# University of Waterloo
# BOARD OF GOVERNORS
## Tuesday 5 June 2018

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

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

|  | **MEETING** | **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 |
|  | **Consent Agenda** **Motion:** To approve or receive for information by consent items 4-9 below. |  |  |
| 1:40 | 4. Minutes of the 3 April 2018 Meeting | 4 | Decision |
|  | 5. Report of the President  a. Recognition and Commendation  b. Sabbatical and Administrative Leaves, and Administrative Appointments | 12  17 | Information  Decision/Information |
|  | 6. Report of the Vice-President, Academic & Provost  a. Department Name Change – Drama and Speech Communication  b. New Academic Unit – Change of Name and Structure of the Conrad Centre | 24  26 | Decision  Decision |
|  | 7. Report of the Vice-President, Administration & Finance  a. Incidental Fee Changes | 30 | Decision |
|  | 8. Reports from Committees  a. Building & Properties  b. Executive  c. Finance & Investment  d. Governance  e. Pension & Benefits | 32  34  35  36  37 | Information  Information  Information  Information  Information |
|  | 9. Reports from Institute for Quantum Computing  a. Annual Report to the Ministry of Innovation, Science, and Economic Development* |  | Decision |

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|  | **OPEN SESSION** | **Page** | **Action** |
|---|---|---|---|
|  | 9. Reports from Institute for Quantum Computing | | |
|  |    b. Corporate Plan 2018-19** | | Decision |
|  | **Regular Agenda** | | |
| 1:45 | 10. Business Arising from the Minutes | | |
| 1:50 | 11. Presentation – Vice-President, University Research | 38 | Information |
| 2:10 | 12. Report of the President | | |
|  |    a. President's Update | 63 | Information |
|  |    b. Discussion of White Paper: Student Learning Environment | 120 | Information |
|  |    c. Report of the Vice-President, Advancement | 134 | Information |
|  |    d. Report of the Associate-Vice-President, Graduate Studies and Postdoctoral Affairs | 156 | Information |
| 3:10 | 13. Report of the Vice-President, Academic & Provost | | |
|  |    a. Staff Salary Recommendation | 158 | Decision |
| 3:20 | 14. Conflict of Interest Declaration Form | 160/At Places | Information |
| 3:25 | BREAK | | |
|  | 15. Reports from Committees | | |
| 3:35 |    a. Finance & Investment | 161 | Decision |
| 3:45 |    b. Joint Report from Finance & Investment and Pension & Benefits | 162 | Decision |
| 3:55 |    c. Responsible Investing Working Group | 171 | Decision |
| 4:15 | 16. Other Business | | |
|  | **CONFIDENTIAL SESSION** | | |
| 4:20 | 17. Conflict of Interest | Oral | Declaration |
|  | **Consent Agenda** | | |
|  | **Motion:** To approve by consent items 18 and 19 below. | | |
| 4:25 | 18. Minutes of the 3 April 2018 Meeting | 9 | Decision |
|  | 19. Report of the President | | |
|  |    a. New Appointments with Tenure | 183 | Decision |
|  | **Regular Agenda** | | |
| 4:30 | 20. Business Arising from the Minutes | | |
| 4:35 | 21. Report of the President | Oral | Information |

| | CONFIDENTIAL SESSION | Page | Action |
|---|---|---|---|
| | 22. Reports from Committees | | |
| 4:45 | a. Executive | 186 | Information |
| 4:50 | b. Governance | 191 | Decision |
| 4:55 | 23. Other Business | | |
| | 24. Next Meeting: Tuesday 30 October 2018 at 1:30 p.m. | | |
| | *IN-CAMERA* SESSION | | |
| 5:00 | 25. Conflict of Interest | Oral | Declaration |
| 5:05 | 26. Minutes of the 3 April 2018 Meeting | 11 | Decision |
| 5:10 | 27. Business Arising from the Minutes | | |
| 5:15 | 28. Other Business | | |
| | 29. Report from Governance Committee | | |
| 5:20 | a. Presidential Performance | 192 | Information |
| | 30. Adjournment | | |

*full report at: https://uwaterloo.ca/institute-for-quantum-computing/sites/ca.institute-for-quantum-computing/files/uploads/files/iqc_2017_annual_report_to_ised.pdf

**full report at: https://uwaterloo.ca/institute-for-quantum-computing/sites/ca.institute-for-quantum-computing/files/uploads/files/iqc_corporate_plan_2018-2019.pdf

At places: Conflict of interest declaration form; Board of Governors 2018 handbook; *University Affairs* magazines

**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.

KJJ/ees                                                                    Karen Jack
29 May 2018                                                          University Secretary
                                                                              Secretary to the Board of Governors

**BOARD OF GOVERNORS**
**Minutes of the Tuesday 3 April 2018 Meeting**

**Present:** Upkar Arora, Kathy Bardswick\*, Peter Barr, Hannah Beckett, Antonio Brieva, Robert Bruce, Jennifer Clapp, Andrew Clubine, Shannon Dea, Cindy Forbes (chair), George Freeman, Martha George, Robert Gorbet, Julia Goyal, Feridun Hamdullahpur, Thorsten Heins, Karen Jack (secretary), Sheryl Kennedy, John Lounds, David Porreca, William Pristanski, John Saabas\*, James Schlegel, Ted Scott, Ken Seiling, Jeremy Steffler, John Swainson, Berry Vrbanovic, Kate Windsor, Marta Witer

**Guests:** Sandra Banks, Bruce Campbell, Aldo Caputo, Jeff Casello, Mario Coniglio, Ingrid Cowan, Rick Culham, Charmaine Dean, George Dixon, Rob Esselment, Kim Gingerich, Sarah Hadley, John Hirdes, Lee Hornberger, Dennis Huber, Richard Hughson, Ryan Jacobs, Michael Jack, Ross Johnston, Andrea Kelman, Derek Madge, Nick Manning, Walter Mittelstaedt, Catherine Newell Kelly, Diana Parry, Douglas Peers, Leanne Perreault, Alice Raynard, Chris Read, Ian Rowlands, James Rush, Daniela Seskar-Hencic, Joanne Shoveller, Allan Starr, Sean Thomas, Susan Tighe, David Tubbs, Stephen Watt, Glen Weppler

**Regrets:** Dave Jaworsky, Tom Jenkins, Bruce Richter, Mark Seasons

\*joined by telephone

**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**
   The chair noted that today's meeting is the last of the governance year and then announced the names of governors who are stepping down: Marta Witer, Ted Scott, Jeremy Steffler, Jennifer Clapp, Robert Gorbet, David Porreca, Bruce Richter, Hannah Beckett, Antonio Brieva, Andrew Clubine, Robert Bruce and Julia Goyal. A round of applause followed.

   The chair reminded members about the reception following the meeting to honour these individuals. The chair also expressed her pleasure with the Board's accomplishments and healthy discussions over the past year.

3. **AGENDA/ADDITIONAL AGENDA ITEMS**
   The chair advised that the agenda was distributed with an incorrect motion in the Report of the Vice-President, Academic & Provost, 2018-19 Operating Budget. The report at members' places has the correct motion, and a corrected pdf was uploaded to the SharePoint site on Monday morning. She also noted that item 13, the Report of the Vice-President, University Research has been deferred to the June meeting.

   The Board heard a motion to approve the agenda as amended.

   Beckett and Arora. Carried unanimously.

**Consent Agenda**

   The Board heard a motion to approve and/or receive for information by consent items 4-8 below.

   Bruce and Porreca.

In response to questions: Peers advised that inclusion of "Waterloo" in the name of the Stratford school was not discussed; there are minimal costs associated with the Retail Services' name change; information about capital projects may be found at the Building & Properties page on the Secretariat website; agreement by the secretary to correct the minutes to reflect that the conversation under part 12., "Tuition" was in relation to international students.

4.   **MINUTES OF THE 6 FEBRUARY 2018 MEETING**
     The Board approved the minutes of the meeting as amended.

5.   **REPORT OF THE PRESIDENT**
     **Recognition and Commendation.** The Board received the report for information.

     **Sabbatical and Administrative Leaves/Administrative Appointments.**
     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.

     **Naming Proposal – Stratford School of Interaction Design and Business**
     The Board heard a motion to approve the creation of the Stratford School of Interaction Design and Business as a new unit in the Faculty of Arts effective 1 July 2018.

     **Naming Proposal – Retail Services**
     The Board heard a motion to approve the following name change: "Retail Services" to "Print and Retail Solutions.

     **Naming Proposal – Campus Wellness**
     The Board heard a motion to approve the following name change: Campus Wellness will be the department name which will encompass Counselling Services, Health Services, and Health Promotion.

7.   **REPORT OF THE VICE-PRESIDENT, ADMINISTRATION & FINANCE**
     **Incidental Fee Changes**
     The Board heard a motion to approve the 2018-19 Student Services Fee as presented in the report.

8.   **REPORTS FROM COMMITTEES**
     **Building & Properties.** The Board received the report for information.

     **Finance & Investment.** The Board heard a motion to approve the revised Endowment Fund Investment Guidelines effective 1 May 2018.

     The Board heard a motion to approve the revised IQC Fund Investment Guidelines effective 1 May 2018.

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

     **Governance.** The Board received the report for information.

     **Pension & Benefits.** The Board received the report for information.

Following kudos to Governor Dea for her teaching award, the question was called, and the motion carried unanimously.

**Regular Agenda**

**9. REPORT OF THE PRESIDENT**
 **President's Update.** The president spoke briefly to his written report, and informed members about the two confirmed Canada 150 Research Chairs (Kerstin Dautenhahn, Chair in Intelligent Robotics and Anita Tam Layton, Chair in Mathematical Biology and Medicine). He also offered kudos to Waterloo's co-op "triple crown winner" Emily Pass (CEWIL Co-op Student of the Year, EQO Co-op Student of the Year, UW Faculty of Science Co-op Student of the Year).

 **Student Mental Health Presentation with John Hirdes, Walter Mittelstaedt, and Antonio Brieva.** Following an introduction to the President's Advisory Committee Student Mental Health Report by Hamdullahpur, during which he invited questions and feedback, Mittelstaedt, Hirdes and Brieva each spoke to it, advising, in turn:

   1) Emerging Themes and Concepts (Mittelstaedt): information re: the committee's terms of reference, timeline to date, the panels which informed the committee's work, the five key concepts (the mental health and wellness lens, social inclusion and support, mental health literacy, resiliency, services), the community's responses.
   2) Implementation (Hirdes): his background, the proposed composition of the implementation committee, his first impressions of the report's recommendations, his plans for staging implementation, other considerations.
   3) Student Perspective (Brieva): the incredible leadership by students and administration in forming the committee, a frank discussion of his own struggles, a request that this matter be included actively in the next strategic plan, his hope that this report is the beginning of the University's commitment to student mental health issues.

 In response to questions: Hirdes advised that many recommendations are not actionable quickly and agreed to report back with respect to progress in the future; Mittelstaedt spoke to the difficulties in identifying useful metrics, but one measure is to track service utilization, and he spoke to the University's commitment to setting aside time for engagement with the whole community in an effort to destigmatize mental health issues; a proposed subcommittee of the implementation committee is intended to consider marginalized groups and there was agreement by Mittelstaedt to bring the suggestion to include them actively back to the group.

 In discussion: kudos, and a suggestion from a faculty governor that employees make themselves more "human" and approachable to students; recognition that the University is not funded as a health care institution and needs more resources from the province on this front; a statement that the University and the students are in this together, both in terms of efforts and financial support; endorsement of the prospect of Waterloo being both the "jobs school" and the "school who cares"; agreement that this issue must be part of the next strategic plan; the value of informal community networks for support; a suggestion that ways be found to celebrate failures as they are an excellent way to learn; agreement with that concept, and a suggestion to embrace fragility and weakness, rather than shy away from it.

The Board as a whole expressed its support for the Student Mental Health Report and the University's plans for its implementation.

Hamdullahpur thanked members for the discussion and in particular, Waterloo's students for their leadership.

**Advancement Update.** Members accepted the report provided by the Vice-President, Advancement distributed before the meeting.

10. **BUSINESS ARISING FROM THE MINUTES**
    **Executive Compensation Program.** The chair advised that the province approved the University's program on 27 February 2018.

    The president advised that the discussion of the University's white papers relating to aspects of the next strategic plan will occur at subsequent meetings and was replaced at today's meeting to enable conversation re: student mental health matters.

11. **PRESENTATION: RICHARD HUGHSON, SCHLEGEL RESEARCH CHAIR IN VASCULAR AGING AND BRAIN HEALTH, DEPARTMENT OF KINESIOLOGY, FACULTY OF APPLIED HEALTH SCIENCES**
    Following an introduction by Charmaine Dean, Dr. Hughson informed members about cardiovascular aging, in particular, his work with the Canadian Space Agency, and Chris Hadfield. He spoke to: various studies, support and competitions; a sedentary lifestyle study he has been involved with; spaceflight's effect on arterial stiffness; the effects of exercise in space; new work on vascular aging on the International Space Station; the negative consequences of stiffer arteries as we age.

    Members thanked Hughson and offered praise for his huge contributions to his field.

12. **REPORT OF THE VICE-PRESIDENT, ACADEMIC & PROVOST**
    **2018-19 Operating Budget.** Dixon presented a summary of the proposed 2018-19 operating budget. Speaking to his presentation, he advised: some information is estimated; opportunities to resolve the deficit exist over the course of the year; the importance of meeting enrollment targets; the budget is conservative; general income and expenses.

    The Board heard a motion to approve the 2018-19 Operating Budget.

    Schlegel and Steffler.

    In discussion: the government does not index its grant funds and is putting its money into OSAP instead; the University hopes to improve its grant funding with the third Strategic Mandate Agreement; from governor Schlegel, advice that the Finance & Investment committee considered the budget carefully and endorses it; a request from the chair for administration to break down tuition fees for a future meeting to inform governors' understanding; from Casello, an account of financial support available to international graduate students which brings their tuition more in line with domestic students; clarification that University funds committed to student mental health have already been allocated and transferred in addition to matching funds from the students.

The question was called and the motion carried unanimously.

**Admissions Update.** Members received the report for information.

13. **REPORT OF THE VICE-PRESIDENT, UNIVERSITY RESEARCH**
The report and presentation were deferred to the June meeting.

14. **SELF ASSESSMENT SURVEY**
Members completed the survey and provided them to the secretary.

15. **REPORT FROM AUDIT & RISK COMMITTEE**
**Delegation of Authority to Approve University of Waterloo Financial Statements, 2017-2018.**
The Board heard a motion to delegate its authority to approve the University's audited financial statements for the fiscal year ended 30 April 2018 (the "Financial Statements") to the Board Executive Committee.

Heins and Pristanski. Carried unanimously.

**Modification of the Terms of Reference.** The Board heard a motion to approve the proposed revisions to the terms of reference of the Audit & Risk Committee.

Scott and Windsor. Carried unanimously.

The remaining items in the report were received for information.

16. **OTHER BUSINESS**
There was no other business.

The Board convened in confidential session and the chair invited the vice-presidents to remain.

14 April 2018                                                        Karen Jack
                                                                     University Secretary
                                                                     Secretary to the Board of Governors

## CONFIDENTIAL SESSION

The confidential minutes have been removed.

The confidential minutes have been removed.

## *IN-CAMERA* SESSION

The *in-camera* minutes have been removed.

**University of Waterloo**
**BOARD OF GOVERNORS**
**Report of the President**
**5 June 2018**

**FOR INFORMATION**

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**Recognition and Commendation**

**The President's Reception for Excellence in Teaching and Research** took place on Tuesday10 April 2018, honouring the faculty and graduate students who have received awards for research and teaching excellence this past year. Forty-three faculty and graduate students who won teaching awards and 119 who won research awards both internal and external to the University were celebrated.

The teaching award honourees included:

**Derek Armitage**; **Mónica Barra**; **Michael Beazely**; **Sanjeev Bedi**; **Steven Bednarski**; **Hector Budman**; **Claudio Cañizares**; **Wayne Chang**; **Feng Chang**; **Frankie Condon**; **Douglas Cowan**; **Dan Davison**; **Richard Epp**; **Kaan Erkorkmaz**; **Myra Fernandes**; **Brian Forrest**; **Amanda Garcia**; **Carol Hulls**; **Alex Huynh**; **Igor Ivkovic**; **David Jao**; **Amir Khajepour**; **Rosemary Killeen**; **Ken Klassen**; **Norman Klassen**; **Ron Kroeker**; **Elaine Lillie**; **David McKinnon**; **Houman Mehrabian**; **Mariam Mufti**; **Mohammed Nassar**; **Elena Neiterman**; **Edwin Ng**; **Rajinder Pal**; **Tejal Patel**; **Karin Schmidlin**; **Sherman Shen**; **Gordon Stubley**; **Lay Ling Tan**; **Chris Vigna**; **Mary Wells**; **Derek Wright**; and **Chad Wriglesworth**.

The research award honourees included:

**Nasser Mohieddin Abukhdeir**; **Howard Armitage**; **Chris Bachmann**; **Michal Bajcsy**; **Nandita Basu**; **Hilary Bergsieker**; **Derek Besner**; **Jonathan Blay**; **David Blowes**; **Ramona Bobocel**; **Raouf Boutaba**; **Janusz Brzozowski**; **Sarah Burch**; **Zhongwei Chen**; **Richard J. Cook**; **Don Cowan**; **Andrew Doxey**; **Robin Duncan**; **Ehab El-Saadany**; **Myra Fernandes**; **Mark Ferro**; **Steven Fischer**; **Marianna Foldvari**; **Geoffrey Fong**; **Brian Forrest**; **Ian Goldberg**; **Guang Gong**; **Maura R. Grossman**; **Igor Grossmann**; **Frank Gu**; **Ralph Haas**; **Jasmin Habib**; **David Hammond**; **Mark Havitz**; **Eric Helleiner**; **Keith Hipel**; **Ric Holt**; **Scott Hopkins**; **Susan Horton**; **Philip Howarth**; **Richard Hughson**; **Lyndon Jones**; **Ivan Jurakic**; **Suzanne Kearns**; **Matthew Kennedy**; **Amir Khajepour**; **Na Young Kim**; **Sharon Kirkpatrick**; **Alice Kuzniar**; **Whitney Lackenbauer**; **Raymond Laflamme**; **Stanley Laiken**; **Lap Chi Lau**; **Scott Leatherdale**; **Xianguo Li**; **Juewen Liu**; **Norbert Lutkenhaus**; **Colin MacLeod**; **Eduardo Martin-Martinez**; **Colleen Maxwell**; **Alan Macnaughton**; **Ashley Rose Mehlenbacher**; **Hossein Abouee Mehrizi**; **Guo-Xing Miao**; **Sushanta Mitra**; **David Moscovitch**; **Ron Mullin**; **J. Ian Munro**; **Linda Nazar**; **Vinh Nguyen**; **Nicole Nolette**; **Marcel Nooijen**; **Marcel O'Gorman**; **Tamer Özsu**; **Diana Parry**; **Janusz Pawliszyn**; **Guy Poirier**; **Adam Presslee**; **Michael Reimer**; **Jean Richardson**; **Candida Rifkind**; **Evan Risko**; **Peter Russell**; **Ken Salem**; **German Sciaini**; **Winny Shen**; **Larry Smith**; **Ken Seng Tan**; **Andrew Trant**; **Daniel Vogel**; **Zhou Wang**; **Ruodu Wang**; **Linda Warley**; **Mary Wells**; **Joanne Wood**; **Michael Worswick**; **Alfred Yu**; and **Weihua Zhuang**. (adapted from the *Daily Bulletin*, 9 April 2018)

On Friday 6 April 2018, the **2017 Co-op Student of the Year Awards** took place in the Tatham Centre. The annual event highlights the co-op achievements of six winners, one from each Faculty. Faculty of Science winner **Emily Pass** also won the **Co-operative Education and Work-Integrated Learning Canada and Education at Work Ontario (EWO)** co-op student of the year awards for her work term at the University of Western Ontario's Centre for Planetary and Space Exploration. "It's incredibly humbling to hear about the accomplishments of the other students here and consider myself a peer," Pass said after receiving her awards. "I'm incredibly proud to be a Waterloo co-op student."

**Aaron Buckley**, the Faculty of Environment Co-op Student of the Year winner, received an honourable mention from EWO for his work at CH2M HILL.

The following are the recipients of the 2017 University of Waterloo Co-op Student of the Year Awards for their contributions to co-operative education and their community:

**Leah Drost – Health Studies (Faculty of Applied Health Sciences)**: Working at Sunnybrook Health Sciences Centre, Drost made significant contributions to the medical field. Her research focused on post-surgery radiotherapy for cancer that had spread to the bone. It was a landmark study and was published in the medical journal *Radiotherapy and Oncology*. She presented her research to the Multinational Association for Supportive Care in Cancer in Washington, D.C.

**Matthew Condie – Economics (Faculty of Arts):** Condie entered HubHead Corp. as a marketing coordinator, but quickly assumed responsibilities at the director level two weeks into his co-op term. He expanded and reinvented the company's social media presence through implementing customer-centric marketing strategies and creating client-focused content.

**Vincent Shadbolt – Biomedical Engineering (Faculty of Engineering)**: Shadbolt managed all software and hardware launches for Motorola devices across Canada. At Motorola Mobility (a Lenovo Company), he was responsible for testing and introducing major IMS features (VoLTE, ViLTE and VoWifi) to be released for 2018 products. He collaborated with the company's Chinese and Brazilian teams, learning Portuguese during his work term to help bridge major communication gaps.

**Aaron Buckley – Geography and Environmental Management (Faculty of Environment)**: At CH2M HILL, Buckley managed a project that increased drinking water capacity by 30 per cent in a major North American city. He has also volunteered his consulting services to organizations such as the Waterloo Regional Police Service, making a difference in the local community.

**Jiajia Yin – Actuarial Science (Faculty of Mathematics)**: While on a work term at Travelers Canada, Yin played a key role in developing a pricing sub-model project that will have a worldwide impact on profitability for the company.  She presented her work to senior management, including the CEO and Vice Chairman of Travelers Canada. The company was so impressed with her work that they have hired her to work for them full-time after she graduates.

**Emily Pass – Physics and Astronomy (Faculty of Science)**: Pass was a research assistant at the University of Western Ontario's Centre for Planetary and Space Exploration. She successfully developed a data analysis pipeline for Colibri, a rapid-imaging astronomical experiment. She developed the pipeline from scratch—a year's worth of work— completing it in six weeks. Her findings appear in a 13-page scientific paper in *Publications of the Astronomical Society of the Pacific*, a respected academic publication. Pass is also one of 270 Schulich Leaders in Canada. (adapted from the *Daily Bulletin*, 12 April 2018)

**Michael Cormier**, a PhD student in the David R. Cheriton School of Computer Science, was awarded the 2018 **Murray Martin Prize for Best Research Paper by a Math Grad Student**. His winning paper "Purely vision-based segmentation of web pages for assistive technology," co-authored with supervisor Dr. Robin Cohen, is published in a special issue on assistive computer vision and robotics in the journal *Computer Vision an Image Understanding*. Grounded in computer vision, a subfield of artificial intelligence research, this work hinges on the clever insight that web pages can be considered as visual images. Cormier used this foundation to design a novel computer vision model that segments web pages both hierarchically and optimally by using a Bayesian approach to detect edges, and which also considers classification. Vision-based methods are not sensitive to implementation language or complexity, meaning this innovative model has applications far and wide in accessible technologies. His foundational work creating this model offers rich information and novel insights that form a viable launch pad for future computer vision research to take off from. A direct application of this work to the field of assistive

technology is improving systems that produce alternative presentations of text. It enables users, especially those with cognitive and visual challenges, to interact with web pages through a series of augmented experiences. Practical functions like decluttering pages or zooming preferentially, are desirable for everyday use. The $3,060 Murray Martin scholarship is made possible thanks to generous donation from Pitney Bowes Inc. in honour of Murray Martin, the retiring chair, president, CEO and director whose continued investment in research and development has ensured the company's industry leadership. (adapted from *Cheriton School of Computer Science News*, 24 April 2018)

Professor and Distinguished Teacher **John North** celebrates his **50th year** at University of Waterloo this year. He has taught more than 20,000 students at Waterloo. Originally from British Columbia, North anticipated staying with the University for only a year before returning home. While North's five-decade stay wasn't part of his original plan, he credits Waterloo's top students and good relations with colleagues and University administration as big influencers. "But even more than that, the freedom to teach," says North. "To teach what I love to teach and to do research which I find engrossing. It's a fine thing at my age to come and go with young people in their late teens and 20's." In reflecting, North also highlights Waterloo's unique encouragement of faculty to form companies for the marketing and development of their research, a pivotal policy which has contributed to the economic development of KW. His own company, North Waterloo Academic Press, has published volumes by many scholars, as well as his own 69-volume *Waterloo Directory of English Newspapers and Periodicals 1800-1900*, reviewed as "the fourth great Humanities reference work of Great Britain, after Johnson's *English Dictionary*, the *Dictionary of National Biography* and the *Oxford English Dictionary*." This series now includes Scottish, Irish and Welsh periodicals. More than 400 students have worked with North on this project.
The *Directory* enables scholars to identify primary sources, as well as the scholarship on each title, and then to read the full text by hyperlink from within the *Waterloo Directory.* This includes some 70,000 newspapers and periodicals, in all subjects, so users can read press reports of the day, such as the coronation of Queen Victoria, the ravages of cholera, the première of Handel's *Israel in Egypt* at the 1846 Birmingham Music Festival, and the Crimean War. Alongside his teaching, North volunteers in Spiritual Care at Grand River Hospital and welcomes refugees arriving in Kitchener-Waterloo. (adapted from *Waterloo Stories*, 25 April 2018)

University of Waterloo student **Chloe Jang** has won **Waterloo Region's Outstanding Youth Award**. Jang, a third-year biomedical sciences student, received the award at the Volunteer Impact Awards ceremony on April 19 at the Waterloo Region Museum. Jang was recognized for her volunteerism efforts at the University Gates Senior Residence, Grand River Hospital, Sanctuary Refugee Health Centre, and the Student Success Office's International Peer Community Program. Jang also founded the Association Supporting Children's Educational Nurturing and Development (ASCEND), a unique summer camp initiative that helps Syrian refugee children adjust to Canadian society and culture. The program has expanded to offer an integrated ESL program aimed at helping immigrant families. Jang was among fourteen individuals, teams and organizations honoured with the Volunteer Impact Awards, which are presented by the Volunteer Action Centre. (adapted from the *Daily Bulletin*, 27 April 2018)

Waterloo Engineering professor **Slim Boumaiza** was honoured at Rideau Hall in Ottawa for his research on wireless communications networks with two industry partners. Boumaiza, an electrical and computer engineering professor who heads the Emerging Radio Systems Group (EmRG), is one of 20 scientists and engineers to be recognized at a ceremony attended by Governor General Julie Payette and other dignitaries. He is receiving a $200,000 research grant as the winner in one of four **Synergy Awards for Innovation** categories sponsored by the Natural Sciences and Engineering Research Council of Canada (NSERC) for outstanding examples of industry-academia collaboration. The award recognizes Boumaiza's work with Ericsson Canada Inc. and Keysight Technologies Canada Inc. to find ways to build energy-efficient radio-communications systems that minimize the environmental impacts and operational costs of 4G infrastructure. A citation by NSERC notes his research is paving the way for 5G, or fifth-generation, wireless networks, which involve "a combination of ingenuity and enterprise that can only be achieved by collaboration between industry and academia." In addition to setting the stage for 5G networks, it notes, Boumaiza and his industry partners are helping train the new engineers who will be at the forefront of wireless communications research and development in the future. The event at Rideau Hall

honoured the winners of NSERC's six national prizes totalling $3.72 million. (adapted from *Faculty of Engineering News*, 27 April 2018)

Eight University of Waterloo researchers have been named new or renewing **Canada Research Chairs (CRC)**. The announcement made by the Government of Canada is part of national funding for CRCs worth $158 million. An additional $8.3 million awarded to researchers across the country from the Canada Foundation for Innovation (CFI) for research infrastructure will be associated with the new Chair awards through the John R. Evans Leaders Fund, which includes funding for one Waterloo researcher. The recipients are:

**Arts**

- **Abigail Scholer** (Psychology) – SSHRC Tier 2 Renewal: Motivated Social Cognition ($500,000 over five years)

**Engineering**

- **Zhongwei Chen** (Chemical Engineering) – NSERC New Tier 1: Advanced Materials for Clean Energy ($1.4 million over seven years)
- **Ehsan Toyserkani** (Mechanical and Mechatronics Engineering) – NSERC New Tier 1: Multi-Scale Additive Manufacturing ($1.4 million over seven years)
- **Norman Zhou** (Mechanical and Mechatronics Engineering) – NSERC New Tier 1: Advanced Materials Joining and Processing ($1.4 million over seven years)

**Environment**

- **Brian Doucet** (School of Planning) – SSHRC New Tier 2: Urban Change and Social Inclusion ($500,000 over five years)

**Science**

- **Roger Melko** (Physics and Astronomy) – NSERC Tier 2 Renewal: Computational Quantum Many-Body Physics ($500,000 over five years)
- **Kevin Resch** (Physics and Astronomy) – NSERC Tier 2 Renewal: Optical Quantum Technologies ($500,000 over five years)
- **Mark Servos** (Biology) – NSERC Tier 1 Renewal: Water Quality Protection ($1.4 million over seven years) and John R. Evans Leaders Fund: Enhanced Assessment of Multiple Stressors ($149,000)

(adapted from the *Daily Bulletin*, 10 May 2018)

The Labour Market Information Council (LMIC) has named Waterloo professors **Ellen MacEachen** and **Ana Ferrer** to a newly formed 14-person **Labour Market Information Experts Panel**. The members are drawn from across the country and include academics from universities such as the University of Ottawa, New Brunswick and the Université de Montréal, as well as other industry experts. The LMIC created the panel to help guide the development, evolution and priorities of the Council. MacEachen, professor and associate director in the School of Public Health and Health Systems, researches the design and performance of work and health systems in relation to fast-changing economic, social and technological environments of the global economy. Ferrer, an Economics professor and incoming associate dean of Arts, Research, examines the economic implications of immigration, education and family economics. The LMIC identifies cross-Canadian priorities for the collection, analysis and distribution of labour market information, and helps get better value from existing labour market information investments across Canada. It also fosters the exploration of new opportunities for collaboration between governments and stakeholders. (adapted from the *Daily Bulletin*, 14 May 2018)

Each year, the Centre for Teaching Excellence and Graduate Studies and Postdoctoral Affairs recognize and celebrate the teaching development efforts of a Waterloo graduate student with the **Certificate in University Teaching (CUT) Award**. **Caitlin Scott** from the School of Environment, Resources and Sustainability is this year's recipient. The award honours Caitlin's commitment to implementing feedback for the continuous improvement and development of her teaching, her thoughtful approach to assessing student learning, and the practice of reflection that she regularly brings to her work as an instructor. Caitlin is a PhD candidate in Social and Ecological Sustainability. Her research examines the role of corporate actors in governance at the intersection of health and the environment. (adapted from the *Daily Bulletin*, 18 May 2018)

**University of Waterloo**
**BOARD OF GOVERNORS**
**Report of the President**
**June 5, 2018**

**FOR APPROVAL**

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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**

     **Betz, Emma,** Germanic and Slavic Studies, January 1, 2019 to June 30, 2019 at 85% salary
     *I will focus on completing two book projects begun during my last leave (in 2016) and disseminating the findings: 1) "Particles across languages", comparing OKAY in 14 languages and involving 20 interaction researchers; 2) "Mobilizing Action", focusing on how participants in interaction use multimodal resources to enlist the assistance of others. I am co-editor for both. I expect the remaining writing, editorial work, and dissemination for both to fall into Winter and Spring 2019.*

     **Blackwell, Adrian,** Architecture, September 1, 2018 to August 31, 2019 at 85% salary
     *I will focus on two projects: 1) Shenzhen as Model: tracing the topologies of neoliberal urbanization will study the dynamic form of urban space as it produces, and is in turn produced by, political economic processes; and 2) Delineating the Nation-State: Fences, Blockades or "Taking Care" will examine the relation between architectural theories of urban property lines and the history of the settler colonization of indigenous land.*

**Boluk, Karla,** Recreation and Leisure Studies, January 1, 2019 to June 30, 2019 at 100% salary
*I will continue to work on empirical and conceptual projects exploring the process in which tourism businesses and social entrepreneurs activate critical and creative thinking in order to progress sustainability, in light of the UN's 2030 Sustainable Development Goals, in addition to knowledge translation/exchange initiatives. International travel to further collaborations related to examining the role of tourism in advancing sustainability is possible.*

**Brisley, Neil,** Accounting and Finance, September 1, 2018 to February 28, 2019 at 85% salary
*I will continue to develop new research projects in Executive Compensation, Human Capital, and Corporate Governance. I will present my research to top European finance scholars, attend their workshops, contribute to their seminars and research environment, initiate new research collaborations, while learning about their pedagogy.*

**Choi, Kyung Soo,** Physics and Astronomy, September 1, 2018 to February 28, 2019 at 100% salary
*I will focus on my research program in quantum optics and quantum information science. I will perform experiments on quantum spin ice for the potential discovery of quantum spin liquids and write manuscripts on the findings. I will also prepare for the tenure dossier and write grant proposals that bridge industrial partnerships.*

**Chou, Perry,** Chemical Engineering, January 1, 2019 to December 31, 2019 at 100% salary
*I will focus on planning for the next phase of my biomanufacturing research projects using synthetic biology, metabolic engineering and various microbial biotechnology approaches; creating more academic partnerships; and renewing lecture notes.*

**Crowley, Mark,** Electrical and Computer Engineering, November 1, 2018 to April 30, 2019 at 100% salary
*I will conduct novel research in Machine Learning and expand my academic network through travel to conferences. The focus will be developing a new theoretical model integrating Reinforcement Learning with Deep Learning to improve decision making for spatial-temporal domains. I will continue to work with my graduate students to advance their publications and thesis research.*

**Dawson, Lorne,** Sociology and Legal Studies, January 1, 2019 to June 30, 2019 at 100% salary
*I will continue my government funded research into foreign terrorist fighters and their families, including completing a book under contract with Hurst/Oxford University Press. I will work on a new government funded project "Testing the Reliability, Validity and Equity of Terrorism Risk Assessment Tools".*

**Elliott, Susan,** Geography and Environmental Management, January 1, 2019 to June 30, 2019 at 85% salary
*I will focus on three projects: 1) complete a book on global environment and health (under contract to Springer) linked to the newly developed on-line course in Global Environment & Health (GEOG 225); 2) firmly establish the GLOWING (Global Index of Wellbeing) initiative with external funding (four international pilot studies conducted to date); 3) extend the "inequalities at the water-health nexus" research program through interactions with international partners in Mexico and Bangladesh (currently funded).*

**Gibson, Robert,** Environment, Resources and Sustainability, January 1, 2019 to June 30, 2019 at 85% salary
*I will devote my time to work on an SSHRC project that I lead on application of next generation impact assessment law and policy in Canada; and related more specific work on aligning Canadian assessment law and practices with Canadian commitments to climate change mitigation under the Paris Agreement.*

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**Giesbrecht, Mark,** Computer Science, July 1, 2018 to December 31, 2018 at 85% salary
*I will be based in Waterloo, with planned research trips to Pierre and Marie Curie University (UMPC) Paris (Professor Mohab Safey El Din), Université Grenoble (Professor J-G Dumas), Simon Fraser University (Prof. Micheal Monagan), New York University (NYU) (Professors Chee Yap and Victor Shoup). In each location, I will engage in ongoing and new projects in computer algebra and symbolic-numeric computation.*

**Haas, Carl,** Civil and Environmental Engineering, November 1, 2018 to April 30, 2019 at 100% salary
*I have two objectives; complete a book entitled "Infrastructure Computer Vision", which will be used to augment teaching; develop collaborative research projects with colleagues at UW, ETH in Zurich, TU Berlin and Chalmer University on Artificial Intelligence (AI) developments in construction and management of infrastructure systems.*

**Hardy, Mary,** Statistics and Actuarial Science, January 1, 2019 to December 31, 2019 at 100% salary
*I will work on a research project developing a framework for pension benefit design based on quantitative measures of risk, sustainability, equity and fairness. I will also complete a new text, Quantitative Enterprise Risk Management (co-authored with David Saunders), as well as the third edition of Actuarial Mathematics for Life Contingent Risk, a popular textbook co-authored with colleagues from Australia and the UK.*

**Hengartner, Urs,** Computer Science, September 1, 2018 to August 31, 2019 at 85% salary
*I will spend my sabbatical in Montreal collaborating with researchers at Concordia University and other local universities who are working on mobile privacy and security. I also intend to go on short-term visits to collaborate with other researchers working in this area.*

**Jakobsh, Doris,** Religious Studies, January 1, 2019 to June 30, 2019 at 85% salary
*I will work on two book projects/chapters and continue research on Sikhs globally and experiential learning/research on women in world religions.*

**Jiang, Ning,** Systems Design Engineering**,** January 1, 2019 to June 30, 2019 at 100% salary
*I will continue my research on advanced human-machine interfaces, neurorehabilitation engineering and engineering bionics which are supported by NSERC, OCE, and CFI.*

**Karsten, Martin,** Computer Science, September 1, 2018 to February 28, 2019 at 85% salary
*I plan to visit SAP in Walldorf, Germany to continue a collaboration that I started during my previous six month sabbatical. I plan to apply recent research results on dynamic resource management in a production-oriented cloud computing environment to validate those results and to collect real-world observations that can inform my future research.*

**Keller, Heather,** Kinesiology, January 1, 2019 to December 31, 2019 at 93.3% salary
*Research programs cross the continuum of care and are focused on improving the nutritional status and food intake of older adults. Research activity is focused on improving food quality and food intake and nutrition care processes to prevent, detect and treat malnutrition.*

**Kempf, Achim,** Applied Math, November 1, 2018 to April 30, 2019 at 100% salary
*I plan to visit the group of Professor Timothy Ralph, Node Director for the ARC Centre of Excellence for Quantum Computation and Communication Technology at the University of Queensland in Brisbane, Australia. We plan to work on recent developments at the intersection of the fields of quantum optics and relativistic quantum information. I am also planning visits to collaborators in Europe.*

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**Larson, Kate,** Computer Science, September 1, 2018 to August 31, 2019 at 85% salary
*I will be in Montreal and will collaborate with colleagues who work on artificial intelligence and algorithmic game theory at McGill University and other local universities. I also intend to take some short-term visits to other researchers working in these fields.*

**Law, Jane,** Planning, September 1, 2018 to February 28, 2019 at 85% salary
*I plan to conduct research and advance my knowledge in Bayesian spatial analysis that relates to two of my research grants (NSERC and CIHR). New methodologies that aim to solve current problems of analyzing spatial data and their applications in advancing knowledge transfer and exchange with stakeholders in planning and public health will be explored.*

**McKillop, Ian,** Public Health and Health Systems, September 1, 2018 to August 31, 2019 at 100% salary
*I plan to advance the science of public health management through the publications of a collection of real-world public health case scenarios developed in concert with students in our professional graduate program.*

**Nacke, Lennart,** Drama and Speech Communication, July 1, 2018 to December 31, 2018 at 100% salary
*I will focus on three projects: a) researching and writing first chapters for my new book on gameful design (design strategies, lessons learnt, and an overview of gamification studies); b) building a gameful application to improve personal well-being and health; and c) building an online resource filled with articles about games user experience design.*

**Onay, Selcuk,** Management Sciences, September 1, 2018 to August 31, 2019 at 96.8% salary
*I will conduct analytical and experimental research in behavioral decision-making and behavioral economics. More specifically, I will be working on projects that aim to shed light on the psychology of individuals' time and risk preferences and how firms' optimal production and pricing decisions are influenced by the presence of such boundedly rational consumers.*

**Scott, Andrea,** Systems Design Engineering, January 1, 2019 to December 31, 2019 at 85% salary
*I intend to write up journal papers pertaining to research on sea ice forecasting done by myself and my students over the past few years. I will also focus on a new project on lake ice modelling and validation for Lake Erie, and strengthen my existing collaborations with the Danish Meteorological Institute and Environment and Climate Change Canada.*

**Smale, Bryan,** Recreation and Leisure Studies, September 1, 2018 to February 28, 2019 at 100% salary
*I will focus on several large projects I am leading as Director of the Canadian Index of Wellbeing. Three provincial wellbeing indicator reports are underway or planned for Ontario, Saskatchewan, and Nova Scotia and five community-based wellbeing surveys are underway or scheduled in two provinces. Writing the final reports on all projects will be completed as well.*

**Stashuk, Daniel,** Systems Design Engineering, September 1, 2018 to August 31, 2019 at 85% salary
*I will spend more time focussing on the development and evaluation of algorithms for the quantitative analysis of electromyographic signals for the extraction of information to assist with the diagnosis and treatment of neuromuscular disorders and to study the effect of aging on human motor units. I hope to visit collaborators research labs in the U.S. and the U.K.*

**Toman, David,** Computer Science, January 1, 2019 to June 30, 2019 at 85% salary
*I will focus on the general topics of query and database update compilation in the context of Knowledge bases. I plan to visit top research groups in the area and related areas, such as automated theorem proving.*

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**Trefler, Richard,** Computer Science, September 1, 2018 to August 31, 2019 at 86.4% salary
*I will visit scientific collaborators and colleagues at Bell-Labs, Jet Propulsion Laboratory or Cambridge University to work on "local automated reasoning" for the analysis of parameterized symmetric computer system designs.*

**Tripp, Bryan,** Systems Design Engineering**,** January 1, 2019 to June 30, 2019 at 85% salary
*Deep neural networks approximate neurophysiological systems in an abstract way. This research will develop variations of deep networks that incorporate additional properties of neurophysiological systems, and test their performance and their ability to account for brain activity in response to visual stimuli.*

**Wan, Justin,** Computer Science, July 1, 2018 to June 30, 2019 at 100% salary
*I will be conducting research on scientific computing, including developing accurate and fast computational methods and models for applications in medical imaging, computational finance, and physical simulations.  Meanwhile, I plan to attend research conferences on these topics.  I also plan to have short visits to colleagues in other research institutions nationally and internationally.*

**Zhu, Kejia,** Management Sciences, September 1, 2018 to February 28, 2019 at 100% salary
*I plan to do research that further deepens the understanding of the dynamics of organizational rule networks. In addition, I will further expand the research on innovation, which is a new research field that I have started to explore with a research team at the University of Science and Technology of China.*

- **Sabbatical Leave Change**
  **Opal, Ajoy,** Electrical and Computer Engineering, May 1, 2017 to April 30, 2019, changed to May 1, 2017 to August 31, 2018, at 89.9% salary.


- **Administrative Leaves**
  **Dawson, Lorne,** Sociology and Legal Studies, September 1, 2018 to December 31, 2018 at 100% salary
  *I will continue my government funded research into foreign terrorist fighters and their families, including completing a book under contract with Hurst/Oxford University Press. I will work on a new government funded project "Testing the Reliability, Validity and Equity of Terrorism Risk Assessment Tools".*

  **Lawson, Kate,** English Language and Literature, September 1, 2018 to November 30, 2018 at 100% salary
  *I continue to work on influence and intertextuality within the microcosm of literary history constituted by the Brontë sisters. Employing a New Materialist methodology, I hope to expand notions of literary influence and to account for the effects of a shared space and shared reading and writing practices on their literary production between 1847 and 1853.*

  **Liebscher, Grit,** Germanic and Slavic Studies, September 1, 2018 to December 31, 2018 at 100% salary
  *I will prepare and submit publications for projects started over the past few years: Intercultural Encounters (supported by LITE and DAAD grants), German-Canadian language and identity (with collaborator in Mannheim, Germany), and German-as-a-foreign language in Japan (with collaborator in Japan). I will also spend some time on conceptualizing a new project on German language use.*

  **Servos, Mark,** Biology, January 1, 2019 to April 30, 2019 at 100% salary
  *I intend to travel to Eawag (ETH Zurich) to conduct research on risk assessment and management of emerging contaminants of concern (i.e. microcontaminants).  This is a pressing environmental issue in Switzerland as well as Canada where water managers are hindered by considerable scientific uncertainty.  I will work to place the risk from wastewater contaminants into the context of multiple*

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*stressors and cumulative effects at the watershed scale and been awarded a Proto-Synthesis Fellowship to work with researchers at Eawag to prepare a comprehensive review of this issue.*

**Smale, Bryan,** Recreation and Leisure Studies, March 1, 2019 to June 30, 2019 at 100% salary
*I will focus on several large projects I am leading as Director of the Canadian Index of Wellbeing. Three provincial wellbeing indicator reports are underway or planned for Ontario, Saskatchewan, and Nova Scotia and five community-based wellbeing surveys are underway or scheduled in two provinces. Writing the final reports on all projects will be completed as well.*

## FOR INFORMATION
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2. **Administrative Appointments**
   **Brown, Daniel**, appointment as Acting Director, Computer Science, Faculty of Mathematics, July 1, 2018 to December 31, 2018.

   **Clarke, Amelia**, appointment as Associate Dean, Research, Faculty of Environment, May 1, 2018 to April 30 2021.

   **Faulkner, Andrew,** appointment as Chair, Classical Studies, Faculty of Arts, July 1, 2019 to June 30, 2022.

   **Fieguth, Paul,** re-appointment as Chair, Systems Design Engineering, Faculty of Engineering, September 1, 2018 to August 31, 2020.

   **Gorbet, Robert,** re-appointment as Chair, Knowledge Integration, Faculty of Environment, September 1, 2018 to August 31, 2020.

   **Hanning, Rhona**, re-appointment as Associate Dean, Graduate Studies, Faculty of Applied Health Sciences, July 1, 2018 to June 30, 2020.

   **Hoeppe, Goetz,** appointment as Chair, Anthropology, Faculty of Arts, May 1, 2018 to April 30, 2022.

   **Moresoli, Christine,** re-appointment as Associate Dean, Co-operative Education and Professional Affairs, Faculty of Engineering, September 1, 2018 to August 31, 2021.

   **Nilsen, Elizabeth,** appointment as Interim Associate Dean, Graduate Studies, Faculty of Arts, July 1, 2018 to December 31, 2018.

   **Opal, Ajoy,** appointment as Associate Dean, Teaching, Faculty of Engineering, September 1, 2018 to August 31, 2020**.**

   **Staines, Richard**, re-appointment as Associate Dean, Research, Faculty of Applied Health Sciences, May 1, 2018 to June 30, 2020.

   **Stubley, Gordon**, re-appointment as Associate Dean, Teaching, Faculty of Engineering, May 1, 2018 to August 31, 2018.

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**Vester, Christina,** appointment as Interim Chair, Classical Studies, Faculty of Arts, July 1, 2018 to June 30, 2019.

- **Administrative Appointment Change**
  **Ager, Sheila**, appointment as Interim Chair, Fine Arts, November 22, 2017 to June 30, 2018, changed to November 22, 2017 to December 31, 2018.

  **Faulkner, Andrew,** appointment as Chair, Classical Studies, Faculty of Arts, July 1, 2017 to June 30, 2021 changed to July 1, 2017 to June 30, 2018.

Feridun Hamdullahpur
President

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**FOR APPROVAL**

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**Department Name Change**

**Motion:** That the Board of Governors approve the following name change: "Department of Drama and Speech Communication" to "Department of Communication Arts," effective 1 September 2018.

**Background and Process:**

The Department of Drama and Speech Communication proposes to change its name to the Department of Communication Arts.

The Department of Drama and Speech Communication proposed a new name to Arts Faculty Council in May 2016 ("Department of Communication, Performance, and Design"). This motion was approved 26 to 14 (with 4 abstentions). The proposed change was the result of extensive and ongoing conversations (both formal and informal) about the central aims of the department. A motion was then brought before University Senate in June 2016 and rejected. Subsequent to these meetings, the Department re-started a formal name change process. This required both decisions about process and substance, and conversations inside the department and with external stakeholders. The department decided to find a new name through an "iterative" consultation process, which required moving back and forth between discussions within the department and discussions with other units at the University. The goal of the iterative process was to have external discussion inform internal department decision-making. The Chair of the Department consulted, in some cases on several different occasions, with the Department of Fine Arts, the Department of English Language and Literature, the Stratford Programs, the Faculty of Engineering, the Provost's Office, and the Dean of Arts. Records of this consultation process were kept and all Department discussions began with reports of feedback from external stakeholders. This iterative process eliminated certain phrases and words from consideration and included robust support for "Communication Arts" from the external stakeholders identified above and from the Department. Substantive discussions concluded in December 2017. The Department voted on December 6, 2017 in favor of the name "Department of Communication Arts." A motion was then brought to Arts Faculty Council on February 6th, 2018 and that motion passed unanimously. Subsequently, Senate approved the recommendation of this motion to the Board of Governors at its meeting on 22 May 2018.

**Rationale:**

The name "Drama and Speech Communication" uses two anachronistic and confusing descriptors for the research and teaching that happens within the Department. "Drama" does not identify any existing academic program in the Faculty of Arts and misrepresents the Theatre and Performance program; "Speech Communication" is often confusingly associated with "Speech Pathology"; and Digital Arts Communication is not represented at all in the current department name. The

proposed new name – "Communication Arts" – captures the department level emphases on the analysis, inquiry, and critical practice of multi-modal forms of making meaning, including embodied, spoken, written, performative, visual, and digital modes of representation. All students in the Department engage in the production, performance, and critical cultural study of communication, with the aim of becoming competent and engaged artists/scholars/practitioners in their fields – the new name highlights this shared feature of all of the department's programs and better captures the kinds of research and creative work characteristic of faculty in the department. Furthermore, "Communication Arts" qualifies the word "communication" in order to distinguish our program from "Professional Communication," as it is understood in the Department of English Language and Literature, and other Canadian Communication programs (like Wilfrid Laurier's "Communication Studies" program which does not emphasize embodied performance, digital design arts, or critical practice).

D. George Dixon
Vice-President, Academic & Provost

FOR APPROVAL

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## CHANGING THE NAME AND STRUCTURE OF THE CONRAD CENTRE

**Motion**: That the Board of Governors approve the following changes: that the name of the Conrad Business, Entrepreneurship and Technology Centre be changed to the "Conrad School of Entrepreneurship and Business" within the Faculty of Engineering, and that it be granted formal status as an academic unit.

**Rationale**: When the Conrad Business, Entrepreneurship and Technology Centre (Conrad) was established it was made a Centre in part to allow it to exist outside of the faculties and deliver on a cross-university mandate. Since those early days, governance changes at the university have resulted in Conrad moving inside of Engineering and functioning as a department under the auspices of the Dean's office. However, Conrad's functioning is not aligned with current governance requirements at UW (it has academic programs, appoints dedicated faculty, needs to oversee tenure and promotion, etc.). The proposed change is "governance housekeeping" on one level, and brings no material change to Conrad's functioning, programming or mandate. The proposed name captures Conrad's activities well, is appropriate to its competitive context, and aligns with its external review recommendations. The motion above received unanimous endorsement by Engineering Faculty Council at its January 2018 meeting. Subsequently, Senate approved the recommendation of this motion to the Board of Governors at its meeting on 22 May 2018.

D. George Dixon
Vice-President, Academic & Provost

**UNIVERSITY OF WATERLOO**

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Attachment #1
## CONRAD SCHOOL OF ENTREPRENEURSHIP AND BUSINESS PROPOSAL

### BACKGROUND

The Conrad Business, Entrepreneurship and Technology Centre (Conrad) is a successful academic enterprise at University of Waterloo. For the last 15 years it has offered a truly unique, high-value professional masters degree (MBET). In its most recent external review, MBET was characterized as "innovative and evolving in line with the newest approaches to both Entrepreneurship and Intrapreneurship, not only in Canada but worldwide."

More recently, Conrad has begun offering:

- a Graduate Diploma in Business and Entrepreneurship;
- a Weekend version of its unique MBET that has attracted a large inaugural class;
- graduate courses in business and entrepreneurship that attract hundreds of Engineering's professional masters students every year,
- a ground-breaking online introductory entrepreneurship course (BET100),
- the innovative Bridging Entrepreneurs to Students (BETS) program that provides work experience to unplaced co-op engineering students while accelerating start-up activities at UW and in the region,
- an Enterprise Co-op program that has more than tripled in size since Conrad assumed its leadership; and
- the university's new undergraduate option and minor programs in entrepreneurship – open to all UW students regardless of discipline.

A proposal for a unique doctoral program in entrepreneurship is also in the formal planning stages.

Conrad's undergraduate courses and programs are made available to students from every faculty, permitting entrepreneurial students from every discipline to pursue exciting real-world applications of their disciplinary studies. Proposals are in development for how Conrad might also play a similarly valuable role in supporting the education and aspirations of graduate students across campus as well as the research commercialization activities of faculty and doctoral students. Conrad is a going concern that has been rapidly growing in size and scope.

When established by the University of Waterloo's senate, Conrad's mandate was "... *to provide a focal point for the development and coordination of UW's business activities...*", including MBET, the development of undergraduate programming, supporting the expansion of business offerings across campus, serving as a focal point for entrepreneurship research activities, and engaging with the business community and external stakeholders through outreach programming.

When Conrad was first formed to offer the MBET degree, it took the form of a university research centre. This was done, in part, to allow it to exist outside the faculties in order to be true to its senate-approved, university-wide mandate to serve all faculties. Over time, it became clear that a unit offering academic programming of this kind was most appropriately situated inside a faculty given UW's governance structures and, in 2005, Conrad became a unit inside of Engineering. It's university-wide mandate, however, remained and remains unchanged.

Under current UW governance policies and practices, research centres should not be offering degree programs or for-credit courses, and cannot technically appoint faculty. Further, they lack the requisite formal structures to facilitate the tenure and promotion practices of UW – an increasingly pressing issue that needs to be resolved for Conrad. (Policies 76 & 77)

In order to bring Conrad's formal structure in line with its mandated and actual activities, Conrad must become either a School or a Department within its faculty. In many respects, the proposal here represents a kind of governance "house keeping". *It represents no material change in Conrad's activities.*

PROPOSAL AND RATIONALE

*It is proposed that the* **Conrad Business, Entrepreneurship and Technology Centre** *become the* **Conrad School of Entrepreneurship and Business.**

The easiest name change would involve simply changing "Centre" to "School". However, Conrad and the Faculty of Engineering are mindful that it might be problematic to have the sequence "School of Business" in Conrad's name given the broad nature of business activities at the university, and we want to continue to position Conrad as a uniquely entrepreneurial entity.

School status is seen to be more appropriate to Conrad's activities, more helpful to its future aspirations, as well as more appropriate to its role in both the faculty's and the university's strategic agendas than department status. There is a robust set of reasons to draw this conclusion:

- The University of Waterloo has a number of schools that are housed within faculties: School of Accounting and Finance (Arts), School of Public Health and Health Systems (Applied Health Sciences), School of Optometry and Vision Science (Science), School of Pharmacy (Science), School of Architecture (Engineering), School of Environment, Enterprise and Development (Environment), School of Computer Science (Math), and the School of Planning (Environment). Each of these schools share a common focus on professional rather than purely academic and disciplinary activities and pursuits. Conrad clearly also has this characteristic focus. Further, as a measure of current thinking, the rationales used most recently in the establishment of both SEED and the School of Environment, Resources and Sustainability align closely

with Conrad's situation. The scope of Conrad's operations is, additionally, similar to those of the School of Architecture, SEED and the School of Environment, Resources and Sustainability when they were conferred with school status.

- School status offers a signal to the outside world of the importance of such professional entrepreneurship education programming to the university's strategic plan.

- Consistent with the rationale most recently offered for the School of Environment, Resources and Sustainability, almost all of Conrad's competitors are "schools".

- As with all the other schools at the University of Waterloo, school status will be helpful in marketing Conrad and the University's activities in the existing marketplace for such programming.

- Out of necessity and as part of its strategic positioning for UW, Conrad has built up a variety of structures and activities that are more consistent with UW practice in its schools, and less so in its departments. For example, Conrad has received a significant naming gift from the Conrad family that is similar in nature to the Cheriton School gift. Given the unique market it serves, Conrad also invests in its own specialized marketing and communications activities and staffing like Accounting and Finance.

Changing Conrad to a school is also consistent with the recommendations of the Ministry of Colleges and University's external review of Conrad's graduate programs in 2012, its accepted 2015 update to Senate, and the Engineering Faculty's Vision 2015 plan. Indeed, this change of status is one of the last remaining items on Conrad's last approved strategic planning agenda.

Conrad's faculty and staff see this as a critical step in achieving their objectives and advancing their mission. Their Engineering Faculty Council colleagues offered their formal and unanimous support of the proposal.

Respectfully Submitted,


J. Mark Weber
Eyton Director
Conrad Business, Entrepreneurship and Technology Centre

Pearl Sullivan
Dean
Faculty of Engineering

**University of Waterloo**
**BOARD OF GOVERNORS**
**Report of the Vice President, Administration & Finance**
**5 June 2018**

**FOR APPROVAL**

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**Incidental Fees**

**Federation of Students Fee**
It is recommended that the compulsory Federation of Students fee, assessed and collected from all full-time on-campus undergraduate students, be increased from $57.76 to $60.64 per term effective September 2018 (fall term).  Part-time on-campus undergraduate students are assessed 30% of the full-time fee or $18.19 per term.

Comments:
- The previous full-time fee increase was $1.14 per term effective September 2017
- The 2018 fee increase of $2.88 (5.0% to cover CPI plus the 2018 increase in the minimum wage) was approved at their General Meeting on March 21, 2018
- Payment of the fee is a requirement of registration and is non-refundable

**Orientation Fee**
It is recommended that the Orientation Fee, assessed and collected from each incoming full-time on-campus, first-year undergraduate student, be increased from $107.01 to $110.53 effective September 2018 (fall term).

Comments:
- The original $100.00 fee was approved by student referendum in February 2005
- The fee is collected in the fall term only for 1A students
- The fee can be adjusted by CPI each year and last increased in September 2017; the proposed increase is 3.3% and was approved at their General Meeting on March 21, 2018
- The fee is refundable through the Federation of Students; students seeking a refund are required to request the refund prior to the start of frosh week

**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 2018 (fall term).

|         | Dental  | Health   | U-Pass  | SRP    | Total    |
|---------|---------|----------|---------|--------|----------|
| Regular | $45.00  | $ 55.00  | $93.91  | $1.00  | $194.91  |
| Co-op   | $83.63  | $103.13  | $93.91  | $1.00  | $281.67  |

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 Federation of Students is monitoring the impacts of Ontario's PharmaCare+ program
- 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 $4.46 per term (4.99%)

**Science Society Fee**
It is recommended that the compulsory Science Society Fee, assessed and collected from all undergraduate science students be increased from $9.00 to $12.00 per term effective September 2018 (fall term) and from $12.00 to $15.00 September 2019 (fall term).

Comments:
- The fee increase was approved at the Science Society meeting on February 13, 2018
- The fee was last increased in the 1990s
- The fee is refundable during the first three weeks of the term

**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 U-Pass component effective September 2018 (fall term).

|           | Dental  | Health  | U-Pass  | Grad House | Total    |
|-----------|---------|---------|---------|------------|----------|
| Full-time | $81.00  | $62.00  | $93.91  | $23.50     | $260.41  |
| Part-time | $81.00  | $62.00  | N/A     | $23.50     | $166.50  |

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 23, 2018
- The U-Pass component reflects an increase of $4.46 per term (4.99%)

<div style="text-align:right">

Dennis Huber
Vice President, Administration & Finance

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This report is submitted following the committee's meeting of 18 May 2018, where quorum was not met at the meeting. Following the meeting, an electronic ballot was issued to members on the three items included, and these items were approved unanimously.

**FOR INFORMATION**
_____

1. **Service Tunnel Rehabilitation – UW Place Residence**
   On behalf of the Board, the committee approved a project budget of $4,000,000, and the construction tender will be considered in June 2018.

   Background: An inspection of the service tunnels at UW Place identified several safety concerns. Gillespie Building Consultants (GBC) Inc., structural consultants specialized in this type of work, were retained to prepare a condition assessment of the existing corrugated steel tunnel infrastructure that was originally constructed in 1970. This condition assessment report concluded that there are issues with the structural stability of these tunnels.

   GBC have been commissioned to complete the bid and construction documents for rehabilitating these tunnels. The solution currently being bid is to excavate and encase the existing steel tunnels in reinforced concrete. Restoration of the finished grade will form part of the contract.

   The proposed project budget ($000s) including net HST is:

   | | |
   |---|---|
   | Estimated cost of construction | $3,000 |
   | Restore finished grade (asphalt/landscaping) | 275 |
   | Contingency (15%) | 570 |
   | Condition Assessment Consulting Fee | 5 |
   | Bid & Construction Documents (3.8%) | 150 |
   | **Total** | **$4,000** |

   The project funding is from the Housing Department, which operates as an ancillary (full cost recovery) unit. This work is weather and season dependent; construction should start as soon as possible in June for completion by October.

2. **Chiller Replacement Project – Physics Building**
   On behalf of the Board, the committee approved a $3.5 million project budget to replace the existing chiller with the intention to approve the award of the construction contract in August 2018.

   Background: Supporting the Office of Research, the addition of a nationally interconnected data centre also known as "SharcNet" initiated the requirement to increase campus chilled water capacity. In addition to the Compute Canada grant for the recently completed SharcNet Data Centre, an additional $1M grant is anticipated from the Provincial grant sponsor to offset the costs of providing this additional cooling in the form of chilled water.

   The existing chiller within the Physics building is at end of life. The 1060-ton chiller in Physics, complete with associated cooling tower, pumps, and piping will be replaced with a 1500-ton chiller and associated mechanical systems.

   Stantec Consulting were initially selected to undertake feasibility and concept design work with a separate contract to prepare design and construction documents.

The proposed project budget ($000s) including net HST is:

| | |
|---|---|
| Class D Construction Estimate | $2,660 |
| Construction Contingency (20%) | $530 |
| Consulting Fees | $310 |
| **TOTAL PROJECT** | **$3,500** |

The project will be funded through a $1 million grant from the Province with the balance coming from the operating fund. This work will be scheduled during Fall 2018. Long-lead equipment will be procured and purchased in advance of bidding the construction work. Construction is expected to be complete by December 2018.

3. **Transformer/Power Upgrade Project – Math and Computer Building**
   On behalf of the Board, the committee approved a $4.2 million project budget to to replace the existing transformers, upgrade high voltage campus loop, switch gear, and relocate exterior pad mounted generator with the intention to electronically approve the award of the construction contract in July 2018.

   Background: Supporting the Office of Research, the addition of a nationally interconnected data centre also known as "SharcNet" within the Math and Computer building initiated this electrical upgrade project. The existing transformers are original to the building, and have been in service since 1967. This project proposes to replace the two existing 1000kVA transformers with two 3000kVA transformers. Upgrades to the existing high voltage campus loop is required to support this project. Emergency power and redundancy are required for this research facility.

   Stantec Consulting was initially selected to design the emergency power systems with incremental fees required to also prepare design and construction documents for the transformer upgrades so that both projects could be fully coordinated.

   The proposed project budget ($000s) including net HST is:

| | |
|---|---|
| Class C Construction Estimate | $3,325 |
| Consulting Fees (Generator +Transformers) | $150 |
| Mechanical Cooling Allowance | $55 |
| Structural Remediation Allowance | $105 |
| Construction Contingency (15%) | $565 |
| **TOTAL** | **$4,200** |

   The project will be funded through operating funds. This work will be scheduled to coordinate with a building shutdown between August 20-31. Construction is expected to be complete by December 2018.

4. **General Oversight**
   The committee reviewed and accepted for information:
   - the capital financing commitments associated with capital projects, and advises that these commitments fall within Waterloo's board-approved debt policy
   - the status of capital projects
   - the work plan of the committee

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Martha George
Chair

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/*mg*

**University of Waterloo**
**Board of Governors**
**EXECUTIVE COMMITTEE**
**Report to the Board**
**5 June 2018**

This report is submitted following the committee's deliberations during April/May 2018.

**FOR INFORMATION**
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Over the course of April and May 2018, the following resolutions were passed on behalf of the Board of Governors.

1.  **Appointments to Committees**
    a.  Board Executive
        That the Board Executive Committee approve the reappointment of Upkar Arora, CAL member (term: 1 May 2018 – 30 April 2021) and appointment of Kate Windsor, staff representative member (term: 1 May 2018 – 30 April 2019) to the Board Executive Committee.

    b.  Building & Properties
        That the Board Executive Committee approve the appointment of Murray Gamble, LGIC member (term to 30 April 2021) to the Building & Properties Committee.

    c.  Pension & Benefits
        That the Board Executive Committee approve the appointment of Michael Herz, staff representative member (term: 1 May 2018 – 30 April 2021) to the Pension & Benefits Committee.

Cindy Forbes
Chair, Executive Committee

**University of Waterloo**
**Board of Governors**
**FINANCE & INVESTMENT COMMITTEE**
**Report to the Board of Governors**
**5 June 2018**

This report is submitted following the committee meeting of 17 May 2018, and is recommended for inclusion in the consent agenda.

**FOR INFORMATION**

1. **General Oversight**
   <u>Investment Fund Performance</u>. The committee reviewed the performance of the registered pension plan, endowment fund, IQC trust fund, and payroll pension plan portfolios as at 31 March 2018. The most recent quarter provided generally muted returns for all asset classes and for most fund managers with returns slightly negative in some cases but still consistently ahead of policy benchmarks. The registered pension fund managers have achieved returns of 6.1% over the past full year, ahead of its return target of 5.5% (CPI+3.50%). The endowment fund's performance of 4.4% exceeded the fund's policy benchmark of 4.2% on a one-year basis. The IQC trust fund returned 5.8% over the same period compared to the benchmark of 4.3%. The fully indexed payroll pension plan continues to track closely to the policy benchmark.

   */mg*                                                            James Schlegel
                                                                    Chair

**University of Waterloo**
**Board of Governors**
**GOVERNANCE COMMITTEE**
**Report to the Board of Governors**
**5 June 2018**

This report is submitted following the committee's meeting of 24 May 2018.

**FOR INFORMATION**
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1. **Board Self-Assessment Questionnaire**
   The Committee reviewed the results of the Board and committee self-assessment surveys done at the end of the 2017-2018 cycle. As a result of the surveys and comments received, the committee agreed that the secretary of the Board will provide information relating to some concerns at the orientation session (e.g., construct of agendas, and the roles of the committees will be better described). Further, committee secretaries and chairs will reach out to new and continuing members to invite discussion re: the committees' terms of reference, purposes, sources of information, and powers. Other concerns mentioned included video conferencing capabilities which now are improved and in place for committee meetings, and will be improved for Board meetings, and distribution of presentation materials with the agenda which is also in place.

2. **Board Orientation**
   The committee heard about the final plans with respect to the planned orientation sessions to be held 4-5 June 2018. Members understood that the secretary will reach out to those members unable to attend to invite them to a meeting with her to review key messages.

3. **Work Plan**
   The committee reviewed its annual work plan, and agreed to move the performance evaluation of the President and receipt of the performance reviews of the executive group and the Provost's portfolio from May to March in order to better align with the University's normal evaluation timelines.

4. **Board Retreat**
   The committee was advised that the annual Board retreat will be held on Friday 7 December 2018. The committee agreed with the President's suggestion that the retreat focus on the development of the next strategic plan.


28 May 2018                                                          Cindy Forbes
*/kjj*                                                              Chair

This report is submitted following the committee's meeting of 18 May 2018, and is recommended for inclusion in the consent agenda.


**FOR INFORMATION**
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1. **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 University's pension plan and considers the information when making decisions on matters including plan design, funding and administration.

   During the reporting period, this included a presentation to outline the impact of Ontario Regulation 250/18 and the new Ontario pension funding rules on the pension plans, and in particular, the potential impacts upon going concern and solvency valuations and the special extra payments made by the University thereon.


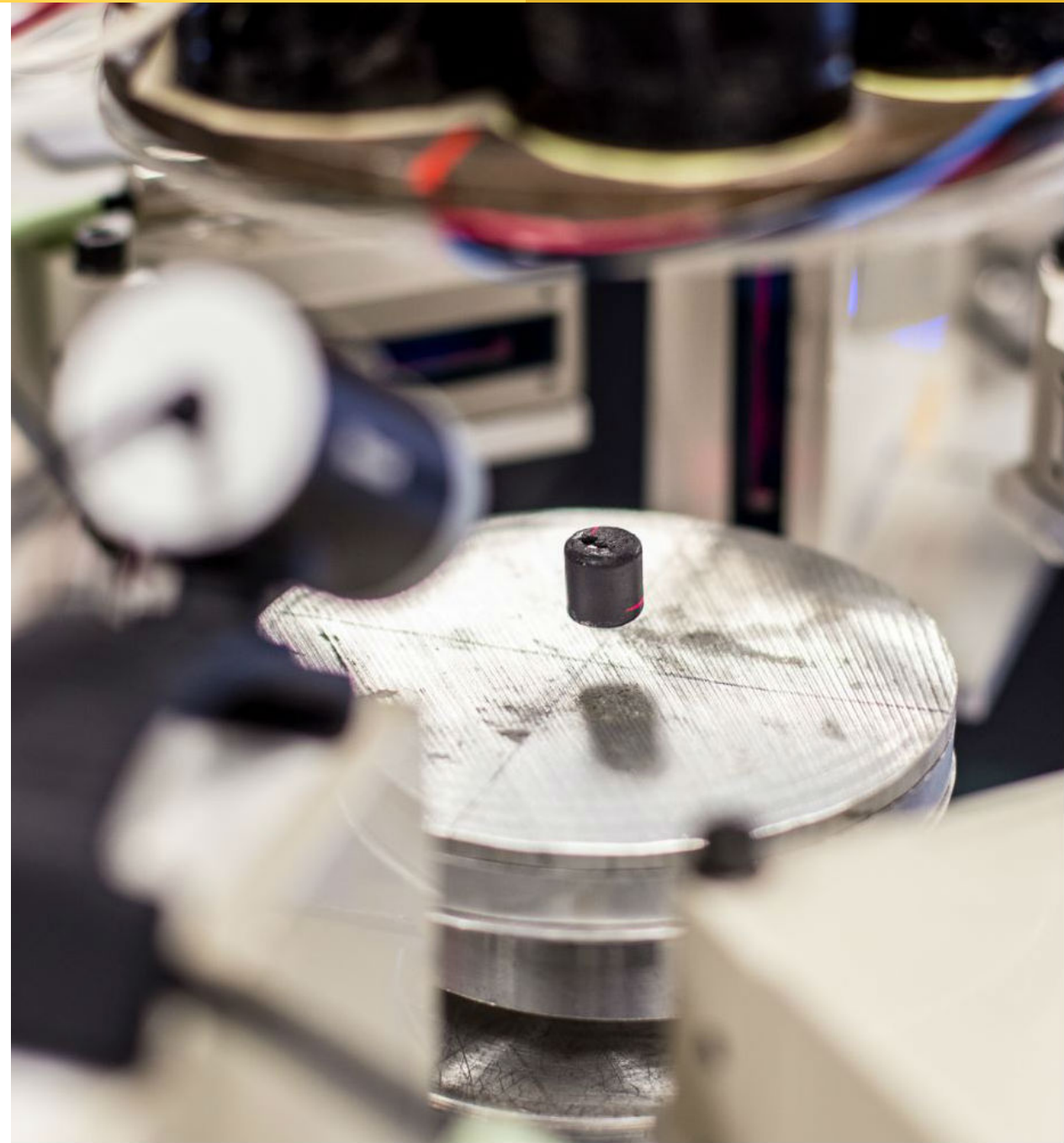   /mg                                                          Marilyn Thompson, Chair
                                                               Pension & Benefits Committee

# An unconventional approach to education, research, and commercialization

Board of Governors
June 5, 2018

Charmaine Dean

**Vice-President, University Research**

UNIVERSITY OF
**WATERLOO**

# **Transformational Research**

Increase the worldwide impact and recognition of University of Waterloo research
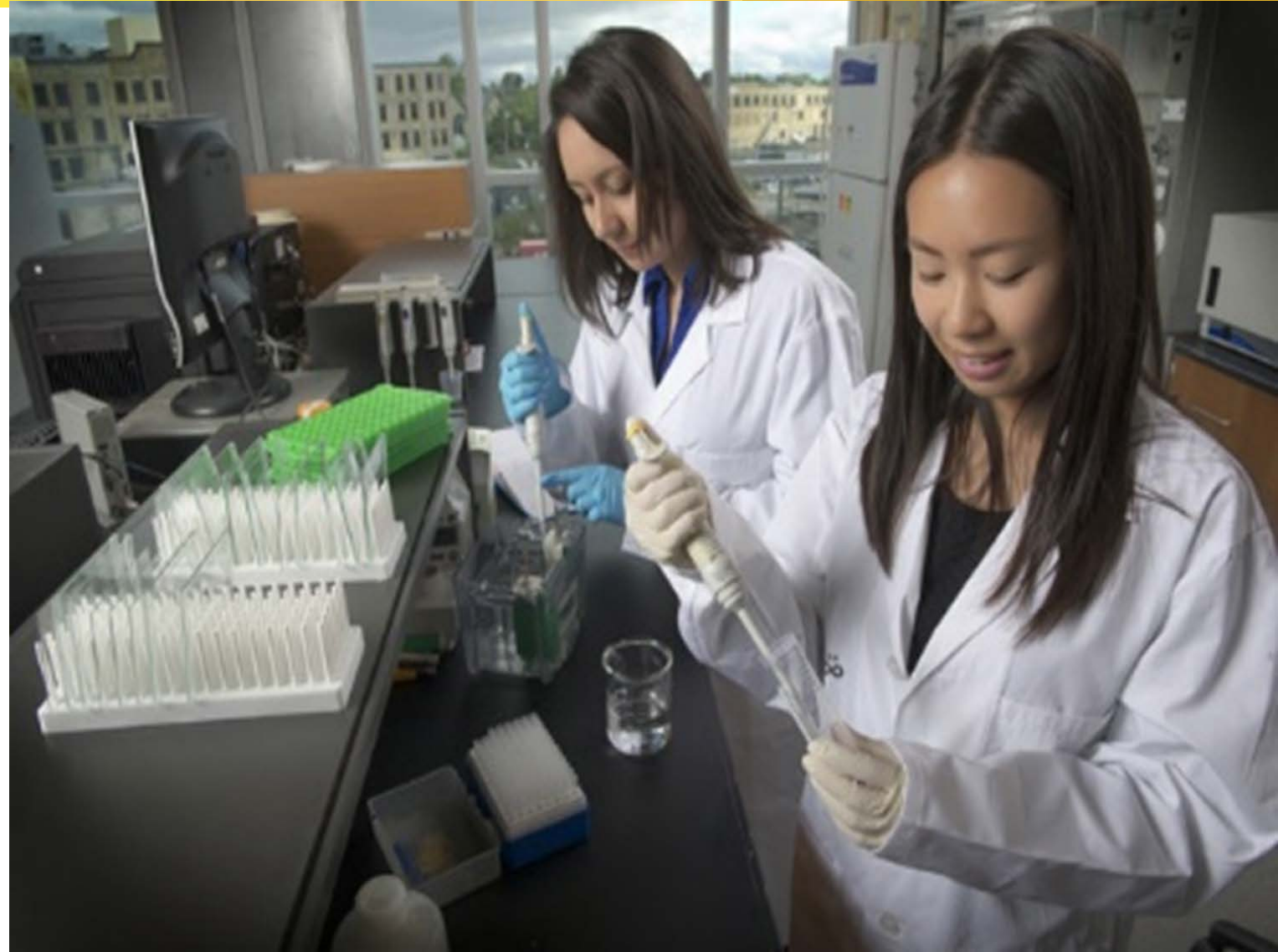
# Vision and focus

# Key areas of focus

- Excellence:
  - Disciplinary & Interdisciplinary
- Innovation, Entrepreneurship
- Equity
- Internationalization
- Impact and Profile



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# Transformational Research

## Excellence in Disciplinary and Interdisciplinary Research

# 2017 Awards

**Royal Society of Canada**

- David Blowes (Fellow)
- Sarah Burch (Member, RSC College of New Scholars, Artists and Scientists)
- Zhongwei Chen (Rutherford Memorial Medal in Chemistry)
- Frank Gu (Member, RSC College of New Scholars, Artists and Scientists)
- Weihua Zhuang (Fellow)
- Geoffrey Fong (Fellow)
- Keith Hipel (Miroslaw Romanowski Medal)

**Order of Canada**

- Keith Hipel (Officer of the Order of Canada)
- Raymond Laflamme (Order of Canada)

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# 2017 Awards

## Fellows

- Ramona Bobocel (2017 Fellow, Canadian Psychological Association)
- Zhongwei Chen (Canadian Academy of Engineering)
- Ehab El-Saadany (Institute of Electrical and Electronics Engineers)
- Myra Fernandes (Association for Psychological Sciences)
- Eric Helleiner (Killam Research Fellowship, Canada Council for the Arts)
- Susan Horton (Fellow, Canadian Academy of Health Sciences)
- Lyndon Jones (Fellow, Canadian Academy of Health Sciences)
- Norbert Lutkenhaus (Fellow, American Physical Society)

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# 2017 Awards

## Career Awards

- Hilary Bergsieker (APS Rising Star Award, Association for Psychological Science)

- Geoffrey Fong
  - Policy Impact Award (American Association for Public Opinion Research)
  - Trailblazer Award; Senior Career (CIHR Institute of Population and Public Health)

- Raymond Laflamme
  - 2017 CAP-CRM Prize in Theoretical and Mathematical Physics (Canadian Association of Physics)
  - Mike and Ophelia Lazaridis "John Von Neumann" Chair in Quantum Information (Mike and Ophelia Lazaridis )

- Janusz Pawliszyn (2017 EAS Award for Outstanding Achievements in the Field of Analytical Chemistry, Eastern Analytical Symposium Exhibition)

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# Interdisciplinarity

University Research Centres and Institutes

- Institute for Quantum Computing

- Waterloo Institute for Nanotechnology

- Waterloo Institute for Sustainable Energy

- Water Institute

- Games Institute

- Centre for Bioengineering & Biotechnology

- Cybersecurity and Privacy Institute

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# CANADA'S QUANTUM POWERHOUSE

**UNIVERSITY OF WATERLOO** | **IQC** Institute for **Quantum** Computing

## $545M in funding for quantum research

**298** researchers including 7 research chairs

**329** collaborations around the world

**1,522** publications since 2002

**30,357** cumulative citations

**60+** patents & licenses

**12** start-ups

HARNESSING THE QUANTUM LAWS OF NATURE TO DEVELOP NEW TECHNOLOGIES

POTENTIAL IMPACT AREAS: ENVIRONMENT, PRIVACY, MEDICINE, TRANSPORTATION, TECHNOLOGY, DIGITAL COMMUNICATION

# WIN's Research Breakthroughs

## Smart and Functional Materials

**Pavle Radovanovic**

- "Waterloo chemist develops 'holy grail' LED lightbulb"- CBC's *The Morning Edition*
- Easier to produce LED bulb that is pleasing to the eye and less expensive

## Connected Devices

**Hany Aziz**

- Metal nanoparticle printing on solar cells for light harvesting
- Printed electronics for wearable electronics

## Next Generation Energy Systems

**Linda Nazar**

- Long-lasting batteries to allow people to drive 3x farther in electric vehicles.
- "Most influential Scientific Minds"- Thompson Reuters 2014

## Therapeutics and Theranostics

**Karim Karim**

- Low-cost, high-resolution digital X-ray imager for use in the developing world

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WATERLOO INSTITUTE FOR nanotechnology

# Cybersecurity and Privacy Institute

- Nurturing and enhancing Canada's leadership position in cybersecurity and privacy research by partnering with industry in the following areas:

  - Cybersecurity

  - Privacy

  - Quantum-safe cryptosystems

  - Cryptography

  - Policy-making and regulation

  - Security and vulnerabilities in current and future systems and devices



UNIVERSITY OF WATERLOO

## Transformational Research

Innovation, Entrepreneurship

built on the Waterloo philosophy:

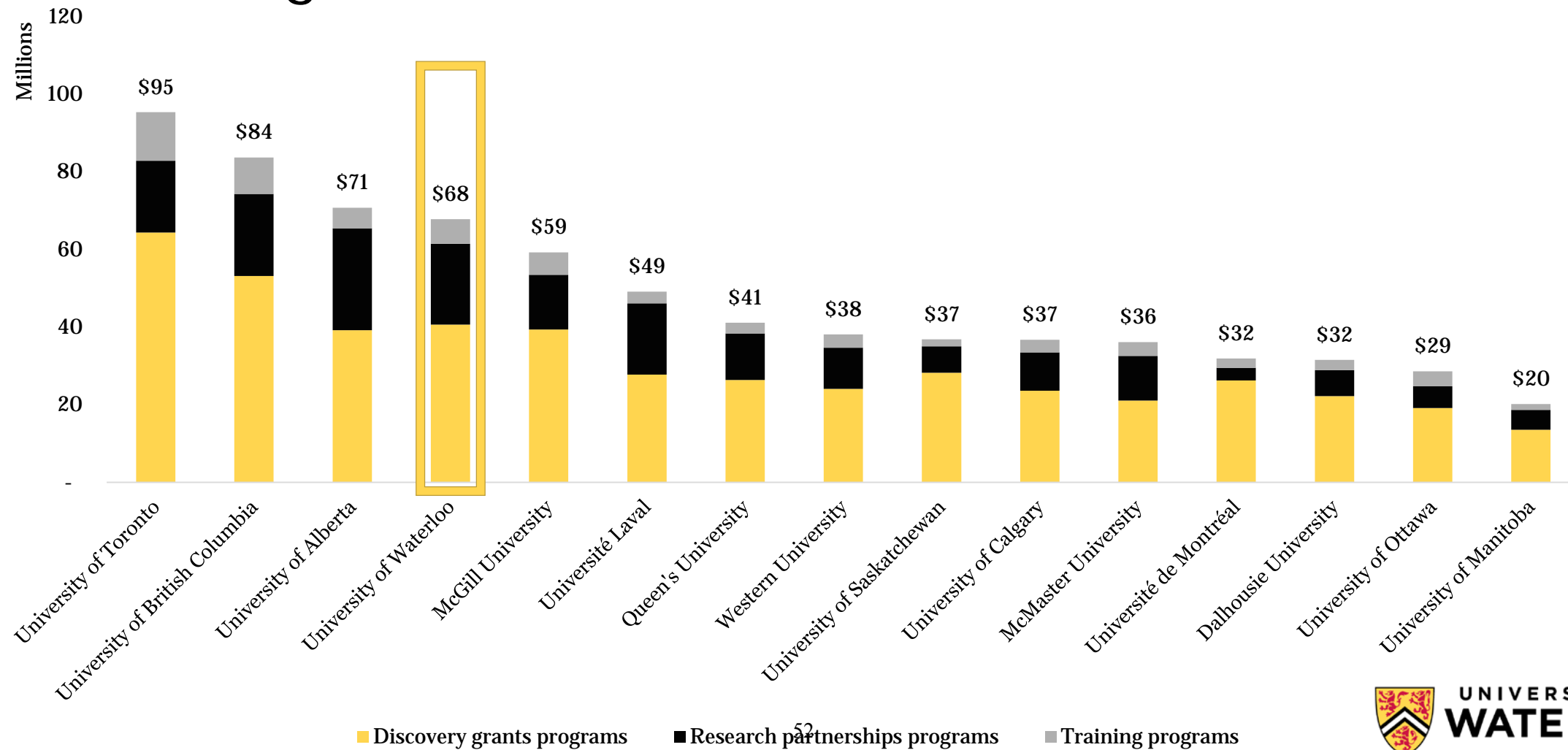working hand in hand with partners to train and to innovate

# Innovation

- Accelerator Centre

- Velocity

- Co-operative Education

- Conrad Business, Entrepreneurship and Technology Centre

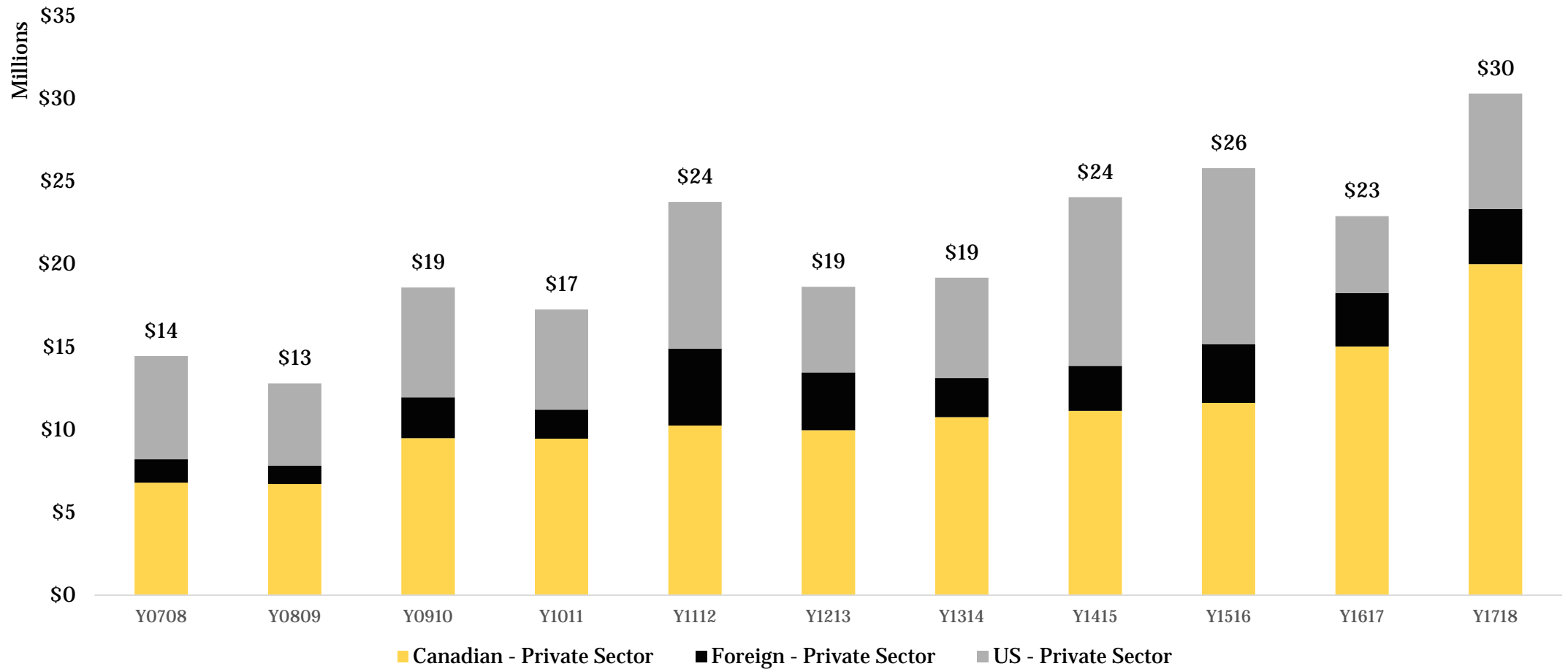- Graduate Professional Training

- Supercluster activity

Natural Science and Engineering funding among U15 in Y1617

# Industry funding

# Research funding: crescendo of impact

## Individual

| Discovery Grants (2017-18) | Engineering | Science | Arts |
|---|---|---|---|
| | Average: $33,151<br>Highest: $75,800<br>Total: $7,492,066 | Average: $38,550<br>Highest: $125,000<br>Total: $5,358,421 | Average: $33,529<br>Highest: $57,000<br>Total: $570,000 |

## Medium Size Networks

| NSERC Strategic Network Grants | Network for Holistic Innovation in Additive Manufacturing (5 years) (Ehsan Toyserkani) | $5,500,000 |
|---|---|---|
| | Network for Forested Drinking Water Source Protection Technologies (5 years) (Monika Emelko) | $5,500,000 |
| | Toward Environmentally Responsible Resource Extraction Network (5 years) (David Blowes) | $5,500,000 |

## Major National Networks

| CFREF | Transformative Quantum Technologies (2016-2023) | $76,300,000 |
|---|---|---|
| CFREF | Global Water Futures (2016-2023) | $15,000,000 ($77 M total) |
| NCE | Canadian Water Network (2001-2017) | $61,500,000 |

# Humanities and social sciences

Waterloo #1 among comprehensive Canadian universities
with respect to SSHRC funding per full-time faculty member

*Maclean's University Rankings 2017*

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# Waterloo commercialization office (WatCO)

- **Entrepreneurship support**
  - AC JumpStart & SEB Fellowship "recent grad" startup program, since 2012
    - $195+ million follow on investment
    - 350+ jobs
    - 53 companies
  - IP and commercialization education
    - Content creation: IP 101 & Commercialization, IP Case Study, Copyrights, Trademarks, 2 day licensing workshop
    - 600 participants across campus (faculty, grad, and undergrad)

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# Commercialization

- Four startups created with faculty member IP – 2017/18

    - Maple Nergy – Zn-air battery

    - LumeNeuro – retinal eye imaging (screening for Alzheimer's disease)

    - CHZE Power Inc. – Li-ion battery

    - WatCarbon Inc. – graphene production

- $5.9 million new investment funding raised (2017-18)

- $39.8 million cumulative (2013-18) investment funding raised by WatCo startups

- $6.13 million research contracts with associated startups (2017-18)

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# Internationalization



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# QS 2018

| Top 50 | 51 -100 | 101 - 150 |
|---|---|---|
| Hospitality & Leisure Management Studies (19) | Chemical Engineering (51 – 100) | Accounting & Finance (101 – 150) |
| | Civil Engineering (51 – 100) | |
| | Electrical Engineering (51 – 100) | Earth and Marine Sci (101 – 150) |
| Computer Sciences & Information Systems (31) | Environmental Sciences (51 – 100) | |
| | Geography (51 – 100) | Mechanical Eng (101 – 150) |
| | Material Science (51 – 100) | Physics & Astronomy (101 – 150) |
| Mathematics (39) | Psychology (51 – 100) | |
| | Sports Related Subjects (51 – 100) | Architecture/ Built Environment (101 – 150) |
| | Statistics & Operational Research (51 – 100) | |

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# Research ecosystem
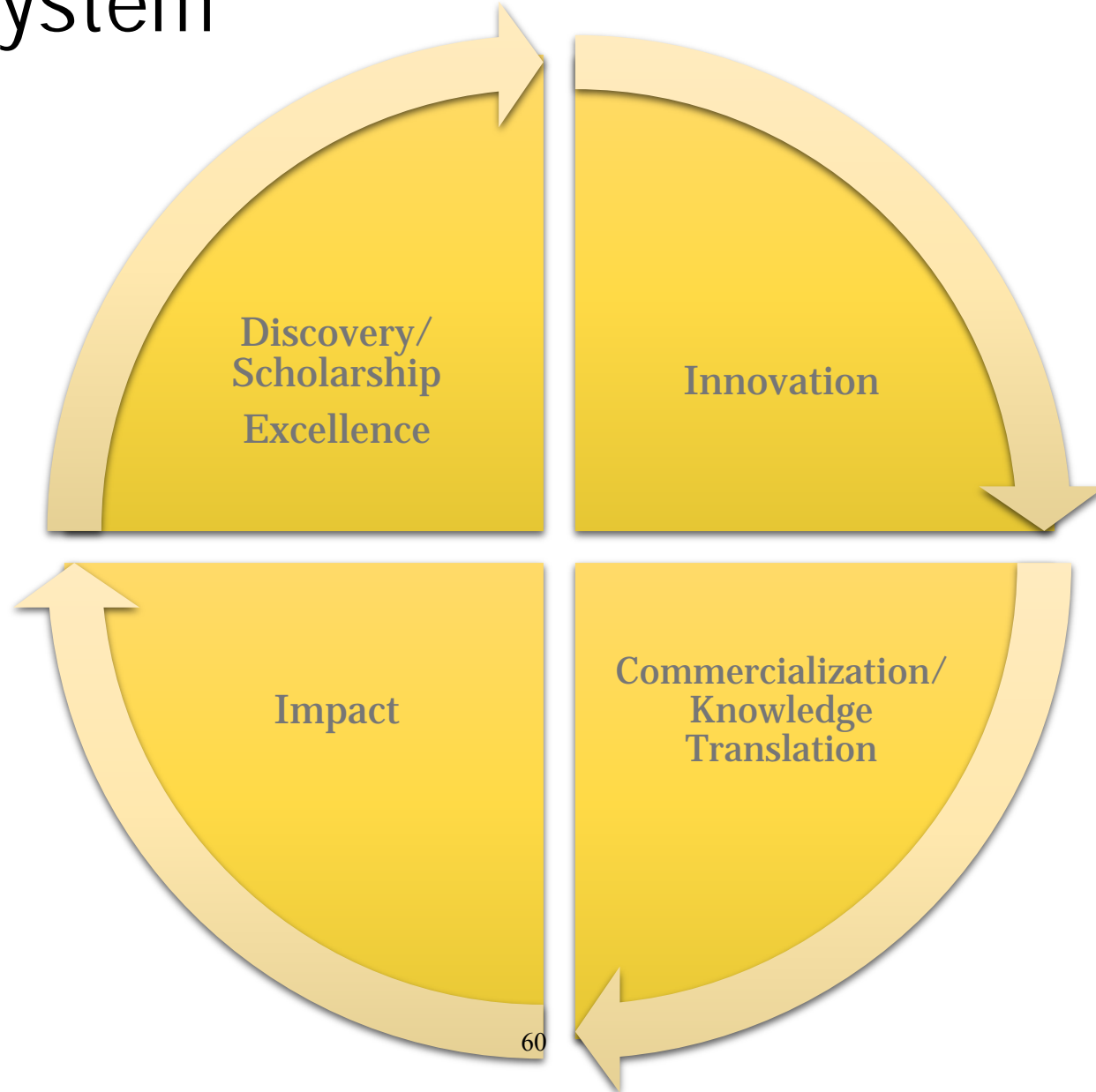
# Technology to fight groundwater contamination

- Phosphex:

  - low-maintenance system to treat phosphorous contamination, a global environmental epidemic that affects aquatic life, public health, and the economy

  - eliminates pathogens from water, including E.coli and contaminants such as arsenic

  - uses waste product from steel industry to react with phosphorous in water and provides green recycling and water treatment solution

  - developed by David Blowes and Carol Ptacek with their students

  - short-listed for the $10-million George W. Barley Water Prize



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Charmaine Dean

**Vice-President, University Research**

UNIVERSITY OF
**WATERLOO**
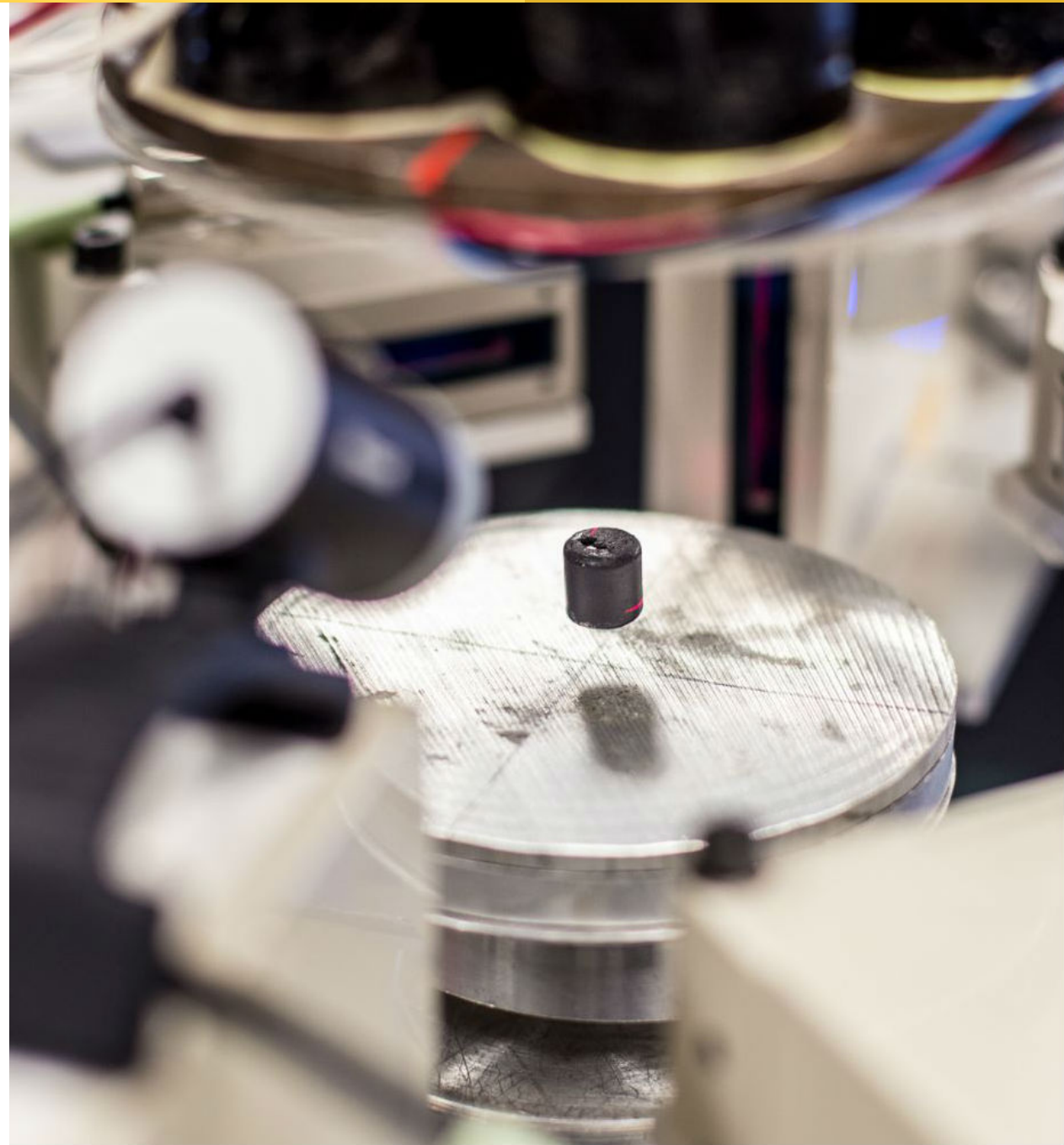
## OVERVIEW

I am pleased to provide you with a summary of major achievements, initiatives and updates since our last meeting in April, and am happy to discuss any items in further detail.  However, I would like to spend the majority of my time at the meeting discussing student success and in particular one of the issue papers recently on the topic of undergraduate education.  Seven issue papers have been developed to provide a common frame of reference for the consultations for the Strategic Plan 2020-2025 consultations planned for this fall.  I have expanded further on this later in my report.

## ACHIEVEMENTS/CONGRATULATIONS

- Maclean's Magazine student survey ranked Waterloo #1 in preparing them for post-graduate employment
- Federal government announced support for quantum radar technology with $2.7 million in funding through the Department of National Defense
- Cisco and Waterloo partner to advance 5G technology and establish the Cisco Research Chair in 5G Systems – a $1 million contribution to the University over the next five years.
- Launched the Sustainable Development Solutions Network (SDSN) Canada on campus in partnership with the Waterloo Global Science Initiative (WGSI)
- Launched Waterloo AI, a new Artificial Intelligence Institute that is a joint venture between the Faculties of Engineering and Mathematics and will also include researchers from Arts, Applied Health Sciences, Environment, and Science
- Three new academic programs have been approved by MAESD;
    - BASc, Architectural Engineering
    - Type 3 Graduate Diploma in Climate Risk Management
    - PhD, Sustainability Management
- Faculty member Dr. Slim Boumaiza of the Department of Electrical and Computer Engineering received a Synergy Award for Innovation from NSERC for outstanding examples of industry-academia collaboration
- Waterloo received approval from MAESD in May 2018 to offer three new programs: BASc in Architectural Engineering; Type 3 Graduate Diploma in Climate Risk Management; and PhD in Sustainability Management

## RESEARCH

### Research Funding

Overall, we are seeing an $18.5M increase from last year, with a final balance of $224,251,365. This is the highest level of external funding ever achieved. All major categories went up in funding, except Industry:
- Federal (excluding Tri-Council) up by $7.8M (CFREF awarded to TQT)
- Federal Tri-Council up $3.7M due to increase in NSERC (Strategic Network Grants Program) funding
- Industry down $1.7M. This is because Y1617 had $9.4M awarded by 'Various Sponsors' (CFI In-kind), whereas typically that amount is <$1M. In addition,  $2.5M awarded by Scalar Decisions in Y1718
- 'Other' up $4M

1

- o $2.6M increase in 'UW-Contribution' (Internal transfer of funds for CFREF Competition 2 Transformative Quantum Information Devices Initiative (UW cash)
- o $1.6 in non-profit funding ($500K Canarie Inc and $560 by The Andrew W Mellon Foundation)
- Provincial up $4.6M with $3.4M installment from FedDev - Federal Economic Development Agency for Southern Ontario for Waterloo 3D: Centre for Multi-Scale Additive Manufacturing Systems.

Global Entrepreneurship & Disruptive Innovation (GEDI)

The GEDI initiative has made an important step towards operational status, with funding for Year 1 Budget transferred to the Office of Research initiate activities and for space renovations. The steering committee continues to make progress in key areas, which are central to the operationalization of GEDI. The physical presence has been confirmed for the 2nd floor of EC5. A Managing Director will support GEDI and there will be a shared business development role with MITACs.

GEDI has engaged its first corporate sponsor, Cisco, securing $300,000 cash and $100,000 in-kind. The in-kind funding provided Spark Board technology which was demonstrated on April 9, as part of the announcement of Cisco's contributions to the University for the Cisco 5g Chair and GEDI. Ongoing discussions continue with RBC and Darwin.AI and Velocity has expressed interest in negotiating space within the GEDI footprint to house their on-campus staff. The steering committee continues to promote GEDI with industry partners currently considering partnership including Lockheed Martin, Proctor and Gamble, and Maxar Technologies.

Interdisciplinary Research

Academics are increasingly competing for research funding in an era of outcomes-focused research conducted by research teams, more often than not, interdisciplinary teams. This new emphasis partly reflects the extant situation; most sponsors of research have moved away from requiring only individual excellence to supporting teams with multidisciplinary expertise within a strong, networked institutional environment.  Tri-Council has recently focused attention on high-risk interdisciplinary research through a new portfolio of funds allocated to encourage such activity.  Importantly, securing major team grants will support Waterloo's trajectory to rise in stature in global and national ranking measures that are based on Tri-Council funding.
A new campus-wide initiative, managed by the Office of Research, will advance interdisciplinary research that addresses this changing context by encouraging the formation of interdisciplinary teams able to tackle problems of high societal and economic impact, working at disciplinary intersections. Teams of researchers will be comprised of at least two principal investigators from at least two Faculties.  A major facet is the provision of seed funding to interdisciplinary teams to support generation of preliminary data or results that will enhance the likelihood of securing major external funding.

Supercluster projects

The current cycle was launched June 5, 2017 and on February 15, 2018 superclusters were announced. Waterloo is a participant in two successful awards:
SCALE.AI – defining a new, AI-powered global supply chain platform to make a profound impact in the retail, manufacturing and infrastructure sectors
Next Generation Manufacturing (NGM) Canada – driving collaboration between the technology and manufacturing sectors using the Internet of Things, big data, sensors and intelligent machines.

2

None of the superclusters have signed a collaboration agreement yet with the government. It is anticipated that such agreements would be in place by the end of June. Until those agreements are established, no funding can flow to the Scale or NGM supercluster entities.   The clusters both have as much as $230-$250 million in allocable government funding, in addition to over $700 million in pledged industry funding.  None of that funding is explicitly allocated to be spent in academic institutions; Waterloo is aggressively positioning itself as a partner for specific projects.  The NGM supercluster has a partnering meeting scheduled for May 11.  There are a wide range of potential projects where Waterloo can collaborate, and our capabilities are in general well known to the participants.  Researchers, university staff and leadership will all be promoting Waterloo's capabilities in order to maximize our involvement as project partners.  Projects would then be expected to be under development in the fall.

C150 Chairs

Waterloo holds two C150 Chairs; Kerstin Dautenhaun (Engineering) starting August 1, and Anita Layton (Math) starting July 1. Each would receive $350,000 per year for 7 years (total of $2,450,000) plus significant institutional cash commitments. This is a one-time program. Summaries of the research programs of these two Chairholders follow.

*Dautnenhan Chair Program Summary:* Robots are increasingly being used outside traditional manufacturing contexts. One of the most challenging areas is to develop robots that can interact with and work naturally alongside people, assisting us in our daily lives. Making robots behave socially and intelligently are prerequisites for their acceptance and ultimately their successful use in any applications where robots share spaces with people. New adaptive and interactive robotic technologies will have immense positive impacts in several domains, including education, therapy and care for older residents. The proposed program will also integrate artificial intelligence to advance interdisciplinary approaches for creating intelligent and assistive robots.

*Layton Chair Program Summary:*  Dr. Layton is a pioneer in demonstrating the use of mathematics as the new microscope in biology and medicine. Her modelling work was instrumental in solving one of the longest-standing mysteries in traditional physiology: How does the mammalian kidney produce urine that is much more concentrated than blood plasma? More recently, she has done ground-breaking translational work that focuses on the efficacy of therapeutic treatments for hypertension and diabetes. Key contributions include revealing (1) the molecular mechanisms underlying the different responses to hypertensive treatments among men and women, and (2) potential side effects of a new "miracle drug" for diabetes.

Canada Excellence Research Chairs (CERC)

Waterloo holds two CERCs, David Cory and Philippe Van Cappellen. We were successful in the first stage of the current CERC cycle inviting proposals and have been requested to submit a full proposal in Stage 2 of the competition for a CERC in human-centred robotics and machine intelligence.   We are currently searching for a candidate and the final application (with our named candidate) will be submitted in late Fall; decisions, based on the excellence of our proposed candidate, will be made early next year.
National Research Council (NRC)

The NRC-UW Collaboration Centre (NUCC) is being established on the University of Waterloo campus. The focus of research at the new Centre will be informed by Waterloo and NRC strategic plans in the area of Information of Technology (IoT), Artificial Intelligence and Cybersecurity. The Centre will combine a critical mass of NRC and Waterloo researchers to

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accelerate research and commercialization impacts of mutually agreed upon these priority areas. The Centre will initially accommodate 5-10 researchers from each of NRC and Waterloo under a 7 year agreement with potential for review.  Space for the Centre is under development, as well as considerations of a governance structure for the Centre.

We are also proposing to host a workshop to bring together potential participants for the UW Collaboration on both sides (15 from each of UW and NRC) on June 18th. We expect to land with about 7-10 from each organization initially involved in the collaboration. Planning is underway.

## UNIVERSITY RELATIONS

### Major Focus Areas:

Campus Wayfinding Plan

Waterloo's Campus Wayfinding Plan (CWP) has a mandate to develop an integrated and overarching plan for wayfinding and related signage for the Waterloo campus within a time frame that allows an unveiling in fall 2018.
Since the last report to the Board of Governors, the consultant has provided an archival document analysis; performed expert interviews with campus community members (e.g. facilities, accessibility, creative services, etc.); done an on-site study and best practice/case study review; and completed an evaluation of the results from the online survey, on-campus focus groups and end-user intercept interviews. This information was presented to the Steering Committee and Campus Wayfinding Advisory Group for discussion/feedback, along with three design concepts and a plan for wayfinding (strategy/placement/etc.).
The three concepts were also presented to PVP and Dean's Council for their insight. All reaction and comment was assessed, summarized and provided to the consultant to aid in the refinement of the final design which will be ready for stakeholder review in late May and further socialization in early June.

Reputation Research

In 2014, the University of Waterloo conducted research to measure market awareness and key stakeholder perceptions. The data and insights informed a number of key initiatives including the University's strategic plan and brand refinement project as well as reputation-building activities designed to drive sustainable competitive advantage. Waterloo is currently in the process of repeating the research to monitor and report on changes since 2014, guide the BEYOND campaign's next phases, inform continuous improvements in the University's marketing and communication activities and support development of the University's next Strategic Plan. To date the survey instruments have been reviewed and updated to reflect new requirements and improve results with key audiences. Updated contact lists have been developed with CECA. The survey will be in the field in May/June with early results expected in mid-summer.

### Communications

Integrated Communication

The communication team has continued to support the roll out of the second volume of the 2018/19 State of the University Report –Global Impact. The University launched the report in March 2018 and has finalized the report's digital presence and shared some of the 32 stories on paid media and social media channels

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Working closely with Advancement and Alumni Relations, the integrated communication team will release the spring issue of the Waterloo Magazine in mid-May. The theme of this issue aligns with the Global Impact Report, by demonstrating how Waterloo is having a significant impact in the world. This issue, called *What's Your Problem?* highlights the launch of Canada's first Problem Lab, a program that teaches students how to analyze and identify important problems. There is also a related feature about the Quantum Valley Investments Problem Pitch Competition.

The magazine also reports on a Faculty of Engineering alumnus, who overcame significant obstacles growing up in rural India to get her PhD. There is a related feature updating the community on Waterloo's HeForShe commitments. Another magazine feature shares the story of Optometry Professor Chris Hudson who has been diagnosed with early-onset Parkinson's Disease and is also researching how to detect such neurodegenerative diseases earlier in our rapidly aging population.

Integrated Communications coordinated the planning and communication of the release of the President's Advisory Committee on Student Mental Health report, which was launched on March 14 at a Student Mental Health Forum.

Executive Communication

Over the course of this reporting period, the president undertook nineteen speaking engagements that included important on-campus events, international keynote engagements in Saudi Arabia, Singapore and Beijing and additional appearances across Ontario.

On campus in March and April the president:
- hosted Waterloo's International Women's Day Dinner,
- welcomed Minister Kirsty Duncan to campus for a special Budget 2018 announcement,
- hosted a panel event with the Provost on Academic Freedom with more than 200 faculty in attendance,
- welcomed more than 500 interested community members to the President's Advisory Committee on Student Mental Health Forum
- launched the Waterloo Artificial Intelligence Institute with Minister Navdeep Bains
- welcomed the President of Cisco Canada to campus for a partnership announcement on the creation of the Cisco Research Chair in 5G Systems.

Outside of the campus community, the president:
- attended the Times Higher Education MENA Summit in Saudi Arabia as the Summit's primary keynote speaker where he spoke on "Fostering Research for the 21st Century University,"
- took part in the University's Beyond Impact: A Waterloo Innovation Summit Series event in Toronto that was in partnership with The Globe and Mail
- Welcomed researchers from across Canada to the Waterloo Global Science Initiative (WGSI) Generation SDG Summit as they sought to develop an actionable framework to tackle the UN's Sustainable Development Goals.

During the same period the president's blog published nine new posts on topics ranging from mental health, academic freedom, professional development and freedom of expression. The president also had two op-eds published. On March 13, the President had an op-ed published in the Waterloo Region Record on student mental health. Another op-ed was published in Times Higher Education March 15 on "Book-smart is not enough. Students must be world-smart too".

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The president was featured in articles in Times Higher Education in support of his keynote address in Saudi Arabia, the Waterloo Region Record in support of the Cisco Canada partnership and in the technology news outlet Betakit for their coverage of Google's investment of $2.1 million in Kitchener-Waterloo non-profits that target STEM educational programs, including the University of Waterloo's Engineering Science Quest and Women in Computer Science programs.

The president's social media activity saw steady increases in Twitter followers and a strong increase in follower engagement. Engagement (retweets, likes and replies) increased by 25 percent and link clicks by followers increased 1310 percent driven by audience interest in student mental health and freedom of expression.

## Media Relations

The University of Waterloo was mentioned in approximately 13,271 stories (print, online and broadcast) between March 1 and May 7, 2018. The University regularly appeared in local media as well as in a number of national and international publications, including the New York Times, Forbes, Times Higher Education, the Globe and Mail, Time, the National Post, Maclean's magazine, the Daily Mail (UK), the Independent (UK), Bloomberg, Huffington Post, Quartz, the Toronto Star, CNN, CNBC, BBC, and The Conversation.
In addition to the president's coverage cited above, selected news coverage over the period includes:
- The Globe and Mail featured and op-ed by Pearl Sullivan. The piece highlighted the importance of collaboration between industry and universities to ensure Canada is successful in the new economy.
- Stories about the launch of Waterloo's Artificial Intelligence Institute appeared in numerous prominent magazines and tech journals, including Academica, Techvibes, Betakit, MobileSyrup, Digital Trends, and CBC.
- International media covered Waterloo research on a dead zone in the Gulf of Mexico and its impact on the environment. The story appeared in the New York Times, The Times of India, The Guardian, and USA today.
- Scientists at Waterloo discovered a new way to battle hospital superbugs. The story appeared in the Daily Mail, Newsweek, and Popular Science.
- 150 vehicles gathered at the University of Waterloo campus, which acknowledged the installation of the first fast charging electric vehicle chargers in Canada. The story appeared in CBC and CTV.
- The Institute for Quantum Computing announced new research that will enable quantum technology to detect and track stealth aircraft. The story appeared in BBC, Motherboard, the Daily Mail, Digital Journal, and Gizmodo.

Internal Communication

In March, the Internal Communication team took a direct role in communications support for the University's strategic plan, playing a lead role in the communication of nomination and election information for community representatives for the Strategic Plan Advisory Committee.

The team also shaped the communication plan for the next phase of the University's strategic plan, including the upcoming Bridge to 2020 event scheduled for June 8.  Internal Communications is working closely with Institutional Analysis and Planning, IST, and Community Relations and Events to establish a communications roadmap that celebrates Strategic Plan milestones, promotes the engagement of the University Communication in the

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consultation phase of the plan, leading towards major updates at the President's Town Hall Meeting scheduled for November 21, 2018 and beyond.

In March and April Internal Communications supported Community Relations and Events in a push for volunteers for spring 2018 Convocation and highlighted the new pilot project for employee milestone and retiree recognition in the Daily Bulletin, which included several profiles of long-serving employees at the University.

## Government Relations

Ontario Budget 2018

Introduced on March 29th, the Budget passed third reading on May 8th, the day before the writ was dropped for the provincial election.
The highlights of the budget for the University of Waterloo are:
- No significant increases to operating grant funding to universities
- No new investments in postsecondary infrastructure in the next three years beyond previous commitments to facilities renewal and the three new postsecondary campuses in Markham, Brampton and Milton.
- $204 million in additional spending on OSAP due to higher than anticipated enrolment and applications for student aid
- $132 million for new programs through the Highly-Skilled Workforce for "micro-credentials, and one-year extension to the Career Ready Fund, support for dual curriculum programs, and a new STEM equipment fund.
- There was no additional operating funding announced to support the 25% increase in the number of STEM graduates
- Some economic development funding programs announced including funds to allow for the development and adoption of certain technologies (ie. Clean Tech, ICT, life science, data management, cybersecurity)

Ontario International Education Strategy
The Ontario government announced their long-awaited International Education Strategy. There were few surprises and notional support for both incoming international students and outward bound international experiences for domestic students. A new international tuition transparency and predictability for students. No cap on first year tuition but caps in upper years. No cap was announced on the number of international students but a signal that more campuses should benefit from international students including the northern universities.

Transit Advocacy

Government Relations continues to advocate to the provincial and federal government for better transportation linkages within the Toronto – Waterloo Innovation Corridor, as part of a Region-led coalition

## Community Relations & Events

Waterloo Innovation Summit

The University is using 2018 to reset the Summit model to ensure relevance, thought leader engagement, and respond to changes in the regional and national event landscape, notably the introduction of True North Waterloo, hosted in Waterloo Region in May 2018 by Communitech.

March 23, 2018 marked the launch of the Waterloo Innovation Summit speaker series in Toronto, hosted in partnership with The Globe & Mail and with a focus on artificial intelligence and quantum computing.  Three hundred business and government attendees registered for this sell-out event.  A special luncheon with key Toronto Alumni was also hosted by the President following the Summit program.  Plans are underway for a second event in fall 2018 in Vancouver.

Sustainable Development Solutions Network (SDSN) Canada launch

The University hosted the launch of SDSN Canada on May 7, 2018.  Greetings from the Prime Minister were shared, acknowledging the leadership role of the University of Waterloo in hosting this national network that advances the United Nations' 17 sustainability goals.  A keynote address was provided by Columbia University's Jeffrey Sachs, Special Advisor to United Nations Secretary-General António Guterres on the Sustainable Development Goals (SDGs).

True North

The University of Waterloo supports Communitech's True North event May 29, 2018 as the Innovation Partner.  Our partnership includes a three hour experience at the University on May 29, allowing thought leaders and visitors to Waterloo region an opportunity to experience the University first hand.

Community engagement

The University continues to demonstrate its support of our community partners.  University leaders attended all State of the City addresses in Waterloo, Kitchener, Stratford and Cambridge.  We also participated in initiatives including the United Way Waterloo Region Communities 2018 Spirit Awards and the Sustainable Waterloo 2018 Evening of Recognition, where the University received the "Breakthrough Award" for our sustainability efforts.  In addition to our sponsorship of True North, we supported events such as the Food Bank of Waterloo Region's Canstruction, the Canadian Undergraduate Technology Conference and the 2018 Maker Expo.

## Marketing and Strategic Initiatives

## ENTREPRENEURSHIP/VELOCITY

Top Line Key Performance Indicators

- $750M+ raised by Velocity companies
- 300+ companies incubated by Velocity since 2008
- 2,250+ jobs created by Velocity companies
- Currently, 69 companies in the Velocity Garage + 14 teams in Velocity Science (on campus)

General Updates

- Velocity has completed an organization structure change to better focus on the needs of both the startup and campus community. A portion of the Velocity team is now based on campus out of Velocity Start in SCH, working to inspire, inform and guide the campus community on entrepreneurship (build pipeline). The rest of the team will continue to work out of the Velocity Garage to support founders building early-stage startups. This

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new structure has enabled Velocity to flatten its org chart while explicitly staffing both campus and startup activities.

- **Corridor Demo Day (CDD)** is occurring on May 31. This is the 2nd time CDD is happening, it was originally conceived by Velocity and the first version had great investment outcomes for the Toronto-Waterloo corridor (multiple deals closed worth several million with direct attribution to this event). Velocity has 10 companies that are pitching at CDD (out of 46 that are pitching and 122 that applied), there are currently 150 investors RSVPed making this the largest investor demo day in Canada (aspirationally rivalling Y Combinator's Demo Day)
- The Canadian (Waterloo-Toronto Corridor) startup ecosystem has been under a lot of positive spotlight recently:
    - [Fred Wilson (Union Square VC) Canada Blog Post](#)
    - [Brad Feld (Global Startup Thought Leader) Canada Blog Post](#)
    - [Startup Genome 2018](#) lists Toronto-Waterloo in top 20 startup ecosystems in the world, with a specifically shout out to UWaterloo (page 156).

Competitions & Awards

- The $25K winners of the Winter 2018 Velocity Fund Finals include **A-Line Orthopaedics** (faster and less invasive implants for spine surgery), **Bibu Labs** (defence against cyberattacks), **Fuzzbuzz** (platform that keeps software secure), and **SannTek** (marijuana breathalyzer)
- **Amina Health** (tabletop device to help users track nutrition levels via a drop of blood) won $16,000 in cash and prizes at the Synapse Life Science competition.
- **NERV Technology** (implantable biochip to detect post-operative complications) was one of seven startups that will split $200,000 in-kind services as a finalist from the M2D2 competition at the University of Massachusetts.
- **EMAGIN** (AI powered tools/systems for water infrastructure operators) was one of 20 companies to join the UPPlift smart city pilot in Toronto.
- **Ground** (AI-powered verified news platform) was one of five startups accepted into DMZ's Digital News Innovation Challenge, and access to up to $100,000 in funding.

Funding, Growth, Scaling

- **Labforge** (low energy networked sensors that use AI to map object movements) announced a multi-year partnership with the Royal Canadian Air Force to use their situational awareness technology for perimeter defense on Canadian soil.
- Velocity alumnus **ChefHero** (wholesale marketplace for independent restaurants) raised $12.6 million in Series A investment to streamline bulk food purchasing for restaurants. ChefHero launched from the Garage in the fall of 2015.
- The Toronto Grace Health Centre announced $1 million in funding to the Centre for Aging and Brain Health Innovation to facilitate the piloting of **Curiato** technology (smart bedsheet technology to prevent pressure related injuries), for research on pressure injury management systems for individuals living with dementia.
- **Thalmic Labs** (wearables that facilitate gesture control for computers) expanded their presence into fully renovated offices at 27 Gaukel St. in downtown Kitchener. Thalmic Labs nows employees 350 people and the new office adds 26,000 sq. ft. of space next door to their current offices.
- **Kik** (messaging app with 300+ million users and creator of Kin cryptocurrency) is moving their offices into Catalyst137, taking over 23,000 sq. ft. of office space. Kik currently employees 90 people in Waterloo Region, and another 60 in Tel Aviv, New York, Toronto and San Francisco.

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- **Ground** (AI-powered verified news platform) launched an iOS and Android app that uses AI to combat fake news. Ground collects news from 10,000+ national and local media and sources it to Ground users on-location to verify its accuracy.
- **3 Velocity companies** accepted to the summer Y Combinator accelerator cohort
    - 8,000+ companies apply with only ~140 spots (< 2% acceptance)
    - 18 Velocity companies applied with 3 accepted (17% acceptance rate)
    - Note that Velocity companies participating almost always return to Waterloo region to scale their company post-YC

## WATERLOO INTERNATIONAL ACTIVITIES

The Working Group on International Travel Issues – a cross-campus committee stewarding and communicating our processes for ensuring the safety and security of our members when travelling abroad – was scheduled to host a series of Information Sessions on May 22nd, May 30th, and June 4th.  These meetings were called to provide opportunities for University of Waterloo members to learn about the information that the Working Group has gathered, to ask questions about international travel, and to offer insights based on their own experiences.  With literally thousands of our students, staff, and faculty travelling internationally every year – and with our global connections growing in number and in significance – this issue continues to be of paramount importance.  I am delighted to see such a dedicated group addressing it.  Recently, two internal funding opportunities – designed to stimulate our internationalization priorities – had calls.  One was for what has become a well-established mechanism, the other was for something new and innovative.

The Staff International Experience Fund call closed on May 14th.  Now in its fifth year, this continues to be an innovative program in Canada – allowing our staff members to visit some of our most valued global partners and to share insights with their peers.  Every year, up to three staff members travel to different parts of the world; they usually spend two weeks visiting three or four universities.  Their interactions with other higher education professionals there help to give the University of Waterloo additional global prominence; our staff members also bring back new ideas, new insights, and new connections to improve their own work on campus.  This year's recipients will be announced by Waterloo International at the end of June.
And continuing in that innovative spirit, Waterloo International launched a new Internationalization Fund in March.  It was established to encourage our students, staff, and faculty – working individuals or in groups – to bring forward their ideas for advancing internationalization (through activities on campus, abroad, or connections between the two).  The Fund empowers everyone on campus to think creatively, and to take action to move our international ambitions forward in a tangible way.  Indeed, I am excited to see the range of ideas presented, and the associated activity that it will catalyze.  Waterloo International will announce results before the end of June.

Finally, the Government of Ontario released its 'International Postsecondary Education Strategy' in May.  Subtitled, 'Educating Global Citizens:  Realizing the Benefits of International Postsecondary Education', we had contributed during the consultations that preceded its publication.  With the Strategy's emphasis including (a) creating opportunities for domestic students to travel abroad for academic opportunities, (b) enhancement of the international student experience on campus, and (c) the advancement of intercultural understanding, it echoes much of our own activities and plans.

## ADVANCEMENT UPDATE

In order to build sustainable growth in fundraising, the central Advancement and Faculty teams operate on this strategic framework:

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1. Alumni and donor-centred decision-making and strategy-setting
2. Faculty focus
3. President and leadership engagement
4. Central Advancement optimization
5. Accountability, transparency and results

Thanks to a high level of integration and collaboration between the central and Faculty-based Advancement teams we closed out the 2017/18 fiscal year with a total of **$51,298,514**. There was a 129% increase in the $100K-$1M gifts over last year, with 32 donors. This sets us up well for a continued emphases on the under $5M target area, as we move into pipeline enhancement in advance of a capital campaign.

## **1. Alumni and donor-centred decision-making and strategy-setting**

Individual and Corporate Pipeline (I200/C100)
- The I200 list currently sits at 110 individuals/families and the C100 sits at 75 major corporations and foundations. Significant work is taking place to move us to 75% of the goal shortly.

Donor report
- The 2017/18 **Report on Giving** will be produced in both digital and print versions, with a distribution date of late August.

Volunteer engagement
- Hired a **Senior Alumni Officer, Volunteer Engagement**, to strategically grow and enhance the use of worldwide alumni volunteers in a meaningful and impactful way.
- During **National Volunteer Week** (April 16-20) we created a special video highlighting the impact of our Advancement volunteers, accompanied by thank you messages from the President and the Vice President, Advancement. Alumni Relations mailed 120 handwritten thank you notes with a small gift to volunteers who directly participate in our central programs.
- March 26 – **Singapore alumni event** hosted with the Singapore alumni chapter, featured the President and Dean of Mathematics, Stephen Watt. Fifty alumni and guests enjoyed this exclusive, sold-out event hosted at Google Singapore. This event was made possible by UWaterloo alumni who are employees at Google.
- April 5 – **Hockey night in New Jersey**, hosted by alumnus Arda Ocal (BMath '05) and the New York alumni chapter. A group of 18 alumni and their families cheered on the Leafs and/or Devils.

**Outreach**
- April 26 –**Where UWaterloo Meets AI: Ethics** alumni event in Mississauga hosted at PointClickCare, a strong co-op employer and recent sponsors of Waterloo's Innovation Summit. Nearly 200 alumni engaged in a lively panel discussion moderated by Prof. Kate Larson, which included Sheldon Fernandez (BASc' 01), CEO of Darwin AI; Prof. Maura Grossman, eDiscovery and Legal Technology; and grad student Leah Govia, who specializes in anthropology and the ethics of technology design.
- Discussions with campus partners on the **future of Reunion** have been productive and we will soon be announcing changes to our program from the annual fall event to two events, each with a different but specific focus to enable us to more effectively engage a broader group of alumni
  - A **spring event** – June 1, 2019 – will focus on deepening relationships and moving alumni through the pipeline. Emphasis at this annual gathering will be

on celebrating 25 and 50 alumni anniversaries and on Reunions hosted in the faculties and colleges.
- o A historical **fall event** – date to be determined for 2019 – will remain focused on motivating first-time attendance and in strengthening pride in alumni and students. This will involve a wide range of programming that will attract a broad audience.

**Student-Alumni Bridge**
- **GOLD on the Go (Graduates of the Last Decade)** events are being re-designed to better align with the needs and expectations of this growing alumni group.
- All faculties successfully held their **student send-off events** celebrating their graduating students throughout this quarter.
- Housing and Residences along with Alumni Relations are hiring two new **Alumni-in-Residence** for the second year of a two-year pilot, Get Ready For Life After Graduation program. These alumni have full-time jobs in the area and live in UW Place where our upper-year students reside. The goal is to provide students with practical life skills through monthly events and a mentor for the students to connect with over the year.
- **#UWBreakfastClub** – a joint venture by alumni relations and development, meant to encourage GOLD alumni to donate $10 ($5 to student wellness and $5 to give a student breakfast during finals). 116 breakfast vouchers were given out to students from 44 total donors. 19 of these were first-time donors and 21 were staff. There was strong [social media engagemen](t) where donors tweeted messages of support to students and students replied with gratitude, in addition to 4,700 Snapchat views and 11,847 Instagram impressions.
- Alumni Relations is hiring an **Alumni Officer, Student-Alumni Bridge** to facilitate the creation, implementation and maintenance of programs and activities to better engage students with alumni.
- Exploring opportunities with Co-operative Education and Federation of Students to make an alumni impact on the **Co-op Connections** program, to gather co-op students on work terms in areas where there are large numbers of alumni for social gatherings.

## 2. Faculty focus

For the FY 2017/18, the Faculties focused on pipeline growth and the effective use of leadership time. With the President's increased time allotment for advancement-related activity, we've set a new standard for Presidential involvement – more than three times the average of the last three years (a 200% increase).

The Faculty Advancement teams have worked collegially with the central Advancement Strategy team to reach new heights in pipeline growth, demonstrating strong impact by closing gifts in the $100K-$1M range - the area where we can make the greatest impact. This year we raised 32 new gifts and pledges in this range – more than doubling last year's count and exceeding this level for each year since 2013.

## 3. President and leadership engagement

FY 2017/18 was an unprecedented year for **Advancement activity involving the President**. As of April 30, 2018, the President was supported by Advancement in 134 distinct activities, the majority of which were face-to-face prospect calls and small group engagements. This is a significant increase over FY 2016/17, with 39 only Advancement meetings.

The Faculty Advancement teams played an important role in increasing the President and leadership engagement this year through deliberate, careful and regular planning. The Advancement Strategy team supported the President for face-to-face interactions with 55 individuals on the I200 list and 23 organizations on the C100 list.

| President's activity category | Total |
|---|---|
| Prospect/donor calls (individuals, foundations, corporations and other organizations with Advancement as a focal point) | 86 |
| Conferences | 3 |
| Private dinners at the President's home | 2 |
| Campus visits by companies (with major Presidential involvement) | 5 |
| Advancement/alumni events and other activities (including vision roundtables) | 38 |
| **Total for FY 2017/18** | **134** |

The **Vice President, Advancement** had multiple events, calls and roundtables in March, April and May, meeting more than 200 alumni, donors and company/government representatives, and has more than 55 meetings and events with alumni and current and prospective donors scheduled for May and June.

The **campaign planning committee** meetings kicked off in April, serving as an introduction to the planning process and committee function, Waterloo's vision, financial overview and current state of pipeline development, donor retention and alumni engagement. Next meeting is scheduled for June 18th.

### 4. Central Advancement optimization

The Gifts and Records teams, both high-volume areas, were **combined into a new unit** to rationalize their work to provide better service and more redundancy into the system, and allow us to emphasize targeting our work to the constituents who are more strategically important to us. The reorganization also created a **Data Steward position** which will be responsible for improving the overall quality of our data while acquiring more of it, a crucial first step in doing effective data mining.

### 5. Accountability, transparency and results

- **Overall results of $51,298,514** in all support of the University compares favourably with last year's $49,377,591. Softness in gifts of >$5M obscures the very strong growth of 42% in the overall <$5M category which grew from $12.7M to $18.1M.
- Preliminary fundraising results at the close of FY 17/18 show **strength in the number of donors** we attracted in the key $100k-$1M range, exceeding last year by 129% (n=18) and $5.25M. In a promising sign, we also exceeded our five-year average number of donors in this category by 37%.
- Finance has confirmed a 3% spending rate for **endowment funds** for the current fiscal cycle. Donors will receive their endowment report packages in October.
- Several years ago, the donor pipeline for **Athletics and Recreation** was identified at $500,000 and an Athletics development officer was hired. With this investment, the program has grown to over $650,000 in revenue for this fiscal year, the third year of the program. Additionally, a high level of prospect-facing activity combined with research activities has led to the identification of a robust pipeline with a conservative preliminary value of $10 million.

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- In FY 17/18, the **planned giving program** secured 55 new gifts (plus gift increases) for approximately $8.6M and finished the year with a total of 703 confirmed gifts with a milestone value of $105.2M. Two new bequests totaling $3M and a gift increase of $1.5M contributed significantly to this achievement. Estate revenue for the year was $ $508K from eight estates.

## Annual Giving

Annual Giving ($1-$10,000) preliminary reports show steady donor counts compared to last year (9,038) and increased revenue ($3,355,770) at this level.

Results from participation in a benchmarking study with Canadian peer institutions showed some strong Waterloo performance in several annual giving categories for FY17. They include:
- Alumni **donor retention rate** up 3.5% from FY16 to FY17 (55.5% to 59%)—a significant jump in a metric with which most universities are struggling;
- Highest **new donor** retention rate in our Canadian higher ed benchmarking group (14 schools);
- Continual growth in the amount of alumni donors giving in the $1K - $25K range for the last five years, from 548 donors in FY13 to 673 donors in FY17;
- Only school in Canadian benchmarking group with alumni giving participation rates on the rise;
- Steadily growing monthly recurring gift program. Nearly 1,300 total monthly recurring donors at the end of FY17, with 359 added in FY17 alone.
    - Monthly recurring donors give more per donor and have much higher retention rates.

Annual Giving successes can be attributed to a long-term strategy of recurring monthly gifts as the first and primary ask (started five years ago and rolled out fully three years ago).  In addition, a revamped, more aggressive renewal cycle was launched.

Preliminary results from FY18 show continued strength in the areas of donor retention and growth of recurring donors numbers as demonstrated below.

|  | FY15 | FY16 | FY17 | FY18 |
|---|---|---|---|---|
| **Retention rate, all donors** | 49% | 51% | 56% | 56% |
| **New donor retention rate** | n/a | 24% | 28% | 30% |

## Leadership Giving

- Focus was given to engaging alumni and donors with the President and VP, Advancement leading to 10 **meetings/roundtables** with individuals and groups this quarter. The team delivered individual donor revenue of $288,400 with additional support for appeal follow-up activity during staff shortage.
- A **development officer position** was filled creating a full leadership giving team.

## IMPLEMENTATION COMMITTEE ON STUDENT MENTAL HEALTH UPDATE
## Background

- President's Advisory Committee on Student Mental Health

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- o PAC-SMH was started in response to mental health issues and suicides on campus and at University of Guelph
- o Five panels of ~20 people investigated different issues pertaining to mental health on campus, which resulted in recommendations related to five main concepts: mental health and wellness, social inclusion and support, mental health literacy, resiliency, and services
- o Response to PAC-SMH was generally positive, but some concerns were expressed that the implementation committee is just another committee, and that change will not occur quickly
    - ▪ Short-term priorities include: adopting the Okanagan Charter, mental health training and service enhancements.
    - ▪ Long-term goals are: resilience campaigns, identification of teaching approaches, and growth of social support networks.
- o Expected to take approximately 1-2 years to complete the PAC-SMH recommendations for implementation.
- Steps Already Taken:
    - o Implementation committee and expectations of the Committee
        - ▪ Need to be aware that CoSMH cannot compel implementation of responses to PAC-SMH report, but prioritize recommendations and determine what will be required to implement to put forward to the university
    - o Service provision
        - ▪ Resources being added to campus wellness build on approximately 30 FTE staff positions. Recommendations in report to aim for 1: 1,000. Unit funded under SSAC-agreement with the students such that these expenses are shared financial responsibility funded by university budget and aux fund. Through this process, seven new full-time employees have been hired.
        - ▪ Added position of Director of Health Promotion to help with health promotion on campus
        - ▪ Postings for new job positions posted and expect to reach about 37 FTEs to approximate 1: 1,00 ratio. Positions include: mental health nurses, case managers, counsellors, and psychologists

## Strategy for setting priorities related to PAC-SMH recommendations

- Committee members will provide representation of their constituencies in prioritization process. Committee members may consult with their peers for feedback, but there are no plans for large scale surveys of stakeholders on campus as part of prioritization process. CoSMH committee members are charged with setting the priorities.
- For each recommendation, the prioritization process will consider prevalence (how broadly students are affected), magnitude of expected impact on student mental health, and modifiability (e.g., time frame required for change, likelihood of change being realized)

## Potential future agenda items

- The committee will continue its work in addition to the following specific considerations:
    - o Information resources on-campus related to mental health
    - o Privacy legislation affecting on & off campus services
    - o Data sources on UW student mental health
    - o Substance use on campus (e.g., alcohol, cannabis)

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**FOCUS FOR JUNE BOARD MEETING**

The complexity of the challenges facing Canadian universities is very likely going to increase in the coming years.

We should expect to see heightened awareness and tensions (rightfully so) around free speech, immigration, diversity, social justice, climate change, and equity.  Nevertheless, as we face these challenges we must not lose focus on student success.

We know that our economy will make very direct demands from our institutions. Most critically, by 2020, 64 per cent of new jobs created will require a university degree.  So, the success of our students is not just important to our institutional statistics, or to the students and their families, but also crucial for the health of our economy.

So as we begin on a process of strategic planning for the next half decade, we are asking ourselves, what is our understanding of student success? Graduation? A Job? Making money? Having fun while studying?

Simply put, I believe student success means supporting the academic achievement and personal growth of every student.

Our campus and the programs we offer form a complex ecosystem. Small changes to improve student success must be supported by the entire campus ecosystem for comprehensive change to take root. To best appreciate how we make such changes, we will need to dissect the entire ecosystem to deeply understand how each and every component affects the success of our students.

Making single, one-off tweaks in isolated areas is unlikely to improve the overall and, I fear, could even be counterproductive.  Before we act, we need to understand our own unique culture, embrace it and everything that is stands for – the good the bad and the ugly - only then we can talk about shift, evolution, while protecting the essence of our special culture.

Remembering Peter Drucker's famous saying that "culture eats strategy for breakfast" we need to implement change through the lens of the University of Waterloo way.

In this regard, we must bear in mind that successful initiatives or strategies elsewhere may not necessarily work here in the way we expect. We must always try to balance culture and student experience.  We also need to get everyone involved – our students, faculty, staff and community members – and ensure our whole community in bound in to the process of change to improve student success. In our community, top down direction can only go so far.

As we began our next strategic planning process for 2020 to 2025, we felt it would be important to identify key thematic areas to explore the various components of student success.  This exploration took the shape of seven issue papers, namely:

- Empowering People
- Graduate Studies
- Internationalization
- Leveraging Resources
- Research and Crossing Disciplinary Boundaries
- Student Learning Environment
- Undergraduate Learning

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The primary objective of these strategic plan issue papers is to identify where we stand today in these thematic areas, including the strengths, barriers and opportunities moving forward and to provide a common frame of reference for the consultations for the Strategic Plan 2020 to 2025.

Over the course of the past year, Waterloo's leadership (the president, provost, deans, and other members of the Executive Council, along with the Board members (at several Board meetings) identified the broad themes and issues for this exploration. The Board also provided their input on these topics in the context of the President's vision Document at the December 2017 retreat.

More than 140 faculty, students and staff, representing all Faculties and many academic support units, have worked to develop the issue papers. The papers will complement other key evidence sources to inform the strategic planning process, including the 2013-2018 Strategic Plan summative report with outcome indicators, and key university performance indicators. We will have completed drafting the issue papers by early June and plan to make them available for campus to read online and through a series of consultations starting on June 18, 2018 and lasting through the fall. The following graphic outlines the timeline for delivering the Plan.

# 2017 -2020 Strategic Plan timeline

| Spring 2017 | Fall 2017 | Winter 2018 | Spring 2018 | Fall 2018 | Winter 2019 | Spring 2019 | Fall 2019 | Winter 2020 | Spring 2020 |

We are here —————— └ June 18th Launch Event

Reflecting back, looking forward

2013 – 2018 Summative

2020 – 2025 Evidence Gathering & Prep

2020 – 2025 Consultation & Planning Process

2020 – 2025 SP Begins

UNIVERSITY OF WATERLOO

Attached to my report are the executive summaries of all seven issue papers for your information and context. For the upcoming meeting, I would like to focus our conversation around one specific paper – Undergraduate Learning. The full paper on this particular topic is included.

Amongst many such considerations, lies the academic heart of the institution: the curriculum and, particularly (the proverbial) classroom. What happens to students in classrooms. There are so many layers and dimension that require well beyond the conventional blackboard, chalk, teacher and note-taker scenario. This is the part that I would like to focus on at the June meeting and will invite your participation in the discussion. Mario Coniglio and Anne Fannon will lead the discussion on this topic.

 I look forward to our discussions in June.


Feridun Hamdullahpur
President and Vice-Chancellor

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# Waterloo Bridge to 2020

# Advancing Undergraduate Learning

Issue Paper
May 2018

# Executive Summary - Advancing Undergraduate Learning

Our environmental scan of best practices in teaching and learning at the post-secondary level confirms that Waterloo is doing well on a number of fronts. Many ongoing practices that promote deep learning for our students emerge from individual Faculties through a host of initiatives, for example, senior capstone projects, problem-based learning, incubators, implementation of a large variety of technologies to support teaching and learning, and so on. Centrally, the work of our Centre for Teaching Excellence (CTE) has been instrumental in awareness building and special programming for instructors in course design, assessments and high impact practices (HIPs), etc.

Our co-operative education program is widely recognized as being our most impactful HIP. At Waterloo, co-op adds value to the learning experience at a scale that no other institution can match. There is promise that the fledgling EDGE certificate will also provide additional value to the learning experience for students who do not participate in co-op. However, experiential education is more than simply co-op and EDGE on this campus, and the broader spectrum of experiential education is an integral part of many of our academic programs (e.g., internships, labs, clinics, capstone courses, etc.). In select programs, experiential education is built into curriculum design and intentionally scaffolded throughout a student's degree program. In other instances, individual faculty members include as part of their pedagogy experiential learning activities in their courses to enhance student learning and motivation.

The competitive landscape for the best undergraduate students means that Waterloo cannot afford to rest on its laurels. Within higher education, the dominant paradigm continues to focus on teaching while there is an ongoing and increasing push to focus on learning. As an institution, Waterloo appears ready to make a transition from operating within a *teaching paradigm*, where the focus is on what teachers do, to the *learning paradigm*, where the focus is on what learners do. This is where we need to go as an institution. While some of our individual faculty members have already made this transition, for widespread adoption to happen so that we can call this the norm at Waterloo, many more changes in individual practice and institutional support need to occur. Moreover, as more post-secondary institutions seek to provide experiential learning opportunities (especially the set of experiences referred to as Work Integrated Learning or "WIL"), Waterloo will need to determine how to maintain its world leadership in co-operative education and how to effectively educate policy makers on the important quality indicators associated with work-integrated learning.

We propose an **institutional vision statement for learning**... *Waterloo as a university where learning is powered by curiosity, informed by research, and transformative in practice.*

Adopting five evidence-based principles of effective teaching that are particularly relevant to Waterloo's context will enable us to achieve the learning process as characterized in the vision statement. At Waterloo, effective teaching (1) uses alignment in course and curriculum design; (2) fosters motivation; (3) embodies inclusivity; (4) encourages deep learning; and (5) enables lifelong learning.

A sampling of Waterloo's strengths and challenges is provided to help understand the current institutional context before we share ideas for specific initiatives that would allow us to achieve the aspirations of the vision statement for learning. These initiatives can be distilled into five strategic priority areas: (1) teaching and curricular innovations to encourage creativity; (2) student-led initiatives to empower our students; (3) assessment of learning to provide positive and productive learning experiences; (4) institutional infrastructure, policy, and practice to

promote quality and remove barriers to flexibility; and (5) advancing experiential education as an integral part of the Waterloo experience. This issue paper concludes with a selected list of proposed initiatives as a starting point for a more in-depth discussion of each of the five strategic priority areas.

# 1. Introduction

The University of Waterloo has developed a series of issue papers on seven topics as part of the evidence-gathering process for the development of the 2020-2025 Strategic Plan. This issue paper is focused on the topic of undergraduate learning, and the process and methodology for creating this paper is described in Appendix A. Two closely-related issue papers focus on Graduate Studies and the Learning Environment, the latter addressing aspects of the university experience that occur outside of the classroom. These issues papers are the first steps in the broad consultation process that will inform the next Strategic Plan.

The specific purpose of the Undergraduate Learning paper is to provide a foundation to stimulate a campus-wide discussion on promising practices and possible future directions for enhancing the undergraduate learning experience at Waterloo. This paper draws from the recently produced Teaching and Learning Report, the Issue Paper Advisory Group members' feedback, as well as consultation with other key stakeholders in experiential education and the Faculties. The paper aims to be forward-thinking and begins by presenting a vision for teaching and learning at Waterloo, then outlines some of our current strengths and challenges in relation to that vision, and suggests some promising practices for enhancing the undergraduate learning experience at Waterloo.  The paper ends with a set of questions for the community to consider in the consultations for the 2020-2025 Strategic Plan consultation process. While the focus of the current report is on undergraduate learning, many of the ideas expressed in this document are also equally applicable to varying degree to graduate studies, especially as course-based master's degrees increase in number.

# 2. The Future of Teaching and Learning at Waterloo[1]

The research literature has identified a continuum of approaches to education: from putting the primary focus on teachers and their teaching to focusing on learners and their learning (Barr & Tagg, 1995; Prosser & Trigwell, 1999). Within higher education, the dominant paradigm continues to focus on the former (teaching) while there is an ongoing and increasing push for the latter (learning) (Christensen Hughes & Mighty, 2010). In the Association of American Universities Framework document (2013), the association's president encourages faculty members to "use student-centered, evidence-based, active learning pedagogy in their classes". As an institution, Waterloo is well poised to make the transition from operating within a *teaching paradigm*, where the focus is on what teachers do, to a *learning paradigm*, where the focus is on what learners do (Barr & Tagg, 1995). A number of our instructors[2] have already made this transition, and some departments and programs have moved further along this path than others, but for more widespread adoption to occur, many more changes in individual practice and institutional support are needed. For the upcoming strategic plan, we recognize the need to support the shift to a learning paradigm while also starting from a more familiar focus

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[1]  This section stems primarily from the "Final Report: Input on the Future of Teaching and Learning at Waterloo, April 13, 2018" (identified above as the Teaching and Learning Report), which is a report that resulted from four half-day retreats in Fall 2017 and Winter 2018 involving senior staff from four academic support units that report to the Associate Vice President, Academic (Centre for Teaching Excellence, Centre for Extended Learning, Writing and Communication Centre, and WatCACE). The authors of this report are referred to as the Teaching and Learning Working Group. Some additions to the original report were made by the Issues Paper Advisory Group members.

[2]  The term "instructor" is intended to include all who teach at Waterloo: faculty members, lecturers, staff instructors, sessional instructors, and teaching assistants.

on teaching. As such, the focus for the next plan must be on effective teaching that promotes meaningful learning, which is described in the vision statement shared later in this section.

To assist in clarifying both effective teaching and learning, the Teaching and Learning Working Group adopted broad and conceptually simple definitions from the research literature, which are also being used in this issue paper. **Effective teaching** is defined as being "oriented to and focused on students and their learning" (Devlin & Samarawickrema, 2010, p.112). In essence, effective teaching focuses on the process of learning, and it puts the primary emphasis on the learners rather than the teachers. **Learning** is defined as "a process that leads to change, which occurs as a result of experience and increases the potential for improved performance and future learning" (Ambrose et al., 2010, p.3). Learning includes making sense, acquiring knowledge or skills, altering perspectives, and so on.

From these fundamental definitions and background literature, the Teaching and Learning Working Group developed an **institutional vision statement for learning**:

*We envision Waterloo as a university where learning is powered by curiosity, informed by research, and transformative in practice.*

To achieve learning as characterized in the vision statement, we need effective teaching. The Teaching and Learning Working Group identified five evidence-based principles of effective teaching that are particularly relevant to Waterloo's context which we believe need to be encouraged, supported, and celebrated over the next number of years.

**Evidence-based Principles of Effective Teaching at Waterloo**

*At Waterloo, effective teaching:*
1. *Uses alignment in course and curriculum design*
2. *Fosters motivation*
3. *Embodies inclusivity*
4. *Encourages deep learning*
5. *Enables lifelong learning*

*These five fundamental principles need to exist in an environment where the institution's senior administrators, academic support staff, instructors, and students demonstrate a commitment to effective teaching.*

These principles of effective teaching involve both means and end goals, and they all require instructors to engage in certain processes to achieve them. How each principle can be achieved through teaching is briefly described:

1. **Alignment** in design occurs when outcomes that are focused on learning are made explicit for learners in courses and programs, the assessments of learning match the outcomes, and course-related activities prepare learners for the assessments (Biggs & Tang, 2007).

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2. **Motivation** occurs when learning experiences, inside and outside the classroom, are relevant and of value to learners, provide them with choice, and feel achievable yet appropriately challenging (Svinicki, 2004).
3. **Inclusivity** occurs when learning environments and experiences engage learners with differences respectfully and in a caring manner and are designed to enable all to learn (Ouellett, 2005).
4. **Deep learning** occurs from experiences that encourage learners to make connections, apply knowledge in new contexts, engage in learning activities and analytical thinking on their own and with others, and retain their learning (Christensen Hughes & Mighty, 2010).
5. **Lifelong learning** occurs from experiences that teach students to think about their thinking, become self-aware as learners, take responsibility for their learning, and self-assess their learning (Yancy McGuire, 2015).

The application of these principles in a widespread manner is more likely when all of the involved stakeholders commit to them and work in concert to achieve success. More specifically:

1. **Institutional Commitment** stems from **senior administrators** who promote a culture that values effective teaching through articulating its importance, and expecting, enabling, and rewarding its implementation. In addition, **staff members** who support instructor development and student learning help to demonstrate this commitment at the institutional level (Association of American Universities, 2013).
2. **Instructor Commitment** is present when instructors recognize themselves as learners, regularly review courses/programs and their instructional practices to improve, share research-informed best practices with colleagues, and seek assistance when needed (Weimer, 2010). Their commitment is also apparent when their actions are consistent with caring for their students' welfare and they have reasonable expectations of their students.
3. **Student Commitment** is shown when they engage effectively as learners and seek to demonstrate their curiosity, interest, and abilities in the process of learning.

The principles of and commitments to effective teaching can be conveyed in the visual model shown in Figure 1.

**Figure 1: Effective Teaching to Promote Learning at Waterloo**
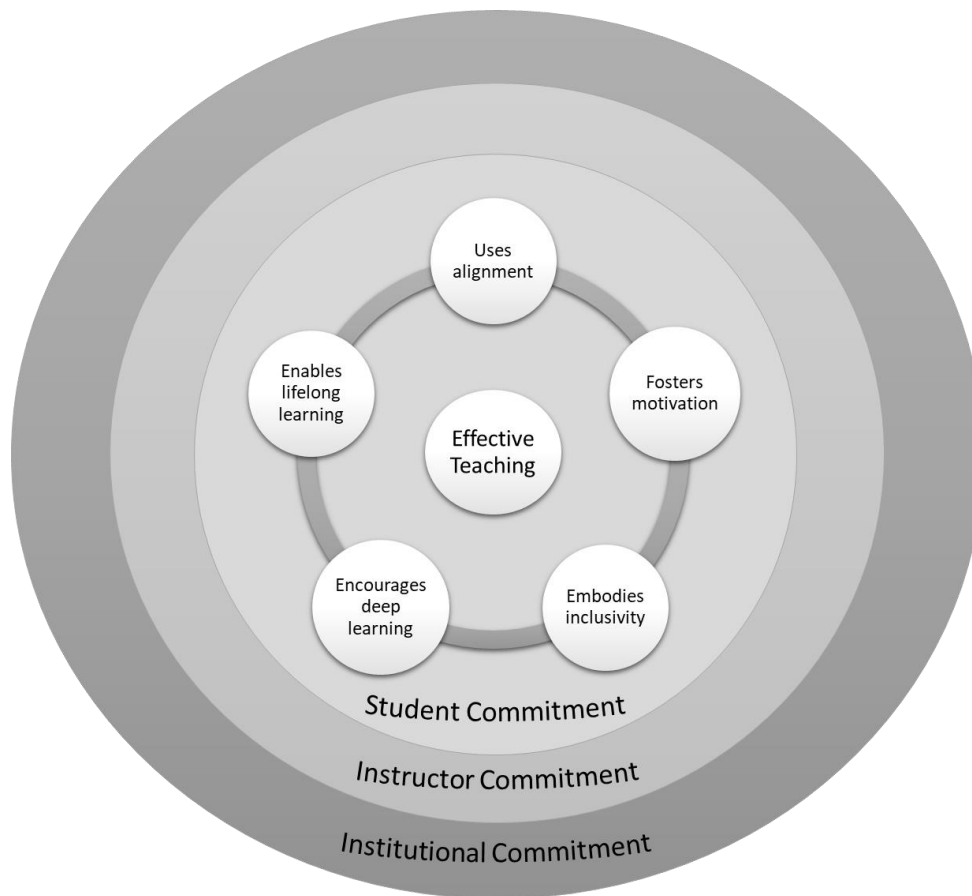


The members of the Teaching and Learning Working Group and the Issue Paper Advisory Group recognize that this model of effective teaching needs to be implemented within the Waterloo context in order to continue the journey towards the wide adoption of a learning paradigm. The next two sections of this paper describe elements of the Waterloo context regarding strengths and challenges related to teaching and learning. The examples identified are not meant to be comprehensive; rather, they provide a top-of-mind perspective. The paper ends by exploring promising practices both here and elsewhere and identifying questions to encourage deeper discussion.

# 3. Waterloo's Strengths in Teaching and Learning

The Advisory Group provided their perspectives on Waterloo's strengths that would support further movement towards the adoption of a learning paradigm. The listing below is grouped thematically and is not intended to be hierarchical.

**High-performing and engaged students**

- Waterloo attracts exceptional students. Three out of five (60.6%) of Waterloo's undergraduate students had an entering average of 90% or greater in fall 2016 (Strategic

Plan in Action, n.d.). What this means is that students attending Waterloo have accomplished, bright peers with whom to work, learn, and establish friendships.

- In their courses, 61% of Waterloo's 4th-year student respondents report having participated in an average of two High Impact Practices[3], compared to just over half (52%) in Ontario (National Survey of Student Engagement (NSSE), 2017). More and more instructors at Waterloo are including HIPs into their pedagogy, many assisted by staff in our academic support units (e.g., Centre for Teaching Excellence, Student Success Office, Writing and Communication Centre, Library). Many ongoing practices that promote deep learning for our students emerge from individual Faculties through a host of initiatives, for example, senior capstone projects, problem-based learning, incubators, implementation of a large variety of technologies to support teaching and learning, and so on. Such high impact practices have repeatedly and consistently proven their worth in terms of their transformative educational value, and in terms of important metrics such as student graduation rates.
- Students engage in capstone courses in many of our programs to integrate, in a comprehensive way, their prior learning in their programs to create new higher level understanding of their areas of interest and, in many cases, to test the waters for considering graduate studies. Waterloo students also engage in opportunities to explore how to link learning activities to skills required in the workplace, such as through WatCV, a suite of assignments that help them connect course work to skills required in the workplace.
- Outside of courses, students engage in opportunities to pursue their curiosity and develop leadership skills through an astonishingly wide range of co-curricular initiatives, including entrepreneurship (e.g., Velocity), student clubs, senior research projects, tutor training, Engineering design teams, math contests, hackathons, and other activities.

**Experiential education**

- Experiential education has been a foundational component of education at Waterloo from its inception. Annual co-op work terms have surged from 13,000 in 2007 to over 21,000 in 2017 (Performance Indicators, Co-operative Education, 2017).  The infrastructure to support this level of activity is staggering, and it is no surprise that co-operative education at Waterloo adds value to the learning experience at a scale that no other institution can match.
- Waterloo co-op students are enrolled in 120 different academic programs, and they work with 6,700 employers in over 60 countries.  In 2017/18, 60% of full-time undergraduate students were enrolled in a co-op program (Performance Indicators, Co-operative Education, 2017). It's hard to overstate the value of co-operative education to Waterloo's reputation. When asked, 70% of incoming student survey respondents indicate that they would not have come to Waterloo if not for co-op (Marketing and Undergraduate Recruitment, internal data).
- The recently created EDGE certificate will provide additional value to the learning experience for students who do not participate in co-op programs.

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[3]High Impact Practices (Kuh, O'Donnell, & Schneider, 2017) are teaching and learning practices that have been shown to be beneficial for post-secondary students. High Impact Practices include: first-year seminars and experiences, common intellectual experiences, learning communities, writing and inquiry intensive courses, collaborative assignments and projects, undergraduate research, diversity / study away / global learning, service learning, community-based learning, internships and field experiences, capstone courses and projects, and e-Portfolios.

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- There is recognition, both internally and externally, that experiential education is more than co-op and EDGE on this campus, and the broader spectrum of experiential education is an integral part of many of our academic programs (e.g., internships, labs, clinics, capstone courses, etc.). In select programs, experiential education is built into curriculum design and intentionally scaffolded throughout a student's degree program. In other instances, individual faculty members include, as part of their pedagogy, experiential learning activities in their courses to enhance student learning and motivation.
- Students learn and practice foundational skills like teamwork, time management, communication, and leading others outside of the classroom through our array of mentorship experiences such as teaching assistantships, peer success coaching, orientation leadership, working as residence dons, and so on, often supported by staff in our academic support units.

**Growing capacity for culture change**

- Waterloo has, in recent years, been able to grow its faculty complement more aggressively than many other Canadian universities, hiring an average of 71 faculty members per year since 2012 (Performance Indicators, Hires by Gender, 2017). New hires with a passion for teaching bring energy to their courses and to their academic colleagues.
- The Teaching Fellows program exists to mentor and stimulate teaching development and innovations. Each Faculty participates in the program and regular meetings of the Teaching Fellows result in discussions of challenges as well as the sharing of best practices across the institution.
- Waterloo has committed through the Undergraduate Communications Outcome Initiatives to enhance the communication skills of all of its undergraduate students.
- An increasing number of courses include active learning strategies and more diversity in student assessment practices, including two-stage testing. Professional development opportunities, such as faculty communities of practice and an annual teaching and learning conference, are facilitated by the Centre for Teaching Excellence to assist with sharing research and best practices.
- An increasing number of programs have re-designed curricula and now include capstone courses in the senior year.

**Teaching and learning resources in place**

- The Centre for Teaching Excellence (CTE) collaborates with individuals, academic departments, and academic support units to foster capacity and community around teaching and to promote an institutional culture that values effective teaching and meaningful learning. From 2011 to 2017, more than 6,000 faculty members, staff instructors, and graduate students have engaged with CTE's services ([Centre for Teaching Excellence External Review Self Study Report](), 2017). CTE is currently working towards a number of strategic priorities that align with the principles for effective teaching described in this issue paper.
- The Centre for Extended Learning (CEL) supports the design, development, and delivery of online courses. Through their partnership with course authors and departments, they support effectiveness and innovation in online teaching and learning. Waterloo has one of the largest and most well-supported online programs in Canada, which positions us as a leader in the ability to provide flexible and far-reaching learning options sought by today's learners.

- Librarians across the University Library partner with faculty and students to enhance critical and creative thinking in curricular and co-curricular settings with a focus on information seeking skills, evaluation, information ethics, and increased context for disciplinary and interdisciplinary information, supporting student growth in both one-on-one and group sessions.
- The Student Success Office (SSO) works closely with the faculties and campus partners to support academic and personal development and promote a smooth transition for new students. The focus is on enhancing students' awareness of their learning strengths and challenges, their ability to meet learning expectations and adapt to new environments, and their ability to seek out and access relevant resources that enhance their student experience.
- The Writing and Communication Centre (WCC) provides student-centred support which includes helping students identify and articulate learning goals as part of their writing process in both one-on-one and group sessions.

**Technology and infrastructure in use to support learning**

- In general, technology is becoming an increasingly important component of the learning ecosystem, and the proper tools can make learning more engaging and effective. All Faculties use technologies that include the learning management system, technologies to support blended courses and flipped classrooms, and various types of engagement tools.
- Blended courses and flipped classrooms are becoming more common at Waterloo, and more student-centred pedagogies, such as problem-based learning and team-based learning, are being used in some courses and programs.
- The University of Waterloo makes over 375 fully online courses available, as well as over 22 fully online programs, leading the U15 group of universities. The Centre for Extended Learning (CEL) supports over 515 reoffers each year, many of which involve direct interaction with and support of the instructor. CEL is involved in 40-60 development projects each year, supporting faculty with expertise in instructional design and innovative content creation (CEL, internal data, 2018).
- Mathematics has contributed significantly to the development of Möbius a STEM-aware course development software. In addition, Engineering, Mathematics, and Science use electronic marking programs (e.g., Crowdmark, MarkBox) to facilitate faster feedback for students.
- Waterloo has committed to intensifying the rate of classroom renovation, and has struck a Teaching and Learning Spaces Committee to inform the design and use of classroom spaces. Plans include providing more classroom spaces to support and facilitate active learning pedagogies involving student-to-student and student-to-instructor interactions.

# 4. Challenges in Teaching and Learning

The Issue Paper Advisory Group also considered challenges related to moving towards a learning paradigm, where student learning is powered by curiosity, informed by research, and transformative in practice. As in the previous section, the listing below is grouped thematically and is not intended to be hierarchical. Each theme heading represents a challenge or obstacle in Waterloo's current context. To move successfully towards a learning paradigm, these need to be addressed; as such, the examples below each theme are phrased as opportunities to consider for future action.

**Ensure that teaching is valued**

- Contemplate how to best balance and reward the dual roles of teaching and research in a research-intensive university to encourage time and attention to both. Indeed, teaching and research can reinforce each other.
- Update hiring, tenure and promotion policies so that an individual's teaching ability is a priority area for evaluation.
- Consider a teaching faculty stream that is parallel to the established (assistant, associate, and full professor) stream and that has the same opportunities for career advancement as well as sabbaticals.

**Encourage students to take risks as learners**

- Consider how current assessment models can include low-stakes learning opportunities and encourage deep learning.
- Support students' willingness to pursue their curiosity through competition, collaboration, and opportunities to learn from real-world experience.
- Consider how best to support student risk-taking with regards to their learning.

**Break down structural barriers**

- Strive for classroom design that promotes and supports various kinds of pedagogies, including active learning.
- Employ additional new ways to increase awareness of teaching successes and good practices across the university.
- Consider how to support deep learning in a funding environment that incentivizes increases in enrolment.
- Explore how to allow for instructor flexibility and choice in learning technologies, while minimizing confusion and the learning curve for students.

**Bring together communities**

- Waterloo has many different sub-communities within the larger student community (e.g., co-op students and regular students, entrepreneurial students and non-entrepreneurial students, STEM students and arts and humanities students, etc.). Consider how to create opportunities for integration and a sense of overall belonging to one institution.
- Acknowledge the unique features of Waterloo's alternating co-op / on-campus schedule, which require creative approaches to building campus community.
- Be aware of how articulated institutional priorities (e.g., c o-op, entrepreneurship) may affect a student's sense of belonging if they are not part of those specific programs.
- The Affiliated and Federated Institutions of Waterloo (AFIW – includes Renison University College, Conrad Grebel University College, St. Paul's University College, and St. Jerome's University) add valuable dimensions to the University of Waterloo. The AFIW teach numerous Waterloo students and therefore need to be engaged and supported appropriately in all discussions regarding teaching and learning.

**Maintain our leadership in experiential learning**

- Within the Canadian higher education landscape, significant attention is being paid to the importance of experiential education (EE), particularly the sub-set of EE known as work-

integrated learning (WIL). The Ontario Ministry of Advanced Education and Skills Development, the Business/Higher Education Roundtable, and Employment and Social Development Canada are leading and/or funding major initiatives designed to ensure that more Canadian students have an experiential or work-integrated learning experience before graduation. In response, more post-secondary institutions are seeking to provide these sorts of learning opportunities to their students including co-op work terms, community-engaged experiences, and applied research projects. During this time of intense focus on WIL, Waterloo will need to determine how to maintain its world leadership in co-operative education and how to effectively educate policy makers on the important quality indicators associated with work-integrated learning.

# 5. Promising Practices

With Waterloo's context explored, it is helpful to consider concrete ways in which we may move forward. Various sources were used to identify new and creative ideas for Waterloo. The Teaching and Learning Working Group began this work by identifying specific initiatives that would allow us to achieve the aspirations of the vision statement for learning, and they distilled these into thematic strategic priority areas. The Issue Paper Advisory Group added to this work, as did reports from the Educational Advisory Board solicited for this issue paper. From these sources, **five strategic priority areas** have been identified for further consideration.

1) **Teaching and curricular innovations to encourage creativity**
   a) Launch a teaching and learning incubator. Bring together multiple stakeholders (instructors, staff, and students) to address how to implement priority areas and/or transform courses/programs (e.g., experiential learning, interdisciplinary learning on wicked problems, Indigenization, writing across the curriculum) (Parker, 2010; Reybold & Halx, 2012).
   b) Develop a secondment/exchange program for instructors to learn about teaching and learning strategies in use at Waterloo or elsewhere.
   c) Encourage students to seek breadth in their education by reducing the risk of stepping out of their disciplinary areas, for example, by implementing pass/fail for certain types of courses.
   d) Following the University of British Columbia (UBC) model, make a clear institutional commitment[4] to shifting to the learning paradigm. UBC did this by starting a teaching and learning enhancement fund to support innovative teaching strategies, funded in part through student tuition. This commitment was re-energized through another $12M investment by a foundation, and led by the Faculty of Science (Education Advisory Board, UBC, 2018).

2) **Student-led initiatives to empower our students**
   a) Set up systems for prior learning assessment in programs and student-led individually-created courses (see https://www.ed.ac.uk/employability/slicc).

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[4] Recently, Waterloo's Science Faculty established the "2019 Dean's Undergraduate Teaching Initiative Fund" to support teaching and learning initiatives that will help transform the undergraduate educational experience in Science. Although it is only for one year, this initiative sends a powerful message to the Science community about the importance of teaching and learning innovations in that faculty, and, provides significant resources to effect change.

b) Develop a mentoring program to pair 4th year students with 1st year students re: doing research (could be part of EDGE program and/or co-op program).

c) Assist faculty in incorporating relevant experiences of students (co-op or EDGE) to enhance the value of their courses.

3) **Assessment of learning to provide positive and productive learning experiences**

   a) Support and resource replacement of high-stakes final exams, particularly in first-year courses.

   b) Implement more broadly two-stage tests, as currently being done at UBC and in some programs at Waterloo, where students first complete an exam independently and then work together in groups of three or four to retake the exam collectively (Education Advisory Board, UBC, 2018) (Jang et al., 2017).

   c) Help faculty identify essential course requirements and multiple ways for students to demonstrate them (universal design for learning) (Warrington, 2017).

4) **Institutional infrastructure, policy, and practice to promote quality and remove barriers to flexibility**

   a) Expand evaluation practices to enable instructor risk-taking and expect professional development in teaching and learning.

   b) Commit to providing infrastructure to foster active learning – for example, flexible classrooms (low tech) and active learning classrooms (high tech) – especially for high enrollment courses (Mitchell, Petter, & Harris, 2017). Carnegie Mellon University (CMU), the University of British Columbia (UBC) and Wilfrid Laurier University (WLU) have made significant progress in incorporating active learning practices, including in large lecture halls. (Education Advisory Board, CMU, 2018) (Education Advisory Board, UBC, 2018) (Education Advisory Board, WLU, 2018)

   c) Commit to an agile, technology-enabled learning ecosystem that supports student-centred learning experiences, the creation and adoption of high-quality open content (low or no cost), and flexible learning options (Hall Giesinger et al., 2016).

5) **Advancing experiential education as an integral part of the Waterloo experience**

   a) Provide resources to support faculty in implementing a full spectrum of experiential education opportunities within the curriculum.

   b) Intentionally incorporate experiential education in new program design and assessment (e.g., program reviews) (Celio, Durlak, & Dymnicki, 2011; Berg, Lee, & Buchanan, 2016).

   c) Identify efficient ways to track the types and extent of experiential education happening across the institution.

# 6. Questions for the Community

Consultations for the next strategic plan should be informed by our existing context and ideas for the future. Engaging with the community, listening to and critically assessing feedback will be instrumental in developing our new strategic plan. Responses to the questions posed will provide insights into how we move measurably and deliberately to a learning paradigm at University of Waterloo.

1) Are the aspirations and ideas in this issues paper on target?
2) How can the university demonstrate commitment to an approach to learning that is powered by curiosity, informed by research, and transformative in practice?
3) In your role, how do you see this approach to learning coming to life?

**Secondary Questions**

4) To faculty – how will we know when teaching effectiveness is recognized as being of equal importance to research on this campus?
5) To students – without undermining the value of the degree you are working towards, what would it take to encourage you to learn more broadly, i.e., take risks as learners (and reduce focus on grades)?
6) To administrators and faculty – how can we show we are committed to lifelong learning for ourselves and our students?
7) To faculty – how can our students' experiential learning, both past and current, be deliberately leveraged to enhance the value of what they learn in your courses?

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# Appendix A: Issue Paper Process and Methodology

To begin the issue paper process, the president, provost, deans, and other members of the Executive Council identified broad themes and issues that are vital to strengthening and advancing the unique value proposition for the University of Waterloo. The Executive Council identified faculty and staff to lead this initiative, while the Graduate Student Association and Federation of Students identified graduate and undergraduate student representatives.

Issue Paper Advisory members included:

Theme Lead: Mario Coniglio

IAP facilitators: Daniela Seskar-Hencic, Jana Carson, and Annamaria Feltracco

Advisory Group Members: Carey Bissonnette (Faculty of Science), Aldo Caputo (Centre for Extended Learning), Andrew Clubine (Federation of Students), Tara Collington (Faculty of Arts), Peter Douglas (Faculty of Engineering), Donna Ellis (Centre for Teaching Excellence), Anne Fannon (WatPD), Leeann Ferries (Faculty of Applied Health Sciences), Ross Johnston (Co-operative Education and Career Action), Carrie Mitchell (Faculty of Environment), Francis Poulin (Faculty of Math), Judene Pretti (WatCACE), Kari Weaver (Library), Heather Westmorland (Student Success Office)

Through a series of 5 meetings between January and May 2018, the group defined the issue, developed a literature scan strategy executed by the Waterloo library, conducted an analysis of teaching and learning at Waterloo, developed the consultation questions, and provided feedback on drafts of the paper. This paper reflects the process engaged by the issues group and is not intended to be a comprehensive overview of all aspects of undergraduate learning at Waterloo.

To develop the Advancing Undergraduate Learning paper, the Issue Paper Advisory Group benefited from the foundational work of the Teaching and Learning Working Group. The current issue paper draws heavily from its content.

The Teaching and Learning Report synthesizes ideas generated in response to an invitation from our president, Feridun Hamdullahpur, to rethink teaching and learning at Waterloo as part of the preparation for our next institutional strategic plan. In July 2017, Mario Coniglio (Associate Vice President, Academic) and the senior teams in the Centre for Teaching Excellence and the Centre for Extended Learning met with the president to share ideas about what Waterloo could be doing differently in teaching and learning. Then in August 2017, the president shared a framework from the Association of American Universities (AAU) about systemic change for undergraduate teaching and learning. During the Fall 2017 and Winter 2018 terms, four half-day retreats were held to enable participants to explore and then distill ideas for Waterloo's near future in teaching and learning.[5] The Teaching and Learning Report documents the outcomes of this process.

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[5] The participants in the retreats were: Mario Coniglio, Associate Vice-President, Academic, Senior staff from the Centre for Teaching Excellence (Donna Ellis [director], Veronica Brown, Trevor Holmes, Katherine Lithgow, Mark Morton, Mary Power, Svitlana Taraban-Gordon), Senior staff from the Centre for Extended Learning (Aldo Caputo [director], Dina Meunier, David Bean), Clare Bermingham (director of the Writing and Communication Centre), Judene Pretti (director of WatCACE), and Ron McCarville, Professor in Recreation and Leisure Studies and facilitator for all four retreats. These participants brought their expertise with the research and practice of teaching and learning to bear on developing the ideas in this report.

The Issue Paper Advisory Group considered what changes would be needed to make progress on adopting and advancing initiatives that address the principles from the Teaching and Learning Report, and fit with promising practices here at Waterloo and elsewhere. The group engaged in a facilitated discussion to generate ideas and strategies that could assist the institution in putting the principles into practice. Summarized ideas from this discussion are presented in the Strengths, Challenges, and Promising Practices sections of this issue paper.

The Issue Paper Advisory Group also considered information collected from a variety of other sources:

- University survey data on undergraduate learning, analysed and reported by Waterloo's Institutional Analysis and Planning unit;
- a summary of interviews with peer university stakeholders to address key issues within undergraduate learning, developed by the Educational Advisory Board (EAB); and
- a literature scan and synthesis based on questions developed by the Issue Paper Advisory Group and conducted by Waterloo's library staff.

Finally, an important element of this work was a facilitated group process to identify vital issues in undergraduate learning with the Issue Paper Advisory Group.

This methodology was developed not to create a comprehensive understanding of undergraduate learning, but rather to highlight and explore the most important issues identified by key University stakeholders.

# EXECUTIVE SUMMARY - STUDENT LEARNING ENVIRONMENT

The purpose of this issue paper is to stimulate campus discussion around the University of Waterloo's learning environment.

Before Waterloo can address how to build a high quality learning environment, there needs to be a fundamental commitment to honouring students and their learning development. Our issue paper group strongly articulated their belief that Waterloo's student learning environment is a vital component of Waterloo's success as an institution, and that our institutional values need to reflect this position. The members proposed the following **value statement** to be put forward for discussion among the Waterloo community:

> *Achieving a positive learning experience requires a proactive community that demonstrates and encourages genuine care, concern, and respect for students and all members of the university community.*

The group ultimately determined that the proposed value statement be presented with **three outcome areas** that will serve to promote a 'call to action' for discussion, revision, and ultimately, for endorsement:

- Student support
- Student involvement on campus
- Learning culture

The next phase of the strategic plan should determine whether or not this value statement resonates with the larger community. If it does, the next question is whether the three categories are representative of the value statement, and whether anything else needs to be included. Examples of questions that could facilitate this discussion include:

- What changes do we want to see in the learning environment?
- What would ideal student relationships, support, and student involvement look like?
- What would assure us that the values of the institution are being applied?
- How could you, as an individual, contribute to ensuring that this value statement is enacted?

Based on feedback from the community, the new strategic plan should refine the value statement areas/outcomes to contain indicators against which change can be evaluated, so that these can guide the direction that Waterloo will go.

## CURRENT CONTEXT FOR STUDENT LEARNING AT WATERLOO – OUR TAKE

Waterloo has a long-held reputation of excellence as an institution of higher learning. At the same time, the learning environment at Waterloo has been perceived to be suboptimal. Issue group members noted that there is a perception of significant competition among students that negatively impacts student-to-student relationships, and that some members of Waterloo's faculty do not consistently act in a supportive manner towards students. Waterloo's co-operative education also provides a challenge for the student environment as it means that a large proportion of students are frequently spending four months away from campus, which may create a fractured relationship with the university community.

Waterloo monitors the quality of the learning environment through several surveys including the National Survey on Student Engagement (NSSE), National College Health Assessment

(NCHA), and Canada University Survey Consortium (CUSC). Internally, Waterloo also conducts the Canada Graduate and Professional Students Survey with graduate and professional students.

In many ways, students at Waterloo demonstrate excellent learning and achievement outcomes, compared to students at other institutions. For example:

- Fewer undergraduate students at Waterloo experienced interruptions to their studies and delays in completing their program,
- A higher proportion of Waterloo undergraduate students had a grade of A- or higher, received financing from co-op, internships, or other financing opportunities, and were employed full-time after graduating,
- The majority of undergraduate students were satisfied with their decision to attend UW and recommend it to others.
- Two thirds of Waterloo graduate students rated their relationships with the faculty as very good or excellent.

Altogether, these results suggest that students at Waterloo are more successful in certain areas than their counterparts in other universities across Canada, and are highly accomplished and relatively satisfied. However, other data provide further insight into the lives of students:

- Over half of first-year Waterloo survey respondents indicated that Waterloo places quite a bit to very much emphasis on overall well-being compared to less than half of graduating year respondents. Compared to Ontario peers and universities in the U15/U6, Waterloo's results are significantly lower, although the actual effect is very small for both first-year and graduating-year respondents,
- About three out of four first-year undergraduate survey respondents were satisfied (satisfied and very) with the concern shown to them by the university, compared to about half of graduating year respondents. The satisfaction with concern shown by the university among Waterloo's graduating year student respondents is significantly lower than that Ontario graduating year students,
- Results from a 2016 survey demonstrate that UW students and at other institutions across Canada report nearly identical frequencies of physical, mental, and social health issues. At Waterloo, almost four out of ten students met recommendations for moderate-vigorous exercise; a quarter felt things were hopeless; one in six felt so depressed it was difficult to function; almost a third felt very lonely; over half felt exhausted for reasons other than physical activity; and more than a quarter felt overwhelming anxiety,
- Just over half of graduate students rated the advice on career options outside of academia as good, very good or excellent.

In contrast to the results of academic excellence and satisfaction, answers to survey items related to physical, mental, and social health expose conditions of unhappiness and distress. The issue paper group did not believe that Waterloo should be content with having our students report satisfaction with a learning experience that is "as good as" other universities in Canada, and that Waterloo should seek to offer a student experience that is of higher quality. A review of the literature on best practices of the learning environment reveals that students can be empowered by their surroundings in multiple ways, and that these initiatives can further improve academic success.

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A FURTHER LOOK AT THE OUTCOME AREAS

To support the value statement, our group worked to identify key, visible outcomes that would demonstrate that the value had been achieved. These outcomes could eventually serve as benchmarks for institutional change. The values statement is operationalized by action in three areas:

STUDENT SUPPORT

For students to benefit from the learning environment there needs to be widespread awareness and accessibility of services offered on and off-campus. Service support and awareness should also extend to faculty and staff members, who can work together to enhance student services and reduce individual work burden. Ideally, students should want to stay on campus for subsequent degrees, after class, as alumni, and/or to work.

> Best practices for consideration: access to person-centered counselling/advisory services can promote success; service delivery models that are proactive, preventative, and easy to navigate improve accessibility

STUDENT CAMPUS INVOLVEMENT

The way students engage in and experience the learning environment is an essential representation of the learning environment. The group declared that student voices should be heard across the community of Waterloo, and they should feel that their involvement on campus is worth their time. Students should feel comfortable in approaching faculty and staff with their needs, embodied by an "open door" policy that directs students to the services they need no matter where they access them. This would also be reflected by increased participation by students and faculty in student-focused initiatives such as on-campus lectures, Faculty/program activities, and student leadership, and community engagement activities.

> Best practices for consideration: in general, enthusiastic, compassionate, and respectful attitudes have been identified by students as important characteristics of faculty members; discussions with faculty/staff about career plans and content from outside readings, working with professors on research projects or activities outside of class

LEARNING CULTURE

The group contended that Waterloo should celebrate learning in small ways, while also acknowledging that the process of learning is inherently difficult. A challenge that has been identified at Waterloo specifically is a "culture of competition," wherein students are encouraged to compete and succeed over others. Celebrating others' success and maintaining a balance between cooperation and achievement would strengthen the community at Waterloo and reduce unnecessary stressors among students.

> Best practices for consideration: academic skill-building interventions that build on motivation and emotional regulation, such as workshops for study habits, learning strategies, and test-taking strategies; first-year seminars, hosting events on intellectual discourse, celebrating diversity, and providing opportunities for research can increase student engagement

Overall, the issue paper group hopes to consult with campus on the value statement and supporting outcome areas. By initiating a conversation on institutional values within the campus

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community, Waterloo has an opportunity to innovate its approach to student learning and build a stronger community in the process.

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# WATERLOO'S RESEARCH LANDSCAPE

## Research Excellence and Crossing Disciplinary and Institutional Boundaries

A number of indicators support the contention that UW is highly regarded as a research institution. Moving forward into 2020 and beyond, the institution must sustain and surpass this reputation in an increasingly competitive global environment. This will require building on existing discipline-specific research excellence, fostering interdisciplinary collaboration through meaningful interactions and exchange of ideas across disciplinary boundaries, and seizing opportunities to lead in new and emerging research areas. Issues that will need to be addressed, insights and best practices for confronting these issues, UW's current research landscape, and questions for consultation with the community are delineated in this summary.

ENHANCING CROSS-FACULTY AND WITHIN-FACULTY INTERDISCIPLINARY RESEARCH IN A HIGHLY DECENTRALIZED ENVIRONMENT WHILST MAINTAINING AND BUILDING ANEW DISCIPLINE-SPECIFIC RESEARCH STRENGTHS

UW has major discipline-based research strengths in all its Faculties that are the foundation of its sterling research reputation. Moving forward, the institution must ensure that these strengths are not only maintained, but developed anew with emphasis on retention and recruitment of excellent faculty who, through creative and impactful discipline-specific research, bring recognition and distinction to the institution.

Interdisciplinary research that is cross-Faculty in nature or occurs within Faculties is also important. Indeed, some leading institutions (e.g., MIT) are combining disciplinary research strength with the flexibility to create research centers that bridge disciplinary divides. There is ample evidence that interdisciplinary research provides new opportunities for impact, broadens the relevance of research and has the potential to create new fields. This is illustrated, for example, by the evolution of quantum information and nanotechnology at UW.

Moreover, academics are increasingly competing for research funding in an era of outcomes-focused research conducted by research teams, typically interdisciplinary teams that cross Faculty boundaries.  Indeed, many sponsors of research have moved away from requiring only individual excellence to supporting teams with multidisciplinary expertise within a strong, networked institutional environment.  Yet, there are numerous barriers to pursuing interdisciplinary research. These include funding constraints, narrow definitions of merit that do not value interdisciplinary research for career development, lack of space for co-locating researchers from different Faculties to develop cross-disciplinary communities, and the perceived risk of weakening research in a given Faculty through bleeding of high profile researchers into cross-Faculty interdisciplinary initiatives.  A major joint report by the Committee on Facilitating Interdisciplinary Research, the National Academies of Sciences and Engineering, and the Institute of Medicine concludes that successful institutions are likely to be those that are nimble in developing policies that mitigate barriers to cross-disciplinary research. Through such policies, opportunities to grow relationships and establish connections should be afforded to faculty interested in interdisciplinary research, enabling them to form teams and seek funding.

Interdisciplinary research within Faculties at Waterloo is alive and well, and it will be important to ensure that this continues to be encouraged and facilitated. It bears noting, though, that the environment at Waterloo is not always conducive to grass-roots, cross-Faculty collaboration. At issue, therefore, is removing these barriers where they exist and, in so doing, more effectively enabling cross-Faculty initiatives. UW supports seven University Centers/Institutes conducting cross-Faculty

interdisciplinary research in areas aligned with its strengths. Given its decentralized modus operandi and the new Waterloo Budget Model, however, a major challenge for UW going forward will be mobilizing the resolve to permit cross-Faculty collaboration to grow to new heights, comparable to those in place in a number of other leading institutions, in order to maintain and strengthen anew global recognition as a research-intensive institution. This could include incentivizing strategic joint cross-Faculty appointments and implementing measures to more fully realize the potential of University Centers/Institutes as vehicles for cross-Faculty and within-Faculty interdisciplinary research.

## ADDRESSING THE INTERFACE BETWEEN THE PHYSICAL SCIENCES/ENGINEERING AND MEDICINE, ABSENT A MEDICAL SCHOOL

UW is the only U15 institution without a medical school, yet is a tour de force at the interface between the physical sciences/engineering and medicine. Indeed, virtually all Faculties are, to a degree, engaged in research that has the potential to shape the future of medicine, and not having a medical school could well become a limitation that UW will have to address.  Options include creating formal institutional research agreements with teaching hospitals such as Sunnybrook Hospital and the University Health Network at the University of Toronto, as MIT has done with Harvard's teaching hospitals.  Another longer-term strategy might be to pursue the establishment of a new, non-traditional medical school at UW, one that has a strong technical focus underpinned by the physical sciences and engineering, yet would arguably enhance UW health –related research broadly across the campus.

## INCREASING RESEARCH FUNDING IN AN ERA OF EXTREME PRESSURE ON RESEARCH DOLLARS

There are more researchers in more institutions chasing limited research dollars than ever before. This presents a challenge for all research whether single-disciplinary or interdisciplinary, although it appears to be more difficult to secure funding for interdisciplinary research.  The 2017 government review of Canada's fundamental science research, "Investing in Canada's Future: Strengthening the Foundations of Canadian Research" (commonly known as the Naylor report), contains recommendations for addressing the disproportionate shortage of funding for interdisciplinary research. As these seem likely to be implemented, it will be important going forward for UW to be nimble in forming cross-Faculty and within-Faculty interdisciplinary teams and developing funding proposals for projects that require working at disciplinary intersections.  Also important will be the provision of seed funding to support generation of preliminary data that will enhance the likelihood of securing major external funding for interdisciplinary research. UW should also pursue strategies for further diversifying research funding beyond that provided by the Tri-Agencies, including targeting industry/government contracts with attendant leveraging as well as funding from Foundations and non-profit organizations. In addition, as industries increasingly turn to UW to up their game through innovation, it will be important to ensure that they have access to expertise broadly across the institution.

## RECRUITING AND RETAINING EXCELLENT FACULTY, PARTICULARLY FROM THE FOUR DESIGNATED GROUPS

Ultimately, excellence in research is about people.  A university distinguishes itself by the caliber of its research faculty. Internationally renown faculty have disproportionately high h-indices, enhance the institution's ability to attract high quality graduate students, and are more likely to secure strong research funding.  Faculty at the top of their game have the credentials to successfully lead new initiatives in

emerging research areas, lend disproportionate credibility to interdisciplinary teams and are more likely to receive major national and international research awards. Many institutions in effect 'buy CVs' to achieve reputational enhancement.

It will be important moving forward for UW to be competitive in recruiting and retaining excellent faculty, embracing in the process equity, diversity and inclusivity which underpin the creation of a dynamic research environment with different perspectives, fresh ideas and new approaches.  Issues confronting UW as it seeks to attract and retain excellent faculty include:

- Whether, and if so where, to invest more heavily in targeted hiring of research 'stars'.
- Provision of a welcoming, inclusive environment in which faculty have access to state-of-the art core facilities and equipment, are able to recruit high-quality graduate students and are not unduly burdened with the "administrivia" of conducting research.
- Adoption of a more inclusive definition of research excellence that incorporates non-traditional measures of impact such as community engagement, impact on economic development and government policy, and entrepreneurial spinoff. Indeed, show-casing societal impact has assumed greater importance as the funding environment becomes more competitive.
- Developing more relevant merit evaluation guidelines for faculty involved in interdisciplinary research. Traditional evaluation and promotion systems tend to undervalue interdisciplinary research and need revision to include, for example, valuative recognition of team-work. In addition, interdisciplinary hiring will likely require new administrative procedures.
- Consideration of broader implementation of differential teaching loads within Departments and Schools, recognizing that running a large internationally competitive research program is increasingly tantamount to a full-time job.

## QUESTIONS

- How important is it for UW to engage more substantively in cross-Faculty interdisciplinary research? If doing so is important, how can UW overcome the barriers to cross-Faculty research collaboration, and proactively foster and support it?
- Should provision of dedicated space for cross-disciplinary research collaboration be a priority for UW?
- How can the institution more fully realize the potential of University Centers/Institutes as vehicles of cross-disciplinary research collaboration?
- Should UW incentivize joint faculty appointments, and if so, how?
- Should UW invest more heavily in targeted recruitment of senior research stars to enhance its reputation?
- How should research excellence and impact be assessed in disciplines that are not well served by bibliometics?
- Should UW more broadly implement differential teaching loads within Departments and Schools?
- Should UW pursue a specialized medical school with a strong technical bent aligned with its strengths in physical sciences/engineering?

# Executive Summary – Leveraging Resources

The University of Waterloo operates effectively as a small city, which directly supports or offers services to students, faculty, staff, alumni, employers and an ecosystem of applicants, other agencies, institutes, suppliers, local community members and more. Waterloo manages over 1000 acres of land, 100+ distinct buildings that includes teaching, research and office space and manages more than 1.1 million daily logins to information technology (IT) services from on-campus. The spectrum of services includes those found in many businesses or large institutions, as well as housing, food, health and wellness, parking, athletics and an on-site energy plant. This all relies on a large and complex set of shared technological systems, finances, physical assets, and processes in order to function. The scale of Waterloo's resources is enormous, and ensuring they are managed efficiently is of strategic focus to ensure short and long-term goals can be achieved.

Types of resources identified by the group included physical, technological, people, and capital/financial. There is a strong interconnectedness in the way that these types of resources are governed and managed. Effective is typically used to describe policies, instruments and techniques that achieve what they are intended to do. Related to this, efficiency focuses on producing the desired results without wasting materials, time or energy. The current highly decentralized structure provides advantages while in some cases, the structure is a challenge for resource management. For example, investments in cosmetic renovations do not address long-term structural maintenance needs. In thinking about strategic directions for leveraging resources, it is necessary to balance centralization and decentralization of governance, planning, design and renewal.

TRANSPARENT GOVERNANCE AND HOLISTIC RESOURCE MANAGEMENT

The University of Waterloo needs to engage in effective management of resources, which are transparent and clear. Effective management of resources also implies intentional governance to optimize management of physical infrastructure over time, through usage of lifecycle costing decision-making tools to ensure preservation, maintenance, and rehabilitation costs. It also needs to support sustainable practices for operating and managing infrastructure. To support high quality education, student experience and research, there is a need to ensure better space utilization and exploration of modern workspace designs. Usage of inventive technology and collaboration tools could provide assistance.

By 2025, effective management of resources will mean avoiding duplication and streamlining practices wherever possible. The built environment will need to be accessible to meet the needs of members of the campus community with a variety of physical abilities and to respond to regulatory requirements. Campus master planning and space management will ensure space is allocated in an efficient manner so that it ensures infrastructure can address emerging demands while accommodating expansion for future teaching and research needs. Capital plans and deferred maintenance will be addressed through sufficient staffing and financial resources to proactively ensure long-term sustainability, accessibility, and growth, while also meeting current maintenance and deferred maintenance needs. Finally, resources will ensure that Waterloo's facilities are positioned to reduce our environmental impact and respond to social, economic, and regulatory demands. Managing energy costs and carbon emissions to ensure long-term financial performance of the campus in addition to demonstrating corporate commitment to pressing global challenges. Similar social and regulatory pressures will require a proactive

approach to waste management, transportation, water efficiency, grounds maintenance, and climate adaptation from a built environment perspective.

The deployment and use of IT on campus represents both an opportunity and a key challenge for Waterloo. Security has become one of the important disciplines within the IT community and this can pose some future risk. There are numerous examples of corporations and institutions that have experienced a data breach, denial of service attack or like compromise or threat to its operations. The need to manage these risks will require diligent monitoring and detection, hardware and software tooling, user education and practice. Proactive tracking of new technology, active threats and the new connectedness involved with the "Internet of Things" (IoT) will need to be monitored. Within a relatively short period of time, cloud services (platforms and applications) have become conventional technology. Responses to Request for Proposals (RFPs) and offerings from vendors are predominantly based on services provided in the cloud. This has generally created a shift from local support for technical infrastructure and development to data governance, vendor management, business analysis, architecture, and integrations.

Classroom support, recruiting new staff, applications for research funding, development of the course timetable, matching of co-op students and employers, government reporting, payments to suppliers, fundraising and others, all rely heavily on technology. This also implies the need for a robust suite of technology-based services to support them. Collaboration, is also paramount for informal sharing and supports a number of key activities. Information Systems Technology (IST) works to develop and enhance key capabilities in the areas of: project and portfolio management, data analytics, and security, and has dedicated programs for their advancement. Consideration is also being given to the increased need to business analysis as well as business process review resources, in conjunction with campus initiatives such as Lean. Infrastructure demands on the campus network are ever-increasing, in terms of the number of connected devices, responsiveness and bandwidth.

QUESTIONS

1. How do we effectively govern and manage our resources to ensure that the University of Waterloo has the ability to meet its strategic goals?

2. How can resources best be used to enable innovation and collaboration across a decentralized structure?

3. Are our resources "strategic" differentiators or are they primarily "enablers" which support the core of the university? For example, should IT at Waterloo be a robust serviceable and reliable capability, or should it be more aligned with the image of innovation and a true differentiator?

4. Are there different ways of leveraging resources, which improve space management, physical infrastructure, and IT?

5. How should sustainability be assessed campus wide? What goals should be established to advance this goal?

6. How can resources be leveraged to improve student experience, education campus wide and research?

# Executive Summary - Advancing Internationalization

In an increasingly interconnected and complex world, infusing global perspectives into decision-making and catalyzing collaboration across borders are vital to societal well-being. However, recent global trends – such as the rise in nationalism, xenophobia, and sectarianism – have served to encourage narrow-mindedness and insularity. Thus, the gap between what is required and what exists is large and widening.

Given this, the need for universities to make a contribution is perhaps more important now than ever. It is critical that universities commit – wholeheartedly – to the ways in which internationalization can serve to advance their core mission of teaching, research, and service for the public good. Not only does the world need the graduates, discoveries, and contributions that would result from these activities, but the world also needs this example of global engagement and leadership, so that others can be inspired.

EVOLUTION OF INTERNATIONALIZATION IN HIGHER EDUCATION

Globally, early internationalization efforts of governments and universities were narrowly focused on education abroad and mobility of students and faculty. Individual faculty members pursued the bulk of international engagement with limited institutional support, resulting in an ad-hoc, organic internationalization strategy at a very modest scale. More recently, some national governments have 'ramped up' their levels of interest in internationalization – focusing upon the attraction of talent from abroad, and offering resources for global research collaboration.

In Canada, the main international education policies of federal and provincial governments emphasize the development of a 'Canadian brand' for the recruitment of students and the acquisition of skilled labour. These efforts have been quite successful and, combined with recent geopolitical events, have made Canada one of the top four destinations in the world for international education; the number of Canadians heading abroad, by contrast, remains relatively low.

THE VALUE PROPOSITION OF INTERNATIONALIZATION IN HIGHER EDUCATION

Increasingly, a number of world-class universities are recognizing the ways in which internationalization – through international and intercultural experiences on the part of their students, staff, and faculty – can advance their goals.

- Learning: Internationalization better prepares the student for a globalized world, as well as providing the individual with skills like effective communication, flexibility and resilience, and cognitive dexterity and depth,
- Research: Diverse perspectives and insights, as well as a larger pool of financial, infrastructural, and educational resources, provide a strong foundation from which to pursue research,
- Service: Public universities are obliged to contribute to issues of significance to their stakeholders, many of which are largely inseparable from global challenges,
- Strategic: To help a university advance its strategic goals, internationalization can be a stimulus to innovation, and it can be a gateway to resources. Moreover, in an increasingly competitive global market for education, top-tier universities recognize internationalization as a key strategy to distinguish themselves amongst their peers, through formally enhancing their rank, and informally broadening their reputation.

1

CONTEMPORARY COMPONENTS OF INTERNATIONALIZATION

There are three key components to the contemporary landscape of internationalization in institutions of higher education. These are referred to as: Internationalization on Campus (IoC), Internationalization Abroad (IA), and International Partnerships (IP). The term IoC is offered to capture the multiple international dimensions on the home campus, with focus on incoming international students and internationalizing all students' experiences. Current challenges to a successful IoC program include determining and securing the ideal ratio of international to domestic students, avoiding over-reliance on one key market for incoming international students, identifying and allocating appropriate resource supports for international students, and integrating diverse communities on campus so as to reap the benefits of a global population. Successful strategies to address these challenges include country-of-origin diversity in international student recruitment, anticipating – and funding – support requirements for international students, and intentionally designing, resourcing, and evaluating intercultural initiatives, both curricular and co-curricular, on campus.

IA is a term used to refer to the mobility of the university population across international borders. With respect to student mobility, the term encompasses a broad range of initiatives: short and long-term semesters abroad, research internships, service-learning, work, joint academic programs, and dual and cotutelle degrees. It is still unclear as to whether particular types of experiences – with particular durations and locations – are more valuable than others; or whether some minimum criteria across these characteristics should be in place in order to define 'an international experience'. In any case, the safety and well-being of those abroad continue to rise up institutional and public agendas, with recent geopolitical events serving as ever-present catalysts in this regard. Additionally, international experiences are often prohibitively expensive, or come at the cost of other paid opportunities for students (or are difficult to arrange, for academic reasons). Many institutions in Canada and around the world are looking to increase the number of students participating in IA initiatives, seeking to understand 'best practice' and experimenting with new strategies.

IP refers to cross-border linkages with institutions, alumni, industry, governments, and other stakeholders. Many of these linkages are primarily concerned with collaborative research activity. Currently, highly-regarded strategies for IP emphasize the development of fewer, strong strategic partnerships, networks, and alliances to meet institutional goals for internationalization and grow the global impact of research. Factors to consider when prioritizing partnerships include value added for the particular university's faculty and students, relative ranking of the prospective partner, existing linkages, location, and type of partnership (research and/or educational). Additionally, significant financial and time resources must be devoted to outreach, partnership maintenance, and evaluation of outcomes over time. International alumni can play a crucial role in advancing an institution's internationalization goals, as ambassadors, champions, and facilitators for partnerships, as well as talent recruiters, and providers of market intelligence more generally.

INTEGRATION

'Comprehensive Internationalization' has increasingly been adopted as a framework for internationalization at universities, seeking to align and integrate policies, programs, and initiatives to position universities as more globally-oriented and internationally-connected institutions. This strategy considers all the IoC, IA, and IP dimensions of internationalization through a combination of top-down and bottom-up collaborative approaches. Moreover, emphasis is placed on developing more qualitative measures of internationalization in addition to current quantitative metrics, and building fewer, deeper relationships with other global institutions.

2

INTERNATIONALIZATION AT WATERLOO

A strong international outlook and vibrant international engagement are vital to Waterloo's global excellence. Well-known for its transformative research, innovation and entrepreneurship, and co-operative education program, these qualities, as part of the university's overall brand, can be leveraged and considered for strategic planning of international initiatives.

Moving forward, Waterloo must look inward: reflecting on internationalization in its overarching ethos, and considering both the amount and quality of intercultural opportunity available to students, staff, and faculty. However, the university must also look outward: finding synergies with other institutions, and developing strategic outreach priorities. A series of questions is presented in the paper to stimulate campus-wide discussion.

The world is indeed complex and interdependent. Given this context, risks are inevitable, and the university must be vigilant and continue to adhere to and promote the values of academic freedom, reciprocity, quality, and access. In its international engagement, it will have to address challenges concerning academic integrity and freedom, quality assurance, institutional autonomy, ethics, brain drain and exchange, developing sustainable partnerships, improving international student experience, and engaging in regions and countries with diverging value systems. Means to evaluate and to act upon such risks will have to be in place.

Although internationalization brings such challenges, there are also a great many opportunities, such as use of technology and online platforms for collaboration and participation, access to talent, research funding, and other resources, and the opportunity to address complex problems through innovative and interdisciplinary approaches utilizing diverse perspectives. The world needs its top universities to internationalize thoughtfully, meaningfully, and forcefully.

3

SELECTED WATERLOO DATA POINTS

Internationalization on Campus

| Indicator | Value | Source |
|---|---|---|
| Number of international undergraduate students (percentage of total), 2016/17 | 5,398 (18.0%) | Waterloo Strategic Plan reporting |
| Number of international graduate students (percentage of total), 2016/17 | 1,668 (38.5%) | Waterloo Strategic Plan reporting |
| Number of faculty members with an international citizenship (percentage of total), 2016/17 | 343 (27.8%) | Waterloo Strategic Plan reporting |
| Percentage of faculty with a degree from outside of Canada, 2017 | >50 | Waterloo Strategic Plan, Progress and Outcomes, Fall 2017 Update |

Internationalization Abroad

| Indicator | Value | Source |
|---|---|---|
| Number of students participating in outbound international experiential learning programs, 2016/17 | 961 | Waterloo Strategic Plan reporting |
| Number of co-operative education work-terms located internationally, 2016/17 | 2,653 | Waterloo Strategic Plan reporting |
| Number of participants in the Staff International Experience Fund (countries visited), 2014-2016 | 9 (9) | Waterloo Strategic Plan, Progress and Outcomes, Fall 2017 Update |

International Partnerships

| Indicator | Value | Source |
|---|---|---|
| Agreements with universities ranked in the top 100 (QS), 2016/17 | 37 | Waterloo Strategic Plan reporting |
| International research funding, 2016/17 | C$17.4 million | Waterloo Strategic Plan reporting |
| Number of co-authored publications with top international country partner (country partner, percentage of total), 2014-2017 | 3,213 (United States, 19.5%) | SCOPUS |
| Number of joint academic programs with international partner universities, 2017 | 40 | Waterloo Strategic Plan, Progress and Outcomes, Fall 2017 Update |
| Number of international delegations hosted, 2016/17 | >60 | Waterloo Strategic Plan, Progress and Outcomes, Fall 2017 Update |
| Number of contactable alumni, international (number of countries), 2016/17 | 17,115 (144) | Waterloo Strategic Plan reporting |

Comprehensive Internationalization

Waterloo is currently ranked 60th in the world for international outlook, and sixth in Canada, based on Times Higher Education performance indicators. (These weight equally 'international-to-domestic student ratio', 'international-to-domestic staff ratio', and 'international collaboration', which looks at the extent to which journal articles have at least one international co-author.)

Definitions for Internationalization

4

With respect to higher education, internationalization 'at the national, sector, and institutional levels is defined as the process of integrating an international, intercultural, or global dimension into the purpose, functions or delivery of higher education' (Knight, 2015, 2). To encompass the large range of institutional settings in which internationalization plays out, Hudzik (2011, 10) defines comprehensive internationalization as 'a commitment, confirmed through action, to infuse international and comparative perspectives throughout the teaching, research, and service missions of higher education.' The American Council for Education's Centre for Internationalization and Global Engagement outlines six tenets that comprise Comprehensive Internationalization:

1) *Articulated institutional commitment*: a combination of strategic planning, an internationalization committee, engagement of campus stakeholders, and continuous assessment of internationalization goals
2) *Administrative leadership, structure, and staffing*: high-levels of engagement from upper-level university administration, in addition to an office(s) dedicated to coordinating internationalization activities
3) *Curriculum, co-curriculum, and learning outcomes*: integrating internationalization into general education requirements, discipline-specific courses, and student learning outcomes. Additional programs and services related to internationalization are offered outside normal curricula
4) *Faculty policies and practices*: international experience plays a role in career and hiring-relating practices, and faculty have ample opportunity for research and teaching mobility as well as professional development
5) *Student mobility*: students have financial and logistical supports to mobilize internationally, with re-entry experience-based programs for maximal learning outcomes; international students are fully supported while integrating into campus life
6) *Collaboration and partnerships*: align partnership goals with institutional-level mission and values, identify and engage in outreach, and continuously manage partnerships

Hudzik, J.K. (2011). Comprehensive internationalization: From concept to action. Washington, DC: NAFSA (Association of International Educators).

Knight, J. (2015). Updated definition of internationalization. *International higher education*, (33).

5

# Executive Summary - Growing Graduate Studies at the University of Waterloo

This paper intends to summarize the work done by the committee on graduate studies. The goal of that committee was to identify and provide substantive background on issues facing graduate studies such that conversation can be facilitated among campus stakeholders. The summary provided here is informed by three primary sources: a wide-ranging literature review; consultation with peer universities through Education Advisory Board; and the knowledge of the committee members. Through our work, several overarching research questions evolved. Each is discussed in detail here.

## HOW CAN WATERLOO ATTRACT AND RETAIN THE BEST GRADUATE STUDENTS, AND FACILITATE THE BEST SUPPORT POSSIBLE?

The concept of a "student funnel" is often discussed in higher education. Conceptually, the funnel reflects the narrowing of the pool from a large number of potential applicants, to those who do apply, to those who receive offers, and finally to those who confirm and attend. Naturally, this process is strongly influenced by student experience; those who excel at a university are likely to both generate positive recognition for the university and become ambassadors for that university, broadening the initial applicant pool. This research question intends to explore the best practices in the initial stages – marketing, recruitment, and retention – of the graduate student funnel to understand where opportunities may exist to grow Waterloo's graduate enrollment, in both quantity and quality.

The literature review conducted for this research question suggests that most graduate students make their decisions on places to study based on the quality of the program, the potential career outcome, the affordability, and the relationship with their supervisors. Generally, digital media remains the strongest asset in marketing and recruitment (M&R); the literature is less conclusive on the use of social media. The literature also advocates for the use of data to manage the recruitment process – to identify target markets, to evaluate the success of initiatives, and to understand students' reactions to M&R efforts. Commonly identified elements of successful M&R are communication and relationship building between (potential) applicants, programs and supervisors. More specifically, the use of Customer Relationship Management (CRM) software as both a data analysis and a relationship monitoring tool is widely recognized.

Attrition in graduate studies is less impactful than at the undergraduate level. Data from Waterloo suggest that in the past three years, 361 Master's students and 136 PhD students have voluntarily withdrawn. Of those withdrawing, only 27 students cited financial reasons that motivated the withdrawal. The most common reasons were personal (192), work – found job (119), program – wrong fit (103), and medical (48). According to the 2016 Canadian Graduate and Professional Student Survey (CGPSS), more than half of respondents did not identify any obstacles to their academic progress, but 25% did identify work/financial commitments as a major obstacle to their academic progress. In addition, for both the 2014/15 and 2015/16 fiscal years, Waterloo ranked first among the U15 Group of Canadian Research Universities in regards to financial support provided to both research Master's and doctoral students.

## HOW CAN WE BUILD A DISTINCTIVE APPROACH TO THE GRADUATE EXPERIENCE AT WATERLOO?

When selecting among graduate schools, potential applicants have a host of options. It is necessary for universities to be able to differentiate themselves from peers – particularly in the area of student experience. The goal of this research question was to understand how other

universities create an environment that promotes positive student experiences which, in turn, can support the initial and final stages of the funnel.

The process of identifying the issues of most importance to graduate student experience included an analysis of the results of a recent survey conducted by the Graduate Student Association (GSA). Not surprisingly, the most important issues for graduate students are space, wellness, funding, and the quality of relationship with university administrators – Faculty (including supervisors) and staff. For the first point, dedicated graduate student space and facilities are issues that have been identified in multiple forums. Best practices at peer universities include dedicated space for graduate and professional students. For example, Virginia Tech reported the creation of a Graduate Life Center, a hub providing "collaborative and study space, support services, housing and dedicated graduate programming."

On wellness, our work coincided with a report on graduate student mental health that suggested: "that graduate students are at greater risk for mental health issues than those in the general population. This is largely due to social isolation, the often abstract nature of the work and feelings of inadequacy -- not to mention the slim tenure-track job market." Our committee is eager to work with the other groups to articulate unique considerations and solutions for graduate students' mental and overall health.

The literature also identifies that current and future graduate students are eager to engage in extensive professional development (PD) opportunities. The Canadian Association for Graduate Studies' 2008 report argues that universities are responsible for providing graduate students with the best possible preparation for their future roles, and that this responsibility extends to the development of professional skills. The report highlights four skill areas (communications skills, management skills, teaching and knowledge transfer skills, and ethics) as having a higher likelihood of implementation success in universities. A 2016 study reported that the most popular workshop session themes were found to be the following: Career Planning, Ethics and Copyright, Networking and Job Searching, Presentations and Public Speaking, Project Management, Software and Online Branding, Teaching, and Writing for Grad School.

In peer universities, several best practices have emerged around PD, including: introducing formal mentorship programs with influential alumni; hiring dedicated staff to concentrate exclusively on graduate student PD; creating a culture where graduate student PD is celebrated by all members of the university community; and embedding professional development opportunities in graduate students' curricula. Professional development goals can also be achieved through formal and informal experiential learning opportunities. One peer university convenes an external industry advisory board to oversee all external graduate student issues.

Waterloo data from the Canadian Graduate and Professional Student Survey (CPGSS) indicate that 51% of respondents perceive their quality of student experience as either very good or excellent. Interestingly, about nine in ten Waterloo graduate students report good, very good or excellent interactions with staff; about eight in ten chose the same categories for academic advising. To catalyze positive relationships between supervisors and students, several best practices are identified. First is recurring training of supervisors which is mandatory at multiple peer universities. Second is the use of "supervisory agreements" that establish common expectations at the onset of the student-supervisor relationship.

Despite substantive programming through Waterloo's GRADVenture program and the Centre for Career Action, only about half of CGPSS respondents overall felt prepared to "begin a new job tomorrow." Finally, 43.8% rated the quality of the support and training that they had received (advice/workshops) surrounding career options outside of academia as being either fair or poor.

2

HOW CAN WE ENGAGE GRADUATE STUDENTS IN IMPACTFUL RESEARCH?

The literature suggests that students pursuing graduate studies often do so to achieve impact – they wish to make substantive changes in their fields of study.  The literature also indicates that students are in some cases seeking to customize their areas of inquiry to achieve their personal goals.  These observations present several opportunities, and challenges.

When a supervisor considers a student as a vehicle to advance the supervisor's research agenda, the situation may occur where insufficient attention is paid to the student's academic, professional and personal goals.  This practice may stem, at least in part, from the evaluation metrics that are in place in most research intensive universities.  The literature reviewed did not address the assessment of research productivity and impact from the perspective of incorporating graduate students' goals and objectives into faculty members' evaluations.  No best practices were identified from peer universities.  More research is necessary here.

Our committee also spent considerable time talking about achieving meaningful interdisciplinarity in research.  The Committee on Facilitating Interdisciplinary Research and Committee on Science, Engineering and Public Policy states: "Interdisciplinary research (IDR) is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice."  In a 2014 report for the Canadian Association for Graduate Studies, Hall outlines four types of interdisciplinary graduate programs (IDGPs) that exist in Canada: individually designed programs, direct entry programs, supplementary programs (which are called collaborative programs in Ontario, and interdisciplinary specializations in Alberta), and non-degree programs (such as certificates).  Functional obstacles to interdisciplinarity include: the difficulty in the establishment of a common language among students of different backgrounds; budgetary impediments; resource allocation and funding hindrances; and program advocacy (whereby interdisciplinary programs are often seen as being in competition with the department).

One successful model is at the University of Alberta, where students have the option of completing an interdisciplinary or hybrid graduate degree; if students' research interests align with two or more academic departments, they may submit a two-page proposal to apply to work with administrators in designing a hybrid degree for themselves (students must also hold a superior academic record and significant experience in at least one of the proposed disciplines).   The University of Waterloo also offers such a program, though uptake is limited.  Within the context of our institution, according to the Canadian Graduate and Professional Student Survey (CGPSS) conducted in 2016, slightly less than half of Waterloo respondents (47.8%) reported feeling supported to participate in interdisciplinary work.

QUESTIONS
- What is Waterloo's Graduate "Brand" and how are the University and the Faculties working collectively to market, recruit and retain the best graduate students?
- What collective efforts are being made to gather data, evaluate, and respond to graduate student experience?  How is the University reacting to specific needs such as space, wellness, supervisory and other relationships?  Are the practices sufficient?
- How is the University reacting to changing needs from graduate students in terms of professional development and experiential learning? Is there sufficient attention/ programming being paid to these areas?

3

- Should the university be dedicating more attention to the relationships between supervisors and students, particularly as these relationships influence both the quality of student experience, the impact of research being conducted, and the professional advancement of faculty colleagues?
- How can the university meaningfully embed interdisciplinarity into its graduate student research experience?

4

# Executive Summary – Empowering People

One of six strategic issues identified by Waterloo leadership was advancing equity, diversity, inclusivity, Indigenization and organizational development. An advisory group was formed with wide representation from students, staff and faculty. In addition to the items identified by leadership, a further item—wellness—was added by the Advisory Group to reflect the higher intent behind the other key areas. The attainment of campus-wide wellness is an overarching goal that individual empowerment supports.

PROCESS AND DEFINITIONS

The Advisory Group articulated core principles from which to work as they developed practical definitions. The foundational principles the group developed are: people-oriented, wellness, respect, communication, clarity, transparency, and consistency. These principles were thought to underpin the "values" of wellness, empowerment, respect, Indigenization, equity, diversity, and accessibility, and served as the backdrop to discussions.

In terms of equity, diversity, and Indigenization, specifically ensuring the participation of women, visible minorities, Indigenous peoples and persons with disabilities is and will remain a goal for Waterloo in the coming years. Sustainability is also a key goal for Waterloo.

VISION OF AN EMPOWERED CAMPUS

The Advisory Group spent significant time unpacking what empowered undergraduate students, graduate students and postdoctoral fellows, faculty and staff would look like, culminating in a description of what an empowered campus might look like.

All individuals that are part of the Waterloo community (students, employees, faculty) would:

- See themselves as part of the Waterloo community; feel positive about their time at Waterloo; and feel a sense of belonging and connection that continues after leaving
- Feel recognized, respected, and valued
- Feel they have the skills, knowledge, and support to succeed in their role at Waterloo
- Feel comfortable and confident about communicating with others at Waterloo
- Can effectively contribute/study/work without facing physical or systemic barriers
- Feel a sense of responsibility towards the campus and the land on which it resides

In addition, empowered undergraduate students would:

- Feel excited and engaged in their own learning and see opportunities to create their own path at Waterloo and after graduation

Empowered graduate students and postdoctoral fellows would:

- Feel confident in their ability to carry out their role; understand their rights and responsibilities; and know how to access assistance when required
- Feel excited and engaged in their own learning and development, and feel training opportunities are meaningful

1

- See opportunities to create their own path at Waterloo, and to pursue personally meaningful career paths after graduation/completion

Empowered staff and faculty would:

- Feel that they are treated equitably; that recognitions, appraisals, and promotions are truly merit-based; and that processes are applied consistently across campus
- Feel confident in their ability to carry out their role; understand their rights and responsibilities; and know how to access assistance when required
- Feel a sense of pride and ownership about their work; see opportunities to create their own career/professional path at Waterloo (including personally/professionally relevant and meaningful professional development opportunities); and see themselves as contributing to Waterloo's future
- Feel able to maintain a healthy work/life balance

To attain this, the Advisory Group's vision of Waterloo's "campus culture" would create a space that:

- Recognizes how diversity and the reduction of barriers to participation will improve the university experience for all; is open to changing structures or processes that are barriers to students' and employees' well-being or efficacy; and acts to rectify ongoing inequities
- Creates opportunities for community building through multiple pathways, and supports and encourages a sense in everyone that they are part of the community
- Works to creates a place of learning/work/research that people can be proud of and want to be a part of; where they feel inspired and supported to achieve their academic and professional goals
- Seeks and values input from all stakeholder groups into curriculum, policy and procedure development, plans for improvement, etc.
- Strives for continual improvement and engenders a drive for excellence across the entire Waterloo community
- Engenders a sense of empowerment in Waterloo community members that is carried forward into the world
- Shares a sense of custodial responsibility for the campus and the land on which it resides

HOW IS WATERLOO DOING NOW?

Waterloo has numerous activities, initiatives and plans underway to improve the campus community's wellness, equity, diversity, inclusivity, Indigenization, accessibility and sustainability, as do all other universities across Canada. There are too many to list in this summary, however, important work is happening on campus.

WHERE COULD WATERLOO DO BETTER?

Areas at Waterloo which have been identified as needing further/additional attention, study, development or mitigation include:

- employment engagement with contract employees; inconsistent/imbalanced recognition of faculty members' contributions across teaching, research, and service/administrative work; opportunities for, and recognition of the importance of,

work-life balance; extension of wellness programming across all employee groups; relevant mentorship opportunities for skill development; and improved means through which employees can provide feedback, suggestions, and ideas.

- creating a greater sense of community, citizenship, and belonging, where people can bring their whole selves forward and connect meaningfully with others and to Waterloo's purpose; taking a holistic approach to supporting the health of students, faculty and staff, recognizing the need for increased support for mental health across all groups; creating a workplace/classroom/lab of which individuals are proud and want to be a part, and where they feel inspired and supported to achieve their academic and professional goals; enabling everyone to contribute ideas and feedback and to play a meaningful role in building a legacy for the future; and providing a supportive environment where all individuals are valued, engaged and are able to thrive.

- Advance equity across the four designated groups with a particular focus on Indigenization

- Address Accessiblity including communications for service disruptions and available alternate accesses (including management of temporary disruptions through departments responsible for maintenance); consistent verification process for service animals; and a more prominent community engagement strategy that involves active and ongoing consultation with persons experiencing disabilities.

- Focus on specific sustainability goals including basic literacy of issues related to sustainability, goal of being Zero-Waste, limited just-in-time information available to help with decision making, consistent signage for waste and recycling and additional information on how energy is used in campus buildings

QUESTIONS

- What initiatives does university need to consider so every member of the community can feel recognized, respected and supported in achieving their personal and professional goals?

- What does wellness look like at Waterloo?

# Advancing Undergraduate Learning: Next Steps

6/5/18

Presented by:

Mario Coniglio, Assoc. VP Academic

Donna Ellis, Director, CTE

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# APPROACH

- Effective teaching and student learning

- Current strengths and challenges

- *Proposed* priority areas for teaching and learning at Waterloo

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# INSTITUTIONAL STRATEGIC PRIORITY AREAS

- Experiential education
- Indigenization
- Interdisciplinarity
- Internationalization*

- Learning environment*
- Student life /engagement
- Student mental health**
- Student success

### ADVANCING UNDERGRADUATE LEARNING*

*issue paper topics, **PAC-SMH

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# INFORMATION SOURCES

- Teaching and Learning Working Group

*"Future of Teaching and Learning at Waterloo"*

- Issue Paper Advisory Group

- Education Advisory Board (EAB)

- Other Issue Papers (Internationalization, Student learning environment)

- President's Forum with Undergraduate Students: *Advancing Research Opportunities for Undergraduate Students* (November, 2016)

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# APPROACHES TO EDUCATION

...CONTINUUM...

Teachers and their teaching

***Teaching paradigm***

PSE is still mostly here

Learners and their learning

***Learning paradigm***

Effective teaching focusses here!

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# EFFECTIVE TEACHING AT WATERLOO...

Evidence-based principles

- Uses alignment
- Fosters motivation
- Embodies inclusivity
- Encourages deep learning
- Enables lifelong learning

Levels of commitment

- Institution
- Instructors
- Students

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# WATERLOO'S STRENGTHS IN TEACHING AND LEARNING

- High-performing and engaged students

- Growing capacity for culture change

- Teaching and learning resources in place

- Technology and infrastructure in use to support learning*

- Experiential education (including undergraduate research)

*Board of Governors presentation "New Teaching and Learning Technologies" (Coniglio and Ellis, Feb. 2018)

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# WATERLOO'S CHALLENGES

- Ensure that teaching is valued

- Encourage students to take risks as learners

- Break down structural barriers

- Bring together communities

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# PROPOSED STRATEGIC PRIORITY AREAS RELATED TO ADVANCING UNDERGRADUATE LEARNING AT WATERLOO

1) Teaching and curricular innovations to encourage creativity

- Launch a teaching and learning incubator

- Develop a secondment/exchange program for instructors

- Commit to shifting to the learning paradigm

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# PROPOSED STRATEGIC PRIORITY AREAS RELATED TO ADVANCING UNDERGRADUATE LEARNING AT WATERLOO

2) Student-led initiatives to empower our students

- Prior learning assessment in programs

- Student-led individually-created courses

- Mentoring programs (4th with 1st year students)

- Undergraduate research opportunities

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# PROPOSED STRATEGIC PRIORITY AREAS RELATED TO ADVANCING UNDERGRADUATE LEARNING AT WATERLOO

3) Assessment of learning to provide positive and productive learning experiences

- Support replacement of high-stakes final exams, particularly in first-year courses

- Implement more broadly two-stage tests

- Help faculty identify multiple ways for students to demonstrate learning

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# PROPOSED STRATEGIC PRIORITY AREAS RELATED TO ADVANCING UNDERGRADUATE LEARNING AT WATERLOO

4) Institutional infrastructure, policy, and practice to promote quality and remove barriers to flexibility

- Enable instructor risk-taking and expect professional development in teaching and learning

- Provide infrastructure to foster active learning

- Commit to an agile, tech-enabled learning ecosystem

- Encourage breadth in student education by reducing risk of stepping out of their disciplinary areas

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# PROPOSED STRATEGIC PRIORITY AREAS RELATED TO ADVANCING UNDERGRADUATE LEARNING AT WATERLOO

5) Advancing "Discovery" as an integral part of the Waterloo experience

- Provide infrastructure to foster early connections and information

- Provide incentives for faculty and graduate students to engage undergraduate students in their research

- Continue to encourage interdisciplinary research

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# Are we heading in the right direction?

# QUESTIONS?

Advancing Undergraduate Learning: Next Steps

Photo by Garrett Sears on Unsplash

# Building a University-wide Philanthropic Culture

05/06/2018

Advancement Strategy Presentation

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# First, Good News

# Fiscal Year End Results

✓ The team created **42% growth** in gifts <$5m, **$18.1m** vs $12.7m – *highest $ in last 6 years*

✓ In the critical category of >$100,000 we received **34 gifts**, highest # in last 6 years

✓ Overall, the team booked a total of **$51.3 m** compared to $49.3 m last year

### Six year review



Legend: <5 million | $5 million+ | GIK | Other* | Research | Colleges

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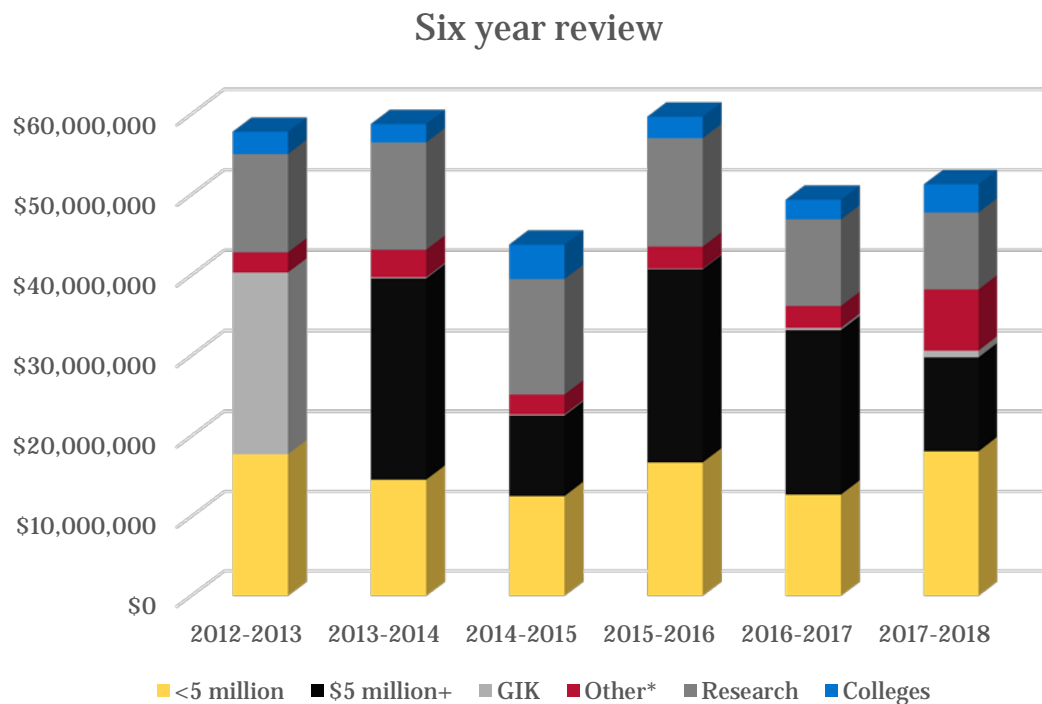
# Looking forward:
# Why A Campaign?

Momentum building

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# 5 benefits of a Campaign

1. Creates urgency for a compelling vision and clear definition of transformative impact

2. Creates the opportunity to strategize about big, bold ideas and define strategic funding needs clearly

3. Creates an exciting community-wide call to action, mission or cause; engages a wide body of volunteers; brings community together

4. Creates the expectation that we will ask for support

5. Creates a philanthropic culture for long-term, sustainable support

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# Successful Campaign Planning

A typical example

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| | |
|---|---|
| **PHASE 1** | • Campaign Planning |
| **PHASE 2** | • Leadership Phase |
| **PHASE 3** | • Launch |
| **PHASE 4** | • Public Phase |
| **PHASE 5** | • Closing |

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# Phase 1:  Campaign Planning

**12-24 months**

## Institution prepares

- ✓ Strategic plan
- ✓ Feasibility Study
- ✓ Define priorities
- ✓ Preliminary budget
- ✓ Engage campaign counsel
- ✓ Begin donor research

- ✓ Define policies
- ✓ Draft campaign plan
- ✓ Recruit campaign committee
- ✓ Develop gift table
- ✓ Start internal consultation
- ✓ Prospect review

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# Phase 2: Leadership Phase

**12-18 months**

- ✓ Form the campaign board

- ✓ Solicit leadership gifts & aim to secure 40-50% of goal

- ✓ Build momentum

- ✓ Plan communications and campaign branding/name

- ✓ Plan launch events

- ✓ Prepare materials

- ✓ Challenge grant vs matched gifts

- ✓ Finalise goal

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# Phase 3: Launch

**1-6 months**

✓ Clear messaging on goal, leadership, success to date

✓ Marketing activities

✓ Events in key cities

✓ Generate additional gifts

✓ Ask & thank

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# Phase 4: Public Phase

**36-60 months**

✓ Continued asking & thanking

✓ Stewarding donors; focus on impact

✓ Reporting on results internally and externally

✓ Keep an eye on the pipeline

✓ Progress against target

✓ Announcing new big gifts

✓ Keeping institutional and volunteer leadership engaged

✓ Dealing with changes in leadership

✓ Roll out campaign to broad base of donors

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# Phase 5: Closing the Campaign

**12-18 months**

✓ Estimate when you will reach goal

✓ Consider increasing campaign goal

✓ Focus on participation; volunteer impact

✓ Plan campaign reports; impact statements

✓ Plan closing events; acknowledgements

✓ Assess results

✓ Plan post-campaign strategies

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# Where we are now:
# Our Campaign Planning Process

# Campaign Planning Committee

They care about future of university; they are entrepreneurial; they have a range of experience and perspectives; they are ambitious

# Campaign Planning Process

- Aligns beautifully with Strategic Planning Process, 2018-2019

- 8 quarterly meetings with specific decisions and milestones against each meeting

- Advisory Group recruited for continuous input and feasibility

- Key decisions:  Why?  How?  Who?  When?  How much?

- December 2018:  Draft working model to Board of Governors with proposed volunteer structure

- December 2019:  Recommendation for Board of Governors including volunteer leadership

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# Campaign Ready by 2020

Critical areas of focus in 2018/2019

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# Benchmarking Successful Campaigns

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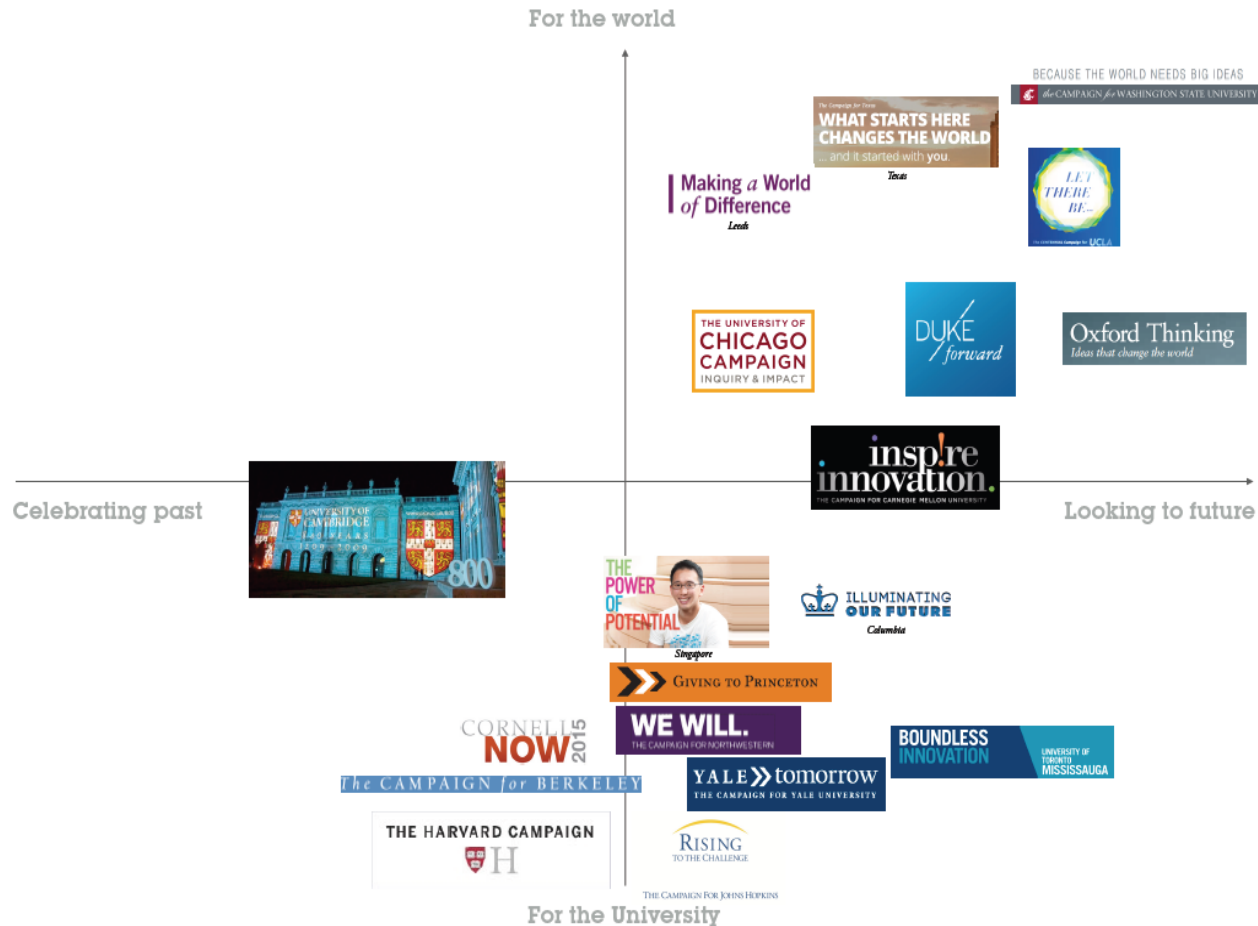
# Creating a compelling Campaign Case

✓ Bold vision

✓ Transformative strategic plan

✓ Tangible, understandable projects

✓ Multiple funding opportunities with appeal to donors

✓ Internal, board and volunteer endorsement

✓ Community cause and call to action

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# Professional Fundraising Discipline

1. **Engage in great relationships**

   - Grow a robust, <u>sustainable</u> pipeline

   - Clear strategies for each major donor

2. **Create a compelling Case**

   - Vision; Strategic Imperatives;

   - Funding Priorities; Naming Opportunities

3. **Execute professional Infrastructure**

   - Clear, rigorous metrics: # of calls; # of asks; $ New gifts and pledges

   - Consistent behaviours, policies (clearance, naming, acceptance)

   - Regular routines and disciplines (meetings, communications)

   - Prospect management: capacity ratings; strategies to asks (6-18 months)

Principal

Major

Annual/leadership

Donor Pyramid

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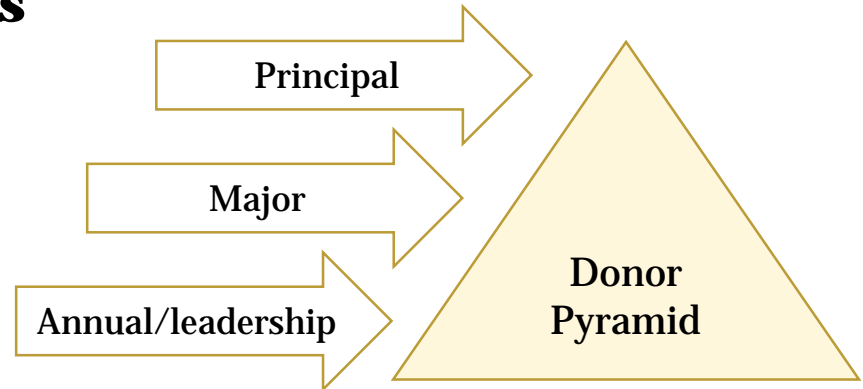
# A High Performance Team

1. Tight focus on a robust pipeline of alumni and donors who can make major and principal gifts; with ability to inspire 8 and 9 figure transformational gifts

2. Sophisticated, coordinated use of volunteer leaders to engage with big donors

3. Deep understanding of the University and Faculty strategic and funding priorities including big transformational ideas; traditional fundraising priorities; capital and infrastructure fundraising priorities

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THANK YOU!

**What is the appropriate size and composition of Waterloo's graduate program?**

The University will be well served by the creation of a strategic vision around the composition of graduate students – professional master's, research master's and PhD – in relation to total university enrollment. Current data are:

- Graduate students make up about 13% of the total student enrolment at the University of Waterloo;
- Graduate percentages at Canada's U15 schools range from 13% to 26% (U15 webpage).
- Research intensive universities have much higher percentages of graduate students: Stanford 56%; MIT 60%; Imperial College London 41%; ETH 52%;
- Waterloo's graduate program has about 35% international students, among the highest in the U15. For comparison, the U15 average is about 24%.

This enrolment balance has resource implications on:

- teaching tasks including faculty's capacity to supervise research graduate students;
- university operating funds - domestic graduate students generate substantial provincial funding;
- space.

To achieve Waterloo's strategic goals of research intensity, internationalization, and vibrant student experience, clarity around graduate student composition – what is desirable and attainable – is necessary.  The implications of changing enrollment patterns must be considered in terms of the resources identified.

**How can Waterloo attract and retain the best graduate students, and facilitate the best support possible?**

To grow graduate studies, two concurrent efforts are necessary:

- To develop and implement data-driven marketing and recruitment strategies across the University in partnership with the Faculties;
- To monitor and review graduate student support –financial and other wise – to ensure successful retention and completion;

Our data suggest that we are excelling in the latter, but significant new resources may be necessary for the former.

**How can we build a distinctive approach to the graduate experience at Waterloo?**

In order to grow enrollment in and impact of graduate programs at Waterloo, prospective students must be able to differentiate Waterloo from peer programs.  Differentiating features may include:

- Graduate student space;
- Graduate student wellness programs;
- Experiential learning opportunities – Grad "co-op";
- Professional development programming;
- Excellence in graduate student supervision motivated by transformative faculty metrics;
- Engagement in transformative research, including interdisciplinarity.

**Ongoing initiatives:**
- Marketing and recruitment "round table" led by GSPA with all faculty involvement;
- Task force on graduate student supervision led by AVP-GSPA;
- In-depth look at graduate student funding led by AVP-IPB;
- "Gradventure" Professional Development Program led by Angela Rooke, Manager, Professional Skills and Postdoctoral Affairs;
- Working group on graduate experiential education led by Daniela O'Neil, Assistant Vice President, Graduate Studies and Postdoctoral Affairs
- Interdisciplinarity in Research, led by Charmaine Dean, Vice President University Research.

**UNIVERSITY OF WATERLOO**
**BOARD OF GOVERNORS**
**Report of the Vice-President, Academic & Provost**
**5 June 2018**

This report is submitted following the Provost's Advisory Committee on Staff Compensation (PACSC) meetings of 15 February, 5 March, 16 March, 2 April, 19 April and 25 April 2018.

**FOR APPROVAL**
_____

**Motion:** To approve the terms and conditions of the compensation agreement with university staff, as outlined below.

**Background:** In accordance with Policy 5, *Salary Administration, University Support Staff,* PACSC met several times over the past few months to discuss a compensation agreement with university staff. PACSC reviewed, among other things, market data, the findings of the staff salary review concluded in Winter of 2018, and the agreement reached with the faculty association. Staff from Human Resources modelled several scenarios based on PACSC's agreed upon objectives – addressing the gap to market identified in the staff salary review, achieving equity with the faculty salary settlement, and optimizing outcomes for staff.

The agreement outlined below meets PACSC's objectives, is consistent with the budget approved at the April Board of Governors meeting, and incorporates longer-term goals with respect to reviewing and improving, where necessary, salary administration practices and the performance appraisal system.

1.  Term of agreement: 1 May 2018 to 30 April 2021 (Term).

2.  Increases:
    a)  On each of 30 April 2018 and 30 April 2019, increase the salary ranges by 0.75% with no consequent adjustment to individuals' salaries. This will have the effect of lowering the compa ratio (an individual's position in the range relative to the job value/mid-point) for all staff by approximately 0.75% on each adjustment date.
    b)  On 1 May 2018, increase the salary ranges by 2.00% and run the merit program.
    c)  On each of 1 May 2019 and 1 May 2020, increase the salary ranges by 2.15% and run the merit program.

    Note: Because the recommendations are subject to approval by the Board of Governors at the June meeting, the range increases for 30 April 2018 and 1 May 2018 will be performed retroactively and the resulting increases are expected to be reflected in staff members' June pay.

3.  The university will increase its annual contribution to the employee health and dental care benefits plan for the benefit of staff by ~$800,000 (all-in costs, inclusive of taxes and fees, corresponding to a notional additional ~$325 per non-retired staff member using Great-West Life membership data as at 1 October 2017). Although the additional contribution will be made 1 May 2018, the deadline date for implementation of the benefit change is 1 January 2019 (Implementation Deadline) to correspond with the beginning of the benefit year, and to allow the time necessary for the Pension & Benefits Committee to implement in accordance with its existing principles. PACSC will revisit the Implementation Deadline on the advice of the Pension & Benefits Committee.

4. The university will continue to contribute $250,000 per annum to the Staff Excellence Fund during the Term, which funds will be allocated through the current, established processes. Prior to the end of each fiscal year during the Term, the Associate Provost, Human Resources and the President of the UWSA will together review any unspent funds to determine if there are opportunities to allocate those funds in accordance with the fund guidelines before the end of that fiscal year.

5. The option to exchange one week vacation allowance for a one-time 2% increase in salary when within three years of retirement is extended to 30 April 2027 for retirement on or before 1 May 2030, to align with the Vacation Exchange Program in the Employee Benefits Program booklet.

6. Working Groups:
   a)   Staff Salary Gender Equity Working Group:
   PACSC will establish a working group with representation from HR and the UWSA to review whether there is gender inequity in staff salaries as a result of salary administration practices. The working group will report its findings to PACSC for discussion re: next steps.

   b)   Performance Appraisal System Working Group:
   A full and comprehensive performance appraisal system review will be completed by HR in consultation with PACSC in fiscal 2018/2019. The results will be reported to PACSC for discussion re: next steps.

Subject to approval of this recommendation by the Board, Human Resources will arrange information sessions for the end of June to respond to questions staff may have about the recommendations and the compensation strategy long-term.

Members of PACSC

Marilyn Thompson, Associate Provost, Human Resources (Chair)
Bill Baer, Staff Association
Lawrence Folland, Staff Association
Dennis Huber, Vice-President, Administration & Finance
Kenton Needham, Executive Director, Human Resources
Ian Rowlands, Associate Vice-President, International
Jackie Serviss, Staff Association
Rose Vogt, Staff Association

Resources

Lee Hornberger, Director, HR Total Compensation
Rebecca Wickens, Associate University Secretary (Secretary)

D. George Dixon
Vice-President, Academic & Provost

**University of Waterloo**
**BOARD OF GOVERNORS**

**Conflict of Interest Declaration**

Consistent with the Board of Governors Bylaw 1, Section I, Conflict of Interest for Governors, each governor shall complete a form congruent with his/her (re)appointment/(re)election to the Board and submit it to the secretary of the Board and annually each May thereafter.

Each governor is further required to submit a supplemental conflict of interest declaration to the secretary of the Board at such further time throughout the year that an actual, perceived, or potential conflict of interest may arise.

Please check the appropriate box below. If applicable, provide all information relating to an actual, perceived or potential conflict of interest in the space provided below.

**Return the completed declaration to the secretary of the Board by 30 June 2018.**

Upon submission of this declaration to the secretary of the Board of Governors, the governor acknowledges and confirms that:

| | The governor does not have any interest, and has not taken any action(s), that may constitute an actual, perceived, or potential conflict of interest. |
|---|---|

| | The governor does have an interest, or has taken an action(s), that may constitute an actual, perceived, or potential conflict of interest as outlined below. |
|---|---|

Details:

Signature: _____     Date: _____

Print Name: _____

**University of Waterloo**
**Board of Governors**
**FINANCE & INVESTMENT COMMITTEE**
**Report to the Board of Governors**
**5 June 2018**

This report is submitted following the committee meeting of 17 May 2018, and is recommended for inclusion in the regular agenda.

## RECOMMENDATION

**Approval of Investment Manager – Endowment**

**Motion:** That the Board of Governors approve Fiera Capital as a global equity investment manager for the university's endowment fund;

And further that the Board of Governors approve the immediate deployment of approximately $50.5 million CAD to the global equity strategy of Fiera Capital, in accordance with the approval provided at the meeting of 6 February 2018.

**Rationale:** The Board of Governors approved the dismissal of an investment manager its meeting of 6 February 2018, with those assets to be redeployed to a new global equity manager subject to a successful investment manager search to be conducted by the Finance & Investment Committee.

A subgroup of the committee undertook a search for a new global equity investment manager with support from Aon Hewitt, interviewing four investment managers on 10 May 2018. In consideration of the managers' relative merits, the subgroup unanimously agreed to recommend Fiera Capita noting the following traits:

- A clear, disciplined and rigorous investment process with a strong inclination toward high-quality companies which aims to generate only high-conviction investment prospects
- Inclination to investment selection with a long-term time horizon
- Record of good upside capture in rising markets and very strong downside protection in down market periods
- Record of low volatility and turnover within the portfolio, and a culture to promote this on an ongoing basis
- Overall strong record of value-added investment management
- Reasonable investment fees that are in line with competitors in the space and which are considered to be acceptable

Should the Board of Governors approve this recommendation, staff in Finance would immediately undertake to execute the redeployment of funds to the new manager.

James Schlegel
*/mg* Chair

**University of Waterloo**
**FINANCE & INVESTMENT COMMITTEE**
**and**
**PENSION & BENEFITS COMMITTEE**
**Report to the Board of Governors**
**5 June 2018**

This report is submitted following the committee's meetings of 17 May 2018 (F&I) and 18 May 2018 (P&B), for inclusion in the regular agenda.

**RECOMMENDATION**
_____

1. **Pension Investment Committee**

   **Motion:** That the Board of Governors endorse the report outlining the prospective Pension Investment Committee as described in Attachment #1, including the terms of reference contained therein, and further that the Board of Governors direct that such amendments as are necessary to put the Pension Investment Committee into effect be prepared for the 30 October 2018 meeting of the Board of Governors.

   **Rationale:** In early 2017, the Registered Pension Plan Investment Subcommittee (RPPI) was unable to fill its membership requirements. Thereafter, at its meeting on 10 March 2017 the Pension & Benefits Committee (P&B) directed that a working group of the committee prepare a revised governance structure to the RPPI. With no formal representation on the working group, the Finance & Investment Committee (F&I) received a draft of the attached paper in February 2018 and provided comments, as well as endorsing the final version in May along with the Pension & Benefits Committee.

   The changes recommended in the new Pension Investment Committee (PIC) would place central importance of managing the investments of the pension plan while aiming to achieve greater efficiency in decision-making related to the pension plan assets. The proposed membership aims to balance stakeholders in the community while adding representation from the Board of Governors to reflect that the ultimate responsibility for any funding shortfalls in the pension plan resides with the University. The proposal would effectively delegate authority from both P&B and F&I to establish the new organ as the operational locus of control for matters pertaining to the management of investment assets of the pension plan. The two existing committees would retain their empowerments from the Board in this regard, but would themselves delegate onward to the PIC formally as a subcommittee to the F&I and P&B.

   /mg                    James Schlegel, Chair              Marilyn Thompson, Chair
                          Finance & Investment Committee     Pension & Benefits Committee

UNIVERSITY OF
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# Memorandum

To:        Pension & Benefits Committee

From:      P&B Working Group on Pension Investment Governance

Date:      11 May 2018

Re:        **Proposal for Revision to Governance of University Pension Plan Assets**

At its meeting on 10 March 2017, the Pension & Benefits Committee (P&B) directed that a working group prepare a revised governance structure to the Registered Pension Plan Investment Subcommittee ("RPPI"). In response to this direction, the working group has formulated the attached draft terms of reference for a new sub-committee of the Finance & Investment Committee (F&I) and Pension & Benefits Committee, notionally named the Pension Investment Committee (PIC).

The objective of this revised structure is to promote:

1. The central importance of managing the investments of the pension plan, including the achievement of the required rate of return, maintaining mindfulness of the liabilities of the plan, and the optimization of fees
2. Greater efficiency in decision-making related to the pension plan assets by adjusting the thresholds at which such decisions migrate from occurring at the PIC level to recommendations to the Board of Governors by the P&B Committee.
3. Recognition of the breadth of stakeholders by drawing the membership of the committee from each of the Board of Governors, the employee groups, and from the community including retirees such that no group would have a voting majority, with one extra member from the Board of Governors serving to reflect that the ultimate responsibility for any funding shortfalls resides with the University
4. Decision making that is both agile and that can gain broad consensus, whether by formal or informal means, within the approved bounds of the committee's terms of reference and the approved Statement of Investment Policies and Procedures (SIPP)
   a. It would be anticipated that, within the thresholds proposed herein, the PIC would effectively be able to carry out nearly all of the management of the pension investments short of approving new managers or terminating existing managers

The changes contemplated by the working group would delegate authority from both P&B and F&I so as to establish the PIC as the operational locus of control for matters pertaining to the management of investment assets of the pension plan.  The two existing committees would retain their empowerments from the Board in this regard, but would themselves delegate onward to the PIC formally as a subcommittee to the F&I and P&B. The attached chart provides a simplified breakdown of the governance roles of the Pension Investment Committee, the Finance & Investment Committee, the Pension & Benefits Committee, and the Board of Governors.

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To put into effect these changes in pension investment governance, it is anticipated that Board of Governors approval would be sought to approve revisions to the terms of reference for P&B as well as that of the F&I, as well as the approval of the dissolution of RPPI. The dissolution of the RPPI will require the approval of P&B and F&I.

It bears mentioning that this proposal amounts to a delegation of a portion of general P&B authority for pension investment management (as below), which is allowed under the text of the pension plan and would require approval of the Board of Governors.

<u>Excerpt from P&B Terms of Reference</u>

"The Committee shall have full power to administer employee pension and benefits plans approved by the Board, such power to include, but not limited to, the following:

- to make and enforce such rules and regulations as it shall deem necessary for the effective and efficient administration of the pension plan and to decide all questions concerning the pension plan, including who is eligible to participate

  …

- to recommend to the Board the appointment of custodians / trustees and fund managers
- to recommend to the Board for approval investment policy as described in the Statement of Investment Policies and Procedures

Note:
(1) The Finance & Investment Committee will assist, advise and review on matters related to the appointment of the custodians / trustees and fund managers and investment policy. When the Pension & Benefits Committee is selecting a fund manager, the Chairs of the Finance & Investment Committee and of the Pension & Benefits Committee consult and reach agreement on the selection process of the fund manager as well as the extent to which the Finance & Investment Committee will act as a resource to the Pension & Benefits Committee."

This general empowerment is complemented by the involvement of F&I with respect to pension investment management:

"To review and recommend to the Board, directly or indirectly though the Pension & Benefits Committee, all UW investment policies and guidelines, including rebalancing strategies.

To monitor the performance of all external fund managers, to recommend their appointment to the Board, as required*, and to take actions as may be deemed appropriate.
…

To assess annually the adequacy of the Committee's terms of reference as well as those of the Pension & Benefits Committee, in consultation with the Chair of the Pension & Benefits Committee, and to propose any needed amendments to the Governance Committee.

*The Finance & Investment Committee recommends the appointment of all fund managers except those appointments made to the Board through the Pension & Benefits Committee. When the Pension & Benefits Committee is selecting a fund manager, the Chairs of the Finance &

Investment Committee and of the Pension & Benefits Committee consult and reach agreement on the selection process of the fund manager as well as the extent to which the Finance & Investment Committee will act as a resource to the Pension & Benefits Committee."

Should the PIC structure be seen as desirable, a submission would be made to the Board of Governors to endorse the structure and to direct staff to bring forward the relevant changes to various terms of reference to appropriately delegate authority, as well as to direct the formulation of a prospective work plan for the new committee.

# Proposed

| Responsibility | Activity carried out by governance body | | | |
|---|---|---|---|---|
| | **PIC** | **F&I** | **P&B** | **Board of Governors** |
| Selection of custodians/trustees | None | None | Recommend to BOG | Approval of recommendation from P&B |
| Annual review of SIPP, rebalancing guidelines and investment policy | Review, obtain input from F&I, then recommend any changes to P&B | Provide input to PIC | Receive recommendation from PIC, recommendation to BOG | Approval of recommendation provided from P&B |
| Selection and termination of investment managers | Review, recommend to P&B, report to F&I | Receive for information (may be quarterly reporting) | Receive recommendation from PIC, recommendation to BOG | Approval of recommendation provided from P&B |
| Review of investment manager performance (annually) | Review, report to P&B and F&I | Receive for information (may be quarterly reporting) | Receive for information (may be quarterly reporting) | Receive for information through P&B and F&I |
| Purchase/sale/allocation of assets within the list of approved investment managers | Approval of asset mix changes and investment decisions, where the cumulative annual transaction(s) represent less than 15% of the Plan's total assets at the beginning of the calendar year. Report to P&B and F&I | Receive for information (may be quarterly reporting) Where cumulative transactions in a calendar year exceed 15% of the Plan's total assets, provide input to PIC | Receive recommendation from PIC where cumulative annual transactions exceed 15% of the Plan's total assets at the beginning of the year, recommendation to BOG thereon | Approval of recommendations from P&B where cumulative annual transactions exceed 15% of the Plan's total assets at the beginning of the year |
| Review reports provided by P&B including annual valuation, investment-related risk/return assessments, asset-liability studies | As needed | None | Send reports to PIC | None |
| Quarterly reporting on activities, decisions and recommendations | Report to P&B, F&I and Board | Receive for information | Receive for information | Receive for information through P&B and F&I |

# Pension Investment Committee – Terms of Reference

The Pension Investment Committee (the "committee") is a subcommittee of the Finance & Investment Committee and Pension & Benefits Committee that oversees the investment of the assets of the University of Waterloo Pension Plan ("the Plan").

<u>Mandate</u>
The committee is mandated to oversee the investments of the Plan recognizing that (a) the Plan is funded through employee and employer contributions and (b) investment decisions are based on a full understanding of the underlying liabilities, within acceptable risk tolerances, while remaining mindful of liability matching requirements and optimization of fees.

The details of the mandate are as follows:
1. To review, at least annually, the Statement of Investment Policy and Procedures (SIPP) with input from the Finance & Investment Committee, and to recommend any amendments of the SIPP through the Pension & Benefits Committee to the Board of Governors
2. To review reports provided by the Pension & Benefits Committee including the annual valuation, investment-related risk/return assessments, and asset-liability studies and to advise the Pension & Benefits Committee on those reports
3. To meet annually with the investment managers that the Plan has retained
4. To make recommendations to the Board of Governors from time to time, through the Pension & Benefits Committee, on the selection and termination of investment managers or specific investments of the Plan
5. To review at each meeting the investment returns of the Plan assets, the performance of the investment managers, the profile of the Plan assets with respect to acceptable risk tolerances and asset allocation, and the profile of the Plan assets with respect to applicable liability matching requirements
6. Written reports shall be provided quarterly to the Pension & Benefits Committee and to the Finance & Investment Committee outlining the Pension Investment Committee's activities, decisions, recommendations, future agenda items, and any other applicable information. The Chair will meet at least annually with the Pension & Benefits Committee and the Finance & Investment Committee. A summary report will be provided quarterly to the Board of Governors through the Pension & Benefits Committee and the Finance & Investment Committee
7. To approve asset mix changes and investment decisions in compliance with the SIPP amongst the approved investment vehicles where the cumulative annual transaction(s) represents less than 15% of the Plan's total assets at the beginning of the calendar year. This activity includes allocations to newly-approved managers, or existing approved managers. The committee may at its discretion place investment managers on watch based on criteria developed by the committee. Written reports of all such investment decisions shall be provided to the Pension & Benefits Committee, the Finance & Investment Committee and the Board of Governors
8. To consult with the Finance & Investment Committee prior to recommending investment decisions and/or asset mix changes to the Board of Governors through the Pension & Benefits Committee, where the cumulative transactions in that calendar year would result in exceeding 15% of the Plan(s) total assets
9. To convene a meeting with the Pension & Benefits Committee in the event of a significant market event or shift, to discuss issues such as: specifics of significant changes in the investment environment; desirable changes to asset mix; overall risk appetite; the quality of specific investments and/or performance of investment managers during the event or shift; and market opportunities that may be presented due to the event or shift
10. To advise and/or make recommendations to the Board of Governors and/or the Pension & Benefits Committee on any matter pertaining to the management of the assets of the Plan

## Meetings

The committee normally will meet four times per year, approximately quarterly, from September to June. Additional meetings will be called as required. In person attendance at meetings is encouraged, however, members may attend meetings electronically when the university and members have appropriate alternate means at their disposal. Between meetings, at the direction of the chair, the secretary may facilitate voting on a motion or motions through email or another suitable platform, provided none of the members object on the grounds that further information or discussion is reasonably required in order to make a proper decision. Meetings are restricted to committee members and guests invited by the committee.

## Membership

The three voting constituencies among members are as follows:
1. Three (3) voting members appointed from and by the Board of Governors, with pension risk management and/or investment expertise
2. Two voting members having pension risk management and/or investment expertise, drawn from the complement of regular faculty, staff, and retirees and appointed via consensus agreement by the presidents of Faculty Association of the University of Waterloo (FAUW), the University of Waterloo Staff Association (UWSA), Canadian Union of Public Employees Local 793 (CUPE), and the University of Waterloo Retirees Association (UWRA)
3. Two voting members to be drawn from the external community with expertise in pension risk and/or investment, appointed by the Governance Committee of the Board of Governors. The prospective members in this category will be recommended by the Pension & Benefits Committee to the Governance Committee, and the Pension & Benefits Committee would be responsible to prepare a master list of potential members for the Governance Committee and update it annually to ensure that the Governance Committee has a list of members with relevant expertise for the PIC.

The committee will include four non-voting members: two from university administration appointed by the university president, and two from the employee groups appointed via consensus of the presidents of CUPE, FAUW, UWSA, and UWRA. It is intended that all of CUPE, FAUW, UWSA and UWRA would be represented through the two voting plus two non-voting members.

At least three voting members shall have investment expertise and at least three voting members shall have experience in managing pension risk. The committee may engage experts from industry or academia if specific advice is required.

Appointments are for one (1) three-year term with the option to reappoint for one (1) additional three-year term. Members may be reappointed for two (2) additional three-year terms thereafter following a two-year break from the end of their most recent term.

## Quorum

At least four voting members, with: at least two members appointed from the Board, one member from the employee/retiree constituency, and one member from the external community.

## Chair

The chair of the Committee is appointed from among the committee membership by the Board of Governors, on the recommendation of the Governance Committee.

## Voting

Where a question is to be decided with a formal vote, the result of the vote must have the support of at least one member from each of the three voting constituencies to validly carry the motion.

## Appendix - BOG resolutions/empowerments to be resolved under proposed governance structure:

A. Finance & Investment Committee - TOR section 3

…

"To review and recommend to the Board, directly or indirectly through the Pension & Benefits Committee, all UW investment policies and guidelines, including rebalancing strategies.

To monitor the performance of all external fund managers, to recommend their appointment to the Board, as required*, and to take actions as may be deemed appropriate

…

To assess annually the adequacy of the Committee's terms of reference as well as those of the Pension & Benefits Committee, in consultation with the Chair of the Pension & Benefits Committee, and to propose any needed amendments to the Governance Committee.

*The Finance & Investment Committee recommends the appointment of all fund managers except those appointments made to the Board through the Pension & Benefits Committee. When the Pension & Benefits Committee is selecting a fund manager, the Chairs of the Finance & Investment Committee and of the Pension & Benefits Committee consult and reach agreement on the selection process of the fund manager as well as the extent to which the Finance & Investment Committee will act as a resource to the Pension & Benefits Committee."


B. Pension & Benefits Committee - TOR

"The Committee shall have full power to administer employee pension and benefits plans approved by the Board, such power to include, but not limited to, the following:

- to make and enforce such rules and regulations as it shall deem necessary for the effective and efficient administration of the pension plan and to decide all questions concerning the pension plan, including who is eligible to participate

  …

- to recommend to the Board the appointment of custodians / trustees and fund managers
- to recommend to the Board for approval investment policy as described in the Statement of Investment Policies and Procedures

Note:
(1) The Finance & Investment Committee will assist, advise and review on matters related to the appointment of the custodians / trustees and fund managers and investment policy. When the Pension & Benefits Committee is selecting a fund manager, the Chairs of the Finance & Investment Committee and of the Pension & Benefits Committee consult and reach agreement on the selection process of the fund manager as well as the extent to which the Finance & Investment Committee will act as a resource to the Pension & Benefits Committee."


C. SIPP - previous version 1 January 2015

"1. PURPOSE
The primary goal of the University of Waterloo Pension Plan (2011) (the "Plan") is to provide members with a defined retirement income at a reasonable cost. The prudent and effective management of the assets of the pension fund has a direct impact on the achievement of this goal. The University of Waterloo ("UW"), sponsor and legal administrator of the pension fund, is responsible for achieving this primary goal.

This document has been prepared in accordance with the relevant legislation affecting the Plan to ensure continued prudent and effective management of pension fund assets. Deviating from this Statement of Investment Policies and Procedures ("Statement") is only allowed with the prior written approval of the Pension and Benefits Committee ("P&B Committee")."

Note: no similar text in current SIPP version 1 January 2017, approved on 31 October 2017

D. Pension Plan text

Section 15.02, Powers of Pension Committee

"c. to appoint and monitor a consulting actuary and to recommend to the Board of Governors the appointment of custodians/trustees and fund managers
…

(i) to recommend to the Board of Governors for approval an investment policy as described in the Statement of Investment Policies and Procedures; and
(j) to delegate any of these powers and responsibilities to other parties as it sees fit, subject to any limits set by the Board of Governors."

E. **Subcommittee for Registered Pension Plan Investments** - **Terms of Reference**

"Membership

- two members from P&B selected on the basis of financial/investment expertise
- three members of F&I, one of whom will be chair
- Vice-President, Academic & Provost
- Vice-President, Administration & Finance

The Consulting Actuary/Investment Management Advisor, appointed by P&B, will serve as a resource.

Mandate

- Asset allocation for the Registered Pension Plan recognizing that (a) the Plan is funded through employee and employer contributions, (b) acceptable risk tolerances, and (c) liability matching requirements. This includes review, at least annually, of the Statement of Investment Policies and Procedures (SIPP) and the rebalancing guidelines.
- Selection and termination of investment managers (information will be made available to all members of P&B and F&I upon request)
- Semi-annual review of investment manager performance

Reporting Structure
- The subcommittee's recommendations will be approved by P&B and F&I before being recommended to the Board of Governors for approval. P&B and F&I members will have access to all documentation upon request."

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**University of Waterloo**
**RESPONSIBLE INVESTING WORKING GROUP**
**Report to the Board of Governors**
**5 June 2018**

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This report is submitted following the committee's meetings since the last formal report to the 6 June 2017 Board of Governors; eight meetings were held between 26 June 2017 and 22 May 2018. This report is recommended for inclusion in the regular agenda.


**RECOMMENDATION**

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 **Motion:** That the Board of Governors endorse the recommendations of the report of the working group as described in Attachment #1, and further that the Board of Governors direct that such actions as outlined in the report be prepared and brought forward to the Board of Governors on the timelines described.

 **Rationale:** The Board of Governors ("Board") approved a motion to form the Responsible Investing Working Group ("RIWG") on 7 June 2016. The RIWG began work in January 2017 with the mandate to make recommendations to the Board through the appropriate committees and subcommittees as to whether and how to incorporate environmental, social and governance (ESG) factors into decision-making regarding the investment of endowment and pension funds.

The RIWG, in carrying out its mandate, deliberately engaged a broad range of interested constituencies in an open, transparent manner to provide significant opportunities for input from multiple sources and perspectives. These included students, faculty, staff, alumni, retirees, and donors. This approach aimed to ensure that the fullest possible array of perspectives from the University community would be considered. As a result of the group's environmental scan, direct outreach and extensive consultation, the RIWG has provided key observations as well as a set of recommendations that would provide an important start for the University in the fast-evolving space of responsible investing.

Recommendations of the RIWG were to be subject to review and approval by the Registered Pension Plan Investments Subcommittee, Finance & Investment Committee and Pension & Benefits Committee, in accordance with their mandates. It should be noted that because the Registered Pension Plan Investments Subcommittee encountered difficulty in populating its membership, for the purposes of the working group's reporting only the Finance & Investment Committee and the Pension & Benefits Committee were consulted during the process. Both the Finance & Investment Committee and Pension & Benefits Committee endorsed the attached report unanimously at the respective 17 May 2018 and 18 May 2018 meetings.


_/mg_                                                                              Bruce Gordon,
                                                                                    Chair

Report of the Responsible Investing Working Group

to the

Board of Governors of the University of Waterloo

June 2018

**Summary**

The Responsible Investing Working Group recommends that the Board of Governors:

1. Formally adopt environmental, social and governance (ESG) factors as a valid and important lens to be integrated into the investment decision-making processes for the endowment and pension investments;
2. Adopt the Guiding Principles and the Guidelines for the Application of ESG Principles contained in this report for University investments;
3. Undertake to make the necessary amendments to the Pension SIPP and to the Investment Guidelines for the each of the Endowment and IQC, to reflect the adoption of ESG factors in the investment decision-making process; these documents currently state that the University does not take ESG factors into consideration;
4. Direct staff to prepare a plan for the Board of Governors (outlining the costs and the monitoring and reporting requirements) for the University to become a signatory in good standing to the UN PRI with a target timeline of 12 months;
5. Explore and evaluate potential social impact investments, which would aim to provide an acceptable risk-adjusted rate of return along with the opportunity to generate positive social impact, with the aim to launch a pilot investment in this space in one year's time;
6. Commit to reviewing progress on the implementation of the recommendations outlined herein on an annual basis.

## Formation and Mandate

The Board of Governors ("Board") approved a motion to form the Responsible Investing Working Group ("RIWG") on 7 June 2016. The RIWG began work in January 2017 with the mandate to make recommendations to the Board through the appropriate committees and subcommittees as to whether and how to incorporate environmental, social and governance (ESG) factors into decision-making regarding the investment of endowment and pension funds, taking into consideration:

- 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;
- Approaches taken at peer institutions;
- The views of University stakeholders e.g., retirees, alumni, donors; and
- The perspectives and advice provided by University investment advisors and managers.

Recommendations of the RIWG were to be 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. It was expected that the recommendations of the RIWG will be reflected in the statements of investment policies and procedures for the endowment and pension funds as may be appropriate. It should be noted that because the Registered Pension Plan Investments Subcommittee encountered difficulty in populating its membership, for the purposes of the working group's reporting only the Finance & Investment Committee and the Pension & Benefits Committee were consulted during the process.

## Membership

A membership listing is included as an appendix to this report.

## Investments

An overview of the University's various investments to which the group's work pertains is provided.

| Name | Fixed Income | Equities | Other Asset Categories | Total for Fund/Plan |
|---|---|---|---|---|
| Endowment Fund | $163,200 | $204,100 | $19,500 | $386,800 |
| IQC Trust Fund | $53,300 | $30,000 | - - | $83,300 |
| Payroll Pension Plan | $16,700 | $25,100 | - - | $41,800 |
| Registered Pension Plan | $803,900 | $686,600 | $187,100 | $1,677,600 |
| **Total** | **$1,037,100** | **$945,800** | **$206,600** | |
| | | | **Grand Total** | **$2,189,500** |

*All values are in $000's as of 31 December 2017*

Portion of Grand Total held as direct investments = 9.4% (two holdings) ($207 million)

Portion of Grand Total invested through investment managers or indexed holdings = 90.6% ($1,983 million)

## Process Undertaken

The RIWG completed the following in order to fulfill its mandate:
- Analyzed exposure to fossil fuels, tobacco and oil sands within the University's portfolio;
- Inventoried ESG approaches of the University's current investment managers;
- Consulted with the University's pension advisor (Aon Hewitt) and had them present to the RIWG the different approaches to ESG in the market, other "responsible investing" approaches that have been adopted by asset owners, and overall trends in ESG and responsible investing as well as limitations and practical considerations for ESG or similar approaches (e.g. target rates of return of CPI + 3.5% to ensure the health of the pension plan on a going-concern basis);
- Obtained information on a variety of approaches that differ from ESG: negative or exclusionary screening; best-in-class screening; ownership of assets paired with engagement to effect change; impact investing; divestment;
- Consulted with two additional investment managers on ESG approaches and trends including one manager whom the University currently employs to manage its assets (Philips, Hager & North) and one manager without any current investment management relationship to the University (Manulife Asset Management), with the aim of seeking a diversity of views from managers active in the space;
- Conducted an environmental scan of the ESG approaches adopted by a sample of similar universities and major pension funds, within Canada, the United States, and internationally;
- Reviewed requests previously brought forward regarding divestment of fossil fuel investments;
- Examined numerous case studies that are seen to be significant in this space and which inform the views of pension advisors and investment managers;
- Reviewed a considerable volume of literature, including academic publications, books and other publications;
- Reviewed results of an exercise carried out by Advancement to solicit the views of targeted key endowment donors and alumni, on ESG factors; and
- Solicited input from current pensioners, using the list of the University of Waterloo Retirees Association; the constituency of current and future pensioners represents the single largest stakeholder group of the University's investment assets.

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## Community Engagement

The RIWG, in carrying out its mandate, deliberately engaged a broad range of interested constituencies in an open, transparent manner to provide significant opportunities for input from multiple sources and perspectives. These included students, faculty, staff, alumni, retirees, and donors. This approach aimed to ensure that the fullest possible array of perspectives from the University community would be considered. These activities included:

- Issuing two notices to the entire University community, on 5 May 2017 and 5 October 2017, to communicate the mandate of the RIWG and solicit feedback on this mandate. The two separate notices reflected and accommodated the rollover that occurs in the University community during the fall term
    - As a result of the notices, the RIWG received considerable feedback (~ 80 comments from individuals and groups on campus)
    - The RIWG also has received a considerable volume of written material above and beyond commentary on responsible investing and ESG factors, including academic publications, book chapters and other such material
- Holding direct meetings of a subgroup of the RIWG with representatives of two separate groups who had provided written submissions – faculty in support of fossil fuel divestment, and students supporting fossil fuel divestment
- Providing periodic progress updates to the Board as well as the Finance & Investment Committee and the Pension & Benefits Committee
- Issuing to the community a compilation of comments, material and input received up to January 2018

## Discussion of RIWG Observations

As a result of the group's environmental scan, direct outreach and extensive consultation, the RIWG has reviewed and deliberated on a considerable volume of written material and community input. The RIWG is of the view that the material considered represents a comprehensive review of ESG considerations, at the same time understanding that ESG considerations are evolving in real time.

A number of findings are worth highlighting here:

1. The University must consider the interests of multiple stakeholders: students, faculty, staff, current and future pensioners, alumni, donors, taxpayers, senior levels of government, each of whom may have different interests in the short term and the long term.
2. Fiduciary duty is the single largest and most important driver that the Board should consider in assessing whether or not to include ESG factors into investment decisions, given the magnitude of University responsibility for pension plan and endowment assets. This observation has been consistently at the forefront as the RIWG acted to fulfill its mandate. There would be considerable negative impact upon the University community, and pensioners particularly, if the pension and endowment funds do not achieve performance requirements to meet the commitments that have been made. The Board has fiduciary obligations under common law and pension regulation which include duties of care, loyalty to the interests of beneficiaries, and obedience to the purposes of the funds which are paramount. The inclusion of ESG factors in the investment process is not inconsistent with fiduciary obligations, and most likely supports the execution of those duties. Other universities in Canada also recognize this and have stated so publicly.
3. Responsible investing involves integrating ESG into the investment process. In addition to using ESG to consider investment opportunities, asset owners and investment managers can also use ESG-focused proxy voting and shareholder engagement with portfolio companies.
4. The rate of adoption of ESG factors in investment decision making is increasing for investment managers and asset owners of all types including investment managers, institutional investors and universities.

5. ESG is a fundamentally useful lens for review of investments as well as for monitoring and managing current and prospective investment managers, and can be applied in support of conventional investment analysis to gauge potential rates of return and the risk of asset or capital impairment, and is not inconsistent with fiduciary obligations and most likely supports these duties.
6. The incorporation of ESG factors into investment decision should not compromise returns, and supports better risk management while promoting sustainable long-term investment returns.
7. The University largely utilizes investment managers to manage its investments, and thus the University will have to ensure these managers adopt ESG into their investment decision-making process and provide ongoing reporting to the University.
8. At the time of this writing, we are not aware of a clear direction in either Canadian or provincial law regarding whether or not to include ESG considerations in investment decisions. There currently is no legislation mandating the inclusion of ESG factors as an investment consideration, but there is a requirement for disclosure
9. In the process of fulfilling its mandate, the RIWG considered and rejected the notion of differential treatment of funds/investments e.g. endowment investments can differentially incorporate ESG in comparison to pension investments. It is felt that the same lens ought to be applied to all investments.
10. As part of the consultation process undertaken by the RIWG, the working group notes that a significant amount of feedback received from the community encouraged the University to divest from fossil fuel investments. The RIWG is also aware of the requests received by the Board in 2016 which encouraged fossil fuel divestment, and that similar divestment proposals have been put forward at universities and other institutions in Canada and worldwide, with widely-varying institutional responses which have included: resolution to implement a divestment policy for some or all of the investments in question; declining to divest but implementation of an ESG policy; preference given to approaches where an institution's investment policy would skew toward certain assets that match institutional values.

Regulators have expressed concern when divestment is considered purely for ethical reasons, which could be considered "ethical screens":

> "… An administrator should be cautious to ensure that its approach to incorporating ESG factors does not conflict with its fiduciary duties, as may be the case with the use of ethical screens. The best interests of plan beneficiaries has traditionally been defined by the courts in terms of the beneficiaries' financial interests, with the result that there is a potential conflict with investing with other goals in mind, such as ethical or moral considerations. If the administrator is considering such an approach, the administrator is encouraged to consult with its legal counsel on this issue."[1]

The RIWG observes that the University should view any request for divestment cautiously where divestment serves as a form of ethical screening, rather than due to other factors related to risk adjusted rates of return.

The RIWG takes note of the older example of the movement to divest from South African companies in the 1980's and 1990's, and particularly the passage of provincial legislation in the form of the *South African Trust Investments Act* in 1990[2]. While this occurred some time ago, this legislation provided clarity to Ontario institutions proceeding that a prospective divestment would not be offside in the view of the most relevant authority. No similar such legislation exists with respect to fossil fuel divestment. This provide some precedent where little exists.

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[1]  Financial Services Commission of Ontario, Investment Guidance Note IGN-004
(https://www.fsco.gov.on.ca/en/pensions/fsco_consultations/Documents/IGN004.pdf)
[2] South African Trust Investments Act, R.S.O. 1990, c. S.16 (https://www.ontario.ca/laws/statute/90s16)

Additionally, the RIWG recognizes that sectoral divestment does not consider the heterogeneity of companies that may operate within a given sector. The broadness of sectoral definitions does not differentiate between companies that may be focused on investing in innovative new technologies, as one example. Given this understanding, sectoral divestment of fossil fuels or any other sector is currently seen to be neither intrinsically effective nor advantageous.

Further, the RIWG notes that comparator Canadian institutions have generally not supported a divestment approach.

This area continues to evolve and the university will continue to monitor initiatives, actions and movements as they unfold. However, in consideration of the reasons outlined above together with the weight of fiduciary duty borne by the University, we do not support the suggestion of divestment from fossil fuel investments at this time.

## Recommendations

With there currently being no accounting for ESG factors in the University's investment decision-making, the RIWG recognizes the importance of establishing a foundation in this space with an eye to potential expansion of activity at a future date. The most important steps that the University can take presently are those that establish a framework to integrate ESG into the regular activity of investment decision-making and to make the commitment to the principles of responsible investing.

The RIWG recommends the following to the Board of Governors:

i.   That the Board of Governors formally adopt and incorporate ESG considerations as part the selection criteria for investment managers, and as part of the investment considerations for directly-held investments.

   **Rationale:** Adoption of ESG considerations is increasingly occurring within the sector, and the RIWG observes that the consensus view that ESG is a valid and important lens for investment decision-making. The RIWG is aware that adoption of ESG considerations does not place the University at the forefront of this emerging space and that this recommendation does not place the University at the forefront of innovation. Nevertheless, the RIWG affirms that adoption of ESG factors constitutes an important incremental improvement which enables the potential to advance our position at a future date. For the purposes of this recommendation, ESG factors refer to the environmental, social and governance factors relevant to an investment that may have a financial impact on that investment.

ii.  That the Board of Governors adopt the following principles and guidelines for the meaningful and robust application of ESG principles to University investments:

   Guiding Principles
   1. The University's approach to investing its assets to support its programs and people must be appropriate for an institution of its stature and calibre. Furthermore it must recognize that its actions will be scrutinized by others and may also carry significant influence in how other institutions approach their investing strategies as it relates to ESG and responsible investing.
   2. The University recognizes ESG as an important lens to identify opportunities and risks to the University's investments.
   3. The subject of ESG is continuing to evolve in real time. As a leading and innovative University, we commit to reviewing on an annual basis and recommending revisions as appropriate to ensure the University's practices are consistent with best practices for comparable institutions.
   4. Waterloo shall utilize ESG as a tool in service of responsibly stewarding its assets, and investment decisions shall be made based on an investment thesis that includes consideration of ESG factors as part of the thesis.

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5. ESG factors shall be applied equally across all investment funds, and normally no provision will be made for any differential treatment for a given fund or account within a fund.

Guidelines for the Application of ESG Principles to University Investments

1. ESG factors refer to the environmental, social and governance factors that may have a financial impact on investment.
2. The University bears fiduciary responsibility as the sponsor of the University's pension plans, as well as responsibility for the effective stewardship of funds within the University's endowment, and affirms that ESG factors are important to serving these overarching responsibilities. The University sees no requirement to lower the performance expectations of a given investment or investment manager as a result of the incorporation of ESG factors in investment decisions.
3. The University recognizes that ESG factors and market practices related to ESG are dynamic and may change from time to time. Consequently, ESG factors, trends, and practices shall be monitored and formally assessed on an annual basis through an appropriate mechanism as approved by the Board. The University may retain outside consultants and experts on the subjects of ESG and responsible investing.
4. The University acknowledges that the application of ESG factors to investment decision-making must take into consideration practical factors including, but not limited to:
   a. Differing potential for impactful action between direct investment holdings vs. investments managed by professional investment managers with discretion over the purchase and sale of assets (e.g. pooled funds, indexed funds).
   b. Differing levels of disclosure and transparency of information for assets based on factors that include: fixed income, equity, and indexed investment products; publicly-traded companies vs. privately-held companies, and requirements in different geographic domiciles.
5. The University acknowledges that analysis of ESG factors by an investment manager retained by the University is an important consideration in the manager's determination of the viability of a given investment in facets including, but not limited to: sustainability of a given business; viability and robustness of a business model; potential for societal rejection of a given company or sector; potential for beneficial or detrimental impact on assets, including either or both of tangible and intangible assets. The University affirms that monitoring of current and future investment managers is an important activity and this includes, but is not limited to, the following: review of managers' proactive disclosures, analysis of how ESG factors are considered by the managers, third party reporting on managers' ESG activity, monitoring adherence to UN PRI principles (if the manager is a signatory), and records of proxy voting by managers. Investment managers and commingled investment vehicles will be evaluated on their ESG capabilities and performance. Where possible, the ESG capabilities and performance will be included into the University's investment selection and monitoring processes.
6. The University shall incorporate a thoughtful analysis of ESG factors into its decision-making for the evaluation of direct investments, including for new direct investments, for increases/reductions to existing investments, and for removal of investment in a given direct investment. In carrying out analysis for ESG factors, the University may utilize the services of any consultant or resource that is deemed to be authoritative in these matters.
7. Responsibility for the execution and monitoring of investments impacted by these guidelines shall reside with the Board, and the Board may delegate this responsibility within its sole discretion to any of its committees or the staff of the University.

**Rationale:** These guiding principles and guidelines serve to codify the University's understanding of ESG considerations in a broad way, while allowing interpretation in their application. The RIWG expects that ESG will evolve over time and with that evolution these points of guidance may also be amended from time to time based on the most current understanding of ESG, providing a flexible framework to help guide the application of these considerations.

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iii. That the Board of Governors revise ESG-specific language in the Statement of Investment Policies and Procedures (SIPP) for the University of Waterloo Pension Plan and for the Statement of Investment Guidelines of the University of Waterloo Endowment Fund to reflect the substance of the above guidelines and principles as appropriate.
Draft language is provided for consideration, and it is recommended that the University consult with experts in this area (e.g., the pension consultant) before any action is taken:

> **Environmental, Social and Governance ("ESG") Factors**
> Consistent with its obligation to act in the best interest of the Plan, UW chooses investments and investment managers that it believes will deliver superior financial performance over the longer term. In this regard, UW considers ESG factors in selecting investment managers with whom it invests the assets of the Plan as well as assets that are directly held by the UW. UW recognizes, however, that managers may consider ESG factors in different ways in assessing whether a given investment will have the best economic outcome. In order to protect and enhance the value of the Plan's investments, when selecting investment managers or direct investments, UW considers criteria that include: the managers' business and staff; historical performance; and the consideration of ESG factors in the investment process. As well, ESG factors, including, but not limited, to the proactive disclosure and analysis of ESG factors by the investment manager will be considered in the monitoring of, and ongoing decisions pertaining to, the retention of investment managers. For the purposes of this section, ESG factors refer to the environmental, social and governance factors relevant to an investment that may have a financial impact on that investment, and it is understood that the understanding of and impact from ESG factors may change over time.

> **Rationale:** Adoption of affirmative language for ESG considerations within the SIPP and the investment guidelines is the most powerful action that can be taken by the University to demonstrate that ESG considerations will be integrated into decisions and to convey this commitment outwardly.

iv. That the Board of Governors direct staff to prepare a report on the requirements for the University to become a signatory to the United Nations Principles for Responsible Investment (UN PRI), with the aim of joining with other signatories in implementing the six principles for responsible investing and outlining costs, monitoring and reporting requirements with the objective of becoming a signatory in good standing on a 12 month timeline:

> **UN Principles for Responsible Investment**
> 1. We will incorporate ESG issues into investment analysis and decision-making processes.
> 2. We will be active owners and incorporate ESG issues into our ownership policies and practices.
> 3. We will seek appropriate disclosure on ESG issues by the entities in which we invest.
> 4. We will promote acceptance and implementation of the Principles within the investment industry.
> 5. We will work together to enhance our effectiveness in implementing the Principles.
> 6. We will each report on our activities and progress towards implementing the Principles.

> **Rationale:** The RIWG views the adoption of the principles of the UN PRI as an important step in conveying the commitment of the University to an initiative that has been embraced by more than 1700 institutions representing $62 trillion in assets under management (2017 figures), and which is recognized by institutions and investment managers internationally. The RIWG notes that rather than recommending the University immediately become a signatory, it is clear that the implications and obligations of doing so need to be understood fully before embarking on this action to mitigate any reputational risk from inadvertent non-compliance. The plan should include details on the necessary commitments related to reporting and monitoring, as well as prospective costs (both financial and staff time/resources).

v. That the Board of Governors should explore and evaluate potential social impact investments with the aim to launch a pilot investment in one year's time.

> **Rationale:** It is understood that there exists a continuum of options in this space, which could offer an acceptable risk-adjusted rate of return along with the opportunity to generate positive social impact. The

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RIWG is of the belief that this area provides sufficient opportunity to merit consideration, and potential investment in this space may become very attractive to the University as time progresses.

vi. That the Board of Governors resolve to review progress on the implementation of ESG factors annually.


## Action Plan

The RIWG is aware of, and sensitive to, the considerable amount of work that the recommendations entail. The following actions will subsequently be required with the adoption of the recommendations, and suggested timelines are provided:

1. Amendment of SIPP and investment guidelines, as appropriate (staff to bring forward in consultation with pension consultant Aon Hewitt, October 2018).
2. Allocation by the Board of Governors of responsibility for making ESG decisions for each of the identified groups of investment holdings (staff to bring forward recommendation, October 2018).
3. Staff to develop a plan to become a signatory on the UN PRI, complete with details on the initial and ongoing resource obligations attendant to this commitment (June 2019).
4. Development of processes, including joining relevant industry associations such as the Responsible Investment Association, to ensure the University remains apprised of trends and concepts in the ESG space into the future, as well as the impact of ESG considerations on fiduciary duty (staff to bring forward recommendation, target of June 2019).
5. Development of processes to integrate ESG factors into the selection of investment managers and/or directly-held investments, and regular monitoring of ESG in investment holdings and managers, with the understanding that external third-party services would interface with staff to support monitoring for ESG within the University governance structure (staff to bring forward recommendation, target of June 2019).
6. Development of a transparent reporting process for ESG monitoring (staff to bring forward recommendation, target of June 2019).
7. Review of progress in the implementation of ESG annually (Board, first review June 2019).
8. Clear communication to the community on the adoption of ESG is important, and it is the view of the RIWG that the adoption of these recommendations forms the beginning of responsible investment that the University can build upon over time.

# Appendix

1. RIWG Membership

Per the terms of reference, the working group's membership was established as follows:

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

The Vice-President, Academic & Provost or delegate will serve as Chair. The Chair may vote, if necessary, in order to break a tie.

| Member Name | Constituency/position |
|---|---|
| Bruce Gordon | Chair – delegate of the Vice-President, Academic & Provost |
| Alan Macnaughton | Representative – Faculty (P&B) |
| Ted Bleaney | Representative – Staff (P&B) |
| Stewart Forrest | Representative – CUPE Local 793 (P&B) |
| Mary Thompson | Representative – Retirees' Association (P&B) |
| Robert Bruce | Board Member – Graduate Student (BOG) |
| Andrew Clubine | Board Member – Undergraduate Student (BOG) |
| Upkar Arora | Three members of the Board of Governors or its finance and/or pension committees, other than University employee or student members |
| John Liddy | |
| John Lounds | |
| Dennis Huber | Vice-President, Administration & Finance |
| Joanne Shoveller | Vice-President, Advancement |
| **Former members** | **Constituency/position** |
| Christine Wagner (to April 2017) | Representative – Staff (P&B) |
| Ramesh Kumar (to April 2017) | Representative – Retirees' Association (P&B) |
| Christopher Pugh (to July 2017) | Board Member – Graduate Student (BOG) |

2. Short List of Selected Definitions of Investment Concepts Related to ESG and Responsible Investing

Active Ownership – is when investors utilize their ownership to vote on and engage corporate managers and boards of directors to address concerns of environmental, social and corporate governance (ESG) issues. Active ownership is utilized to address business strategy and decisions made by the corporation in an effort to reduce risk and enhance sustainable long-term shareholder value.

Divestment – when investments are sold from a portfolio because they no longer meet the ESG or other criteria.

Environment, Social and Governance (ESG) – beyond the traditional financial factors, the evaluation of environmental, social, and corporate governance (ESG) factors can provide insights into investment risk, and there is growing evidence that suggests that ESG factors when integrated into investment analysis and decision-making may offer investors potential long-term performance advantages. ESG has become shorthand for investment methodologies that embrace ESG or sustainability factors as a means of helping to identify companies with superior business models.

Fiduciary Duty/Responsibility – in the institutional investment context, trustees of pension funds owe fiduciary duties to beneficiaries to exercise reasonable care, skill and caution in pursuing an overall investment strategy suitable to the purpose of the trust and to act prudently and for a proper purpose.

Negative / Exclusionary Screening – in searching the universe of prospective investments, exclusion of companies from the investible universe when said companies are poorly-rated on ESG or other criteria

Responsible Investing - Responsible investment is an approach to investing that aims to incorporate environmental, social and governance (ESG) factors into investment decisions, to better manage risk and generate sustainable, long-term returns.[3]


3. Benefits Canada "Two-thirds of institutional investors use ESG analysis"

http://www.benefitscanada.com/news/two-thirds-of-institutional-investors-use-esg-analysis-105698

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[3] https://www.unpri.org/pri/what-is-responsible-investment