

The James Buchanan Duke Library: A Prototype Virtual Library Using Geographic Information Systems

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Furman University EES-24- Dr. Suresh Muthukrishnan

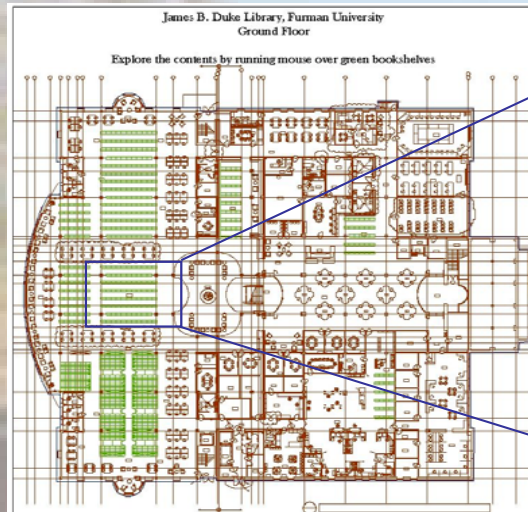
Purpose:

The intent of this project was to see if a prototype could be developed for creating a whole virtual library system that combines the Internet with the GIS system to create a more visually appealing and comprehensible web interface. Such a system would help users find books and resources as well as showing them the physical location on a map.

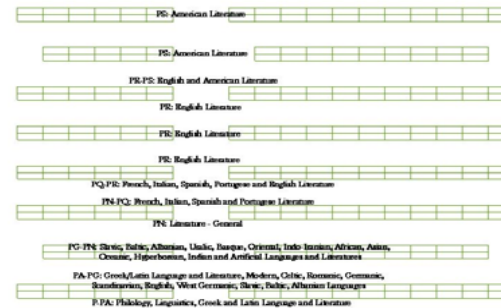
Stage 1: Data Collection /Creation

I began by contacting library employees for CAD drawings of the new library. The viewing and analysis program in (ArcMap) required additional work making CAD renderings visible, because they lack a coordinate system. However, data was input into ArcMap.

I then created a "footprint" of the Library by digitizing its borders, and then its bookshelves, making this a separate map.



Some Library Bookshelves on Ground Floor



Stage 2: Web Interface

The next work was web-based, using Macromedia Dreamweaver to create web pages of my findings. The homepage shows the entire library with all its GIS layers: polygons, lines, and points.

Using my digitized footprint and shelves, I created a zoomed-in version of these shelves and focused on 8 sets.

I recorded the range of call numbers posted on the bookshelves in the library and labeled them on the web interface, so that by running the mouse over each shelf, the range of call numbers pops up.

Finally, I searched the Library of Congress for their subject organizations and descriptions and labeled the shelves as shown below.



ALCUM

Stage 3: Visual Interface

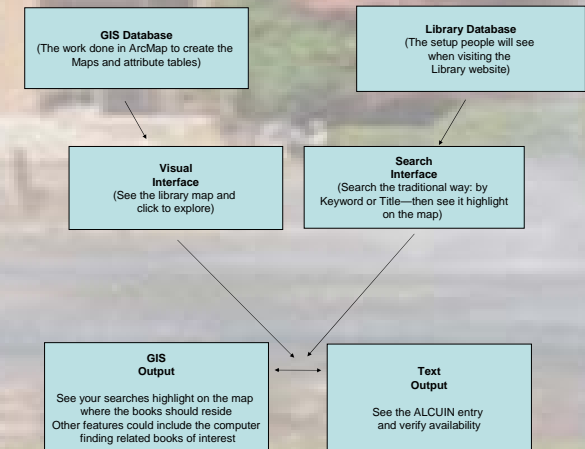
I took digital pictures of a random set of bookshelves and of one particular shelf within it. Then I uploaded it onto my third webpage.

On this particular shelf each book is visible and links to its entry in ALCUM, the library catalog. Running the mouse over the books displays its title and author. By clicking on any one of the books, the ALCUM catalog is called up real-time to show the book's citation and availability.

Stage 4: Future Work

I believe it is possible to create a virtual library system in which one could explore and search the library without entering. It would require that the library databases (ALCUM) work in conjunction with an ArcMap-based GIS interface (see flowchart at right).

The GIS database would have to include call numbers, titles, authors, publication information and anything else pertinent in the accompanying attribute tables. This poses difficulties because of nature of current library data: while the maps show whole bookshelves, data would have to show the hundreds of individual books on each one. Entering attributes for each book will be time-consuming, as will creating ingenious interfaces, like showing related books of interest on a map when a user searches.



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