

## Backgrounder

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European Processor Initiative (EPI, <https://www.european-processor-initiative.eu/>) project is one of the cornerstones of European strategic HPC agenda.

Below we give executive overview of Europe's recent HPC activities and show how EPI is one of the premier examples of strategic unification of efforts and resources towards European exascale goals.

The idea behind EPI initiative was rooted when Horizon2020, biggest EU Research and Innovation programme, was planned by the European Commission with the specific ICT Call in the Work Programme (H2020-ICT-2017-2, under the topic ICT-42-2017 Framework Partnership Agreement in European low-power microprocessor technologies) with the aim to fund the design and implementation of a roadmap for a new family of low-power European processors for extreme scale computing, high-performance Big-Data and a range of emerging applications. This Call was a strategically envisioned spark that would ignite further industry and R&I activities to follow.

A group of key European industrial and scientific organizations joined to form a consortium under the name European Processor Initiative. The EPI's proposal was chosen as the winning one under the stringent selection criteria and the first stage of development, under the Specific Grant Agreement of the European Processor Initiative (EPI-SGA1: 826647), was signed. The European Processor Initiative project formally kicked off and started its activities in December 2018.

In parallel, in March 2017, the European Commission initiated another strategic activity with the formal signature of the EuroHPC declaration – an agreement in which the signatory countries commit to work together with each other and with the European Commission to acquire, build and deploy an integrated world-class High Performance Computing infrastructure. With 7 member states signing the initial declaration, the number has grown to 29 member states as of Oct 2019.

Following the declaration, the European Commission proposed to setup the EuroHPC Joint Undertaking, a 1-billion-Euro joint initiative between the EU and European countries to develop a World Class Supercomputing Ecosystem in Europe. The proposal has been formally adopted by the Council of the European Union on 28 September 2018. Located in Luxembourg, the Joint Undertaking started operating in November 2018.

EuroHPC will permit the EU and participating countries to coordinate their efforts and share resources with the objective of deploying in Europe a world-class supercomputing infrastructure and a competitive innovation ecosystem in supercomputing technologies, applications and skills.

The Joint Undertaking will pool EU and national resources in High-Performance Computing with the aim of:

- acquiring and providing a world-class petascale and pre-exascale supercomputing and data infrastructure for Europe's scientific, industrial and public users, matching their demanding application requirements by 2020. This would be widely available to users from the public and private sector, to be used primarily for research purposes;
- supporting an ambitious research and innovation agenda to develop and maintain in the EU 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.

Supercomputing is additionally one of the five key digital topics where the EU's investment should significantly increase: under the next long-term EU budget for 2021-2027 the Commission proposes under Digital Europe programme to invest €2.7 billion in projects to build-up and strengthen supercomputing and data processing in Europe.

Nowadays, European research institutes, universities and industry consume 30% of global supercomputing capacities, but Europe is able to provide just 5% of those capacities – it is clear Europe needs to build its own supercomputers.

The EPI project is recognized and established as one of the cornerstones of this strategic plan. The EuroHPC Joint Undertaking announced it would support future activities of the European Processor Initiative to develop, using European technologies, the low-power microprocessors needed to power supercomputers. This will make Europe less reliant on foreign technology in a field that is essential for many areas of the digital economy in high-performance computing and beyond, such as connected and autonomous vehicles, and big data servers.

## Sources

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