

Of standards, interoperability and efficiency

An integrated CAD/GIS platform not only improves the quality, efficiency and accessibility of engineering data but also delivers interoperability with existing GIS data, enhancing the overall productivity

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A port which accounts for 13 per cent of the containerisation of a country, with seven separate container terminals, 10 piers, 80 berths, 72 post-panamax gantry cranes that work 24x7 to extract or load the containers onto some 5,300 ships each year is definitely a busy port. Tucked away some 25 miles south of Los Angeles, the Port of Long Beach, covering 3,200 acres has supplemented its commercial operation with technology for optimum efficiency. Containers with toys to automobiles are handled with ease, thanks to standardisation of engineering data on a common CAD/GIS project.

The professionals charged with providing infrastructure to support this burgeoning sea trade are committed to becoming technology leaders in the port facilities industry. Standardising on a common CAD/GIS platform was a strategic component of a US\$ 26-million, five-year technology plan initiated in 2007 for the Port of Long Beach, a department within the city of Long Beach. The CAD/GIS project will improve the quality, efficiency, and accessibility of engineering data as well as deliver

interoperability with existing GIS data. A comprehensive standards manual will leverage and enforce the new platform and ensure accurate infrastructure as-builts.

"The main objective of this project was to make the Port of Long Beach a leader in engineering design of infrastructure," said CADD Manager Michael Kolster. "We are already one of the largest ports in the world and seen as a leader in the port industry. We are recognised as a leader on environmental issues and port security, and it was time to lead in engineering technology as well."

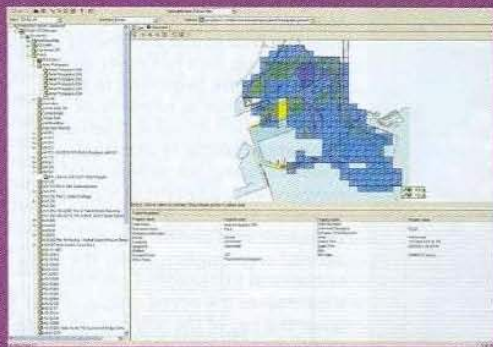
One of the reasons why standardisation on interoperable software is such an advantage is because the port has to manage such diverse classes of infrastructure. Bentley's engineering and geospatial software allows the port to manage the entire portfolio of assets including bridges, roads, rail facilities, water and wastewater networks, the communications network, and marine structures. Not only that, Bentley also provides the technology to create and edit the base maps on which all this infrastructure is located and designed.

The CAD/GIS project plan called for replacing multiple disparate engineering software programmes that required the time-consuming re-creation of data and had no central storage for project files. The new platform seamlessly integrates the design processes and products. Convinced by Kolster's demonstration of the Bentley solution and its long-term financial and technical benefits, Harbour Board of Commissioners gave their approval to adopt the platform.

Kolster explained, "This project will help our staff easily access accurate digital information for the first time since migrating from the drafting board. We are confident that these improvements will make us more competitive in the coming years."

Five steps to standardisation

The Port of Long Beach signed an Enterprise License Subscription and Enterprise Training Subscription in February 2007 and kicked off the CAD/GIS project in October 2007. The project was divided into five subprojects: CAD Standards and ProjectWise



Implementation, Process Re-engineering, Data Remediation, Enterprise GIS, and Coordinate Systems. Project goals were achieved by analysing as-is workflows and proposing future workflows that leverage the new Bentley-configured software.

One workflow reform that illustrated the potential time savings was the transfer of mapping data from the survey department to engineering. The survey department had been creating terrain models that would be converted from electronic format to PDF file format to printed copies for field notebooks, and then these prints would eventually be scanned and manually recreated in electronic

format. The cumbersome process involved several file conversion steps and ultimately placed duplicate files in multiple data storage areas. Finding files required searching seven mapped drives.

Using integrated Bentley products, the survey department now processes GPS data in InRoads. Engineering designers use the ProjectWise Connector for ArcGIS to pull as-built data and begin working with no data conversion. ProjectWise serves as the centralised document management system and requires just one mapped drive. Assuming a workload of about 200 projects per year, Kolster estimated that the improved workflows

across all functions – from finding and assembling project data to as-built validation and clean-up – will save more than 200 man-weeks per year, for a total annual cost savings of about US\$ 540,000.

The two-year process of standardising on the Bentley platform involved developing the system's functional and technical specifications; migrating the current document management system data and as-built database; identifying new hardware and software specifications; creating a comprehensive CAD standards manual and consultant guidelines; deploying and configuring Bentley Geospatial Management (the spatially enabled version of ProjectWise), the ProjectWise Connector for ArcGIS, and Bentley Map; integrating applications; benchmarking results; and training users through the Enterprise Training Subscription programme.

The ongoing engineering and construction projects managed by the Port of Long Beach provide the port industry with state-of-the-art facilities. Sea trade and transportation is a major economic force, and the Port of Long Beach currently generates about US\$ 16 billion in annual trade-related wages statewide and supports more than 1.4 million jobs throughout the United States. As the Port of Long Beach becomes more efficient in its ability to design and build infrastructure, it will contribute to the growth of the local and national economy. ■

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