

Paving the Way for GIS

by Helen Ireland, SR/WA

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Geographic Information System (GIS) applications can be a powerful tool in the right-of-way field, providing access to accurate, timely and consistent data. Typically, these systems have a foundation in a national database and are fine-tuned at the local level. GIS tools have been used in infrastructure management, superfund cleanup, transportation engineering and interstate utility projects. On a daily basis, GIS provides the field agent with maps and fact sheets, and benefits the public with one-stop permit processing.

A GIS is a means to link graphic data with land data maintained in spreadsheet format. A graphic link is the obvious structure for tying together land data. Queries on a particular location can access data from various files as well as relate the graphic area to other maps. There are many advantages to having a file of maps related this way. Each map can be treated as a thematic layer, allowing selective viewing of as little or as much information required. Automated maps can be easily scaled. The use of the common graphic link eliminates redundant mapping as various departments are able to share maps electronically. Information related to the map can be transferred quickly, providing complete and current information.

GIS technologies have a wide range of uses in the right-of-way field. Facilities management is a popular application. Highways, utilities, waste disposal and water systems all benefit from an efficient method for maintaining, improving and linking the systems and facilities.

System components inventoried through a database can be easily identified and updated to reflect factors such as history, condition and location. Planning for expansion and the preparation of Environmental Impact Statements is simplified with the ability to overlay maps of historical sites, old landfills, storage tanks, soil data and drainage patterns. Routing and scheduling applications is another area where GIS is useful for tasks such as transportation scheduling, sanitation pick up and meter reading.

With such useful widespread applications, why aren't more individuals using a GIS? The main obstacles are cost and time of cost recovery. From user requirements to implementation, costs can run into millions of dollars. To be cost-effective, it should serve a large number of users over a wide range of applications. The primary candidates for GIS are currently government, utilities and big business. Installation must be customized to the users' system. Analyzing user needs and data stores; evaluating software and hardware requirements; defining a plan to incorporate this into a GIS; implementing, testing and revision—this is a lengthy process. It may take from four to 10 years before costs can be recovered. Still, faced with problems of increasing work loads and aging systems in a tightening economy, there is a rapidly growing demand for GIS tools to produce greater efficiencies of management.

GETTING INVOLVED

The right-of-way agent is one of the elite who may be involved in the maverick operations which will pave the road for others. For those who are fortunate enough to be within an organization which is developing a GIS, there are certain steps you might take to become an active participant.

The costliest and most time-consuming aspect of a GIS is data conversion. You can mitigate this by planning now for the system you would like to develop. Anticipate the data and formats other departments might require to facilitate data sharing. Taking the initiative could qualify you for inclusion in a pilot project. Getting involved in the early stages of system development will help uncover oversights in system analysis and user needs. A GIS can, and should, be functional even in the early stages of development. A good integration can be expected when the system and the user develop at the same time.

This author became involved with GIS initially through work as a right-of-way agent for Pima County's Property Management Division. Pima County's IMAGIN project in Tucson, Arizona, is supervised by the county manager's office through a project manager. During development, only a few of the departments were expected to participate. Some divisions became included through their own initiative. One, of course, was Property Management. Another was the Pima County Health Department's (PCHD) Division of Disease Control. Both were able to do this by devising a workable database.

PROPERTY MANAGEMENT APPLICATION

Pima County's Property Management Division is responsible for the acquisition and disposal of county property, administration of improvement districts, and review of rezoning and subdivision requests. Although project information was maintained primarily in reports and files, the division planned to reorganize this information using a Dbase database. The Dbase system would link information maintained in the appraisal and acquisition sections.

The initial system was designed to