



EuroHPC JOINT UNDERTAKING
DECISION OF THE GOVERNING BOARD OF THE EuroHPC JOINT
UNDERTAKING No 9/2019
Adopting the amended Joint Undertaking's Work Plan for the year 2019

THE GOVERNING BOARD OF THE EuroHPC JOINT UNDERTAKING,

Having regard to Council Regulation (EU) 2018/1488 of 28 September 2018 establishing the European High Performance Computing Joint Undertaking (hereinafter "Regulation")¹,

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

Having regard to the Governing Board Decision No 7/2018 of 21 December 2018 adopting the EuroHPC Joint Undertaking Work Plan for the year 2019,

Having regard to the Governing Board Decision No 8/2018 of 21 December 2018 adopting the EuroHPC Joint Undertaking Budget for the year 2019;

WHEREAS

- (1) The annual Work Plan of the EuroHPC Joint Undertaking for the year 2019, adopted by the Governing Board by its Decision No 7/2018 of 21 December 2018, needs to be amended in order to include the full list and description of topics to be launched under the research and innovation activities and in order to update the corresponding expenditure estimates.
- (2) The Executive Director of the EuroHPC Joint Undertaking submitted the amended draft work plan to the Governing Board.
- (3) In the interest of legal certainty and clarity, an amended annual Work Plan of the EuroHPC Joint Undertaking for the year 2019 should be adopted by the Governing Board,

HAS ADOPTED THIS DECISION:

¹ OJ L 252, 08.10.2018, p. 1-34

Article 1

The annual Work Plan of the EuroHPC Joint Undertaking for the year 2019 adopted by the Governing Board by its Decision No 7/2018 of 21 December 2018, is replaced with the amended Annual Work Plan for the year 2019 set out in the Annex to this Decision.

Article 2

The Executive Director shall make the amended Annual Work Plan 2019 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 12 July 2019.

For the Governing Board

Thomas Skordas

The Vice- Chair

Annex: Amended European High Performance Computing Joint Undertaking Annual Work Plan 2019

Undertaking Annual Work Plan 2019

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In accordance with the Statutes of the EuroHPC JU annexed to the Council Regulation (EU) 2018/1488, and with Article 111 of the Financial Regulation of the EU

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

1. INTRODUCTION

The EuroHPC Joint Undertaking (hereinafter “EuroHPC JU”), established by the Council Regulation (EU) 2018/1488² (hereinafter “Regulation”), 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 data infrastructure and to develop and support a highly competitive and innovative High Performance Computing (HPC) ecosystem.

In particular, the overall objectives of the Joint Undertaking can be summarised as follows (Article 3 of the Regulation):

- to provide the research and scientific community, as well as the industry including SMEs, and the public sector from the Union or countries associated to Horizon 2020 with the best available and competitive High Performance Computing and data infrastructure and to support the development of its technologies and its applications across a wide range of fields;
- to provide a framework for the acquisition of an integrated, demand-oriented and user-driven world-class petascale and pre-exascale supercomputing and data infrastructure in the Union;
- to provide Union-level coordination and adequate financial resources to support the development and acquisition of such infrastructure, which will be accessible to users from the public and private sector primarily for research and innovation purposes;

² OJ L 252, 8.10.2018, p. 1-34.

- to support an ambitious research and innovation agenda to develop and maintain in the Union a world-class High Performance Computing ecosystem, exascale and beyond, covering all scientific and industrial value chain segments, including low-power processor and middleware technologies, algorithms and code design, applications and systems, services and engineering, interconnections, know-how and skills, for the next generation supercomputing era;
- to promote the uptake and systematic use of research and innovation results generated in the Union by users from science, industry, including SMEs, and the public sector.
- to interconnect and federate regional, national and European High Performance Computing supercomputers and other computing systems, data centres and associated software and applications in cooperation with PRACE and GÉANT.

Given its inter-disciplinary nature and its ability to process large amounts of data and carry out complex computations, HPC is essential to address a wide range of key scientific, industrial and societal applications, such as for example in: earth science and climate change; secure, clean and efficient energy; health, demographic change and wellbeing; food security, sustainable agriculture, marine research and technologies and the bio-economy; pharmaceuticals and chemistry; aerospace and automotive; cybersecurity and defence; smart, green and integrated urban planning; cosmology and astrophysics, etc.

Actions of the EuroHPC programme do not necessarily have to limit themselves to covering only one of these key applications; on the contrary, multi-capability actions will be encouraged wherever relevant. This cross-capability work is vital in creating initiatives of adequate critical mass and vital in fostering innovation that will contribute to the overall goals of EuroHPC Joint Undertaking.

2. MAIN AREAS OF ACTION

The activities of the Joint Undertaking will consist of:

- **Supercomputing and Data Infrastructure programme:** Acquisition and operation of at least two world-class precursors to exascale supercomputers (capable of around 10^{17} calculations per second) and at least two mid-range petascale supercomputers, and providing and managing access to these systems to a wide range of public and private users. These supercomputers will be hosted in national Supercomputer 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 Participating States of the Joint Undertaking. The acquisitions are foreseen for 2020, as the selection of the hosting entities must be done first.
- **Research and innovation programme on HPC:** to support the development of European supercomputing technology including the first generation of European low-power microprocessor technology, and the co-design of European exascale machines, and to foster applications, skills development and a wider use of High Performance Computing.

Regarding the precursors to exascale systems, the EuroHPC Joint Undertaking will be the owner of these supercomputers it will acquire. The Union's contribution from Horizon 2020 and CEF funds should cover up to 50% of the acquisition costs plus up to 50% of the operating costs of these supercomputers.

In the case of petascale supercomputers, the Union's contribution from Horizon 2020 and CEF funds should cover up to 35% of the acquisition costs of the supercomputers, to align with the existing funding for innovation procurement in Horizon 2020. The EuroHPC Joint Undertaking should jointly with Participating States procure the petascale supercomputers. The operation of each petascale supercomputer should be entrusted to a hosting entity.

3. CALL FOR SELECTION OF HOSTING ENTITIES

The EuroHPC Joint Undertaking will initiate and manage the Calls for Expression of Interest for hosting petascale and precursors to exascale supercomputers and evaluate the offers received, with the support of independent external experts. The hosting entity will be selected by the Governing Board of the Joint Undertaking following the call for expression of interest.

Pursuant to Article 8 of the EuroHPC Regulation, the EuroHPC Joint Undertaking shall entrust to a hosting entity the operation of each of these supercomputers.

The following Calls for Expression of Interest for selection of Hosting Entities are currently foreseen:

Subject	Timetable, 2019
Call for Expression of Interest for the selection of Hosting Entities for the pre-cursors to exascale supercomputers	21 January
Call for Expression of Interest for the selection of Hosting Entities for the petascale supercomputers	15 February

a. Funding of an experimental platform towards the exascale systems

The Call for Expression of Interest for the selection of Hosting Entities for the pre-cursors to Exascale supercomputers will include a part for potential funding of an experimental platform towards exascale systems. Applicant Hosting Entities could submit a proposal in that regard.

This aims at building up the competitive EU technology that could be integrated in the future exascale supercomputers, including the development of an advanced experimental platform towards exascale systems. The selected technology will have to be an open solution for hardware, which could achieve objectives established by the EuroHPC Joint Undertaking. The development will take place during the operational life of the pre-exascale supercomputer.

This will be implemented by way of a grant which will be awarded on the basis of Article 195 (f) of the Financial Regulation (EU, Euratom) 2018/1046 to Hosting Entities for the pre-cursors to exascale supercomputers that have included this optional part in their application. The development of such experimental, forward-looking, supercomputing platform requires high degree of technical competence and specialization. Therefore the action can only be implemented as part of the pre-exascale supercomputer development activity and by the awarded hosting entities.

Up to 50% and up to EURO 5.150.000 of the grant will be covered from the JU's funding.

4. ACQUISITION OF PETASCALE AND PRECURSORS TO EXASCALE SUPERCOMPUTERS

In 2019, the EuroHPC Joint Undertaking will carry out a number of activities for acquiring the above-mentioned precursors to exascale and petascale supercomputers, which will be co-designed with the hosting entities and the amounts will have to be fixed accordingly.

The following list of activities is currently foreseen:

Subject	Indicative timetable, 2019
Calls for Tender of Petascale Supercomputers	Q3
Calls for Acquiring Precursors to Exascale Supercomputers	Q3

The Infrastructure Advisory Group (INFRAG) will make recommendations for supercomputing system architectures that should promote a co-design approach where user requirements will drive the selection of technological solutions.

5. CALLS FOR RESEARCH AND INNOVATION PROPOSALS

The Private Members of the EuroHPC Joint Undertaking, the private associations ETP4HPC and BDVA, representing the HPC community, have identified priorities for indirect actions to be launched in the 2019–2020 period: HPC technologies and systems, and Applications. These priorities have been adopted in the form of a strategic research and innovation agenda by the Research and Innovation Advisory Group (RIAG) of the EuroHPC Joint Undertaking.

The final decision concerning the multiannual strategic research and innovation agenda lies with the Governing Board, which will adopt an annual work plan and will approve the launch of Calls for proposals for indirect actions with the associated budgets.

The identified priorities address the mastering of the R&D process to develop exascale HPC technologies and systems in Europe for real and relevant applications of scientific, social and industrial value, the development of the software stack, the preparation of applications for the upcoming exascale systems, and the widening of HPC use by supporting competence and skills developments. In particular, the following actions are foreseen:

5.1. Extreme Scale Technologies and Applications

The support for a sustainable exascale HPC ecosystem in Europe requires action on the technology supply to develop extreme scale, power-efficient and highly resilient HPC and data technologies. It requires also actions to adapt and scale up applications with tangible benefits for addressing scientific, industrial or societal challenges for upcoming exascale and extreme performance computing capabilities. This includes the development of the required software stack.

The development of this topic will proceed along the following lines:

- Extreme scale computing technologies (hardware, software, methods and algorithms for key applications)
- HPC applications to ensure European leadership

5.2. Widening HPC skills and use

Widening the use of HPC and attracting new talents requires the creation and coordination of national HPC Competence Centres across the Union. They will engage in training and outreach activities for academic, industrial and public sector users. Especially SMEs need better access to HPC tools and services to increase their innovation capability.

The development of this topic will proceed along the following lines:

- Increase the knowledge and human capital and upraise HPC capabilities, including through the creation of national HPC Competence Centres and their networking and coordination across the Union
- Support to SMEs

Call topic	Indicative timetable	Call process
1. Extreme Scale Technologies and Applications	25th July	single stage
2. Widening HPC skills and use	25th July	single stage

Details about the eligibility, selection and award criteria; the co-financing rates applied for grants; information on the calls' timetables and the criteria for evaluating the submitted proposals will be described in the calls for proposals of the EuroHPC Joint Undertaking for 2019.

It is foreseen that the calls for proposals will be single stage. Forms of funding envisaged in the calls are exclusively grants.

The full details of the R&I calls are described in Appendix I.

Appendix I: European High-Performance Computing Joint Undertaking Annual Work Plan 2019 – Research and Innovation actions

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**APPENDIX I to the Amended EuroHPC Joint Undertaking
Annual Work Plan of the for the year 2019**

*European High-Performance Computing Joint Undertaking Annual
Work Plan 2019 – Research and Innovation actions*

In accordance with the Statutes of the EuroHPC JU annexed to the Council Regulation (EU)2018/1488, and with Article 111 of the Financial Regulation of the EU

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

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Introduction

The EuroHPC Joint Undertaking (hereafter “JU”) supports an ambitious research and innovation agenda to develop and maintain in Europe a world-class High Performance Computing (HPC) ecosystem towards exascale and beyond.

The EuroHPC Strategic Research and Innovation Agenda (SRIA) identifies research and innovation priorities for the development and adoption of technologies and key competences for HPC and Big Data. It covers all scientific and industrial value chain segments, including low-power processor, software architecture and engineering, middleware technologies, algorithms, up to system architectures, code design and applications, services, interconnections for the next generation supercomputing. It supports the integration of technologies into supercomputing systems through a co-design and piloting approach to test the readiness of the European technology projects, vendors and users to produce a globally competitive HPC system. It emphasizes the importance of achieving excellence in HPC applications through re-engineering of codes and application workflows with scientific, industrial and societal impact and supporting emerging HPC-enabled lead-market applications.

The SRIA also addresses aspects of training and education for the next generation of scientists and engineers, skills development and services to industry, illustrating the potential of HPC through industrial use cases creating business value to help Europe compete in this complex market.

Based on the EuroHPC SRIA, the Annual Work Plan 2019 for Research and Innovation foresees the launching of Calls in the following areas.

Call - Towards Extreme Scale Technologies and Applications

H2020-JTI-EuroHPC-2019-1

The support for a sustainable extreme-scale HPC ecosystem in Europe requires mastering the R&D process with a co-design approach and a holistic view on the technology supply, hardware, software stack and applications. The goal is to improve time and energy to solution, robustness, reliability, portability, maintainability and productivity on upcoming exascale and extreme performance computing capabilities for scientific, industrial or societal challenges.

Proposals are invited against the following topic(s):

EuroHPC-01-2019: Extreme scale computing and data driven technologies

Specific Challenge: to develop world-class extreme scale, and energy-efficient High Performance Computing (HPC) and data driven technologies, that use software engineering techniques, programming tools and libraries that can be adapted and retargeted to rapidly evolving HPC architectures, in view of maximising application performance and efficiency in next generation supercomputers. Actions should allow leveraging the efforts on the European low power processing technologies as well as the Centres of Excellence and build a sustainable exascale HPC ecosystem in Europe, enabling collaborations among the relevant stakeholders.

Scope: Proposals should address the development of extreme scale computing technologies and system architectures, programming models and tools, resource management, fault tolerance, and mathematical methods and algorithms in an increasingly complex and heterogeneous computing environment with memory and storage hierarchies. The approaches should respond to critical demands of application performance, energy efficiency, scale, resilience, scheduling, programmability, etc., across the levels of the compute stack, including compute elements, networking, data storage and data handling. A co-design approach should be followed, covering from the application to the hardware, answering user challenges of industry and research centres/academia and involving the work on the European low power processing technologies and results of Centres of Excellence, significant previous European and national projects in the area, and the data provided e.g. by the Digital Innovation Hubs.

The approaches should ensure that they contribute to the realisation of future exascale system architectures based on European technologies. In particular, proposals have to demonstrate that such approaches align with the efforts of European low power processing technologies, by describing the mechanisms that will be used for that purpose.

Proposals should address one or more of the following sub-topics (proposals should clearly indicate the sub-topic which is their main focus):

- a) Technologies to increase sustained application performance at node and system level, improve energy efficiency and open new usage domains (e.g. High-Performance Data Analytics and mixed precision technologies for existing computing models as well as for Artificial Intelligence).

- b) Technologies to manage data volumes generated and consumed, to minimize data movement and to increase flexibility to store, manipulate and access extremely large data sets in very heterogeneous computing environments.
- c) Networking capabilities allowing low latency and high bandwidth communication between large numbers of extreme computing and data components (e.g. nodes, storage, memory, accelerator etc.).
- d) Programming models, associated run-time systems, system software and compilers to ensure code scalability, maintainability, functionality and performance portability and optimisation across existing and possible future architectures and systems.
- e) New mathematical methods and algorithms to ensure efficient usability and improve energy efficiency, featuring high robustness and enhanced scalability.

The JU considers that for sub topics a), b) and c) proposals requesting a contribution from the JU of up to EUR 4 million, respectively requesting a contribution from the JU of up to EUR 7.5 million for sub-topic d) and requesting a contribution from the JU of up to 1.5 million for sub topic e), and , matched by the Participating States with a similar amount, and a duration of 3 years would allow this specific challenge to be addressed appropriately³. Nevertheless this does not preclude submission and selection of proposals with another duration or requesting other amounts. At least one proposal per sub-topic will be selected for sub topics a), b), c) and d).

Successful proposals are expected to coordinate their approaches to ensure coherence of the expected outcomes with the EuroHPC exascale roadmap.

Expected Impact: Proposals should describe how the proposed work will contribute to the listed corresponding expected impacts and include baseline, targets and metrics to measure impact:

- Contribution to the realisation of the EuroHPC overall and specific objectives⁴
- Strengthening scientific leadership as well as the competitiveness and innovation potential of European industry, contributing to a sustainable exascale HPC supply ecosystem in Europe and ensuring European technological autonomy in this field
- Leveraging the efforts on the European low power processing technologies (in particular the European Processor Initiative) and contributing to the realisation of future exascale system architectures based on such technologies
- Creation and promotion of European IP
- Maturity of solutions and potential for commercial exploitation in future European exascale HPC systems

Type of Action: Research and Innovation Action

³ Please refer to Table 1 for the funding rate and the national contribution to this topic

⁴ Council Regulation 2018/1488 of 28 September 2018 establishing the European High Performance Computing Joint Undertaking (EuroHPC) <https://eurohpc-ju.europa.eu/documents/Regulation.pdf>

The conditions related to this topic are provided at the end of this call and in the General Annexes of the Horizon 2020 Work Programme 2018-2020.

EuroHPC-02-2019: HPC and data centric environments and application platforms

Specific Challenge: to support the development of High Performance Computing (HPC) and data driven HPC software environments and application oriented platforms to generate innovation and value creation in sectors of societal and industrial relevance for Europe.

Scope: Proposals should address the development of energy-efficient HPC solutions supporting the adoption of applications with industrial and societal relevance for Europe on evolving HPC hardware and system software/programming environments.

The use of HPC solutions to generate innovation and value creation should be clearly demonstrated (for instance in manufacturing, farming, health, mobility, natural hazards, climate, energy, space, finance or cybersecurity) and aimed at providing secure and simple access and service provisioning to relevant stakeholders based on such HPC solutions.

These developments should be driven by complex application workflows, for instance High Performance Data Analytics (HPDA), combining artificial intelligence and simulation modelling, exploiting underlying hardware heterogeneity/modularity, integrating cloud-based solutions etc.) and should offer solutions to key application areas including industrial use cases. These developments may also promote the efficient use of platforms and architectures best suited for the targeted use cases and applications (e.g. accelerated platforms).

The required and available data assets should be clearly described. Actions should include co-design in close cooperation with the scientific disciplines to explore and demonstrate the technical feasibility and value of advanced workflows, e.g. mixed/integrated simulation, HPDA & AI, and ensuring wide adoption in production use.

The JU considers that proposals requesting a contribution from the JU of up to EUR 4 million, matched by the Participating States with a similar amount, and a duration of 3 years would allow would allow this specific challenge to be addressed appropriately⁵. Nevertheless this does not preclude submission and selection of proposals with another duration or requesting other amounts.

Expected Impact: Proposals should describe how the proposed work will contribute to the listed corresponding expected impacts and include baseline, targets and metrics to measure impact:

- Contribution to the realisation of the EuroHPC overall and specific objectives⁶
- Demonstrated relevance of the main target sector for European industry or society and in ensuring European technological autonomy in this field and in the Digital Single Market
- Demonstrated innovation and productivity enhancement in the main target sector

⁵ Please refer to Table 1 for the funding rate and the national contribution to this topic

⁶ Council Regulation 2018/1488 of 28 September 2018 establishing the European High Performance Computing Joint Undertaking (EuroHPC) <https://eurohpc-ju.europa.eu/documents/Regulation.pdf>

- Effective integration of HPC technologies in the main target sector with measurable end-user metrics such as accessibility, scalability, performance, energy efficiency, reliability, and cost
- Widening the use of and facilitating the access to advanced HPC, big data and cloud infrastructures stimulating the emergence of the data economy in Europe.

Type of Action: Innovation Action

The conditions related to this topic are provided at the end of this call and in the General Annexes of the Horizon 2020 Work Programme 2018-2020⁷.

EuroHPC-03-2019: Industrial software codes for extreme scale computing environments and applications

Specific Challenge: To efficiently enable the industrial applications fully exploit the evolving HPC hardware and software landscape and seek synergies with open-source components, including the use of novel mathematical methods and algorithms.

Scope: To improve industrial software and codes for industrial users to fully exploit the new capabilities of extreme performance HPC environments. This includes aspects such as novel algorithms, efficiency, scalability, refactoring, porting and optimisation to novel HPC hardware and software architectures of increased supercomputing performance.

Proposals should clearly identify the target software and codes to be improved. These software and codes should be used in areas of significant demonstrable market impact, where Europe is leader or should achieve leadership and create value in Europe.

The JU considers that proposals requesting a contribution from the JU of up to EUR 2 million, matched by the Participating States with a similar amount, would allow this specific challenge to be addressed appropriately.⁸ Nevertheless this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact: Proposals should describe how the proposed work will contribute to the listed corresponding expected impacts and include baseline, targets and metrics to measure impact:

- Contribution to the realisation of the EuroHPC overall and specific objectives⁹
- Achieving European leadership in the areas of application of the target software and codes and creating value in Europe
- Enabling a demonstrably more competitive and innovative European industry, including SMEs, and maximising market impact of the project's results

⁷ http://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2018-2020/annexes/h2020-wp1820-annex-ga_en.pdf.

⁸ Please refer to Table 1 for the funding rate and the national contribution to this topic

⁹ Council Regulation 2018/1488 of 28 September 2018 establishing the European High Performance Computing Joint Undertaking (EuroHPC) <https://eurohpc-ju.europa.eu/documents/Regulation.pdf>

- Significant improvements in the target software and codes, in terms of e.g. efficiency, scalability, refactoring, adaptation to new software engineering and programming environments and tools, and optimisation for novel HPC hardware and system software
- Greatly accelerate the time to market for products and services based on HPC codes and software
- Support a sustainable industrial HPC software capability in Europe

Type of Action: Innovation Action

The conditions related to this topic are provided at the end of this call and in the General Annexes of the Horizon 2020 Work Programme 2018-2020.

Conditions for the Call - Towards Extreme Scale Technologies and Applications

Opening date(s), deadline(s), indicative budget(s):

Topics (Type of Action)	Budgets (EUR million)	Deadlines
	2019	
Opening: 25 Jul 2019		
EuroHPC-01-2019 (RIA) EuroHPC-02-2019 (IA) EuroHPC-03-2019 (IA)	55.00	14 January 2020
Overall indicative budget	55.00	

In order to allow a balanced coverage between topics, the following minimum amounts of JU contribution will be allocated to proposals eligible for funding:

EuroHPC-01-2019: minimum JU contribution of EUR 20 million

EuroHPC-02-2019: minimum JU contribution of EUR 16 million

EuroHPC-03-2019: minimum JU contribution of EUR 8 million

Indicative timetable for evaluation and grant agreement signature:

For single stage procedure:

- Information on the outcome of the evaluation: Maximum 5 months from the final date for submission; and
- Indicative date for the signing of grant agreements: Maximum 8 months from the final date for submission.

Eligibility and admissibility conditions: The conditions are described in General Annexes B and C of the Horizon 2020 Work Programme 2018-2020¹⁰.

¹⁰ http://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2018-2020/annexes/h2020-wp1820-annex-ga_en.pdf.

Evaluation criteria, scoring and threshold: The criteria, scoring and threshold are described in General Annex H of the Horizon 2020 Work Programme 2018-2020.

Evaluation Procedure: The procedure for setting a priority order for proposals with the same score is given in General Annex H of the Horizon 2020 Work Programme 2018-2020.

The full evaluation procedure is described in the relevant [guide](#) published on the Funding & Tenders Portal.

Grant Conditions:

EuroHPC-01-2019	As an exception from General Annex D of the Horizon 2020 Work Programme 2018-2020, the funding rate for eligible costs in grants awarded by the JU for this topic will be 50% of the eligible costs.
EuroHPC-01-2019	<p>Grants awarded under this topic will be complementary.</p> <p>The respective options of Article 2, Article 31.6 and Article 41.4 of the EuroHPC JU Model Grant Agreement will be applied.</p> <p>Grants awarded under this topic will include a common task, defined by the EuroHPC Joint Undertaking, contributing to the definition of a common, overarching objective such as, for example, the definition of a reference exascale system architecture, including in cooperation with other Grants awarded by the EuroHPC Joint Undertaking.</p>
EuroHPC-02-2019, EuroHPC-03-2019	As an exception from General Annex D of the Horizon 2020 Work Programme 2018-2020, the funding rate for eligible costs in grants awarded under this topic will be differentiated: 50% of the eligible costs for beneficiaries and linked third parties that are non-profit legal entities; and 35% of the eligible costs for beneficiaries and linked third parties that are for profit legal entities.
EuroHPC-01-2019, EuroHPC-02-2019, EuroHPC-03-2019	<p>Participants are encouraged to include a security self-assessment identifying any security issues and detailing how those issues will be addressed in order to comply with the relevant national and Union laws. Where appropriate, the Joint Undertaking may carry out a security scrutiny for proposals raising security issues in accordance with General Annex J of the Horizon 2020 Work Programme 2018-2020. The security scrutiny may lead to security requirements that are set out in Annex 1 to the EuroHPC JU Model Grant Agreement.</p> <p>For grants awarded under this topic the the JU may object to a</p>

	<p>transfer of ownership or the exclusive licensing of results to a third party established in a third country not associated to Horizon 2020. The respective option of Article 30.3 of the EuroHPC JU Model Grant Agreement will be applied.</p> <p>Additionally, the Work Plan foresees additional exploitation obligations, requiring that first exploitation of the results takes place in Europe using an option of Article 28 of the EuroHPC JU Model Grant Agreement as a default option.</p>
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Consortium agreement:

<p>EuroHPC-01-2019, EuroHPC-02-2019, EuroHPC-03-2019</p>	<p>Members of consortium are required to conclude a consortium agreement, in principle prior to the signature of the grant agreement.</p>
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Call - Innovating and Widening the HPC use and skills base

H2020-JTI-EuroHPC-2019-2

The take-up of HPC services by industry and SMEs, academia and the public sector is a crucial element for the full development of a sustainable HPC ecosystem in Europe. Widening the use of HPC requires federating resources, and attracting new talents requires the further development of existing and the creation of new national HPC Competence Centres and their networking and coordination across Europe. These Centres will inter alia engage in training and outreach activities for academic, industrial and public sector users. SMEs need better access to HPC tools and services to increase their innovation capability.

Proposals are invited against the following topic(s):

EuroHPC-04-2019: HPC Competence Centres

Specific Challenge: This topic covers two interrelated and complementary areas:

a. National HPC Competence Centres – The aim is to support existing or the creation in a maximum number of countries of up to one national HPC Competence Centre in each of the EU Member State and EuroHPC JU Participating State. The national HPC Competence Centres should provide HPC services to industry (including to SMEs), academia and public administrations, delivering tailored /modular solutions for a wide variety of users, with an aim to ease and foster the transition towards wider uptake of HPC in Europe. It should be the focal point coordinating all national initiatives, facilitating access of national stakeholders to European HPC competence and opportunities in different industrial sectors and domains.

b. Networking and coordination of national HPC Competence Centres with the aim to maximize existing European HPC knowledge and expertise across Europe. The tasks and services of the network will be to establish a single focal point at European level, that will be responsible for the coordination of the national Competence Centres, the exchange of best practices, know-how and information, networking and training across national HPC Competence Centres.

Scope: a. Research and Innovation Actions

Set-up and operate one HPC Competence Centres in a maximum number of countries of each of the EU Member States and EuroHPC JU Participating States, associated to the national supercomputing centres. The HPC Competence Centre should provide leading-edge, innovative solutions taking into account national HPC needs and requirements emanating from different users (industry, academia, public administrations), and develop the necessary expertise and applications know-how close to the users. National HPC Competence Centres should implement a flexible and modular approach in the services to be provided, taking into account the degree of maturity of the national HPC infrastructure.

HPC Competence Centres should provide for example services such as:

- Facilitate uptake of HPC applications by different users, including SMEs (e.g. promoting locally relevant success stories), academia and public administrations.
- Facilitate access to scientific/technical expertise/consulting through application oriented HPC know-how/focus (e.g. HPC and High Performance Data Analytics (HPDA)), as well as access to advanced simulation and modelling algorithms, software codes and tools.
- Onsite evaluations of new technologies, experimenting, proof of concept, facilitating access to the HPC ecosystem including testbeds, hands-on sessions on HPC and, HPC application optimising and scaling in a number of fields.
- Facilitate access to supercomputing and data management for exploring innovation solutions of interest to end users, including SME user industries.
- Local and national training and skills development in the area of HPC and related subjects (e.g. HPDA, parallel programming, etc.), through face-to-face as well as online training (e.g. MOOC platforms).
- Awareness raising and outreach on the benefits of HPC to potential user industries, including SMEs.
- Implementing technology transfer activities at local/national level and the Digital Single Market.

It is required that the national HPC Competence Centre – consisting of either one or several national organisations - is formally designated and mandated by the national authorities of the EU Member State or the EuroHPC JU Participating State.

The JU considers that proposals requesting a contribution from the JU of up to EUR 1 million per national HPC Competence Centres¹¹, matched by the Participating States with a similar amount, and a duration of 2 years would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals with another duration or requesting other amounts. Only one proposal including a maximum number of national HPC Competence Centres will be selected.

b. Coordination and Support Action

Proposals should aim at coordinating the national HPC Competence Centres. In particular, it is expected to establish a communication platform, facilitate dialogue, promote the objectives of the HPC Competence Centres and organize outreach events and workshops (on topics identified by the national HPC Competence Centres). It is expected to identify potential training solutions and tools available from the HPC Competence Centres network to support and assist national HPC Competence Centres requests and/or needs and help networking of respective national and European activities including through the provision of mentoring and twinning schemes.

Proposals should address all the following points:

¹¹ 50% will be funded through EU contribution and 50% through national contribution

- coordinate and be a reference point for national HPC initiatives ensuring the exchange of best practice and information across Europe;
- ensure that the specific “vertical” expertise and solutions of each national Competence Centre provide coordinated support on a local level to other Competence Centres, facilitating cross-domain expertise and share effective solutions for industry, academia and the public sector;
- coordinate centrally mentoring and twinning programmes with the aim to accelerate the development of ‘new’ HPC Competence Centres and build strong collaborations across HPC Competence Centres with similar interests;
- sharing of existing libraries of HPC codes and, inter alia facilitate access to upgraded HPC application codes in order to encourage mutual learning and strive towards reaching a uniform maturity level across HPC Competence Centres and help close the gap between experienced and less experienced countries.

It is expected that such an activity be driven by the relevant actor(s) bringing in the required expertise and a solid and robust track-record in offering HPC Competence Centre related services to a variety of users including industry, as well as HPC-related training activities at European level.

The EuroHPC JU considers that proposals requesting a contribution from the EU of up to EUR 2 million and a duration of 2 years would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting another duration or other amounts. Only one proposal will be selected.

Expected Impact:

a. Research and Innovation Action

- Contribution to the realisation of the EuroHPC overall and specific objectives¹²
- Promoting the use of HPC at national level by identifying relevant users and matching their needs with the available expertise in the HPC Competence Centres
- Effective establishment of a wide range of HPC services (as referred in the scope of this objective)
- Provision of leading-edge, innovative solutions for targeted regional/national industries/applications
- Provision of support to interested end users that are/will use HPC and HPDA in their daily business
- Contribute in ensuring European technological autonomy in this field

b. Coordination and Support Action

- Contribution to the realisation of the EuroHPC overall and specific objectives¹³

¹² Council Regulation 2018/1488 of 28 September 2018 establishing the European High Performance Computing Joint Undertaking (EuroHPC) <https://eurohpc-ju.europa.eu/documents/Regulation.pdf>

- Effective coordination and exchange of best practices and information among the networked HPC Competence Centres
- Facilitate access to services and training offered at national level to interested HPC Competence Centres and other potential users (from industry, academia or public sector)
- Maximise visibility and outreach of national HPC Competence Centres, in particular to industry
- Improved coordination and increased availability of training activities on HPC across HPC Competence Centres

Type of Action: Research and Innovation Action, Coordination and Support Action

The conditions related to this topic are provided at the end of this call and in the General Annexes of the Horizon 2020 Work Programme 2018-2020.

EuroHPC-05-2019: Stimulating the innovation potential of SMEs

Specific Challenge: Providing an effective mechanism for inclusion of innovative, agile SMEs lowering the barriers for small actors to enter the market and exploit new business opportunities.

Scope: Proposals are expected to define an outreach approach for identifying and attracting SMEs whose innovation potential and competitiveness could be increased as users of advanced HPC services, and a mechanism involving financial support to third parties, which will adequately stimulate such innovation potential of SMEs participating in the action. The focus of the action should preferably aim at European engineering and manufacturing SMEs.

The proposal will define the process of selecting SMEs for which financial support will be granted. Taking into account the complexity of projects involving access to advanced HPC services (such as for example AI/HPDA, etc.), typically the financial support will be in the order of EUR 50 000 – 150 000¹⁴ per party. At least 80% of the JU funding should be allocated to financial support for these third parties.

The selected project should collaborate with the future national HPC Competence Centres and the related coordination action (topic EuroHPC-04-2019 in this Work Plan), if selected for funding, Digital Innovation Hubs, or other relevant domain-oriented or industry associations.

The JU considers that proposals requesting a contribution from the JU of between EUR 8 and 10 million and a duration of 3 years would allow this specific challenge to be addressed

¹³ Council Regulation 2018/1488 of 28 September 2018 establishing the European High Performance Computing Joint Undertaking (EuroHPC) <https://eurohpc-ju.europa.eu/documents/Regulation.pdf>

¹⁴ In line with Article 23 (7) of the H2020 Rules for Participation, the amounts referred to in Article 204 of the Financial Regulation may be exceeded where it is necessary to achieve the objectives of the action. Findings from a European Investment Bank study on HPC infrastructures and services, and from the ongoing action Fortissimo, supporting SMEs in manufacturing, show that the cost of this kind of HPC services is very likely to exceed EUR 60 000, and can reach EUR 150 000.

appropriately.¹⁵ Nonetheless, this does not preclude submission and selection of proposals with another duration or requesting other amounts. Only one proposal will be selected

Expected Impact:

- Contribution to the realisation of the EuroHPC overall and specific objectives¹⁶
- Improving European competitiveness and productivity, by supporting the innovation in SMEs through the use of HPC and ensuring European technological autonomy in this field
- Widening the HPC user base by attracting new users of HPC in different application domains (with a preference focus on engineering and manufacturing, or any other fast growing sector of the economy)
- More competitive European service providers through provisioning of new types of HPC services

Type of Action: Research and Innovation Action

The conditions related to this topic are provided at the end of this call and in the General Annexes of the Horizon 2020 Work Programme 2018-2020.

Conditions for the Call - Innovating and Widening the HPC use and skills base

Opening date(s), deadline(s), indicative budget(s):

Topics (Type of Action)	Budgets (EUR million)	Deadlines
	2019	
Opening: 25 Jul 2019		
EuroHPC-04-2019 (RIA)	28.00	14 Nov 2019
EuroHPC-04-2019 (CSA)	2.00	14 Nov 2019
EuroHPC-05-2019 (RIA)	10.00	14 Nov 2019
Overall indicative budget	40.00	

Indicative timetable for evaluation and grant agreement signature:

For single stage procedure:

- Information on the outcome of the evaluation: Maximum 5 months from the final date for submission; and

¹⁵ Please refer to Table 1 for the funding rate and the Union/national contribution to this topic

¹⁶ Council Regulation 2018/1488 of 28 September 2018 establishing the European High Performance Computing Joint Undertaking (EuroHPC) <https://eurohpc-ju.europa.eu/documents/Regulation.pdf>

- Indicative date for the signing of grant agreements: Maximum 8 months from the final date for submission.

Eligibility and admissibility conditions: The conditions are described in General Annexes B and C of the Horizon 2020 Work Programme 2018-2020¹⁷.

Evaluation criteria, scoring and threshold: The criteria, scoring and threshold are described in General Annex H of the Horizon 2020 Work Programme 2018-2020.

Evaluation Procedure: The procedure for setting a priority order for proposals with the same score is given in General Annex H of the Horizon 2020 Work Programme 2018-2020.

The full evaluation procedure is described in the relevant [guide](#) published on the Funding & Tenders Portal.

Grant Conditions:

EuroHPC-04-2019	As an exception from General Annex D of the Horizon 2020 Work Programme 2018-2020, the funding rate for eligible costs in grants awarded under this topic will have a 50% funding rate for the EuroHPC-04 – Competence Centre RIA , and a funding rate of 100% for the EuroHPC-04 – Competence Centre CSA .
EuroHPC-04-2019, EuroHPC-05-2019	Grants will be awarded to the highest-ranked proposal provided that it attains all thresholds.
EuroHPC-05-2019	For grants awarded under this topic beneficiaries may provide support to third parties as described in General Annex K of the Horizon 2020 Work Programme 2018-2020 either in form of grants or prizes. The respective options of Article 15 of the EuroHPC JU Model Grant Agreement will be applied.
EuroHPC-04-2019	Grants awarded under this topic will be complementary. The respective options of Article 2, Article 31.6 and Article 41.4 of the EuroHPC JU Model Grant Agreement will be applied.
EuroHPC-04-2019, EuroHPC-05-2019	For grants awarded under this topic the JU may object to a transfer of ownership or the exclusive licensing of results to a third party established in a third country not associated to Horizon 2020. The respective option of Article 30.3 of the EuroHPC JU Model Grant Agreement will be applied. Additionally, the Work Plan foresees additional exploitation obligations, requiring that first exploitation of the results takes place in Europe using an option of Article 28 of the EuroHPC JU

¹⁷ http://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2018-2020/annexes/h2020-wp1820-annex-ga_en.pdf.

	<p>Model Grant Agreement as a default option.</p> <p>Participants are encouraged to include a security self-assessment identifying any security issues and detailing how those issues will be addressed in order to comply with the relevant national and Union laws. Where appropriate, the Joint Undertaking may carry out a security scrutiny for proposals raising security issues in accordance with General Annex J of the Horizon 2020 Work Programme 2018-2020. The security scrutiny may lead to security requirements that are set out in Annex 1 to the EuroHPC JU Model Grant Agreement.</p>
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Consortium agreement:

<p>EuroHPC-04-2019, EuroHPC-05-2019</p>	<p>Members of consortium are required to conclude a consortium agreement, in principle prior to the signature of the grant agreement.</p>
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Budget

	Budget line(s)	2019 Budget (EUR million)
Calls		
H2020-JTI-EuroHPC-2019-1		55.00
	<i>from 09.040734</i>	55.00
H2020-JTI-EuroHPC-2019-2		40.00
	<i>from 09.040734</i>	40.00
Other actions		
Estimated total budget		95.00