European Exascale Software Initiative EESI2 WG 5.3

Energy Efficiency Issues as a Cross-Cutting issue for Exascale

WP5 Task 5.3

Simon McIntosh-Smith, University of Bristol, chair

Thomas Ludwig, vice chair

EESI2 WG5.3 goals

① Identify Exascale challenges specifically related to energy efficiency

② Map existing landscape for energy efficient HPC
- Projects
- Calls
- People
- Groups

③ Generate input for future EU H2020 funding calls

WG5.3 technical experts

- Simon McIntosh-Smith (UoBristol) – chair
- Thomas Ludwig (DKRZ) – co-chair
- Laurent Lefevre (Lyon)
- Matthias Müller (Aachen)
- James Perry (Edinburgh)
- Jean-Marc Pierson (Toulouse)
- Alex Ramirez (Barcelona)
- Paul Carpenter (Barcelona)
- Daniel Hackenberg (TU Dresden)
- Manuel Dolz (UoHamburg)

EE related EU projects

Already identified some of the emerging energy efficiency related projects and initiatives:

- FP7 Minimising Energy Consumption of Computing to the Limit (MINECC) - €15M
  - E.g. Exa2Green, ENTRA, PARADIME
- SCORPIO
- EXCESS (Execution Models for Energy-Efficient Computing Systems)
- ADEPT (Addressing Energy in Parallel Technologies)
- CoolEmAll
- Score-E and many, many more

An ongoing task is reviewing EE-related projects

Recent papers on energy efficiency

Have been systematically reviewing energy efficiency papers at relevant journals and conferences. For example:

- SC'13, Denver:
    - 4 papers (out of 90), 2 BoFs (out of 74)
- ISC 14, Leipzig:
    - 3 papers (out of 33), 2 BoFs (out of 20)
- Ena-HPC 14:
    - 12 papers accepted

- Energy efficiency is still _not_ figuring as a major research issue at the major HPC conferences
- This is a critical issue that needs to be addressed!