

# Sustained Simulation Performance 2015



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Hiroaki Kobayashi • Jiaxing Qi • Sabine Roller  
Editors

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*Front cover figure:* Iso-surface extraction of vertebral, thoracic arteries from the computer tomographic image processed with the gradient based filter application. Illustrated by Nisarg Patel, High Performance Computing Center (HLRS), University of Stuttgart, Stuttgart, Germany

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# Preface

The Sustained Simulation Performance workshop is based on a project that was initiated in 2004 as a collaboration between the High Performance Computing Center Stuttgart (HLRS) and NEC Deutschland GmbH (NEC HPCE) to support scientific researchers and industrial customers to achieve their goals using the high performance computing systems.

Since then, a series of workshops have put their focus on sustainable performance. These workshops have become a meeting platform for scientists, application developers, hardware designers and system managers to discuss the current state and future directions of supercomputing with the aim of achieving the highest sustained performance in practical applications.

This book presents the combined results of the 20th and 21st instalments of this series. The 20th workshop was held at the High-Performance Computing Center, Stuttgart, Germany, in December 2014. The 21st workshop was held at the Tohoku University, Sendai, Japan, in February 2015.

The topics investigated by the contributed papers include techniques and tools for high performance systems (Part I), numerical methods and technologies for high performance computing (Part II), and applied supercomputing in physics, medicine and meteorology (Part III).

Starting from 2014, the workshops concentrated on user's applications and their optimization for the latest Cray XC40 large-scale supercomputer installed at HLRS as well as the new SX-ACE-based supercomputer systems located at Tohoku University and other universities within Japan. Numerous scientific programs, developed and maintained by researchers or commercial organizations, have been analysed and optimized. Simulation results from various disciplines obtained on those systems are presented and discussed. This created new science and a deeper understanding of the underlying physics.

We would like to thank all the contributors and organizers of this book and the Sustained Simulation Performance project. We especially thank Prof. Hiroaki

Kobayashi for the close collaboration over the past years and are looking forward to intensify our cooperation in the future.

Siegen, Germany  
Siegen, Germany  
June 2015

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