



**48th Annual Conference of the
Association of Canadian Ergonomists**

**12th International Symposium on
Human Factors in
Organizational Design and
Management**

Organizing for High Performance

**July 31-August 3, 2017
Banff Centre, Alberta**

www.ace-ergocanada.ca
events@ace-ergocanada.ca

Exhibitor Showcase on August 1—August 2, 2017

FINAL PROGRAM



Keynote Speakers:

Dr. Jorgen Eklund - The hidden relationship between ergonomics and quality

Dr. Pascale Carayon—Human Factors Engineering of Smart and Connected Health Care

Dr. Sharon Parker—Work Design: Maintaining Momentum On Achieving Decent Jobs For All

Dr. Mark Fleming—A practitioner's guide to creating a high performance safety culture

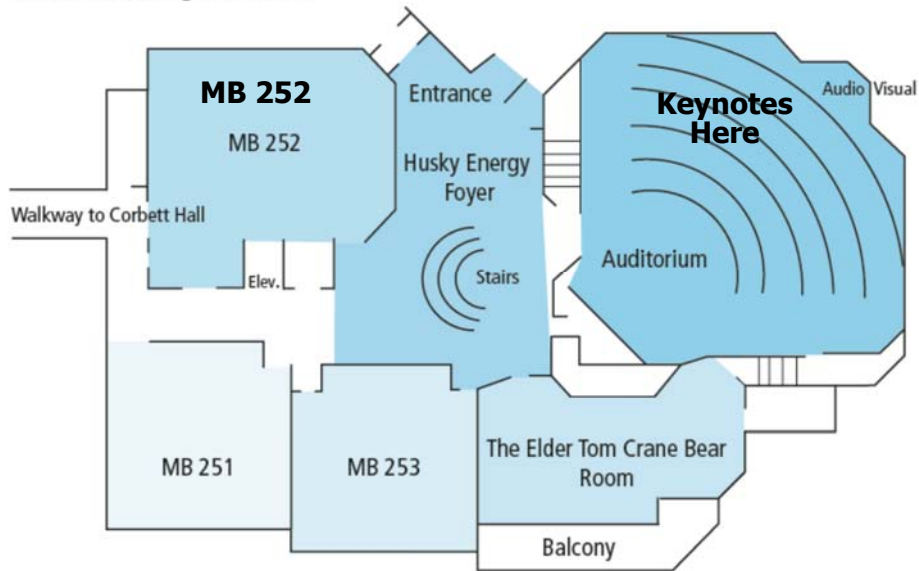


**Association of Canadian Ergonomists
Association Canadienne d'Ergonomie**

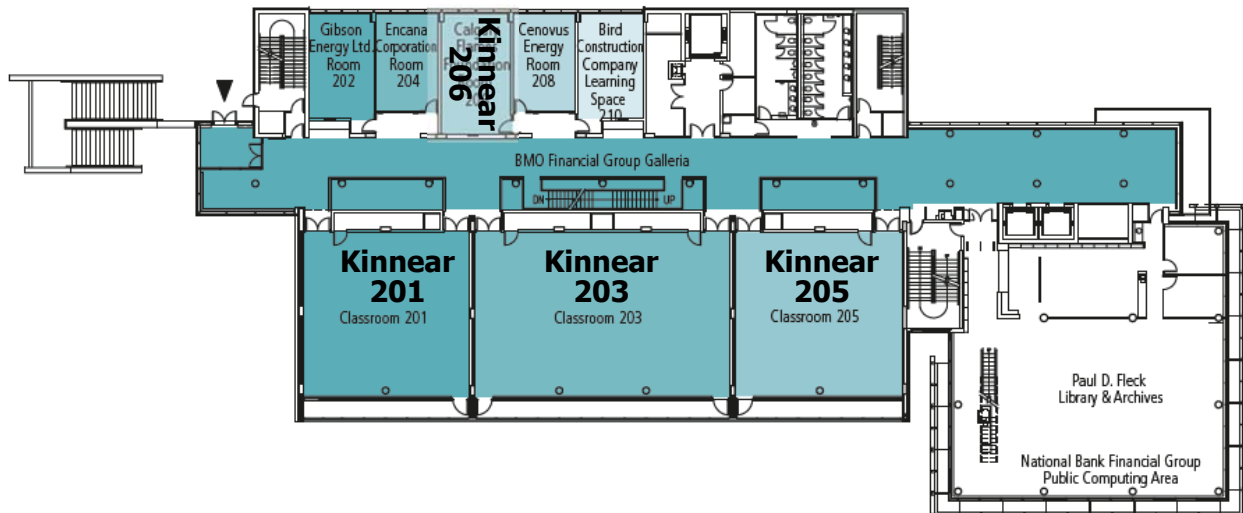
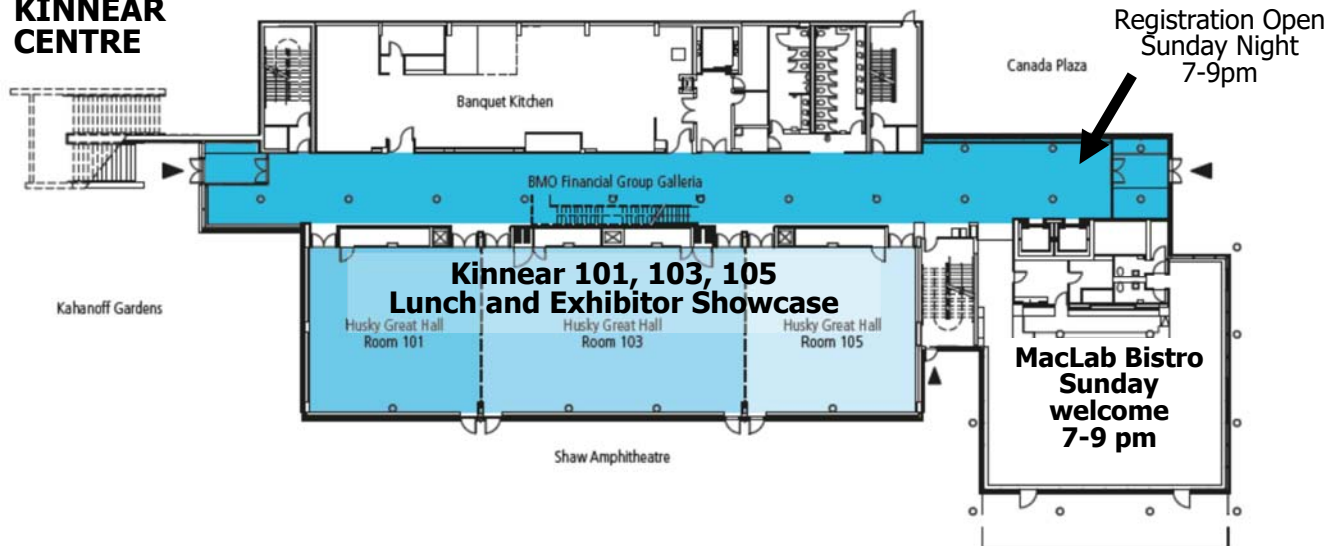
© Association of Canadian Ergonomists/
Association canadienne d'ergonomie
Suite 200 - 411 Richmond St E
Toronto, Ontario, Canada M5A 3S5
Toll Free: 1-888-432-2223 or Toronto (416) 477-0914
Fax: (416) 929-5256 info@ace-ergocanada.ca

Banff Centre Meeting Space

Max Bell Building Main Floor



KINNEAR CENTRE





Association of Canadian Ergonomists
Association Canadienne d'Ergonomie

We are pleased to welcome you to the 48th annual conference of the Association of Canadian Ergonomists (ACE) hosted jointly with the 12th International Symposium on Human Factors in Organizational Design and Management. Through the conference theme, "Organizing for High Performance", we will examine the contribution of ergonomics/human factors to creating optimal safe performance in work systems. People interact with each other, technology, equipment, tools and internal and external systems related to management of people, products, safety, health and processes. These interactions all contribute to the efficient and effective performance of the organization as a whole and the conference sessions will include researcher and practitioner contributions from multiple disciplines who are involved in the investigation, design and implementation of these interactions to improve the performance, safety and well-being of people, systems and organizations.

ACE-ODAM 2017 includes ergonomists, human factors professionals, researchers and students, as well as members of allied professions, including: safety, health, rehabilitation, industrial hygiene, industrial design, human resources, psychology, engineering, usability, user experience and facility planning. Internationally renowned speakers, practicing ergonomists, researchers and students will present their most recent work in oral presentations, panel discussions, workshops, and symposia sessions.

The annual conference will also provide ample opportunities for professional networking and an opportunity to interact with exhibitors who provide products, services and support to the ergonomics community and organizations.

The venue for this year's conference is the Banff Centre, located in Banff National Park, Alberta, Canada. The Centre is well known for its Arts and Leadership programs as well as the annual Banff Mountain Film Festival. The surrounding mountains and stimulating conference sessions are sure to inspire creativity and new understandings for attendees to implement on return to your home bases. Take advantage of the numerous opportunities for hiking, mountain biking, paddle sports, and other outdoor adventures or simply relax and take in the beauty of the scenery.

Welcome to Banff!

Margo Fraser and Michelle Robertson, Conference Co-Chairs

Organizing Committee

Organizing Committee

Conference Chairs

Margo Fraser, M.Sc., CCPE
Michelle Robertson, PhD, CPE

Technical Chairs

Patrick Neumann, PhD, LEL, EurErg
Michelle Robertson, PhD, CPE

Sponsor/Exhibitor Coordinators

Linda Miller, OTD, MEDes, CCPE, CPE
Margo Fraser, M.Sc., CCPE

ACE Events Coordinator

Daniella Bustamante

Table of Contents

2.....	Meeting Space Map
3.....	Welcome and Organizing Committee
4.....	Table of Contents
5.....	Keynote Speakers
5.....	Scientific Committee
9.....	Schedule at a Glance
10.....	Detailed Program
19.....	Conference Workshop Descriptions
22.....	Panel Descriptions
24.....	CCPE Certification Question & Answer session
25.....	Symposia Descriptions
26.....	Travel & Destination Information
27.....	Venue and Accommodation
28.....	Conference Social Events
29.....	Exhibitor Showcase Participants
31.....	Banff Centre Campus Map
32.....	ACE-ODAM 2017 Sponsors

Conference Sponsors

We would like to thank all sponsors very much for their interest and support in the 2017 conference.

Platinum Sponsor

www.ergoCentric.com

ergoCentric®

Bronze Sponsor

www.globalfurnituregroup.com/ca



Student Sponsors



Break Sponsors



Keynote Speaker - Monday, July 31, 2017

YOUR KEYNOTE SPEAKERS!

The organizing committee for the 2017 ACE conference is excited to introduce this year's keynotes. We believe that they truly embody our 48th ACE Conference theme, "Organizing for High Performance".

Keynotes will be speaking and answering questions Monday morning between 8:45-9:45 am, immediately following opening remarks by the conference committee (starting at 8:30 am) and on Tuesday to Thursday between 2pm and 3pm. Keynote presentations will take place in the Max Bell Auditorium.



Dr. Jorgen Eklund, Professor, Unit of Ergonomics, School of Technology and Health, KTH / Royal Institute of Technology, Sweden

The hidden relationship between ergonomics and quality

There is strong evidence that insufficient ergonomics cause quality deficiencies in production. Despite this, it has not yet been accepted that ergonomics is an important production factor. Reasons for this situation and possible actions are discussed. The scientific literature reports many examples of relationships between ergonomics and quality. However, this knowledge has not been sufficiently systematized for ergonomics to become generally accepted as a production factor. The objective of this talk is to summarize different perspectives on the relationship between ergonomics and quality, and to discuss the formation of this knowledge on a generalized level. In the talk, I will give an overview of the strong relationships between good ergonomics and high quality performance, both on an individual level and on an organizational level. I will discuss TQM and Lean in relation to their consequences for the work environment and reflect about why ergonomics still has difficulties to be recognized as a production factor. Further, I will bring up some arguments that are useful for ergonomists when promoting ergonomic design.

Jörgen Eklund has an M.Sc. in Mechanical Engineering from Chalmers, Sweden, and a Ph.D. in Industrial Ergonomics from University of Nottingham, UK. His research has dealt with design of industrial work, workplaces and production systems. He was acting professor in Quality Technology at Linköping University and is now professor in Ergonomics at the Royal Institute of Technology, KTH, in Stockholm, Sweden. His research interests include applied ergonomics and especially interactions with quality and human performance. His research also covers organizational changes and the consequences from introducing TQM and Lean Production.

ACE-ODAM 2017 Scientific Committee

Mohammed Abdoli-Eramaki
Ole Broberg
Jon Doan
Margo Fraser
Alan Hedge
Peter Hoonaker
Ernst Konigsveld
Enid Montague
Jeremy Rickards
Geoff Wright

Anne-Kristina Arnold
Pascale Carayon
Colin Drury
Matthias Goebel
Rob Henning
Andy Imada
Usha Kuruganti
Dave Moore
Dan Robinson
Peter Vink
Dwayne Van Eerd

Stephen Bao
Ana Filipa Couvinhas
Jorgen Eklund
Ryan Graham
Larry Hettinger
Heather Kahle
Nancy Larson
Lauren Murphy
Laerte Sznclwar
Patrick Waterson
Amin Yazdani

Nancy Black
Bob Dewar
Steven Fischer
Michael Greig
Meg Honan
Peter Keir
Carolyn MacGregor
Michele Oliver
Andrew Thatcher
Richard Wells
Klaus Zinc

Keynote Speaker - Tuesday, August 1, 2017



Dr. Pascale Carayon, Procter & Gamble Bascom Professor in Total Quality
Department of Industrial and Systems Engineering, Director of the Center for Quality and Productivity Improvement, University of Wisconsin-Madison, USA

Human Factors Engineering of Smart and Connected Health Care

Technologies are transforming health-care with the potential to improve patient access, and quality and safety of care. These improvements are more likely to emerge if the technologies are designed and implemented in a human-centered manner. In this presentation, I will challenge the human factors engineering community to get involved in the design and implementation of health information technologies, particularly those technologies that bridge the gap between health and health care and support the patient journey.

Dr. Carayon's research is about analyzing, designing and improving complex work systems such as those found in health care. In the past 14 years, she has focused her research on patient safety and other healthcare quality issues such as design and implementation of health information technologies. As an industrial and systems engineer, she is particularly interested in modeling complex system interactions in healthcare processes that can lead to medical errors and other adverse outcomes for patients and healthcare professionals. The multidisciplinary SEIPS research program within the Center for Quality and Productivity Improvement at the UW-Madison allows human factors and systems engineers to collaborate with health scientists (e.g., physicians, pharmacists, nurses) in tackling healthcare problems in various care settings such as the intensive care unit, operating rooms, other hospital environments and primary care, as well problems in transitions across organizational and physical boundaries in health care.

Conference Proceedings

All full conference and full day conference delegates will receive access to the conference proceedings download. Individuals who are unable to attend the conference or delegates wishing an additional copy, may purchase the proceedings for a fee of \$40.00.

Purchase can be made via the attached registration form or on-line registration.

Keynote Speaker - Wednesday, August 2, 2017



Dr. Sharon Parker, Professor, UWA Business School, ARC Laureate Fellow, Australia

Work Design: Maintaining Momentum On Achieving Decent Jobs For All

Creating and maintaining a positive safety culture has become a Work design has long been an important topic, and it is arguably more important than ever. Changing organisational forms, digitalization of work processes, and an ageing workforce are just some of the changes that are occurring in contemporary workplaces. At the same time, we are witnessing increases in mental health issues in the workplace along side rising obesity and health-related diseases exacerbated by excessively sedentary work. Against this background, the topic of work design - or the nature and organisation of work tasks, responsibilities, and activities - is of vital importance. In my presentation, I will recap on what we know about work design so far, focusing especially on psychosocial aspects of work, and I will sketch out a research agenda for the future. I focus on three considerations in particular: the value of examining long-term effects of work design; the need to better understand the antecedents of work design; and the importance of considering contemporary changes in work and organising. I also discuss important practical and policy considerations to help keep work design on the agenda.

Sharon Parker is a Professor at the University of Western Australia with research interests in work design, proactivity, organisational change, employee development, and related topics. She is a current ARC Laureate Fellow and a previous ARC Future Fellow. She currently teaches MBA students on the topic of Leading Self and Leading Others.



Association of Canadian Ergonomists
Association Canadienne d'Ergonomie

**ACE 2018 Annual Conference
held jointly with CROSH**
Sudbury, Ontario - October 15-18, 2018

**13th International Symposium of Human Factors in
Organizational Design and Management, 2020.**

Details to be provided at closing remarks

Keynote Speakers - Thursday, August 3, 2017



Dr. Mark Fleming, *CN Professor of Safety Culture*, Department of Psychology, Saint Mary's University, Nova Scotia, Canada

A practitioner's guide to creating a high performance safety culture

Creating and maintaining a positive safety culture has become a ubiquitous objective in safety critical industries, yet there is little practical guidance on what can be done to achieve this goal. Much of the academic literature has focused on conceptual models and assessment methodologies. Many of the improvement strategies currently in use are propriety and have not been systematically evaluated. In this presentation I will provide an overview of seven strategies that organizations can use to improve. These strategies are based on 20 years over working with high hazard organizations to improve safety culture. Many of these strategies involve modifying existing safety management systems rather than implementing new systems. The aim of the presentation is to provide participants with practical strategies that they can use in their organization.

Dr. Mark Fleming is the CN Professor of Safety Culture in the Department of Psychology at Saint Mary's University. Mark is an applied psychologist with over 20 years of experience in industrial health and safety management in high hazard industries including the offshore oil and gas, nuclear power, petrochemical, power generation and construction. He is dedicated to developing practical and valid tools to assist organisations to prevent harm.

Currently, Dr. Fleming's research includes investigating methods for measuring and improving safety culture, safety motivation, safety leadership and rail safety. He advises many Canadian and international organisations (e.g. International Atomic Energy Agency) on safety culture assessment and improvement. Through his work, Dr. Fleming hopes to provide best practice guidelines to industry and criteria for successful safety programs. He seeks to translate his work on safety culture into usable practices and guidelines by producing practical tools such as Changing Minds Guide and the Cultural Maturity Model.



Ergonomics Canada magazine

Watch for issue 10 of Ergonomics Canada, ACE's annual magazine for the public. Available in both hard copy and electronically, Ergonomics Canada, provides timely information on various aspects of ergonomics and human factors. The electronic issue is available via the ACE website (www.ace-ergocanada.ca). You can also download copies of past issues.

Schedule at a Glance (subject to change)

	MONDAY - July 31		TUESDAY Aug. 1	WEDNESDAY Aug. 2	THURSDAY Aug. 3
8:30 - 9:45	Welcome & Keynote 1 The hidden relationship between ergonomics and quality <i>Jörgen Eklund</i>	9:00 - 10:30	Workshop 1 Ergonomics as a Design discipline: redesigning a local control room in an oil industry Panel Discussion iii Designing Health Information Technology From A Human Factors Perspective Symposium C ODA and sustainable development	Workshop 4 Using Human Factors methods to improve the design of work environments Technical Sessions 9. Healthcare And Macroergonomics 10. Macroergonomics & Organisational Change	Workshop 7 Learn How To Use The Ramp Tool For Risk Assessment And Risk Management Of MSD Risks In Manual Handling Symposium E1 Rasmussen Revisited 1: Human Factors, Accidents & Error Technical Session 14. Design & Macroergonomics
9:45 - 10:00	Coffee	10:30 - 11:00	Coffee & Exhibitor Showcase	Coffee & Exhibitor Showcase	Coffee
10:00 - 11:30	Symposium A A participatory approach to Total Worker Health Technical Sessions 1. Integrating healthcare & macroergonomics issues 2. Physical ergonomics	11:00 - 12:30	Workshop 2 Benchmarks for the design of reception workstations Panel Discussion iv Designing and Managing Healthcare Transitions Technical Sessions 6. Macroergonomics - Interventions, Design Processes & Change Management 7. Simulation & Modelling	Workshop 5 Ergonomics Software Solutions: Exploring your needs now to streamline your program's future Panel Discussion vi Integrating Human Factors into Large Scale Engineering Design Projects Technical Session 11. Office Ergonomics 12. Ergonomics in Practice	Workshop 8 Health Systems Engineering: Participatory ergonomics with health care delivery organizations: Challenges, successes, and future directions Symposium E2 Rasmussen Revisited 2 - Human Factors, Accidents & Error Technical Session 15. Transportation and Mining
11:30	Lunch & ACE AGM	12:30	Lunch	Lunch & CCPE Q&A	Lunch & Closing Remarks
13:30 - 15:00	Roundtable Discussion i Health Systems Engineering Technical Session 3. Physical ergonomics 4. Macroergonomics & Management	14:00 - 15:00	Keynote 2 Human Factors Engineering of Smart and Connected Health Care <i>Pascale Carayon</i>	Keynote 3 Work Design: Maintaining Momentum On Achieving Decent Jobs For All <i>Sharon Parker</i>	Keynote 4 A practitioner's guide to creating a high performance safety culture <i>Mark Fleming</i>
15:00	Coffee	15:00 - 15:30	Coffee & Exhibitor Showcase	Coffee & Exhibitor Showcase	Coffee
15:30 - 17:00	Symposium B Methods and Tools in Human Factors for Healthcare Environment Design Panel Discussion ii Challenges and emerging issues of participatory, integrated programs for worker safety, health and well-being Technical Session 5. Cognitive & Sensory Ergonomics	15:30 - 17:00	Workshop 3 Getting "hands-on" with a virtual-reality mock-up for healthcare facility design Panel Discussion v Ergonomics Business Metrics: Exploring Industry Value Beyond MSDs Technical Session 8. Healthcare and Macroergonomics Systems Approaches	Workshop 6 Integrating Ergonomics for Peeps Sake: Building Standards Up Their Game on Health and Well-being - Panel Discussion vii HTO as a systems concept within ergonomics and human factors Symposium D Participatory Ergonomics and Design Technical Session 13. Human Factors, Quality, And Indicators	Panel Discussion viii The Challenges and Benefits of Calculating the Cumulative Ergonomics Risk Associated with Multiple Subtasks - <i>Jim Potvin</i> Symposium E3 Rasmussen Revisited 3—Human Factors, Accidents & Error Workshop 9 Emerging views of resilience in safety
17:30	Reception				

Conference Sessions (subject to change)

TIME	DAY 1- MONDAY JULY 31		
8:30 AM-9:45 AM	WELCOME & KEYNOTE [Max Bell Auditorium] The hidden relationship between ergonomics and quality <i>Jörgen Eklund</i>		
9:45 AM-10:00 AM	COFFEE —Max Bell Foyer		
Session M1 10 AM-11:30 AM	Kinnear 205	Kinnear 203	Max Bell 252
	Symposium A A participatory approach to Total Worker Health developed by the Center for the Promotion of Health in the New England Workplace <i>Organized by Robert Henning</i> <ul style="list-style-type: none"> - Iterative design of a participatory ergonomics toolkit for total worker health (<i>Robert Henning, Michelle Robertson, Suzanne Nobrega, Nicholas Warren, Andrea Bizzaro</i>) - Field tests of a participatory ergonomics toolkit for Total Worker Health (<i>Suzanne Nobrega, Michelle Robertson, Nicholas Warren, Robert Henning</i>) - Evaluating TWH programs: A rationale for four key metrics (<i>Laura Punnett, Jenn Cavallari, Martin G, Cherniack, Robert Henning</i>) - Development of an organizational readiness instrument based on the total worker health approach (<i>Michelle Robertson</i>) 	Technical Session 1 Integrating healthcare & macroergonomics issues <i>[Chair: Carolina de Conceição]</i> A Sociotechnical System Approach to Address Home Care Provider Injuries (<i>Vicki Lewis, Leslie Phillips</i>) Developing And Evaluating A Multifaceted Patient Handling Program Among Nurses To Improve Safety Culture: A Pilot Study (<i>Dwayne Van Eerd, Amy Chow, Benjamin Amick, Trevor King, Ivan Steenstra</i>) Enhancing public comprehension of patient experience information in emergency departments (<i>Jonas Shultz, Benjamin Higgins, Carmella Steinke, Donna MacFarlane, Lisa Brake, Markus Lahtinen, Ward Flemons</i>)	Technical Session 2 Physical ergonomics 1 <i>[Chair: Gemma Read]</i> Assessment of Prolonged Standing Work in Food Service Workers (<i>Ashirbad Pradhan, Gift Owahuo, Emily Wood, Victoria Chester, Usha Kuruganti</i>) Musculoskeletal discomfort and risk exposure in baristas (<i>Stephen Legg, Heather Carnegie</i>) RAMP—A new tool for MSD Risk Management in Manual Handling (<i>Linda Rose</i>) Preliminary results on the effects of seat parameters on shear force and discomfort (<i>Michelle Cardoso, George Beurier, Xuguang Wang</i>) The effect of bit wear on handle vibration and productivity during concrete drilling (<i>David Rempel, Alan Barr, Antonucci Andrea</i>)
11:30 AM-1:30 PM	LUNCH & ACE AGM Kinnear 101 & 103 <i>*Should you require the ACE Annual General Meeting translated in French, please call 1-877-337-8863 (pin: 1300) before the session begins*</i>		

Schedule at a Glance (subject to change)

	DAY 1—MONDAY, JULY 31 continued...		
Session M2 1:30 PM-3:00 PM	<p>Kinnear 205</p> <p>Technical Session 4 Macroergonomics & Management <i>[Chair: Valentina Di Pasquale]</i></p> <p>Organizational factors in failure to follow procedures events (Colin Drury, Catherine Drury Barnes, Michelle Bryant)</p> <p>SEPSIS: A work systems analysis of 30 survivor and tribute stories (Eva-Maria Carman, Mike Fray, Patrick Waterson)</p> <p>New legislation on organizational and social work environment: a case study (Anette Karlun, Johan Karlun, Martin Rydell)</p> <p>National economic incentive schemes based on audited OHS management systems and work environment practitioners' strategies (Kirsten Olsen)</p> <p>MSD Prevention in Small Businesses (Amin Yazdani, Richard Wells)</p>	<p>Kinnear 203</p> <p>Roundtable Discussion i Health Systems Engineering (Edmond Ramly, A. Joy Rivera, Rupa Valdez, Ann Schoofs Hundt, Renaldo Blocker, Adjhaporn Nana Khunlertkit, Anping Xie)</p>	<p>Max Bell 252</p> <p>Technical Session 3 Physical Ergonomics 2 <i>[Chair: Michael Sonne]</i></p> <p>Reach Envelope and Range of Motion Differences with Total Rotator Cuff Tears (Colleen Dewis, Heather Johnston, John Kozey, Janice Moreside)</p> <p>Risk Of Developing Musculoskeletal Disorders In A Chicken Slaughterhouse (Diogo Reis, Adriana Tirloni, Eliane Ramos, Antonio Moro)</p> <p>Designing A Practical Assessment Tool Based On A Duty Cycle Equation Calculating Maximum Acceptable Efforts Across Multiple Tasks (Kevin Perdeaux, Jim Potvin, Steven Krile)</p> <p>Is there a relationship between low back pain and sit-to-stand workstation usage? (Maureen Riddell, Jack Callaghan)</p> <p>Sensitivity Analysis of Braking Decelerations Across Different Speeds and Braking Strategies (George Page, Steve Fleming, Greg Weames)</p>
3:00 PM-3:30 PM	COFFEE BREAK—Kinnear 103 & 105		
Session M3 3:30 PM-5:00 PM	<p>Symposium B Methods and Tools in Human Factors for Healthcare Environment Design <i>[Chair: Jonas Shultz]</i></p> <p>Comparing three methods for participatory simulation of hospital work systems (Ole Broberg, Simone Nyholm Andersen)</p> <p>Hospital Room Mock-ups: Optimizing Return on Investment (ROI) and Patient Safety (Jonas Shultz, David Borkenhagen)</p> <p>Integrating research, education and practice in the healthcare facility design process through the use of physical mock-ups (Anjali Joseph, Sara Bayramzadeh, James Abernathy)</p> <p>Collaborative Design of Canada's First Stroke Ambulance (Deborah Goodwin)</p> <p>Environment Design and Doffing Safety: An Alternative Design Approach (Tracey A. Herlihey, Stefano Gelmi, Trevor N.T. Hall, Joseph A. Cafazzo)</p>	<p>Panel Discussion ii Challenges and emerging issues of participatory, integrated programs for worker safety, health and well-being (Suzanne Nobrega, Laura Punnett, Martin Cherniack, Carles Muntaner, Amin Yazdani, Lisa Brosseau, Dwayne Van Eerd)</p>	<p>Technical Session 5 Cognitive & Sensory Ergonomics <i>[Chair: Michelle Cardoso]</i></p> <p>Job demands and job resources in nursery schools: a diary study with kindergarten teachers (Christian Korunka, Roman Prem)</p> <p>Association Between Perceptual Sensitivity to Object Form and Reach to Grasp Scaling Performance (Michael Cao)</p> <p>Mental workload assessment by correlation coefficients between several indices derived from ECG signal (Chie Kurosaka, Hiroyuki Kuraoka, Shinji Miyake)</p> <p>Back-Up Alarms: Use, Perception & Safety - Are They Effective? (Heather Kahle, Sasha Brown)</p> <p>A Human Factors Approach To Evaluating LED Light Fixtures For Use In Railroad Locomotive Headlight Applications (Stephen Fleming, George Page, Greg Weames)</p>
5:30PM—8:30PM	OPENING RECEPTION WITH EXHIBITORS—Kinnear 103 & 105		

Conference Sessions (subject to change)

TIME	DAY 2—TUESDAY, AUGUST 1			
Session T1 9 :00 AM-10:30 AM	Kinnear 205	Kinnear 203	Kinnear 201	
	Workshop 1 Ergonomics as a design discipline: redesigning a local control room in an oil industry <i>Daniel Braatz</i>	Panel iii Designing Health Information Technology From A Human Factors Perspective <i>(Peter Hoonakker, Ann Schoofs Hundt, Onur Asan, Rupa Valdez, Yushi Yang, Joy Rivera)</i>	Symposium C ODAM and Sustainable Development <i>Organized by Andrew Thatcher</i> Human Factors and pro-environmental behavior <i>(Matthew Davis)</i> Green Building Design Needs Ergonomics <i>(Alan Hedge)</i> Crowd work and sustainable work systems: a contradiction? <i>(Klaus Zink)</i> Systemic challenges in supply chain ergonomics <i>(Jessica Hutchings, Andrew Thatcher)</i> Shut the fridge door: using socio-technical work redesign to improve energy efficiency in supermarket retail stores <i>(Patrick Waterson, Sian Christina, Andrew Dainty, Kevin Daniels, Olga Tregaskis)</i>	
10:30 AM-11:00 AM	COFFEE & EXHIBITOR SHOWCASE—Kinnear 103 & 105			
Session T2 11:00 AM-12:30 PM	Kinnear 205	Kinnear 203	Kinnear 201	Kinnear 206
	Workshop 2 Benchmarks for the design of a reception workstations <i>Jocelyne Dubé</i>	Panel iv Designing and Managing Healthcare Transitions <i>(Abigail Wooldridge, Ayse Gurses, Eva-Maria Carman, Patrick Waterson, Mary Sesto, Peter Hoonakker)</i>	Technical Session 6 Macroergonomics - Interventions, Design Processes & Change Management <i>[Chair: Linda Rose]</i> Role of the Ergonomist in Supporting Change Management: A Case Study of Forklift Operation <i>(Kim Meszaros)</i> A Macroergonomic Intervention Enabled An Organization To Overcome Production Disruption When Adopting New Technologies <i>(David Rempel, Andrew Imada, Christine Naca, Mel Alexandre, Ira Janowitz)</i> Tertiary Ergonomics/Human Factors Programmes: Who Cares, What Next? <i>(Stephen Legg, Alex Stedmon)</i> Ergonomics in services' economy and societal challenges – a case study related to public services in Brazil <i>(Laerte Sznclwar)</i> Ergonomics In The Design Process When Developing New Products At Ikea Of Sweden <i>(AnnaKlara Stenberg Gleisner, Martina Berglund)</i>	Technical Session 7 Simulation & Modelling <i>[Chair: Igene Oseghale]</i> Modeling workload and quality using system dynamics in healthcare <i>(Mashal Farid, W. Patrick Neumann)</i> Simulating the Dynamic Effect of Pharmacy Staff Workload on Safety and Performance <i>(Mohammed Ibrahim Shire, Thomas Gyuchan, Stewart Robinson)</i> Simulating the Impact of Patient Acuity on Nurse Workload and Nurse Performance <i>(Sadeem Munawar Qureshi, Nancy Purdy, W. Patrick Neumann)</i> Integrating fatigue modelling into applied ergonomics <i>(Michael Sonne)</i> Comparative Analysis of Three Human Modeling Software Packages During The Analysis Of Low Back Loading in Static Postures <i>(Nicholas Patrick)</i>

Conference Sessions (subject to change)

TIME	DAY 2—TUESDAY, AUGUST 1 continued...
12:30pm— 2:00pm	LUNCH & EXHIBITOR SHOWCASE —Kinnear 101 - 105
2:00pm— 3:00pm	Max Bell Auditorium KEYNOTE: Human Factors Engineering of Smart and Connected Health Care <i>Pascale Carayon</i>
3:00pm— 3:30pm	COFFEE & EXHIBITOR SHOWCASE —Kinnear 103 & 105

Session T3 3:30 PM-5:00 PM	Kinnear 205	Kinnear 203	Kinnear 201
	Workshop 3 Getting “hands-on” with a virtual-reality mock-up for healthcare facility design <i>- Jonas Shultz</i>	Panel v Ergonomics Business Metrics: Exploring Industry Value Beyond MSDs <i>(Nancy Larson, Andy Imada, Glenn Azevedo, Najmedin Meshtaki)</i>	Technical Session 8 Healthcare and Macroergonomics Systems Approaches <i>[Chair: Steven Fischer]</i> <p>The Characteristics of Interruptions following Trauma Activations <i>(Renaldo Blocker, Katherine Forsyth, Hunter Hawthorne, Nibras El-Sherif)</i></p> <p>Dealing with near miss events in health care <i>(Denis Fischbacher-Smith)</i></p> <p>Development of a framework for the analysis of weak signals within a healthcare environment <i>(Eva-Maria Carman, Mike Fray, Patrick Waterson)</i></p> <p>Using a participatory ergonomics approach to improve patient room cleaning practices and prevent hospital-associated infections <i>(Anping Xie, Clare Rock, Patience Osei, Jennifer Andonian, Sara Keller, Sara Cosgrove, Ayse Gurses)</i></p> <p>A cost-benefit analysis of a powered stretcher and load system intervention in a paramedic service <i>(Daniel Armstrong, Richard Ferron, Cindi Taylor, Brent McLeod, Steve Fletcher, Renae MacPhee, Steven Fischer)</i></p>

Conference Sessions (subject to change)

DAY 3—WEDNESDAY, AUGUST 2

Session W1 9:00 AM- 10:30 AM	Kinnear 205	Kinnear 203	Kinnear 201	
	Workshop 4 Using Human Factors methods to improve the design of work environments - Susan Biesbroek	Technical Session 9 Healthcare And Macroergonomics [Chair: Evi Carman] Promising Practice: Partners in Person-Centered Approach (PPCA) (Remi Adejumo, Leah Thomas-Olson, Deanna Harrison, Melanie Gee, Nermin Helal) Using a systems framework and methodology for observing behavior in operating room environments (Anjali Joseph, Sara Bayramzadeh, Herminia Machry) How Do Call Characteristics and Paramedics' Perceptions of Physically Demanding Tasks Change After Implementing Powered Stretchers (Uma Lad, Steven Fischer) MSD prevention strategies for the paramedic sector: A review of current evidence (Steven Fischer, Daniel Armstrong) Organizing for High Performance at the Scale of Hundreds of Healthcare Organizations (Edmond Ramly, Susan Nordman-Oliveira, David Zimmerman)	Technical Session 10 Macroergonomics & Organisational Change [Chair: Lauren Murphy] Supporting agro-ecological transition on farms: co-designing a change management support approach (Marie Chizallet, Flore Barcellini, Lorane Prost) Historical analysis as a key tool for seeing alternatives for future: a Change Laboratory experience (Rodolfo Andrade de Gouveia Vilela, Susana Vicentina Costa, Amanda Aparecida Macaia, Marco Antonio Pereira Querol, Laura Elina Seppanen, José Marçal Jackson Filho) Tracing the contradictions as a fundamental step for formative intervention and development (Rodolfo Andrade de Gouveia Vilela, Marco Antonio Pereira Querol, Marina Zambon Orpinelli Coluci, Laura Elina Seppanen, José Marçal Jackson Filho, Ildeberto Muniz Almeida) Workplace practices and policies to prevent MSD: developing an implementation guide (Dwayne Van Eerd, Kim Cullen, Emma Irvin) Breaking organizational silence by implementing work discussion spaces (Lauriane Domette, Lauriane Domette, Pierre Falzon)	
10:30 AM- 11:00 AM	COFFEE & EXHIBITOR SHOWCASE—Kinnear 103 & 105			
Session W2 11:00 AM- 12:30 PM	Kinnear 205	Kinnear 203	Kinnear 201	Kinnear 206
	Technical Session 12 Ergonomics In Practice [Chair: Stephen Legg] Effects of mural nature photograph on workplace environment (Shinji Miyake, Takashi Tanabe) Victorious Validation: A process for improving the accuracy of ergonomists' reports (Josie Blake, Carrie Taylor) Ergonomic Assessment of a Craft Brewery (Emily Wood, Jennifer May, Victoria Chester, Usha Kuruganti) Boot Camp: Considerations When Selecting Safety Footwear For Work (Karen Hoodless) Ergonomic-Designed Environmental Health And Safety (EHS) Change Management (Kevin Perdeaux, Steven Krile)	Panel Discussion vi Integrating Human Factors into Large Scale Engineering Design Projects (Judy Village, Richard Gardner, Carolina de Conceição) Includes: - Integrating experiences from operations into engineering design: modelling knowledge transfer in the offshore oil industry (Carolina de Conceição, Ole Broberg, Esdras Paravizo) - Requirements for incorporating human factors/ergonomics into the design process through simulation: oil refinery experience (Daniel Braatz, Esdras Paravizo)	Technical Session 11 Office Ergonomics [Chair: Dwayne van Eerd] An activity based flex office - planning processes and outcomes (Linda Rolfö, Jorgen Eklund) Policies for sharing workspaces in activity-based flex offices (Linda Rolfö, Maral Babapour, Anna-Lisa Osvalder) Office Ergonomics Interventions: What Have We Learned and What is Next? (Michelle Robertson) Study of Workstation and Working Conditions in a Technical, Computer-Intensive Work Environment (Nancy Black, Colleen Dewis, Nadja Gomes de Oliveira, Jordan Scoliège) Office Ergonomics Triage Process (Melanie Gee, Leah Thomas-Olson, Deanna Harrison)	Workshop 5 Ergonomic Software Solutions: Exploring your needs now to streamline your program's future -Meg Honan

Conference Sessions (subject to change)

TIME	DAY 3—WEDNESDAY, AUGUST 2 continued
12:30PM—2:00PM	LUNCH, EXHIBITOR SHOWCASE & CCPE Q&A —Kinnear 101—105
2:00PM—3:00PM	Max Bell Auditorium KEYNOTE: Work Design: Maintaining Momentum On Achieving Decent Jobs For All <i>Sharon Parker</i>
3:00PM—3:30PM	COFFEE & EXHIBITOR SHOWCASE —Kinnear 103 & 105

Session W3 3:30 PM-5:00 PM	Kinnear 205	Kinnear 203	Kinnear 201	Kinnear 206
	Technical Session 13 Human Factors, Quality, And Indicators <i>[Chair: Meg Honan]</i> <p>Similarity of Risk Factors for Musculoskeletal Disorders and Poor Product Quality (Richard Wells, Ahmet Kolus, W. Patrick Neumann)</p> <p>The impact of aging on human error in manufacturing systems: a systematic review (Valentina Di Pasquale, Salvatore Miranda, W. Patrick Neumann)</p> <p>Inter-method comparison of four Human Reliability Assessment (HRA) models (Azin setayesh, W. Patrick Neumann)</p> <p>A Case Study On The Relationship Between Human Factors And Engineering Metrics (Michael Greig, Judy Village, Filippo Salustri, W. Patrick Neumann)</p> <p>Generating Key Performance Indicators for Modernization of Knowledge Management in an Engineering R&D Firm (Kelly Sprehn, Tristan Endsley, Aleksandra Stankovic, Pooja Bovard, Caroline Harriott)</p>	Panel vii HTO as a systems concept within ergonomics and human factors <i>(Johan Karlton, Anette Karlton, Martina Berglund, Jorgen Eklund)</i>	Symposium D Participatory Ergonomics and Design <i>Organized by Daniel Braatz</i> <p>- Articulating intermediary objects in the design process to enable ergonomics intervention (Daniel Braatz, Esdras Paravizo)</p> <p>- Learning from participatory design projects across industries (Ole Broberg, Carolina de Conceição)</p> <p>- Workspace experiments: a journey on planning participatory design (Carolina de Conceição, Ole Broberg)</p> <p>What are the design requirements for an organisational simulation support? (Laurent Van Belleghem)</p> <p>A Practitioner's Perspective on adding an SMS approach to the Participatory Ergonomics Process (Geoff Wright)</p>	Workshop 6 Integrating Ergonomics for Peeps Sake: Building Standards Up Their Game on Health and Well-being <i>- Lucy Hart</i>

Conference Sessions (subject to change)

TIME	DAY 4– THURSDAY, AUGUST 3		
Session R1 9 AM-10:30 AM	Kinnear 205	Kinnear 203	Kinnear 201
	Workshop 7 Learn How To Use The Ramp Tool For Risk Assessment And Risk Management Of MSD Risks In Manual Handling <i>- Linda Rose & Jörgen Eklund</i>	Symposium E1 Rasmussen Revisited 1 Human Factors, Accidents and Error <i>Organized by Patrick Waterson</i> - Rasmussen vs. the rest <i>(Patrick Waterson)</i> - Assessing Task Complexity by Use of Rasmussen's Decision Ladder: Model and Its Application to Recovery from Healthcare Adverse Event <i>(Kenji Itoh, Noriyuki Yamamoto, Henning Boje Andersen)</i> - Prototype to final product: A contributing factor classification scheme to support the application of Rasmussen's AcciMap method <i>(Natassia Goode, Paul M. Salmon, Natalie Z. Taylor, Michael G. Lenne, Caoline F. Finch)</i> - More converts into Rasmussen? Impact of a Story-Based Animation on Systems Safety <i>(Gyuchan Thomas Jun, Rui Liu)</i>	Technical Session 14 Design & Macroergonomics <i>[Chair: Joy Rivera]</i> Ergonomics and design education: experiences from the development and application of a workspace design workshop <i>(Esdras Paravizo, Daniel Braatz)</i> Analysis, validation and design: using game engines to support ergonomics intervention and design process <i>(Esdras Paravizo, Daniel Braatz)</i> Human capability demands required from the elderly and disabled participants in the user centered design needs elicitation methods- a survey study <i>(Joash Sujan Samuel Roy, W. Patrick Neumann, Deborah Fels)</i> Integrating experiences from operations into engineering design: modelling knowledge transfer in the offshore oil industry <i>(Carolina Conceição, Ole Broberg, Esdras Paravizo)</i> A Chair Assessment Model for Organizational Benefit, Safety and Asset Management <i>(Alison Heller-Ono)</i>
10:30 AM-11:00 AM	COFFEE BREAK —Kinnear 103		

Conference Sessions (subject to change)

TIME	DAY 4– THURSDAY, AUGUST 3 continued...		
Session R2 11:00 AM-12:30 PM	Kinnear 205	Kinnear 203	Kinnear 201
	Workshop 8 Health Systems Engineering: Participatory ergonomics with health care delivery organizations - Challenges, successes, and future directions <i>- Edmond Ramly, Renaldo Blocker, A. Joy Rivera, Rupa Valdez, Adjhaporn Nana Khunlertkit, Anping Xie</i>	Symposium E2 <i>Rasmussen Revisited 2: Human Factors, Accidents and Error</i> <i>Organized by Patrick Waterson</i> Beyond the interface: using EID to design rail level crossing environments <i>(Gemma J.M Read, Neville A. Stanton, Guy H. Walker, Michael G. Lenne, Christine M. Mulvihill, Nicholas Stevens, Paul M. Salmon)</i> Is the AcciMap method an effective approach for analyzing Clinical Incidents in the National Health Service, Scotland? <i>(Oseghale Igene, Christopher Johnson, Yinuo Liu, Jenny Long)</i> Taxonomies of human error and task conditions foundations and use <i>(Andersen Henning Boje, Kenji Itoh)</i> Comparison of HFACS and AcciMap Methods on a Health IT -related Medication Dosing Error Case Study <i>(Oseghale Igene)</i>	Technical Session 15 Transportation & Mining <i>[Chair: Judy Village]</i> Managing the operation of an airline : a scheduling activity that articulates both health, skills and performance issues <i>(Lucie Reboul, Lucie Reboul, Catherine Delgoulet, Corinne Gaudart, Sonia Sutter)</i> Results of a macroergonomic analysis integrating safety climate in the long-haul trucking industry <i>(Lauren Murphy, Lauren Murphy, Michelle Robertson, Yueng-hsiang Huang, Susan Jeffries, Marvin Dainoff)</i> Favorable Conditions to Integrate New Mining Sector Workers - A Tool for Self-Diagnosis (FR) <i>(Sylvie Beaugrand, Elise Ledoux, Charles Gagné, Linda Savoie, Caroline Jolly, Pierre-Sébastien Fournier)</i> Investigating organizational safety control structures within a commuter rail operation setting <i>(Larry Hettinger, Nancy Leveson, Megan France, Susan Jeffries, Jordan Multer)</i> Coordination between stakeholders to improve the risk prevention in MSEs: case studies in transport and construction programs. <i>(Sandrine Caroly, Deborah Gaudin, Patrick Laine, Marc Malenfer)</i>
12:30 PM-2 PM	LUNCH & Conference Closing —Kinnear 101		
2:00 PM-3:00 PM	Max Bell Auditorium KEYNOTE: A practitioner's guide to creating a high performance safety culture <i>Mark Fleming</i>		
3:00 PM-3:30 PM	COFFEE BREAK —Kinnear 103		

Conference Sessions (subject to change)

TIME	DAY 4– THURSDAY, AUGUST 3 continued...		
Session R3 3:30 PM-5:00 PM	Kinnear 205	Kinnear 203	Kinnear 201
	Workshop 9 Emerging views of resilience in safety <i>- Heather Kahle</i>	Panel viii The Challenges and Benefits of Calculating the Cumulative Ergonomics Risk Associated with Multiple Subtasks <i>(Jim Potvin, Murray Gibson, Kevin Perdeaux, Carrie Taylor, Margo Fraser)</i>	Symposium E3 <i>Rasmussen Revisited 3 - Human Factors, Accidents and Error</i> <i>Organized by Patrick Waterson</i> The Obliquity Strategy as a Means of Overcoming the “Drift to Unsafe States” Effect <i>(Patrick Neumann)</i> Systemic Factors In The Investigation Of Railway Occurrences In South Africa <i>(Jessica Hutchings)</i> PLENARY DISCUSSION: <i>Rasmussen Revisited - Human Factors, Accidents and Error</i>

ACE Corporate Membership

ACE aims to promote ergonomics and to raise the standards of practice in ergonomics. Through our Corporate member program, we are building stronger links between ACE and private and public enterprise in pursuit of this mission.

Corporate members will be recognized as supporters of ergonomics in Canada. They will help ACE to achieve its goals and ACE will reciprocate with special Corporate member benefits. The program is a great step for both ACE and the field of ergonomics in Canada and we welcome the partnership opportunities it will provide!

Some of the advantages associated with Corporate membership include:

- Recognition as a supporter of ergonomics in Canada
- Visibility on the ACE Web site
- Access to the network of Canadian Ergonomists including professional consultants and researchers
- Access to national and regional conferences and workshops
- Member advertising rates for *Ergonomics Canada* magazine
- First right of refusal on ACE Conference exhibit space

For more information about Corporate membership, please contact the ACE National Office at 1-888-432-2223

Conference Workshops

New for 2017, 90 minute workshop intensives are integrated into the conference program. This is your opportunity to dive deep into a specific area! Consult the schedule at a glance for times.

W1. Ergonomics as a Design discipline: redesigning a local control room in an oil industry - *Daniel Braatz, PhD, Brazil and Ole Broberg, PhD, Denmark*

In this workshop, participants will learn about how ergonomics can be integrated into the engineering design process to improve working conditions and operational performance. Participants will discuss how ergonomics concepts can be effectively considered during the design of workspaces. They will also deal with the inherent challenges of design processes such as time and budgetary constraints, competition, communication and sense-making among the actors of the process and how to promote a participatory design situation.

Several materials and intermediary objects will be employed in the workshop, such as game boards, computer/smartphone applications, 3D models and interactive virtual environments. Groups will compete to propose better designs, following ergonomics concepts and solving the issues presented in the case.

A final discussion will promote a collective reflection on the experience, how participants perceived the workshop challenges compared to their professional experiences. This discussion will also deal with theoretical issues related to participatory design, intermediary objects and ergonomics as a design discipline.

W2. Benchmarks for the design of reception workstations—*Jocelyne Dubé, CCPE*

There is a reception center for the vast majority of companies: healthcare establishments, administrative offices, service companies, etc. There are many tasks (switchboard, recording and monitoring of visitors, receipt and dispatch of documents, administration, etc.) and multiple pieces of equipment (telephone console, computer equipment, fax, scanner, etc.).

Working at a reception desk sometimes causes postures and constraining motions that can contribute to the development of musculoskeletal disorders (MSDs). Reconciling communication with visitors, computer work and other tasks adds to the challenges, not to mention the challenges inherent in providing security, as well as the need for confidentiality that sometimes arises. In short, these work situations are relatively complex!

This workshop offers criteria for design of a safe and functional reception. Through discussions and exchanges, we will identify design benchmarks and ideas for defining concepts for different types of needs.

W3. Getting “hands-on” with a virtual-reality mock-up for healthcare facility design, *Jonas Shultz, Health Quality Council of Alberta*

The Health Quality Council of Alberta recently released the Simulation-based Mock-up Evaluation Framework (www.hqca.ca/humanfactors) which is intended to be a guidance document to support the planning and evaluation of healthcare environment mock-ups. Building upon this framework, different types of mock-ups (physical vs. virtual reality) are being evaluated to develop evidence-based guidelines outlining which type of mock-up would optimize cost effectiveness (return-on-investment) and outcomes (identified latent conditions, hazards, design opportunities, etc.).

This workshop will focus on the use of a virtual-reality (VR) mock-up to evaluate the design of a medication room. This will include a presentation outlining the steps to prepare for and conduct the evaluation. Furthermore, the workshop will replicate the evaluation process whereby some attendees will enact clinical simulation scenarios while interacting with the VR medication room. A debriefing session will occur to gather feedback regarding their experiences and the design of the medication room. All attendees will be able to observe the scenario enactments and assist in analyzing evidence-based data (behavioural coding and link analysis) which is automatically generated by the VR software. This data will be discussed within the context of evaluating the medication room design and guiding design decisions.

Please note that this session is 2 hours and will extend 30 minutes past the 5:30pm general schedule.

Conference Workshops continued...

N.B. Workshops are described in the language in which they are presented

W4. Using Human Factors methods to improve the design of work environments—*Susan Biesbroek, Alberta Health Services*

Human Factors methodologies can be integrated in to the workspace design process to integrate the end users perspective into the workspace design process. HF methods simulate the tasks that end users are required to do in the environment to optimize task efficiency and effectiveness, workflow, equipment accessibility, and communication.

This workshop will focus on introducing Human Factors methodologies that can be used early in the design process to evaluate a proposed design prior to construction to reduce latent threats that may exist in the design, improving both the efficiency and effectiveness of work in the space. The workshop facilitators will provide examples from healthcare and everyday experience to demonstrate the methods. The workshop will include hands on application of a range of human factors methods through practical group activities, discussions, and data analysis exercises. Examples of the methods that will be covered include: tabletop evaluations, link (workflow) analysis, tape-out and mock-up as well as commissioning simulations.

W5. Ergonomics Software Solutions: Exploring your needs now to streamline your program's future, *Meg Honan, CPE, Melissa Afterman, CPE*

This workshop guides participants on a thought process to identify their needs from an ergonomics software solution (e.g., online training, self-assessment, risk scoring & mitigation, solutions, real-time activity data, break-timer, productivity enhancements, etc.). Technology, tools and working styles continue to change rapidly and the relevance of software must keep up to strengthen the future of an organization's ergonomics program. Our organization's analysis of what we need next has taken us on a thoughtful journey to understanding how to identify and utilize an engaging and relevant software solution. This workshop takes you on a similar journey for your organization, discussing the benefits of using an ergonomics software solution and increasing awareness of current software offerings and potential areas for improved fit.

Workshop Activities:

- Explore a method of Knowing Yourself, Knowing your Work and Knowing your Options as a way to determine the relevant information and system that you need from your software solution
- Examine the key ergonomics risks of your organization and how they compare with the risk assessments found in current software solutions
- Consider the connections between your population and how solutions are delivered for on-going employee engagement
- Prioritize software program elements for your organization

W6. Integrating Ergonomics for Peeps Sake: Building Standards Up Their Game on Health and Well-being, *Lucy Hart, CCPE*

Recent developments on the building standards front bode well for occupants from an ergonomics perspective. Learn why integrating ergonomics with design/build and operations is a focal point for enhancing health & well-being. One of the system goals for LEED v4 is enhancing individual human health and well-being. Find out about the 2016 revisions to the LEED ergonomics Pilot Credit 44 for computer users that support this goal including new infographics and resources. The WELL Building Standard raises occupant health to a whole new level by focusing solely on what the human body needs to maintain health in the built environment. Discover how WELL lends itself to integrating ergonomics with building practices.

Learning Objectives:

- Understand why integrating ergonomics with design/build and operations is a focal point for enhancing health & well-being
- Review the process for applying ergonomics
- Describe the integration of ergonomics with the design/build and operations process
- Outline the steps for LEED revised Ergonomics Pilot Credit 44 for BD+C and O+M projects
- Describe how WELL lends itself to integrating ergonomics with building practices

Workshop Descriptions continued...

W7. Learn How To Use The Ramp Tool For Risk Assessment And Risk Management Of MSD Risks In Manual Handling - *Linda Rose, PhD, Sweden & Jorgen Eklund, PhD, Sweden*

Manual handling work is regarded as one of the main causes to increased risks of developing Musculoskeletal disorders (MSDs). Several MSD risk assessment tools have been developed, but have been found to have insufficiencies for managing MSD risks in manual handling. The RAMP tool (*Risk Assessment and Management tool for Manual Handling – Proactively*), was developed to support the whole process of risk management of MSD risks in manual handling: from identification and assessment of risks to developing risk reducing suggestions and systematic risk management.

What will you learn?

In this workshop you will learn how to use the RAMP tool by participating in applying the tool on an example.

RAMP consists of four parts:

1. The checklist based RAMP I for screening of MSD risks in manual handling,
2. RAMP II for a more in depth analysis of such risks,
3. The Action module to support development of risk reducing measures and support systematic risk management, and
4. The Results module, for communicating the results. It enables presentation of the results at different level of detail and scope, ranging from a work station to the whole company.

In the workshop you will get experience from using the four parts of the RAMP tool, based on a film-based example. *Bring your laptop* to download and use the RAMP tool on your computer!

W8. Participatory ergonomics with health care delivery organizations: Challenges, successes, and future directions, *Edmond Ramly, PhD, Ronaldo Blocker, PhD, Adjhaporn Khunlerkit, PhD, A. Joy Rivers, PhD, Rupa Valdez, PhD, Anping Xie, PhD*

Participatory ergonomics has led to stakeholder-aligned organizational design and management in a range of industries and only recently started being formally applied to macroergonomic healthcare system redesign. Participatory ergonomics approaches align the needs of multiple stakeholders by involving people in “planning and controlling a significant amount of their own work activities, with sufficient knowledge and power to influence both processes and outcomes in order to achieve desirable goals.” Such systematic stakeholder engagement is particularly important for complex process redesign in healthcare delivery organizations.

Professional and functional differentiation often leads to fragmentation of perspectives and subcultures, which negatively impacts the acceptance, adoption, and sustainability of organizational improvements and management initiatives. However, that very fragmentation raises a unique set of challenges to the application of participatory ergonomics with health care delivery organizations. This workshop will model these challenges and strategies to overcome them by simulating a participatory ergonomics process. Participants will be assigned to healthcare personas and teams, along with priorities and constraints, and will be guided through a participatory design process to address a real healthcare scenario. The workshop is intended for individuals who have experience or interest in participatory ergonomics or healthcare systems improvement. (Limit 30)

Workshop Descriptions continued...

W9. Emerging Views of Resilience in Safety—Heather Kahle & Jenny Colman, *WorksafeBC*

This workshop will showcase the theories, principles and application of 'Safety II / Resilience'. It's a perspective and approach that reaches beyond traditional safety in regards to how safety is created and maintained in workplace systems. Safety II recognizes that workers and organizations are constantly adjusting their performance to match varied conditions that result from work, production goals and business objectives. In real-time, workers learn how to identify, intervene, overcome or adapt to varied conditions: expected and unexpected, process deficiencies and other system anomalies. The approach aims to enhance this adaptive work by providing good design as well as the skills and knowledge to respond to changing conditions so that safe, productive outcomes are as high as possible.

The workshop will be based on cornerstones of resilience for organisations and individuals: The ability to Respond, Monitor, Anticipate and Learn. Examples will highlight situations where the adaptive abilities and values that workers contribute have kept workplace systems functional, safe and productive. It will also discuss how the organisations can create a framework to support and facilitate this practice.

Panel Discussions

Note: Panel membership may be enhanced, and audience participation in Panels is expected and encouraged. See the ACE-ODAM conference pages at www.ace-ergocanada.ca for full descriptions of the panel sessions and panelists.

Pi Health Systems Engineering (Edmond Ramly, A. Joy Rivera, Rupa Valdez, Ann Schoofs Hundt, Renaldo Blocker, Adjhaporn Nana Khunlertkit, Anping Xie)

Over the last several decades, there has been particular interest in applying the tools and techniques of industrial and systems engineering to improve health care delivery systems. This intersection between systems engineering and health care has come to be known as health systems engineering, with major contributions from human factors/ ergonomics. Organizational design and management to improve health care systems is a key area of application and raises unique challenges and opportunities. One set of challenges is related to the costs of health care delivery, as a growing proportion of limited resources (e.g., 5% to nearly 20% of U.S. GDP from 1960 to 2016) and the increasing complexity of health care systems and processes. Another set of challenges includes professional and functional differentiation in health care delivery organization, which often leads to fragmentation of perspectives and subcultures. This fragmentation negatively impacts the acceptance, adoption, and sustainability of organizational improvements and management initiatives. This symposium examines two possible solutions to these challenges to contribute to the quadruple aim of improving patient experience, lowering per-capita costs, improving population health, and enhancing quality of work life for health care professionals.

Pii Challenges and emerging issues of participatory, integrated programs for worker safety, health and well-being (Suzanne Nobrega, Laura Punnett, Martin Cherniack, Carles Muntaner, Amin Yadzani, Lisa Brosseau, Dwayne Van Eerd)

The organization of work and the working environment are important factors in the social determinants of health. The World Health Organization and leading public health agencies from Canada, the United States, and other countries support the concept that a "healthy workplace" is comprised of physical and psychosocial aspects of the work environment that directly and indirectly impact health. Integrated program models such as the CDC Total Worker Health® (TWH) program, offer specific strategies to make work organization more conducive to safety, health, and well-being. Participatory engagement of workers in the design of interventions is one core strategy that offers a mechanism for designing integrated interventions using a macroergonomic approach. However, participatory, integrated program approaches have not been widely adopted, particularly in some countries. This session will provide an opportunity to discuss specific challenges and emerging issues related to dissemination and implementation of participatory integrated workplace programs. Five panelists will briefly introduce specific topics and a panel Chair will moderate a dialogue with the panelists and the audience.

Panel Discussions continued...

Piii Designing Health Information Technology From A Human Factors Perspective (Peter Hoonakker, Ann Schoofs Hundt, Onur Asan, Rupa Valdez, Yushi Yang, Joy Rivera)

Health care has grown tremendously in past decades and, due to population aging and technological advancements, it will continue to grow. In response to limited financial and personnel resources and the ever-increasing complexity of health care, health information technology (IT) offers one possible solution to make healthcare processes more efficient. In the past two decades health IT has been implemented on varying scales in both hospitals and clinics, although not without challenges. Lack of end-user involvement in design and failing to incorporate the health IT into existing clinical workflow have contributed to the challenges. In recent years, some progress has been made. In this panel, we examine health IT implementation from a human factors perspective. Several experts will share their experience with health IT implementation, followed by a general discussion of human factors' contribution to health IT.

Piv Designing and Managing Healthcare Transitions (Abigail Wooldridge, Ayse Gurses, Eva-Maria Carman, Patrick Waterson, Mary Sesto, Peter Hoonakker)

As health care has become more complex, care has been organized into specialty groups. However, due to this specialization, transitions have become more common. These care transitions are an inherent, crucial part of the healthcare system, and can be between providers, units, services, facilities, et cetera. These transitions are complex activities, represent the transfer of information, authority and responsibility between clinicians, and are areas of risk as well as opportunities to prevent error and reduce costs. In this panel, we will examine different care transitions, and discuss how these transitions can be better designed and managed. Following the panelists' presentation, we will discuss how human factors can contribute to better design of care transitions to address these complexities.

Pv Ergonomics Business Metrics: Exploring Industry Value Beyond MSDs (Nancy Larson, Andy Imada, Glenn Azevedo, Naj Maskati)

In many companies, the business value of ergonomics is measured through the reduction of work-related musculoskeletal disorders (WMSD) injury rates and associated costs as required by a country's health and safety regulations. The additional benefits of ergonomics to improve quality, delivery, efficiency, employee satisfaction, and profitability are intermingled with other initiatives such as Six Sigma, Total Quality Management, Lean Manufacturing, Sustainability, Safety, and general good business practices. This roundtable discussion will explore strategies industry may apply to realize the value of ergonomics beyond the reduction of WMSDs.

Pvi Integrating Human Factors into Large Scale Engineering Design Projects (Judy Village, Richard Gardner, Carolina Conceicao)

Includes: Integrating experiences from operations into engineering design: modelling knowledge transfer in the offshore oil industry (Carolina Conceição, Ole Broberg, Esdras Paravizo), Requirements for incorporating human factors/ergonomics into the design process through simulation: oil refinery experience (Daniel Braatz, Esdras Paravizo)

In this symposium, speakers from different countries will illustrate how human factors became integrated into large-scale engineering design projects with a goal to improve both human and system performance. Speakers are from the following sectors: design of light rail transit systems (Canada); knowledge transfer in oil rigs design (Denmark); design for manufacturability in aerospace (US), and design of oil refineries (Brazil). Speakers will share their experiences of integrating human factors into design, including what has worked and not worked. The goal is to share lessons learned for other sectors and organizations, and discuss how our profession can help improve engineering design processes.

Panel Discussions continued...

Pvii HTO as a Systems Concept within Ergonomics and Human Factors (Johan Karlton, Anette Karlton, Martina Berglund, Jorgen Eklund)

The field of human factors and ergonomics constitutes a strong potential in systems analysis, design and improvement of operations. It is however often difficult to communicate its potential value. This round table discussion is supposed to address how the human-technology-organization (HTO) concept, which have been used by Swedish ergonomists as 1) a conceptual model; 2) an analysis framework; 3) a meta methodology; 4) a pedagogical tool; and 5) a design tool, can support the understanding, communication and development of the systems' character and potential of human factors and ergonomics. The aim with the round table discussion is to discuss the concept regarding:

- a) Its internal conceptual consistency and relation to ergonomics and other theories
- b) Its potential regarding increasing the understanding for ergonomics and human factors among students, practitioners and researchers
- c) Its usability (to be efficient, effective and satisfactory) in different situations, when it can be used and when not.

After a short introduction of the round table, five leading scholars from different ergonomics traditions will provide their views followed by a common discussion.

Pviii The Challenges and Benefits of Calculating the Cumulative Ergonomics Risk Associated with Multiple Subtasks (Jim Potvin, Margo Fraser, Murray Gibson, Kevin Perdeaux, Carrie Taylor)

Most ergonomics tools evaluate individual tasks for injury risk and/or acceptability for a target population (eg. 25th percentile female). While there is usually one subtask that poses the highest risk, most jobs have multiple subtasks that contribute to the overall risk. Until recently, there have been few methods to assess the combined effects of all subtasks. Potvin (2012) presented a meta-analysis of a wide variety of psychophysical studies of upper extremity, and determined that the maximum acceptable effort (MAE), as a percentage of maximum strength, could be characterized with a simple equation requiring only the input of duty cycle (DC - the percentage of a cycle that the task's efforts where exerted). More recently, that equation has been used to solve for acceptable recovery durations, so that the effects of multiple tasks can be estimated. This roundtable session will present a progression of methods to determine the recommended cumulative recovery duration required when combining any number of occupational different tasks. The panelists will describe the development of the computational methods used, present their experiences with these methods and outline future challenges to incorporating this approach into their ergonomics practice.

Facilitated by: Nancy Black, PhD

CCPE Certification Application Question & Answer session

A special question and answer session on the professional certification (CCPE) application process will be held during lunch on Wednesday August 2 (12:15 pm to 1:15 pm). A separate table will be available for applicants to meet and have lunch with one or more CCCPE board members.

This session will allow potential applicants to ask questions about the specifics of the process and requirements, to assist them in completing their applications. Participants are encouraged to preview the application information available through the www.cccpe.ca web site in advance and to submit their questions ahead of time to info@cccpe.ca.

Cost: No Charge

Facilitators: CCCPE Board Members

Sa A participatory approach to Total Worker Health developed by the Center for the Promotion of Health in the New England Workplace, *Organized by Robert Henning*

The goal of Total Worker Health® (TWH) programs is to integrate protection from work-related safety and health hazards with promotion of injury and illness prevention efforts to advance worker well-being. Researchers in the Center for the Promotion of Health in the New England Workplace (CPH-NEW) have developed a set of tools for planning, implementing and evaluating a TWH program. Participatory action research involving four diverse work organizations was used to develop this set of tools through an iterative design process (R. Henning). Assessment of the intervention design process, evaluation of intervention outcomes, and various indicators of program success informed several revisions (S. Nobrega). Lessons learned from these efforts helped CPH-NEW refine our metrics of TWH “integration,” which can be used to guide intervention design efforts and evaluate program outcomes (L. Punnett). In addition, a means for organizations, practitioners and researchers to assess organizational readiness for implementing a TWH program has been developed to help identify potential obstacles and plan any necessary steps to overcome them (M. Robertson).

Sc Methods and Tools in Human Factors for Healthcare Environment Design, *Organized by Jonas Shultz*

The Health Quality Council of Alberta recently released the Simulation-based Mock-up Evaluation Framework which is intended to be a guidance document to support the planning and evaluation of healthcare environment mock-ups. Building upon this framework, different types of mock-ups (physical vs. virtual reality) are being evaluated to develop evidence-based guidelines outlining which type of mock-up would optimize cost effectiveness (return-on-investment) and outcomes (identified latent conditions, hazards, design opportunities, etc.). Methods and tools that can be utilized will be presented in this symposium.

Sb ODA and Sustainable Development, *Organized by Andrew Thatcher*

Macroergonomics, a discipline within the ergonomics discipline, has led the way in embracing complex systemic interactions. The underpinning sociotechnical systems theory of macroergonomics acknowledges the complex interconnectedness between system elements within an organisation and with the external environment. However, the challenges facing humanity currently (and in the coming decades) require us to explore even larger systems (in particular societal, community, and ecological systems) in order to create a better life for all. In this symposium we look at systems which are resource-constrained and often global in nature. We look at circumstances where our limited resources can be used more effectively and efficiently to ensure sustainability of work while still ensuring safety, health and wellness, and effectiveness of human functioning. This symposia will specifically explore the implications for a number of emergent issues, including how to facilitate and sustain pro-environmental behaviour, the role of ergonomics in green building design, global supply chain ergonomics, crowd work, and sustainable energy efficiencies efforts through ergonomic design.

Sd Participatory Ergonomics and Design, *Organized by Daniel Braatz*

Involvement and participation of people in the design process of workspaces is not an innovative idea, or even a new one. Many consider that it is workers’ right and duty to be involved in changes and that may impact their work in any possible way. However, it’s still more common that this process is conducted by a few specialists (usually ergonomists and/or engineers) with little to no participation of other interested actors.

This symposium goal is to discuss practical experiences and theoretical developments on methods, techniques and tools that improve the results for people’s participation in the planning, design and management of work systems.

Se Rasmussen Revisited—Human Factors, Accidents & Error, *Organized by Patrick Waterson*

The work of Jens Rasmussen over the course of the last half century represents some of the most influential contributions to the fields of cognitive science, human factors, ergonomics and safety science. His models of the boundaries of safe operation, ecological interfaces and methods such as cognitive work analysis as well as his work on the Risk Management Framework have been instrumental in developing models of human error. The presentations in this symposia are inspired by Rasmussen’s work and continue to delve into aspects of risk management and erroneous actions.

Travel Information

Directions & Travel Information

Travel by air:

Calgary International Airport (YYC) is the closest airport to Banff. To travel from the airport to Banff, the easiest options are the shuttle services run by Banff Airporter and Brewster Banff Airport Express. Both services have offered 15% discounts to conference participants.

Travel to Banff from Calgary International Airport

For the Banff Airporter, book on-line at www.banffairporter.com and use the promo code ACEODAM2017 on the final payment page.

For Brewster Banff Airport Express (BBAE), book on-line at <http://www.brewster.ca/brewster-banff-airport-express/> using the promo code ACE-ODAM2017 on the check-out page. Code is valid from Wednesday, July 26 to Tuesday, August 8, 2017.

Car rental is also available from the airport, however please note that Banff will be quite crowded in this high tourist season and a car is not necessary in Banff as there is a free bus service and much can be accessed by foot.

Maps and Directions are available from <https://www.banffcentre.ca/maps-and-directions>

The townsite of Banff is located in Banff National Park. All visitors must have a park pass for entry. As part of Canada's 150th Birthday, Parks Canada has waived National Park fees for 2017! You will still need to stop at the kiosks at the park entry to receive a pass if you do not have one.

Banff

One of the top tourist destinations in the world, Banff lies within Banff National Park. Surrounded by mountains and pristine lakes, Banff offers a multitude of opportunities for outdoor activities including hiking, mountain biking, canoeing, climbing and golf. Soothe weary bones at the end of the day with a visit to the Banff Hot Springs. Take the gondola to the top of Sulphur Mountain for spectacular views or challenge yourself with the hike to the top! Or, simply relax on one of the benches by the river and take in the views. Wonderful restaurants and shopping are available in the downtown core.

For more information on things to do in Banff and area, visit: <https://www.banfflakelouise.com/>

Margo's Picks: If you have a chance, I highly recommend driving or taking a tour bus that goes along the Icefield Parkway from Banff to Jasper. This is a truly awe inspiring visit on which you'll pass numerous view points, the Columbia Glacier and Athabasca Falls, to name a few. It's about a 4 hour drive but you'll want to make lots of stops along the way!

For a flat nature walk in Banff, try the Fenland trail. It's a beautiful 2 km loop and at the far end, you can hop on the road for a short walk down to the Vermillion Lakes for bird watching.

Just down the Tunnel Mountain Road from the Banff Centre, maybe 200m, is the trailhead for the Hoodoos /Bow River trail. It starts with a steep-ish downhill that's not too long and then goes along the river and is mostly flat from there. Banff Centre is also the trailhead for the Tunnel Mountain hike (4.8 km return) to the top of a small peak called Sleeping Buffalo.



This is the link to the hikes in town: <https://www.banff.ca/index.aspx?NID=613>

Moraine Lake (photo) is close by and stunning! Canoe rentals are available.

Moraine Lake—photo Paul Zizka for Banff Lake Louise Tourism

Hotel Information

A block of rooms has been booked at the conference venue, **The Banff Centre**, at a discounted rate for all conference delegates. On-line bookings can be made via <https://register.banffcentre.ca/V1WebControls/GroupLogin.aspx> with the Group ID: 34502, Password 174. For phone reservations, please quote booking ID ACE1707 and Booking name: ACE - ODAM 2017 Joint Conference

Please note that our room block is sold out for Sunday, July 30. Rooms are still available from July 31. For other hotel properties in Banff please refer to the "Best of Banff" website. They operate 9 properties in Banff through one online booking source. www.bestofbanff.com or by calling 1-800-563-8764.

As it is high visitor season in Banff and hotel rooms are at peak pricing, additional hotel properties are available in [Canmore, Alberta](http://canmorealberta.com/places-to-stay) ([https://canmorealberta.com/places-to-stay](http://canmorealberta.com/places-to-stay)) (approximately 20-25 minutes away by car from Banff).

Location:

Banff Centre for Arts and Creativity
107 Tunnel Mountain Dr.
Banff, Alberta, Canada
T0L 0C0
1-800-884-7574



Room Details

Professional Development Centre (PDC)
Single/Double occupancy
Lloyd Hall
Single/Double Occupancy

Rates (\$CDN)

\$170.00*
Extra Occupant: 20.00
\$200.00*
Extra Occupant: 20.00

*Notes:

Accommodation is at the Professional Development Building and at Lloyd Hall. However, Lloyd Hall is currently undergoing extensive renovation, due to be completed in the Spring of 2017. Since construction delays are always a possibility, Lloyd Hall rooms will not be added to the available rooms to reserve until the spring of 2017 or until it is clear that the construction will be completed for the conference.

a) The above rates are quoted in Canadian dollars and are exclusive of all taxes and facility fees.

b) Guestroom rates are subject to applicable taxes in effect at the time of the program, including 2% TIF, 4% ATL, and 5% GST.

c) Guestroom rates are subject to a facility fee of \$15.00 plus GST per person, per day. This fee includes: campus-wide Wi-Fi, phone calls across North America, access to Sally Borden Fitness and Recreation facilities, parking, access and borrowing privileges at The Banff Centre library and archives, and access to complimentary arts and programmed events when available.

d) A facility fee of \$15.00 plus GST per person.

e) Triple and quadruple accommodation is available at an additional cost of \$20.00 per person, per night. The Banff Centre allows a maximum of four (4) adults per guestroom on a bed-share basis. There will be no additional charge for children up to the age of 14 years who share with their parents or guardian.

f) The above guestroom rates will be extended to cover the periods that are three (3) days pre-event and three (3) days post-event, subject to guestroom availability.

g) In the event that a guest within the room block checks out prior to their confirmed check-out date, The Banff Centre will apply an early departure fee of \$75.00 plus GST to the individual's account. Departure date must be confirmed at check-in to avoid an early departure fee.

h) Full cancellation penalties apply for guests cancelling reservations within seventy-two (72) hours of arrival. Should the room block sell out, The Banff Centre agrees to add guest rooms to the room block at the group rate as the need arises, subject to availability.

i) Check-in time is 4:00 p.m. Every effort is made to accommodate guests arriving before the check-in time; however, guestrooms may not be immediately available. Check-out time is 11:00 a.m. Requests to retain rooms beyond that hour should be directed to the front desk once the delegate is registered. Should it be possible to extend a late check-out, a late departure charge may be applicable.

Delegate Social Events

Although this conference will provide delegates excellent educational and training opportunities, it will also offer many fun networking opportunities. We hope that you will be able to join us for the following:

ACE 2017 CONFERENCE WELCOME & REGISTRATION

Sunday, July 30, 2017 from 7-9 pm

Planning on attending arriving early for the conference? Please join us in the **MacLab Bistro**, located in the Kinnear Centre, for an informal get together. It's a great time to catch up with old friends and colleagues, and to make new acquaintances! Early registration for the conference will also be available at that time. Cash bar available.

OPENING RECEPTION AND EXHIBITOR SHOWCASE

Monday, July 31, 2017 from 5:30—8:30 pm

After a great first day of conferencing and networking, relax and chat with our vendors in the **Kinnear Centre** Rooms 103-105 This event, hosted by our vendors, includes appetizers and one free drink ticket for full conference delegates. Other participants may purchase a reception ticket via the conference registration page.

DELEGATE SOCIAL

We are planning a delegate social Wednesday evening at a local venue. Details will be posted on the conference web pages when available!

Watch for other events to be posted before and during the conference!!

Exhibitor Showcase

Thank you to our exhibitors!

ACE 2017 brings together a diverse and influential group of professionals from throughout North America whose common goal is to enhance the safety and effectiveness of people at work and at play. Involvement with this event provides high profile exposure for your people, your products and your organization.

These are our early registrants! Contact events@ace-ergocanada.ca for more information!



ergoCentric

ergoCentric Seating Systems is a Privately Owned Canadian Company, with over 25 years in quality seating manufacturing. Our main focus is on health and productivity, while producing unique and modular chair designs and features. Working closely with ergonomists and health practitioners to continuously improve and refine our chair designs, ergoCentric Seating Systems offers a wide range of aesthetically pleasing task, executive, guest and stackable seating for the office environment.

www.ergoCentric.com

ACE Corporate Member

Platinum Conference Sponsor



Global Furniture Group

We are committed to working with architects and designers highlighting the importance of ergonomics within the workplace design. This year we will introduce two new seating series: Sora and G1 Ergo Select. Both chairs have clean aesthetics and are fully compliant with the latest BIFMA G1, GSA and CGSB specifications. Global is the longest standing corporate member of ACE and will continue its leadership in the development of ergonomics standards and guidelines for a better workplace. Join us at our booth for enlightening conversation!

www.globalfurnituregroup.com/ca

ACE Corporate Member

Bronze Conference Sponsor



Fanshawe College

Fanshawe College offers Advanced Ergonomic Studies which is a full-time program that leverages an undergraduate education with the discipline-specific knowledge, skills and experience required to prepare graduates to enter the workforce as ergonomists. Graduates are well-positioned to pursue the Associate Ergonomist (AE) designation from the Canadian College for the Certification of Professional Ergonomists (CCCPE). The first of its kind in Canada, this intensive program is delivered at Fanshawe's London campus in two 15-week semesters followed by an 8-week field placement.

www.fanshawec.ca

ACE Corporate Member

Student Sponsor



LIFEFORM Furniture Manufacturing

LIFEFORM is a family owned and operated company doing business in Calgary since 1976. We choose to focus on comfort and use only the highest quality components. We have the in house capability to custom build solutions for individuals who can't find solutions any where else. We are more than mere assemblers, we take the time to understand your situation and work with you to ensure you find a long term comfort solution. Visit our website at www.lifeformchairs.com or call us toll free 800.661.8568 to learn more.

ACE Corporate Member

Break Sponsor



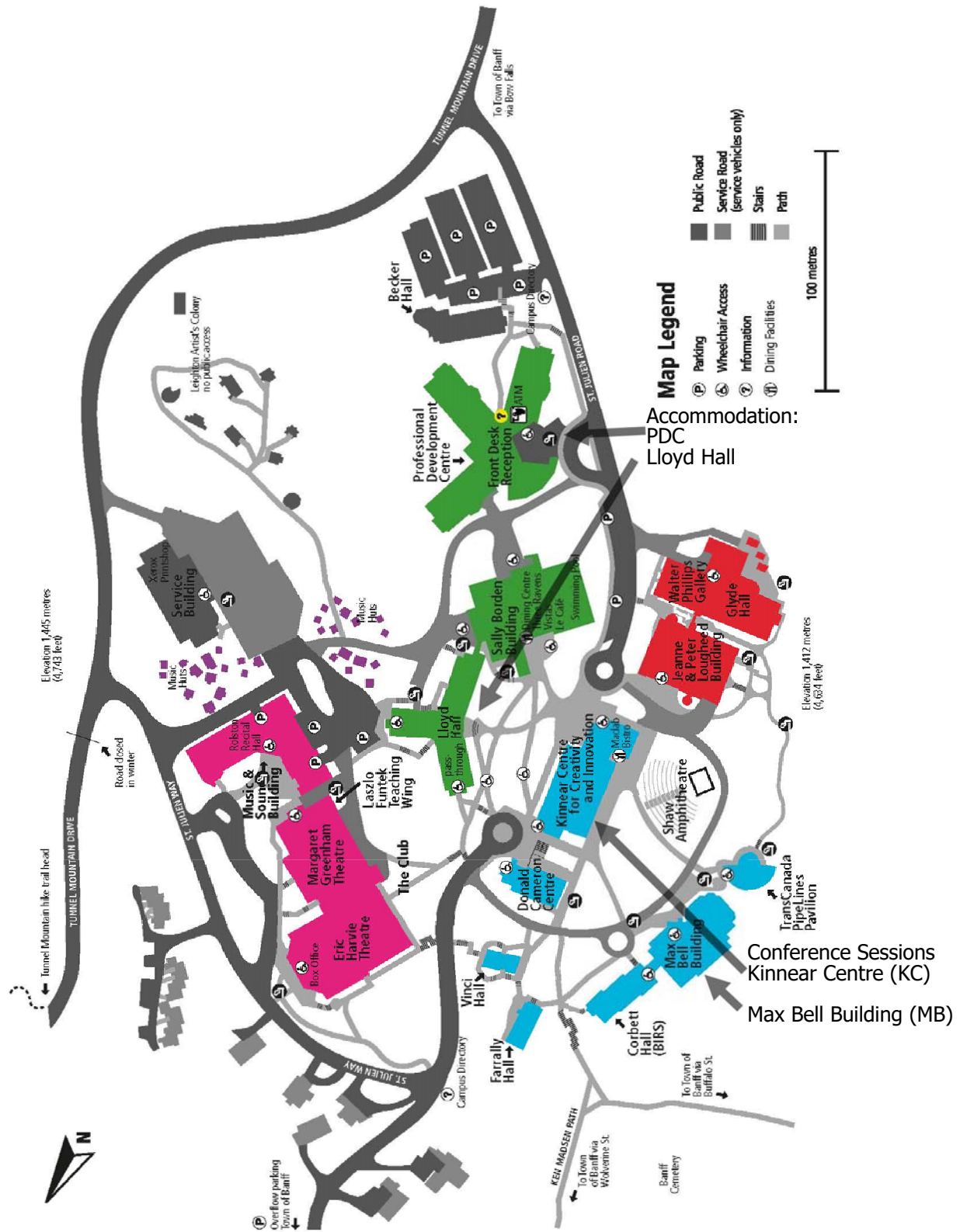
Fitterfirst

Fitterfirst has been "Leading the World to Better Balance" with quality, innovative balance training gear and core stability fitness products since 1985. We encourage everyone, from children to working professionals to seniors, to practice Stability in daily living, to improve Agility at play and to enhance Mobility for life (S.A.M.).

The Active Office™ line is our solution to the traditional sedentary 9 to 5 work day. Work is an area of our daily lives that is in desperate need of a health wake-up call and we provide the means to introduce movement throughout the day. Using products such as sitting discs or ball chairs in the classroom allows teachers and students alike to gently move while sitting, without causing a distraction for others in the room.

For our full line up of products, visit our website at www.fitter1.com

Banff Centre Campus



Conference Sponsors

We would like to thank all sponsors very much for their interest and support in the 2017 conference.

PLATINUM SPONSOR

ergoCentric®

www.ergoCentric.com

BRONZE SPONSOR



STUDENT SPONSOR



BREAK SPONSOR



*The Macroeergonomics Technical Group of the Human Factors and Ergonomics Society
proudly sponsors the 3rd Annual Brown/Hendrick Young Investigator Award.
To be given during closing remarks on Thursday.*