University of Waterloo
SENATE
Notice of Special Meeting

Date:       Monday 6 January 2014
Time:       2:30 – 3:30 p.m.
Place:      Needles Hall, Room 3001

OPEN SESSION

1. Draft Strategic Mandate Agreement [to be distributed] Information

CONFIDENTIAL SESSION

2. Report of the Vice-President, Academic & Provost Nominating Committee [to be distributed] Decision

JLAtad
17 December 2013

Logan Atkinson
Secretary of the University
University of Waterloo
Strategic Mandate Submission
to the Ministry of Training, Colleges and Universities

Draft
Dec. 20, 2013
1) Introduction
For a fast-evolving planet, where the pace of emerging challenges often outstrips available answers, conventional approaches to higher education, innovation and discovery are no longer enough.

Answering the world’s call requires a bold and unconventional approach — one that combines deep knowledge, extraordinary research, broad-based experience and academic excellence. It requires interdisciplinary approaches and a forward-looking focus on advancing knowledge and meeting society’s needs.

As Ontario explores new ways to drive creativity, innovation, knowledge and community engagement through higher education, Waterloo stands ready to lead the way, drawing on its established excellence in experiential and entrepreneurial approaches to education and research, and deep-rooted connections to industry and society.

The University of Waterloo is proud to have been recognized as Canada’s most innovative university for 22 years and counting. It’s a distinction Waterloo has earned by looking at things in a different way, by blazing new trails and redefining university education as a vital and transformational kind of learning.

Last year, Waterloo opened the new School of Public Health and Health Systems, a new Digital Media campus in Stratford, Ontario, and the new Mike & Ophelia Lazaridis Quantum-Nano Centre — establishing Waterloo as the heart of Ontario’s evolving Quantum Valley. Ground has been broken for a new undergraduate science building and the University of Waterloo-Schlegel Research Institute for Aging, a unique living laboratory where students researching health and aging will work directly with residents of a long-term care facility on Waterloo’s campus.

Plans are in place to create an Engineering building focused on entrepreneurial education, a stand-alone institute dedicated to improved population health, and flagship space that has the potential to unite many of Waterloo’s entrepreneurship programs.

As home to the world’s largest post-secondary co-operative education program, this University differentiates itself from its peers in Ontario and across North America in preparing generations of highly qualified and skilled graduates ready to lead the workforce and act as agents of change, fueling innovation, prosperity and job creation here and around the globe.

Waterloo has the experience, the intellectual resources and the proven track record of enabling success to help lead the development of a new higher education model for this province and the world.

2) Institutional mandate, mission and vision statements
a) Mandate
Established to develop the talent and knowledge needed to drive economic and societal change, the University of Waterloo is a student-centred and research-intensive post-secondary institution firmly centred on cultivating innovation through research across all disciplines. Waterloo’s mandate is best expressed by President and Vice-Chancellor Feridun Hamdullahpur:

“Waterloo is the birthplace of a revolution. Since 1957, we’ve done education differently, harnessing the power of academia to meet the needs of society and build a better tomorrow. Connected with the world beyond University walls and inspired by the entrepreneurs and visionaries who support this institution, University of Waterloo students develop the confidence and competence to take risks and lead change. Our students and researchers shape the future of this planet by crossing boundaries,
engaging challenges of global scope and relevance, and applying new knowledge in the pursuit of progress.”

Waterloo’s approach to education has been different from the start, offering its students a unique form of experience-based learning and immersion in a one-of-a-kind entrepreneurial ecosystem, where learning is deepened by the opportunity to engage in world-changing research.

b) Vision:
The University of Waterloo’s vision is charted in the University of Waterloo Act: “The objects of the University are the pursuit of learning through scholarship, teaching and research within a spirit of free enquiry and expression.”

Waterloo embraces and imbues innovation — from teaching to research and relationship-building — all with a goal to create a league of learners who will lead, support and implement innovations to advance all areas of the human condition and address the challenges of our time.

c) Mission:
Over the next five years, this institution’s foundational strengths will propel Waterloo towards a single goal: to be recognized as one of the top innovation universities in the world. Waterloo will do this by focusing energy and allocating resources into areas that set this institution apart. Waterloo will transform education and economies through experiential learning, build its reputation as a uniquely entrepreneurial university and change lives and advance industries through high-impact, highly relevant research. This dynamic future will be built on Waterloo’s solid foundation including excellent academic programming, global impact and vibrant student experience.

To reach this goal, Waterloo must choose to focus energy and allocate resources into the areas that set it apart, ensure the best experience for students and serve as models for the future of higher education.

3) Experiential learning and entrepreneurial culture

Jobs, innovation and economic development
Teaching and learning

a) Experiential learning
As home to the world’s largest post-secondary co-operative education program, Waterloo understands perhaps better than anyone how experience transforms learning. In 2013, Waterloo had 17,500 students enrolled in 178 co-operative education programs, accessing a worldwide network of more than 5,000 co-op employers. Together, these co-op students earned more than $183 million in 2013, and gained real-world employment skills.

From enterprise co-op terms, where students gain valuable experience building their own businesses, to clinical internships, research work terms, community service and employment experiences at home and abroad, this institution continues to reshape the learning landscape.

The payoff for society is huge: students who graduate workplace-ready, with up to two years of real and relevant experience, along with a solid understanding of how organizations work and what it takes to become a valued employee. Compared to the provincial average, Waterloo co-op graduates are more likely than other university graduates to be employed six months and two years after graduation. They earn more than their university-educated peers and are much more likely to be hired in positions related to their field of study.
In a 2012 interview for *Waterloo Magazine*, Bill Tatham, chair and CEO of NexJ Systems, described University of Waterloo co-op students as a “talent pipeline” for his company.

“You start to see their work ethic, passion, cultural fit, determination — all the determinants of success you see only in real life.”

Simply put, experiential education allows students to link their academic goals with their career goals. This is accomplished through hands-on learning experiences that link theoretical knowledge and practical experiences, enabling students to acquire and demonstrate personal transferrable skills. At Waterloo, experiential education opportunities are defined as:

- Connected to the curriculum
- Associated with clearly articulated learning outcomes, and
- Supervised and evaluated/assessed

The University’s new Strategic Plan takes experiential learning to the next level, making it integral to the education of all Waterloo students.

Over the next five years, Waterloo will expand experiential learning opportunities, enlarging the resource base of professional and discipline-relevant employers and recognizing the value of service-based and international opportunities. These learning opportunities will extend to non-co-op students through the development of professional skills courses and enhanced student mobility programs, among others.

*b) Entrepreneurship*

From classrooms to global communities, from research labs to innovative startup ventures, entrepreneurship at Waterloo is defined by a burning desire to make things better. Entrepreneurial spirit is part of Waterloo’s DNA, from long-standing intellectual property policy that ensures creators retain control of their ideas, to leading-edge academic programs promoting venture creation and intrapreneurship, to networks of support and mentorship that enable the commercialization of socially-relevant research.

Hundreds of startups, employing thousands of Canadians, trace their roots to Waterloo and stand testament to this University’s ability to inspire entrepreneurial thinking and the ambition needed to drive economic and societal change.

In the past several years, this institution has supported the creation of business Accelerator Centres in Waterloo and Stratford and promoted graduate and undergraduate entrepreneurship education through programs offered by the Conrad Business, Entrepreneurship and Technology Centre, VeloCity Residence, VeloCity Garage, Research Entrepreneurs Accelerating Prosperity (REAP), student clubs, Engineering Capstone projects, and the new GreenHouse hub for social entrepreneurship. The Conrad Centre was the first business program in Canada fully dedicated to entrepreneurship, and universities across the country are now trying to duplicate the success of the VeloCity programs.

VeloCity’s 63 student-founded companies — including Pebble, Thalmic Labs, BufferBox and MappedIn — have attracted more than $90 million in funding to date. Commercialization efforts originating at the Conrad Centre top $30 million in value, with more than 100 startups to date, including Clearpath Robotics, TutorBright, Tangam, CANGO and Milao.

The Waterloo Commercialization Office supports faculty startups and provides student entrepreneurship fellowships that have supported the creation of companies and jobs. According to a
2013 PricewaterhouseCoopers report, 29 local companies were created by technology licensed from the University of Waterloo and 167 companies were launched by University faculty and/or via contract research. It was also noted that the impact on the local economy was diverse, creating jobs in information and communications technology, clean technology, advanced manufacturing, life sciences and digital media.

During a recent visit to Waterloo, Alexis Ohanian, founder of reddit and an ambassador for Y Combinator, said Waterloo graduates applying to the Silicon Valley startup hub stand out from the crowd.

“They just have a different attitude. They have a different mentality that I think has come from being in school here where they are really results-driven. They are students who have had experience in actually shipping code, in actually shipping products, and that’s what we look for as investors.”

For all students, University of Waterloo enables entrepreneurial approaches in teaching, learning and scholarship — educating, inspiring and employing people who lead change. With plans to expand its local real estate holdings, Waterloo will move to consolidate many of its entrepreneurial ventures in a dynamic new flagship space where collaboration and shared passion will fuel the next generation of startup ventures.

As a driving force behind Canada’s innovation agenda, Waterloo will continue to enable and lead national and international conversations as host of a growing Waterloo Innovation Summit (WIS) that brings together industry, investors, academics and policy-makers. The University will expand entrepreneurial initiatives and learning opportunities for students, faculty and staff, by adding new academic programs and funding support. Inspired by its culture of innovation, Waterloo’s strategic plan is a call to build a reputation as a uniquely entrepreneurial university, a university recognized as the engine of Canadian entrepreneurship and as a model for others to follow in entrepreneurship education, support and research.

This is a critical role for the future development of Canada. More than 99 per cent of all registered companies in Canada are small and medium enterprises. No other Canadian university can claim the same expertise as Waterloo in educating, building and supporting the next generation of Canadian entrepreneurs, intrapreneurs and social innovators.

c) Economic impact

Waterloo’s impact goes much deeper than the contributions of its remarkable graduates. The 2013 PricewaterhouseCoopers survey commissioned by the University provides clear evidence that in little more than 50 years, this institution has led the development of the Waterloo Region Innovation Ecosystem, and had a powerful impact on the province as a whole.

Tom Jenkins, chair of OpenText Corporation, is clear in his assessment: “The Waterloo Region Innovation Ecosystem does not happen without the University of Waterloo, and this is due to UW’s IP (intellectual property) policy and its co-op program.”

Today, for every dollar invested by the province, the University of Waterloo generates $8.80 in total economic impact. The University is the source for more than 20,000 jobs and $1.4 billion in labour income in Ontario, contributing $2.6 billion annually to the provincial GDP.

Entrepreneurially minded students and graduates bring their passion for problem-solving to the workplace, making them highly sought after employees, an outcome that will only increase as Waterloo brings new academic and support programs in entrepreneurship onstream.
According to the economic impact report, 72 per cent of knowledge-based companies in Waterloo Region said they depend on University of Waterloo graduates and students as a source of employees. Almost 42 per cent said Waterloo graduates and students make up more than half their workforce.

d) Innovation in teaching and learning
The University of Waterloo recognizes that deep, lasting and comprehensive learning comes from more than textbooks and blackboards. As an institution that has long been a leader in computer science and technology, Waterloo is building on this expertise to make post-secondary education more effective and more accessible to students, staff and faculty, as well as to learners across Ontario and beyond.

As detailed in the University’s strategic plan, Waterloo aims to be a leading provider of technology-enabled learning opportunities, expanding its footprint in online learning and providing leading-edge technology-enabled learning opportunities.

Waterloo’s track record for developing and implementing technology-enabled programs speaks for itself. As a Canadian pioneer in distance education, Waterloo launched its correspondence program in 1968 as an entrepreneurial reaction to new teacher certification requirements.

Now home to one of the province’s largest online learning programs, Waterloo offers more than 395 online courses, 11 fully online bachelor degree programs, and eight master degree programs with several more in development. Waterloo has also capitalized on technology-enabled learning to advance the quality of online teaching by developing an online training tool for graduate teaching assistants and instructors, a resource soon to be delivered in an open environment for use by other post-secondary institutions.

At Waterloo, technology-enabled learning extends from students in the first year of their degree to alumni and others pursuing continuous professional learning throughout their careers. Technology-enabled learning lends itself to a wide range of multi-institution collaborations. For many learners, it will erase geographical challenges and lessen financial burdens.

The use of new technologies for program delivery offers an enormous opportunity to reach wider educational markets both across Canada and around the world, and to deliver programs to graduates and professionals where they live and work.

The creation of these opportunities can be costly. Already, the institution has begun to evaluate and realign internal resources. Strong partnerships will be required, both with institutional peers and industry partners. Waterloo will continue to work on these innovations with Desire2Learn, a leading company launched by University alumnus John Baker.

Waterloo will continue to grow the number of online courses and degree programs offered, and to seek out new learning technologies and the most innovative methods of course delivery. New and existing strategic partnerships will enable better online learning provincially, nationally and internationally.

4) Transformational research
Research and graduate education

a) Research
The University of Waterloo is a research university. Home to more than 35 Senate-approved research centres and institutes and 103 funded research chairs, Waterloo is engaged in world-changing research across a wide range of disciplines.

As one of the top 10 post-secondary institutes in the world for water research, a trail blazer in quantum research, the home of Canada’s largest engineering Faculty, and a recognized global leader for computer science, Waterloo’s research strength runs deep. For six consecutive years, Research Infosource has ranked Waterloo as Canada’s top comprehensive research university, with $194.2 million in total sponsored research in 2012-2013.

The Quacquarelli Symonds (QS) ranking lists Waterloo’s computer science, mathematics, statistics programs among the top 50 in the world. Waterloo’s engineering program ranks among the top 50 in the world according to both QS and the Academic Ranking of World Universities (ARWU/Shanghai). Waterloo consistently ranks among the top Canadian institutions in all categories — one of the few to do so without a major medical school.

Waterloo is home to nationally and internationally recognized researchers — including recent Killam Prize winners Mark Zanna and Paul Thagard in the Faculty of Arts and Ming Li in the Faculty of Mathematics. The University’s reputation for excellence has helped the Faculty of Science attract two leading international researchers through the Canada Excellence Research Chairs program — Philippe Van Cappellen in water and David Cory in quantum science. A search is underway for a third Canada Excellence Research Chair in Security and Privacy, part of the Faculty of Mathematics.

Colonel Chris Hadfield, the first Canadian to command the International Space Station, has been an active participant in health and wellness research at Waterloo. He has accepted a position as an adjunct professor of aviation beginning in 2014, saying at a December 3 guest lecture:

“[Waterloo] has a tremendous national and international reputation. It’s such a leading hotbed of research in all different areas.”

Students come to Waterloo to learn how to lead in a unique university culture that encourages risk-taking, discovery, real-world experience and drive. Innovative new research programs developed through extensive partnerships and collaborations offer undergraduate and graduate students research experience with a diverse range of industry, academic and government organizations.

Waterloo is expanding research opportunities for undergraduate and graduate students, including through research-focused work-terms. Waterloo will allocate current resources and align future resources to support areas of research where there is the greatest potential for world leadership, including, but not limited to, quantum science, water and aging. Waterloo will continue to support world-class research across all six of its Faculties: Arts, Applied Health Sciences, Engineering, Environment, Mathematics and Science, as well as through its many dedicated research institutes.

The University will more closely link research with experiential learning and entrepreneurship through integrated opportunities including undergraduate research work terms, research into entrepreneurship and continued partnerships with industry. These will see students work hand in hand with industry, business, government, non-governmental agencies and academics to integrate discovery into new processes, policies, products and opportunities for exploration. Brought back into the classroom, this experiential learning benefits faculty and fellow students.

Experience shows that learning is enhanced when it includes research and that strong researchers have the tools to be talented teachers. Waterloo researchers redefine what is known about the world. They shed new light on mysteries of the universe through deep and fundamental research.
b) Graduate education
Waterloo has the wherewithal to accomplish needed expansion of graduate student experiences in traditional and non-traditional research arenas. The University is committed to improving its undergraduate to graduate student ratio, recognizing the direct link between graduate education and productivity and prosperity.

In less than a decade, graduate enrolment at Waterloo has almost doubled; new graduate programs have been introduced at an average of five per year, and there are eight online master's programs, with several more in development. Students from around the world want to come to Waterloo to study and prepare for the future.

Expansion of graduate program offerings and enrolment at Waterloo will include online graduate programs, interdisciplinary graduate programs and developing an integrated English as a Second Language (ESL) program, in addition to the proposed areas of program strength and enhancement:
- Engineering and architecture
- Globalizing communities: health, finance, security and governance
- Technology, culture and communications
- Social innovation, entrepreneurship and sustainability.

Appropriate resources are required to support this expansion.

From a policy perspective, revisions to the tuition framework and policies regarding international students are needed to support these efforts. In particular, redacting the international student levy and allowing high-performing international students to be eligible for competitive scholarships will provide greater opportunity and incentive for qualified international students who want to study in Canada. In a global economy, domestic students benefit from studying and working alongside students from around the world.

5) Foundational strengths
Student population
Institutional collaboration
Program offerings

a) Student population
Waterloo’s defining endeavours in entrepreneurship, experiential education and transformational research stand on a rock-solid academic and cultural foundation.

The University attracts some of the world’s best, brightest and most motivated students and scholars, offering them the opportunity to become something more. More than 30 per cent of first-year students have an entrance average above 90 per cent. They are drawn by top-quality academic programming, emboldened by an innovative and dynamic approach to learning that is uniquely Waterloo’s.

b) Institutional collaboration
Enrollment at Waterloo continues to rise, with more than 35,000 full- and part-time undergraduate and graduate full-time equivalent students in the 2012-2013 year. The University collaborates on a national and global scale, both as a member of Canada’s U15 research universities network and with 350 partnerships with institutions in 60 countries.

c) Program offerings
Waterloo offers 15 undergraduate and 24 graduate degrees across its six Faculties, along with graduate and undergraduate diplomas and certificates. Program offerings have increased steadily to meet the needs of both students and environmental, technological, social and economic challenges of a fast-evolving world. New programs include undergraduate degrees in biomedical engineering, and a doctorate in pharmacy.

Waterloo’s reputation for excellence and real-world experience makes the institution a magnet for first-generation students — with 17 per cent of full-time undergraduate students self-identifying as the first generation in their family to attend university. The University supports these students through strong mentorship programs, which help them navigate through the transition process, programs and the University environment.

Waterloo is committed to providing access to all qualified students, as demonstrated through entrance scholarships and participation in Student Access Guarantee programs. In 2012-2013, the University provided $9,689,326 in Student Access Guarantee funding to 3,564 students for tuition, books and other expenses.

6) Conclusion

As the Province of Ontario seeks new ways to make higher education more meaningful, relevant and accessible, the University of Waterloo stands ready with answers.

No ivory tower, this is an institution uniquely connected to the world, and committed to making it better — by fueling prosperity and improving the human condition. This is a place of constant forward motion.

Through the new Strategic Plan, the University of Waterloo will create a differentiated university for the province and the country, one that offers unique experiential learning for every student; one that focuses on entrepreneurship to create new companies, new jobs and even new industries; one that manages for global excellence; one that will be a world leader in select and pivotal areas of research, with strong research foundations throughout.

Waterloo can and will lead the innovation agenda for Ontario and for Canada, redefining higher education for this country and the world.