### BOARD OF DIRECTORS

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<th>Position and Affiliation</th>
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<tr>
<td>William Swirsky, MBA, FCPA, FCA, ICD.D</td>
<td>Chair, UWCISA</td>
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<tr>
<td>J. Efrim Boritz, PhD, FCPA, FCA, CISA</td>
<td>Ontario CPA’s Chair in Accounting, University of Waterloo</td>
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<tr>
<td>Malik Datardina, CPA, CA, CISA</td>
<td>Senior Manager, Audit Analytics, Deloitte. Assistant Director, UWCISA (ex officio)</td>
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<tr>
<td>Gord Beal, CPA, CA, M.Ed</td>
<td>Vice-President, Research, Guidance and Support, CPA Canada</td>
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<tr>
<td>Don Cowan, PhD, DSc</td>
<td>Distinguished Professor Emeritus, Director, Computer Systems Group, University of Waterloo</td>
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<tr>
<td>Bob Cuthbertson, CPA, CA, CA-IT</td>
<td>Chief Operating Officer, CaseWare IDEA Inc.</td>
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<td>Jodie N. Lobana, CPA, CA, CIA, CISA, IFRS-Certified</td>
<td>Director, IIA Canada. Managing Director, Lobana Consulting Group Inc. IIA Observer</td>
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<tr>
<td>Richard Livesley, MBA, CGEIT</td>
<td>Director, Strategy and Planning, Global Information and Technology Risk Management, BMO Financial Group</td>
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<tr>
<td>Asif Mohammed</td>
<td>Director, Research and Academic Relations, ISACA, Toronto Chapter. Manager, Global Infrastructure, Services, Solutions and Consulting, CGI</td>
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<td>Vaike Murusalu, CPA, CA</td>
<td>Vice-President Audit Services, OLG</td>
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<tr>
<td>Robert Parker, MBA, FCPA, FCA, CISA, CMC</td>
<td>Retired Partner, Enterprise Risk, Deloitte, Toronto</td>
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<tr>
<td>Erik Peters, FCPA, FCA</td>
<td>Retired Auditor General of Ontario, Ottawa</td>
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<tr>
<td>Tom Scott, PhD</td>
<td>Director, School of Accounting &amp; Finance, University of Waterloo</td>
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<tr>
<td>Theophanis (Theo) Stratopoulos, PhD</td>
<td>Associate Professor of Information Systems, University of Waterloo</td>
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**WE WELCOME INQUIRIES, SUGGESTIONS AND COMMENTS**

J. Efrim Boritz, Director
Centre for Information Integrity and Information Systems Assurance
School of Accounting and Finance
University of Waterloo, ON N2L 3G1

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MISSION STATEMENT

The mission of the University of Waterloo Centre for Information Integrity and Information Systems Assurance (UWCISA) falls under three headings:

**RESEARCH:** Identify, create and deliver research addressing information integrity, IT governance, risk, control, assurance, and data analytics issues;

**EDUCATION AND KNOWLEDGE TRANSFER:** Support and promote the delivery of educational activities and materials related to information integrity, IT governance, risk, control, assurance; and data analytics issues;

**INTERACTION:** Communicate and promote information integrity; IT governance, risk, control, assurance, and data analytics issues that are important to professionals working in these areas; and to support and promote interaction on those issues among practitioners, educators and students.

The UWCISA (Centre) invites and welcomes new sponsors/collaborators to share in its mission.

BACKGROUND

The University of Waterloo is a leading university in Canada and is well known for its information technology related research, teaching and entrepreneurship. The School of Accounting and Finance (SAF) is one of Canada’s leading academic units in the accounting and finance fields and has both a Canada-wide and international reputation. The School is a strong supporter of the information integrity and information systems assurance fields, as demonstrated by its leading courses and programs in these areas and related research they have spawned (for information please visit http://saf.uwaterloo.ca/uwcisa/index.html).

The Centre was founded in 1998 by the School of Accounting and Finance at the University of Waterloo. The founding sponsors were the Chartered Professional Accountants of Canada (CPA Canada) and the Information Systems Audit and Control Association (ISACA). CaseWare IDEA Inc. joined the sponsor group on January 1, 2006. The sponsors’ objectives are to improve the quality of education and research in information integrity and information systems assurance, and to foster a close and continuing working relationship between the School, the sponsors and other partners with an interest in information integrity and information systems assurance. The Centre was renamed from the Centre for Information Systems Assurance to the Centre for Information Integrity and Information Systems Assurance in 2008 (retaining the acronym UWCISA) in recognition of the need to broaden the Centre’s mandate and activities beyond systems assurance to information integrity. UWCISA is an administrative sub-unit within the Centre of Accounting Research and Education (CARE).

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1 The following name changes have taken place since the founding of the UWCISA. ISACA replaced Information Systems Audit and Control Association on January 1, 2006. The School of Accounting and Finance replaced The School of Accountancy on November 19, 2007. Chartered Professional Accountants of Canada (CPA Canada) replaced Canadian Institute of Chartered Accountants (CICA) on April 1, 2013.
DIRECTOR’S MESSAGE

To the Board of Directors:

I am pleased to present this report on the operations and activities of the University of Waterloo Centre for Information Integrity and Information Systems Assurance during 2014, our seventeenth year of operation.

This year marks the second year in a three-year funding commitment by the Centre’s sponsors for the period 2013–2015, inclusive.

During the year, we continued our thought leadership role through service on CPA Canada’s Information Management and Technology Advisory Committee (IMTAC) and the AICPA’s Trust Services Information Integrity Task Force. We also continued our research activities related to information integrity, IT governance, risk and internal control, business model and business process documentation, online privacy, XBRL and data analytics and presented our research at a number of conferences as detailed in the report. During the year, we saw a number of publications result from these efforts as detailed in this report. Our work in progress includes projects addressing IT governance, risk and internal control, online privacy, XBRL, information integrity, business process documentation, business model documentation, robotics and data analytics. We have launched an exciting new initiative into assurance in the area of cyber security.

We continue to work with other centres with similar purposes, strengthening an international network for mutual support of our respective missions. We are also expanding our relationship with the Institute of Internal Auditors (IIA) which has accredited UW’s internal auditing education curriculum under its IAEP program. We are actively preparing for our October 2015 Symposium on Information Integrity and Information Systems Assurance.

We continue to welcome new partners to share in our mission. I thank the Centre’s Board members and sponsors for their continued support. I look forward to working closely with all of you in the future.

Respectfully,

Dr. J.E. Boritz, FCPA, FCA, CISA
Director
OPERATIONS AND ACTIVITIES FOR 2014

RESEARCH

THOUGHT LEADERSHIP

The Centre provided thought leadership in several areas during 2014. Copies of working papers are available on the UWCISA’s website http://saf.uwaterloo.ca/uwcisa/index.html.

BUSINESS RISK ASSESSMENT

• Business Modeling to Improve Auditor Risk Assessment: An Investigation of Alternative Representations. Research team is Efrim Boritz, Carla Carnaghan, University of Lethbridge, Paulo Alencar, Computer Systems Group, University of Waterloo. The objective is to investigate the effects of alternative methods for documenting business models on audit risk assessment behavior. The study’s findings indicate that a tabular presentation can possess many of the benefits often associated with a diagrammatic representation. Funding for this project was provided by KPMG and the University of Illinois Business Measurement Research Program. This paper was published in Journal of Information Systems (JIS), Fall 2014.

• Business Risk Assessment. Research team is Efrim Boritz and Kun Huo. This study investigates how different business model representation techniques affect auditors’ assessment of business risk and audit risk. This paper was presented at the CAAA Annual Conference in Montreal, May 30–June 2, 2013 and the AAA Annual Meeting in Atlanta, August 2–6, 2014. It is currently being revised to incorporate comments received.

• On the Use of Checklists in Auditing: A Commentary. Research team is Efrim Boritz and Lev Timoshenko. This paper provides a framework for thinking about checklists that recognizes that checklist-based outcomes are a joint product of the task and task environment; checklist design; checklist application; and contextual factors. This paper was published in Current Issues in Auditing, February 2014.

INFORMATION INTEGRITY

• Information Integrity Control Guidelines. Project team is Efrim Boritz and Malik Datardina. The objectives are to: 1) define information integrity and to identify information integrity risks and controls for mitigating those risks; 2) define assurance practices for information integrity services; 3) interview or survey audit team members about their views on information integrity risks, controls and assurance practices. Funding is being provided by CPA Canada. Members of the project advisory board are: Chris Anderson, CA (NZ), CISA, CMC, CISSP, Grant Thornton LLP, Toronto, (Ontario); Usuff Curim, CPA, FCCA, CISA, PricewaterhouseCoopers, Toronto, (Ontario); Ray Henrickson, CPA•IT/CISA, Scotiabank, Toronto, (Ontario); Darren James ACPA, CISA, Deloitte LLP, Toronto, (Ontario); Richard Livesley, BMO, Financial Group, Toronto, (Ontario); Madhavan Nayar, Infogix, Inc., Naperville, (Illinois, USA); Sheryl A. Teed, FCPA, CPA•IT/ CISA, CFE, Ernst & Young LLP, Toronto, (Ontario). Research is in progress and nearing completion.

IT GOVERNANCE, RISK AND INTERNAL CONTROL

• Informativeness of Auditors’ Internal Control Reports. Research Team is Efrim Boritz, Louise Hayes and Lev Timoshenko. The objective is to determine the informativeness of auditors’ SOX 404 reports to auditors and investors about specific internal control weaknesses and to establish whether it has changed over time. This paper was presented at the AAA Annual Meeting in Atlanta, GA, August 2–6, 2014.
**INTEGRATED REPORTING**

- Impact of Integrated Reporting Information on Judgments and Decisions. Research team is Efrim Boritz, Leslie Berger and Carolyn MacTavish. The objective is to evaluate the impact of integrated reporting on investor decision making. A behavioural study is being planned for 2015 to enable submission to various conferences.

- Quality of Integrated Reporting Information. Research team is Efrim Boritz, Linda Whittaker, Leslie Berger and Carolyn McTavish. The objective is to review and evaluate the quality of integrated reporting information. Received SSHRC Grant. The write-up of a literature review by Boritz and Whittaker was completed in March 2014.

**ONLINE PRIVACY**

- Designing Privacy-Enhanced Interfaces on Digital Tabletops for Public Settings. Research team is Arezoo Irannejad, Efrim Boritz and Mark Hancock. The objective is to evaluate the perceived effectiveness of various user interface designs for protecting users’ privacy when using digital tabletops in public settings. This paper was presented at the AAA Annual Meeting in Atlanta, GA, August 2–6, 2014. This paper is currently being revised.

**USE OF SPECIALISTS IN AUDITING**

- Use of Specialists in Auditing. Research team is Efrim Boritz, Natalia Kochetova, Linda Robinson and Chris Wong. The objective is to describe current practices in using specialists in the audit. This paper was presented at the CAAA Annual Conference in Edmonton, May 29 – June 1, 2014. It will be presented at the AAA Auditing section Midyear Meeting in Miami, January 15–17, 2015 and European Accounting Association (EAA) Annual Conference in Glasgow, Scotland, April 28–30, 2015.

**ROBOTICS**

- Research team is Robert Parker and Efrim Boritz. The objective is to consider the impact of the developing uses of robots on risk, control and assurance issues.
• Executive Team Information System and Financial Reporting Competencies, and Voluntary Adoption of XBRL Reporting. Research Team is Jee-Hae Lim, Efrim Boritz and Jap Efendi. The objective is to determine which management competencies (IT or Financial) are most strongly associated with voluntary adoption of XBRL during the SEC’s XBRL voluntary filing program. This paper was presented at the XBRL 25th International Conference in Yokohama, Japan, November 6–8, 2012, the AAA IS section Midyear Meeting in Ft. Lauderdale FL, January 10–12, 2013 and the International Conference on Information Systems (ICIS) in Auckland, NZ, December 14–17, 2014. This paper is being prepared for submission to an accounting journal.

TRUST SERVICES
• Trust Services Task Force. The Director is serving on the AICPA task force to update Trust Services Principles and Criteria. The task force is updating the Guide: Reporting on Controls at a Service Organization (SOC 2SM) and beginning work on cyber security principles and criteria and assurance guidelines.

FELLOWSHIPS AND SCHOLARSHIPS
During the summer of 2014 UWCISA hosted Dr. Acklesh Prasad from Queensland University of Technology, Brisbane, Australia. During this visit Dr. Prasad presented his research and explored new research ideas with members of the Centre.

FUNDING SPECIFIC RESEARCH AND EDUCATION PROJECTS
UWCISA’s funding comes from donations provided by our generous sponsors, research grants from various agencies and publication revenues. UWCISA is exploring new fundraising options to help the Centre establish a full-time staff to conduct its research, education and outreach activities on a long-term, sustainable basis.

We welcome new partners to help us achieve the Centre’s mission.

SPONSORING RESEARCH SYMPOSIUM
INFORMATION INTEGRITY AND INFORMATION SYSTEMS ASSURANCE SYMPOSIUM
The 8th Biennial Research Symposium was held October 3–5, 2013 at the Renaissance Hotel, One Blue Jays Way, Toronto, Canada. The symposium was sponsored by the University of Waterloo, BMO Financial Group, CPA Canada, CaseWare IDEA Inc., and the International Journal of Accounting Information Systems.

EDUCATION AND KNOWLEDGE TRANSFER

DEVELOPING COURSES, WORKSHOPS, CASES AND OTHER TEACHING MATERIAL

COURSES

Under Theo Stratopoulos’ leadership and with the assistance of Malik Datardina and Kieng Iv of Deloitte, the Centre sponsored the development and implementation of a Business Analytics stream within the accounting program at the University of Waterloo. The program was successfully launched in spring 2014.

IT IN ACCOUNTING EDUCATION

Efrim Boritz and Greg Stoner of Glasgow University, Scotland wrote a chapter on IT in Accounting Education for a book titled The Routledge Companion to Accounting Education edited by Richard M. C. Wilson. A paper based on this chapter was presented at the AAA Annual Meeting in Anaheim, CA, August 3–7, 2013. It was published by Routledge Press in April 2014.

WORKSHOPS

Theo Stratopoulos developed a workshop on data analytics for academics.

SHARING MATERIAL WITH OTHER EDUCATORS

The UWCISA website contains a variety of materials from various Centre-supported initiatives including research papers, reports, videos, and podcasts. These materials are available for use by academics and practitioners.

INTERACTION

ALLIANCES AND RELATIONSHIPS

As part of its mission to interact with academe and practice, the Centre seeks to create and sustain relationships with academic units with similar objectives and professional associations with an interest in information integrity and information systems assurance. During the year, the Centre supported the following activities:

• Clark Hampton continues to lead the Centre initiative assisting the School of Accounting and Finance to develop its accredited program under the IIA’s IAEP (Internal Auditing Education Program). Approval was received in July 2012. The relationship between the Centre and IIA continues to strengthen. During the year, in conjunction with the Toronto Chapter of the IIA, a moderated panel discussion was held at UW that included chief audit executives and internal audit practitioners from Tim Hortons, Maple Leaf Foods, London Health Centre, Deloitte, and Scotia Bank. In addition, two UW students attended the 2014 IIA Toronto Chapter Conference.

• The Director continued to participate on CPA Canada’s Information Management and Technology Advisory Committee (IMTAC). Information is available at: https://www.cpa-canada.ca/IMTAC. In addition, Malik Datardina provides support for IMTAC.
• The Director is a member of the Departmental Audit and Evaluation Committee of Shared Services Canada (SSC).

• The Director is a member of the AICPA’s Trust Services Information Integrity Task Force and Audit Data Analytics Task Force.

• UWCISA continued to work with academic units with similar purposes to create an international network for mutual support of our respective missions.

• The Centre is beginning to develop a relationship with CGI in the data analytics area.

DISSEMINATING BEST PRACTICES

CONFERENCES

• Centre personnel made presentations at a number of conferences during 2014, including the American Accounting Association (AAA) IS section Midyear Meeting, the Auditing Section Midyear Meeting, the AAA Annual Meeting, the Canadian Academic Accounting Association (CAAA) Annual Conference, and the 2014 International Conference on Information Systems (ICIS), Auckland, New Zealand.

• The Director organized a Panel on COSO at the AAA IS section Midyear Meeting in Raleigh, North Carolina with Sandra Richtermeyer (Xavier University, OH/COSO) and Chris Halterman (Ernst & Young/AICPA) joining him to delve into the new features of COSO 2 and its relationship to Trust Services Principles and Criteria.

COMMUNICATION

WEBSITE AND SOCIAL MEDIA OUTREACH

UWCISA’s website, accounting.uwaterloo.ca/uwcisa, serves as the Centre’s portal. It includes calls for papers and research proposals, a resources section, a number of links and downloadableables, and the IS Assurance blog.

UWCISA’s Annual Reports are posted to the website and summarize the Centre’s year-by-year activities. These reports are disseminated both electronically and in hard-copy formats.

Robert Parker’s thought-provoking environmental scans and Don Cowan’s Building Mobile and Web Apps Quickly and Painlessly video presentations and PowerPoints are posted on the Centre’s website and are available at accounting.uwaterloo.ca/uwcisa/resources/videos.htm.

Our website, through Theophanis Stratopoulos’ initiative, is linked to key social networks such as Facebook, LinkedIn and Twitter. These social networks give us an opportunity to share information (like the flyer for the Symposium) with people who would not normally be closely tied to our Centre. During the coming year we will explore the use of other ways to extend our reach.

Articles in ISACA’s Toronto Chapter Newsletter have been used to communicate UWCISA’s activities to Chapter members.

IS ASSURANCE WEBLOG

Malik Datardina maintains our blog at uwcisa-assurance.blogspot.com.
FUTURE PLANS

In the next twelve months, UWCISA will maintain its current research, education and interaction activities, and will undertake new initiatives as well. Plans for each key category are outlined below.

RESEARCH

THOUGHT LEADERSHIP

UWCISA will continue working on the following projects during 2015:

• Business Model Documentation. One paper on this topic will be completed and submitted for presentation at various conferences and publication.

• Cyber Security. Through membership on the AICPA Trust Services Task Force we will contribute to the development of criteria for reporting on the effectiveness of an entity’s cyber security policies and practices.

• Information Integrity. One monograph on this topic is being prepared for publication, and a new project will be started.

• IT Risks and Internal Control. One paper on this topic will be completed and submitted for presentation at various conferences and publication.

• Online Privacy. Two papers on this topic are being prepared for presentation and publication.

• Robotics. An article on this topic is being prepared.

• XBRL. One paper on this topic is being prepared for publication.

FUNDING SPECIFIC RESEARCH AND EDUCATION PROJECTS

UWCISA’s fundraising committee will continue seeking ways to expand the funding base for the Centre. We invite partners to join us in our mission to improve the integrity of information and the quality and reliability of information systems and the processes used to create, implement, operate, maintain and change them.

RESEARCH PROPOSALS

For Research Proposal Guidelines, visit arts.uwaterloo.ca/ACCT/uwcisa.

FELLOWSHIPS AND SCHOLARSHIPS

UWCISA will make funds available for Visiting Fellows and doctoral students. For details, contact the Director.

SPONSORING RESEARCH SYMPOSIUM

The 9th Biennial Research Symposium will be held October 1–3, 2015 at the Renaissance Toronto Downtown Hotel, 1 Blue Jays Way, Toronto, Canada. The symposium is sponsored by the University of Waterloo, the Chartered Professional Accountants Canada, CaseWare IDEA Inc., ISACA Toronto Chapter and the International Journal of Accounting Information Systems.

A special issue of the International Journal of Accounting Information Systems will be published in 2016, containing selected papers from UWCISA’s 2015 Symposium.
EDUCATION AND KNOWLEDGE TRANSFER

DEVELOPING COURSES, WORKSHOPS, CASES AND OTHER TEACHING MATERIAL

COURSES
Under Theo Stratopoulos’ leadership and with the assistance of Malik Datardina and Kieng Iv of Deloitte, the Centre is sponsoring the development of a Business Analytics stream at the University of Waterloo. The program will be expanded in 2015.

WORKSHOPS
• A workshop on data analytics for academics will be offered by Theo Stratopoulos at the American Accounting Association’s IS section’s Midyear Meeting in January 2015.

• A PD Workshop on Data Visualization developed by the Centre will be offered at the 2015 Conference on IT Audit, Governance and Security, March 25–27, 2015.

• The Centre plans to offer a PD Workshop on Information Integrity Assurance and Information Integrity Controls for ISACA members during 2015.

SHARING MATERIAL WITH OTHER EDUCATORS
The Centre will continue to share its material with educators around the world. For information, please visit our website or contact the Director.

INTERACTION

ALLIANCES AND RELATIONSHIPS
As part of its mission to interact with academe and practice, the Centre seeks to create and sustain relationships with academic units with similar objectives, professional associations and industry partners with an interest in information integrity and information systems assurance. In the coming year we will continue our outreach to units with similar goals and objectives to develop an international network for mutual support.

DISSEMINATING BEST PRACTICES

CONFERENCES
• Centre personnel will make presentations at a number of conferences during 2015, including the American Accounting Association (AAA) IS section Midyear Meeting, the AAA Annual Meeting, the Canadian Academic Accounting Association (CAAA) Annual Conference, and the European Accounting Association (EAA) Annual Conference.

COMMUNICATION

WEBSITE AND SOCIAL MEDIA OUTREACH
• Robert Parker will provide an environmental scan for 2015 that will be posted on the UWCISA website in summer of 2015.

• Various social media networks will continue to be used (Facebook, Twitter, YouTube and LinkedIn).

• UWCISA plans to continue to improve the site in 2015. Your comments are welcome.

IS ASSURANCE WEBLOG
• Malik Datardina will continue to manage the IS Assurance blog on behalf of the UWCISA.
CENTRE PERSONNEL

The University of Waterloo Centre for Information Integrity and Information Systems Assurance gratefully acknowledges the generous support of our founding partners and sponsors.