Land Use Consultation Services for First Nations, Dreamcatcher Geomatics Beta Service Development

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Abstract
We present a functioning web-based system called Dreamcatcher Informatics that provides specific knowledge on First Nation community cultural mapping implementation and the use of such data for the purposes of consultation.

Background and Relevance

A new paradigm in geographic information science has emerged since the late 1990's often referred to as "cybercartography" (Taylor and Pyne, 2009) which emphasizes that "we must move away from the narrow 'technological' normative and formalistic approaches to cartography to a more holistic approach where both mapping as a process and the map are expanded". This new approach or paradigm in geographic information science has led to more holistic, integrated and interactive forms of mapping such as public participation geographic information systems (PPGIS) and collaborative geomatics. There are other similar terms used to convey concepts comparable to PPGIS including "participatory GIS (PGIS)", Collaborative GIS, Critical GIS, or Collaborative GIS (Elwood, 2006; Sieber, 2006; Dunn, 2007). However, many PPGIS systems only allow users to display content rather than being truly interactive, allowing for volunteered geographic information (VGI) (Haklay et al., 2008).

In contrast, we have defined collaborative geomatics is "a participatory approach to both the development and use of online, distributed-authority, geomatics applications" (McCarthy et al. Submitted). What makes collaborative geomatics truly unique is the declarative application engine upon which it is based, referred to as the Web Informatics Development Environment (WIDE). The Computer Systems Group of the University of Waterloo developed the WIDE toolkit to begin to remove "gate keepers" such as programmers, allowing domain experts in the social sciences to build low cost applications that enable citizens to take control of some of their own data, information and knowledge, collection, processing and management.

This project brings together the Computer Systems Group of the University of Waterloo and the Centre for Community Mapping (COMAP), a not-for-profit provider of software as a service, and two Ontario aboriginal communities, the

Mississaugas of the New Credit First Nation and Fort Albany First Nation. The goal is to build a functioning web-based system called Dreamcatcher Informatics (DI) that will provide specific knowledge on First Nation community cultural mapping implementation and the use of such data for the purposes of consultation.

DI will support community-based mapping services that empower aboriginal community cultural mapping and planning and support remote land use consultation between community, agency and development proponents, with a premise of sustainable community economic development. The DI beta implementation is funded by the Ontario Ministry of Culture, Ministry of Aboriginal Affairs and SSHRC.

Methods and Data

This project is part of an on-going series of collaborative, participatory research projects between the Fort Albany First Nation and the University of Waterloo that have ranged from toxicology, nutrition, food security, environmental policy and land use planning. As with all of these collaborative projects, members of both the Fort Albany and Mississauga's of the New Credit First Nations were part of the research team, helping to develop the project proposal and seeing it through implementation. Both communities expressed a need for set of tools to enable the collection of community-based, cultural mapping information. This project will pilot the preparation of cultural content for and by the Mississaugas of the New Credit First Nation and the development and implementation of a cultural resources plan with constraint mapping. Both processes will ensure the proper interpretation and application of Traditional Knowledge (TK) and western science in cultural preservation in the face of resource developmental pressures. Specifically, this project will:

1. Develop and implement a suite of collaborative geomatics tools including:
    - multi-media narrative services with WIKI tools and archival metadata,
    - modular map-based pop-ups or mapups
    - mediated community network services with roll-based access controls, and
    - real-time, repayable collaborative mapping negotiation services that employ AJAX and COMET technologies

    for undertaking community-based, cultural asset mapping, constraint mapping and consultation; and
2. Provide adequate training and support: for the development of cultural asset mapping process by the Mississaugas of the New Credit First Nation;

Results and Conclusions

The project is expected to generate an alpha system by February 28th 2011; that will be introduced to and tested by the Mississaugas of the New Credit and Fort Albany First Nations. The resulting beta system will be further modified for pilot

community operations and other aboriginal communities. The project will be presented, discussed and demonstrated live at the SKI Canada conference.

References

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