Preparing HPC Codes and Software for Exascale Computing: Early results of the G8 Exascale Projects

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G8 Research Councils Initiative on Multilateral Research Funding

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G8 Research Councils Initiative on Multilateral Research Funding

- G8 Heads of Research Councils (HORCs) meeting in Kyoto, Japan, in May 2008: Proposal for a **multilateral funding activity**:
  - Multilateral research projects can address global challenges in ways that are beyond the capacity of national or bilateral activities.
  - The G8 HORCs framework provides the unique opportunity to pilot a new modality for conducting international research.
- Goals: supporting **excellent** and **interdisciplinary** research on topics of **global relevance** best tackled through a multinational approach.
- Research topics defined separately for each call.
- 7 Funding Agencies: NSERC (Canada), ANR (France), DFG (Germany), JSPS (Japan), RFBR (Russia), RCUK (UK), NSF (USA).
- Principles:
  - A common call text with selection criteria predefined together
  - A **multinational peer review** process in 2 stages (pre-proposals and full proposals)
  - Consortia consisting of partners from at least 3 of the participating countries.
  - **National funding** according to normal terms and conditions for national project funding.
  - Funding meant for **collaborative research**, not merely for networking, mobility or communication.

G8HORCS calls planned

- 2011 : *Interdisciplinary Program on Application Software towards Exascale Computing for Global Scale Issues*
- 2012 : *Interdisciplinary Programme on Material Efficiency – A First Step towards Sustainable Manufacturing*
- 2013 : *Interdisciplinary Programme on Coastal vulnerability & Fresh water security* – Belmont Forum (IGFA - International Group of Funding Agencies for Global Change Research)

What next?

- Continuation of the initiative?
- In which format?

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Objectives of the workshop

1. Share the early results of these 6 projects and their impact on science
2. Explore common lessons learned in terms of Exascale research
3. Present early feedback on this innovative multinational collaborative pilot program
4. Discuss between funding agencies, PIs and the Exascale community related to the G8 tool: call, award management, cooperation between partners, consortium management

Funding Organizations

- The Natural Sciences and Engineering Research Council of Canada (NSERC)
- The French National Research Agency (ANR)
- The German Research Foundation (DFG)
- The Japan Society for the Promotion of Science (JSPS)
- The Russian Foundation for Basic Research (RFBR)
- The Research Councils of the United Kingdom (RCUK)
- The U.S. National Science Foundation (NSF)

AGENDA

8:30 AM **Welcome and Introduction**

9:00 AM **FIRST SESSION**

9:00 AM ECS: Enabling Climate Simulation at Extreme Scale

9:45 AM ExArch: Climate analytics on distributed Exascale data archives

10:30 AM **BREAK**

11:00 AM **SECOND SESSION**

11:00 AM ICOMEX: Icosahedral-grid Models for Exascale Earth System Simulations

11:45 AM Nu-Fuse: Nuclear Fusion Simulations at Exascale

12:30 AM **LUNCH BREAK**

1:30 PM **THIRD SESSION**

1:30 PM SEISMIC IMAGING: Modeling earthquakes and earth's interior based upon Exascale simulations of seismic wave propagation

2:15 PM INGENIOUS: Using next generation computers and algorithms for modelling the dynamics of large biomolecular systems

3:00 PM **BREAK**

3:30 PM **PANEL SESSION: Questions, Discussions & Conclusion:**

Early feedback on this innovative multinational collaborative pilot program

Discussion related to the G8 tool: call, award management, cooperation between partners, consortium management

5:00 PM **End of the Workshop**

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