



WATER RESOURCES RESEARCH GRANT PROPOSAL

Title: Natural Resources Integrated Information System

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Focus Categories: M & P, WQL, MOD

Congressional District: Sixth

Descriptors: Data Analysis, Data Storage and Retrieval, Information Dissemination, System Analysis, Geographic Information Systems, Water Quality Management, Watershed Management

Critical, Regional, or State Water Problems

Area of Relevant Research

Numerous federal and state agencies are increasing their emphasis on examining water problems from the watershed perspective. The watershed perspective is being emphasized in the reauthorization of the Clean Water Act, the new Farm Bill as well as several other pieces of legislation. Because of our Institute's long term position relative to national and state water programs, we function as a coordinator to assist with linkages, support education, research, and outreach with and among agencies in the broad water arena. Accordingly, we are in a unique position to facilitate watershed policy, planning, and management with a multi-disciplinary perspective. Our proposed effort includes three major thrusts. The first is the enhancement of integrated watershed systems that can be used for analysis of various management options. The second is extended education where the internet and advanced computer systems in addition to traditional conferences and workshops are used to extend new knowledge to agencies, organizations, and local level watershed and land use groups. The third involves developing a networking infrastructure to facilitate cooperation among partners such as the USDA, Natural Resource Conservation Service, USEPA, and state Departments of Natural Resources, Environmental Quality, and Agriculture, as well as township associations and county organizations.

Results and Benefits

We will promote the dissemination and application of results through the thrusts of extended education, networking, and strong partnerships with other organizations. Thus, an excellent opportunity exists to disseminate and assure application of knowledge. Consistent with a watershed approach, emphasis will be placed on assisting individuals in understanding the interactions of human land use practices and activities on surface and groundwater. This will be accomplished by working with local professionals, practitioners, consultants, and in educating local decision makers about watershed

functions and related policy options for the facilitation of water quality protection. The extensive use of extended education over the internet using hypertext techniques will greatly facilitate the effectiveness of wide dissemination throughout the state and region relative to watershed education and applicable policies. Further, many of these modules and approaches can be used nation-wide.

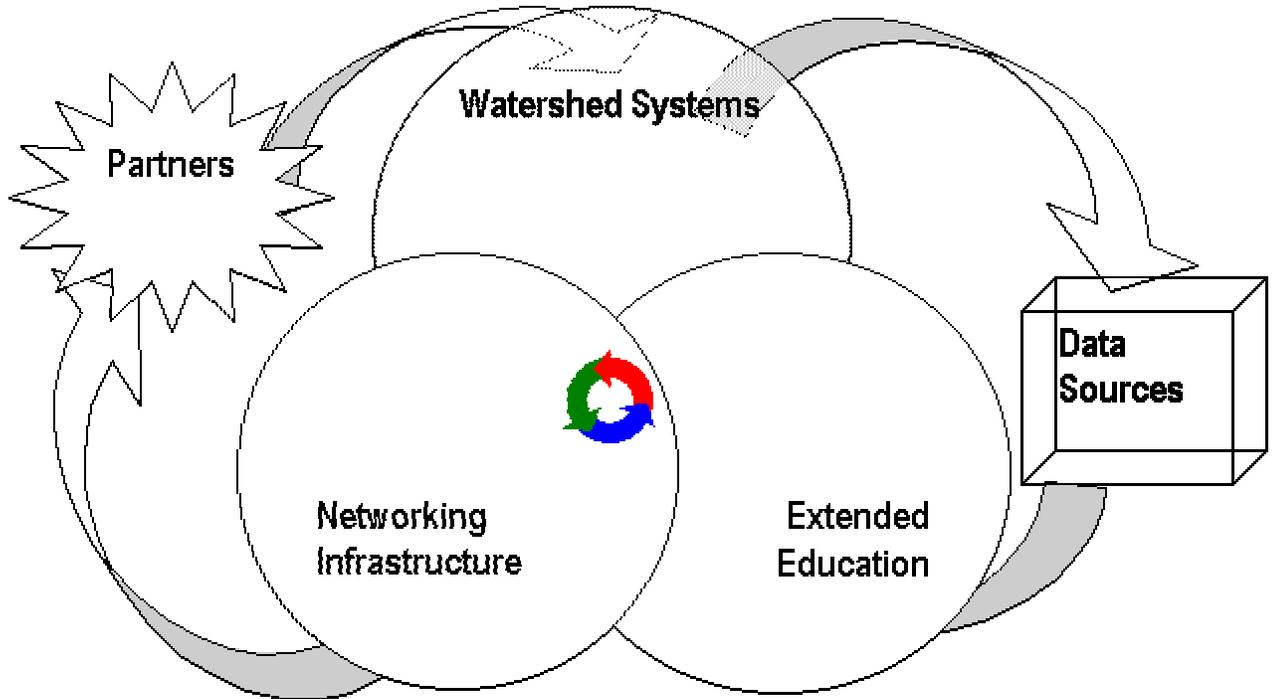


Figure 1. Networking and Communications Pathways

Nature, Scope, and Objectives

Goal

Develop an information exchange integrated support system for watershed studies with emphasis on land use and resource stewardship. The system will support research, studies by faculty and graduate students in several departments, and planning and management by local, county, state, and federal agencies.

Objectives

1. Integrate concepts and activities in watershed systems and extended education through a networking infrastructure of organizations and digital communication pathways with integrated distributed data sources and partners (Fig. 1).
2. A computer/network based Natural Resources Integrated Information System (NRIIS) will be developed with graphical interface and search mechanisms to access models, data, information, and GIS/graphic tools (Fig. 2).
3. Graduate students will use the system a) to facilitate their research, b) see how their study is part of a larger system, and c) gain experience with NRIIS and its power for enhancing research, technology, and information transfer and communication for informed natural resource policy, planning, and management decisions.

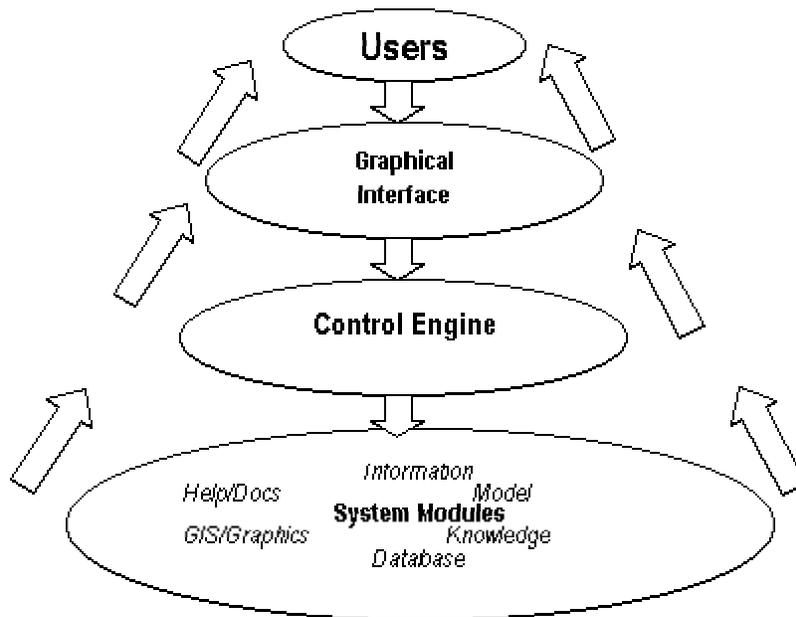


Figure 2. Graphic Interfaces and Search Mechanisms

Related Research

Our Institute has grants with many agencies such as the Corp of Engineers, the USDA, USFS, and many state agencies and NGOs. In all the aforementioned activities, a multiplier effect and synergisms will result by tying these individual efforts to the larger integrated watershed systems activity supported by the USGS Institute dollars. Following are a few current related key references upon which this proposed new project will build.

References

Ouyang, D., and J. Bartholic. 1997. Assessment of non-point source pollution potential from agricultural phosphorus in the United States. ASAE paper 97-2003. In: *Applications of Emerging Technologies in Hydrology*, pp. 9-12.

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