



INCREMENTAL CONSTRUCTION OF GIS DATABASE – A STRATEGY FOR DEVELOPING AN ENTERPRISE GEOSPATIAL RESOURCE

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Geospatial data is extremely useful and versatile in transportation operations. However, large data collection projects are expensive and difficult to authorize. Moreover, once generated, they require upkeep and maintenance.

Ironically, the data that staff members need is usually purchased by agencies, as contractors commonly collect natural resource geospatial information to generate reports such as environmental assessments and biological opinions. Frequently, the geospatial data itself generally goes unorganized or even uncollected. It is the report—not the data—that is considered the deliverable.

As part of its work on the \$1.3 billion OTIA III State Bridge Delivery Program, the Oregon Department of Transportation and its private-sector program management firm, Oregon Bridge Delivery Partners, set out to address this situation with a system that would make data the deliverable.

Building a database incrementally

The new model is a Web-accessible set of information useful to a broad range of groups, from contractors to federal environmental agencies. It works by approaching contractor-generated GIS data as a contract deliverable, working with established GPS and GIS standards, and enlisting the bridge program GIS team as a services group. The first application of this was environmental baseline reports.

Before the design and construction phases of the bridge program, ODOT generated environmental baseline reports for 418 bridge sites to help project design teams avoid or minimize environmental impacts of bridge construction. The GIS team took advantage of this rare initial investment, using it as the foundation for data collection and information system development.

Next, the data was a deliverable in all contracts. Contractors were required to submit any new or modified GIS data as part of their work. This was a significant change in contracting for both the contractor and agency.

To ensure incremental data accrual will be effective, it must take place according to clearly established standards. For the bridge program, the GIS database, keyed to the environmental baseline process, became the standard to which future data additions were matched. A GPS application with a preset setting enforced ODOT's new GPS standards, facilitating the transition.

GIS staff members also helped contractors through the new process, offering a free tool built around standard practices employed by the contractors; application and manuals downloadable through the bridge program Web site; and technical staff members available for support.

Cost and benefits

The development costs were primarily in the contract management practices, requiring mostly a new mindset. The benefits are straightforward. Wide-area data is maintained rather than going stale through lack of updating. With this information, the bridge program quickly measures its outcomes against environmental performance measures, in streamlining permitting and regulatory compliance, and in monitoring the cumulative impacts of transportation projects statewide. ODOT can track not only the volume of the impacts associated with the bridge program, but also where they are concentrated—by type, activity and even by contractor. And the database is already finding new uses in generating rapid, location-specific reports for state and federal agencies.

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