Open Edge and HPC Initiative

ISC'2019 Status Report

http://www.openedgehpcinitiative.org/

Open Edge and HPC Initiative

Our Mission

Foster the development of an open and feature-rich **ecosystem for Arm®-based technologies** to support the evolving needs of the various industries undergoing digitalization and of all their respective stakeholders

Open Edge and HPC Initiative

Our Goals

- Facilitate **shorter time to market**
- Create an environment where members can **integrate solutions** coming from different suppliers
- Create an open environment for **sharing information**
- Raise awareness for **capabilities** of Arm®-based solutions

Open Edge and HPC Initiative

Our initial Focus

- Edge computing

- High-performance computing

Addressing future challenges requires scaling to extreme performance levels by means of HPC solutions as well as bringing compute closer to data sources, i.e. enabling computing at the edge.

New opportunities will arise from bringing both together, e.g. for the realization of digital twins or enabling of smart cities

Open Edge and HPC Initiative

Target stakeholders

- Scientists from all domains
- Engineers
- Code developers
- Educators
- Students
- ISVs

Edge Computing Objectives

- Address the need for **secure distributed data processing and low latency communications** in emerging 5G and industry 4.0 environments

- Search for and validate **best practices** and author **white papers** illustrating the industry challenges and the requirements to be mastered by means of Arm®-based solutions

- Develop a **reference framework** and an end to end architecture integrating Edge and Server architectures

Edge Computing Achievements

- Edge computing platforms used within industrial test beds for smart manufacturing and smart energy.

- Edge Computing platforms are designed with support for Artificial Intelligence and Time Sensitive Networking.

- Standard hardware technologies used within the platform, such as ARM64 Processors, Neural Processors and FPGA based acceleration

Edge Computing Ongoing Activities

- Implementation of a live edge trial with AI and TSN support to be demonstrated at the International Electrotechnical Commission (IEC) General Meeting in October 2019 to capture realistic requirements for the **Reference Edge Platform**

- Support for an **Edge Computing Hacking event** to be hold early 2020 allowing for Edge Computing application onboarding on the OEHI Edge Reference Platform

- Establishing an **Edge Computing User Group** to enable a platform of information and experience exchange

HPC Objectives

- Establish the value of **Arm®-based solutions for HPC workloads**

- **Generate and share knowledge** on what needs to be done to deliver competitive performance on such systems.

- Enable the development of **commercial offerings from ISVs**, e.g. by providing quick and easy access to Arm®-based HPC systems to explore the capabilities of these new solutions.

- Provide its members with a **unique opportunity to collaborate** on identifying market needs for Arm®-based HPC solutions

- **Exploring new market segments** not yet occupied by established technologies and solutions

HPC Achievements

- Profiled OpenFOAM to spotlight the time critical parts and the performance roadblocks

- Ported and optimized codes for Arm: Lattice-Boltzmann, Lattice QCD, brain simulators, KKRnano

- Ported application kernels to SVE and analyzed the performance

HPC Ongoing Activities

- Identifying a list of computing kernels that can benefit strongly from Arm®-based systems

- Collaborating and supporting ISVs in porting their packages

- Access to state-of-the-art Arm-based hardware
  - ThunderX2 servers from E4
  - Kunpeng 916 and 920 servers from Huawei

Visit website for Codes@OEHI

Open Edge and HPC Initiative

What we promise

Make the Arm®-based technology well suited for different IT segments including but not limited to

- Edge Computing

- High Performance Computing (HPC)

- High Performance Data Analytics and Artificial Intelligence

Open Edge and HPC Initiative

To engage join our discussion groups

- **HPC**: Send email to OEHI-HPC@arm-hpc.groups.io

http://www.openedgehpcinitiative.org/