

Research Centre/Institute Annual Report

The logo for Ryerson University, featuring the text "RYERSON UNIVERSITY" in white, uppercase, sans-serif font on a dark blue background. A yellow vertical bar is positioned to the right of the text.

RYERSON UNIVERSITY

**Inclusive Media and Design Centre
Ted Rogers School of Management**

Date: July 2015

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Director's Overview and Highlights

The 2014/2015 was a very productive and eventful year. Most importantly, two PhD students, Carmen Branje and Rob Bajko, and two Master's student, Joseph Moscateillo (MSc) and Greg Dolinar (MMSc) successfully defended their theses and graduated. In addition, one new MMSc student, Jonathan Turco started his program. Four MBA major research papers were also associated with the IMDC. From a funding perspective eight full funding proposals, five letters of intent (LOI) and one post-doctoral fellowship proposal were submitted. Six funding proposals (two internal Ryerson programs) were awarded (one rejected, one pending decision) and three LOIs accepted to date. Notification of a sixth funding proposal and a fourth LOI is expected in summer 2015. All applications, other than the NSERC Discovery Grant award, were with multiple partners. Fels was a lead on five of the seven funding applications and one of the LOIs.

Publications were maintained at an excellent level with five journal articles published and four submitted (three of which are in the second revision stage) and one is awaiting review. Four conference papers were also accepted and presented at various conferences. All publications have student and collaboration partners as authors.

Fels was the General Chair of ICCHP 2014 and the e-publication chair at Mobile HCI 2014 representing Ryerson and the IMDC. She also received the Ryerson Collaborative Research Award for 2014/2015.

Finally, technology transfer activities for the IMDC were very exciting. The ISO standard PDS 20071-21 "Information Technology — User interface component accessibility — Part 21: Guidance on audio descriptions which was based on research carried out at the IMDC on audio description has been passed. A new company, Socius Pro, has been initiated by two IMDC students based on the research and software developed from the TerpTube project. We are also in negotiations with a US-based company to distribute TerpTube.

For 2015/2016, there will be new master's level students beginning in September and one PhD student beginning in January. All students will be working on projects related to research funded by the various partners. It is expected that two master's students and one PhD student will graduate during the 2015/2016 year. We are also beginning a research path that has a focus on older adults as a specialist population within the general area of people with disabilities. As such we are working on research that involves older adults with mobility challenges, who are frail, who have dementia or who have chronic ailments.

The Year in Review

Non-HQP Team Members and Affiliates

Chris Gibbs – co-PI on Socius Pro research project funding through TRSM

Peter Pennefather – project co-PI on CHRP (NSERC/CIHR) LOI submission

Arlene Astell project co-PI on CHRP LOI submission and NSERC Strategic submission

Rob Bajko – co-PI on Gamification of ITM445 and CMN450 funding by Ryerson's LTEF.

Jaigris Hodson – co-PI on Gamification of ITM445 and CMN450 funding by Ryerson's LTEF.

Danny Roush – Lead PI for TerpTube project.

Frank Rudzicz – co-PI on NSERC Strategic grant proposal

David Smith – partner on Intimate interfaces project and co-investigator on NSERC Strategic grant proposal

Frauke Zeller - co-investigator on NSERC Strategic grant proposal
Kevin Shaw – CEO, Zagga Entertainment, collaborator on NSERC Engage and Broadcast Accessibility Fund LOI
Beverly Milligan – co-PI on Broadcast Accessibility Fund LOI
David Bobier – artist in residence for Vibrafusion Lab research
Maria Karam – collaborator on Vibrafusion Lab research

Collaborations and Partnerships

- 1) OCADU – Inclusive Design Institute
- 2) Zagga Entertainment – LiveDescribe
- 3) Eastern Kentucky University – TerpTube
- 4) Ontario Shores Centre Mental Health Sciences – Storytelling robot
- 5) SociusPro – TerpTube technology transfer partner
- 6) Tactile-Audio Display (TAD) Inc. – Vibrafusion lab

Awards and Recognitions

Deborah Fels received the Ryerson University's Collaborative Research Award in Dec. 2014. She also gave the keynote address at the American Council for the Blind Conference in Las Vegas in July 2014. She was the General Chair of the ICCHP 2014 conference in July 2014 and the e-publications chair for MobileHCI in September 2014.

PhD student, Katie Seaborn, received a Japan Summer Program Scholarship to work with a Japanese researcher on her third experiment.

Joseph Moscateillo won best paper award from paper presented at Young Research Consortium at ICCHP 2014 (July 2014). Invited to submit his paper to Technology and Disability.

Vera Parilova was awarded an NSERC Undergraduate Research Award for summer 2015.

Research Funding and Projects

Internal

Program	Date	Contribution to IMDC research objectives
Workstudy	Summer 2014, Fall/Winter 2014/2015	Allows undergraduate students to be involved in various research projects including TerpTube, Intimate Interfaces, LiveDescribe, Socius Pro and Vibrafusion lab. Students play a key role in developing software and participating in user studies.
Research assistant program	Fall/Winter 2014/2015	Undergraduate program that allows one student to participate in the development and implementation of research objectives. The student for 2014/2015 participated in developing a compositional tool for creating vibrotactile art.
Learning and Teaching Office	Dec. 2014 – Dec. 2015	In partnership with Rob Bajko and Jaigris Hodson, we gamified ITM445 and CMN450 to engage students in innovative pedagogical processes. This work was an extension of the gamification survey paper conducted by Katie Seaborn as part of her PhD research.

External

Date	Organisation & Research Project	Applicant	Amount for Fels/Ryerson
2015	Broadcast Accessibility Fund LOI - LiveDescribe	D. Fels & K. Shaw	Full application invited
2015	Broadcast Accessibility Fund LOI – EnACT enhanced captioning integration with existing captioning tool	B. Milligan & D. Fels	Full application invited
2015	Broadcast Accessibility Fund LOI – Audio description in Canada	Canadian Association of Blind Canadians	Full application invited
2015	SSHRC Partnership Grant - LOI		Awaiting decision
2015	CIHR/NSERC – CHRP program	D. Fels, P. Pennefather. A. Astell	
2015	NSERC Strategic Project – Storytelling robots for older adults with communication difficulties	D. Fels, F. Rudcicz, A. Astell, D. Smith and F. Zeller	Awaiting decision
2015-2020	NSERC Discovery – Inclusive media and design	D. Fels	\$28,000 per year

2015-2016	TVN – Tecla Shield 3.0	D. Fels & Komodo OpenLab	\$20,000
2015 - 2018	CFI infrastructure grant	J. Nolan,	\$950,000
2014 - 2019	Age-well NCE - TUNGSTEN	Alex Mihailidis + 20 other researchers; Co-lead with A. Astell	\$59,000
2014	NSERC Engage: LiveDescribe with Zagga Entertainment	D. Fels, K. Shaw	\$22,000

Submissions

1. Storytelling robots for frail older adults with communication difficulties submitted to TVN 2014 Catalyst Grant Program Application. This application was rejected in January 2015. The application was reworked based on the feedback received and resubmitted to the NSERC strategic project program.

Knowledge Mobilization

Please list and discuss (here) all of the knowledge mobilization activities initiated by the Institute/Centre and its members. Why are these events important and what impact have they had outside of the individual Institute/Centre and the University?

Co-author of ISO standard PDS 20071-21 "Information Technology — User interface component accessibility — Part 21: Guidance on audio descriptions. It has been accepted as a new ISO standard.

Events

SociusPro was showcased at two events: 1) Ignite Business Event, April 2015; and 2) Online Revealed Conference – March 2015.

The Vibrafusion Lab held 15 different concert, installations and events with the Emoti-chair technology including Workshop concert in the Array Space, Composers workshop, concert by Robert Appleton (musician), workshop with Chisato Minamimura (deaf Dancer), workshop with Gordon Monahan (composer) and Orchestra of the Tactile. Please refer to www.vibrafusionlab.com for the complete listing of events and details.

Presentations

All conference papers were presented at the associated conference.

Service

Deborah Fels in cooperation with two instructors from ProComm gamified one ITM and one ProComm course. Research regarding student opinion and instructor observations was presented as a poster at the 2015 Ryerson Teaching and Learning conference, which won best poster.

Students and staff at the IMDC are regularly being asked to consult on accessibility issues in TRSM and the broader Ryerson community.

Deb Fels participated in a panel discussion on the position of technology for older adults for the 50+ Life program through Continuing Education at Ryerson University in April 2015.

Curriculum development

Ryerson courses ITM445 and CMN450 were gamified for Winter 2015 – a project funded by LTEF. The gamification process was based on Seaborn and Fels' (2015) survey paper on gamification. A poster presented at the Ryerson Learning and Teaching conference May 2015.

Advocacy

See Service

Training Highly Qualified Personnel

Students – PhD

Name	Program	Thesis title
Ellen Hibbard (on-going)	Communication and Culture	The impact of vlogging on Deaf culture.
Katie Seaborn (on-going)	Industrial Engineering	Mixed reality, social connectivity, eudaimonic mobility
Carmen Branje (graduated Oct. 2014)	Industrial Engineering	The vibrochord: Investigating a vibrotactile musical instrument
Rob Bajko (graduated Oct. 2014)	Communication and Culture	Modeling the changing attitudes and uses of mobile technology in the corporate environment

Students - Masters

Name	Program	Thesis/MRP title
Somang Nam (MSc, on-going)	Computer Science	Beadbox: A compositional tool for composing vibrotactile art
Joseph Moscateillo (MSc. graduated Oct. 2014)	Computer Science	Design an evaluating a system for the effective analysis of sign language video content for the improvement of video quality
Neil Sylva (MA, on-going)	Communication and Culture	Video guestbook
Greg Dolinar	MMSc	Investigating user perspectives on mixed-reality games for people who drive mobility devices
Jonathan Turco (MMSc, on-going)	MMSc	Credibility and authenticity between text and video consumer reviews
William Cruz (graduated Oct. 2014)	MBA	Examining the Pattern of Innovation of Disruptive Nanomedicine and its Potential Interaction with the Pharmaceutical Industry
Jing Pan (graduated Oct. 2014)	MBA	What are the sustainability options for deploying a patient and family education mobile program for Oral Rehydrated Fluids?
Melissa Factor graduated (Oct. 2014)	MBA	Funding in health research: A provision for technical support
Nikita Shelkovnikov (graduated Oct. 2014?)	MBA	Sustainable monetization of PN calculator mobile application

Undergraduate students

Name	Program	Project duties
Vera Parilova	Computer Science	Programmer, SociusPro (2014/2015)
Davor Kjucevic	Computer Science	Programmer, LiveDescribe (2014/2015)
Carly Holtzman	Design	Interface designer, Terptube
Bergin Dedej	Biomedical Engineering	Programmer, TerpTube
Thanuson Sathasivam	Computer Science	Programmer, LiveDescribe (2014/2015)
Albert Aikins-Mensah	Computer Science	Programmer, Vibrafusion Lab (2014/2015)
Daniel Maueri	Computer Science	Programmer, LiveDescribe (summer 2014)
Valentin Serrago	Computer Science	Programmer, LiveDescribe (summer 2014)
Kristian Ott	Mathematics	Lead programmer, LiveDescribe (summer 2014)

Staff

Name	Contribution
Diana Aybar	Programmer, Intimate Interfaces project
Jamal Edey	Programmer on TerpTube project and lab manager
Martin Gerdzhev	Programmer for TerpTube project and server administrator
Joseph Moscateillo	Technical lead for TerpTube and lab manager Sept 2014 – April 2015
Margot Whitfield	Lab manager until August 2014 then on maternity leave. Authored two papers, organized finances and user studies for lab. Submitted and was awarded two research grants.

Research Contributions

Journal articles

1. Branje, C., Fels, D.I. (in press). The Vibrochord: Validating a theoretical framework for the evaluation of musical input devices. *International Journal of Human-Computer Studies*. Impact factor = 2.366
2. Seaborn, K, Fels, D.I. (2015). Gamification in Theory and Action: A Survey. *International Journal of Human Computer Studies*. 74 (Feb). 15-31. Impact factor = 2.366. First survey paper published from IMDC.
3. Hibbard, E., & Fels, D. I. (2014) Answering a PhD qualifying exam in ASL: One person's experience. *Canadian Journal of Learning and Technology*, 28, 3. New online journal.
4. Branje, C., Fels, D.I. (2014). Playing vibrotactile music: A comparison between the Vibrochord and a piano keyboard. *International Journal of Human-Computer Studies*. 72. 431-439. Impact factor 2.366.
5. Branje, C., Nespoil, G., Russo, F., & Fels, D. I. (2014). The effect of vibrotactile stimulation on the emotional response to horror films. *Computers in Entertainment (CIE)*, 11(1), 5-18. No impact factor but preeminent ACM journal on entertainment computing for academic and industry publications. Widely read by industry.

Conference papers and presentations

1. Fels, D., Whitfield, M., Baffa, R., Aybar, D. (2015). IIS you is my digital baby: An Intimate Interface System for persons with disabilities. *GI'2015*.
2. Edey, J., Seaborn, K., Branje, C., Fels, D.I. (2014, October). Powered to play: A mixed reality game for people driving powered chairs. In *Games Media Entertainment (GEM), 2014 IEEE* (pp. 1-8). IEEE.
3. Engler, R. Fels, D.I. (2014). Intimate Interfaces: an inclusive game, designed to people with mobility issues. *5th International Forum of Design as a Process*. Guadalajara.
4. Fels, D.I., Roush D., Church, P., Gerdzhev, M, Stevens, T, Hibbard, E. (2014). TerpTube: A Signed Language Mentoring Management System. *ICCHP2014*. Paris. 408-414.

Media Mentions and Social Media Presence

“Intimate Interfaces for People with Disabilities” CBC Metro Morning. Feb. 13, 2015.

“Audio description in Canada Panel” AMI television. Interview. April 10, 2014.

Submissions/in revision

1. Seaborn, K., Pennefather, P., Fels, D.I. Learn What We’re Going Through:” Older powered chair users’ on mixed reality and related technologies for social interaction, entertainment, and understanding: A focus group and needs requirements study. *Universal Access to the Information Society*. Impact factor 0.40
2. Seaborn, K., Edey, J., Dolinar, G., Whitfield, M., Gardner, P., Branje, C., Fels, D.I. Accessible play in everyday spaces: mixed reality gaming for powered mobility device users. *Transactions on computer-human interaction* (2nd revision). Impact factor 1.37
3. Hibbard, E., Fels, D.I. Sign Language Communication becomes Asynchronous: A comparison of vlogs by Deaf people from a mainstream website, YouTube with a Deaf specific website, Deafvideo.TV. *Journal of Pragmatics* (1st revision). Impact factor 0.98
4. Whitfield, M. Seaborn, K., Fels, D.I. Inclusive production: Live audio description and sensory tours for accessible theatre performance. *Disability and Society* (1st revision). Impact factor 1.02
5. Whitfield, M. Fels, D.I. Mary Poppins, the musical, brought to life through alternative audio description (AD) for blind and low vision (B/LV) theatre goers. *Universal Access to the Information Society* (1st revision). Impact factor 0.40
6. Naraine, M., Whitfield, M., Fels, D.I. Who’s devising your theatre experience? *Journal of Visual Communications* (awaiting decision on 1st revision). Impact factor 1.48.

Expenses for Previous Year

Please outline all expenses for the previous year (in Appendix I) and provide a brief description for each expense (here).

Plan for the Following Year

Future objectives, plans, and activities

The goal of the IMDC remains to carry out technology oriented research on inclusive media and design.

We plan to continue our current projects and are adding one new direction, increased participation and research with older adults, particularly those with disabilities. Towards that new direction, we are part of the AGE-WELL NCE working on the TUNGSTEN project with a goal of creating tools that assist designers in understanding and accounting for the needs of older adults.

Anticipated SRC output (e.g. journal articles and conference papers/presentations): We expect to publish at the same rate as 2014 although we are targeting higher impact value venues.

Planned submissions to granting agencies: We plan to submit at least four new funding application, two to the Broadcast Accessibility Fund, one to CIHR knowledge mobilization program, and one to the Ministry of Health Systems Research Fund.

Human Resources: It is anticipated that there will be three new masters students joining the IMDC in September 2015 and one new PhD student in January 2016. We also anticipate that six new undergraduate students will be involved in the IMDC projects through the Ontario WorkStudy programs. Staffing levels will remain the same as the 2014/2015 year.

Knowledge mobilization (e.g. events and seminars): It is anticipated that there will be an additional five events scheduled at the Vibrafusion Lab and two seminars on accessibility throughout the 2015/2016 year.

Strategies to ensure goals and objectives are met:

- 1) We will continue to submit applications for funding in order to attract adequate human and technical resources to achieve our goals and objectives.
- 2) Publishing research work will remain a part of each graduate students' work.