# Computation and Data Committee Report to the CASCA Board, May 2016

**DRAFT. Do not distribute outside the CASCA Board.**
**Please give feedback on any required edits.**

Current Committee membership:

| | |
|---|---|
| James Wadsley (McMaster) (Chair) | Term ends: 30 June 2018 |
| Hugo Martel (Laval) | Term ends: 30 June 2017 |
| J. J. Kavelaars (HIA/NRC/CADC): | Term ends: 30 June 2017 |
| Erik Rosolowsky (Alberta) | Term ends: 30 June 2018 |

## Computing in Canada

### Compute Canada

Compute Canada (CC: http://computecanada.ca) is the main source of cycles and storage for researchers at Canadian universities. It is led by CEO, Mark Dietrich, CSO (Chief Scientific Officer) Dugan O'Neil (Physics, Simon Fraser) and CTO (Chief Technical Officer) Greg Newby. The CC Advisory Council on Research (ACOR) includes James Wadsley (McMaster), of this committee and Robert Thacker (SMU). The members of CC are the universities and colleges in Canada.

### Hardware Refresh

The Stage 1 hardware refresh settled on 4 sites: SFU (CEDAR: GPU focused ~ 20000 cores, ~ 3000 GPUs), U-Vic (ARBUTUS: cloud focused ~7000 cores, 1.6 PB), Waterloo (GRAHAM: ~20,000 cores) and Toronto (NIAGARA: Large parallel system ~ 66,000 cores). The fastest moving site is SFU which is currently installing hardware that should be available to users in early 2017. The other sites are typically at the RFP stage with installation expected to occur throughout 2017 and the last new systems (probably NIAGARA) becoming available to users in early 2018. Existing systems are old and will be shut down in a staggered way over 2017 but there is still no clear plan for how this will happen. CC likes to emphasize that the core counts are conservative and they hope to get more (perhaps 40% over initial estimates). They are partly waiting for new chip architectures from Intel (Haswell). The initial expected overall storage however looks quite modest 40-62 PB. CC plan to expand this from 2018-2020 to over 200 PB but it isn't clear how this will happen.

There are discussions with CFI over further refresh ("Stage 2" submitted May 2016) that would likely allow for current major sites (e.g. Sherbrooke) to be refreshed as well as expanding storage. However, CFI has recently indicated it feels conditions on recent CC operating funding (MSI) were not met. This resulted in the lead MSI institution (UWO) being asked by CFI to finalize meeting those conditions and has put future funding (both infrastructure Stage 2 and operating funds MSI2) in limbo until that is done. However, CFI recognizes the need for steady funding and MSI2 is very likely to be funded in time for the expiry of the current MSI in 6-12 months. CFI and the CC membership (institutions) have both expressed dis-satisfaction with the stage 2 infrastructure proposal process. As a result it is not clear when and how this will move forward.

CC renamed its user resource competitions (https://www.computecanada.ca/research-portal/accessing-resources/resource-allocation-competitions/) as Research Platforms and Portals (RPP – focused on programming and software infrastructure such as web portals) and Resources for Research Groups

(RRG – specific hardware resources such as core years for computing and storage). The latter was previously known as RAC and currently allocates up to 80% of most systems. Decisions and new allocations should begin around March 2017. The expected increase in capability is quite modest as the net core counts will be similar after the refresh and de-commissioning even though the chips will be newer. There is some uncertainty in where cores will be allocated given the de-comissioning and some migration of users is very likely.

**CANFAR, CADC and CANARIE**

Summary:

1 - CADC has concerns with the astronomy community relying on Compute Canada for physical delivery of archive and user storage.

2 - The project to migrate all CADC services to CC hardware is behind schedule and CADC is concerned.

Details.

Currently CANFAR has been allocated ~2.2 PB of storage (1.150 PB each at two sites, U-Vic and SFU). In the summer of 2016 that storage had yet to be delivered and revised schedule was requested. The revised date was 'end of October'. Today CANFAR and CADC still do not have that complete allocation (only ~800 TB per site) and have filled the gap using re-purposed Gov. of Canada hardware.

Mostly the storage refresh at CC is happening but was too slow and no additional capacity appeared until recently. CANFAR debated, back in Sept, turning away storage requests but managed to find some temporary hardware (Equipment that environment Canada was surplussing is now serving astronomy data).

C3TP is the migration of CADC infrastructure to CC hardware and systems. This project is better organized than in the previous report period and the agreement on scope is getting close but is months behind its original schedule just a year into the project. NRC will be taking up more work than originally expected. Chances for this migration to succeed are now considered larger than chances of failure.

There is a request going into the CC resource allocation process for CANFAR. No major push-back is expected but the is concern over possible delays in delivery based on past outcomes.

CANFAR is evolving into a university led activity with Falk Herwig leading the effort. CANFAR will try and expand by applying for development money from Canarie. A full proposal is due in spring 2017.