related to Human Resources Management. She organizes initiatives aiming at ensuring staff well-being.

HR Assistant

The HR Assistant supports the HR Officer in recruitment and selection procedures and day-to-day Human Resources Management, including HR personnel files, learning and development, SYSPER (leave manager).

She/he manages relevant HR functional mailboxes and ARES files.

IT Officer - VACANT

The IT Officer provides appropriate definition of requirements, implementation of policy and maintenance of the ICT infrastructure and service of the JU. She/he contributes to the preparation of the budget and provides IT-related input into JU's activity reports.

The IT Officer oversees the management of the IT infrastructure of the JU, ensuring compliance with applicable rules and requirements. She/he monitors to correct operation of the systems, ensuring that the IT systems respond to business needs.

She/he plans the hardware and software needs of the JU and ensures their timely procurement.

IT Assistant

IT Assistant is responsible for the day-to-day management of IT and Telecommunication Systems of the JU. He provides help-desk assistance to JU staff. He supports the IT Officer in preparation of contracts and purchase orders, in order to ensure that the JU's IT needs are met.

He provides input into the budgetary planning and reporting.

IT Service Assistant - VACANT

IT Service Assistant responsible for the day-to-day management of IT and Telecommunication Systems of the JU. He provides help-desk assistance to JU staff. He/she supports the IT Officer in preparation of contracts and purchase orders, in order to ensure that the JU's IT needs are met.

She/he provides input into the budgetary planning and reporting. He/she coordinates the JU IT service requirements and best practices with the inter-JU IT services (Back Office Arrangement).

Head of Sector Finance – VACANT

She/he leads a team of financial officers and assistants, contributing to the sound implementation of the JU's administrative and operational budget, compliant with EC Financial Regulation and ensures overall coordination with the other actors of the financial circuits. She/he oversees the financial procedures and circuits and model documents.

She/he provides input to budgetary planning and contributes to the design, implementation and evaluation of the JU's control mechanisms and fraud prevention.

Accounting & Budget Officer

The Accounting & Budget Officer monitors that the JU is complying with the applicable EU financial and accounting rules, is the interface with the EC Accountant (DG BUDG), provides advice and recommendations to improve the efficiency, effectiveness and financial management of the JU.

She prepares annual budgetary and financial accounts and monitors budget execution. She contributes to the preparation of the Annual Activity report, including the corresponding costs. She prepares and manages reporting on budgetary and general accounts. She contributes to the development and implementation of financial procedures and the elaboration and updating of model documents.

Financial Assistant Initiation – 3 posts

The Financial Assistant is responsible for the financial initiation with regard to administrative and operational expenditure (budget, procurement and grants) of the JU. She/he ensures the financial and administrative compliance of the grants and contracts, performs the administrative quality checks on files for signature, monitors the operational and administrative expenditures.

She/he provides support in the preparation, planning, reporting, forecast and follow-up of the budget.

Financial Officer Verification - VACANT

The Financial Officer verifies the financial and administrative compliance of the grants, contracts and procedures, performs the administrative quality checks on files for signature, monitors the operational and administrative expenditures. She/he performs ex-ante verification of commitments, payments and recovery orders. She/he ensures legality and regularity by verifying the respect of Financial Regulation and other related rules and budgetary dispositions.

She/he contributes to the JU's risk assessment annual exercises and the review of financial circuits, and works with the Audit Manager to ensure the implementation of the Internal audit and other activities linked to management of risk and prevention of fraud.

Financial Officer Verification

The Financial Assistant supports the verification of the financial and administrative compliance of the grants, contracts and procedures, performs the administrative quality checks on files for signature, assists in monitoring the operational and administrative expenditures. She/he supports the process of ex-ante verification of commitments, payments and recovery orders. She/he ensures legality and regularity by verifying the respect of Financial Regulation and other related rules and budgetary dispositions.

Financial Officers Central Financial Management – VACANT – 2 posts

The Financial Officer is responsible for initiating and the monitoring of the Participating States indicative commitment amount of the national financial contributions to indirect actions to the Joint Undertaking which will be made annually prior to the adoption of the Work Programme, in line with the Horizon Europe applicable rules.

She/he will be responsible for initiating / verifying the payments of the National Contributions to the beneficiaries.

He/she will ensure the financial and administrative compliance of grants and contracts and performs the administrative quality checks on files for signature.

She/he provides support in the preparation, planning, reporting, forecast and follow-up of the Participating States Contributions and the monitoring and reporting of In Kind Contributions to Operational Activities.

[1] OJ L 256, 19.7.2021, p. 3–51.

[2] This corresponds to the budget envelope indicated in the Call for Expression of Interest in the EuroHPC WP2021.

[3] This corresponds to the budget envelope which is indicative and may appear in the 2023 Work Programme.

[4] This corresponds to the budget envelope indicated in the Call for Expression of Interest in the EuroHPC WP2021.

[5] This corresponds to the budget envelope indicated in the Call for Expression of Interest in the EuroHPC WP2021.

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

[7] Regulation (EEC, Euratom, ECSC) No 259/68 of the Council of 29 February 1968 laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Communities and instituting special measures temporarily applicable to officials of the Commission (OJ L 56, 4.3.1968, p. 1).