# Council Regulation (EU) 2018/1488 of 28 September 2018 establishing the European High Performance Computing Joint Undertaking

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## establishing the European High Performance Computing Joint Undertaking

THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 187 and the first paragraph of Article 188 thereof,

Having regard to the proposal from the European Commission,

Having regard to the opinion of the European Parliament,

Having regard to the opinion of the European Economic and Social Committee[(1)],

Whereas

(1) Public-private partnerships in the form of Joint Technology Initiatives were initially provided for in Decision No 1982/2006/EC of the European Parliament and of the Council.[(2)]

(2) Regulation (EU) No 1291/2013 of the European Parliament and of the Council[(3)] establishes Horizon 2020 – The Framework Programme for Research and Innovation (2014-2020), 'Horizon 2020'. It aims to achieve a greater impact with respect to research and innovation by combining Horizon 2020 and private sector funds in public-private partnerships in areas where the scope and scale of the resources in research and innovation are justified to the Union's wider competitiveness goals, leverage private investment and help tackle societal challenges in a limited number of cases with a clear European added-value. Those partnerships should be based on a long-term commitment, including a balanced contribution from all partners, be accountable for the achievement of their objectives and be aligned with the Union's strategic goals relating to research, development and innovation. The governance and functioning of those partnerships should be open, transparent, effective, efficient and inclusive, by giving the opportunity to a wide range of stakeholders active in their specific areas to participate.

(3) In accordance with Regulation (EU) No 1290/2013 of the European Parliament and of the Council[(4)] and Council Decision 2013/743/EU[(5)], support may be provided to joint undertakings established in the framework of Horizon 2020 under the conditions specified in that Decision.

(4) Regulation (EU) No 1316/2013 of the European Parliament and of the Council[(6)] established the Connecting Europe Facility (CEF). CEF should enable projects of common interest to be prepared and implemented within the framework of the trans-European networks policy in the sectors of transport, telecommunications and energy. In particular, CEF should support the implementation of those projects of common

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interest which aim at the development and construction of new infrastructures and services, or at the upgrading of existing infrastructures and services, in the transport, telecommunications and energy sectors. CEF should contribute to supporting projects with a European added value and significant societal benefits which do not receive adequate financing from the market.

(5) Regulation (EU) No 283/2014 of the European Parliament and of the Council[7] established the guidelines for trans-European networks in the area of telecommunications infrastructure and laid down the sector specific conditions for the telecommunications sector.

(6) High Performance Computing qualifies as a project of common interest in the area of digital service infrastructures identified to be eligible for funding subject to Article 6(1) of Regulation (EU) No 283/2014, namely access to re-usable public sector information, as referred to in point 3(d) of the Annex to that Regulation. In accordance with Article 6(3) of Regulation (EU) No 1316/2013, the Commission may entrust part of the implementation of the CEF to the bodies referred to in point (c) of Article 62(1) of Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council[8].

(7) The Communication from the Commission entitled 'Europe 2020 — A Strategy for smart, sustainable and inclusive growth' (the 'Europe 2020 strategy'), endorsed by the European Parliament and by the Council, emphasises the need to develop favourable conditions for investment in knowledge and innovation so as to achieve smart, sustainable and inclusive growth in the Union.

(8) The Communication from the Commission of 19 April 2016 entitled 'European Cloud Initiative – building a competitive data and knowledge economy in Europe' calls for the establishment of a European data infrastructure based on leading-class High Performance Computing capabilities and the development of a full European High Performance Computing ecosystem capable of developing new European technology and realise exascale supercomputers. The importance of the area and the challenges faced by the stakeholders in the Union require action in order to gather the necessary resources and capabilities, including the existing ones such as, for example, national supercomputers and supercomputing centres, to close the chain from research and development to the delivery and operation of the exascale High Performance Computing systems. Therefore, a mechanism should be set up at Union level to combine and concentrate the provision of support to the establishment of a world-class European High Performance Computing infrastructure and for research and innovation in High Performance Computing by Member States, the Union and the private sector. This infrastructure should provide access to the public sector users, users from industry, including small and medium-sized enterprises (SMEs), and users from academia, including the scientific communities of the emerging European Open Science Cloud.

(9) The Communication from the Commission of 10 May 2017 on the Mid-Term Review on the implementation of the Digital Single Market Strategy — A Connected Digital Single Market for All, identifies High Performance Computing as a critical element for the digitisation of industry and the data economy. Substantial investments are needed to develop, acquire and operate supercomputers that rank among the top three in the world

and no single European country has the resources to develop a full High Performance Computing ecosystem alone. There is, therefore, a need for the Member States, the Union and the private sector to coordinate their efforts and share their resources in order to meet the increasing demand for High Performance Computing and to build up a strong and innovative High Performance Computing science and industry ecosystem across the Union. The Communication proposes the creation of a legal instrument that provides a procurement framework for an integrated exascale supercomputing and data infrastructure.

(10) In order to equip the Union with the computing performance needed to maintain its research at a leading edge, the Member States investment in High Performance Computing should be coordinated and the industrial and market take-up of High Performance Computing technology be reinforced both in the public and private sectors. The Union should increase its effectiveness in turning the technology developments into demand-oriented and application-driven European High Performance Computing systems that are competitive in the marketplace, establishing an effective link between technology supply, co-design with users, and a joint procurement of world-class systems, and creating a globally competitive ecosystem in High Performance Computing technologies and applications. At the same time, the Union should provide an opportunity for its supply industry to leverage on such investments, leading to their uptake in large-scale and emerging application fields such as personalised medicine, connected and automated driving or other lead markets that are underpinned by artificial intelligence, blockchain technologies, edge computing or more broadly by the digitisation of Union industry.

(11) A Joint Undertaking represents the best instrument capable to implement the goals of the European High Performance Computing Strategy as set out in the European Cloud Initiative, to overcome the present limitations, while offering the highest economic, societal, and environmental impact and best safeguarding the Union's interests. It can pool resources from the Union, the Member States and the private sector. It can implement a procurement framework and operate world-class High Performance Computing systems via promotion of technology, particularly if it is a competitive European one. It can launch research and innovation programmes for developing European technologies and their subsequent integration in exascale supercomputing systems and contribute to developing a competitive European technology supply industry.

(12) The Joint Undertaking should be set up and start operating at the latest by early 2019 to reach the target of equipping the Union with a pre-exascale infrastructure by 2020, and to develop the necessary technologies and applications for reaching exascale capabilities around 2022 to 2023, while promoting a competitive European High Performance Computing innovation ecosystem. Since a development cycle of the next generation of technology typically takes four to five years, to stay competitive on the global market, the actions to reach the exascale target have to start as soon as possible.

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(13) The public-private partnership in the form of the Joint Undertaking should combine the financial and technical means that are essential to master the complexity of the ever escalating pace of innovation in this area. Therefore, the members of the Joint Undertaking should be the Union, Member States and countries associated to Horizon 2020 agreeing on a joint European initiative in High Performance Computing, and associations representing their constituent entities and other organisations with an explicit and active engagement to produce research and innovation results and keep the know-how in the field of High Performance Computing in Europe. The Joint Undertaking should be open to new members.

(14) The Union, the Participating States and the Private Members of the Joint Undertaking should each provide a financial contribution to the administrative costs of the Joint Undertaking. Under the multiannual financial framework for the years 2014-2020, a contribution to the administrative costs by the Union can be frontloaded to cover the running costs only up to 2023. The Participating States and the Private Members of the Joint Undertaking should fully cover the administrative costs of the Joint Undertaking as of 2024.

(15) With a view to regaining a leading position in High Performance Computing technologies, and develop a full High Performance Computing ecosystem for the Union, the industrial and research stakeholders in the European Technology Platform for High Performance Computing (ETP4HPC) private Association have established a contractual Public Private Partnership with the Union in 2014. Its mission is to build a European world-class High Performance Computing technology value chain that should be globally competitive, fostering synergies between the three main components of the High Performance Computing ecosystem, namely technology development, applications and supercomputing infrastructure. Considering its expertise, and its role in bringing together the relevant private stakeholders in High Performance Computing, the ETP4HPC private Association should be eligible for membership in the Joint Undertaking.

(16) With a view to strengthening the data value chain, enhancing community building around data and setting the grounds for a thriving data-driven economy in the Union, the industrial and research stakeholders in the Big Data Value Association (BDVA) have established in 2014 a contractual public private partnership with the Union. Considering its expertise and its role in bringing together the relevant private stakeholders of big data, BDVA should be eligible for membership in the Joint Undertaking.

(17) The private associations ETP4HPC and BDVA have expressed, in writing, their willingness to contribute to the Joint Undertaking's technological strategy and bring their expertise into the realisation of the objectives of the Joint Undertaking. It is appropriate that the private associations accept the Statutes set out in the Annex to this Regulation by means of a letter of endorsement.

(18) The not-for-profit Partnership for Advanced Computing in Europe (PRACE) association has 25 member countries whose representative organisations create a pan-European supercomputing infrastructure, providing access to computing and data management resources and services for large-scale scientific and engineering

applications at the highest performance level. The Joint Undertaking may cooperate with PRACE for providing and managing access to a federated and interconnected supercomputing and data infrastructure and its services, as well as for training facilities and skills development opportunities.

(19) The GÉANT network interconnects 38 national research and education network partners delivering a pan-European network for scientific excellence, research, education and innovation. Through its integrated catalogue of connectivity, collaboration and identity services, GÉANT provides users with highly reliable, unconstrained access to computing, analysis, storage, applications and other resources, to ensure that Europe remains at the forefront of research. The Joint Undertaking may cooperate with the GEANT network for the connectivity between the supercomputers of the Joint Undertaking, as well as with other European supercomputing and data infrastructures.

(20) The Joint Undertaking should address clearly defined topics that would enable academia and European industries at large to design, develop and use the most innovative technologies in High Performance Computing, and to establish an integrated networked infrastructure across the Union with world-class High Performance Computing capability, high-speed connectivity and leading-edge applications and data and software services for its scientists and for other lead users from industry, including SMEs and the public sector. The Joint Undertaking should make efforts to reduce the specific High Performance Computing-related skills gap across the Union by engaging in awareness raising measures and assisting in the building of new knowledge and human capital.

(21) The Joint Undertaking should lay the ground for a longer-term vision and prepare the path towards building the first hybrid High Performance Computing infrastructure in Europe, integrating classical computing architectures with quantum computing devices, e.g. exploiting the quantum computer as an accelerator of High Performance Computing threads. Structured and coordinated financial support at European level is necessary to help research teams and European industries remain at the leading edge in a highly competitive international context by producing world-class results to ensure the fast and broad industrial exploitation of European research and technology across the Union generating important spill-overs for society, to share risk-taking and joining of forces by aligning strategies and investments towards a common European interest.

(22) In order to achieve its objectives to design, develop and use the most innovative technologies in High Performance Computing, the Joint Undertaking should provide financial support in particular in the form of grants and procurement following open and competitive calls for proposals and calls for tenders based on annual work plans. Such financial support should be targeted in particular at proven market failures that prevent the development of the programme concerned, and should have an incentive effect in that it changes the behaviour of the recipient.

(23) In order to achieve its objectives to increase the innovation potential of industry, and in particular of SMEs, contribute to reducing the specific High Performance Computing related skills gap, support the increase of knowledge and human capital and upraise High Performance Computing capabilities, the Joint Undertaking should