# Computation and Data Committee Report to the CASCA Board, Dec 2017

Current Committee membership:

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

Hugo Martel will rotate off the committee and we thank him for his contributions. Catherine Lovekin has expressed interest in joining. Additional members could rotate off if new members wish to join and/or the committee could expand.

## Computing in Canada

### CANFAR, CADC and CANARIE

To reiterate; JJ Kavelaars has assumed the role of Group Leader within the CADC and is now responsible for the direction of the data centre. The CADC continues to work with Compute Canada (CC) to transition the operation of the CANFAR service from a CADC managed service on Compute Canada hardware to being a CC operated service on CC hardware. CADC is now working to build some of the core infrastructure pieces that were part of the (unsuccessful) CFI proposal. These new computing components will be made available via canfar.net. Some of this work is in support of ALMA data processing and part is in support of JWST. The JWST related work is on a delayed scheduled, partly due to the delayed launch of JWST but more importantly as CSA has not determined if they will fund this activity.

CSA-NASA-ESA have nearly reached agreement on an archive partnership with public data to be distributed by all thee partner sites. At this time MAST (NASA) will be the only distributor of proprietary observations.

The CADC is continuing it's internal hardware refresh. The first installment of hardware arrived at the start of April and is now in operations. By the end of the refresh (expected in summer 2021) the storage capacity in the CADC will be about 3 PB, about double it's current capacity.

### CFI Cyberinfrastructure Grants

The CANFAR-based cyberinfrastructure proposal submitted by U-Vic, (PI: Falk Herwig) was unsuccessful. There is somewhat broad support among the PI's to try again but there is no new call for this CFI program. Falk will continue to develop his AstroHub framework and CADC will also continue to develop related cyberinfrastructure, as noted above.

### Compute Canada Governance and Management

Compute Canada (CC) remains the main source of cycles, storage and HPC services for researchers at Canadian universities. CC now has an interim CEO and president, Robbin Tourangeau, but no Science officer. CC has not engaged the research community for several years and this function seems dormant. For example the nominal researcher input committee, ACOR (including J. Wadsley and R. Thacker as members) is still prominently listed on the CC website but has not met in ~ 3 years.

**Hardware Refresh**

All four new systems are up and running; SFU's CEDAR (GPU focused ~ 30,000 cores, ~ 3000 GPUs), U-Vic's ARBUTUS (cloud focused ~15000 cores, 1.6 PB storage), Waterloo's GRAHAM (~30,000 cores)and Toronto's NIAGARA system (Large parallel system, 60,000 Intel Skylake cores, 300 TB RAM, 9 PB disk). The next planned new system is GP4 for Quebec with architecture similar to GRAHAM with delivery in2018.

**Issue of Centralization versus Regional Consortia**

In the last report, we outlined an ongoing problem where the central management of Compute Canada sought to partly defund regional services in favour of more central staff. CFI has delayed the transfer of operating funds until this issue is resolved. The funds support CC staff at all levels, including the regional consortia. As a result, several Canadian institutions are paying staff salaries out of pocket. The prior report gave historical background for this dispute. In particular, Canada's computing ecosystem is quite different from other countries and its recent development is driven by the nature of CFI as a funding agency. With respect to CC, a primary concerns is an apparent disregard for input from its stakeholders (researchers, member institutions and universities).

In our recent reports, it was suggested that researcher driven organizations like CASCA could play a key, constructive role in focusing HPC in Canada on the needs of its primary stakeholders. There is also concern that this dispute could disrupt support for key infrastructure and initiatives for Canadian astronomy. To this end, it was suggested that CASCA should write an open letter (to e.g. CC, CFI, VPR), supporting several key ideas (listed below). A detailed rationale was given the Dec 2017 report.

1) *CASCA should place top priority on maintaining normal operations for Compute Canada and the resumption of funding flows from CFI immediately.*
2) *CASCA should support an open assessment of the current structures and methods for delivery of HPC services to Canadian researchers.*
2a) *CASCA should support specific transparency requirements on finances and other operations for Compute Canada and for the regions.*
2b) *If large reorganizations of staff and funding are to occur, CASCA should support a gradual transition so that staff are not fired and alternative funding mechanisms for local staff can be explored by regions and universities.*
2c) *CASCA should support better and more regular opportunities for researcher representative involvement for each of the regions and Compute Canada.*
2d) *CASCA should support the development of mechanisms to provide mid-level HPC that is independent of CFI national platforms.*

**Latest Developments and New Recommendations**

There have been some key new developments. The Canadian federal government has decided to act on the Naylor report of 2017, "Canada's Fundamental Science Review" and dramatically rethink funding for big infrastructure projects in Canada. In particular, the government is apparently of the opinion that ongoing infrastructure needs (such as HPC) are not well served by the current CFI framework. In addition, there is apparently a sense that Compute Canada is not functioning well. This reorganization is reportedly driven by key ministers and deputy ministers in science and innovation

(e.g. Kirsty Duncan and Navdeep Bains). We are aware of this because there has been consultation by the government with various individuals connected to HPC in Canada, such as Mark Daley (Deputy VPR at Western, CC member representative for UWO/Ontario, Compute Ontario board chair) and Ranil Sonnadara (SHARCNET/McMaster site-leader and Compute Ontario board member). James Wadsley has been in direct contact with these individuals on behalf of this committee and CASCA.

Both Daley and Sonnadara independently suggested that CASCA has an opportunity to influence this key reorganization if we act quickly. They agree that a short white paper could be influential if it went to the ministries quickly. Erik Rosolowsky of this committee has begun work on drafting such as white paper to help the process give the tight time constraints. It would also serve the intended purpose of the previously recommended letter but has much greater ramifications. A positive aspect of the new development is that we can take a step back and advocate for big picture issues because its likely that the short term issues (e.g. staff funding disputes) will be resolved at a much higher level. However, this reorganization has the potential to affect much more than HPC. For this reason, the committee recommends that CASCA's LRP development team should contribute to the writing of the white paper.

The committee recommends that CASCA board verify this information via local VPR and get additional views on what the best approach for CASCA should be. However, the time lines are short. Daley estimated that things could be locked in to some degree by July so a contribution in early June would be best.