



BUSINESS PLAN NOTES FOR WICI'S COMPLEXITY PROFESSIONAL DEVELOPMENT PROGRAM

BACKGROUND

Until now, the Waterloo Institute for Complexity and Innovation's (WICI) primary role was to act as a research hub that promotes research, knowledge transfer and networking among Canadian and international complexity scholars. That said, WICI's mandate is up for renewal by the University, and it is prudent to examine new pathways to a sustainable future for WICI. Funding constraints suggest that to continue its work, WICI must explore mid- to long-term funding models that reach beyond University appropriations. One such option would be for WICI to augment revenue by offering a suite of professional development offerings under the umbrella of a Complexity Professional Development Program (CPDP). Assuming that WICI might partner with University of Waterloo (UW) Faculties, other Institutes (especially WISIR; Problem Lab; and the Kindred Credit Union Centre for Peace Advancement, which coordinates Map the System at UW), and members of the Canadian Network for Complex Systems (CNCS) to deliver such offerings, revenue could be derived from:

- Continuous learning CPDP courses or certificates offered to the general public through WatSPEED
- Professional development training and certificate programs in social system innovation and change, complex systems analysis, and policy making under complexity. Such introductory training would target executive, senior, and mid-level managers.
- Corporate and public-sector professional development offerings delivered either through WatSPEED, or directly to the patron organization by WICI and its institutional partners.
- Opportunities for public- and private-sector organizations to leverage co-op education and "reverse co-ops" to build staff competency in social system innovation and change, complex systems analysis, and policy making.

BUSINESS PLANNING

To pursue new CPDP revenue streams, WICI needs a business plan that considers the viability of managing such an enterprise. The following Business Model Canvas captures initial thoughts toward a WICI business plan that are discussed further in this document.

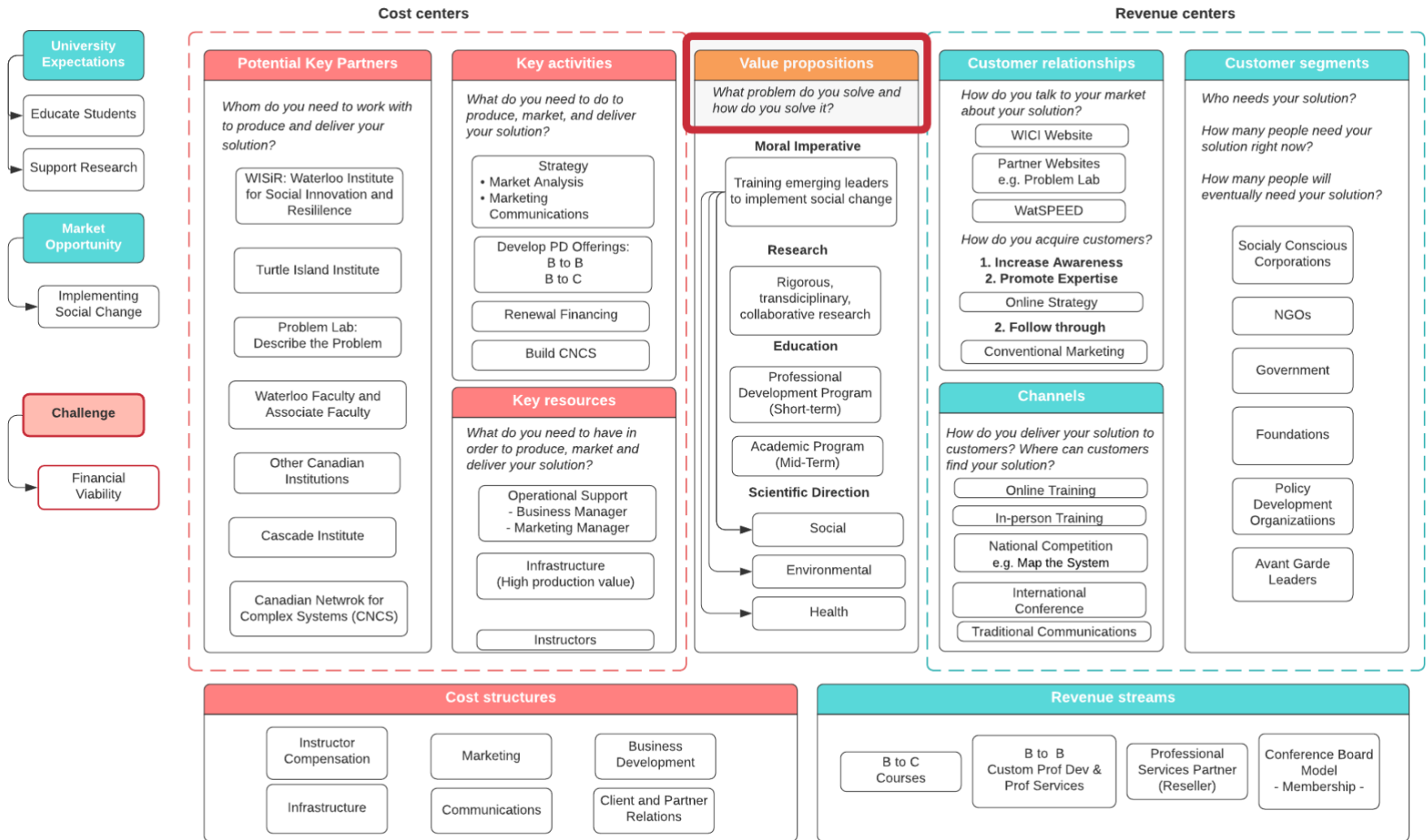


Figure 1
WICI Business Model Canvas (DRAFT)

The key elements of the business model canvas that WICI is currently investigating are:

- Investigating partnerships with other University of Waterloo Institutes, namely Problem Lab and WISIR
- Preliminary consideration of professional development offerings that are achievable for WICI, including but limited to a relationship with WatSPEED (Waterloo's new academic support unit for professional development offerings)
- Working with WatSPEED and Problem Lab to draft a value proposition
- Preliminary market research
- Consideration of potential revenue models

VALUE PROPOSITION

To be attractive in the marketplace, WICI must offer a promise of value that can be delivered, communicated and acknowledged by potential patrons. WICI offers value both as a research hub and a source of professional development. In the context of professional development, WICI's value proposition should consist of a client-focused description of solutions that are in demand and attractive to potential patrons. For example:

At its core, WICI is an interdisciplinary research hub that integrates global expertise in complex systems and the application of complex systems thinking to today's most pressing social, environmental and health problems. WICI's professional development arm focuses on training emergent leaders to implement technical and social innovation in the midst of the most intractable challenges of our times.

The above working draft of a value proposition leverages WICI's credibility as a research hub and centre of complexity expertise while highlighting the public- and private-sector challenge that WICI's professional offerings could address: the need for *technical and social innovation in the midst of the most intractable challenges of our times.*

The effort to increase awareness of WICI's mission and value can coincide with WICI's ongoing work to share knowledge and enhance networking amongst complexity scholars and practitioners.

PARTNERSHIPS

WICI's limited resources cannot deliver on the value proposition without the synergy of partnerships. WICI is engaged in promising discussions with other organizations as possible delivery partners. Including, but not limited to:

- Waterloo's Problem Lab -- disruptive economic and social innovation through necessary understanding of a problem before it can be solved,

- Waterloo Institute for Social Innovation and Resilience (WISIR) – trans- and interdisciplinary social innovation in sustainable development and mental health,
- Turtle Island Institute (launched in partnership with WISIR) -- Indigenous social innovation "think and do tank" focused on community-driven solutions, and
- Cascade Institute based at Royal Roads University -- high-leverage economic, political, technological, and health interventions toward fair and sustainable prosperity.

In addition, the effort to expand and strengthen the CNCS network of complexity scholars is ongoing. In time this network may become a resource for expanding the breadth and depth of WICI's professional development programs. All in all, WICI's business model needs to offer both professional and financial benefit to all who participate in program promotion and delivery. At this stage, initiatives that contribute to the sustainability of WICI are being developed first.

KEY ACTIVITIES

Launching a WICI professional development arm is a bootstrap endeavour. It must be done incrementally with existing resources. Nonetheless, certain key activities are needed to produce, market and deliver on revenue potential over time. These include:

- Building partnerships with other academic institutions. WICI is in the process of solidifying its partnerships with WISIR and Problem Lab.
- Market analysis. WICI has conducted a dozen market research interviews. As part of its vetting process, it appears that WatSPEED may also run a description of course content by a small focus group.
- Developing marketing communications. One of WatSPEED's services is to deliver such communications.
- Developing a curriculum and structure for CPCD. Relationships for business to business (B-to-B) offerings must be actively developed. Once our existing networks have been exhausted, business to consumer (B-to-C) offerings may be a vehicle for reaching new clients.
- Investigating the viability of a B-to-B offering delivered by WICI and its academic partners. Informal conversations with Problem Lab suggest that the curriculum for a first offering under development, "Systems Thinking on the Back of an Envelope" (Appendix A), may be viable as a B-to-B offering.
- Continuing to build the CNCS network and, longer term, determine interest in participating in delivery of CPCD programs

KEY RESOURCES

To be successful WICI must structure itself and be self-accountable to deliver its value proposition. This means augmenting, however incrementally, its internal ability to manage operations and kickstart market demand.

Ideally, this would mean one or more of the following options:

- Developing a mandate for business management,
- Clarifying the role/tasks of administrative staff
- Leveraging the contribution of Graduate Research Assistants (GRA)
- Liaising with WatSPEED to deliver professional development offerings
- Investigating executive relationships that could lead to B-to-B opportunities potentially through foundations and the Office of Advancement

PROFESSIONAL DEVELOPMENT MODELS

There are two key professional development models in use at the University of Waterloo--business to consumer (B-to-C) and business to business (B-to-B).

BUSINESS TO CONSUMER - B-TO-C

The *business-to-consumer* model (B-to-C) includes courses and certificate programs offered to individuals and to public, private and non-governmental organizations. B-to-C offerings may also serve as an initial point of entry for organizations interested in learning more before embarking on a B-to-B relationship. These types of courses are currently offered through the Centre for Extended Learning, but responsibility may shift when WatSPEED is fully operational.

BUSINESS TO BUSINESS - B-TO-B

The *business-to-business* model (B-to-B) assumes that WICI and its academic partners would offer customized solutions to public, private, and NGO organizations who are seeking to focus highly trained resources (e.g. UW faculty) on a particular problem and/or to expand the knowledge and competency of their organization. The B-to-B offering might include a suite of engagements that are available *a la carte* or in a logical sequence. This includes:

- High-level introductory sessions for executives
- In-depth workshops focused on a specific corporate issue
- Customized professional services
- Staff augmentation through co-operative education
- Organizational capacity building through reverse co-ops with WICI and/or its affiliates.

WATSPEED

WatSPEED is a new academic support unit reporting to the Office of the Provost at University of Waterloo. They are associated with, but independent from, the Centre for Extended Learning (CEL) and were launched as part of President Feridun Hamdullahpur's

vision to accelerate offerings from UW that contribute to lifelong learning. WatSPEED is in the midst of building relationships with Waterloo Faculty to offer both Business to Business (B-to-B) and Business to Consumer (B-to-C) professional development offerings. A key difference between CEL and WatSPEED is that the former might hire 'sessionals' to deliver courses developed by UW faculty, while WatSPEED courses would be delivered by UW faculty themselves. This has implications for revenue and resource sharing across departments, faculties, and research institutes like WICI.

At the moment, WatSPEED is liaising with three University of Waterloo entities to begin three B-to-B pilots with pre-identified corporate patrons. WatSPEED does not anticipate expanding its offerings beyond these pilots until late 2021.

WICI and Problem Lab are in discussion with WatSPEED to investigate the viability of developing joint professional development offerings, both B-to-C and B-to-B, that might meet the business and financial models of WICI, Problem Lab, and WatSPEED. WatSPEED is in the process of finalizing its business and financial models. There are no firm details of its revenue distribution model with further discussions planned with the Faculty of Environment due to the parties involved in a possible first course offering involving WICI.

WatSPEED expects a 3-year resource commitment (course authors and teachers) before finalizing a new offering.

MARKET RESEARCH

Although further market research is needed, the optimal revenue opportunities for CPDP likely exist within a niche market of avant-garde leaders in the public, not-for-profit, and private sectors. This could include government policy makers, foundations, socially conscious corporations, NGO's, and mid to senior staff responsible for addressing intractable problems.

Recently, WICI conducted a dozen market research interviews with C-level executives and mid-level managers. These conversations yielded interesting insights into the potential market for professional development training in systems thinking and complexity.

- Interest in the *application* of complexity principles to solutions development and implementation prevails over the desire for theoretical knowledge.
- The language of "complexity" is off-putting, but a more generalized view of systems thinking/analysis is seen as a needed skill.
- Specialized training in complexity appears to be a top-down sell that may require buy-in at the executive level before an investment is possible (e.g. a B-to-B offering).
- There is a particular need for executive awareness and alignment of funding organizations on the evaluation and governance of initiatives that apply complex system thinking to initiate and manage innovation/change.

More work may be needed to ascertain if there is a critical mass of interest in WICI professional development and professional services offerings, but the preliminary market research is strong. Assessing market demand would go hand-in-hand with stimulating interest among WICI's academic delivery partners. As noted in Figure 1 under Revenue centers (blue boxes), it may also be beneficial to partner with other University institutes holding various competitions where there is mutual value in adding a complexity component to those competitions, e.g. Map the System (hosted by the Kindred Credit Union Centre for Peace Advancement) and perhaps the Problem Pitch (hosted by Problem Lab).

Should WICI deem it a sensible investment to develop a CPDP arm, next steps toward fleshing out a more complete business plan should include finalizing a revenue sharing agreement between WatSPEED, Problem Lab, and the Faculty of Environment. Based on the outcomes of these conversations, there may be implications for administrative tasks within WICI as well as discussed further below. That done, the WICI value proposition should be refined, and clear communications developed that tell a *patron-centric* story. Longer term (> 3 years), the dialogue about CPDP offerings might be expanded with WICI's membership and the Canadian Network for Complex Systems. Other areas that might be ideal for CPDP offerings include healthcare.

REVENUE POTENTIAL

Revenue potential refers to the balance between revenue streams and cost structures. Regarding revenue streams, there is insufficient data to develop financial predictions at this time. That said, it can be assumed that B-to-C offerings would generate individual revenue opportunities valued at hundreds of dollars each. Such revenue may be helpful to augment WICI's operating costs but not to significantly support them.

On the other hand, each B-to-B offering would likely generate thousands or tens of thousands of dollars of revenue because of the diversity and customization of the offerings involved. B-to-B offerings would be individually priced based on a *time and materials* basis, or a *fixed cost proposal*, depending on the situation. Per diems vary by region and market. In the Toronto/Waterloo area a qualified junior resource might be valued at \$650/day while an expert resource might be in the range of \$1600 to \$1800 per day or more. A custom designed corporate workshop with one junior and one senior resource might be valued at \$10,000 to \$30,000 or more, depending on the amount of analysis and reporting required. It's difficult to predict whether per diems will rise or fall during the COVID-19 recovery years.

While the B-to-B revenue potential is higher than B-to-C, it is not without drawbacks. Corporate offerings incur additional cost structures through business development, relationship management, and back-office costs that drive much higher operating costs than B-to-C offerings. Problem Lab, for instance, has dedicated staff for such purposes, while WICI does not. Additionally, there is the issue of instructor compensation. If a UW faculty member were able to have a WICI CPCD course offering

count as part of their teaching load, to provide ballpark figures for cost, a course buyout in the Faculty of Environment for UW faculty time is \$16,000.

If WICI wishes to start developing a B-to-B offering, the easiest way to start would be to invest in an executive relationship with an interested foundation or corporation. The easiest way to do that might be to leverage an existing relationship between a WICI partner and one of their private sector patrons.

It's worth noting that WatSPEED would provide infrastructure for a WICI CPCD and may provide marketing communications. However, it does not intend to engage in business development (sales) of B-to-B offerings and, therefore, would not be the party developing client and partner relations.

CONCLUSION

A bootstrap effort to complement WICI's role as a complexity research hub with a professional development arm could play a significant part in WICI's long-term financial sustainability. Moving forward with an initial CPCD offering appears feasible with minimal expansion of resources and validating the market assumptions put forward in this paper; however, if working with WatSPEED, course development and delivery would be a 3-year commitment. Developing CPCD may dovetail with WICI's other strategic goals such as developing applied complexity science research, expanding complexity science into professional fields, identifying opportunities for endowment support through the Office of Advancement, and leveraging synergistic opportunities with WISIR and other Canadian complexity-focused institutions.

Appendix A

Course Design for Systems Thinking on the Back of an Envelope

The Next Stage of Problem Analysis on *the Journey to Solutions*

Vanessa Schweizer, Dept. of Knowledge Integration and the Waterloo Institute for Complexity and Innovation (WICI) and Larry Smith, Problem Lab; University of Waterloo

TEACHING PHILOSOPHY

Students are taught that systems modelling is a vehicle to insight through the intensive application of case studies and examining a problem of their choice that has been intractable. Following a straightforward four-step process along with a software tool, students will learn how to conduct a thorough system analysis, glean actionable insights from it, and communicate findings to create a call to action.

1. Course Description

Intractable problems persist for many reasons, and this course will focus on their system complexity. The course demonstrates and applies both fundamental and state-of-the-art methods and tools for how to specify the complex system underlying any “wicked” problem. Such approaches can be quite simple (i.e. “back of the envelope”) yet powerful enough to determine steps and opportunities to pursue (e.g. partnerships) in order to advance problem solution.

2. Course Outcomes

Students will see problems that have been intractable in a more comprehensive and rigorous way, one that they will have trouble ignoring in the future for any major problem they encounter. They will understand and practice how to analyze the effects and causes of the problem as well as previous failed attempts at solution. They will appreciate the need to specify and include all relevant system components at a high level, offering evidence for their inclusion in the scope of problem solving, logically framed. They will understand and practice how to visually communicate and justify the results of their analysis to themselves as well as to a wide range of audiences.

3. Weeks, Modules, and Topics

[main structure]

Week	Module	Topics/Concepts
1	Introduction	The Characteristics of Wicked Problems and Summary of Problem Analysis
		Effective Sources of Information
2	Effects of a Problem	How to Measure Effects of a Problem
		Common Mistakes in the Measurement of Effects
3	Causes of a Problem	How to Measure Causes of a Problem
		Direct Causes
		Indirect Causes
		Common Mistakes in the Measurement of Causes
4	Diagramming Causes and Effects	Influence Diagrams
5	Network Analysis of Causes and Effects	Translating an Influence Diagram into an Adjacency Matrix
		Lessons from Translating the Diagram to a Predictive Model
6	Systemic Outcomes from Causes and Effects	Scenarios as Simultaneous Systemic Influences and Outcomes
		Uncovering Internal Inconsistencies in What You Think You Know about Systemic Influences and Outcomes
7	Modeling for Insight: Intervention and Failure Analysis	Role of Intervention Analysis
		Role of Failure Analysis
		Using the Systems Model to Understand Failure and Draw Lessons
8	Actionable Insights	Role of Actionable Insight
		Definition and Characteristics
		Key Steps to Identify Actionable Insight from Systems Modelling
		Prioritizing Actionable Insights
9	Communicating Problem Analysis	Key Deliverables
		Documenting Priorities
		Communication Template
		Audiences and Environments
		Creating the Call to Action
		Details to Sate Devil's Advocates: Writing a Technical Report of the Systems Model

Can also be a corporate offering in the form of a workshop:

Problem Lab and WICI Customized Training for Corporate Training

The Problem Lab and WICI could offer training in problem analysis as well as qualitative predictive modeling in a customized workshop setting where participants both learn the methodology and advance their understanding of a key corporate issue, identified in advance of the workshop.

The full methodology is practised, including the complete documentation of the effects, causes, context, history of the problem and analysis of failed attempts to solve the problem in question.

When a problem is fully understood, the solution is more likely to be effective and have greater scale and consequence. Unless the problem is fully understood, any resulting solution is primarily the result of random chance.

Moreover, by thoroughly understanding multiple problems and their underlying mechanisms, organizational priorities can be set more effectively, and be based on sound evidence.

A typical workshop would consist of two half-day sessions.

DRAFT

4. Learning Outcomes-Assessments Alignment Matrix

[do your activities and assessments align with your learning outcomes]

Week	Module	Topics/Concepts	Learning Outcome	Bloom's taxonomy level	Activity or Assessment (e.g., quiz, written assignment, discussion)
			DRAFT		

ASSESSMENT PLAN

[are your expectations of students reasonable?]

Example

Assessment / Week	1	2	3	4	5	6	7	8	9	10	11	12	Weight (%)

5. Module Page

[draft a module page; i.e. the instructional sequence for one module]

6. Course Schedule

[with information you have so far populate the course schedule]

Week	Module	Activities and Assignments	Due Date	Weight (%)