February 8, 2017

TO: Members of the University Planning Committee

FROM: Mark Downard
       Senior Governance Advisor and Associate University Secretary

I am writing to inform you that the next meeting of the University Planning Committee will be held on Wednesday, February 15, 2017 at 10:30 a.m. in the Council Room, Gilmour Hall, Room 111.

If you are unable to attend this meeting, please contact the University Secretariat at telephone 905-525-9140, ext. 24337 or e-mail univsec@mcmaster.ca.
UNIVERSITY PLANNING COMMITTEE

Wednesday, February 15, 2017 at 10:30 a.m.
Gilmour Hall, Room 111

A G E N D A

OPEN SESSION

I  MINUTES of the Open Session Meeting of December 21, 2016
(attached – for approval)

II  BUSINESS ARISING

   a. Athletics and Recreation Referendum – Update
      Mr. R. Couldrey

III  CHAIR’S COMMENTS AND UPDATES

IV  REPORT FROM THE FACULTY OF SCIENCE –
    MOVEMENT OF MEDICAL PHYSICS PROGRAM
    (attached – for approval)

Dr. M. Farquharson

V  PROPOSAL TO CLOSE THE MASTER OF PUBLIC POLICY
   AND ADMINISTRATION PROGRAM
   (attached – for approval)

Dr. D. Welch

VI  PROPOSAL TO ESTABLISH THE McMaster DIGITAL
    TRANSFORMATION RESEARCH CENTRE
    (attached – for approval)

Dr. R. Baker

CLOSED SESSION

VII  MINUTES of the Closed Session meeting of December 21, 2016
    (attached – for approval)

VIII  BUSINESS ARISING

IX  PROJECT STATUS REPORT
    (attached – for information)

Mr. E. Kamarah

X  PROPOSED NAMING
    (attached – for approval)

Ms M Williams

XI  OTHER BUSINESS
McMaster University

UNIVERSITY PLANNING COMMITTEE

Wednesday, December 21, 2016 at 10:30 a.m.
John Hodgins Engineering Building, Room A114

PRESENT: Dr. D. Wilkinson (Chair), Mr. R. Couldrey, Dr. J. Daniel, Dr. S. Denburg, Dr. S. Hanna, Dr. J. Hurley, Dr. T. Moffat, Dr. S. Searls Giroux, Ms L. Serviss, Dr. D. Welch, Ms H. Ayre (University Secretary), Mr. M. Downard (Senior Governance Advisor and Associate University Secretary)

OBSERVERS: Mr. S. Van Koughnett, Associate Vice-President (Students and Learning)

CONSULTANTS: Ms L. Coslovi, Executive Director, Office of the Provost

INVITED: Ms S. Anderson, Program Administrator, Arts & Science Program Dr. T. Hurd, Professor, Faculty of Science Dr. M. Farquharson, Associate Deane (Academic), Faculty of Science Dr. D. Lozinski, Assistant Professor, Faculty of Science Dr. J. McDermid, Professor, Faculty of Engineering Dr. J. Smith, Assistant Dean (Studies), Faculty of Science Ms M. White, Assistant Dean (Studies), Faculty of Engineering

REGRETS RECEIVED: Dr. R. Baker, Dr. W. D’Angelo, Dr. P. Deane, Mr. R. Deshpande, Mr. P. Douglas, Mr. A. Jacob, Dr. J. Lee, Dr. A. McQueen, Ms J. Pike, Ms M. Williams

I MINUTES

On a motion duly moved and seconded, the minutes of the meeting held on November 16, 2016 were Approved as circulated.

II BUSINESS ARISING

There was no business arising from the minutes of the previous meeting.

III CHAIR’S COMMENTS AND UPDATES

Dr. Wilkinson informed members that the provincial government recently announced an extension to the current tuition framework. The news was not unexpected and it is in line with the University’s budgeting projections. Core programs will be able to increase tuition by 3 percent and designated professional programs can go up by 5 percent.
With regard to the upcoming Strategic Mandate Agreement process, it has been announced that the negotiator for the province will be Dr. Bonnie Patterson, former President of the Council of Ontario Universities. It will be important for McMaster, and research intensive universities as a group, to ensure their needs are appropriately considered.

The Provost explained that there has been information released about the new funding formula and that it will be a corridor system. Despite this, some important details still need to be established which will be critical for McMaster’s budgeting process.

Members were informed that because quorum was not yet present, the order of the agenda would be re-arranged to discuss information items first.

The order of the agenda was varied.

VI STRATEGIC MANDATE AGREEMENT – REPORT

The Committee was given an overview of the circulated material. Dr. Wilkson noted that the report contains useful information about McMaster’s achievements and represents positive results. Members had no further questions or comments.

IV REPORT FROM UNDERGRADUATE COUNCIL

i. Establishment of Combined Honours Bachelor of Arts and Science in Arts and Science and Indigenous Studies

Dr. Searls-Giroux discussed the proposal to establish a combined Honours Bachelor of Arts and Science in Arts and Science and Indigenous Studies.

It was duly moved and seconded,

that the University Planning Committee approves the establishment of the Combined Honours Bachelor of Arts and Science in Arts and Science and Indigenous Studies program, effective September 2017, as outlined in Attachment I.

The motion was carried.

ii. Closure of Honours Bachelor of Engineering in Software Engineering – Embedded Systems

The Committee was informed that Undergraduate Council had approved a proposal to close the Honours Bachelor of Engineering in Software Engineering – Embedded Systems program. Enrolment in the stream is low and there are very few differences between it and the Software Engineering program.
It was duly moved and seconded,

that the University Planning Committee approves the closure of the Honours Bachelor of Engineering in Software Engineering – Embedded Systems program, effective September 2018, as outlined in Attachment II.

The motion was carried.

iii. Closure of Honours Bachelor of Engineering in Electrical and Biomedical Engineering

The Chair explained that Undergraduate Council had approved a proposal to close the Honours Bachelor of Engineering in Electrical and Biomedical Engineering program. The newly established Integrated Biomedical Engineering and Health Sciences program will replace the existing Electrical and Biomedical Engineering program.

It was duly moved and seconded,

that the University Planning Committee approves the closure of the Honours Bachelor of Engineering in Electrical and Biomedical Engineering program, effective September 2018, as outlined in Attachment II.

The motion was carried.

iv. Closure of Technology Diploma
v. Closure of Technology Leadership Diploma

Agenda items 4. iv. and v. were discussed together.

Members discussed the circulated material. It was explained that the two diploma programs have had consistently low enrolment and there are currently no students in either program. Members had no further questions.

It was duly moved and seconded,

that the University Planning Committee approves the closure of the Technology Diploma and Technology Leadership Diploma programs, effective September 2017, as outlined in Attachment III.

The motion was carried.

vi. Closure of Honours Bachelor of Science in Medical Physics

Dr. Wilkinson gave an overview of the closure of the Honours Bachelor of Science in Medical Physics. The closure of this program is part of the administrative process to facilitate the merger of the Medical Physics and Biophysics programs into the Honours Bachelor of Science in Medical and Biological Physics.
It was duly moved and seconded,

that the University Planning Committee approves the closure of the Honours Bachelor of Science in Medical Physics program, effective September 2018, as outlined in Attachment IV.

The motion was carried.

V REPORT FROM GRADUATE COUNCIL – NEW PROGRAM PROPOSAL FOR MASTER OF FINANCIAL MATHEMATICS

Dr. Welch discussed the proposal to establish a new graduate program in Financial Mathematics. A question was asked about how graduates would be able to compete against PhDs, especially when it is a 12 month program. Dr. Hurd explained that those with PhDs would have greater technical knowledge, but the business and fundamental math skills will be similar to those taught in the Master of Financial Mathematics program. There has been positive feedback about the program and it is anticipated that some refining of specialized skills will take place once students are within industry.

A member asked if the program will be BIU funded. Dr. Hurd informed the Committee that they are seeking BIU funding. Programs like this are in high demand from industry and it is anticipated that it will receive strong interest.

It was duly moved and seconded,

that the University Planning Committee approves the establishment of the Master of Financial Mathematics program, as outlined in the attached report.

The motion was carried.
Michael Farquharson  
Associate Dean (Academic)  
Faculty of Science.

TO: University Planning Committee  

FROM: Michael Farquharson, Associate Dean (Academic) Faculty of Science  

DATE: February 1st 2017  

RE: Moving the Honors Medical Physics Program (and CO-OP) from the School of Interdisciplinary Science to the Department of Physics and Astronomy

I am hereby requesting that the University Planning Committee approve and refer to Senate the move of the Honours Medical Physics program (and CO-OP program) from the School of Interdisciplinary Science to the Department of Physics and Astronomy.

Background:
The department of Medical Physics and Applied Radiation Sciences (MPARS) was closed at the end of December 2015. The School of Interdisciplinary Science (SIS) was opened January 1st 2016. The existing undergraduate Medical Physics Program(s) are now administered through SIS. As part of this process, a working group was struck by the Dean to consider the future of the Medical Physics program(s). The working group recommended that the Honours Medical Physics program merge with the existing Biophysics program which is currently administered by the Department of Physics & Astronomy, to form the Honors Medical and Biological Physics program. This merged program will be administered by the Department of Physics & Astronomy. These changes were approved by Undergraduate Council (UGC) December 16th 2016 and Senate on January 11th 2017. Also approved was the closure of the existing Medical Physics program with the final year of enrollment being Fall 2017. This was approved by UPC on December 21st 2016 and Senate January 11th 2017.

As a result of this, the students remaining in the Honours Medical Physics program are due to complete their program through SIS. However, during the Fall, 2016 term, representatives for the Medical Physics Student Society met with the Director of SIS to discuss the transition of Honours Medical Physics (including CO-OP) to the Department of Physics and Astronomy. They are aware of the proposed changes to existing programs and the expectation that starting in September 2017 students will enroll in the merged Honours Medical and Biological Physics program administered by the Department of Physics and Astronomy. At a student society meeting in November, the student representatives shared with their constituents the list of support available for students in Physics and Astronomy and subsequently passed a
motion requesting that the students currently enrolled in the Medical Physics program be provided with access to these student supports as soon as possible.

At the students’ request, and pending appropriate support and approval, we now propose to move the existing Medical Physics (and CO-OP) program to the Department of Physics and Astronomy, and most importantly, to initiate the provision of these supports to the associated students. This proposal has the support of the Chair of the Department of Physics and Astronomy, the Director of SIS, the Medical Physics student body and the Dean of Science. This proposal was approved by UGC on January 31st 2017.

Budget implications for this proposal will require revenue generated by the Medical Physics program/students be transferred from SIS to the Department of Physics and Astronomy. This has been approved by the Dean.
To : University Planning Committee

From : Christina Bryce
Assistant Graduate Secretary

At its meeting on December 6th, Graduate Council approved the cancellation of the Guelph–McMaster Collaborative Program in Public Policy and Administration.

The attached document, pertaining to the cancellation, is now forwarded for approval to the University Planning Committee for its meeting on February 15th.

Attachment
# RECOMMENDATION FOR CHANGE IN GRADUATE CURRICULUM - FOR CHANGE(S) INVOLVING DEGREE PROGRAM REQUIREMENTS / PROCEDURES / MILESTONES

**IMPORTANT: PLEASE READ THE FOLLOWING NOTES BEFORE COMPLETING THIS FORM:**

1. This form must be completed for **ALL** changes involving degree program requirements/procedures. **All** sections of this form **must** be completed.

2. An electronic version of this form (must be in MS WORD **not** PDF) should be emailed to the Assistant Secretary, School of Graduate Studies (cbryce@mcmaster.ca).

3. A representative from the department is **required to attend** the Faculty Curriculum and Policy Committee meeting during which this recommendation for change in graduate curriculum will be discussed.

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<th>Political Science</th>
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<td>NAME OF PROGRAM and PLAN</td>
<td>MA in Political Science (GSSMA / POLSCCSMA)</td>
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<td>Guelph–McMaster Collaborative Program</td>
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<td>DEGREE</td>
<td>MA in Political Science</td>
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**NATURE OF RECOMMENDATION (PLEASE CHECK APPROPRIATE BOX)**

Is this change a result of an IQAP review? ☒ Yes ☐ No

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<th>CHANGE IN ADMISSION REQUIREMENTS</th>
<th>CHANGE IN COMPREHENSIVE EXAMINATION PROCEDURE</th>
<th>CHANGE IN COURSE REQUIREMENTS</th>
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<th>CHANGE IN THE DESCRIPTION OF A SECTION IN THE GRADUATE CALENDAR</th>
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<td>Cancellation of Guelph-McMaster Collaborative Program</td>
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<th>OTHER CHANGES</th>
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DESCRIBE THE EXISTING REQUIREMENT/PROCEDURE:

C. Public Policy and Administration

The Public Policy and Administration Program is offered in collaboration with the Department of Political Science at the University of Guelph. Students concentrating in this area must satisfy the following requirements:

Six half courses (or equivalent) at the graduate level
The two half year courses beyond those required may be taken on either campus or, with the approval of the Graduate Advisor, up to six units (2 half courses) may be taken from an allied discipline at the McMaster campus; and

Written comprehensive examinations in the major field of Public Policy and Administration with a minor field of Canadian Politics, Comparative Politics, International Relations or Political Theory.

Required half courses

POLSCI 783 / Comparative Public Policy
POLSCI 784 / Quantitative Political and Policy Analysis
POLSCI 785 / Public Sector Management OR
POLSCI 786 / Organizational Theory and the Public Sector
POLSCI 794 / Public Policy and Administration Research Seminar OR
POLSCI 796 / Research Design and Methods

PROVIDE A DETAILED DESCRIPTION OF THE RECOMMENDED CHANGE (Attach additional pages if space is not sufficient.)

Delete all calendar references to the Public Policy and Administration Program (at part C, below). Delete POLSCI 794 / Public Policy and Administration Research Seminar

RATIONALE FOR THE RECOMMENDED CHANGE (How does the requirement fit into the department’s program and/or tie to existing Program Learning Outcomes from the program’s IQAP cyclical review?):

This program was created 25+ years ago, but has ceased to function due to retirement/non-replacement of core faculty members at McMaster and University of Guelph. Since Sept. 2014, neither of the collaborating departments has been able to offer the required course POLSCI 794: Public Policy & Administration Research Seminar (the course was historically co-taught or shared across the two universities). The Political Science department at the University of Guelph has not promoted the program and not accepted students since Sept. 2014. Both departments are now taking steps to close the program formally. Our department plans to introduce a number of substantive changes to our MA-Political Science program in time for admissions in Sept. 2018.

PROVIDE IMPLEMENTATION DATE: (Implementation date should be at the beginning of the academic year)

Effective as of September 1, 2017

ARE THERE ANY OTHER DETAILS OF THE RECOMMENDED CHANGE THAT THE CURRICULUM AND POLICY COMMITTEE SHOULD BE AWARE OF? IF YES, EXPLAIN.

PROVIDE A DESCRIPTION OF THE RECOMMENDED CHANGE TO BE INCLUDED IN THE CALENDAR (please include a tracked changes version of the calendar section affected if applicable):

CONTACT INFORMATION FOR THE RECOMMENDED CHANGE:

Name: Karen Bird Email: kbird@mcmaster.ca Extension: 23701 Date submitted: October 26, 2016
Political Science, M.A.

M.A. Degree in Political Science

Admission

Admission to the M.A. in Political Science degree program requires an average of B+ or better in Honours Political Science or, with the approval of the Department’s Graduate Chair, in another discipline. The Department offers a regular M.A. in Political Science program in four areas: Canadian Politics, Comparative Politics, Political Theory and Public Policy. There is also a Collaborative M.A. Program with the University of Guelph in Public Policy and Administration. Students must indicate the area in which they wish to major in their application.

In the regular M.A. in Political Science program, studies in all areas may take the form of course work and comprehensive examinations, or course work and a thesis.

A. Course Work with Comprehensive Examinations

Six half courses (or equivalent) at the graduate level and written comprehensive examinations. Normally 3 half courses are taken during the Fall term and 3 half courses during the Winter term. The comprehensive examinations are written in the latter half of July. Students are responsible for one major (two subfields) and one minor (one subfield) area chosen from: Canadian Politics, Comparative Politics, International Relations, Political Theory, and Public Policy and Administration.

B. Course Work with Thesis

Five half courses (or equivalent) and a thesis, which must demonstrate independent research skills. Full-time students who wish to write a thesis must submit a thesis proposal for departmental approval by a date to be determined by the Department. If the thesis proposal is not approved, students may continue in the course/comprehensive option. The thesis option is normally a two-year program.

C. Public Policy and Administration

The Public Policy and Administration Program is offered in collaboration with the Department of Political Science at the University of Guelph. Students concentrating in this area must satisfy the following requirements:

- Six half courses (or equivalent) at the graduate level
- The two half year courses beyond those required may be taken on either campus or, with the approval of the Graduate Advisor, up to six units (2 half courses) may be taken from an allied discipline at the McMaster campus; and
- Written comprehensive examinations in the major field of Public Policy and Administration with a minor field of Canadian Politics, Comparative Politics, International Relations or Political Theory.

Required half courses

- POL SCI 783 / Comparative Public Policy
- POL SCI 784 / Quantitative Political and Policy Analysis
- POL SCI 785 / Public Sector Management
- POL SCI 786 / Organizational Theory and the Public Sector
- POL SCI 794 / Public Policy and Administration Research Seminar
January 23, 2017

TO: University Planning Committee

FROM: Robert L. Baker

RE: McMaster Digital Transformation Research Centre Proposal

The Committee on Research Institutes has reviewed the attached Proposal for the McMaster Digital Transformation Research Centre, as per the policies and guidelines.

The proposal has the unanimous support of the Committee on Research Institutes.

Please include this as an Agenda Item for the next University Planning Committee Meeting.

RLB/pb

Attach.

cc: David Wilkinson
    Len Waverman
    Doug Welch
    Helen Ayre
December 6, 2016

Dr. Robert Baker  
Vice-President (Research)  
McMaster University, GH 208  
Hamilton, ON

Dear Dr. Baker,

I am forwarding a proposal for establishing the Digital Transformation Research Centre in the School of Business. The proposal has my endorsement and that of Dr. Agarwal, Associate Dean Graduate Studies and Research.

Our Strategic Plan 2015 – 2020 identifies two areas of focus, leadership and digital transformation. Through our recently launched EMBA in Digital Transformation and Health Leadership Academy, we have attempted to strengthen our educational programs in these two focus areas. The proposed Digital Transformation Research Centre will help us move our research enterprise in this direction. The Centre will serve to integrate the recent successes of our faculty in attracting SSHRC, CFI and ORF-RI funding for setting up the Evidence Based Management Lab, the Flexible NeuroIS User Experience Lab and the Advanced Human Computer Interaction Lab. Consistent with the McMaster Strategic Research Plan, the proposed is designed to promote inter-disciplinary and collaborative research programs with potential for involving researchers from across Faculties. Also, the governance and administrative structure of the proposed Centre, including the aforementioned Labs, satisfies all the requirements of the McMaster Guidelines for the Governance and Review of Research Institutes, Centres.

The attached proposal is being submitted for consideration and approval by your Committee for Review of Centres/Institutes. Please let us know if you require any further information.

Best Regards,

[Signature]

Dr. Leonard Waverman  
Dean, DeGroote School of Business

Enc: DTRC Proposal
A NEW FOCUS ON DIGITAL TRANSFORMATION

Vision

The McMaster Digital Transformation Research Centre’s (M-DTRC) vision is to become a self-sustaining world leading research centre and knowledge hub with a focus on the leadership and management of digital transformation. The centre will operate at the nexus of business, engineering, economics, neuroscience, psychology, computer science, and communications/media/social media fields. The M-DTRC will represent the best in multidisciplinary research, building on collaborations with key partners and affiliates in academia as well as the public, private, and not-for-profit sectors. The centre’s mission will focus on innovative research that investigates the booming digital innovations that are prevailing through and transforming all aspects of our modern society. This timely and important research will lead to a fundamental shift in our understanding of the developing digital revolution and its challenges and opportunities, with far reaching implications for managerial practice, in the different sectors of the knowledge economy as well as society at large. It is anticipated that the program of research and training at the M-DTRC will contribute to the development of a unique breed of Highly Qualified Personnel (HQP) with specialized skillsets, building their capabilities to become the digital transformation leaders of tomorrow.
The Digital Revolution

The end of the twentieth century marked a new era in human history. Information Technology (IT) and the Internet have become ubiquitous, and fueled an information revolution that transformed societies and created a complex global knowledge economy. Technological innovations continue to grow exponentially, and the world is entering a new stage of the Information Age, a second Digital Transformation revolution that is disrupting almost every aspect of our lives.

The growing wave of digitization of products, processes and organizations promises fascinating opportunities and challenges, and is radically transforming the office, factory, farm, home, government and everything in between. Consequently, our world has become inundated with data. The global data universe will reach 40 zettabytes by 2020 experiencing a 50 fold growth from 2010. Modern cars have up to 100 sensors spitting out loads of information. A Boeing aircraft generates terabytes of data in a single flight. Medical devices are constantly emitting data essential to patients’ health and safety. Teaching and learning in educational institutions is shifting towards new models of digital exchange and knowledge generation. Consumer products in the “Internet of Things” era are constantly exchanging data with each other and cloud-based service platforms, enabling novel value propositions, emerging communication/management solutions and opportunities for efficiencies. Machine to machine communication enabled by sophisticated cyber and enterprise systems is fueling a fourth industrial revolution, allowing precise customized manufacturing at unprecedented massive scales. Add in supply chain logs, social media giants like Facebook and Twitter, digital entertainment companies like Netflix, financial systems employed by banks and capital markets, and you quickly arrive at the conclusion that there is a monumental amount of data generated, just waiting to be analyzed and utilized. In fact, 90 percent of data available worldwide today has been created in the last two years only.

Organizations and governments alike are dealing with the complex challenges of what is often referred to as “Big Data”. How can this digital transformation be managed? How can organizations refine their strategies to maintain and enhance their competitiveness through Information Technologies? How can Digitization create value for organizations? What skills make leaders capable of making evidence-based sound decisions based on big data? McKinsey Global Institute projects that there will be a shortage of at least 1.5 million managers and analysts in the U.S. alone who know how to utilize big data to make effective decisions. The Canadian Information and Communications Technology Council projects that Canada will need to fill 150,000 to 182,000 positions requiring data literate managers and analysts by 2019, and will additionally need to fill 14,000 to 19,000 positions requiring deep analytical skills, with a significant proportion of these vacancies projected in Ontario. This skills shortage coupled with the
enhanced focus on the knowledge economy and innovation as a driver to prosperity as articulated in a recent Globe and Mail article penned by the presidents of McMaster, University of Toronto and the University of Waterloo; ensures that the **M-DTRC** is very relevant and timely today, and will continue to play a role as the economy in Ontario specifically and in Canada overall evolves to meet the emerging challenges we face. Through investment in the **M-DTRC**, McMaster and DeGroote will be in a unique position to address these challenges.

**McMaster’s Leadership Opportunity**

McMaster’s guiding strategy, as communicated through the Forward with Integrity mandate, establishes the University’s key priorities of strengthening research excellence; graduate education and training; and connections with the local, provincial, and global communities through distinctive and sustainable initiatives. As such, the DeGroote School of Business is committed to evolving and facilitating innovative research and educational programs that meet the contemporary challenges and opportunities of an increasingly complex business world. To that end, the DeGroote School of Business is distinguishing itself in an area of monumental importance and one in which it has considerable strength: the management of **Digital Transformation** which leverages “**Big Data**” and cutting edge research methods. The DeGroote School of Business Strategic Plan’s objectives provides a solid roadmap to ensure that the next generation of leaders is expertly equipped with the skillsets necessary to manage in the digital economy through data-driven knowledge discovery and evidence-based decision making. This will ensure that future leaders are capable of effectively steering their organizations in a sophisticated, competitive, increasingly digital and rapidly evolving global landscape. To that effect, the School has recently launched an innovative **Executive MBA in Digital Transformation** program. The **Digital Transformation Research Centre** will serve as an imperative component supplementing this strategy and bolstering McMaster’s position as a world leading institution in this emerging field.

**M-DTRC Concept Innovativeness**

**M-DTRC** will function as a world class research organization to bring top researchers from DeGroote, McMaster, and beyond to engage in cutting-edge multidisciplinary research aimed at better understanding and enhancing how organizations of all sizes, at all stages of maturity and across a broad spectrum of industries can create more value while increasing their efficiency and effectiveness through information/communication technologies and digitization. **M-DTRC** will serve as a hub for collaborative and multidisciplinary research, graduate/undergraduate training, and executive education. It will contribute to further McMaster’s leadership role in the study of evidence-based decision making especially in the presence of big data, human-computer interaction, management of industry 4.0, and strategic management in the digital economy. **M-DTRC** will be one of the first of its kind in Canada, and will bolster DeGroote’s and McMaster’s position as global pioneers of **Digital Transformation**.
M-DTRC will mainly be situated on the fourth floor of DeGroote’s Ron Joyce Centre (occupying approximately 300 m²/3,300 ft²) in Burlington, with complimentary space located on the second floor of DeGroote’s Hamilton campus. The centre will draw on three complimentary CFI/ORF-RI-funded research labs involving collaboration between researchers from DeGroote and the Department of Psychology, Neuroscience & Behaviour at McMaster: (i) The Evidence Based Management Lab ($499,866 CFI/ORF-RI funding secured in 2015/16 and lab is established); (ii) The Flexible NeuroIS User Experience Lab ($284,411 CFI funding secured in 2016 with matching ORF-RI funding expected in 2017); and (iii) The Advanced Human-Computer Interaction Lab ($271,000 CFI/ORF-RI funding secured in 2014/15 and lab is established). These innovatively designed labs house cutting-edge neurophysiological/information systems (Neuro-IS) research infrastructure combined with computing capacity that will enable a wide array of Digital Transformation research projects to be conducted across a broad range of social, professional, and educational contexts. The advanced NeuroIS infrastructure in these labs includes neurophysiological equipment measuring the cognitive and physiological responses of participants in real-time as they engage in various tasks (e.g. decision making, work meetings, learning, web surfing, e-Commerce, etc.). Together with traditional measures (e.g. interviews, questionnaires, video recordings), these neurophysiological measures will facilitate deeper insights into the subconscious aspects of technology users as they engage in various tasks thus highlighting how individuals select, process, interpret and use information. Other available complementary research infrastructure such as Dr. Hassini’s CFI funded lab for Advanced Business Analytics at DeGroote and McMaster’s multidisciplinary big data institute (MacDATA) will enhance the research capacity of DRTC especially as it relates to big data and data analytics.

M-DTRC Research Activities

Digital technologies are rapidly affecting all aspects of our societies including business, education, health and industry. As such, the M-DTRC will focus on generating and advancing knowledge on the best approaches to leverage these technologies while managing their disruptive effects. The activities of M-DTRC will also result in developing the next-generation of researchers, executives, managers, and leaders of the digital transformation age. Facilitated by the novel design and sophisticated infrastructure of the centre, a wide range of studies can be conducted to achieve the outlined objectives. Some research streams in the different laboratories are outlined below as examples:

- **Evidence-based Decision Making**: Effective decision making is a key success factor for organizations. Decision making is a complex task involving the searching, processing, integration and contextualization of information from a wide variety of sources. With the advent of sophisticated information technologies and “Big Data”, this problem has been further exacerbated as decision makers face an overabundance of information, which encourages them to settle for suboptimal decisions based on their intuition (as opposed to actual evidence) to reduce their cognitive burden. At the Evidence Based Management Lab, M-DTRC researchers will carry out research projects aimed at gaining a deeper understanding of and addressing the challenges facing managerial
decision making in the presence of Big Data using a mixed methods approach comprising traditional and neurophysiological techniques. Consequently, customized decisions aids will be designed and evaluated to support decision makers in different contexts to help them to best leverage available evidence in support of higher quality decisions. The implications of group and multi-located decision making will also be explored.

- **User Experience in the Digital Age:** Digital innovations are transforming societies and economies. Information technology has become ubiquitous and pervasive in all aspects of our lives. The prevalence of information technologies is evident as they have become essential to many contemporary professional, educational, and personal activities, with obvious implications to the way individuals interact, communicate, and collaborate with each other. In the **Flexible NeuroIS User Experience Lab**, interdisciplinary research at the **M-DTRC** will strive to decipher what occurs within the brains and bodies of participants engaged in real-time digital technology mediated-interactions in a variety of settings to study the digital transformation impacts on social interactions, professional and educational collaborations.

- **Designing Effective Digital interfaces for Older Adults:** The ageing of the Canadian population is expected to rapidly accelerate reaching 9.9 million to 10.9 million seniors by the year 2036, representing approximately 25% of the population. The senior population also represents the fastest growing segment of Internet users. The increasing proportion of older adults using information and communication technologies for professional or personal activities demand the tailoring of digital interfaces to match the diminishing cognitive and physical abilities of this segment due to the natural processes of ageing they go through. In the **Advanced Human-Computer Interaction Lab**, **M-DTRC** researchers will combine cutting-edge NeuroIS techniques with traditional behavioural methods to more deeply understand how digitization impacts older adult users while interacting with digital technologies in a variety of contexts. Consequently, this understanding will help us develop interface design guidelines and decision aids to support the special needs of this segment.

- **Digitization of Healthcare:** The digitization of the healthcare industry is becoming a critical imperative due to the mounting pressures on this sector resulting in part from an increasing ageing population. However, this process is hampered by a variety of policy, and technology interoperability issues as well as concerns over privacy and security. Research at **M-DTRC** will explore these issues leveraging the long history of its researchers in the area of eHealth and our flagship M.Sc. in eHealth program (an interdisciplinary program involving the faculties of Business, Engineering and Health Sciences).
M-DTRC Training and Education

The training of HQP will be a major component of the proposed programs of research conducted at the M-DTRC. The centre will serve to attract top talent to programs from the undergraduate, Master’s, Executive Education, and Ph.D. levels as well as Post-Doctoral Fellows (PDF) spanning the DeGroote School of Business, Faculty of Science, Faculty of Engineering, and other partner Faculties within and beyond McMaster. The multidisciplinary nature of the research undertaken at the centre, the ongoing interactions with our affiliates and partners, as well as the cutting-edge neurophysiological and behavioural research tools and equipment used will all serve to develop a unique breed of Highly Qualified Personnel (HQP) with highly specialized skill sets. By utilizing these innovative methods, our students will develop refined capabilities in investigating and understanding how digital transformation, driven by innovations in technology and the continued emergence of sources of big data, is challenging the standards of business and other elements of society. Students will be trained on how this transformation could be best leveraged to the betterment of our economic and social systems. The ongoing interactions with our partners in the private, public, and not-for-profit sectors will further enrich our students’ experiences making them more attractive for employment upon graduation given their multidisciplinary training and highly specialized and diverse skill sets.

Rationale for the Creation of the M-DTRC

Business schools produce professionals in areas such as accounting, finance, marketing, etc., but we can also contribute towards developing leaders who can understand and manage the transformations in industries and society that are fuelled by the ongoing digital revolution. Many of the significant transformations such as those we observe in the hospitality industry (Airbnb) and transportation sector (Uber), are largely driven by data and digital innovations where leaders need to bridge the gap between technology affordances and business strategy by making evidence-based decisions. This applies whether they are driving the disruption or adapting to it. As such, there is a tremendous opportunity for the DeGroote School of Business to conquer this divide that exists in business and managerial practice and to make innovative contributions to business and society through interdisciplinary research to transform the way we manage, strategize, produce, collaborate, and create value in an increasingly complex and digitally interconnected world.

The timing is right for this venture. McMaster has prioritized interdisciplinary research and teaching, and has recently launched a big data campus-wide initiative (The MacDATA Institute). Additionally, the new strategic plan for DeGroote School of Business includes a mission to “foster interdisciplinary thinking and evidence-based management to transform business and society.” As such, the School is putting significant resources and support behind the M-DTRC and other initiatives that fall under these criteria, which enhances its chances of success. This support includes contributions such as the dedication of space and infrastructure for the faculty, graduate student offices and research laboratories, as well as financial support.
**Funding**

Funding will come from research granting agencies, investment from the School of Business and private donors, in addition to income generated through the operations of the centre including research contracts. As outlined above the School of Business has dedicated space on the fourth floor of DeGroote’s Ron Joyce Centre (occupying approximately 300 m²/3,300 ft²) in Burlington for M-DTRC, with additional space located on the second floor of DeGroote’s Hamilton campus. The centre will draw on three complimentary CFI/ORF-RI-funded research labs involving collaboration between researchers from DeGroote and the Department of Psychology, Neuroscience & Behaviour at McMaster: *(i) The Evidence Based Management Lab* ($499,866 CFI/ORF-RI funding secured in 2015 and lab being established); *(ii) The Flexible NeuroIS User Experience Lab* ($284,411 CFI funding secured in 2016 with ORF/MRI matching funds expected in 2017); and *(iii) The Advanced Human-Computer Interaction Lab* ($271,000 CFI/ORF-RI funding secured in 2014 and lab is established). In the immediate future, operating research funds will come for a variety of research grants currently held by members of the centre (e.g. SSHRC Insight Grants, SSHRC Insight Development Grants, SSHRC Partnership Development Grants, NSERC Discovery and Engage Grants). Further, the DeGroote Advancement – Development & Outreach team is currently actively helping us identify private donors who, through their generous contributions, could get this centre off to a strong start. In addition, from the first year of operation we envision a variety of revenue generating activities for the M-DTRC that will see the centre breaking even or making a small profit starting with the third year of its operation, with the goal of being independently operational by year sixth of its launch. Below we outline some of these potential sources of revenue.

**Research Funding**

*Research Grants:* A laboratory of this caliber will allow members of the associated research team to ensure robust innovative applications to standard sources of funding that include those already utilized by the faculty such as SSHRC Insight Grants, SSHRC Insight Development Grants, SSHRC Partnership Development Grants, NSERC Discovery and Engage Grants, and Ontario Research Fund (ORF). These options range in terms of the level of funding from $25,000 over 6 months for the NSERC Engage grants to up to $4,000,000 of funding over five years with the Ontario Research Fund for Research Excellence. Applications to strategic grants involving multidisciplinary teams and close collaborations with industry partners are also envisioned on a regular basis.

*Research Contracts:* University based laboratories, as evidenced by the collective experiences of the Faculties of Science, Engineering and Health Sciences also facilitate Research Contracts with industry partners. It is reasonable to expect that the M-DTRC comprising three laboratories of this stature would generate a steady flow of research contracts with business partners. These contracts are not dependent on adjudication of research proposals and provide the opportunity for additional overhead funds. Such contracts will provide opportunities for our faculty and graduate students to interact closely with industry partners to address relevant real world questions with ensuing mutual benefits to both sides.
Executive Training
It is envisioned that the M-DTRC will leverage the expertise of its faculty members to develop/deliver executive training courses related to digital transformation and evidence based management that would be highly attractive to organizations in both the private and public sectors. Examples of such courses include: Competing in Digital Markets, Creating Value through Internet of Things Products and Services, Evidence-based Decision Making for Managers, Neuroergonomics of Digital Technologies and Smart Products, Creating and Sustaining Evidence-based Organizations, Selecting & Nurturing Evidence-based Leaders. These courses will be marketed through DeGroote’s Executive Education team and will serve to further bolster our reputation as a leader in this area.

Systematic Reviews
It would be possible through the research undertaken by the Centre to develop systematic reviews that leverage our growing expertise in digital transformation. The idea here is to leverage the reputation of the M-DTRC to conduct such objective systematic reviews based on peer-reviewed academic studies and integrated evidence from a variety of resources. These reviews will be commissioned in areas of wide interest to the business and industrial communities and could represent an additional source of revenue for the centre. Examples reviews include: best practices for hiring managers in the digital age, best practice in designing mobile applications for older adults, etc.

Subscription Model
The M-DTRC will seek to implement a subscription model whereby subscribing organizations would receive our systematic reviews free of charge and training courses at a discount for their employees. We envision having four-six members paying $30,000 annually. They would also gain access to a certain threshold of our research capacity to focus on research areas of interest to them. It would be also possible leverage these funds in such strategic grants applications such as the NSERC-CRD.
Administration and Governance

The organizational structure of the M-DTRC will follow the McMaster’s Guidelines for the Governance and Review of Research Centres as outlined in the Figure below.

The centre will be led by its Director, who is normally appointed for a 5 year term. The Director establishes an Advisory Committee (AC) whose purpose is to provide advice to the Director with regard to scientific or scholarly priorities and direction for the Centre. The AC is chosen by the Director, and convenes at least twice a year, or more frequently at the discretion of the Director.

The centre Director reports to the Institute’s Governing Board (GB) on an annual basis. The GB comprises the Dean of the school of Business (or designate), the Chairs of the Departments which have a substantive investment in the success of the centre, and one faculty member at large who is active within M-DTRC. The GB, in consultation with the Director, the AC, and members of the Institute, is responsible for constituting an External Review Board (ERB) at least every 5 years, and normally coincident with the final year of the Director’s term.
M-DTRC Governing Board

The Governing Board will consist of:
- Dean of the DeGroote School of Business (Chair)
- Chair of the Information Systems Area, School of Business
- Chair of the Psychology, Neuroscience, and Behaviour Dept., Faculty of Science
- One faculty member at large (who is active within M-DTRC)

M-DTRC Advisory Committee

The Advisory Committee will consist of:
- Dr. Khaled Hassanein (Business), Centre Director (Chair) - TBC
- Dr. Vishwanath Baba (Business)
- Dr. Patrick Bennett (Science)
- Dr. Milena Head (Business)
- Dr. Ranil Sonnadara (Health Sciences and Research & High-Performance Computing Support)
- Dr. Scott Watter (Science)
- Three members from industry who are active in support of M-DTRC selected on a two-year rotating basis and likely to include some of the following individuals:
  - Representatives from the organizational subscribing members of M-DTRC
  - Mark Morreale – Lead, Academic Programs, SAS
  - Todd Roberts, VP CIBC
  - Richard Vanderlubbe, President, tripcentral.ca

1 To be confirmed
M-DTRC Team

Additionally, over the next five years the following professors from across McMaster and other academic institutions are proposed to be involved in M-DTRC’s activities:

School of Business
- William Allender
- Norm Archer
- Vishwanath Baba
- Goran Calic
- Brian Detlor
- Maryam Ghasemaghaei
- Rick D. Hackett
- Anwar Haque
- Khaled Hassanein, Director (TBC)
- Elkafi Hassani
- Milena Head
- Kai Huang
- Ali Reza Montazemi
- Alina Nastasoiu
- Joseph Tan
- Ofir Turel
- Manish Verma
- Ruhai Wu
- Yufei Yuan
- Manaf Zarqoush

Faculty of Science
- Patrick Bennett
- Paul McNicholas
- Sukvinder Obhi
- Allison Sekuler
- Laurel Trainor
- Scott Watter

Faculty of Humanities
- Alex Sevigny
- David Harris Smith

Faculty of Health Sciences
- Geofff Norman
- Eva Klein
- Ranil Sonnadara

Faculty of Engineering
- Fei Chiang
- Tom Doyle
- Mo Elbestawi
- Reza Samavi

Academic Contacts and Collaborators Beyond McMaster
- Marc Adam, Senior Lecturer, School of Design Communication and IT, University of Newcastle, Australia
- Izak Benbasat, Professor, Sauder School of Business, University of British Columbia, Canada
- Michael Bliemel, Rowe School of Business, Dalhousie University, Canada
- Sonia M. Camacho A., PhD. I Assistant Professor, School of Management | Universidad de los Andes, Columbia
- Soussan Djamalsbi, Associate Professor, IT, School of Business, Worcester Polytechnic Institute, USA
- Dianne Cyr, Professor, Beedie School of Business, Simon Fraser University, Canada
- Constantinos Coursaris, Associate Professor, Department of Media and Information, Michigan State University, USA
• Angelika Dimoka, Associate Professor, Fox School of Business, Temple University, USA
• Ahmed Doha, Assistant Professor, Sprott School of Business, Carleton University, Canada
• Farimah HakemZadeh, Assistant Professor, Lazaridis School of Business and Economics, Wilfrid Laurier University, Canada
• Pierre-Majorique Léger, Professor, Department of Information Technologies, HEC Montreal, Canada
• Gitte Lindgaard, Professor, Department of Psychology, Carleton University, Canada & Faculty of Health, Art, and Design, Swinburne University of Technology, Melbourne, Australia
• Patrick Martin, Professor, School of Computing, Queen’s University, Canada
• Adriane Randolph, Associate Professor, Information Systems, Kennesaw State University, USA
• Senecal, Sylvain, Professor, Department of Marketing, HEC Montreal, Canada
• Timm Teubner, Institute of Information Systems and Marketing, Karlsruhe Institute of Technology (KIT), Germany
• Dr. Wietske Van Osch, Assistant Professor, Department of Media and Information, Michigan State University, USA
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