

Associated Colleges of the South Information Fluency Grant Proposal

Collaboration to Manage Spatial Information on ACS Campuses: prototyping an information infrastructure

Submitted on behalf of Washington & Lee University by:
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1. **Title of Program:** Collaboration to Manage Spatial Information on ACS Campuses: prototyping an information infrastructure
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3. **Brief Abstract:** Collaboration between ACS institutions can be built by face-to-face meetings to work on common problems. This proposal seeks travel funds to connect five ACS campuses in a project to develop software to support fluency with spatial data. External funding for further development will be sought once prototypes have been built and tested.
4. **Rationale:** This proposal seeks support for the next step in ACS's development of fluency with spatial information, and connects work I have been doing for many years with needs articulated during a meeting of Geographic Information Systems (GIS) users from six ACS campuses at University of Richmond in early November. We came to a consensus that the greatest common need is for improved access to spatial information: teachers and students need to know what datasets and images are available locally, what can be accessed from remote storage, and how data can be converted to useable formats. Each ACS campus needs to develop GIS support and spatial data collections that address local teaching and research needs, and most users also need help in making effective use of spatial information.

These are all issues of Information Fluency, and address the full gamut of concerns of the ACS Initiative: end users must develop research skills across a growing range of information media, institutions must build collections to support the evolving needs of teaching and learning, and library and computing staff must create the infrastructure for delivery of effective and timely logistical support and training. While the primary goal of an Information Fluency Initiative on a campus is to support the needs of local departments and programs, ACS objectives also include (1) encouraging implementation of 'best practices' on other campuses, (2) developing collaborations among ACS members, and (3) sharing resources and facilitating exchanges where feasible. This proposal addresses all of these goals and purposes (all noted in the report of the Collaboration Task Force, February 2001), and seeks support for travel essential to the creation of a prototype of management software which will enable development of spatial data libraries on ACS campuses.

The faculty or student user of GIS software has the same basic Fluency problem as a user of traditional print or emerging electronic media, which can be summarized in the question what do you have and how can I get it? The Web offers a distributed environment within which this question can be answered in many ways (including online catalogs, search engines, indexes, full text delivery and virtual reference services, guides and tutorials, and browsable archives). Virtual libraries of georeferenced data have recently joined this spectrum of information resources, and every campus with GIS activities has the problem of proliferating spatial data: users seek data and create maps, and in the

absence of someone to organize and manage this maelstrom, local servers accumulate vast quantities of unconnected projects and files. Few libraries have integrated spatial information into their services, but advertisements for 'spatial librarians' are beginning to appear, and a number of developmental efforts are reaching maturity.

GIS has appeared on ACS campuses in some departments (Geology at Trinity, Centenary and Washington & Lee; Biology at Davidson; Anthropology at Centre; Politics at Washington & Lee) and programs (Environmental Studies at Rhodes, Furman and Sewanee), but spread to other settings awaits improved support for users. Few ACS institutions are likely to fund GIS support personnel until their absolute necessity is clear; libraries are unprepared to take on management and distribution of spatial data; and few faculty will invest time and energy in learning and using GIS without institutional support. Breaking this logjam requires an innovative model of support and distribution.

5. **Project Description:** At the Richmond meeting we discovered that University of the South and Washington & Lee have been pursuing complementary approaches to GIS development:

The Landscape Analysis Lab at University of the South (under the direction of Jon Evans) combines a focused and externally funded research program with a GIS teaching environment. Support personnel have practical knowledge of a broad spectrum of GIS products and have learned a great deal about data management and solving day-to-day problems. Summer workshops have built basic skills and established an effective training model. The Lab's webpage (lal.sewanee.edu) introduces program, staff, and facilities.

At Washington & Lee a collaboration between a librarian (Hugh Blackmer), the Head of the Instructional Technology Collaborative (John Blackburn), and a database and networking specialist (Skip Williams) has focused on Internet Map Server (ArcIMS) development, centered on Web-based map interfaces to interconnected data realms (image archives, bibliographic records), distribution of interactive maps to classroom and community, and support for campus internationalization. This effort also draws on the skills of senior Computer Science students, whose capstone projects can be linked to the development effort. Links at ims1.wlu.edu lead to prototypes of several mapping and data presentation projects now under development.

Much can be gained from linkage of these efforts, and this proposal seeks funding for travel for working visits of 3-4 days, to facilitate exchange between campuses. These visits will include presentations of current work, discussions of emerging problems, and detailed exploration of possible linkages and potential collaborations.

6. **Plans for Follow-up and Evaluation:** While the present proposal covers only prototype development during the next 6-8 months, a more detailed sketch of our developing vision for the fuller system will clarify the directions we contemplate. Refinements and elaboration (which will feed into the application for external funding) will come both from discussions we have with other ACS participants and from convergent developments in the GIS industry.

We seek to build a spatial information infrastructure that (1) end users can navigate easily, (2) librarians can use and maintain without special skills, (3) faculty can draw upon to augment and distribute course material, (4) institutions can build upon for outreach to surrounding communities, (5) will support the work of GIS support staff as institutions add them, and (6) will stimulate collaborations among ACS partners. The elements include:

- GIS servers: we envision eventual implementation of ArcIMS servers at all participating institutions, to handle on-campus distribution of frequently used data and wider distribution of local contributions; initially development would be centralized on one or two main servers for the consortium
- Data structure and access: design and implementation of common standards for on-campus and external access to archived spatial data

- Metadata tools: utilities for online entry of identification and cataloging information for material being added to collections, complying with Dublin Core and NSDT [?] conventions to facilitate incorporation in online catalogs
- Converters: a suite of tools to transform spatial data into common formats for easy use by end users
- Online tutorials: step-by-step instructions for common problems
- Construction kits: utilities to facilitate linkage of data and the creation of interactive maps for Web distribution
- The Digital South: a distributed library of georeferenced data covering the states in which ACS institutions are located, including maps, images, text (and potentially other media, including sound and video), with local collections housed on servers on the various campuses and reflecting local interests. This archive will grow as institutions add resources and pursue research on surrounding regions.

Subsequent developments may include

- Linking to library online catalogs (Dublin Core and other metadata standards, SQL)
- Integration with industry standard digital information management systems (National Digital Library Initiative, geographynetwork.com)

Evaluation will be largely a matter of testing the prototypes we build, to determine the usefulness of ArcIMS as a distribution platform and assess the limitations of Internet access to data and imagery stored on distant servers.

7. **Plans for Dissemination of Results and Replication at other Campuses:** Ultimately we seek to build a distributable spatial library, including data, management tools, and supporting documentation which can be brought to a campus information environment (computing facilities and library) and integrated with existing systems, personnel, and curricular objectives. The Richmond meeting (under the leadership of Pat Schoknecht) recognized that creation of components of this spatial library will be a multi-stage effort, for which external funding will be sought. In the interim, and to support development of the grant proposal, we at Washington & Lee propose to continue to work on prototypes of system modules, in consultation with people from several ACS schools. Site visits will broaden our knowledge of existing resources, complementary skills, and specific problems, and will establish the basis for future collaboration with GIS users on several campuses (initially, Davidson, Furman and Richmond, in addition to Sewanee; others interested in participation could be added).
8. **Preferred Timing:** We propose to begin the reciprocal visits as soon as possible, with an eye toward an April proposal deadline for NSF funding under the National Digital Libraries Initiative (one of several funding sources we are considering for continuation of the project).