



Queen's University Submission to Standing Committee on Finance Pre-Budget Consultation

August 2014

Queen's University is pleased to support the pre-budget submissions of the U15 Group of Research Intensive Universities and the Association of Universities and Colleges of Canada (AUCC). These submissions highlight the critical importance of the continued investment in Canada's universities to sustain and build our competitiveness through research, development, innovation, and commercialization, maximize jobs and economic growth, and support vulnerable Canadians by focusing on education and training. In particular, Queen's encourages the committee to support:

- Sustained investment in basic scientific research in areas of Canada's global competitiveness, including physics and astronomy, which the Council of Canadian Academies documented in their 2012 report, *State of Science and Technology in Canada, 2012*, as two of the six research fields in which Canada excels;
- The ongoing support of the tri-council research funding agencies;
- Sustainable funding for the Canada Foundation for Innovation and FedDev programming, both of which encourage university and industry collaboration;
- A national vision and a coordinated plan for a sustainable advanced digital infrastructure;
- Provision of tax credits and vouchers for small and medium-sized businesses (SMEs) to hire students on work placements.

Queen's would like to encourage the House of Commons Standing Committee on Finance to include Kingston as a site for one of its hearings this fall. Queen's would be pleased to host the hearings, in collaboration with our community partners. We can promise an engaged and dynamic audience for the discussion and believe that it would provide an excellent educational opportunity for some of our students to observe the Parliamentary process.

Increasing Canada's Competitiveness

Continued Investment in Research Funding

We look forward to the implementation of the Canada First Research Excellence Fund (CFREF) and acknowledge the government's commitment to ensuring our research-intensive universities are able to contribute effectively to Canada's global competitiveness and economic success. As the U15 and AUCC note, sustained funding for the tools and equipment that support research, including essential digital tools, as well as continued investment in the federal tri-council funding agencies and the indirect costs of research, will drive all aspects of research toward increasing levels of excellence.

The recent allocation of the Canada Excellence Research Chair (CERC) to Queen's in the area of particle physics is an example of how we can mobilize research expertise and infrastructure to create global impact. In conjunction with SNOLAB, Queen's underground particle physics science laboratory located two kilometres below the surface in the Vale Creighton Mine located near Sudbury, Ontario, through our partnership with TRIUMF, Canada's National Particle Physics laboratory in Vancouver, and collaboration with the Perimeter Institute, Queen's, and Canada, is positioned to accelerate and lead the basic-science research in this globally competitive area.

The successful university of the 21st Century is one that will be differentiated globally and regionally by building on national strengths through partnerships and collaborations to maximize socioeconomic impact. Continued investment in basic scientific research in Canada will send a clear message to the global business community that Canada is serious about research and development, and has the funding and expertise to demonstrate this commitment.

One area of specific national importance is continued government support for the development of the Thirty Meter Telescope (TMT) to be located on the Island of Hawaii. As a member of the Association of

Canadian Universities for Research in Astronomy (ACURA), we support the call for the federal government to assist with funding the construction phase of the TMT Project. This project is critical to maintaining Canada's international leadership in astronomy and astrophysics. Canada has been a founding partner in the TMT and played a critical role in its design. To realize the scientific opportunities of this project, Canada needs to partner in TMT construction, thereby securing access to this facility for our researchers.

Continued investment in the CERC, Canada Research Chair, and Networks of Centres of Excellence (NCE) programs is critical to ensuring faculty renewal and leadership in key global research areas. Without these investments, Canada cannot expect to be globally competitive on a broad scale and risks losing homegrown talent to an international market. Equally important is a commitment to multi-year funding for research infrastructure and maintenance of world-class facilities through the Canada Foundation for Innovation. This funding is important to sustain the relevance of current equipment and in the pursuit of opportunities for Canada to demonstrate global leadership.

Digital Competiveness

Big data is a global reality that is fundamentally reshaping the speed at which we work, the questions that we can ask and the results that we can achieve. Our reliance on it cuts across all sectors, allowing us to realize new innovations and discoveries that will have a profound impact on our future. The ability to create, use, and manage this data is absolutely critical to our continued global, social and economic competitiveness; countries that are unable to remain current in this big data environment will lose out to those who can.

Like their colleagues in other sectors such as finance, advanced manufacturing, and bio-sciences, Canadian university researchers have been on the cutting edge of recognizing and incorporating the power of big data into their work, harnessing its potential to answer big and pressing questions that affect the economic and social well-being of Canadians. For example, Queen's and HPCVL's collaboration with the Ontario Brain Institute and the Ontario Cancer Biomarker Network seeks to integrate and share Ontario-based brain research to inspire innovative, impactful diagnostics and treatments for brain disorders. To facilitate collaboration and discovery, OBI has developed Brain-CODE, an informatics platform that manages the acquisition, storage and sharing of multidimensional data collected from patients with a variety of brain disorders.

Realizing the potential of big data requires computational capacities far beyond those of the common desktop; it requires an integrated system that has four core elements:

- a network (i.e. Canarie) which provides the dark fibre highway along which the data moves;
- a high performance computing centre (e.g. the High Performance Computing Virtual Laboratory – HPCVL) in which highly qualified personnel process the data using sophisticated hardware;
- the ability to store and manage the data so that data can be accessed and easily used; and
- middleware that supports the presentation of data, much like a graph makes the data in a spreadsheet more accessible.

Queen's supports the U15 and the Leadership Council on Digital Infrastructure in encouraging the government to work with Canada's university sector to develop a national vision and coordinated plan for a strong and sustainable integrated data infrastructure system. Queen's further encourages the government to provide new funding to support Canarie's mandate renewal.

Maximize Jobs and Economic Growth: New Measures to Support Work-Readiness and Training for Youth

As part of our commitment to enhancing the student learning experience, Queen's is accelerating the number of programs for our students that provide work-integrated learning opportunities. We are, therefore, very supportive of AUCC's recommendations to provide tax credits and vouchers for SMEs to hire students on work placements. In particular, we urge the government to ensure that not only co-op placements but also internships and other forms of work experience are eligible for such programs. Given the rapid increase in the number and type of work-integrated learning opportunities at Canada's post-secondary institutions, such flexibility will ensure a greater alignment between employers' need for talent and students who are interested and qualified to help drive the competitiveness of Canada's SMEs.

Queen's joins with AUCC in supporting the recommendation for additional support for youth business mentorship and new incentives to invest in youth entrepreneurs. PARTEQ, our commercialization and technology transfer organization, and Queen's Innovation Park are the Queen's partners in an application for funding from the Canada Accelerator and Incubator Program (CAIP). In partnership with Invest Ottawa and Kingston's regional innovation network, CAIP funding will enhance the programming we offer our student start-ups and regional partners to learn and apply entrepreneurial skills and explore entrepreneurship as a career choice. By matching expertise at Queen's in engineering design and prototyping with the highly-ranked business strategy and operations expertise in the Queen's School of Business, our students are manufacturing consumer products, developing highly marketable digital apps, and working with business partners to drive innovation inside corporations. Support for this type of experiential learning opportunity and career preparation will allow more students to take advantage of these programs and further engagement with local and regional entrepreneurs.

Queen's University is committed to the pursuit of research, development and innovation. Continued investment in CFI and FedDev programming, which encourages university and industry collaboration as part of the funding criteria, is a critical component in facilitating engagement and realizing the potential of business investment in the research process. This can be leveraged through regional economic development, but also on a global level by facilitating faculty mobility and international collaboration. Additional funding for research internships through MITACS' programs will support the development of talent that in turn will work with Canadian business to ensure access to the research development and discoveries that will make Canada globally competitive.

About Queen's University

Queen's offers an unparalleled student learning experience and attracts top students from across Canada and around the world. To illustrate: this fall, 16 percent of our incoming undergraduate class will come from Canadian provinces other than Ontario, and a further 7 percent will come from countries other than Canada. This is a reflection of our longstanding reputation for the quality of our academic and extra-curricular learning opportunities, and for preparing Canada's leaders of tomorrow. Today, as a member of the U15 group of research-intensive universities, we are as well known for our excellence in research and graduate and professional program as for the quality of our student learning experience. Our Strategic Framework, and the Academic and Research Plans that underpin the framework, reflect our commitment to education and research: *Queen's is, and will continue to be, the Canadian research-intensive university with a transformative student learning experience.*