

dg.o2004 PGIST Project Highlight Summary

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Title: An Internet Platform to Support Public Participation in Transportation Decision Making aka Participatory GIS for Transportation (PGIST)

The PGIST project involves the development of an Internet portal to support three phases of participatory, transportation improvement program modeling, and evaluate its use. Funding for the project is provided by the National Science Foundation, Directorate for Computer and Information Science and Engineering, Division of Experimental and Integrative Activities, Information Technology Research Program (a cross-foundation program). Funded as grant EIA 0325916 - medium-size project managed by the Digital Government Program. (September 1, 2003 – August 31, 2007). Project management structure is shown in Figure 1.

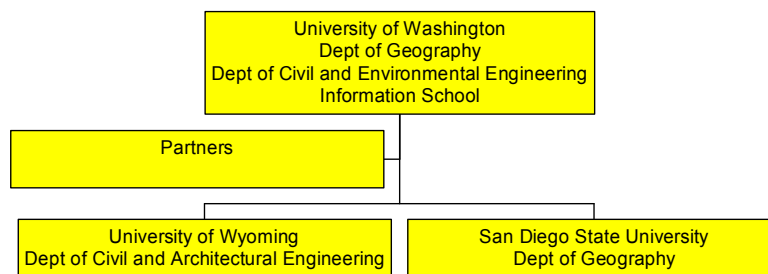


Figure 1 PGIST Organization Chart

Our (potential) Partners include the City of Seattle, Community Technology Program; King County, Department of Transportation; Puget Sound Regional Council; Regional Transportation Investment District; and Washington State Department of Transportation.

This research is motivated by several factors. First, federal and state transportation laws mandate public participation in long-range planning, transportation improvement programming, and major investment studies. Second, as reported in research about local governance and public-oriented decisions, public participation still commonly involves little “meaningful participation,” which can be defined as access to voice and competence of knowledge(s) that foster shared understanding about concerns. Third, research about analytic-deliberative decision processes shows that meaningful public participation is possible, and decision outcomes are improved in relation to concerns.

Problem-solving strategies for complex problems must be both analytic and deliberative. The analytic component provides technical information that ensures broad-based, competent perspectives are treated. The deliberative component provides an opportunity to interactively give voice to choices about values, alternatives, recommendations and/or choices. Such public participation has been expensive and time consuming, and thus involved small groups. An Internet GIS platform that supports an analytic-deliberative process might be one way to facilitate meaningful participation in large groups, while holding down the cost to all publics who wish to participate.

Based on this problem context, our principal research question is: *What Internet platform designs and capabilities, particularly including geographic information system (GIS) technology, can improve public participation in “analytic-deliberative” transportation decision making within large groups?*

Three tasks direct this project in answering that research question. As our *first task*, we will refine and integrate analytic-deliberative decision process requirements and system architecture designs for the capital improvement programming decision situation. Based on those requirements and designs, as our *second task*, we will develop three kinds of analytic tools embedded within participation models to facilitate interaction among people. First we will develop participatory visualization techniques for collecting and synthesizing community value structures. Such structures organize community quality of life goals, objectives, and criteria hierarchies that can supplement existing transportation databases. Then, we develop participatory, scenario-based alternative generation models for multi-modal transportation programs. Such models frame impact analyses of the alternatives. Third, we develop participatory choice models to support sensitivity trade-off analyses, allowing large groups to evaluate transportation solutions against the value structures. Participants will organize the above described analytic tools using an “agenda builder tool”. The agenda builder will allow participants to drag and drop participation models at four “scales of participation process”, i.e., event duration as follows.

- 1) Technique - basic building blocks of analytic-deliberative interaction that occur during public participation processes e.g. voting, survey, analysis, and/or display, etc.
- 2) Method - a structured way of interacting with one or more techniques to gather ideas, organize them, select which information is relevant, then review and move on to the next step in a meeting,
- 3) Meeting - an interaction setting which organizes the sequencing of one or more methods,
- 4) Decision situation – an interaction made up of a series of meetings to conduct the participation processes for the overall transportation improvement programming process

The analytic-deliberative techniques form the basis of the process scales, with an embedding across scales 1 to 4. As such, all scales can support analytic-deliberative modeling as appropriate to participation need. Each participation model, regardless of scale, can be described in terms of an agenda, i.e. a sequence of interaction steps. However, the length of an agenda for any particular participation model is not fixed by time, but by functional activity. Scales can be jumped, e.g., a meeting agenda can be developed by sequencing techniques, as the method scale might not be appropriate for a short meeting.

As our *third task*, large groups of the public will participate in a transportation decision simulation. We will contact people in the central Puget Sound area through random digit dial telephone calls, describe the project, and direct them to a web site to enroll approximately 300. They will be paid a stipend for participating in each project phase.

Accomplishments to date include an evaluation of the PGIST platform, development of a public participation plan and object specification and integration. The first speaks to the collaborative web environments needed for the PGIST team and tools. The public participation plan describes how we are going to interact with partners and subjects. The object specification and integration starts to lay out what data are needed for the system and how they relate to each other.

Members of the PGIST team have worked previously with current partners in many areas. For example, Rutherford and Young worked with Washington Department of Transportation to develop a Multimodal Investment Choice Analysis (MICA) software for transportation improvement programming, which will be adapted for the PGIST project. Nyerges has coordinated GIS database perspectives for urban-regional (MPO) growth management-oriented transportation planning and improvement programming

The PGIST project is anticipated to have broad impacts. We will involve larger groups of people in regional transportation planning & programming than is occurring currently. This will empower a broader sector of society to participate in local decision making. In addition, we will develop information support for analytic-deliberative processes, i.e. those that require technical and scientific analyses as well as iterative discussions incorporating a range of values and perspectives.