Queen's University
Executive Summary of the Review of the Academic Programs in the School of Computing

In accordance with Queen's University Quality Assurance Processes (QUQAP), the School of Computing submitted a self-study on October 1, 2014 to the Faculty of Arts and Science, the School of Graduate Studies and the Office of the Provost and Vice-Principal (Academic) to initiate the cyclical program review of its undergraduate and graduate programs. The approved self-study presented program descriptions, learning outcomes, library report and analyses of data provided by the Office of Institutional Research and Planning and the School of Graduate Studies. Appendices to the self-study contained CVs for each full-time member in the School of Computing and the library report.

Three arm's-length reviewers (Hana Lutfiyya, Professor and Head, Department of Computer Science, Western University; Gail Murphy, Professor and Associate Dean (Research and Graduate Studies), University of British Columbia; and, Ahmad Afsahi, Associate Professor and Undergraduate Chair, Electrical Engineering, Queen's University) examined the materials and conducted a site visit on December 4 and 5, 2014. The site visit included interviews with the vice-provost (teaching and learning), associate vice-principal (research), associate dean School of Graduate Studies, dean and associate dean of the Faculty of Arts and Science and meetings with the director, heads of cognate units, post-doctorate fellows, students, technicians, staff and faculty.

In their report (December 12, 2014), the review team provided feedback that describes how the School of Computing's programs meet the QUQAP evaluation criteria and are consistent with the university's mission and academic priorities. The review team noted that the School of Computing is an excellent academic unit producing world-class research and excellent undergraduates, graduate students and post-doctoral fellows. They also recognized the top-notch staff and collegial nature of the unit.

The review team did report on some challenges facing the School of Computing, including the need to develop a succession plan for both faculty and staff.

Based on all of the above documentation, a *Final Assessment Report* and an *Implementation Plan* were prepared by the vice-provost (teaching and learning) and approved by the provost (August 12, 2015).

The academic programs in the School of Computing have been approved to continue and are scheduled for their next review in eight years (2022-2023).

Prepared by the vice-provost (teaching and learning)   September 8, 2015

**Final Assessment Report & Implementation Plan for the
Cyclical Program Review of the Academic Programs in the School of Computing**

In accordance with Queen's University Quality Assurance Processes (QUQAP), this final assessment report provides a synthesis of the external evaluation and the internal response and assessments of the undergraduate programs delivered by the School of Computing. This report identifies the significant strengths of the programs, together with opportunities for program improvement and enhancement, and it sets out and prioritizes the recommendations that have been selected for implementation.

The report includes an implementation plan that identifies who will be responsible for approving the recommendations set out in the final assessment report; who will be responsible for providing any resources entailed by those recommendations; any changes in organization, policy or governance that will be necessary to meet the recommendations; who will be responsible for acting on those recommendations; and, timelines for acting on and monitoring the implementation of those recommendations.

**Summary of the Cyclical Program Review
of the Academic Programs in the School of Computing**

The School of Computing submitted a self-study on October 1, 2014 to the Faculty of Arts and Science, the School of Graduate Studies and the Office of the Provost and Vice-Principal (Academic) to initiate the cyclical program review of its undergraduate and graduate programs. The self-study presented the program descriptions and learning outcomes, an analytical assessment of the academic programs, and program data including the data collected by the Office of Institutional Research and Planning and the School of Graduate Studies. Appended to the self-study were a number of documents including CVs for each member of School of Computing and the library report.

Two arm's-length external reviewers (Hana Lutfiyya, Professor and Head Department of Computer Science, Western University and Gail Murphy, Professor and Associate Dean (Research and Graduate Studies), University of British Columbia) and one arm's length internal reviewer (Ahmad Afsahi, Associate Professor and Undergraduate Chair, Electrical Engineering, Queen's University) were selected by the vice-provost (teaching and learning) in consultation with the dean of Arts and Science and the vice-provost and dean School of Graduate Studies from nominations submitted by the School of Computing. The review team evaluated the self-study documentation and then conducted a site visit to Queen's on December 4 and 5, 2014. The site visit included interviews with the vice-provost (teaching and learning), associate vice-principal (research), associate dean School of Graduate Studies, dean and associate dean of the Faculty of Arts and Science and meetings with the director, heads of cognate units, post-doctorate fellows, students, technicians, staff and faculty.

In their report (December 12, 2014), the review team provided feedback that describes how the School of Computing's programs meet the QUQAP evaluation criteria and are consistent with the university's mission and academic priorities. The review team noted that the School of Computing was committed to providing a rich and valuable student learning experience. In particular, the review team noted that the School of Computing is an excellent academic unit producing world-class research and excellent undergraduates, graduate students and post-doctoral fellows. They also recognized the top-notch staff and collegial nature of the unit.

The review team did report on some challenges facing the School of Computing, including the need to develop a succession plan for both faculty and staff.

The director, after consultation with faculty and staff in the department, submitted a response to the review team report (March 6, 2015). The vice-provost and dean of the School of Graduate Studies (March 19, 2015) and the associate dean of the Faculty of Arts and Science (March 30, 2015) also submitted their responses to the provost's office. Specific recommendations were discussed, and clarifications and corrections presented.

Subsequent to receipt of the review team report and the internal responses from the department and the associate dean of Arts and Science, the senate cyclical program review committee (SCPRC) dedicated part of its meeting of May 12, 2015 to this particular discussion.

The SCPRC would like to recognize the following strengths of the School of Computing:
- Excellent faculty producing world-class research and outstanding undergraduates, graduate students and post-doctoral fellows;
- Excellent staff who foster an environment that is inclusive, welcoming, supportive, collegial and caring;
- Offering programs that are strong in the discipline of computing while also being innovative, vibrant and interdisciplinary;
- Clearly articulated program goals and excellent curriculum mapping;
- Exceeding the University's equity goals in many areas;
- Establishing several fourth-year capstone courses that allow students to independently apply their knowledge and skills gained in earlier courses to a specific area;
- Multiple approaches to undergraduate admissions allowing students to enter via numerous pathways.

The SCPRC would like to identify the following opportunities for enhancement. The School should:
- Consider the viability of the undergraduate cognitive science program;
- Explore opportunities for future enrolment growth at the undergraduate level;
- Ensure that students have contact with tenured and tenure-track faculty doing active research in the early years of their undergraduate program;

- Conduct a review of its topical courses to ensure all aspects of computing are adequately covered.

Summary of the Reviewers' Recommendations with the Vice-Provost and Dean (Graduate Studies) and Associate Dean (Arts and Science) Responses

Collaborative Space for Undergraduate and Graduate Students

The review team recommended that the University provide coherent collaborative space for undergraduate and graduate students that could be used for project work, meetings and peer teaching and learning. It was noted that although there is a strong sense of community within the school, potential growth in enrolment and the current multiple location of laboratories will make maintaining these communities extremely challenging.

The associate dean (Arts and Science) responded that it may not be desirable to consolidate the school's various spaces; that in taking up the recommendation, the school will need to assess the existing strengths of space use in terms of curricular and research areas, and that the high quality of the computing science program needs to be maintained by strategic planning of the kind the school has employed to date. The response went on to say that should the school decide to pursue consolidation of its space, the faculty of arts and science would assist it in advancing its proposal to the campus planning committee.

Future Growth and Development of a New Programs

The review team commented that a challenge for all Canadian computing departments is the growing enrolments in existing programs and the growing opportunities and needs for interdisciplinary computing programs. In their view, it will be difficult for the School of Computing to meet all demands within Queen's. The review team encouraged the school to focus its intentions on areas of strategic importance to the university.

The vice-provost and dean (Graduate Studies) responded that it will provide advice and information to the School of Computing as they complete their proposals for a new professional master's and graduate diploma in biomedical informatics and a program in ultra-large scale software systems (ULSSS). The response went on to say that successful development of these and any new interdisciplinary programs will require an analysis of resource implications, a sound business case and a well-developed plan for assigning responsibilities, apportioning costs and sharing revenues among the participating academic units.

The associate dean (Arts and Science) added that support for the school's assessment of resources required and of the projected program revenue connected with program development at both the undergraduate and graduate levels is available through the Faculty of Arts and Science and the School of Graduate Studies which are both prepared to assist as appropriate.

Implementation Plan:

Recommendation	Proposed Follow-up	Responsibility for Leading Follow-up	Timeline for Addressing Recommendation
The SCPRC recommends that the School of Computing create an advisory committee with broad membership to provide strategic input for positioning the school and its programs to meet the opportunities of the next decade and beyond. The advisory committee should also be leveraged to help develop faculty and staff renewal/transition plans.	Initiate discussions with relevant associate deans (Arts and Science and Graduate Studies), director and key faculty.	Relevant associate deans of Arts and Science and Graduate Studies in consultation with the director.	Dean of Arts and Science's *annual report* to the provost 2016

The vice-provost and dean (School of Graduate Studies) and the dean of Arts and Science shall be responsible for monitoring the implementation plan. The details of progress made will be presented in the deans' annual reports and filed in the Office of the Provost and Vice-Principal (Academic). Monitoring reports will be posted on the university web site.
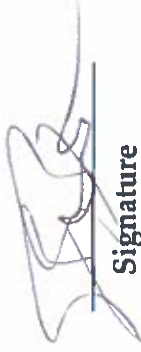
Final Assessment Report & Implementation Plan   September 16 2015

                                                     Approval Date

Vice-Provost (Teaching and Learning)   Signature

Final Assessment Report & Implementation Plan for the CPR of the Academic Programs in the School of Computing

Vice-Provost and Dean, School of Graduate Studies

Signature

Dean, Faculty of Arts and Science

Signature

Final status of academic programs in the

School of Computing — Approved to Continue

Date of next program review — 2022/2023 Academic year