

Waterloo Institute for Complexity and Innovation (WICI)

## **WICI Data Challenge**

### **Call for Submissions**

November 13, 2012

Value of Challenge: CDN\$10,000

The Waterloo Institute for Complexity and Innovation (WICI) is seeking tools and methods that improve the exploration, analysis, and visualization of complex-systems data.

With each passing year, researchers and policymakers have access to steadily more data on the behavior and causal structure of complex systems such as urban land markets, global financial networks, epidemic disease, and Earth's climate. They need tools and methods to effectively evaluate and interpret these data and present the results in accessible formats to a broad range of stakeholders. But the development of such tools and methods has not kept up with the data's soaring availability. WICI is launching a \$10,000 challenge prize to help address this emerging need.

Tools of potential interest to WICI include (but are not limited to) those that:

- Identify and visualize critical transitions and bifurcations in nonlinear systems;
- Provide interactive graphical representation of catastrophe manifolds;
- Provide meta-analysis of—and visualize the data generated by—computational models of coupled human-natural systems;
- Visualize and analyze social capital and its relationship to social networks;
- Explore the use of movement and dance as visualization tools for complex systems;
- Develop visualization platforms for stakeholder and participatory decision making;
- Develop scenario models and gaming visualizations of imagined futures produced through mass-collaborative online social technologies.

Submissions will be accepted via the [WICI Data Challenge](#) website. The winner will be granted a CDN\$10,000 cash value prize and invited to present at WICI's major public colloquium on the topic of data visualization in the fall of 2013. Runners-up may also be invited to participate in this colloquium and/or have their entries archived on and distributed through the [WICI website](#).

Due to the collaborative and open-source nature of this effort, a condition of the award will be publication of the winning entry under a [Creative Commons license](#). This license allows the community to use and adapt the design while ensuring that the designer receives full attribution. The winner must also agree to share any data, software, or other scientific tools

developed as a part of this challenge with the public via the WICI website. All entries will be subject to confidential peer-review evaluation. Unless submitter(s) recommend otherwise, WICI will hold entries that do not win in confidence.

Entries should include:

1. A written document or video\* presenting an overview of the submission. This item should describe:
  - the substantive challenge that the tool addresses in the exploration, analysis, and/or visualization of complex-system data;
  - the tool's innovative contribution relative to other tools;
  - the tool's algorithmic or conceptual foundations;
  - the data (real or simulated) to be analyzed;
  - a demonstration of the tool that is understandable to complex-systems scientists from a range of disciplines; and, if relevant,
  - a statement of the tool's possible broader impact, including its potential to advance complex-systems education and outreach.
2. the dataset used for the tool's application;
3. an executable of the tool, along with either the source code or an explanation of the program and its algorithms sufficient to ensure replicability;
4. a statement that the product is the original work of the submitter(s) and that the submitter(s) have the right to submit it as an open-source tool should an award be granted; and, optionally,
5. additional graphics, videos, documentation, and publications directly relevant to the submission.

**\* Note:** Written submissions should not exceed 2000 words, citations excluded, and should be double spaced using 12-point font. Videos should be no more than 15 minutes long and should be accompanied by a separate list of works cited.

Entries should be submitted by Friday March 15 2013 at 12PM Eastern Time on the [WICI Data Challenge](#) website. An entry will not be considered complete until all five of the above files, each tagged with the name(s) of the submitter(s), are uploaded via the links to MediaFire provided on the foregoing website. Results will be announced in late April 2013. Individuals and/or groups selected for the WICI colloquium will then be assigned to present their proposals at a time convenient to their schedule.

Any questions regarding this Challenge should be directed to WICI Associate Director, Professor Dawn Cassandra Parker ([dcparker@uwaterloo.ca](mailto:dcparker@uwaterloo.ca)) or the WICI Administrative Assistant, Ms. Maria Legault ([maria.legault@wici.ca](mailto:maria.legault@wici.ca)).