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INVITED SPEAKER: Challenges for Parallel Programming Models and Languages of post-petascale and exascale computing

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Abstract content
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Europe, the US, Japan and China are racing to develop the next generation of supercomputer – exascale machines - capable of a million trillion calculations a second by around 2020. To realize exascale systems, there are many challenges and issues including architectures and programming models to exploit billions of parallelism and the limitation of power consumption. Toward a post-petascale system as the next of Japan's petascale facility, the K computer, the project, FLAGSHIP2020, has been launched to develop and deploy the post-K computer the last year. While there are two major different approaches for exascale, manycore-based and accelerator-based, we take manycore-based approach for our Post-K computer. OpenMP is a key to make use of manycore efficiently, and is to be evolved for exploiting large parallelisms and integration with communication layers. In this talk, projects for post-petascale and exascale computing in Japan will be described, and challenges for parallel programming models and languages in these projects will be addressed.

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