

**Research Centre/Institute Annual Report**

**RYERSON UNIVERSITY**

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

**Date: June 2016**

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## Director's Overview and Highlights

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The 2015/2016 was another productive and eventful year. Most importantly, one Master's student, Somang Nam (MSc) successfully defended his thesis and graduated. In addition, one new MASc student, Joash Sujan, started his program. Two MBA major research papers were also associated with the IMDC. From a funding perspective, eleven full funding proposals, six letters of intent (LOI) and one post-doctoral fellowship proposal were submitted. Four funding proposals (a) SSHRC Partnership (to remain confidential until announced by federal government, b) CIHR knowledge translation, c) Learning and Teaching Office and d) Broadcast Accessibility Fund) were awarded (four rejected and four pending) and three LOIs accepted to date (two rejected and one pending). Notification of the pending funding proposals or LOIs is expected in summer/fall 2016. All applications were with multiple partners. Fels was a lead on eight of the eleven funding applications and three of the LOIs.

Publications were maintained at an excellent level with four journal articles published and three submitted (one of which is in second revision) and two are awaiting review. Twelve conference papers were also accepted and presented at various conferences. One book chapter has been submitted. All publications have student and collaboration partners as authors.

Fels is the Co-Chair of Young Researchers Consortium for ICCHP 2016. She also continues representing Ryerson and NSERC on the Panel. Finally, Fels participated in reviewing numerous journal and conference submissions including Universal Access to the Information Society Journal, UIST 2016, ASSETS 2016, ICCHP 2016, CHI 2016 and GI 2016. She is on the program committee for ICCHP 2016.

Finally, technology transfer/knowledge mobilization activities for the IMDC were very busy. We produced two consulting reports for Media Access Canada regarding the Canadian Broadcast Associate report on real time caption accuracy and on the proposal for assessing captioning accuracy. We are also still in negotiations with a US-based company to distribute TerpTube. We have partnered with Mediac Inc. to produce a Canadian captioning tool that incorporates

For 2016/2017, there will be new PhD and master's level students beginning in September. All students will be working on projects related to research funded by the various partners. It is expected that one master's students and one PhD student will graduate during the 2016/2017 year (Katie Seaborn's PhD defense is scheduled for July 27, 2016). We are also continuing our 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

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### Non-HQP Team Members and Affiliates

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

Peter Pennefather –project co-PI on CIHR Knowledge Synthesis (KS) grant and CHRP (NSERC/CIHR) LOI and CIHR Live Pilot submissions.

Fatima Lahka –PDF for CHRP LOI and CIHR Live Pilot submission, collaborator in CIHR KS grant

AK –research participant and knowledge user for CIHR KS grant and CIHR Live Pilot submission.

Myda Kavazanjian –collaborator and knowledge user from York University for CIHR KS grant and CIHR Live Pilot submission.

Jason Nolan –director of the RE/Lab at Ryerson.

Arlene Astellco –lead on Work Package 1.2 of Age-Well NCE.  
Rob Bajko –co-PI on Gamification of ITM445, NUR850 and CMN450 funding by Ryerson’s LTEF. Co-PI on SSHRC Insight submission.  
Lori Schindel Martin –co-PI on Gamification of ITM445, CMN450 and NUR850 funding by Ryerson’s LTEF.  
David Chandross –game designer and researcher on LTEF grant and Framgames project  
David Kaufman –co-PI on Framgames project  
Danny Roush –lead PI for TerpTube project.  
Kevin Shaw –CEO, Zagga Entertainment, collaborator on NSERC Engage and Broadcast Accessibility Fund LOI  
Beverly Milligan –co-PI on Broadcast Accessibility Fund grant and new BAF LOI  
David Bobier –artist in residence for Vibrafusion Lab research and for CIHR Live Pilot and OCE Advancing Education submission (called WebMoti)  
Maria Karam –collaborator on Vibrafusion Lab research, industry partner for CIHR Live Pilot and OCE Advancing Education submission.  
Graham Smith –PDF for CIHR Live Pilot and OCE Advancing Education submission.  
Jason Nolan –co-PI for CIHR Live Pilot and OCE Advancing Education submission.  
Mauricio Meza –co-PI on Canadian Frailty Network (CFN) grant.

## Collaborations and Partnerships

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- 1) OCADU – Inclusive Design Institute.
- 2) Zagga Entertainment – LiveDescribe.
- 3) Eastern Kentucky University – TerpTube.
- 4) Ontario Shores Centre Mental Health Sciences – Age-Well.
- 5) SociusPro – TerpTube technology transfer partner.
- 6) Tactile-Audio Display (TAD) Inc. – Vibrafusion lab.
- 7) Toronto Grace Long Term Care – CFN project.
- 8) WebChair Inc. – WebMoti project.
- 9) g-Dial – industry partner for CIHR Live Pilot and CHRP submissions.
- 10) Christie Digital – industry partner for Katie Seaborn’s thesis.
- 11) Variety Village – knowledge user for Katie Seaborn’s thesis.
- 12) Beleave Inc. – knowledge user for CHRP submission.
- 13) Mediac Inc – industry partner for Broadcast Accessibility Fund.

## Awards and Recognitions

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Deborah Fels is the co-chair for the Young Researcher Consortium for ICCHP 2016 conference in July and a member of the program committee. She was also the best paper judge for ASSETS 2016. Finally, Deb is on the Board of Directors for CaptionMax, a captioning and audio description company in the US.

## Research Funding and Projects

### Internal

Program	Date	Contribution to IMDC research objectives
Workstudy	Summer 2016, Fall/Winter 2015/2016	Workstudy 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 (RSP)	Fall/Winter 2015/2016	RSP undergraduate program allows one student to participate in the development and implementation of research objectives. The student for 2015/2016 participated in developing a mobile version of SociusPro.
Learning and Teaching Office	Dec. 2015 – Dec. 2016	In partnership with Rob Bajko, Lori Schindel Martin, and David Chandross we gamified ITM445, NUR850 and CMN450 to engage students in innovative pedagogical processes. This work was a continuation of the gamification research carried out in the previous year. We also created D2L widgets that will be made available Ryerson-wide in September 2016.

### External

Date	Organisation & Research Project	Applicant	Amount for Fels/Ryerson
2016	Broadcast Accessibility Fund LOI – Methods for determining accuracy of real-time captioning	B. Milligan & D. Fels	Full application invited
2016	OCE Advancing Education	D. Fels, J. Nolan, G. Smith, M. Karam	Full application invited
2016	CIHR Knowledge mobilization	D. Fels, P. Pennefather, F. Lahka, AK	\$15,000
2015	Broadcast Accessibility Fund LOI –EnACT enhanced captioning integration with existing captioning tool	B. Milligan & D. Fels	Awarded, \$123,000
2015	SSHRC Partnership Grant		Awarded (\$7m over 7 years, Fels to receive \$100k annually)

2015-2020	NSERC Discovery	D. Fels, P	\$28,000 per year
2014 - 2019	Age-well NCE - TUNGSTEN	Alex Mihailidis + 20 other researchers; Co-lead with A. Astell	\$59,000

*Submissions*

1. CIHR Live Pilot
2. CIHR Live Pilot
3. CHRP LOI
4. Full proposals for OCE Advancing Education and Broadcast Accessibility Fund.
5. SSHRC Insight grant

Knowledge Mobilization We produced two consulting reports for Media Access Canada regarding the Canadian Broadcast Associate report on real time caption accuracy and on the proposal for assessing captioning accuracy. We are also still in negotiations with a US-based company to distribute TerpTube. We have partnered with Mediac Inc. to produce a Canadian captioning tool that incorporates the captioning research that has been carried out at the IMDC over the past 10 years.

Events

The Vibrafusion Lab held 10 different concerts, installations and events with the Emoti-chair technology including a 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](http://www.vibrafusionlab.com) for the complete listing of events and details.

Presentations

All conference papers were presented at the associated conferences.

Service

In cooperation with one instructor from ProComm and one from Nursing, Dr. Fels continued the gamification process begun the in 2014/15 by gamifying one ITM, one Nursing and one ProComm course. Research regarding student opinion and instructor observations was presented as a seminar at the 2016 Ryerson Teaching and Learning conference. Six other conference presentations are scheduled for 2016.

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

Deb Fels was invited by SSHRC to present her approach to innovation and inclusion to the Knowledge Translation awardees.

## Curriculum development

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Ryerson courses ITM445, NUR850 and CMN450 were gamified for Winter 2016 – a project funded by LTEF. The gamification process was based on Seaborn and Fels’ (2015) survey paper on gamification. A gamification seminar was presented at the Ryerson Learning and Teaching conference May 2016. In addition, leaderboard, avatar and alternative currency modules are being created for general use in D2L. The expected launch for these modules is September 2016.

## Advocacy

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Fels has assisted two ITM students with disabilities in negotiating accommodation requirements with ITM and other professors. This includes alternative exam formats, understanding student’s abilities and providing suggestions on how to make classes and class materials more accessible.

## Awards

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Somang Nam has been nominated for Ryerson’s 2016 gold medal for outstanding graduate work. Ellen Hibbard received the City of Toronto international graduate student award and the Toronto Excellence Award in Fall 2015.

## Training Highly Qualified Personnel

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### *Students – PhD*

<b>Name</b>	<b>Program</b>	<b>Thesis title</b>
Ellen Hibbard (completed Oct. 2015)	Communication and Culture	The impact of vlogging on Deaf culture.
Katie Seaborn (on-going)	Industrial Engineering	Mixed reality, social connectivity, eudaimonic mobility
Somang Nam (on-going)	Industrial Engineering	Scooter games



### Students - Masters

Name	Program	Thesis/MRP title
Joash Sujan (MAsc, on-going)	Industrial Engineering	TUNGSTEN
Somang Nam (MSc, completed April 2016)	Computer Science	Beadbox: A compositional tool for composing vibrotactile art
Jonathan Turco (MMSc, on-going)	MMSc	Credibility and authenticity between text and video consumer reviews
Carly Holtzman (MA, on-going)	MA, Comm/Cult	Towards patient audio/video contributions to the electronic medical record
Elena Emelyanova (completed, April 2016)	MBA	The untapped opportunities of using web analytics data in the redesign process
Karen Zheng (completed, Dec. 2016)	MBA	The SR&ED program, its bias and success factors

### Undergraduate students

Name	Program	Project duties
Vera Parilova	Computer Science	Programmer, SociusPro (2015/2016)
Raza Al Miri	Computer Engineering	Programmer, LiveDescribe and SociusPro
Sheraz Siddiqui	Computer Science	Lead programmer, (Fall/winter 2015/2016, summer 2016); Gamification project
Davor Kjucevic	Computer Science	Programmer, LiveDescribe (2014/2015)
Thanuson Sathasivam	Computer Science	Programmer, LiveDescribe (2014/2015)

## Staff

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Name	Contribution
Martin Gerdzhev	programmer for TerpTube project and server administrator
Lawrence Kwok	Research assistant – Tecla Sheild 3.0
David Chandross	Game designer
Margot Whitfield	Lab manager. Authored two papers, organized finances and user studies for lab. Submitted and was awarded one research grant.

## Research Contributions

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### Journal articles

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1. Bajko, R. Hodson, J., Seaborn, K., Livingstone, P, Fels, D.I. (forthcoming). Edugamifying Media Studies: Student Engagement, Enjoyment, and Interest in Two Multimedia and Social Media Undergraduate Classrooms. *Information Systems Education Journal*.
2. Seaborn, K., Edey, J., Dolinar, G., Whitfield, M., Gardner, P., Branje, C., Fels, D.I. (forthcoming). Accessible play in everyday spaces: mixed reality gaming for powered mobility device users. *Transactions on computer-human interaction*.
3. Seaborn, K., Pennefather, P., Fels, D.I. (forthcoming). 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*.
4. Naraine, M., Whitfield, M., Fels, D.I. (2015). Who’s devising your theatre experience? *Journal of Visual Communications*.

### Conference papers and presentations

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1. Meyer, R., Chandross, D., Reguindin, J., Bajko, R., Fels, D.I., Schindel-Martin, L. (2016). The Design and Implementation of Game-Based Learning Systems in Higher Education and Health Professions Education. CAUSE 2016.
2. Kwok, L., Whitfield, M., **Fels-Leung, S.**, Meza, M., Fels, D.I. (2016). Working with frail, elderly EVA users to determine ways to support agency in single switch connectivity with mobile technologies. *ICCHP 2016*. Linz.
3. Whitfield, M. **Mir Ali, R.**, Fels, D.I. (2016). New audio description web application, LiveDescribe, is redefining what and how entertainment content is being made accessible to blind and low vision audiences. *ICCHP 2016*. Linz.
4. Bajko, R & Fels, D.I. (2016). Mobile phone interaction in workplace meetings. *HCII 2016*, Toronto.
5. **Roy, J.S.S.**, Fels, D.I., Neumann, P.W. (2016). User centred design methods and their application for older adults. *HCII 2016*, Toronto.
6. Bajko, R., Chandross, D. Schindel-Martin, L., Fels, D.I. (2016). D2L/Brightspace gets power-up’s: The development of gamification API’s for LMS. Canada International Conference on Education (CICE-2016), Toronto.

7. **Nam, S.**, Fels, D.I. (2016). Design and evaluation of a composition tool and notation system for vibrotactile composition. *HCII 2016*, Toronto.
8. **Seaborn, K.**, Satoh, Y., Fels, D.I. (2016). Usability and safety of a HUD during power chair navigation: A pilot study. *HCII 2016*, Toronto.
9. Bajko, R., Hodson, J., **Seaborn, K.**, **Livingstone, P.**, Fels, D.I. (2015). Guilds, Die Rolls, and Leaderboards: Gamification of Two Undergraduate Multimedia and Social Media Courses. *EdSIG*. Wilmington.
10. Kwok, L., **Fels-Leung, S.**, Meza, M., Fels, D.I. (2015). The Tecla Shield 3 (poster). 3rd Annual TVN Conference on improving care for frail elderly Canadians. <https://www.eiseverywhere.com/ehome/tvnconference2015/home/>.
11. **Seaborn, K.**, Pennefather, P., & Fels, D. I. (2015, October). A cooperative game for older powered chair users and their friends and family. InGames Entertainment Media Conference (GEM), 2015 IEEE (pp. 1-4). IEEE.

### Submissions/in revision

1. **Seaborn, K.**, Pennefather, P., Fels, D.I. Evaluation of a cooperative game prototype for improving the well-being of older powered chair users. *ACM Transactions on Accessibility*.
2. Pennefather, P., Seaborn, K., Fels, D.I. Systemic Design Principles Targeted at Developing Eudaimonic Flourishing through Healthcare System Participation. in Jones, P. (ed.) *Systemic Design*, Springer.

### Invited talks, presentations, etc.

- April 2016 – Security and older adults, presented to Older Women’s Group from the Birchmount Bluffs Neighbourhood Community Centre.
- April 2016 – Access older adults and financial technologies, presented at Technology and evidence for healthy ageing and financial services co-hosted by the World Economic Forum and National Institute on Ageing.
- Oct. 2015 – Inclusive media and design, D. Fels, guest lecture for graduate level design course at Universidade do Estado de Minas Gerais - UEMG, Belo Horizonte, Brazil.
- Aug. 2015 – Showcased IMDC technologies at the Accessibility Innovation Showcase, co-inciding with the Parapan AM games.

### Expenses for Previous Year

All expenses and a brief description for each expense for the previous year are outlined in Appendix I .

Salary expenses for Margot Whitfield comprised the bulk of the costs from 2015/2016 and this is expected to continue through 2016/2017.

The \$2,600 allocated to supplies was for computer parts rather than stationary including new laptop/iPad chargers, backup hard-drives, headphones, laser and 3-D printer cartridges (\$250 each x 3), and a replacement battery for our mobility scooter (\$650).

## Plan for the Following Year

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### Future objectives, plans, and activities

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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. We are also investigating social connectedness offered by paired game play with older adults. Finally, we carried out a user study with Komodo OpenLabs for the Tecla 3.0 system and frail older adults. The study will be completed by June 2016. The long term care facility and industry partner would like to continue this research so we will seek funding to support further research.

*Anticipated SRC output (e.g. journal articles and conference papers/presentations):* We expect to publish at the same rate as 2015 although we are targeting higher impact value venues and new venues. For example we are targeting trade publications in the broadcast area in order to disseminate our captioning research to the broadcaster industry and non-academic audiences.

*Planned submissions to granting agencies:* We plan to submit at least three new funding applications, one to the Broadcast Accessibility Fund, one to Ontario Media Development Corporation and one for an SSHRC partnership development grant.

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

*Knowledge mobilization (e.g. events and seminars):* It is anticipated that there will be an additional five events scheduled at the Vibrafusion Lab, one art installation, one seminar on accessibility, and one workshop on gamification throughout the 2016/2017 year. Dr. Fels will be on sabbatical and it is anticipated that she will give at least four invited presentations on the work produced at the IMDC at Queensland University of Technology.

*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.