

**University of Waterloo
BOARD OF GOVERNORS
Tuesday 7 June 2016**

Meeting
1:30 p.m.
Needles Hall, Room 3407

Dinner immediately to follow
for governors, vice-presidents and deans
at the
University Club

Please convey regrets to Emily Schroeder at 519-888-4567, ext. 32749 or eschroeder@uwaterloo.ca.

	<u>MEETING</u>	Page	Action
	OPEN SESSION		
1:30	1. Conflict of Interest	Oral	Declaration
	2. Remarks from the Chair	Oral	Information
	3. Agenda/Additional Agenda Items	Oral	Decision
	<u>Consent Agenda</u>		
	Motion: To approve or receive for information by consent items 4-7 below.		
1:40	4. Minutes of the 5 April 2016 Meeting	4	Decision
	5. Report of the President		
	a. Recognition and Commendation	17	Information
	b. Sabbatical and Administrative Leaves, and Administrative Appointments	21	Decision/Information
	6. Report of the Vice-President, Administration & Finance		
	a. Incidental Fee Changes	27	Decision
	7. Institute for Quantum Computing Annual Report to Industry Canada, Executive Summary*	29	Decision
	<u>Regular Agenda</u>		
1:45	8. Business Arising from the Minutes		Input
1:50	9. Student Research Presentations: Three Minute Thesis (3MT) Finalists –		
	• Elise Vist, university-wide finalist – Arts	Oral	Information
	• Gah-Jone Won, university-wide finalist – Science, first prize winner, and Ontario provincial first place winner	Oral	Information
2:00	10. Report of the President		
	a. President's Update	34	Information

2:20	11. Report of the Vice-President, Academic & Provost a. Strategic Plan Theme – Robust Employer-Employee Relationship	Oral	Information
2:30	b. Women’s Leadership	Oral	Information
2:40	c. Undergraduate Admissions Update	Oral	Information
2:50	d. Graduate Student Recruitment Update	Oral	Information
3:00	BREAK		
	12. Reports from Committees		
3:10	a. Building & Properties	49	Decision
3:20	b. Finance & Investment	50	Decision/Information
3:30	c. Governance	52	Information
3:40	d. Pension & Benefits	54	Decision/Information
3:50	13. Other Business		Input
CONFIDENTIAL SESSION			
3:55	14. Conflict of Interest	Oral	Declaration
	<u>Consent Agenda</u>		
	Motion: To approve by consent items 15 and 16 below.		
4:00	15. Minutes of the 5 April 2016 Meeting	11	Decision
	16. Report of the President		
	a. New Appointments with Tenure	57	Decision
	<u>Regular Agenda</u>		
4:05	17. Business Arising from the Minutes		Input
	18. Report of the President		
4:10	a. Naming Proposal	60	Decision
4:20	19. Reports from Committees		
	a. Building & Properties	65	Decision
	b. Governance	66	Decision
4:30	20. Other Business		Input
	21. Next Meeting: Tuesday 25 October 2016 at 1:30 p.m.		

	<i>IN CAMERA SESSION</i>	Page	Action
4:35	22. Conflict of Interest	Oral	Declaration
4:40	23. Minutes of the 5 April 2016 Meeting	16	Decision
4:45	24. Report from Governance Committee	67	Information
4:55	25. Business Arising from the Minutes		Input
5:00	26. Other Business		Input
5:05	27. Adjournment		

*full report at: https://uwaterloo.ca/institute-for-quantum-computing/sites/ca.institute-for-quantum-computing/files/uploads/files/2015-16_iqc_report_to_ised_-_uwbofg.pdf

At places: Conflict of Interest Declaration; Board of Governors 2016 Handbook; *University of Waterloo Magazine*, Spring 2016; *University Affairs*, May 2016

Note: To allow the Board to complete a number of matters quickly and to devote more of its attention to major items of business, the agenda has been divided between items that are to be approved and/or received for information by consent and those that are to be presented individually for discussion and decision and/or information.

A consent agenda is not intended to prevent discussion of any matter by the Board, but items listed under the consent sections will not be discussed at the meeting unless a governor so requests. Governors are supplied with the appropriate documentation for each item and all items will be approved by means of one omnibus motion. The Board will then move immediately to consideration of the items on the regular agenda.

JLA/ees
31 May 2016

Logan Atkinson
University Secretary & General Counsel
Secretary to the Board of Governors

University of Waterloo
BOARD OF GOVERNORS
Minutes of the Tuesday 5 April 2016 Meeting

Present: Catherine Booth, Tara Collington, Maya D'Alessio, David DeVidi, Fraser Easton, Murray Gamble, Sally Gunz, Feridun Hamdullahpur, Thorsten Heins, Robert Henderson, Karim S. Karim, Christos Lolas, David Porreca, Tristan Potter, William Pristanski, Satish Rai, Gerry Remers, Ron Schlegel, Ted Scott, Ken Seiling, Jeremy Steffler, Michael Stork, Hamid Tizhoosh, William Watson, Karen Wilkinson, Kate Windsor, Marta Witer

Guests: Sandra Banks, Alison Boyd, Bruce Campbell, Mario Coniglio, Jason Coolman, Ray Darling, George Dixon, Kim Gingerich, Helen Hannusch, Dennis Huber, Peggy Jarvie, Beth Jewkes, Robert Lemieux, Andrea Kelman, Derek Madge, Nick Manning, Jane Manson, Ian Orchard, Daniel Parent, Chanakya Ramdev, Chris Read, Erin Sargeant Greenwood, Daniela Seskar-Hencic, Allan Starr, Brandon Sweet, David Timms, Stephen Watt

Secretariat: Laurie Arnott, Logan Atkinson, Karen Jack, Emily Schroeder, Sian Williams

Absent: John Baker*, Jordan Banks*, Cindy Forbes*, Allyson Francis*, Dave Jaworsky*, Tom Jenkins, John Lounds*, Berry Vrbanovic*

*regrets

Organization of Meeting: William Watson, chair of the Board, took the chair, and Logan Atkinson, secretary of the Board, acted as secretary. Atkinson advised that due notice of the meeting had been given, a quorum was present, and the meeting was properly constituted.

OPEN SESSION

1. CONFLICT OF INTEREST

Governors were asked to declare any conflicts they may have in relation to the items on the agenda. No conflicts were declared.

2. REMARKS FROM THE CHAIR

Opening Remarks

Condolences were expressed to Catherine Booth on the recent death of her father, and the Chair expressed special thanks to her for attending the meeting today under difficult circumstances.

Recognition to Karen Wilkinson on her recent presentation to the Association of Fund Raising Professionals – Women in Philanthropy.

The Chair referred to the ground breaking ceremony at St. Paul's University College related to the GreenHouse Program in Social Entrepreneurship, and remarked on the investment in residence and living/learning facility. Congratulations were offered to Principal Graham Brown and Chancellor Lloyd Axworthy on that initiative.

Governors Stepping Down

A number of governors are stepping down at the end of April. The Chair acknowledged them, as follows:

- **Community-at-Large Representatives:**
 - Gerry Remers (Board Executive Committee, Audit & Risk Committee and Governance Committee)
 - Ron Schlegel (Board Executive Committee and Building & Properties Committee)

Both governors have served two consecutive terms on Board.

- **Lieutenant Governor in Council Representative:**
Cindy Forbes (chair, Audit & Risk Committee; Executive Committee, Finance & Investment Committee and Governance Committee)

Governor Forbes has served two terms as well.

- **Faculty Representatives:**
Sally Gunz
David Porreca (Executive Committee)
Hamid Tizhoosh (Building & Properties Committee)

Professor Gunz concludes her term as Faculty Association of University of Waterloo president.

- **Undergraduate Student Representative:**
Ms Francis is graduating in Mechanical Engineering.
- **Graduate Student Representatives:**
Maya D'Alessio (Executive Committee and Building & Properties Committee)
Robert Henderson

Ms D'Alessio concludes her term as Graduate Student Association president.

Mr. Henderson has served two terms on Board.

Board of Governors/Senate Joint Orientation

The Chair reminded governors that the first ever joint orientation for members of the Board of Governors and Senate will be held on Friday 29 April 2016 in NH 3318. This session will serve to orient new governors and senators to their responsibilities and the governance of the University, and function as a refresher for those returning to Board or Senate in 2016-2017. All members of Board and Senate, including the most experienced, are welcome to attend. New members of the Board and Senate will be invited as soon as they are identified.

3. AGENDA/ADDITIONAL AGENDA ITEMS

The Board heard a motion to approve the agenda as distributed, subject to the addendum on additional administrative appointments at places.

Porreca and Wilkinson. Carried

Consent Agenda

The Board heard a motion to approve and/or receive for information by consent items 4-7 below.

Schlegel and Porreca.

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4. MINUTES OF THE 2 FEBRUARY 2016 MEETING

The Board approved the minutes of the meeting as distributed.

5. REPORT OF THE PRESIDENT

Recognition and Commendation. The Board received the report for information.

Sabbatical and Administrative Leaves and Administrative Appointments.

Motion: The Board heard a motion to approve the sabbatical and administrative leaves as presented in the report.

The remaining items in the report were received for information.

6. REPORT OF THE VICE-PRESIDENT, ACADEMIC & PROVOST

University Professor Designation. The Board received the report for information.

7. REPORT OF THE VICE-PRESIDENT, ADMINISTRATION & FINANCE

Incidental Fee Changes

Motion: To approve the 2016-17 Student Services Fee as presented in the report.

The question was called, and the motion. carried.

The President and the Vice-President, Academic & Provost explained the reasons why faculty members taking sabbaticals receive different percentages of their full salaries. This is provided in policy, a link to which can be found here: <https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-3>

Regular Agenda

8. BUSINESS ARISING FROM THE MINUTES

There was no business arising. The issue of fossil fuel investments will be addressed in agenda item 13(g), the Report of the Finance & Investment Committee.

9. REPORT OF THE PRESIDENT

President's Update. The President focused his remarks on the "Transformational Research" theme of the strategic plan, the reasons why this theme is one of the top themes in the strategic plan, and the progress made to date in this respect. He drew connections between the research activity of the faculty and teaching and learning at the University. The President made special reference to research funding and the successes of faculty in this respect, to collaborations with scholars at institutions around the world, and to research-related connections with partners in industry. The President commented in particular on the rates at which university faculty research is cited in the literature, suggesting that the rates here suggest wide and important dissemination of the knowledge created through faculty research efforts.

The President described what we mean by "high impact research," referencing impact on policy-making, economic growth and other social and political indicators. There are various measures used to indicate success in this respect.

It is possible to separate out law school and medical school funding from the totals at other universities so as to make our comparisons legitimate. Vice-President, University Research George Dixon provided further comment on ways in which to measure our performance relative to other universities, and commented on how strong this university is in certain indicators. He made special

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comment about the relationship between average grants to faculty as opposed to medians, and about the strength of our results in SSHRC grants.

The President provided a quick summary of recent rankings of the university, and certain programs at the university, internationally.

He provided comment on the University's positioning relative to the recently announced funding by the federal government for innovation networks and clusters, and other aspects of the federal budget that are particularly advantageous to this University. He also referred to certain aspects of the recently announced provincial budget, especially the promised tuition support for students and the "advanced manufacturing consortium" proposed for McMaster University, Western University and the University of Waterloo.

The President offered some comment on the strengths of the University's "creator-owned" intellectual property policy.

Research done at this University is done only with strict compliance with ethics approvals that are well-established and thoroughly applied. This means that faculty-industry partnerships are properly scrutinized at the approvals level. Governors were reminded that much of the control as to what research is conceived and executed lies with the individual faculty member, and that academic freedom has much to say about how research is managed.

Slides used in the President's presentation may be seen here: https://uwaterloo.ca/secretariat-general-counsel/sites/ca.secretariat-general-counsel/files/uploads/files/04-05-16_-_fh_bog_ptn_v12.pdf

Advancement Update. The Vice-President, Advancement presented an update on the university's current advancement position relative to both relationships and revenue.

Slides used in the Vice-President's presentation may be seen here: <https://uwaterloo.ca/secretariat-general-counsel/sites/ca.secretariat-general-counsel/files/uploads/files/advancementbogapril52016.pdf>

We are currently at about 95% participation by the Board of Governors in annual giving, with an ambition to get to 100% by the end of the fiscal year.

10. REPORT OF THE VICE-PRESIDENT, ACADEMIC & PROVOST

Board Retreat Outcomes and Follow Up. The Vice-President presented an update on follow up to the Board retreat held in December 2015. He indicated that many of the initiatives in the strategic plan are consistent with what was learned at the retreat, but he also indicated that the retreat prompted consideration of linkages among the various strategic planning themes, such that new initiatives are emerging. And there is some motivation emerging from the retreat as the university gets ready to start working on the next strategic plan. The Vice-President updated the Board on online education initiatives, credentialing, outcomes-based education, and advances in the student experience at the university.

With respect to student engagement at the University, and flowing from the comments of student panelists at the retreat, the suggestion was made that a different mix of students as dons could address some of the issues raised.

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Organizers and panelists were thanked for their important contributions to the success of the retreat and retreat follow up.

2016-17 Operating Budget. The Vice-President presented a summary of the proposed 2016-17 operating budget.

Slides used in the Vice-President's presentation may be seen here: https://uwaterloo.ca/secretariat-general-counsel/sites/ca.secretariat-general-counsel/files/uploads/files/provost_-_board_of_governors_-_april_5_2016.pptx

Motion: Resolved that the Board of Governors approve the 2016-17 Operating Budget as presented in the report.

Witer and Schlegel.

Orchard referred to the delegation of international students at a recent Senate meeting questioning the proposed 9% tuition increase for international students.

Easton commented on the proposed library acquisitions budget, in particular the implications of the exchange rate between the Canadian and U.S. dollar. He asked how this University compares to other universities in the U15 with respect to library acquisitions. Orchard agreed to bring some comparisons to a future board meeting.

Orchard advised that there is no expectation that a structural deficit will result, despite the projection of a relatively small deficit for the coming year. An observation was made about the possibility of using additional tuition increases to overcome the deficit.

The question was called, and the motion carried.

11. RESEACH PRESENTATION

George Dixon introduced Michael Hudson, professor of physics & astronomy. He provided some comments on his research related to "mapping the universe."

Professor Hudson provided an educational presentation on universe mapping, and demonstrated the "3D Map of the Universe" that he has created along with his students.

12. SELF-ASSESSMENT SURVEY

Governors were given ten minutes to complete the surveys prior to the break.

13. REPORTS FROM COMMITTEES

Audit & Risk.

- **Delegation of Authority to Approve University of Waterloo Financial Statements, 2015-16**
Motion: That the Board of Governors delegate its authority to approve the University's audited financial statements for the fiscal year ended 30 April 2016 to the Board Executive Committee.

Pristanski and Heins.

Carried.

The Board received the remaining items in the report for information.

Building & Properties.

- **Student Space**

Motion: That the Board of Governors approve the appointment of CS&P Architects for the proposed addition to the Student Life Centre (SLC) and Physical Activities Complex (PAC) with an approved budget of \$34 million.

Gamble and Lolos.

In the budget, the \$200,000 budgeted for “disbursements” goes to professional fees and other related professional disbursements. There was some comment on media representations that the project will proceed, before it is finally approved by the Board of Governors. Students were congratulated for their support of the project.

The question was called, and the motion carried.

The Board received the remaining items in the report for information.

Some comment was offered on the idea of constructing a field house on the north campus. This would be an additional recreational facility, about the size of a playing field, enclosed against the weather. Other non-athletic events could be scheduled in the facility as well.

Finance & Investment.

The Board received the report for information.

A question was raised about the ability of the pension plan investment plan to meet its targets, whereas the targets for other funds do not.

With respect to the focus on corporate social responsibility and its relationship to investment policy, is there any thought of bringing in people outside the committee to take part in the conversation? The working group will be comprised of members of the Board, with an additional one or two administrators, but they will have a mandate to consult widely in their work. The terms of reference are intended to come to the June meeting of the Board of Governors for approval. The process of collecting data has already begun in anticipation of the committee beginning its work. The committee will proceed expeditiously to come to a recommendation for the Board to consider, but the issues are complex and must be explored very thoughtfully. The intention is to include the signatories to the letters in the consultation path, and that the communication channels are open.

Governance.

The Board received the report for information.

Pension & Benefits.

The Board received the report for information.

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14. OTHER BUSINESS

There was no other business.

The Board convened in confidential session.

6 April 2016

Logan Atkinson
University Secretary & General Counsel
Secretary to the Board of Governors

Confidential minutes have been removed.

The *in camera* minutes have been removed.

University of Waterloo
BOARD OF GOVERNORS
Report of the President
7 June 2016

FOR INFORMATION

Recognition and Commendation

Seven researchers at the University of Waterloo are receiving more than \$3.9 million to collaborate with Canadian-based companies and government organizations on strategic research projects. The funding for Strategic Partnership Grants announced 2 March 2016 by the Natural Sciences and Engineering Research Council of Canada (NSERC) helps bring expertise from academia and industry together to collaborate on research that will lead to innovation and commercialization. Waterloo has a long history and reputation for successful industry partnerships, and was ranked second in Canada for collaboration with industry by the CWTS Leiden Ranking 2015. The researchers who will receive funding through Strategic Partnership Grants are: **Professor Slim Boumaiza** (Electrical and Computer Engineering) with BlackBerry Ltd. and Skyworks Solutions Inc: Digitally-assisted analog/RF circuits for enhancing the performance of 5G millimeter-wave massive MIMO transceivers (\$581,844). **Professor Jean Duhamel** (Chemistry) with EcoSynthetix: Hydrophobically modified thermoresponsive starch nanoparticles for use in oil recovery of oil sands (\$574,220). **Professor Karim S. Karim** (Electrical and Computer Engineering) with Teledyne DALSA: High resolution, hard X-ray digital imagers for non-destructive testing applications (\$597,000). **Professor Hyung-Sool Lee** (Civil and Environmental Engineering) with AMEC Foster Wheeler: Innovative technologies for controlling dissolved methane and nitrogen in anaerobic wastewater treatment (\$567,300). **Professor John Long** (Electrical and Computer Engineering) with Sidense Corp. and Skyworks Solutions Inc: 2D material thin-film transistors and components for RF/mixed-signal applications (\$633,613). **Professor Sriram Narasimhan** (Civil and Environmental Engineering) with the City of Guelph, C3Water, Terepac Corporation, Toronto Water and Eramosa Engineering Inc: A novel monitoring and decision support system to manage water loss in urban water distribution systems (\$503,448). **Professor Aiping Yu** (Chemical Engineering) with Grafoid Inc. and Microbonds Inc: Advanced graphene fiber based wearable supercapacitor (\$450,000). (*Daily Bulletin*, 2 March, 2016)

The Board of Governors of St. Jerome's University has announced that **Katherine Bergman** has been re-appointed to a second term as President and Vice Chancellor of St. Jerome's University. "Under Professor Bergman's leadership the University has seen unprecedented infrastructure renewal, and is in the midst of an active and successful fundraising campaign," says the official announcement. "We are delighted that Dr. Bergman has accepted a second term as President of St. Jerome's University," said Cathy Horgan, chair of St. Jerome's Board of Governors. "Her proven leadership skills and sound vision will lead us into the future as a premier Catholic university." Bergman is an avid volunteer, building community partnerships and active in both the Rotary and with KidsAbility. She is the seventh President and Vice Chancellor at the University. (*Daily Bulletin*, 8 March, 2016)

An easy-to-use system that enables farmers to reduce agricultural water waste through real-time data cleaned up at this year's Canadian Engineering Competition held at McGill University March 4-6. Designed by five electrical and computer engineering students, Project Reservoir is an agricultural water control and environmental monitoring system consisting of low-cost field sensors which collect real-time soil and environmental conditions. **Ryan Gibson, Austin Cousineau, Ian Murray, Stuart Alldritt** and **Nicole Jiang** won first place in the Innovative Design Competition, the W. R. Petri Engineering Design Award for Technical Excellence, and the CEC Award for Outstanding Environmental Awareness. Project Reservoir is a recipient of funding from the Engineer of the Future Trust. Second place in the Innovative Design Competition went to fourth-year

Waterloo nanotechnology engineering students **Wenbo Cui, Stuart Murray, Laura Bahlmann** and **Eric Beaugard** for [GraFET](#). The sensor uses a graphene based transistor and a dipole detection method to quickly detect toxic gases. (*Engineering News*, 7 March 2016)

The 2015 Co-op Students of the Year Awards were held on Tuesday, March 15 in the Tatham Centre. Six students, one from each Faculty, were recognized for their outstanding achievements in co-operative education. One student was also honoured with the rare “co-op triple crown”, by winning the Faculty, provincial, and national Co-op Student of the Year awards. **Rachel McDonald**, from the Faculty of Applied Health Sciences, was recognized by the Canadian Association for Co-operative Education (CAFCE) as the winner of the national Co-op Student of the Year Award and by Education at Work Ontario (EWO) as the winner of the provincial Co-op Student of the Year Award. She received these top awards for her work with Sunnybrook Health Sciences Centre, where she coordinated a radiotherapy program for people in the advanced stages of cancer. The 2015 Co-op Students of the Year are: **Vinita Dhir**, Faculty of Science, **Jordan Grant**, Faculty of Engineering, **Andrew MacDonald**, Faculty of Environment, **Rachel McDonald**, Faculty of Applied Health Sciences, **Joey Pereira**, Faculty of Mathematics, **Emily West**, Faculty of Arts. In addition, Abhirup Chatterjee (Applied Health Sciences), Kai Slaughter (Engineering), and Emma Hawley-Yan (Environment) received honourable mentions for Waterloo’s 2015 Co-op Students of the Year Awards. (*Daily Bulletin*, 18 March 2016)

On Thursday, March 24, the University of **Waterloo’s United Way Campaign** won the **Leadership Campaign Award** at the Community Spirit Awards ceremony. Waterloo was nominated for awards in two categories: Leadership Campaign and Campaign Team. The University’s United Way campaign raised more than \$260,000 this year, and Waterloo has been supporting the cause since 1983. (*Daily Bulletin*, 29 March 2016)

A systems design engineering professor and team of graduate students are the recipients of two Magna Cum Laude awards presented at the 2016 Annual Meeting of the Imaging Network of Ontario held in Toronto at the end of March. **Alexander Wong**, the Canada Research Chair in Medical Imaging Systems, and systems design engineering graduate students **Audrey Chung, Mohammad Javad Shafiee, Devinder Kumar**, along with their collaborators at Sunnybrook Health Sciences Centre, were recognized for their research in the area of radiomics-driven oncological clinical decision support. Wong and his team in collaboration with clinical researchers at Sunnybrook Health Sciences have introduced a breakthrough strategy to quicker and more effective cancer identification. Known as discovery radiomics, the concept allows for the identification of a large number of imaging-based features that act as quantitative biomarkers for capturing highly unique tumor traits and characteristics beyond what can be captured using predefined feature models. (*Faculty of Engineering News*)

Two faculty members in the Department of Combinatorics and Optimization have been named Fellows of the international Society for Industrial and Applied Mathematics (SIAM). Professor **Thomas Coleman**, who served as Dean of the Faculty of Mathematics from 2005 to 2010, is now a member of the SIAM Fellows Class of 2016. He was honoured “for contributions to large-scale, sparse numerical optimization, financial optimization, and leadership in mathematics education and engagement with industry.” Professor **Henry Wolkowicz** became a SIAM Fellow in 2015, honoured “for contributions to convex optimization and matrix theory.” SIAM Fellowships “honor SIAM members who are recognized by their peers as distinguished for their contributions to the discipline.” (*Daily Bulletin*, 6 April 2016)

Five University of Waterloo students are celebrating their win at the global championship of the CFA Institute Research Challenge. **Brent Small** (AFM), **Adnan Khan** (AFM), **Daniel Zhang** (Biotech/CPA), **Kamaljot Dhaliwal** (CFM) and **Rudder Zhang** (BMath) are all smiles as this victory marks the first Canadian team to win this prestigious international title. The annual financial analysis competition draws more than 4,000 students world-wide from more than 865 universities in 70 countries. The School of Accounting and Finance (SAF) student team spent hours preparing to present and defend detailed equities research report on a publicly traded company to a panel of industry experts. The SAF team advanced through several rounds to reach the Global

Finals in Chicago, where they beat out University of Georgia, Ateneo de Manila University, and Politecnico di Milano, to capture the championship and a \$10,000 prize. (*Daily Bulletin*, 18 April 2016)

Gah-Jone Won, a PhD candidate in Vision Science and Biology, was selected as the winner of the Ontario Provincial Three Minute Thesis (3MT) competition. Won advanced to the provincial final, held April 14 at Wilfrid Laurier University, after being chosen from among 200 graduate students who took part in the 3MT competition at University of Waterloo. Won's research focuses on the development of a pharmaceutical treatment for presbyopia, an age-related condition that causes the eyes to lose the ability to focus on nearby objects. The treatment specifically targets and softens the crystalline lens in order to restore nearby vision. The 3MT competition challenges graduate students to explain their research to a non-specialist audience in three minutes, using a single static slide and no props. The provincial competition included 20 universities from across Ontario. Won's presentation is now in the running for the national 3MT prize, sponsored by the Canadian Association for Graduate Studies (CAGS). The national competition will take place online. (*Waterloo Stories*, 15 April 2016)

Research projects that aim to develop deeper understanding of human interactions has earned national recognition for two University of Waterloo graduate students. **Fatima (Noori) Khan**, a Master's student in the School of Environment, Resources and Sustainability, and **Emma Vossen**, a PhD candidate in English, were among 25 finalists in The Storytellers competition. Funded by Canada's Social Sciences and Humanities Research Council (SSHRC), Storytellers challenges graduate students to tell a story about the impact of their SSHRC-funded research in 300 words or three minutes. (*Daily Bulletin*, 20 April 2016)

Professor **Roger Melko** from the Department of Physics and Astronomy was awarded the 2016 Canadian Association of Physicists (CAP) Herzberg Medal for his outstanding early-career achievements in condensed matter physics. Melko is a leader in the field of quantum many-body physics. His large-scale computer simulations have significantly contributed to our understanding of strongly interacting condensed-matter systems. He is the Canada Research Chair in Computational Quantum Many-Body Physics, an affiliate member of the Institute for Quantum Computing at Waterloo, and an associate faculty member at the Perimeter Institute for Theoretical Physics. (*Daily Bulletin*, 26 April, 2016)

Two University of Waterloo researchers specializing in population health are winners of the Canadian Institutes of Health Research's Institute of Population and Public Health Trailblazer Award. Professors **Scott Leatherdale** and **David Hammond**, both of the Faculty of Applied Health Sciences and the School of Public Health and Health Systems at Waterloo, are leading experts in developing and evaluating strategies for reducing the prevalence of chronic disease among the Canadian population. They both hold CIHR-PHAC Applied Public Health Chairs. The one-time awards recognize Canadian researchers who are making exceptional national and international contributions in the area of population health interventions. Professor Leatherdale's COMPASS project is the world's largest and most comprehensive study focused on chronic disease prevention among youth. Following more than 50,000 high school students annually, COMPASS evaluates how hundreds of real-world changes in programs, policies, or environments are related to changes in disease risk factors, such as tobacco and alcohol use, drug use, and obesity. (*Daily Bulletin*, 2 May 2016)

Professor **Kate Lawson** is one of this year's recipients of the Ontario Confederation of University Faculty Associations (OCUFA) Service Award. Lawson, associate professor and Chair of English in the Department of English Language and Literature in the Faculty of Arts served as the president of OCUFA from 2013 to 2015, "guiding the Confederation through a period of challenge, change, and opportunity," according to a statement from OCUFA. "She has also provided critical leadership as Chair of OCUFA's Online Education Committee with her characteristic wisdom, insight, and sensitivity." (*Daily Bulletin*, 4 May 2016)

A continuing lecturer at the University of Waterloo's Faculty of Engineering is the recipient of a national award for innovative teachers. **Carol Hulls** is a winner of the 2016 Society for Teaching and Learning in Higher Education (STLHE) / Brightspace Innovation Award in Teaching and Learning. She is a founding member of the Engineering IDEAs Clinic at Waterloo. The initiative incorporates hands-on activities into all engineering programs at the University. Hulls uses experiential learning in her classes, as well as other innovative techniques. Instead of a whiteboard or chalk board, she uses a tablet PC, and she records what she is writing on the screen and the audio of her voice so that students can see an idea as it's developed and hear the explanation. She has also moved four hours of programming facts online so that the focus of her in-person lectures is on tackling programming design, not recitation. "Faculty members who engage and inspire their students enhance the learning experience and play a key role in equipping Waterloo graduates with the tools they need to succeed," said Ian Orchard, vice-president academic and provost at Waterloo. "Carol Hulls' dedication to her students' learning is commendable, and we are delighted that she is receiving this deserved recognition." Hulls says she is always willing to experiment with a new technique if it could potentially improve student learning. "I want my students to be innovative engineers, willing to try new approaches and learn from failure to make a better design," said Hulls, a Waterloo alumna who began teaching in the Faculty of Engineering in 1999. "In the lecture hall, lab, and also online, I welcome and practice innovation, only the goal for me is learning and having my students experience the joys of engineering." The awards ceremony will take place on June 23 in London, Ontario during the 2016 STLHE Annual Conference. Each of the five winners will receive a two-year membership in STLHE as well as \$2,200 toward travel and registration costs for Brightspace's annual users' conference, FUSION 2016, and STLHE's Annual Conference. (*Daily Bulletin*, 24 May 2016)

University of Waterloo
BOARD OF GOVERNORS
Report of the President
7 June 2016

FOR APPROVAL

1. Sabbatical and Administrative Leaves

The University of Waterloo Policy 3 – Sabbatical and Other Leaves for Faculty Members [excerpts below, full text available at: <http://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-3>] sets out the purpose of leaves for faculty members as well as the requirements/responsibilities of faculty who are granted such leave.

The granting of a leave . . . depends on the University's assessment of the value of such leave to the institution as well as to the individual, and on whether teaching and other responsibilities of the applicant can be adequately provided for in her/his absence. A faculty member who is granted a sabbatical or other leave is expected to return to duties in the University for at least one year and upon return will be expected to submit a brief report to the Department Chair regarding scholarly activities while on leave.

The purpose of a sabbatical leave is to contribute to professional development, enabling members to keep abreast of emerging developments in their particular fields and enhancing their effectiveness as teachers, researchers and scholars. Such leaves also help to prevent the development of closed or parochial environments by making it possible for faculty members to travel to differing locales where special research equipment may be available or specific discipline advances have been accomplished. Sabbaticals provide an opportunity for intellectual growth and enrichment as well as for scholarly renewal and reassessment.

. . . the granting of sabbatical leave is contingent upon the faculty member's department being able to make the necessary arrangements to accommodate such an absence, and also upon the financial resources of the University in any given year. Should problems arise in any of the above, it may be necessary to postpone individual requests until such time as all the conditions can be satisfied.

• **Sabbatical Leaves**

Aucoin, Marc, Chemical Engineering, January 1, 2017 to December 31, 2017 at 100% salary

I intend to do industrially relevant research in continuous manufacturing of herpes and HIV vaccines at Sanofi Pasteur (Toronto); and revamp course notes for three courses in biochemical and bioprocess engineering.

Ben-David, Shai, Computer Science, November 1, 2016 to April 30, 2017 at 85% salary

My research area is machine learning and computational and statistical analysis of big data. In November and December 2016, I will be visiting the Empirical Inference group of the Max Plank Institute for Intelligent Systems in Tübingen, Germany. I will also participate in seminars on clustering and machine learning and complexity in Berkeley, California, and Leiden, Netherland. From January to April 2017, I will be a visiting professor at the Simons Institute in Berkeley in their Foundations of Machine Learning program.

Burch, Sarah, Geography and Environmental Management, July 1, 2016 to December 31, 2016 at 100% salary

Urban spaces around the globe are seeking strategies to become more environmentally, socially, and economically sustainable. While each city may follow its own path towards low-carbon resilience, this

research will explore triggers of these transitions, models of governance that might support them, and actors who play key roles in coming up with innovative solutions.

Chen, Jeff, Physics and Astronomy, September 1, 2016 to February 28, 2017 and September 1, 2017 to February 28, 2018, at 85% salary

I will be conducting theoretical research in the area of soft matter physics; continue current international research collaborations and foster new collaboration opportunities.

Choh, Vivian, Optometry and Vision Science, September 1, 2016 to August 31, 2017 at 85% salary

I will be using this leave to finish on-going research projects and to write manuscripts from the completed research. I also plan to pursue new avenues of research with collaborators here at UW and the U.S. I will also be travelling to attend conferences such as the ARVO (The Association for Research in Vision and Ophthalmology in Baltimore), and hope to attend one of the following three conferences: ISCEV (International Society for Clinical Electrophysiology of Vision in Singapore; Society for Neuroscience in San Diego; or the American Academy of Optometry in Anaheim.

Clarke, Charles, Computer Science, July 1, 2016 to June 30, 2017 at 85% salary

I will conduct research on search and data mining technologies. The first half of the sabbatical will be spent with an industrial research group and the second half of the sabbatical will be spent with an academic group working in my area of research. I plan to spend time at the National Institute of Informatics (Japan); University of Glasgow (Scotland); University of Amsterdam (Netherlands); University of Otago (New Zealand), and RMIT University (Melbourne, Australia).

Csima, Barbara, Pure Mathematics, September 1, 2016 to August 31, 2017 at 85% salary

My area of research is computability theory, focusing mainly on computable structure theory. During my leave I plan to visit collaborators at Victoria University of Wellington (New Zealand), the University of Connecticut (USA), and Nanyang Technological University (Singapore).

Danckert, James, Psychology, January 1, 2017 to June 30, 2017 at 100% salary

There are two purposes to my proposed leave: the first involves travel in the pursuit of establishing new collaborations with other boredom researchers (Cynthia Fisher in Perth, Australia; Tomas Goetz in Germany; Wijnand Van Tilburg in the UK). The second is to complete a book on my research related to boredom (to be co-authored with my colleague John Eastwood at York University).

Elkamel, Ali, Chemical Engineering, May 1, 2017 to October 31, 2017, and May 1, 2018 to October 31, 2018 at 85% salary

I will focus on finalizing a book on optimal product design, preparing invited book chapters, and continue writing journal papers to advance my research program on sustainable process systems engineering. I also plan to spend time to update my lecture notes and develop new ones. I will try to be stationed at another institution in order to start new collaborations.

Gracie, Robert, Civil and Environmental Engineering, January 1, 2017 to June 30, 2017 at 85% salary

I will pursue research into the simulation of hydraulically driven fracture with a focus on oil and gas and enhanced geothermal energy extraction. As part of this sabbatical, I will spend two months at the Institute of Structural Analysis at the Technical University of Graz, Austria, where I will establish new collaborative research on fracture simulation.

Helmes-Hayes, Rick, Sociology and Legal Studies, July 1, 2016 to December 31, 2016 at 100% salary

I will be working on a book manuscript that deals with the establishment of sociology as an academic discipline in Canada's English-language university system, 1889-1930.

Hewitt, Conrad, Centre for Mathematics and Education in Computing, September 1, 2016 to August 31, 2017 at 94.7% salary

I propose to investigate the large-scale properties of the universe in two realms of particular interest. One is evolution of the universe at late and early times, i.e. where did we come from and where are we going to. The other is to determine whether the asymptotic spatial structure of our universe settles down or is oscillatory between different spatial states.

Hulan, Shelley, English Language and Literature, November 1, 2016 to April 30, 2017 at 85% salary

I will complete a manuscript on the rhetoric of nostalgia in early Canadian writing. In nations such as Canada that emerge from contact between ethnic populations, literature and rhetoric are exceptionally intertwined as inhabitants seek new terms that describe their displacement and their dreams. This project examines those terms as part of a lively debate about the nation's future.

Huo, Jingjing, Political Science, January 1, 2017 to June 30, 2017 at 100% salary

I intend to pursue a research project that focuses on the role of electoral systems in mass consumption in advanced industrialized democracies. Using Organization for Economic Cooperation and Development (OECD) and Luxemburg Income (Wealth) Study data, I intend to show that, as inequality rises across the OECD world, today's mass consumption society has shifted from majoritarian to proportional representation (PR) countries.

Karim, Karim, Electrical and Computer Engineering, January 1, 2017 to June 30, 2017 at 85% salary

I plan to pilot an ultra-low cost digital medical X-ray detector prototype in East Africa that was created based on intellectual property developed at the University of Waterloo. Though the project will demonstrate technology for underserved and remote populations, the technology can also help improve health and welfare of underserved, remote populations in Canada.

Kwon, Hyock-Ju, Mechanical and Mechatronics Engineering, January 1, 2017 to June 30, 2017 at 100% salary

My areas of research have two broad directions: i) biomedical engineering involving the detection of pathological anomalies at cellular and tissue levels by characterizing mechanical behaviour, and ii) high intensity focused ultrasound for non-invasive therapeutic intervention. I plan to carry out both researches, through international collaboration with POSTECH (Pohang University of Science and Technology, Korea) and Haifu Medical (China).

Kycia, Jan, Physics and Astronomy, September 1, 2016 to August 31, 2017 at 85% salary

I plan to work closer with collaborators, Andrew Sachrajda and Sergei Studenikin at NRC (National Research Council) in Ottawa. They are world experts on developing spin qubits. I am working to develop an improved high-speed readout for their devices.

Lank, Edward, Computer Science, September 1, 2016 to August 31, 2017 at 85% salary

My goal during my sabbatical will be pursuing research in the field of human-computer interaction. The specific area of research will be in reliable motion-gesture interaction, i.e., reliable interaction using arm and hand movements. I will spend time at the Université Lille 1/INRIA Lille (French National Institute for Computer Science), working with Dr. Géry Casiez, a human-computer interaction researcher with significant prior work in input analysis, input modeling, and large-display interaction.

Lim, Jee-Hae, Accounting and Finance, September 1, 2016 to February 28, 2017 at 100% salary

My research interests are concentrated on the impact of Accounting Information Systems (AIS) events (e.g., IT investments, IT controls and XBRL, etc.) on financial measures in short-term and long-term value creation and pre-realized value and post-realized value. With the support of my SSHRC grant, I

will conduct extensive research in the area of Extensible Business Reporting Language (XBRL) and present my work at a number of universities and conferences. I will revise and resubmit two papers for publication and start work on a new project: The Impact of XBRL on the US Securities and Exchange Commission Review Process (SEC).

Lin, Shoufa, Earth and Environmental Sciences, January 1, 2017 to December 31, 2017 at 100% salary
To conduct research on structural and tectonic evolution of mountain belts of various ages, evolution of tectonic processes through time and structural and tectonic control on mineralization, and to enhance collaboration with geologists in China.

Majedi, Hamed, Electrical and Computer Engineering, November 1, 2016 to April 30, 2017 at 85% salary
I will visit and report to Photonics Systems Inc. in Boston where I have current industrial funding during September. I will also visit my collaborators at Bordeaux, France, Professor Brahim Lunis and Professor Gregor Weihs from Innsbruck, Austria during October/November. I will give a lecture and participate in Lorentz Workshop in Leiden, Netherland from November 27 to December 5. Lastly, I am invited to talks in Turkey, Iran and Kuwait in January/February 2017.

Munro, Ian, Computer Science, January 1, 2017 to December 31, 2017 at 100% salary
My research will focus on various aspects of time and space efficient data structures and related algorithms. In particular, several long standing problems, including the number of comparisons necessary for sorting and selection and optimal tree schemes will be addressed. I will remain primarily in Waterloo with one to two month visits to colleagues at institutions in Bristol (England), Melbourne (Australia), Hong Kong University of Science and Technology (Hong Kong), and Université Libre de Bruxelles (Belgium).

Nepal, Sanjay, Geography and Environmental Management, January 1, 2017 to December 31, 2017 at 85% salary
My research is focused on engagement of marginalized communities in conservation and tourism-induced changes in remote locations. During my sabbatical, I will develop research themes relevant to social capital and community resiliency in the context of natural disasters at tourism destinations. My plan includes short stays at the University of Otago (New Zealand), and Vietnam National University (Hanoi, Vietnam). I will also be conducting preliminary research in the Philippines and Nepal.

Opal, Ajoy, Electrical and Computer Engineering, May 1, 2017 to April 30, 2019 at 89.9% salary
I will re-establish my research in the area of nonlinear circuit analysis and analog circuit simulation. I also intend to develop modules for online courses in circuit analysis at the undergraduate and graduate levels.

Parker, Wayne, Civil and Environmental Engineering, May 1, 2016 to April 30, 2017 at 100% salary
I intend to conduct research related to enhancing the sustainability of wastewater treatment through the following activities: continued supervision of my graduate students; collaboration with my previous and current graduate students to author papers; development of proposals for future research funding; and further development of collaborative research projects with the University of Wageningen (The Netherlands), the University of Victoria, and Ryerson University.

Ponnambalam, Kumaraswamy, Systems Design Engineering, September 1, 2016 to August 31, 2017 at 85% salary
I will be working on developing new regional sustainable development models under uncertainty, considering economics, environment, and social issues using systems and agent-based approaches.

Models will be flexible to suit a specific region whose needs and resources are unique to that region. Further, a server-based software will be developed for various stakeholders who can access these models remotely.

Shen, Yi, Statistics and Actuarial Science, January 1, 2017 to June 30, 2017 at 100% salary

I aim to promote my research, which is mainly in stochastic processes focusing on stationary and stationary increment processes, random locations, self-similar processes, financial mathematics, etc. I plan to pay short-term visits to my collaborators during this leave.

Tan, Zhongchao, Mechanical and Mechatronics Engineering, September 1, 2016 to February 28, 2017 at 100% salary

I plan to finish critical research projects in the areas of thermal engineering nanoaerosol characterization and filtration, clean air technology by sorption and filtration, and applications of nanotechnology to air cleaning. I also plan to present my results at various international conferences, and to visit Purdue University (Indiana, USA) and Tsinghua University (China) for research collaborations in clean air technologies.

Voorhees, Gerald, Drama and Speech Communication, July 1, 2016 to December 31, 2016 at 100% salary

I will write a book applying Lacanian psychoanalysis to the study of digital games, “Symbolic Games and Fantasies of Play”, for the University of Indiana Press; complete ongoing labour on a trilogy of edited volumes concerned with the intersection of game studies and masculinity studies, women’s studies, and queer studies, respectively; and engage in preliminary data collection for a project, “Mapping Gender Identity in Digital Games”, funded by the Refiguring Innovation in Games SSHRC Partnership.

Wang, Zhou, Electrical and Computer Engineering, January 1, 2017 to August 31, 2017 and January 1, 2018 to April 30, 2018 at 85% salary.

The purpose of this sabbatical leave is to enhance and extend external research collaborations in the areas of human visual perception based quality-of-experience assessment with applications to video compression, visual communications, computer vision, design of imaging systems, virtual reality, augmented reality, and video quality enhancement. Target destinations for visit include leading companies and universities in the US, Europe and Asia.

- **Sabbatical Cancellation**

Schweizer, Vanessa, Knowledge Integration, approved sabbatical from July 1, 2016 to December 31, 2016 has been cancelled.

- **Sabbatical Change**

Horton, Sue, Economics, change from January 1, 2016 to June 30, 2016 and January 1, 2017 to June 30, 2017 at 85% salary, to January 1, 2016 to June 30, 2016 at 85% salary.

FOR INFORMATION

2. Administrative Appointments

Bordeleau, Anne, appointment as Director, School of Architecture, Faculty of Engineering, May 1, 2016 to April 30, 2020.

Faulkner, Andrew, appointment as Chair, Classical Studies, Faculty of Arts, July 1, 2018 to June 30, 2022.

Gaudet, Vincent, appointment as Chair, Electrical and Computer Engineering, Faculty of Engineering, July 1, 2016 to June 30, 2020.

Haas, Carl, appointment as Interim Chair, Civil and Environmental Engineering, Faculty of Engineering, May 1, 2016 to December 31, 2016.

Jones, Debbie, appointment as Acting Director, School of Optometry and Vision Science, Faculty of Science, January 1, 2016 to August 31, 2016.

Lin, Shoufa, re-appointment as Associate Dean, International Programs, Faculty of Science, September 1, 2016 to December 31, 2016.

Liston, Maria, appointment as Chair, Anthropology, Faculty of Arts, July 1, 2017 to April 30, 2018.

Park, Robert, appointment as Acting Chair, Anthropology, Faculty of Arts, July 1, 2016 to June 30, 2017.

Rudolph, David, appointment as Interim Chair, Earth and Environmental Sciences, Faculty of Science, September 1, 2016 to August 31, 2017.

Stastna, Marek, re-appointment as Associate Dean, Computing, Faculty of Mathematics, July 1, 2016 to June 30, 2017.

Administrative Appointment Change

Liston, Maria, re-appointment as Chair, Anthropology, Faculty of Arts, May 1, 2014 to April 30, 2018 changed to May 1, 2014 to June 30, 2016.

Feridun Hamdullahpur
President

University of Waterloo
BOARD OF GOVERNORS
Report of the Vice President, Administration & Finance
7 June 2016

FOR APPROVAL

Incidental Fees

Federation of Students Fee

It is recommended that the compulsory Federation of Students fee, assessed and collected from all full-time undergraduate students, be increased from \$54.67 to \$56.62 per term effective September 2016 (fall term). Part-time undergraduate students are assessed 30% of the full-time fee or \$16.99 per term.

Comments:

- The previous full-time fee increase was \$5.72 per term effective September 2015.
- The 2016 fee increase of 3.6% (1.1% CPI plus \$1.35) was approved at the Annual General Meeting on March 23, 2016.
- Payment of the fee is a requirement of registration and is non-refundable.

Federation of Students Administered Fee

It is recommended that the Federation of Students Administered Fee be increased to reflect an increase for the U-Pass component effective September 2016 (fall term).

	<u>Dental</u>	<u>Health</u>	<u>U-Pass</u>	<u>SRP</u>	<u>Total</u>
Regular	\$45.00	\$ 55.00	\$85.20	\$1.00	\$186.20
Co-op	\$83.63	\$103.13	\$85.20	\$1.00	\$272.96

Comments:

- SRP = Student Refugee Program
- The Federation of Students has contracted with Studentcare for the health and dental components and Grand River Transit for the bus pass component.
- The University assesses the fee on behalf of the Federation of Students and transfers the funds to the Federation of Students for disbursement.
- Payment of the fee is a requirement of registration; the health and dental components are refundable through the service provider; the bus pass is non-refundable; the student refugee program is refundable directly through the Federation of Students.
- The bus pass fee is assessed to all full-time undergraduate students on-campus within the Region of Waterloo.
- During the winter term, regular students pay twice the rate for health and dental to ensure continuous coverage from May to August.
- The U-Pass component reflects an increase of \$4.05 per term (4.99%).

Independent Studies Student Society Fee

It is recommended that the Independent Studies Student Society Fee, assessed and collected each term from all full-time undergraduate Independent Studies students, be discontinued effective Fall term 2016

Comments:

- The fee is \$25.00 per term.
- The society has become inactive and the program is being phased out.
- The Federation of Students approved to discontinue the fee at its recent Board meeting.

Graduate Student Association (GSA) Administered Fees

It is recommended that the compulsory GSA Administered Fees, assessed and collected from active full-time and part-time graduate students, be increased for the dental, health, and U-Pass components effective September 2016 (fall term).

	<u>Dental</u>	<u>Health</u>	<u>U-Pass</u>	<u>Grad House</u>	<u>Total</u>
Full-time	\$81.00	\$62.00	\$85.20	\$18.00	\$246.20
Part-time	\$81.00	\$62.00	N/A	\$18.00	\$161.00

Comments:

- Payment of the fee is a requirement of registration.
- The Graduate House fee is refundable directly through the GSA.
- The health and dental components are refundable through the service provider.
- The U-Pass fee pays for a universal bus pass with the Grand River Transit; the fee is assessed to all full-time graduate students on-campus within the Region of Waterloo; the fee is not refundable.
- The proposed fee changes were approved by the GSA Board of Directors on May 11, 2016.
- The U-Pass component reflects an increase of \$4.05 per term (4.99%).
- The dental component reflects an increase of \$3.00 per term (3.8%).
- The health component reflects an increase of \$7.00 per term (12.7%).

Dennis Huber
Vice President, Administration & Finance



UNIVERSITY OF
WATERLOO



Institute for
Quantum
Computing

**INSTITUTE FOR QUANTUM COMPUTING
ANNUAL REPORT
APRIL 1, 2015 – MARCH 31, 2016**

**TO BE SUBMITTED TO:
THE MIINISTRY OF INNOVATION, SCIENCE AND ECONOMIC DEVELOPMENT
JULY 30, 2016**

For University of Waterloo Board of Governors approval

FROM THE EXECUTIVE DIRECTOR

The road from curiosity to commercialization

Since establishing the Institute for Quantum Computing in 2002, I have had the privilege to have a front row seat to its growth and success. I am continually humbled by the response to our collective efforts - from the generous support of our partners, in particular the Government of Canada, to industry representatives to research colleagues from every corner of the globe.

Attracting the highest calibre researchers to Canada remains a top priority for us. This past year, we were delighted to welcome three new members to our faculty community – Vern Paulsen from the University of Houston, Wei Tsen from Columbia University and Na Young Kim from Stanford University. These new members are in addition to William Slofstra from the University of California – our newest research assistant professor.

These new researchers joined our current faculty members, students and postdoctoral fellows generating and sharing quantum information research with the world. We contributed to global knowledge through published papers, presentations at conferences, collaborative projects, outreach initiatives and earned media. Through scientific visitors alone, IQC touched 94 different research institutions in over 20 countries.

All of these efforts have stemmed, in some way, from curiosity: the curiosity to learn more about how the world behaves at its most fundamental level. This curiosity has led to new knowledge and new technologies. IQC is already the birthplace of over 40 patents and five spinoff companies and this year, we are excited to announce that we have begun development on a new industry affiliate program that will help to bridge researchers with the resources to help them make the transition from curiosity to commercialization.

I am excited by the opportunities that continue to emerge from our research and how quickly new ideas are moving toward commercialization. I am delighted that the Government of Canada is our partner in this exciting journey and we will continue to drive innovation for Canada.

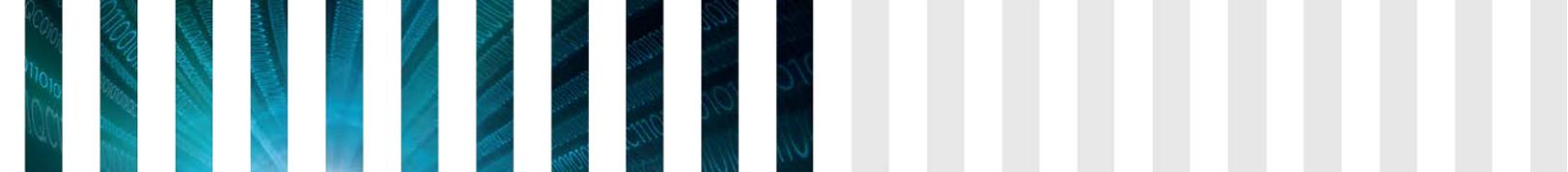
Sincerely,

Raymond Laflamme
Executive Director
Institute for Quantum Computing
University of Waterloo



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EXECUTIVE SUMMARY

Quantum information research is already leading to the development of new technologies that will transform our world...and the Institute for Quantum Computing (IQC) at the University of Waterloo holds Canada's leadership position in quantum information science and technology research. Each year, great strides are made in quantum information research to develop technologies that will change society at every level – and this year was no different.

Below are highlighted achievements in 2015-16 for each of IQC's five funding objectives, as agreed to with the Government of Canada:

A. Increase knowledge in quantum information science and technology (Increase in knowledge in the various fields and sub-fields of quantum information, thereby positioning Canadians at the leading edge of quantum information research and technology).

This year researchers continued IQC's aggressive research agenda and made advancements in quantum computing, quantum communications, quantum sensors and quantum materials. Collectively, they published 132 papers in world-leading journals and their cumulative citations reached over 19,000. In addition, IQC successfully recruited three new faculty members and one new research assistant professor.

- Vern Paulsen, Faculty Member in mathematics from the University of Houston
- Wei Tsen, Faculty Member in the Department of Chemistry from Columbia University
- Na Young Kim, Faculty Member in electrical and computer engineering from Stanford University
- William Slofstra, Research Assistant Professor, from the University of California

B. Create new opportunities for students to learn and apply new knowledge to the benefit of Canada, spurring innovation, and investment in R&D activities through highly qualified personnel development.

IQC is currently home to 116 graduate students and 41 postdoctoral fellows – of these, 12 PhD students, 20 Master's students and 12 postdoctoral fellows were recruited this year after fielding 234 applications from graduate students and 89 for prospective fellows. In line with creating a community of engagement for researchers, IQC also hosted four major conferences, three workshops, 35 seminars and 13 colloquia this year, in addition to sponsoring 14 external conferences.

C. Brand Canada as the destination of choice for conducting research in quantum technologies and attract the best in the world to Canada, creating partnerships with the international quantum information community and promoting a world-class excellence in quantum information science and technology.

IQC's researchers participate in diverse collaborative projects with researchers and organizations across the globe. This year, researchers collectively participated in or attended 140 external conferences and welcomed 157 scientific visitors from 94 different institutions from around the world at IQC.

D. Enhance and expand the Institute’s public education and outreach activities to effectively promote science and quantum information science and demonstrate how the research from quantum information science can be applied for the purpose of sustaining and attracting world-class talent.

This year IQC hosted two major summer schools: USEQIP and QCSYS, three Quantum Frontiers Distinguished Lectures, a public lecture, a major Open House event and partnered to create an exhibition for the International Year of Light, attracting over 40,000 attendees. The IQC communications team continued to produce award-winning publications and grow IQC’s presence online and in earned media.

E. Position Canada to take advantage of economic and social benefits of research through seizing opportunities to commercialize breakthrough research.

IQC researchers submitted at least four patent applications this year, bringing the current total to 41. With five spinoff companies established to date, IQC also began development of a new Industry Affiliate Program to help bridge researchers with industry for future initiatives.

Overall, the 2015-16 year continued IQC’s tradition of research excellence and engaging scientific outreach programming.

PRESIDENT'S UPDATE TO THE BOARD OF GOVERNORS JUNE 7, 2016

Dear Governors,

Below please find a brief update since our last meeting in April. This report includes a strategic plan update and a general update in the following areas:

- Research
- Advancement and Alumni Relations; and
- University Relations.

STRATEGIC PLAN IMPLEMENTATION UPDATE

In addition to my written reports submitted to the Board in advance of each meeting in 2015-2016, I provided an in-depth presentation at these meetings on the three key theme areas of the strategic plan - Uniquely Entrepreneurial, Experiential Education and Transformational Research. Therefore, I will focus this section of my update on our progress and achievements in the remaining five areas of our strategic plan, along with an assessment of related opportunities and challenges. These include the themes of Outstanding Academic Programming, Global Prominence and Internationalization, Vibrant Student Experience, Robust Employer-Employee Relations and Sound Value System.

Academic Programming

Waterloo's scholarship in a number of disciplines remains well recognized by the rankings. In March of 2016, QS World University Rankings program confirmed again that 11 subject areas were ranked among the top 100 in the world. The QS subject ranking ranked three of Waterloo's subjects among the top 50 (computer science and information systems, geography, mathematics) and eight among the top 100 (architecture/built environment, chemical engineering, civil engineering, development studies, electrical engineering, environmental sciences, materials science, statistics and operational research).

The number of online courses available increased by 8.0% since 2013/14; in the 2015 calendar year, we offered 531 courses and currently have 53 development projects that are scheduled with the Centre for Extended Learning for 2016/17.

Total enrolment in online courses reached almost 40,000, an increase of 8.2% over 2013/14 with 19 fully online programs. UW has the highest number of fully online courses in comparison to all Ontario universities. More new fully online programs are in development.

Fully online courses: Top 5 in Ontario	
1 Waterloo	320
2 Ryerson	294
3 Queens	237
4 Guelph	235
5 Windsor	128

Waterloo launched new and improved quality initiatives to address undergraduate and graduate communication and competency skills, provide teaching support for graduate students and faculty, and developed a new, consistent course evaluation system.

Some of the innovative solutions to attract talented students and ensure their enrolment, include:

- development of a new coordinated initiative to leverage existing strengths in Waterloo's business-oriented education and
- exploration of approaches to increase exposure to research at the undergraduate level.

On May 3rd, we held our first combined President's reception for Excellence in Teaching and Research. I was very pleased with the attendance and the combined recognition of the excellent faculty members at Waterloo.

Risks and risk mitigation

A critical risk for the academic programming area is the potential for sub-optimal academic engagement of our students and the lack of well-rounded outcomes for our graduates. We require and work on extensive engagement with faculties and departments who develop and implement both traditional and online programs and courses. This engagement is visible in several key initiatives that look at continuous improvement of the quality of teaching and instruction and academic advising.

Academic Programming is also working closely with experiential, research, entrepreneurial and international themes to develop meaningful initiatives to enhance students' academic experience.

This group is also working with the faculties and Student Success Office on improving NSSE outcomes. A new NSSE survey will be administered in 2017 which will provide comparative results to the 2013 NSSE results.

Global Prominence and Internationalization

Waterloo continues to develop academic and research partnerships with top-ranked international universities. In 2014, Waterloo had 31 agreements with universities ranked in the QS top 100, an increase of 19.2 % over 2013. In 2015, this number grew to 35 agreements with the QS top 100.

Waterloo continues to attract international research funding, with an increase of \$2.7M (15.5%) between 2013/14 (\$17.4M) and 2014/15 (\$20.1M). International research funding becomes increasingly important as domestic funding sources remain restrained.

Between 2013/14 and 2014/15, Waterloo co-op students participated in 15.4% more international co-op work terms.

While we collectively agree on the focus of fulfilling our strategic objectives and not necessarily being guided by rankings, we also understand their importance especially for our global visibility and acceptance as a partner. Waterloo has engaged proactively with ranking organizations which has helped us to understand and improve our reputational scores. This has also helped some ranking organizations (QS and THE) improve their methodologies so that institutions without medical schools are no longer at a disadvantage against universities with the same schools with regards to publication and citation indicators.

Waterloo's rank in most ranking programs continues to improve. Waterloo is ranked 152 in QS World University Rankings in 2015, up from 160 in 2014. Compared to other Canadian Universities, Waterloo's rank in international ranking programs has improved. Considered among Canadian universities only, Waterloo is ranked 7th internationally in the QS and Times Higher Education rankings, ahead of several U15 institutions that have medical schools.

In 2014/15, 15.0% of Waterloo's undergraduate population and 35.7% of Waterloo's graduate population was comprised of international students, compared with 13.4% and 34.9%, respectively, in 2013/14.

Some examples of my international activities related to this theme include meetings in Singapore with the Deputy Prime Minister and Ministers of Education and Defense to explore possible collaboration in the areas of water, aging and cybersecurity, meetings at Tsinghua University in China related to entrepreneurship and their offer to UW to join them and Berkeley in partnership.

Risks and risk mitigation

Waterloo is committed to being a globally-relevant university on the world stage. Accessing international research funding has increased transaction costs for understanding new granting systems and how they work, as well as the "costs" (including time) of developing new norms required in cross cultural research. Increasing the number of outbound students who seek international learning and co-op experiences also requires additional costs -and thus can be an impediment for engaging in this activity. We are actively working to mitigate financial barriers and to build awareness about the advantages of participating in international work.

Vibrant Student Experience

Led by the Student Experience theme and working closely with Academic Programming, a \$10M fund has been established to support space initiatives in student learning, living and community spaces. Current student space improvements completed or in progress include various space improvements and/or additions in the PAC+SLC, South Campus Hall, Library and student recreation facilities, including new space on the north campus. The planned South Commons project will also complement these projects.

Upcoming renovations to Needles Hall will enhance student service delivery through improved systems and rationalized space for academic support units (Registrar's Office, Graduate Students Office and Student Success Office).

A new student portal has been implemented to facilitate web-based student services in all faculties.

Over the remaining two years of the Strategic Plan, the Student Experience theme's focus will shift towards building the value and availability of non-academic student experiences along with continuous strengthening of the quality of teaching and academic advising.

Risks and risk mitigation

Key risks to the success of the student experience is to accurately assess and understand the needs and opportunities to build student experiences, and to help students discover and understand the value of generic, and our own, unique non-academic opportunities. We are dedicated to helping our students acknowledge and benefit from multiple links between our strategic strengths through initiatives such as expansion of experiential, research, entrepreneurial and international experiences, peer mentorship and leadership, and strong academic advising.

Employer-Employee Relationship

Excellence Canada Certification is continuing across campus. In 2014/15, 15% of Waterloo's staff complement were involved in Excellence Canada Certification. Currently, certification is ongoing in Arts, Environment, Engineering, Science, CECA, IST and St. Jerome's college.

Waterloo's accomplishments as an employer have been recognized nationally and internationally with the award of our "Principles of Inclusivity" program, Integrity Matters training and through hosting the International Lean Higher Education Hub Conference, a network of global practitioners working toward continual improvement in the higher education sector.

Waterloo is on track to complete a number of projects in 2016 that will contribute to overall organizational human development, such as onboarding, strategic workforce and succession planning, employee engagement survey strategy, and organizational structure review.

Overall staff turnover at Waterloo, including retirements, remains very low at 4.1%.

Sound Values

The University of Waterloo is committed to addressing gender equity on campus. Waterloo's approach focuses on achieving comprehensive, long-term, sustainable gender equity through the development of innovative programming such as implementation of a fridge rental program for breastfeeding mothers, development of a gender and equity lecture series that involves students, staff and faculty, and initiation of campus-wide engagement around the 16 Days of Activism campaign raising awareness of gendered violence.

Additionally, Waterloo supports three main events annually with a focus on gender equity:

- Take Back the Night Waterloo Region (last year we won top number of participants);
- National Day of Remembrance and Action on Violence Against Women on December 6; and
- International Women's Day Dinner.

Each of these events has grown in scale and scope helping us to build a sense of community and a strong network of those committed to gender equity.

In May 2015, I accepted an invitation from the UN Women's HeForShe campaign for the University of Waterloo to participate in the IMPACT 10x10x10 framework alongside governments, leading universities, and global businesses. Our three specific commitments, and actions to date, are:

Commitment 1: Boost female student participation in STEM outreach experiences and activities to build the pipeline of future female leaders in traditionally male dominated disciplines.

Actions:

- Created HeForShe IMPACT scholarships awarded each year over the next five years to six women entering STEM disciplines.
- Appointed faculty advocates to work with students, staff, faculty and alumni to address gender equity issues and challenges within each faculty.
- Hosted Waterloo Women: Ideas, Makers, and Innovators, a two day ideathon inspiring and connecting women as they seeded and grew ideas in STEM and beyond.
- Developed a STEM website profiling campus opportunities for girls and women.
- Launched a STEM outreach camp for girls and their caregivers from Indigenous communities (August 11-13).

- Initiated a hands-on physics workshop for 100 girls in grades 7-8 called, Physixx: Girls Matter (December 3).

Commitment 2: Enhance female faculty representation to improve the campus environment today and drive towards parity in the future.

Actions:

- Reviewed our policies and procedures to develop an equitable recruitment strategy for faculty hiring. Implementation of the strategy is underway with support from senior managers.
- Announced eight new gender equity research grants (up to \$10,000) to support research that addresses and investigates gender equity.

The proportion of full-time, regular faculty that are female is increasing over time. In 2014/15, 29.4% of full-time, regular faculty were female. Waterloo has committed to the HeforShe goal to increase representation of female faculty to 30%.

Commitment 3: Attract and advance female leaders into senior academic and administrative university positions.

Actions:

- Conducted 10 roundtable discussions with 74 faculty members to solicit input on a successful leadership and mentoring program.
- Initiated the development of a campus-wide leadership and mentorship program (2016).
- Created a Faculty Seminar Series to support networking and professional development and hosted Dr. Angela Hildyard, VP Human Resources and Equity at the University of Toronto.
- Advanced a Presidential lecture series profiling extraordinary female academics and/or equity research (2017).

On June 8th, I am happy to report that we will be hosting Phumzile Mlambo-Ngcuka (Under Secretary-General of the United Nations and Executive Director of the UN Women). She will be meeting with our faculty advocates and students and giving a keynote address in the Senate/Board room. You will have received an invitation and I hope that you are able to join us.

These efforts reflect Waterloo as a change leader in gender equity—especially important as a leading STEM-focused university. Waterloo aims to advance excellence at all levels of our institution, while serving as a galvanizing force for social change at universities across Canada.

Waterloo has also convened the Provost’s Advisory Committee on Equity (PACE) to consult and communicate about equity at Waterloo. The group has formed two sub-committees to address awareness and prevention of sexual violence, and another on LGBTTTQQIPA+ matters.

RESEARCH UPDATE

CFREF Update

Our CFREF Round 2 application (Quantum Computing) was submitted on March 29th for \$81M. We will know in early July if we have been selected for a final applicant interview with the Selection Board which will be held in mid-July.

Wat Co - Faculty Commercialization Activity Update

New Tech Power Inc., a new startup company was created based on lithium-ion battery technology developed by Dr. Zhongwei Chen's lab (Chem Eng.)

<https://uwaterloo.ca/stories/waterloo-researcher-leading-charge-next-generation-battery> . UW holds equity and a licensing stream in this company which is now supporting \$3M in R&D funding at UW over 3 years.

[KA Imaging Inc.](#), a WatCo supported startup company based on novel x-ray imaging technology developed by Dr. Karim Karim (ECE) secured subsequent financing of \$1M in the form of a convertible debenture bringing total investment to date up to \$1.5M . UW has an equity and licensing stream in this startup.

[SSIMwave Inc.](#), a WatCo supported startup located at the Accelerator Centre has negotiated a Seed investment terms sheet based on a significant pre-money valuation. Due diligence by investor is underway and certain formal documents are being completed by the University (WatCo) to facilitate closing the transaction. UW has equity and a licensing stream in the company.

[Tyromer Inc.](#), a WatCo supported startup, reported that it made it's first commercial sales during the quarter. This is a significant milestone of achievement for the company that should drive additional growth. UW has equity and a licensing stream in the company.

[Wattech Power Inc.](#) a new Watco supported startup company created based on [Zn-air battery technology](#) developed by Dr. Zhongwei Chen's lab (Chem Eng.) is in the late stages of raising significant Series A funding based on a high valuation. At the request of Wattech's management, WatCo's Saeed Bagheri has been supporting the financing effort by attending negotiation meetings in China and Vancouver. UW has equity and a licensing stream in the company.

Commercialization Collaboration Partnership

Watco entered into a collaborative commercialization partnership with WiLan who formally issued a [press release](#).

ADVANCEMENT AND ALUMNI RELATIONS UPDATE

Financial Results

The Office of Advancement is pleased to report that the University of Waterloo raised \$59.7M, this year in support of our teaching, research and capital priorities. While this result is just below our goal of \$60M, it represents a significant increase from \$43M raised in 2014-15 and reflective of university-wide strong delivery on Waterloo's 'return to strength' integrated plans for advancement activity and results.

Our Planned Giving Program has had a milestone year, achieving record results with 48 new bequests confirmed with an estimated value of \$25.6M. This achievement includes a new confirmed bequest of \$20M from an alumnus (anonymous).

In total, Waterloo has more than 600 confirmed planned gifts with an expectancy valuation of \$93.4M. Waterloo is well positioned to surpass \$100M in estate expectancies within the next 18-24 months.

Highlights

Waterloo's Advancement operations encompass an enormous amount of effort and partnership across the University every year. However, each year there are special achievements that warrant recognition and celebration.

Waterloo's contact and engagement activity with our top donors and potential donors was transformed over the past year with 541 meaningful contacts made by the Vice-President, Advancement, Principal Gifts team leaders, and me. With a goal of 180 contacts, this achievement demonstrates the priority that this work was given this year, the pace of work that was achieved and the University's commitment to this critically important group. Of note, 15 proposals were made to this group, surpassing our principal gift proposal goal of 13 – and further setting the stage for future growth in principal gifts (\$1M+) to Waterloo.

Building on their longstanding tradition of generosity and leadership, Waterloo's undergraduate and graduate students committed \$24M to a project that will transform the Student Life Centre and Physical Activities Complex.

Waterloo achieved 100% participation in giving by both Waterloo's Executive Council and our Alumni Council. This was closely followed with 95% participation from the Board of Governors.

In 2015-16, Waterloo Advancement hosted 147 events (75 in 2015) in 127 different locations. Of these events, 48 were held outside of Canada, elevating Waterloo's profile, reputation and alumni presence around the world in support of our international aspirations.

Waterloo has ambitions to be the university-of-choice for Canada's most active philanthropists, in addition to maintaining that status with our top donors and volunteers. Achieving this goal depends on our reputation in delivering world-class

stewardship and reporting. Waterloo Advancement has made significant gains in donor impact reporting on key fronts with Waterloo's Report on Giving being published in a digitally responsive format for the first time, increasing the number of custom stewardship reports for our Principal Gift donors to 4 per year and our Endowment Reporting activity continues to grow with over 700 endowment funds reported on this past year, a number that has doubled in the past five years.

Waterloo Advancement's presence in Asia has been significantly strengthened over the past two years through the establishment of an office in Hong Kong and our charitable arm, the Hong Kong Foundation. Waterloo has deepened its commitment to this strategy through a three-year contract extension for Michael Wong, Director, Hong Kong Foundation and extending our favourable lease arrangements for the office space. Board members traveling to the region are invited to visit the office and we would be pleased to arrange meetings or events with key alumni and donors in the region.

New Strategic Initiatives

Waterloo's 6,000 first-year students received a "future alumni package" in their Orientation Week kit to assist with student engagement, support and to familiarize new students with Advancement. This new initiative is part of a long-term commitment to strengthen our engagement with current students and educate them about the benefits, opportunities and responsibilities of being a successful Waterloo alumnus.

Waterloo's award-winning "GOLD on the Go" event series was launched this year. These custom-designed events targeted at graduates of the last decade were held in Ottawa, Mississauga, Seattle, Vancouver and Washington.

Waterloo's "Start-up Pledge Program" was also designed and launched this year and has been very well received during its pilot phase, focused on validating the concept and securing a 'founding cohort' of Start-Up Pledge early entrepreneurs. To date, five alumni entrepreneurs have joined the Start-Up Pledge and this group is anticipated to grow as we work toward a formal launch for this program in Fall 2016. Our future leaders and innovators are in this group and we look forward to engaging them and stewarding them as they build their businesses and their philanthropic capacity.

UNIVERSITY RELATIONS UPDATE

Brand Refinement Project

This brand refinement project is about seeking input on how to use words and imagery to tell the Waterloo story, to build on and strengthen our reputation in a manner that is both consistent and impactful. This initiative will help us create a framework of tools and guidelines that campus can use to effectively communicate our stories.

Work is progressing well on the three-phase project.

Phase 1, brand strategy development, was completed and approved in January. This phase was informed by an extensive program of engagement on campus and online, offering students, faculty, staff, alumni and partners an opportunity to share their thoughts and resulting in over 2,200 submissions. Subsequent consultation via student focus groups, presentations to Board members, and presentations to Faculties and other groups helped confirm the proposed brand strategy platform and identify areas to enhance or make more explicit. Feedback will help refine how we express our brand as well as to develop a multi-year communications approach and visual and written guidelines and tools.

Phase 2, the development of brand guidelines and tools as well as a communications campaign to support reputation, recruitment, advancement and alumni communications is fully underway. Draft brand visual guidelines presented to executive leaders and the advisory group received support and revisions are underway to reflect feedback from these consultations.

Phase 3, implementation of the guidelines, tools and campaign, will begin in the fall term and continue in a staged way throughout the following winter term and beyond.

Senior administration (President/Vice Presidents and Deans' Council) and the advisory group (a cross campus group of 27 marketing and communications professionals) continue to provide input throughout the process.

Global Entrepreneurship and Disruptive Innovation Initiative (GEDI)

The proposal for GEDI initiative was refined to version 3.0 and presented to senior administrative and faculty leadership. The working team further engaged with key internal colleagues in Co-op, Research and Commercialization Office and Advancement.

Initial and promising discussions are underway with several potential corporate partners/early adopters including RBC, Thomson Reuters, D+H and others.

A meeting to finalize the business case is set for June 2. An external communications and outreach plan will be developed and set in motion for August/September.

Marketing and Strategic Initiatives

Marketing activities to enhance the University's brand and build profile and reputation nationally and internationally continue with a focus on the following key activities:

- Advertising initiatives included print and digital ads in the Globe and Mail in support of the School of Accounting and Finance student team who won the 2016 CFA Institute Research Challenge. This competition involves over 4,000 students from 865 universities in 70 countries. This is the first time a Canadian team has

won. Paid social support increased the reach of the advertising generating over 100,000 impressions.

- Research2Reality (R2R), a partnership between University of Toronto, UBC, University of Alberta and Waterloo, creates public service announcements (PSA's) and short videos to promote high impact research happening at key U15 Canadian institutions. PSA's are aired on the Discovery Channel, Discovery Science, and the campaign is supported by R2R's website, social channels and the partner institution platforms.
- Waterloo and its researchers and startups participated in the Waterloo Region pavilion at the Ontario Centres of Excellence 2016 Discovery Day conference May 9 and 10.

Waterloo Global Science Initiative

Founded in 2009, Waterloo Global Science Initiative (WGSi) is a [non-profit partnership](#) between Perimeter Institute for Theoretical Physics and the University of Waterloo. The mandate of WGSi is to promote dialogue around complex global issues and to catalyze the long-range thinking necessary to advance ideas, opportunities and strategies for a secure and sustainable future. I opened the 2016 WGSi Summit on April 24 and introduced its theme, Open Access Energy, and the work of the Summit to develop an actionable framework for addressing electricity provision for energy isolated communities around the globe.

Rankings

In May, *Inc. Magazine*, which tracks successful entrepreneurship worldwide, ranked Waterloo as the world's top emerging startup ecosystem.

University Communications

This was a very successful quarter for media story-telling with major news outlets internationally, nationally and regionally covering the work of the University in driving and promoting innovation.

March 17: **BNN** aired a special episode of their show [The Disruptors filmed on location at Velocity](#). The segment featured an exclusive interview with Feridun Hamdullahpur to discuss innovation and how to remain competitive. The show included pitches from Velocity companies.

March 30: **Financial Post** – John Tory's mission was to promote Toronto-Kitchener/Waterloo as a competitive innovation corridor. He said one of his top preoccupations is the quantity of University of Waterloo graduates, in particular, who leave. [Toronto's mayor heads to Silicon Valley to woo home talent, along with some U.S. venture capital](#)

April 1: [Work in Silicon Valley and Spooked About Trump? Canada Wants You](#) **Bloomberg's** story on migration from the US to Canada featured a quote from Feridun Hamdullahpur speaking after his speech to the Economic Club of Canada..

April 5: **Halifax Chronicle Herald** ran an OpEd by Feridun Hamdullahpur, adapted from a speech given earlier in the year to the Halifax Chamber of Commerce.

[NowNS: A three-tiered model of opportunity](#)

April 8: Waterloo Region Record covered Finance Minister Bill Morneau's remarks at the University of Waterloo [saying that Waterloo Region is a model for the 'innovation agenda'](#)

April 14: The media relations team secured the publication of an OpEd by Stephen Watt, Dean of Math, in the **Toronto Star**. Using the peg of new mandatory math teaching in grade schools, Watt told the Star that Canadians [need to overcome their national math phobia](#).

April 29: After extensive work by the media relations team, the **Report on Business Magazine** featured a cover story called [Out Where The Robots Roam: It's not quite cool yet, but hardware is taking over from pure software plays in Waterloo's tech hothouse](#). The feature included Professors Steven Waslander and Dana Kulic and student/alumni companies Landmine Boys, Avidbots and Clearpath Robotics.

May 5: After several months of effort, the media relations team concluded work with the **Wall Street Journal** on a signature article on the University of Waterloo. The Story, [Tech Recruiters Flock to Ontario](#), ran in the newspaper and was featured across a range of Journal blogs the following day. The story outlines how the University has become a magnet for companies like Google and Amazon who flock to Ontario to recruit talent – but have started to set roots in the province to snag the best talent.

May 6: The media relations team secured extensive Canadian coverage via the **Canadian Press** on [Landmine Boys](#), a startup that has roots in the Faculty on Engineering and the Velocity program.

Research News March – May

- The New York Times covered work by Professor Laura Hug in a story titled ['Scientists Unveil New 'Tree of Life'](#). Researchers selected more than 3,000 species to study, bringing together a representative sample of life's diversity.
- Professor Larry Smith appeared in Time Magazine sharing unconventional advice for students and new grads. [How Not to Screw Up Your Life \(Like Your Parents Did\)](#).
- Work from a team of researchers in the Faculty of Arts generated world-wide coverage including the [UK's Daily Mail](#) newspaper with their finding that drawing can dramatically improve memory.
- Media in more than 40 countries, including the [BBC](#), Le Parisien, The Guardian (UK), The Daily Telegraph (UK), Der Spiegel (Germany) covered novel findings from mathematician Chris Bauch, who found that sexually transmitted infections could have forced humans to become monogamous.

Executive Communications

My most significant and co-ordinated public speaking tour drew to a conclusion following a lunchtime keynote with the Economic Club of Canada in Toronto. Following the luncheon I was interviewed by BNN's Amber Kanwar. This initiative is the result of team efforts across multiple University Relations portfolios and beyond, including Advancement. Feedback from stakeholders has been positive.

We are in the process of pivoting from Waterloo-focused thought leadership — emphasizing the uniqueness and strength of our university model —to an approach focusing much more broadly on the PSE sector's capacity for collaboration and enhanced industry connection and economic impact. This is in support of key Waterloo advocacy priorities.

My digital and social communication activity has continued, with Twitter followership now in excess of 2,000 and engagement scores trending favorably. My blog continues to establish itself as a solid forum for both planned and reactive presidential messaging.

The executive communications portfolio has had the opportunity to support the vice-president, academic and provost on several occasions, mostly to internal audiences or campus-based conferences. This has been a valuable force multiplier for me as well.

I also maintained a steady tempo of speeches and other communications activities in support of key university partnerships, including: at the Korea Advanced Institute for Technology (KAIST) Presidential Forum, with alumni groups in Korea and California, and at the Waterloo Global Science Initiative summit.

Government Relations Update

- Submission of priority infrastructure projects by the May 9 deadline for Engineering 7, Science Research Complex, Chemistry 2, and Burt Matthews Hall. We conducted extensive outreach with Ontario officials and ministers offices as well as with federal officials in advance of our submission. We continue to reach out to Ontario officials to ensure the province's support for our 2 major proposals.
- Federal Budget on March 22, 2016 included funding for co-op, research granting councils, student assistance, the creation of innovation clusters and networks, and postsecondary infrastructure
- Visit and tour by Tony LaMantia, CEO of WREDC (March 15)
- Toronto Mayor John Tory visit to IQC and the Sedra Student Design Centre (March 23)
- Quantum Valley visit by Ontario Finance Minister Charles Sousa including a tour of the Research Advancement Centre (March 19)
- Lieutenant Governor of Ontario Elizabeth Dowdeswell visited IQC, the Velocity Fund Finals competition, St. Paul's GreenHouse, and Renison University, along

with meetings with FEDS representatives and a roundtable with faculty from Environment and Arts (March 31)

- Federal Finance Minister William Morneau visited the Sedra Student Design Centre and held a town hall on the federal budget with students and faculty members (April 7)
- Prime Minister visited Quantum Valley with mention of quantum computing at an announcement of renewed federal funding for the Perimeter Institute (April 15)
- Visit and tour for Sebastien Roy, Canadian Consul and Trade Commissioner in Detroit (May 11)
- Continued development of the Advanced Manufacturing Consortium with VPR and partner institutions
- Successful completion of the Campus-Linked Accelerator renewal for \$2.135 million from the province including Velocity, AC, Conrad Centre, St. Paul's GreenHouse, and regional partners WLU and Conestoga

Community Relations and Events

Planning for the 2016 Waterloo Innovation Summit is underway.

The Growth Imperative, the 2016 Summit theme, underscores the importance of innovation in the creation of agile businesses that succeed even in periods of economic uncertainty.

The 2016 Summit is September 14 - 16. A stimulating and dynamic program is in development with our partner, Communitech, and through the leadership of Summit Chair David Fransen. Confirmed keynote speakers include Walter Isaacson, Anita Sands and Chamath Palihapitiya. We are expecting 250 global leaders — from industry, policy and universities — to connect in one of the world's leading cradles of innovation

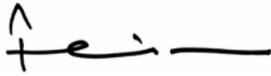
Students, staff and faculty are visible and engaged in a series of community partnerships and events of relevance to the University.

- University leaders attended events including the Mayor's State of the City addresses in both Kitchener and Waterloo; Sustainable Waterloo Evening of Recognition; and Communitech's Tech Leadership Conference.
- The University participates on the Region of Waterloo's Local Immigration Partnership, and contributes to the Syrian Newcomer Fund Task Force in partnership with The Kitchener Waterloo Community Foundation.
- A team from the University also took part in the United Way of Kitchener Waterloo annual Day of Caring.
- In partnership with The Kitchener Waterloo Community Foundation and the House of Friendship, the University welcomed former Governor General Adrienne Clarkson to campus for a public lecture on belonging.
- The University continues to actively participate in town and gown efforts in the community and the province, attending the annual Town & Gown Ontario conference and contributing to a number of City of Waterloo work groups related to talent retention, neighborhood development, and branding/gateway discussions.

Events and initiatives are held on campus to celebrate success and honor achievement.

- We have recently celebrated the President's 2016 Teaching & Research awards and years of service recognition events.
- The President and senior leaders joined the Accelerator Centre in celebrating its 10th anniversary.
- Esteemed economics professor Larry Smith was also honored with an event on May 17, celebrating the release of his new book which included a fireside chat with Larry and me.
- Work is underway in anticipation of the University's 60th anniversary in 2017.

I look forward to discussing these and any other issues and subjects on June 7th.

A handwritten signature in black ink, appearing to read 'Feridun', with a horizontal line extending to the right.

Feridun Hamdullahpur
President and Vice-Chancellor

University of Waterloo
Board of Governors
BUILDING & PROPERTIES COMMITTEE
Report to the Board
7 June 2016

FOR APPROVAL

Resolutions Following 20 May 2016 Meeting

Due to lack of quorum, the meeting was canceled and members were asked to vote via email on those items from the open session that required approval or recommendation to the Board of Governors. Quorum was present on each item that was for decision. Minutes of those decisions are kept herein and a formal record of electronic voting will be maintained by the Secretariat & Office of General Counsel. Supporting documents for these resolutions were supplied with the 20 May 2016 meeting package. Both resolutions were unanimously approved on 24 May 2016. The motions recommended to the Board of Governors are as follows:

1. LIGHT RAIL TRANSIT UPDATE (POTENTIAL EASEMENTS)

Motion: To recommend to the Board of Governors the granting of 4 easements to the Region of Waterloo for the LRT system with a total area of approximately 180 m² (0.04 acres).

2. KITCHENER-WILMOT HYDRO EASEMENT

Motion: To recommend to the Board of Governors the granting of a utility easement to Kitchener-Wilmot Hydro along the Victoria Street frontage of the Health Sciences Campus.

25 May 2016
/ar

Murray Gamble
Chair

University of Waterloo
Board of Governors
FINANCE & INVESTMENT COMMITTEE
Report to the Board of Governors
7 June 2016

This report is submitted following the committee's meeting of 19 May 2016.

FOR APPROVAL

1. Responsible Investing Working Group

Motion: To approve the formation of a Responsible Investing Working Group of the Board of Governors, and to approve the terms of reference for the group as described in this report.

Membership

10 of 12 members will be financially literate and have knowledge of investments generally. A majority of members will have knowledge of the University's investment funds.

- Three members of the Board of Governors or its finance and/or pension committees, other than University employee or student members
- Six members of either the Board of Governors or its pension committee, as follows:
 - One faculty member to be nominated by the FAUW executive;
 - One staff member to be nominated by the UWSA executive;
 - One CUPE member to be nominated by the executive of CUPE Local 793 (the member of the Pension & Benefits Committee who is a representative of CUPE Local 793);
 - One undergraduate student to be nominated by the FEDS executive;
 - One graduate student to be nominated by the GSA executive; and
 - One retiree to be nominated by the executive of the Retirees' Association (the member of the Pension & Benefits Committee who is a representative of retirees).
- Vice-president, administration & finance
- Vice-president, advancement
- Vice-president, academic & provost, or delegate

Chair

The vice-president, academic & provost or delegate will serve as chair. The chair may vote, if necessary, in order to break a tie.

Terms of Reference

The mandate of this working group is to make recommendations to the Board of Governors through the appropriate committees and subcommittees (outlined below) as to whether and how to incorporate environmental, social and governance (ESG) factors into decision making re: the investment of the endowment and pension funds, taking into consideration:

- The legal and regulatory requirements including, among other things, fiduciary responsibilities, investing and investments, ESG reporting and contractual commitments;
- The goals and purposes of the University pension and endowment funds;
- Existing University investments, policy and governance frameworks;
- The financial context of the University;
- Research into options for incorporating ESG factors into investment decisions;
- Review of approaches taken at peer institutions;
- Consultation with University stakeholders, e.g. retirees, alumni, donors; and
- Advice provided by University investment advisors.

Reporting & Approval

Subject to review and approval by the Board of Governors Registered Pension Plan Investments Subcommittee, Finance & Investment Committee and Pension & Benefits Committee, in accordance with their mandates, the recommendations of the working group will be reflected in the statements of investment policies and procedures for the endowment and pension funds and submitted to the Board for final approval.

Term

This working group will serve until the earlier of the date on which it has fulfilled its mandate and the date on which the Board of Governors dissolves the working group.

Approved by the Board of Governors on [...]

Background: The University's current Statement of Investment Policies and Procedures (SIPP) refers generally to the manner in which consideration is made for Environmental, Social and Governance ("ESG") factors in investing decisions. The recommended terms of reference follows from direction provided to investigate what additional ESG detail would be appropriate to include in the SIPP, with the question to be investigated by a group whose membership is representative of the University's stakeholder groups and utilizing a process that consults the stakeholders in the University community. The consideration of recent petitions to divest from certain classes of investments/industries would occur within the scope of the mandate of this working group.

The Pension & Benefits Committee (P&B) considered the terms of reference on a parallel pathway as this committee, and P&B took no action to recommend the draft terms of reference nor was any clear consensus expressed among those members on the draft document at the P&B meeting on 20 May 2016. At that P&B meeting, there was commentary from members of the plan stakeholder groups expressing uncertainty at some facets of the terms of reference as well as uncertainty at how consideration of ESG factors may impact the performance of the pension plan assets.

FOR INFORMATION

2. General Oversight

Investment Fund Performance. The committee reviewed the performance of the registered pension plan, endowment fund, IQC trust fund, and payroll pension plan portfolios as at 31 March 2016.

The fund managers for the registered pension plan fund and the payroll pension plan are generally performing as expected. The IQC trust fund is performing as expected. The endowment fund's performance remains below target; one asset manager will be notified that their fund offerings will be officially put on watch as a result of the fund's performance trends.

Review of Midterm Economic Drivers. The committee reviewed the general investment principles for the investments under consideration, as well as the prevailing trends and economic developments that impact investment decisions and overall returns.

/mg

Satish Rai
Chair

University of Waterloo
Board of Governors
GOVERNANCE COMMITTEE
Report to the Board in regular session
7 June 2016

This report is submitted following the committee's meeting of 19 May 2016.

FOR INFORMATION

1. Board and Committee Self-Assessment Survey Results

The Committee reviewed the results of the Board and committee self-assessment surveys done at the end of the 2015-2016 cycle. Participation was up marginally over the previous year, it being noted that the survey was distributed in hard copy at the April Board meeting as a possible explanation. The committee noted the comments received from the Board on the survey.

As a result of the surveys and comments received, the committee agreed to continue to look for ways to drive dynamic meetings and discussion with more opportunity to have input at a strategic level. The committee will consider how Board and committee meetings are structured and timed. It was observed that Board members need an opportunity to get together to allow members of all constituencies an opportunity for discussion.

The chair advised that he would consult with the Vice-Chair, the President and the University Secretary to identify opportunities for improvement.

2. Core Competencies of the Board Survey

The committee was advised that the Board members' skills matrix would be distributed to the full complement of external board members for completion prior to the end of June, such that the results would be available as this committee gets ready to recruit additional board members.

3. Joint Board/Senate Orientation Update

The first joint orientation session with Board and Senate was generally well attended and well received. The committee secretary will make arrangements to hold a similar event in late April 2017.

4. Preliminary Planning for Annual Board Retreat

The committee was advised that the annual Board retreat will be held on Friday 2 December 2016. The committee secretary advised that, while planning for the retreat had not yet begun, members should consider possible retreat topics such that planning might begin over the summer months. Hamdullahpur, Watson, Booth and Atkinson will consider topics for distribution to the committee for consideration, and all governors are encouraged to send ideas to Atkinson for consideration.

5. Amendment to *UW Act* Update

The committee secretary advised that the amendment to *The University of Waterloo Act, 1972*, by which the Canadian citizenship requirement was removed, received Royal Assent on 19 April 2016. He noted that an amendment to Board Bylaw 1 must be done to ensure consistency with the

amended statute, and advised that he would bring this item forward to the October meeting of the board.

7 June 2016
/jla

William Watson
Chair

University of Waterloo
PENSION & BENEFITS COMMITTEE
Report to the Board of Governors
7 June 2016

This report is submitted following the committee's meeting of 20 May 2016.

FOR APPROVAL

1. Actuarial Valuation of the Pension Plan as at 1 January 2016

Motion: To approve the actuarial valuation report as at 1 January 2016, recognizing that the report will not be filed with the Financial Services Commission of Ontario (FSCO).

Background: The University of Waterloo pension plan is an inflation-linked defined-benefit plan. The plan is funded by contributions from the employees and the University and by investment returns. The total annual contribution is determined by applying actuarial methods with assumptions about investment returns, mortality, inflation and salaries.

An actuarial valuation report is required to be filed at least every three years; however, the committee commissions a report on an annual basis for its planning and the University's budgeting purposes.

The 1 January 2016 report shows that the registered pension plan (the "Registered Plan") is in a deficit position; however, the going concern deficit position has improved since the 1 January 2015 as well as since the 1 January 2014 report. The University continues to make additional contributions to meet the unfunded liability.

See Attachment #1 for a detailed summary of the 2016 actuarial valuation results for the Registered Plan. A complete copy of the report can be requested through the committee's secretary, Sian Williams at sian.williams@uwaterloo.ca or extension 38625.

FOR INFORMATION

2. Payroll Pension Plan

The University of Waterloo payroll pension plan (the "Payroll Plan") provides pension benefits (subject to plan caps) that cannot be paid from the Registered Plan because of the application of the *Income Tax Act* maximum pension. The Registered Plan and Payroll Plan are integrated from a benefits and financial management perspective. Assets are set aside within the University funds in respect of the obligations under the Payroll Plan. A going concern valuation of the Payroll Plan is performed in conjunction with the annual valuation of the Registered Plan, using the same actuarial assumptions.

As of 1 January 2016, the actuarial liabilities of the Payroll Plan were valued at \$34.95 million, and the market value of the assets was \$33.7 million, resulting in an unfunded liability of \$1.2 million. The current service cost for 2015 is \$1,582,372 or 0.40% of pensionable earnings, bringing the total University current service cost for the Registered Plan and Payroll Plan to 8.36% of pensionable earnings.

3. General Oversight

The committee receives regular reports from the consulting actuary on legislative and policy changes anticipated and in force that impact public sector pensions, as well as changes implemented by other public sector pension plans. The committee discusses implications for the pension plan and takes the information into account when making decisions on matters including plan design, funding and administration.

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Karen Wilkinson
Chair

Summary of the Actuarial Valuation Results as at 1 January 2016

1. Financial Position of the Registered Plan

- a. **Going Concern Basis.** A valuation conducted on a going-concern basis is to determine the relationship between the respective values of the Registered Plan’s assets and accumulated liabilities, assuming the Registered Plan will be maintained indefinitely.

	01.01.2014	01.01.2015 ¹	01.01.2016 ²
Actuarial value of assets	\$1,156,065,428	\$1,272,144,692	\$1,357,813,943
Actuarial liability	\$1,305,570,459	\$1,384,215,763	\$1,463,929,240
Funding excess (unfunded liability)	\$(149,505,031)	\$(112,071,071)	\$(106,115,297)
Deferred asset gain (loss)	0	\$44,365,045 ³	\$44,365,045
Market value of assets	\$1,194,775,607 ⁴	\$1,316,509,737	\$1,402,178,988

- b. **Solvency Basis.** A valuation conducted on a solvency basis is used to determine the relationship between the respective values of the Registered Plan’s assets and its liabilities assuming the Registered Plan was wound up and settled on the valuation date by the purchase of annuities or the payment of lump-sum values. In accordance with the *Pension Benefits Act*, solvency liabilities exclude certain contractual benefits (e.g., indexing) in order to limit the magnitude of additional funding requirements for solvency purposes. Ignoring these obligations for solvency funding purposes does not, however, alter the contractual obligation with respect to indexing in place under the terms of the Registered Plan (the liability for indexation benefits is reflected in the going concern valuation position and funding requirements).

	01.01.2014	01.01.2015	01.01.2016 ⁵
Market value of assets (net of wind-up expenses)	\$1,194,275,607	\$1,316,009,737	\$1,401,678,988
Solvency liability	\$1,270,650,784	\$1,521,313,344	\$1,689,999,086
Solvency excess/(deficiency)	\$(76,375,177)	\$(205,303,607)	\$(288,320,098)

The additional wind-up liability for indexation benefits is approximately \$599.8 million at 1 January 2016, resulting in a hypothetical wind-up deficit of approximately \$888 million at 1 January 2016 (including indexation). The primary driver behind the worsening solvency and wind-up valuations is the unprecedented low interest rate environment and the adoption of new mortality tables. The assumed interest rate for the solvency calculation is 3.04% and for the wind-up calculation, -0.05%.

2. **Funding Requirements.** Member contributions for 2016 are approximately \$29.4 million, or 7.34% of pensionable earnings. The University’s current service cost is approximately \$31.8 million or 7.96% of pensionable earnings. The University is also making mandatory special payments of \$15.0 million and

¹ The 2015 numbers reflect the adoption of alternate assumptions, which use a CPI rate of 2%. Note: this moves the discount rate to 5.75% from 6.00%.

² The 2016 figures reflect the reduction in the discount rate from 5.75% (CPI + 3.75%) to 5.70% (CPI + 3.70%)

³ This funding reserve represents the difference between the market value of assets and the actuarial value of assets of the real return bonds at the date of sale. It will be held in reserve and recognized over time.

⁴ Audited statement value has been increased by accrued benefit payments that are included in plan liabilities.

⁵ 2016 Solvency Liabilities reflect the adoption of CPM 2014 Combined with Generational Improvements mortality tables

additional special payments of \$2.3 million to amortize the unfunded liability of the Registered Plan. This brings the University's total contribution to \$47.9 million (163% of member contributions).

3. Asset Mix

Asset Mix (% of Total Market Value) ⁶	01.01.2014	01.01.2015	01.01.2016
Real Return Bonds	17%	0%	0%
Fixed Income, Cash	34%	57%	54%
Equities	41%	35%	38%
Infrastructure	5%	5%	5%
Real Estate	3%	3%	3%
Total	100%	100%	100%

4. Membership Data

Membership Data	01.01.2011	01.01.2012	01.01.2013	01.01.2014	01.01.2015	01.01.2016
Active Members	3518	3617	3760	3891	3940	4169
LTD Members	93	96	94	97	86	84
Suspended Members	12	10	15	11	12	10
Current Pensioners	1432	1480	1555	1603	1673	1745
Deferred Pensioners	422	447	448	484	490	501
Total	5477	5650	5872	6086	6201	6509

5. History of Asset Returns

Year Ending	Return on Market Value ⁷
31 December 2008	-21.51%
31 December 2009	14.70%
31 December 2010	8.49%
31 December 2011	2.89%
31 December 2012	9.10%
31 December 2013	13.1%
31 December 2014	9.43%
31 December 2015	5.23%

⁶ Asset mix is based on the underlying assets excluding in-transit contributions and payments.

⁷ The returns (after expenses) on market value have been calculated assuming contributions and benefit payments take place in the middle of the year. Returns for 2008 – 2013 exclude the real return bonds.