HPC User Forum – Site Introduction
Notur II Norwegian HPC infrastructure

Jørn Amundsen, PhD
Project manager
Notur II
UNINETT Sigma
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HPC Infrastructure overview

Key figures

- 5 Mio. people, 100 KUSD GDB/capita
- A national HPC program for Universities and colleges since mid-80s
- Avg. spending 12 MUSD/yr in HPC and storage ’09-12
- Financed by Govt., Research Council, University cash and in-kind
- Current 10-year program ends in ’14
- Suggested 21 MUSD/yr for the next 10-year period

[notur.no/hardware]
Top two issues in HPC operations

1. Organization
   - Q1: What is the purpose of this spending?
   - Q2: How to organize to maximize the outcome?
   - Estimate for Norway: 3 - 5% of public spending is waste
   - The challenge is to optimize the multi-party funding and the organization of the program

2. Storage infrastructure
   - The complexity and diversity of needs scares me
   - Likewise the skills and usage competence of SI end users
   - Lacks SW competence on the support side
   - Several issues, including storage and computing interplay – sorting out issues and prioritizing becomes difficult
New solutions needed the most

- **Portal computing** [www.bioportal.uio.no]
  - 98.7% of TOP500 performance is Linux/Unix
  - Main usage is job oriented and CLI based
  - Although CLI are fine with some, portal computing might be an important tool to deploy HPC in other communities
  - Currently difficult to connect usage with publications, and difficult to prioritize limited SW development capacity on which portal efforts

- **HPC training**
  - Courses are traditionally conducted by the U's – individually
  - Developing material, prioritizing and unifying courses is difficult
  - Making good courses and providing course videos requires substantial effort
  - Currently, there is a big gap between what we do and what we should have done here
New technologies to advance the HPC industry

• Energy focus and mobile computing
  - Energy consumption is the obvious obstacle to everybody in the HPC business today
  - Energy usage research is a hot topic in current computer science research
  - Performance of mobile devices and HW is on a steep rising edge
  - This is very promising in terms of future HPC solutions

• Uptake of programming and computations in education
  - The advent of very cheap and high performance units like the Raspberry Pi is very interesting to spread public interest in programming
  - Developments in education, like the “Computers in Science Education” at the Univ. of Oslo is very promising to tightly integrate the use of computers in university education
  [mn.uio.no/english/about/collaboration/cse/]
Thank you for your attention!

“The other spire”, Window Peak, Tucson, 7468’