

EuroHPC: 13 neue Forschungsprojekte im Bereich Supercomputing gestartet

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Im Rahmen des Gemeinsamen Europäischen Unternehmens zum Hochleistungsrechnen EuroHPC haben im April 2021 dreizehn Projekte ihre Arbeit aufgenommen. Die verschiedenen Konsortien werden an Forschungs- und Innovationsaktivitäten arbeiten, die Europa helfen sollen, im Bereich des Supercomputing global wettbewerbsfähig zu werden.

An dem 2018 gegründeten [EuroHPC Joint Undertaking](#) nehmen derzeit 32 europäische Länder teil und bündeln ihre Ressourcen mit der EU und privaten Partnern. Die Aufgabe des EuroHPC ist es, eine integrierte Supercomputing- und Dateninfrastruktur von Weltklasse in der EU zu entwickeln, bereitzustellen, zu erweitern und zu warten und ein hochgradig wettbewerbsfähiges und innovatives High Performance Computing-Ökosystem zu entwickeln und zu unterstützen.

Die neuen Projekte nutzen mehr als die vorgesehenen 70 Prozent der im Rahmen von Europa 2020 verfügbaren Mittel und decken die drei Themen des Aufrufs "[Towards Extreme Scale Technologies and Applications](#)" ab, wobei sich ein Großteil mit dem Thema "Extreme scale computing and data driven technologies" befassen wird.

Die Projekte im Überblick:

ADMIRE

The project [ADMIRE](#) (Adaptive multi-tier intelligent data manager for Exascale) aims to create a software solution that allows HPC systems to maximise performance and avoid bottlenecks in processing extremely large data sets.

The project will run for a 3-year period with a total budget of €8 million. Funding of up to €4 million is provided by Horizon 2020. ADMIRE is a consortium composed of 14 beneficiaries from 6 European countries (ES, DE, FR, IT, PL, SE) and is coordinated by the Spanish Universidad Carlos III De Madrid.

DCoMEX

DCoMEX (Data Driven Computational Mechanics at Exascale) aims to provide unprecedented advances to the field of Computational Mechanics by developing novel numerical methods enhanced by Artificial Intelligence, along with a scalable software framework that enables exascale computing.

The project will run for a 3-year period with a total budget of €2,9 million. Funding of up to €1,3 million is provided by Horizon 2020. DCoMEX is a consortium composed of 5 participants from 4 European countries (EL, CH, CY, DE) and is coordinated by the Greek National Technical University of Athens – NTUA.

DEEP-SEA

[DEEP-SEA](#) ("DEEP – Software for Exascale Architectures") will deliver the programming environment for future European exascale systems, adapting all levels of the software stack to support highly heterogeneous compute and memory configurations and to allow code optimisation across existing and future architectures and systems.

The project will run for a 3-year period with a total budget of €15 million. Funding of up to €7,5 million is provided by Horizon 2020. DEEP-SEA is a consortium composed of 13 beneficiaries from 8 European countries (DE, FR, ES, EL, BE, CH, SE, UK) and is coordinated by the German Forschungszentrum Jülich.

eProcessor

The project eProcessor (European, extendable, energy-efficient, energetic, embedded, extensible, Processor Ecosystem) aims to develop software and hardware to deliver the first completely open source European full stack ecosystem that target both traditional HPC, as well as mixed precision workloads for High Performance Data Analytics (AI, ML, DL and Bioinformatics).

The project will run for a 3-year period with a total budget of €8 million. Funding of €4 million is provided by Horizon 2020. eProcessor is a consortium composed of 10 participants from 6 European countries (ES, SE, EL, IT, FR, DE) and is coordinated by the Spanish Barcelona Supercomputing Centre (BSC).

exaFOAM

The project [exaFOAM](#) (Exploitation of Exascale Systems for Open-Source Computational Fluid Dynamics by Mainstream Industry) aims to overcome performance scaling bottlenecks in the exploitation of massively parallel HPC architectures through the development and validation of a range of algorithmic improvements for Computational Fluid Dynamics.

The project will run for a 3-year period with a total budget of €5,4 million. Funding of up to €2,4 million is provided by Horizon 2020. ExaFOAM is a consortium composed of 12 participants from 7 European countries (FR, IT, HR, DE, ES, EL, PT), coordinated by the French ESI GROUP.

IO-SEA

The project IO-SEA (IO Software for Exascale Architecture) aims to provide an innovative and efficient data management and storage platform for exascale computing. The platform, based on hierarchical storage management and on-demand provisioning of storage services, will efficiently make use of different types of storage.

The project will run for a 3-year period with a total budget of €8 million. Funding of up to €4 million is provided by Horizon 2020. IO-SEA is a consortium composed of 10 beneficiaries from 6 European countries (FR, DE, UK, IE, CZ, SE) and is coordinated by the French Commissariat à l'énergie atomique et aux énergies alternatives (CEA).

MAELSTROM

The project MAELSTROM (MACHine Learning for Scalable meTeoROlogy and cliMate) will develop large-scale machine learning applications for the domain of weather and climate science and co-design customised software and hardware solutions to facilitate machine learning work and to achieve optimal application performance and energy efficiency for machine learning at scale.

The project will run for a 3-year period with a total budget of €4,3 million. Funding of up to €2,1 million is provided by Horizon 2020. MAELSTROM is a consortium composed of 7 actors from 6 European countries (UK, DE, IT, CH, NO, LU) and is coordinated by the ECMWF.

MICROCARD

The project [MICROCARD](#) (Numerical modeling of cardiac electrophysiology at the cellular scale) will develop exascale software to simulate the electrical behaviour of the heart. The software will be co-designed by HPC experts, numerical scientists, biomedical engineers, and biomedical scientists, from academia and industry.

The project will run for 42 months with a total budget of €5.8 million. Funding of up to €2.7 million is provided by Horizon 2020. MICROCARD is a consortium composed of 10 participants from 6 European countries (FR, NO, IT, CH, DE, AU) and is led by the French cardiac rhythmology and modeling institute Liryc.

RED-SEA

The project [RED-SEA](#) (Network Solution for Exascale Architectures) will pave the way to the next generation of European interconnect, capable of powering the future European Exascale systems, and relying on efficient European interconnect technology (BXI).

The project will run for a 3-year period with a total budget of €8 million. Funding of up to €3,9 million is provided by Horizon 2020, the Research and Innovation funding programme of the EU. RED-SEA is a consortium composed of 12 actors from 6 European countries (FR, EL, DE, CH, ES, IT) and is coordinated by the French Atos (Bull SAS).

REGALE

REGALE (An open architecture to equip next generation HPC applications with exascale capabilities) aspires to pave the way for next-generation HPC applications on exascale systems. The project will define an open architecture and build a prototype system in order to equip supercomputing systems with the mechanisms and policies for effective resource utilisation and execution of complex applications.

The project will run for a 3-year period with a total budget of €7,5 million. Funding of €3,3 million is provided by Horizon 2020. REGALE is a consortium composed of 6 participants from 4 European countries (TR, NO, PT, DE) and is coordinated by the Greek Institute of Communication and Computer Systems (ICCS).

SPARCITY

The project [SparCity](#) (An Optimization and Co-design Framework for Sparse Computation) aims at creating a supercomputing framework that will provide efficient algorithms and coherent tools specifically designed for maximising the performance and energy efficiency of sparse computations on emerging HPC systems, while also opening up new usage areas for sparse computations in data analytics and deep learning.

The project will run for a 3-year period with a total budget of €2,6 million. Funding of up to €1,3 million is provided by Horizon 2020. SparCity is a consortium composed of 6 participants from 4 European countries (TR, NO, PT, DE) and is coordinated by the Koç University in Turkey.

TEXTAROSSA

The project [TEXTAROSSA](#) (Towards EXtreme scale Technologies and Accelerators for euROhpc hw/Sw Supercomputing Applications for exascale) aims to develop new hardware accelerators, innovative two-phase cooling solutions, advanced algorithms, methods and software products for traditional HPC domains as well as for emerging domains in High Performance Artificial Intelligence and High Performance Data Analytics.

The project will run for a 3-year period with a total budget of €6 million. Funding of up to €2 million is provided by Horizon 2020. TEXTAROSSA is a consortium composed of 11 participants from 5 European countries (IT, DE, FR, ES, PL) and is coordinated by the Italian Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA).

TIME-X

The project TIME-X (TIME parallelisation: for eXascale computing and beyond) will develop efficient parallel-in-time integration methods for real-life applications and unleash the potential of this powerful algorithmic paradigm to unlock the performance of exascale systems for massively parallel HPC simulation.

The project will run for a 3-year period with a total budget of €3 million. Funding of €1,5 million is provided by Horizon 2020. TIME-X is a consortium composed of 10 participants from 4 European countries (BE, FR, DE, CH,) and is coordinated by the Belgian Katholieke Universiteit Leuven.

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[Zurück](#)

Weitere Informationen