Reimagining research computing

Wednesday 15 May 2019 13:30 (1h 30m)

In modern times, computation power is becoming more and more important. However, at the same time, the rest of the world is becoming consumerized: while the general expectation is that information technology is easier to use, the design of high-performance computing (HPC) systems has not kept up with modern developments in computer usability. There are many historical artifacts of how HPC systems are set up: HPC systems are often optimized for data transfer over scp, while users often prefer solutions where remote drives are mounted. We expect computations to fit into nice "rectangular"boxes of number of cores × time × memory, while with modern data science workflows, the time and memory can be unknown at the start of a job, and, in particular, interactive usage leads to highly intermittent CPU and memory requirements. Why is knowing Linux shell scripting a requirement for every job when we want our facilities to be usable by anyone? How can we empower users to have more control over their software stack?

In this workshop, we will explore the largest usability barriers in HPC systems, existing solutions, and create a joint vision of a modern HPC system. The first talks will be presentations on vision and usability from invited speakers from both HPC and human-computer interaction (HCI). After that, there will be brainstorming sessions (guided, in small groups, unconference, or panel discussions) where we identify the biggest pain points. Then, there will be group discussions in a speed-blogging format to create a shared vision document which will be the result of this workshop. After this workshop, there should be additional Nordic infrastructure cooperation to improve the accessibility, and possibly standardization, of large computational resources beyond those who traditionally use them.

"Homework": This is an interactive workshop, so please come prepared. Talk to people at your institution and/or other meeting at NeIC. Poll the people around you: what are the biggest issues with using your institution's computational facilities? Issues can be both general and specific, e.g. "all files have to manually be transferred, but due to the use of ssh proxy hosts there it is difficult from outside the campus network" or "it is easier to pay Amazon than pay us".

Workshop outline

- **Unmanned Vehicles, Remote Visualization and Interactive HPC - Rethinking the use of HPC resources** [30 min, Jonas Lindemann, LUNARC (presenter), Anders Follin, LUNARC]
- **Examples of accessibility improvements at various sites** [20 min, Richard Darst (Aalto University), Sabry Razick (University of Oslo)]
- **Unconference introduction** (10 min)
- **Unconference** (30 min)
- break, discuss with others during this time
- **Unconference continued** (40 min)
- **Discussion, presentations by groups, and panel follow-up** (40 min)
- **Concluding remarks** (10 min)

Size of poster

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