SPATIAL SYSTEMS ASSOCIATES, INC.

Customized Field Data Collection Tools

Customized Applications to Fit Your Data Collection

While Geographic Information System (GIS) and Facility Management Information System (FMIS) data development has often occurred in the office utilizing remotely sensed imagery and/or conversion of hardcopy record documents, with the continued availability of portable computer technology there is an increasing demand for gathering and maintaining GIS and FMIS data in the field. Further, while the conversion effort in the office is most often performed by trained technicians, the expectation in the field is that construction and maintenance personnel, who normally are not trained in the detailed use of the technology, should be able to gather GIS/FMIS data that is compatible with the selected computerized information systems.

The availability of ever-less expensive and yet more capable, ruggedized computer systems provides the platform on which the collection effort can be performed. Many portable accessories are also now available that allow applications to be built that incorporate GPS location, laser range finding, digital photography, bar code identification, and other technologies into these field applications. Esri's development tools provide the resources necessary to build customized applications for use by non-GIS/FMIS staff to collect data, ensure that all necessary attributes are entered, and incorporate the collected data conveniently back into the geodatabase upon return to the office. Spatial Systems Associates' programming staff has been developing and deploying these integrated field systems for several years. The following examples of applications serve to demonstrate the functionality that can be incorporated:

Address Verification

E911 offices are increasingly incorporating GIS technology to optimize the services provided. These offices and the responding units require accurate and maintained/addressed street centerline files along with other GIS datasets. To ensure that the addresses associated with available street centerlines are correct, Spatial Systems programmers have developed portable technology that incorporates GIS, GPS, photography, and range finding functionality that is used to visit points of egress from main streets, verify the address of that point through visual inspection, and capture photographs of the residence or other information that will simplify the ability of responding units to identify the correct location of the call. The information is then returned to the office and automatically incorporated into the centralized geodatabase available to all emergency personnel. Spatial Systems' staff have collected literally hundreds of thousands of address location points and associated data utilizing these field-based technologies.

Asset Collection/Condition Surveys

Whether for GIS or FMIS systems, there is a need to capture information about the existence, location and attribution for assets that exist in the field. These assets may include utility features such as manholes, water or gas valves, hydrants, etc.

They may include transportation features, such as signage and control devices. They may include stormwater features such as inlets, culverts, swales, or streams. For FMIS data collection the requirement may be for partition location, furniture and equipment existence, electric or HVAC infrastructure, etc. In each case, the requirement is to "check out" data from a central database, collect verification or new data and attributes in the field, return collected data to the office and update the central database. Systems often incorporate GPS, photography, laser range-finding, and other technologies. Examples of applications that have been built by Spatial include:

- A location/condition assessment application for stormwater conveyance features, including GPS location, photographic evidence of condition, update of vector data, and collection of attribution information related to the features. According to the county client, the application saves staff time in both the office and the field and results in more accurate collection.

- A telephone survey application for a federal client's police department. A large campus with hundreds of thousands of telephone lines was having difficulty identifying the location of incoming emergency calls despite having a well managed GIS. The application allowed collection of the location and number of every phone on the campus with summer intern help. As a side benefit, thousands of phone numbers that were being paid for monthly were identified as no longer existing on the campus, resulting in the ability to reduce charges from the local phone company and save significant operating costs.

- An application to manage the collection of investigatory data related to hazardous materials. Material samples being gathered across multiple buildings that had to be processed in a lab to identify whether hazardous materials existed were linked to an FMIS, photographic evidence was gathered, and bar codes were generated for each sample. Bar codes are used to track the sample through the "forensic" lab process. The resulting system is used to identify whether hazardous materials exist in areas where renovations are proposed so that proper remediation can be done ahead of construction activities rather than disrupting the process.

Need More Information?

Spatial Systems Associates can design these field applications, integrate portable computer technologies and necessary related peripherals, train customers in the use of the technology or provide field staff for data collection as necessary. Call us if you are interested in building user-friendly field data collection applications to integrate with your GIS or FMIS technology.

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