# A Web-based Framework for Collaborative Innovation

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*Abstract. This paper describes a framework to support the social and technical principles which underlie current and future web-based CI. It will also present the evolving technologies being developed to support CI and examples of web-based systems for CI in specific fields such as environment, cultural heritage, socio-economic development and health.*

Twenty-first century systemic global change in health, water, environment, energy, business and socio-economic structures is challenging our communities' management of resources. For a community to adapt to this systemic change, while maintaining and even enhancing its economy and quality of life, new approaches are needed to enable collaborative innovation (CI) and related action among community leadership and concerned members of the community.

This paper describes a framework to support the social and technical principles which underlie current and future web-based CI. It will also present the evolving technologies being developed to support CI and examples of web-based systems for CI in specific fields such as environment, cultural heritage, socio-economic development and health.

CI can be viewed as a two-step process where members of a geographic community or community of practice

1. produces an inventory of assets and shares this data across one or more communities; and

2. collaborates and acts on that asset knowledge to:

    a.     recognize additional "undiscovered" assets;

b. produce value and change; and

c. create new assets related to the change.

Basically the participants share knowledge and add value to that shared knowledge through a collaborative set of tools which are formed into social networks that operate under various constraints such as access, time and mobility.

The Computer Systems Group at the University of Waterloo and the Centre for Community Mapping have undertaken joint research in developing meta-tools and approaches to building web-based information systems to support CI. One result of this research has been the Web Informatics Development Environment (WIDE), which contains meta-tools to support services such as those related to temporal and spatial (mapping) data, role-based access controls, reporting, document management, social networks and other areas of collaboration. This joint research program has a number of goals namely to:

1. develop data models and corresponding databases for asset maps in different domains;

2. create meta-tools to simplify the production of interfaces, access controls and social networks;

3. create interface and social network frameworks to asset maps to support powerful and purposeful collaboration;

4. create interface frameworks to asset maps to assist with collaborative and dynamic asset map updating;

5. create interface frameworks to interrelate information maintained by different communities of practice to enable synergistic benefits; and

6. produce meta-tools that can be used and maintained by the collaborators.

This paper outlines the concepts of CI and its support through web-based technologies. Based on the experience using our framework in designing and building over 50 systems that incorporate CI, it is clear that CI takes many forms. Thus, it is not possible to build a single set of tools to support CI. Rather a framework and a set of meta-tools is needed which can be used to build tailored systems to fit specific situations that arise when web-based collaboration is to occur. WIDE is an example of the type of meta-tools that are needed. Lessons learned from WIDE are being applied in the creation of WIDE 2.0.

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