

Completed Letters of Intent (LOIs) should be sent as email attachments to applications@grand-nce.ca with "GRAND Phase 2 LOI" as the subject line.

A successful proposal will address problems of significant relevance to the GRAND research program and must meet all of the guidelines for projects within GRAND, including the following mandatory requirements:

- The project must address significant research issues relevant to one or more of the GRAND Challenges identified for Phase 2 of the GRAND NCE
- The Project Leader and Co-leader must work at different universities; often they will represent multiple disciplinary approaches, appropriate to the project.
- There must be at least three researchers (including the Project Leader and Co-leader) who are or are eligible to be Principal Network Investigators within the GRAND NCE.
- There must be at least one Project Champion personally involved in planning and carrying out the project who is affiliated with a current or potential GRAND Partner drawn from the receptor community.
- One or more Partners from the receptor community must commit to making significant cash or in-kind contributions to the project.
- A current NSERC Form 100, SSHRC CV, or CIHR Common CV for both the Project Leader and Co-leader must be submitted as attachments to the LOI. Failure to include these attachments will be cause for immediate rejection.

Detailed instructions for completing this LOI template are on Page 2. More information on Phase 2 of the GRAND NCE is available on the GRAND website at the following URL, which will be updated with links to additional information as it becomes available: <http://grand-nce.ca/renewal>

Please note: If you complete this form using Preview, do not enter more text than is visible within the dimensions of the provided text box. Text that exceeds the visible limits will not be reviewed.

Project Title and Description

☒ Full project LOI ☐ Subproject only LOI

Title of proposed project

Collaboration over Game Systems (COGS)

Brief description for public use

People spend a significant amount of time playing social games. The challenge we address in this project is: How can we leverage the motivational pull of social games to shape the world? In particular, how can we make better social games and make social games better in order to connect people, empower individuals, crowdsource work, and generate revenue? We address this challenge through 6 subprojects (Socialize, Match, Gamify, Foster, Scaffold, and Evaluate), involving interdisciplinary research by scientists, artists, and social scientists from 8 provinces, in collaboration with 17 game and digital media companies, and a number of receptors.

Proposed Project Leader

☒ Form 100, SSHRC CV, or CIHR CCV has been attached

Name
Regan Mandryk

Email
regan@cs.usask.ca

University
University of Saskatchewan

Title/Position
Associate Professor

Proposed Project Co-leader

☒ Form 100, SSHRC CV, or CIHR CCV has been attached

Name
Carman Neustaedter

Email
carman_neustaedter@sfu.ca

University (must be different from Project Leader)
Simon Fraser University

Title/Position
Assistant Professor

Proposed Project Champion

☐ Confirmed ☐ Contacted ☐ Not Yet Contacted

Name
Lee Vermeulen

Email
vermeulen@alientrap.org

Organization
Alientrap Games

Title/Position
Founder and CEO

Front Page: All fields are mandatory. (a) Provide a project title and indicate whether the LOI is for a full project with subprojects or is only for a single subproject. LOIs that only propose a subproject will be matched with related LOIs to form full projects. (b) Provide a brief description of the proposed research suitable for posting on a public website that explains the project in terms accessible to the digital media community. (c) Provide the name, email address, university, and title for both the proposed project leader and the proposed project co-leader. (d) Provide the name, email address, organization name, and title for the proposed project champion (a person affiliated with a project partner who will be engaged in planning the project) and indicate whether the project champion has been confirmed, has only been contacted, or has yet to be contacted.

This Page: Read all of the instructions for completing the LOI template before filling out any of the information on later pages.

In **Part A**, provide the names of up to six partner organizations, indicate whether each has been confirmed, has only been contacted, or has yet to be contacted, and provide a brief explanation for how each organization will be involved in the project either as an active participant or as a potential receptor that will benefit from the research.

In **Part B**, list all GRAND projects that are related to the new LOI and also any other LOIs you are aware of that may be relevant to the new LOI.

In **Part C**, list up to nine additional co-applicants (not including the individuals listed on Page 1) who are expected to be involved as active participants in the research project. Indicate for each whether the individual is a project champion from the receptor community or an academic researcher.

In **Part D**, succinctly summarize (up to one half page) the problem being solved by the research.

In **Part E**, provide an overview (up to one and one half pages) of the proposed solution and the approach that will be taken in the research. Include relevant details about the theoretical framework, significant previous work, methodological approaches, and how the research will be managed and structured to achieve the desired goals. If you checked the box on the **Front Page** indicating you are submitting an LOI for only a subproject, just use the first box for **Part E**, don't use the second box on the continuation page.

In **Part F**, describe up to six subprojects (up to one half page for each subproject) that will be pursued during the first two years of the project. Indicate for each subproject the research question(s) that will be addressed, the relationship of the subproject to the rest of the project, the deliverables and assessment criteria appropriate for evaluating the success of the subproject, and the time frame (start and finish dates) estimated for the subproject. If you checked the box on the **Front Page** indicating you are submitting an LOI for only a subproject, enter "N/A" in all of the fields in **Part F** and continue to **Part G**.

In **Part G**, explain the likely technology transfer, knowledge mobilization, knowledge translation, or other activities that are planned for the project and how they may provide benefits to the receptor community.

In **Part H**, explain how the project will interact with other projects and the ways in which it may support or otherwise enhance the overall impact of the network.

In **Part I**, explain specific ways in which current or future partners will participate in the project and the mechanisms that will be used to ensure that this takes place.

In **Part J**, for each of the seven GRAND Challenges check whether the project will make its primary research contribution (check exactly one box) or a secondary research contribution (as many additional boxes as apply) to the challenge. Check "N/A" for any challenge that is not significantly impacted by the proposed research. For each challenge where a contribution is expected, provide a brief description of the likely contribution and its importance to the receptor community. The "Other" category may be used to describe anticipated contributions to the research infrastructure and enabling technologies and methodologies used in the GRAND NCE, or to other areas relevant to digital media that may be impacted, if the proposed research is expected to make a significant contribution in these areas.

Part A: Receptors and Partners list up to six organizations		
Organization Electronic Arts	<input checked="" type="checkbox"/> Confirmed	<input type="checkbox"/> Contacted <input type="checkbox"/> Not yet contacted Ian Crawford (Director of Studio Operations), Veronica Zammitto
Brief description of involvement Electronic Arts is one of the largest game companies with a Canadian presence. EA has expressed interest in Match (Crawford via Hancock) and Evaluate (Zammitto via Mandryk). As this is a new relationship in a new project, we are still negotiating what will be involved in the partnership. Collaboration with COGS researchers, access to game log data, and internships are anticipated. Further contributions are desired. Because of the history of collaboration between COGS researchers and EA, we expect that EA will be both an active participant and receptor.		
Organization Alientrap Games	<input checked="" type="checkbox"/> Confirmed	<input type="checkbox"/> Contacted <input type="checkbox"/> Not yet contacted Lee Vermeulen (Founder and CEO)
Brief description of involvement Alientrap Games is an indie game studio in Saskatoon, and has demonstrated commercial and critical success with Nexuiz and Capsized. Representing a number of small game studios (e.g., Minority) and incubators (e.g., Execution Lab) involved in COGS, Alientrap will provide access to game code for researchers to implement multiplayer solutions (Match), and game logs for researchers to study how players collaborate in multiplayer games (Socialize). Internships will also be provided. Alientrap (along with the other small game companies) will be both an active participant and a receptor of COGS research.		
Organization Microsoft Research and Microsoft Studios	<input checked="" type="checkbox"/> Confirmed	<input type="checkbox"/> Contacted <input type="checkbox"/> Not yet contacted Kori Inkpen, Michael Massimi, Stephane Morichere-Matte
Brief description of involvement Microsoft Research (Inkpen: Redmond, Massimi: Cambridge) is supporting Foster and Scaffold through internships for HQP, in-kind access to proprietary systems (e.g., VideoThreads, SkypeKit), and collaboration with COGS researchers. We may also receive cash contributions for specific projects. Microsoft Studios (Morichere-Matte: Vancouver) is supporting Match and Evaluate through student internships and collaboration with COGS researchers. We will work to build this relationship.		
Organization Insightrix	<input checked="" type="checkbox"/> Confirmed	<input type="checkbox"/> Contacted <input type="checkbox"/> Not yet contacted Larry Goodfellow (Principal and CFO)
Brief description of involvement Insightrix is a market research company based in Saskatoon with over 100 employees, and over \$3 million in annual sales. Their interest in gamification of their products and processes has led to a relationship with COGS researchers. Insightrix will commit employee time to Gamify, and will conduct online studies of COGS-generated systems via their user study system. Internships are likely, and cash contributions are part of a current CRD application with COGS researcher Gutwin.		
Organization Ubisoft Montreal	<input checked="" type="checkbox"/> Confirmed	<input type="checkbox"/> Contacted <input type="checkbox"/> Not yet contacted Nicholas Sweeney (User Research Director), Ian Livingston
Brief description of involvement Ubisoft Montreal has a user research team (led by Nicholas Sweeney) who service all games produced in Ubisoft Montreal's studio. Ian Livingston leads the team for the Far Cry Brand. Nic and Ian have expressed interest in Evaluate. The role of Ubisoft as a participant or receptor is TBD; however, we are building on the relationship established through the AFEVAL project. Internships, access to game metrics, and implementation of COGS-driven solutions are likely.		
Organization College Mobile	<input checked="" type="checkbox"/> Confirmed	<input type="checkbox"/> Contacted <input type="checkbox"/> Not yet contacted Chad Jones, Founder and CEO
Brief description of involvement College Mobile is a smartphone application developer based in Saskatoon with 15 employees and over \$1million in annual sales. They won the 2012 Saskatoon Awards for Business Excellence (SABEX) "Award of Innovation", and have collaborated with over 40 companies. College Mobile is supporting Gamify with employee time, and app store access and promotion. Internships have been negotiated, and both cash and in-kind contributions have been secured through NSERC Engage and MITACS grants.		
Part B: Relations to existing and proposed projects in the GRAND NCE		
Related Current Projects AFEVAL, GAMFIT, DIGLT, DIGIKIDZ, CPRM, DINS, HSCEG, INCLUDE		
Related LOIs KIDZ, G4HEALTH, MAKE, PLWD, ENGAGE, BOX		

Part C: Additional Co-Applicants List up to nine additional co-applicants

Name Carl Gutwin	Email gutwin@cs.usask.ca	<input type="checkbox"/> Project Champion <input checked="" type="checkbox"/> Researcher
Organization University of Saskatchewan	Title/Position Professor	
Name Bart Simon	Email simonb@alcor.concordia.ca	<input type="checkbox"/> Project Champion <input checked="" type="checkbox"/> Researcher
Organization Concordia University	Title/Position Professor	
Name T.C. Nicholas Graham	Email nicholas.graham@queensu.ca	<input type="checkbox"/> Project Champion <input checked="" type="checkbox"/> Researcher
Organization Queen's University	Title/Position Professor	
Name Kim Morgan	Email kmorgan@nscad.ca	<input type="checkbox"/> Project Champion <input checked="" type="checkbox"/> Researcher
Organization Nova Scotia College of Art and Design University	Title/Position Associate Professor	
Name Sean Gouglas	Email sgouglas@ualberta.ca	<input type="checkbox"/> Project Champion <input checked="" type="checkbox"/> Researcher
Organization University of Alberta	Title/Position Associate Professor	
Name Mark Hancock	Email mark.hancock@uwaterloo.ca	<input type="checkbox"/> Project Champion <input checked="" type="checkbox"/> Researcher
Organization Waterloo University	Title/Position Assistant Professor	
Name Kevin Stanley	Email kstanley@cs.usask.ca	<input type="checkbox"/> Project Champion <input checked="" type="checkbox"/> Researcher
Organization University of Saskatchewan	Title/Position Associate Professor	
Name Karyn Moffatt	Email karyn.moffatt@mcgill.ca	<input type="checkbox"/> Project Champion <input checked="" type="checkbox"/> Researcher
Organization McGill University	Title/Position Assistant Professor	
Name Lennart Nacke	Email lennart.nacke@uoit.ca	<input type="checkbox"/> Project Champion <input checked="" type="checkbox"/> Researcher
Organization University of Ontario Institute of Technology	Title/Position Assistant Professor	

Part D: Summarize the problem being solved (1/2 page)

People spend a significant amount of time playing social games. For example, World of Warcraft players alone have collectively spent more than 50 billion hours (equal to about 6 million years) playing together. Successful social games compel sustained and repeated play through game mechanics that motivate players by allowing them to demonstrate mastery over challenges under their own volition (Rigby, 2011). Although some may consider the time spent playing social games as wasted, research has shown that playing social games results in a variety of benefits, including: improving connectedness between parents and their teenage daughters (Coyne, 2011); strengthening relationships between friends (Wohn, 2011); empowering face-to-face negotiations (Yee, 2009); inspiring creativity (Jackson, 2011); promoting cooperation (Ewoldsen, 2012); managing aggression (Bennerstedt, 2012); connecting populations who are often disconnected due to circumstance (Baecker, 2012); and improving mood (Russoniello, 2009).

However, current collaborative play systems have several problems that limit their scope and potential. For example, many collaborative games do not allow for players of differing skills to compete, online game portals do not support the loose collaboration style desired by players, and novice players experience significant barriers to joining established communities. These limitations prevent the participation of would-be social gamers, reducing the number of consumers for and resulting revenues of social game creators. Thus there is a need to make social games better. In addition, there are large groups of people who could benefit from social games that fill specific needs; however, current social games do not foster intimacy among distributed groups of players, social games do not strengthen existing real-world communities, and crowdsourced work accomplished through social games is usually problem specific, tying progress to a particular instantiation of a game. Thus, there is a need to make better social games.

The challenge we address in this project is: How can we leverage the motivational pull of social games to shape the world? In particular, how can we make better social games and make social games better in order to connect people, empower individuals, crowdsource work, and generate revenue?

We address this challenge through six subprojects: Socialize, Match, Gamify, Foster, Scaffold, and Evaluate.

Part E: Summarize the proposed solution and approach (1 ½ pages)

Our team is comprised of 18 researchers from a broad range of disciplines, including science, art, design, social science, and digital humanities. This interdisciplinary team of researchers with an extensive record of NSERC, SSHRC, CIHR, and CCA funding will bring a holistic perspective to solving the challenge of using the motivational pull of social games to shape the world. In addition, our researchers represent 14 institutions across 8 provinces (BC, AB, SK, MB, ON, PQ, NS, and PEI), bringing a truly networked perspective to COGS research activities. In addition to the PL, CO-PL, and researchers noted in Part C, COGS also involves the following researchers: Scott Bateman (UPEI), Kate Hennessey (SFU-SIAT), Tony Tang (Calgary), Kate Sellen (OCADU), Andrea Bunt (Manitoba), Audrey Girouard (Carleton), and Peter Gorniak (SFU-SIAT).

Our team will work with small (e.g., Alientrap Games), medium (e.g., Insightrix), and large (e.g., Electronic Arts) companies, yielding opportunities for many different types of collaboration. This is elaborated on in Part I.

Our project activities fall broadly into making better social games (Foster, Scaffold, Gamify) and making social games better (Socialize, Match), with a final subproject that explores new methods for evaluating success (Evaluate). The specific problem addressed by each subproject and the accompanying research question follows. Specific project activities and team members are presented in Part F.

1. SOCIALIZE: Connecting People through Online Play

RESEARCH PROBLEM: Online game portals and persistent virtual worlds are popular places for people to play games with other distributed players; however, the relationships formed in these communities vary from loose ties to close partnerships. Current interfaces do not support the lightweight and transient nature of in-game collaboration seen in many existing game environments, whereas, our lack of understanding of collaboration within emerging cooperative games does not allow for effective design of coordinating interfaces.

RESEARCH CHALLENGE: How can we connect large groups of loosely-connected friends or acquaintances through online play in digitally-mediated environments?

2. MATCH: Matchmaking and Balancing Techniques for Collaborative Play

RESEARCH PROBLEM: Playing games is most engaging when the outcome is uncertain; in collaborative games, this means that one player cannot wield a significant advantage. If players of a collaborative game are not well matched in terms of skill (e.g., parents playing with their children, two friends with different abilities), it can be challenging for them to enjoy playing a game together. It is also challenging for players to find others (i.e., friends or strangers) to play games with who already have similar interests and skill levels.

RESEARCH CHALLENGE: How can we provide subtle skill level balancing in collaborative games to balance competition and promote engagement? How can we design systems and algorithms to support player matchmaking in collaborative games?

3. GAMIFY: Crowdsourcing Work through Gamification

RESEARCH PROBLEM: People spend incredible amounts of time playing casual games (e.g., Angry Birds), yet are too busy or too unwilling to participate in online surveys, experience-sampling experiments, or basic psychophysics experiments that require large numbers of participants. Some researchers have leveraged the intrinsic motivation inspired by game play to crowdsource problem solving in specific areas (e.g., Von Ahn's ESP game), but a general solution for gamifying collaborative and large-scale data collection does not exist.

RESEARCH CHALLENGE: How can we use the motivational pull of playing games to crowdsource work? How can we motivate large-scale participation in data collection efforts, such as online polls, sensor-based experience sampling, and psychophysics experiments through digital games?

4. FOSTER: Fostering Closeness among Small Groups with an Intimate Relationship

RESEARCH PROBLEM: There are many situations in which it is difficult to maintain close and intimate relationships with family members and friends. People are increasingly busy, they may be separated by distance, they may have a relationship burdened by circumstance (e.g., illness), and technologies do not adequately support shared intimate activities. Playing games together can help people build intimacy; however, current interfaces do not support collaborative play under these difficult situations.

RESEARCH CHALLENGE: How can we design new digital play technologies to foster connections amongst small groups with very close or intimate relationships?

5. SCAFFOLD: Scaffolding interaction among groups with similar interests or circumstances through play

RESEARCH PROBLEM: Many groups of individuals face context-specific problems that make it challenging to connect with one another or participate in shared activities. For example, technology infrastructures may be limited if trying to communicate over distance, accessibility issues may make it challenging to interact, or individuals may not be connected with others in their geographical community. Meanwhile, challenging social situations, such as a company merger or restructure, or a life-changing event, may cause relationship friction. Playing games together can help to provide common ground for relationship building amongst groups with related interests or circumstances.

RESEARCH CHALLENGE: How can we scaffold interaction amongst groups with similar interests or circumstances through play to support relationship building?

6. EVALUATE: Evaluating Success

RESEARCH PROBLEM: New digital play technologies are difficult to evaluate in ecologically-valid situations. Existing evaluation techniques focus on short scale evaluations that focus more on performance than experience, which is the more important determinant of success in games research.

RESEARCH CHALLENGE: How can we evaluate digital play technologies that aim to support interaction, connection, and relationship building amongst family, friends and strangers, in collocated, distributed, and mixed-presence environments?

METHODS: We will address the research problem and answer the research question in each subproject by conducting mixed-methods studies (i.e., qualitative and quantitative) of existing practices to understand the nuances of the challenges faced by people using current technologies. We will design and prototype new game and play technologies to scaffold and foster relationships, connect people, match and balance players, and crowdsource work. Finally, we will evaluate our technologies to confirm their success, using a combination of established practices and novel methods designed for our particular domain. Throughout all project activities, we will leverage the advantages of the network for applying multidisciplinary perspectives and connecting with industry partners.

Part F: Subprojects list up to six subprojects that will be undertaken in the first two years (only for full project LOIs).

Subproject Name (1)

SOCIALIZE: Connecting People through Online Play

Summary

SOCIALIZE explores how we can connect large groups of loosely-connected friends or acquaintances through online play in digitally-mediated environments.

PROJECT ACTIVITIES: We will understand current practices of, and propose novel solutions for: supporting sociality (lightweight relationships, loose ties) in game portals and game lounges; imagining and practicing social relationships in games with limited communication channels; understanding the value of virtual relationships in MMORPGs; understanding and supporting high-speed collaboration in games; modeling how network conditions affect online play, and generating improved interface solutions; designing remote representation of players in mixed-presence gaming; and building trust in multiplayer cooperative or collaborative games.

SOCIALIZE will be led by Simon (PNI), and will also involve: Gutwin (PNI), Stanley (PNI), Graham (PNI), Mandryk (PL), Nacke (CNI), Bateman (YNI), and Tang (CNI).

Research will be in collaboration with: Lee Vermuelen (Alientrap Games), Henry Smith (Sleeping Beast Games), Marek Futrega (PlayOk), and Arty Sandler (igGC).

Subproject Name (2)

MATCH: Matchmaking and Balancing Techniques for Collaborative Play

Summary

MATCH explores how we can provide subtle skill level balancing in collaborative games to balance competition and promote engagement, and how we can design systems and algorithms to support player matchmaking in collaborative games.

PROJECT ACTIVITIES- We will create systems and approaches for: matching game partners through visualizing and gamifying player data; designing algorithms for automatically modelling gamer playstyle, goals, and expertise for matchmaking and balancing; designing matchmaking algorithms based on game metrics; balancing the competition between players of different skill and ability to improve fun in various genres and using various techniques; and interface-free grouping for lightweight (and transient) cooperation in play.

MATCH will be led by Hancock (CNI), and will also involve: Gorniak (new), Stanley (PNI), Gutwin (PNI), Bateman (YNI), Graham (PNI), Nacke (CNI), and Mandryk (PL).

Research will be in collaboration with: Ian Crawford (Electronic Arts), and Lee Vermeulen (Alientrap Games).

Subproject Name (3)

GAMIFY: Crowdsourcing Work through Gamification

Summary

GAMIFY explores how we can use the motivational pull of playing games to crowdsource work and how we can motivate large-scale participation in data collection efforts, such as online polls, sensor-based experience sampling, and psychophysics experiments through digital games.

PROJECT ACTIVITIES- We will create and evaluate systems for: crowdsourcing work through games; gamification of online survey data collection supporting psychophysical data collection in the wild through game based rewards; motivating participation in large-scale sensor-based experience sampling through games; and gamification of groupware systems to motivate participation and scaffold expert behaviour through social learning.

GAMIFY will be led by Gutwin (PNI), and will also involve: Stanley (PNI), Gouglas (PNI), Mandryk (PL), Bateman (YNI), and Nacke (CNI).

Research will be in collaboration with: Larry Goodfellow, Briana Brownell (Insightrix); Krzysztof Gajos (Harvard, labinthewild.org); Vish Vishvanath (Harvard School of Public Health); and Chad Jones (College Mobile).

Part F: Subprojects (continued, only for full project LOIs)

Subproject Name (4)

FOSTER: Fostering Closeness among Small Groups with an Intimate Relationship

Summary

FOSTER explores how we can design new digital play technologies to foster connections amongst small groups of family and friends with very close or intimate relationships.

PROJECT ACTIVITIES- the development and evaluation of novel game and play mechanisms for: supporting intimacy among distributed couples and close friends through games; connecting people to distributed relatives through play; relieving the burden of caregiver-patient relationships through games; supporting mixed presence with small social groups (e.g., games nights between couples across distance); and supporting feelings of connectedness with family and friends at the end-of-life.

FOSTER will be led by Moffatt (CNI), and will also involve: Neustaedter (CO-PL), Mandryk (PL), Tang (CNI), Nacke (CNI), and Hancock (CNI).

Research will be in collaboration with: Kori Inkpen (MSR), Emily Reardon (Sesame), Tejinder Judge (Google), Mike Massimi (MSR Cambridge), Brenda Gershkovitz (Silicon Sisters), Dr. Jenny Basran (Saskatoon Health Region), and Colleen Young (Canadian Virtual Hospice).

Subproject Name (5)

SCAFFOLD: Scaffolding interaction among groups with similar interests or circumstances through play

Summary

SCAFFOLD explores how we can scaffold interaction amongst groups of people with similar interests or circumstances to support relationship building through the use of digital play or games.

PROJECT ACTIVITIES- the design and evaluation of technologies for: installing playful public interactive art to connect communities through virtual and physical space; leveraging affordances of public spheres to support collaborative play; maintaining indigenous knowledge of artifacts through games; connecting people in special populations (e.g., kids with CP, elderly people with limited mobility aging in place) using games; connecting people with limited connectivity due to institutional setting (e.g. long term care residents) or rural regions through play; and fostering group rapport in the enterprise (e.g., post merger/acquisition) through games.

SCAFFOLD will be led by Graham (PNI), and will also involve: Morgan (CNI), Stanley (PNI), Bunt (CNI), Hennessy (CNI), Neustaedter (CO-PL), Mandryk (PL), Tang (CNI), Nacke (CNI), Sellen (CNI), Baecker (PNI), and Girouard (CNI).

Research will be in collaboration with: Mike Boyle (SMART), Dr. Paul Hoskins (BC Cancer Agency), Kori Inkpen (MSR), Museum of Cultural Anthropology, Trish Barbato (Revera), and Melissa De Smet (Homebody Health).

Subproject Name (6)

EVALUATE: Evaluating Success

Summary

EVALUATE explores how we evaluate digital play technologies that aim to support interaction, connection, and relationship building amongst family, friends and strangers, in collocated, distributed, and mixed-presence environments.

PROJECT ACTIVITIES: adapting existing evaluation methods for interactive technologies to game and play situations; validating scales of user experience in the context of collaborative game play; developing implicit measures of experience and group rapport; creating unobtrusive methods of sensing affective experience during play; reviewing and extending existing techniques to measure impact on quality of life; developing methods to measure sensory experience; and evaluating measures for quality of life and sensory experience through field deployments of collaborative play tools.

EVALUATE will be led by Nacke (CNI), and will also involve: Gouglas (PNI), Mandryk (PL), Sellen (CNI), Moffatt (CNI), and Neustaedter (CO-PL).

Research will be in collaboration with: Ian Livingston (Ubisoft), Gary Rhodin (PMH), Job Rutgers, (OCADU), and Joanne Dykman (Revera).

Part G: Summarize how the proposed project will pursue knowledge and technology exchange and exploitation activities within the context of GRAND.

BENEFITS TO CANADA: Foster and Scaffold will provide new system designs that can act as prototypes for Canadian companies who wish to build commercial games and play systems that support relationships amongst Canadian family and friend networks. They will provide new design understanding about how to support increasingly diverse relationship challenges. Results from Match and Socialize will give Canadian game companies who produce multiplayer games a competitive edge, whereas Gamify will do the same for data collection companies. Evaluate will help Canadian studios take leadership in player experience evaluation.

ACTIVITIES TO FACILITATE KTEE: We will meet with our receptors to discuss our progress and findings and plan collaborations. We will support: startups by providing product design validation; larger partners with theoretical frameworks and direction for future products; and receptors with knowledge to improve quality of life for Canadians and technologies that can be used in practice.

PAST KTEE: We believe our KTEE activities will be successful as we are building on existing relationships. We have previously had funding relationships with MSR, College Mobile, Insightrix, AlienTrap, Google, SMART, and EA and these companies will continue this support. HQP have completed internships at College Mobile, AlienTrap, Insightrix, Demonware, EA, MSR, and Google. We are also bringing on new industry partners. Our record of patents (Hancock, Graham, Mandryk, Stanley) and working with partners (e.g., Visdatec Inc, Digital Extremes, TR Labs, Digidio Interactive, SaskTel, Nokia establishes our success in KTEE that we intend to build on.

Part H: Summarize how the project will network with other projects within GRAND.

COGS is complementary to other GRAND LOIs: The focus of KIDZ on design for children intersects with Foster, the use of games for wellness in G4HLTH and INCLUDE relates to Scaffold, and distributed play relates to MAKE. The collection and use of large volumes of personal data in PLWD relates to Gamify. The study of racism and sexism in games and the industry in ENGAGE has importance for our work on interface techniques for breaking down the barriers to multiplayer socialization (Socialize). The goal of crowdsourcing work (Gamify) overlaps with BOX. Although we see synergy with these other LOIs, it is clear that there is little overlap in terms of anticipated project outcomes; COGS is complementary to a variety of projects proposed in GRAND, yet it is also distinct. The focus of COGS is on interaction, collaboration, relationships, and games. Although we expect to see ancillary benefits of our systems in terms of games for learning, health, and cognitive, emotional, or physical well-being, the main thrust of COGS is on games for entertainment and relationship building. We will share findings with related projects through the overlapping researchers and periodic meetings.

While COGS is a new project proposal, it incorporates research from the past projects, AFEVAL and HSCEG. These two projects were highly-rated and successful in GRAND 1.0, and results from them will be transferred into COGS, whereas outstanding research questions from them will be addressed in COGS (through Socialize, Match, and Evaluate). Thus AFEVAL and HSCEG will be discontinued as distinct projects, but will be rolled into COGS in an anticipated evolution of the network.

Part I: Summarize how one or more current or potential GRAND partners will be engaged in and benefit from the proposed research.

Our team will work closely with individuals at 17 partner companies. Our partners range from large companies with thousands of employees (e.g., MSR, Google, EA, Ubisoft, Microsoft Studios) to medium enterprises (e.g., SMART, Insightrix, Sesame Workshop) to small indie developers or start-ups who have already seen commercial success (e.g., AlienTrap Games, College Mobile, PlayOK, igGC, Silicon Sisters, Minority, Sleeping Beast Games, Execution Lab, Perch Communications, Bookata). This combination of industries will provide COGS researchers with incredible opportunities for industrial collaboration.

Small companies are willing to engage deeply, provide access to code and data, and can implement COGS-based solutions. Medium enterprises can benefit broadly from COGS research, giving a competitive advantage, whereas the large companies provide the opportunity for COGS-based solutions to have widespread impact. All partnerships may include HQP internships.

Receptors of our work include the game and media companies, but also include organizations representative of the end user who will benefit from COGS research. Although too numerous to list all receptors here, confirmed collaborators include the Saskatoon Health Region, Revera, Canadian Virtual Hospice, BC Cancer Agency, Homebody Health, and the Princess Margaret Hospital.

Part J. GRAND Challenges Check all that apply and briefly describe anticipated impact

Entertainment <input checked="" type="checkbox"/> Primary impact <input type="checkbox"/> Secondary impact <input type="checkbox"/> N/A	We will provide new understanding of how digital play and games can support relationship building and social play. This will include new game and digital play technologies, new game mechanics, and new methods for evaluating game and play platforms for their ability to support relationships. We will create proof-of-concept prototypes and theoretical frameworks to address the challenge. Our results will be transferred to game companies for competitive advantage and widespread deployment.
Learning <input type="checkbox"/> Primary impact <input checked="" type="checkbox"/> Secondary impact <input type="checkbox"/> N/A	Some of our research efforts will enhance learning for children and adults through the act of relationship building. This will include knowledge creation of how digital play and games can be used by parents and children as part of informal learning. Our research will also result in new data gathering approaches (i.e., gamification) that can be used by academics and industry for data collection, modeling, and analytics.
Healthcare <input type="checkbox"/> Primary impact <input checked="" type="checkbox"/> Secondary impact <input type="checkbox"/> N/A	Some research will focus on populations facing health challenges and how we can support playful relationships among these populations. Additionally, some sub-projects will address secondary impacts of playful engagement such as quality of life; however, the goals of our subprojects in these areas are to connect people, scaffold relationships, and foster intimacy - achieving these goals will positively affect health, but our primary goal is social connectedness through play.
Sustainability <input type="checkbox"/> Primary impact <input checked="" type="checkbox"/> Secondary impact <input type="checkbox"/> N/A	Our work aims to bring people together through digital play; as an aside, our approaches may help foster connections through distributed technologies, reducing the need for travel.
Big Data <input type="checkbox"/> Primary impact <input checked="" type="checkbox"/> Secondary impact <input type="checkbox"/> N/A	Our research efforts in crowdsourcing work through games (Gamify) will allow for large amounts of data collected that could be used for modeling and analytics.
Work <input type="checkbox"/> Primary impact <input type="checkbox"/> Secondary impact <input checked="" type="checkbox"/> N/A	
Citizenship <input type="checkbox"/> Primary impact <input checked="" type="checkbox"/> Secondary impact <input type="checkbox"/> N/A	Although our games systems will be designed to foster social connections, there is an opportunity for these social connections to crystallize around groups with common sociopolitical interests - essentially deepening civic engagement through play. The opportunity to crowdsource work through play can also be applied to improve civic engagement around particular issues (e.g., elections, bills), or to scaffold citizen science.
Other <input type="checkbox"/> Primary impact <input type="checkbox"/> Secondary impact <input type="checkbox"/> N/A	