Citizen scientist: Helping scientists help themselves

September 20 2010

We are all scientists now, thanks to SETI@home, Galaxy Zoo, The Great Sunflower Project, Folding@home and counltess other projects that allow individuals to take part in scientific research directly or indirectly. In the case of SETI@home and Folding@home one shares one's computer CPU with the researchers, whereas Galaxy Zoo is more about active involvement with the classification of stellar objects in images of the night sky, for instance.

Now, writing in the *International Journal of Organisational Design and Engineering*, US researchers have mapped out an approach to virtual organizations that might allow scientific advances made in part by citizen scientists to move forward much more quickly.

"Citizen science is a form of organisation design for collaborative scientific research involving scientists and volunteers, for which internet-based modes of participation enable massive virtual collaboration by thousands of members of the public," explains Andrea Wiggins of Syracuse University, New York, who works in the research group of Kevin Crowston. Earlier work on virtual organizations, the team points out has focused on distributed collaboration among scientists and related professionals. However, the rapidly increasing power of personal computers, the connectivity afforded by the internet and social media, as well as an apparent growing interest in scientific discovery means there is much greater access to scientific discovery for non-scientists than ever before.

The team explains that, "Citizen science projects conducted via web technologies can yield massive virtual collaborations based on voluntary contributions by diverse participants. The increasing scale of citizen science projects, some of which involve hundreds of thousands of members of the public in distributed data collection and analysis, suggests a need for additional research. In particular, designing organisations to support this form of scientific knowledge production requires understanding the effects of organisation and task design on the scientific outcomes of citizen science projects."

The team has used an existing theoretical framework borrowed from the social sciences and normally used for small organizational groups to build a new model of how best to organize the volunteers in a distributed, collaborative scientific experiment. The approach has allowed them to look at how volunteers might register, interact and reveal the results due to their efforts.

"The theoretical model highlights some key aspects of organizing and running citizen science projects," explains Wiggins. "This could assist people creating new projects or designing supporting technologies for them in better understanding the complex relationships between the diverse elements that go into generating good outcomes, both in terms of volunteer experiences and scientific results." She points out that, "Many project organizers are initially surprised by the extent and variety of the decisions that go into setting up a large-scale project to engage the public in science, so we hope this model provides a starting point to help promote intentional design and decision-making to better support learning and discovery."

More information: "Developing a conceptual model of virtual organisations for citizen science " in *Int. J. Organisational Design and Engineering*, 2010, 1, 148-162

Provided by Inderscience Publishers