



COST

Network for Sustainable Ultrascale Computing (NESUS)

IC1305

Start date: 28/03/2014

End date: 27/03/2018

Year: 1

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Scientific context and objectives (1/2)

- **Sustainability is becoming a major challenge in ultrascale computing systems.**
- Aim of the Action:
 - To coordinate European efforts for proposing realistic solutions addressing major challenges of **building sustainable Ultrascale Computing Systems (UCS)** with a holistic approach.
- Objectives:
 1. To increase EU research in the field of sustainable ultrascale computing.
 2. To give coherence to the European ICT research agenda related to sustainability.
 3. To build a multi-disciplinary forum for cross-fertilization of ideas for sustainable ultrascale computing.

Scientific context and objectives (2/2)

- Cross-community approach of exploring system software and applications for enabling a sustainable development of future ultrascale computing platforms.
- Focus:
 - Exploring new solutions for the **system software stack** (programming paradigms, runtimes, middlewares, resilience, data management, and energy models) and their application to enhance sustainability in UCS.
 - Understanding trade-offs and synergies to leverage all factors.
 - Considering new hardware and architectural solutions.
 - Exploring **redesign and reprogramming** efforts for applications to efficiently exploit ultrascale platforms, while providing sustainability.

Working groups

1. State of the art and continuous learning in UCS.
2. Programming models and runtimes.
3. Resilience of applications and runtimes.
4. Sustainable data management.
5. Energy efficiency.
6. Applications.

30 COST countries + 5 IPC. More than 80 experts.

Future Plan and Challenges (1/2)

1. Create the organization structures
2. Create the Action plans: strategic, dissemination, collaboration, ..
3. Create the dissemination & collaboration Web tools
4. Identify scientific synergies
5. Set up collaborations
6. Work on common topics between different participants
7. Produce first results
8. Plan goals & activities for second year

Future Plan and Challenges (2/2)

- MC meetings. End August 2014, Mid April 2015.
- Action meeting. End August 2014.
- WG meetings. July 2014, Jan 2015.
- STSM. Goal: 15 grants/year.
- Dissemination.
 - Presentations foreseen in:
 - IEEE Cloudnet (Luxembourg), EuroMPI/ASIA (Japan).
 - Expert panel in Supercomputing 2014.
 - Cooperation in workshops:
 - C4Bio, ExtremeGreen, TASUS, APCIE, Heteropar, IEEE Cloudnet, Esaa2014