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Title

Unit 51: Preparing Digital Presentations

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Unit 51: Preparing Digital Presentations

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Examples from the work of Richard Becker.

Context

According to the old saw, a picture is worth a thousand words. That certainly holds true for GIS projects, since in almost all cases the results must be communicated to an audience. That audience may be live, or at the receiving end of a paper document, or, increasingly, downloading a World Wide Web page. Each of these environments requires a graphical presentation, but the technical specifics for each vary with each medium.

One aspect common to all, however, is that the representation must be clear, concise, and accessible. How well a GIS presentation meets those goals depends on many factors, including the design and conception of the original project. Here, though, we will focus on the technical aspects of a final presentation.

The principal communication tool for presenting GIS results is a map. In turn, this means that good cartography is essential for good communication. While GIS packages are often an awkward environment in which to do good cartography (especially compared to good drawing software), they are usually the tool of choice, simply because they are bundled with analysis tools and offer immediate access to the source data.

The difficulty in using a GIS for cartography arises from the fundamental conflict between measurement and communication. While the diligent analyst may be well versed in computing spatial relationships, her focus must change to the disparate world of cartographic communication when it comes time to make a map for a presentation. Instead of accuracy and completeness, her work will now be judged in terms of clarity and communication.

A benefit of GIS in particular and electronic media in general for communication is that many different realizations of the same phenomena can be quickly and easily created

for an audience. In contrast to the days of manual cartography, when great labor was required for each additional map, a presenter can quickly display a new theme on an existing base map.

The disadvantage of electronic media compared to paper, however, is that resolution is much lower. Whereas a large paper map has the equivalent of many thousands of pixels in each direction, a standard VGA computer screen has just 640x480. That means that graphics will need to be simplified compared to a paper presentation. So in order to present as much information as might be printed on a paper map, multiple realizations are often necessary.

Example application:

A consultant has been asked to show how GIS might be used by a fire department. The consultant has already worked on different GIS analyses for this agency, and the time has come to show the benefits to senior management.

"GIS for Emergency Services" [*link removed*] was created for the Ventura and Santa Barbara Countyfire departments by Richard Becker, a geography student at UCSB. It shows how a variety of photographs, maps and diagrams can be used to create a coherent presentation. The software used in this example was Microsoft Power Point and Arc/Info.

The basic steps involved in creating this presentation are:

1. Data collection
2. GIS analysis
3. Presentation design
4. Presentation formatting

The first two steps are covered elsewhere in the CCTP detail.

Presentation design involves formulating a plan for communicating ideas to a target audience. In a multi-media presentation such as the example here, that involves coordinating maps and graphics with explanatory text. Increasingly, this means designing presentations to be viewed on the World Wide Web, as well as delivered in person.

While many resources are available for designing general-purpose presentations, such as with Microsoft Power Point, as well as the WWW, this text will focus on the technical steps necessary to get GIS output into a form where it can be used by other software.

Two general principles apply to successful digital presentations: first, they must be easily read by the viewer in a variety of different computing environments. Second, the message they are intended to convey must be equally clear. Conceptual clarity and

digital quality go hand in hand.

Learning objectives

Awareness

- The student should understand that digital files come in two basic types, vector and raster. The resolution, in both pixels and color depth, of those files will determine how much and how clearly information can be presented on the page.

Competency

- The student should be familiar with basic file types such as Postscript, GIF and JPEG, and be able to choose appropriate types for different presentations.
- The student should be able to use GIS software and other software such as PowerPoint to make simple presentations with maps.

Mastery

- The student will be able to transform graphic files into a variety of different formats for different kinds of presentations.
 - The student will be able to make a complete presentation utilizing graphics from several different sources.
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Preparatory Units

- Unit 47 - Onscreen Visualization
 - Unit 48 - Designing products for printing
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Background

Data types. There are two basic formats in which graphical data are stored--vector and raster.

Vector data types store elements of a map or display as objects, such as a line or a character. A common vector data type is Postscript, a language developed for printers which specifies each element on a page. Another common type is the Windows metafile, developed by Microsoft for transferring drawings between applications. Other data types include those developed for drawing packages such as Adobe Illustrator and Corel Draw.

The benefit of vector data is that it is easily scalable. Objects that are presented on a small display with a limited number of pixels can be redrawn on a much larger display area with no apparent loss in quality or "pixelization". The disadvantage is that isn't a

"picture" of a map, but instead a set of instructions on how to draw it. Thus vector formats aren't viewable in media such as the WWW.

Raster data, however, *is* a picture of the map or other graphics. The arrangement of cells records the image as it is seen onscreen. Unfortunately, this means that it is not possible to get finer detail by enlarging the image. These bitmaps, however, are the most common way of delivering graphics, especially over the Web.

Since raster data usually contains much redundant information--adjacent pixels are likely to be the same value--they are often compressed to reduce storage space and transmission time. A common storage format is CompuServe's Graphic Interchange Format (GIF). Another, more highly compressed format is the Joint Picture Expert Group's JPEG (or JPG), which is especially appropriate for photographs.

File formats. In the raster domain, files are measured by their pixel count in x and y directions, just like screen sizes on the computer are. The standard VGA screen has 640x480 pixels. They are also measured by their *depth*, the number of different possible colors for each cell. Sometimes this is expressed as a number, such as 256, or sometimes in bits (the corresponding number is 8 bits).

In practice, these two numbers (640x480 and 256 colors) represent a good lowest common denominator for raster graphics. More pixels or greater color depth is not likely to be supported by all machines, especially in the case of presentation devices such as panel displays and video projectors. If you are currently using a high-resolution display, the output at 640x480 may well look disappointingly coarse. It may be good discipline, however, to use such low resolution, if only to be sure that an audience can see your presentation from the back of the room.

Capture methods. There are two common ways of getting a map from a GIS program. The first is *export*, and the second is *screen capture*.

For example, in the widely-used software package ArcView 3, it is possible to export to a variety of vector and raster formats from view and layout documents. If the data is to be reused in a drawing package or presented in a paper document, the most appropriate format is likely to be a placeable Windows metafile (.wmf filename extension)--the Microsoft standard for vector graphics. If, however, the document will be used directly in a web page or other format that requires raster graphics, the best choice is likely to be the Windows bitmap (.bmp).

If it is not possible to use built-in export capability to export graphics, they can still be captured as they appear onscreen. Shareware programs such as SnagIt are available for screen capture on Windows systems.

Since Web browsers such as Netscape don't include support for the .bmp format, those files must be converted to the .gif or .jpeg formats described above. While the most popular program for manipulating these bitmap images is Adobe Photoshop, there are

also less expensive shareware programs available, such as Lview Pro, which will do basic file conversion and image processing.

Resources

[Outdated links have been removed.]

Many tools for creating digital presentations are available through the web. Here are some mentioned above:

ArcView 3--widely used GIS software that can be used to generate digital files Corel

Draw--widely used drawing software that can manipulate both vector and raster graphics files

Microsoft Power Point--widely used software for creating digital presentations. Can be used to create pages for the World Wide Web.

Adobe Photoshop--Widely used image editor for raster graphics

SnagIt--Shareware for screen capture

Lview Pro--Shareware for raster file conversion and image editing

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