

EPI: European Processor Initiative (EPI)

Description

The European Processor Initiative (EPI) will mobilise the continent's High Performance Computing (HPC) ecosystem to develop new low-power processors for HPC and embedded systems. The aim is to use the results in the world-class exascale platforms that the EU is planning for 2022 and 2023.

EPI will follow a co-design approach through a partnership between Europe's IT/semiconductor industry and computer science research community on the one hand; and its potential scientific and industrial users on the other. The consortium covers the complete range of expertise, skills and competencies needed to design and execute a sustainable roadmap for research and innovation in HPC and emerging applications, including Big Data, which will bring results right to market. In order to have a solution for 2022-23, EPI will design and develop the first European ARM-based HPC System on Chip, which will combine ARM cores with European technology.

In parallel, the consortium will design and develop an accelerator based on the RISC-V instruction set architecture, containing only European and Open-Source technology. This technology is not as mature but has a lot of potential in the medium to long term. Both elements will be implemented and validated in a prototype. Subsequent generations of them will form the basis for future heterogeneous exascale systems. Due to the limited size of the HPC market, other markets will also be targeted, and a customized solution will be designed for the automotive sector. An embedded implementation of the chips, with the performance and energy efficiency and safety constraints needed for autonomous cars, will be co-designed with key players from the EU automotive value chain. A first prototype will be available in 2021. EPI will maximise the synergies between the ARM, RISC-V and automotive streams of the initiative, and will work with existing EU initiatives on technology, infrastructure and applications, to position Europe as a world leader in HPC.

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