UNIVERSITY OF WATERLOO | WATERLOO INSTITUTE for COMPLEXITY & INNOVATION

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Call for interest and applications:
Waterloo Institute for Complexity and Innovation
External Core Members & External Node Coordinators
August 20, 2019

Review of applications continues on a quarterly basis. Up to four applicants will be invited for campus visits. Additional applicants may be invited for external core membership, affiliate membership, and/or external node coordinator status.

The Waterloo Institute for Complexity and Innovation (WICI) invites applications for external members. WICI is a research capacity and network building organization, housed within the University of Waterloo (UW), which supports complex systems scholarship, broadly defined. WICI researchers work in a wide variety of areas. We are in the process of identifying current WICI research themes—an initial scan identifies the following active areas at Waterloo:

- Complex systems approaches to entrepreneurship and industrial organization
- Complex coupled human-natural systems;
- Complex health systems;
- Complex risk and uncertainty;
- Multi-scale decision-making and governance for complex/wicked problems;
- Multi-scale adaptive management and optimization of complex spatial and network problems;
- Modelling cognition and decision-making;
- Resilient urban environments;
- Thresholds and tipping points in social and natural systems
- Visualization and analysis methods for complex data

WICI is in its ninth year as a formal UW research centre, with renewal pending in winter, 2020. As part of the renewal, we are exploring the development of a Canadian Network for Complex Systems (CNCS). The form, mission, and activities of CNSC are open for development. Initial discussions on campus have identified the following open questions and possible directions:

1. What goals/needs might CNCS serve?
   a. **Networking:**
      i. Identify and publicize active complex systems researchers across Canada—facilitate communication.

      ii.   Provide scholar matchmaking services (i.e., for those seeking particular expertise, data, or research support for research collaboration, student supervision and examination, and grant partnerships).

      iii.   Conduct network analysis (research) on the community of complex systems scholars.

  b. **Education:** Provide access to "get-started" educational materials for complex systems methods to students and other researchers.

  c. **Incentives for collaboration:** Incentivize network development, collaborative engagement and interdisciplinary research at the administrative level.

  d. **Interdisciplinary Scholarship:**

      i.   Enable a cultural shift towards community and interdisciplinary engagement.

      ii.   Reduce analytical and language barriers to facilitate collaboration across fields. Reduce barriers between theory and practice, or the abstract and the concrete.

      iii.   Bring together those with theory and tools with those with applied problems.

2. What kind of structure might CNCS have?

  a. Roles and responsibilities of the main node—to be determined.

  b. Decentralized nodes with a highly flexible structure, but a clearly-defined minimum hurdle for continued membership.

  c. Given that minimum, node size/involvement can be flexibly scaled, from minimal to significant engagement (i.e., online forums, events, participation in summer schools, collaborative projects).

  d. Have rotating activities with internal responsibility for funding (such as conferences, summer schools).

3. What kinds of activities might CNCS support?

  a. Identify grand challenges for complexity science that could frame national and international collaborations. Which are we working on? Which do we aspire to contribute to?

  b. Direct support and engagement with governmental actors at all levels, to provide research support for complex management challenges.

  c. Host methodological workshops and develop modules that could be delivered within different courses across institutions.

  d. A summer school, with rotating hosting, was **highly** supported.

  e. Cross-university advising and student examination.

  f. Host retreats to deepen connections among scholars.

  g. Communicate funding priorities to tri-council and other funding bodies.

  h. Large, multi-institutional grant and infrastructure initiatives.

4. How might CNCS be funded?

5. What might CNCS mission be?
    a. Build capacity to achieve critical mass of complex systems scholarship within Canada.
    b. Advance the discipline broadly.
    c. Train the next generation of complex systems thinkers.
    d. In addition, have an applied focus – demonstrate what complex systems theory/methods applications can do.

In order to explore the potential for this network, we are currently creating an "external core member category within WICI. We also seek to identify up to four institutions across Canada that could house major external nodes. Administrative leaders of these nodes would be designated "external node coordinators," and would also be external core members.

Definitions and Application Instructions:

External core member: Regular, research, or adjunct Canadian university faculty, outside the University of Waterloo, who lead a long-horizon complex systems research program and actively engage with WICI networks and activities.

External affiliate researcher: Affiliate Researchers are regular, research, or adjunct university faculty or non-university researchers, including post-doctoral fellows, who actively participate in institute activities, including its research projects or committees.

Applications for **external core** or **affiliate researcher** membership should include:

1. A brief statement of the applicant's prior background and scholarship in complex systems. (250-500 words)
2. A description of the applicant's complex systems research program and, if applicable, how that program interfaces with ongoing UW research. (500-1000 words)
3. Keywords that describe your research program: 1) Up to 3 research application areas; 2) Up to 3 methods used and 3) Up to 3 disciplinary areas with which you identify.
4. A brief statement of any additional information that would be relevant for the evaluation committee.
5. The applicant's CV.

External node coordinator: External Canadian practitioner, affiliate or core members, who take an active leadership role, with institutional support, in developing and managing external nodes.

We will invite up to four potential initial **node coordinators** to visit the University of Waterloo campus during 2019-2020, funded by WICI. These visits will include the following activities:

- A public talk as part of WICI's seminar series;
- Meetings with current or potential research collaborators on campus;
- A meeting with our Office of Research staff, if feasible given schedules;

- An informal discussion with WICI student members;
- A meeting with the WICI steering committee to discuss possible synergies, future collaborations, and the nodal potential of the visitor's institution.

Applications for **external node coordinator** membership should include:

1. A brief statement of the applicant's prior background and scholarship in complex systems. (250-500 words)
2. A description of the applicant's vision for a local CNCS node, using the points from above as a reference, and included any additional goals/activities that the applicant envisions. (500-1000 words)
3. If applicable, a list of other researchers (including students) at your institution, or within your Canadian research networks, undertaking complex systems scholarship. For each researcher (including the applicant), identify keywords: 1) Up to 3 research application areas; 2) Up to 3 methods used and 3) Up to 3 disciplinary areas with which they identify.
4. If applicable, identification of a particular research theme that might be a focus (foci) for your node (drawing on or expanding from the list above).
5. A brief statement of any additional information that would be relevant for the evaluation committee.
6. A supporting letter from an administrator (e.g., unit head, dean, research centre director, office of research administrator, provost, or other relevant administrator). This letter should outline any internal support resources that would be available to support the local CNCS node.
7. The applicant's CV.

All application materials if possible should be minimum 11 point font, compiled into a single .pdf document, and e-mailed to Brenda Panasiak, Administrative Coordinator of WICI (brenda.panasiak@uwaterloo.ca) with a subject line "WICI external member application-*Name.*" As with all WICI initiatives, we strive to create a highly diverse membership in terms of research foci, perspectives, methods, gender identification, ethnicity, and capability.

Please do reach out to Dawn Parker, WICI director, at dcparker@uwaterloo.ca with any questions, or if you would like to brainstorm about possible directions for your node before applying. We look forward to hearing from you!