

Paperless Engineering in Central Europe

Avi Hoffer
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The Croatian Institute of Civil Engineering (ICE) has invested in a new infrastructure to automate all processes for sharing, sending, and storing paper files — from engineering plans and blueprints to supplier details, invoices, and contracts. With the automated procedures in place, ICE is launching a new product for electronic maintenance and management of buildings, energy, and the environment.

User: The Croatian Institute of Civil Engineering (www.igh.hr) **Technology Provider:** Computhink, Inc; Metastorm, Inc.; Hermes Consulting, Croatia

Business Problem: Searching and processing over 5,000,000 images and pages by both visual and text-based scans, with additional costs of time and storage.

Solution: The Institute purchased Computhink's ViewWise 5.2, Java server-based document and image management solution, with Metastorm e-work, a business process management (BPM) software platform, to automate all processes for sharing, sending, and storing paper files. With the automated procedures in place, the Institute is launching a new product for electronic maintenance and management of buildings, energy, and the environment.

Central Europe is not usually perceived as a region with breakthrough IT applications. However, there are examples of impressive technology at work, which are leading organizations in the area to compete on an equal level with others around the globe. These Central European organizations can now do business on a global scale as they leverage the benefits that the Internet and applied technology have brought.

The Croatian Institute of Civil Engineering (ICE), headquartered in Zagreb (www.igh.hr) with three main regional centers across Croatia (Osijek, Rijeka, Split), is a national agency in size and standing. Currently one of the leading national research and development institutions, it performs all research and professional activities related to the field of civil engineering. As part of a Croatian-wide modernization drive, the Institute of Civil Engineering required a system to digitally store and process data, engineering plans, and documents.

Playing the blues

Blueprints and engineering documents are the main tools of engineering. At ICE engineers need to be able to search over 5,000,000 pages and images of structures, parts, and equipment annually, by both visual and text-based scans. Information on the originator, current questions, and latest amendments have to be available real-time on any form, field, or graphic.

Without an electronic system, storage costs were high, and storage space was significant. Operations were manpower- and time-intensive, manually sorting, updating, and sending documents between departments and locations.

To facilitate accessing and sharing data and designs, ICE needed a solution primarily focused on digitizing its paper-based system. The solution had to integrate documents and images, with the ability to intelligently process and interact with the flow of work, for decision-making and prompting activities. In addition, other associated organizations and government bodies that interact with ICE were feeling the effects of inefficient communication and subsequent delivery of services.

The local government of Zagreb, for example, had no way of automating a scheduled and methodical review of maintenance on public buildings and subsequently the administration process was slow, and manual work took more time, as tasks were duplicated instead of electronically stored as completed. The delay in getting work done was resulting in incrementally worse damage and Zagreb was experiencing an ongoing monthly bill of \$4 million US dollars in emergency maintenance.

Capturing combined forces

The Institute purchased Computhink's ViewWise 5.2, Java server-based document and image management solution, with Metastorm e-work, a business process management (BPM) software platform.

The local representative of Computhink and Metastorm, Hermes Consulting, coordinated an international team to effect the installation and training, which was completed within three weeks. Dr. Dragan Radic, head of consulting, was the project director of the implementation team and completed the rollout with the Institute's trained personnel. "The Institute has invested in a first-class solution, and this implementation represents a milestone in its ability to do business with other industry players around the globe," said Joe Wharram, president of Computhink. "Owing to the flexibility in our technologies, The Institute can also leverage software that it has already invested in while gaining maximum use from ViewWise and Metastorm e-work, integrated and designed to its specifications," he added.

Staff in 10 different departments at ICE can communicate on a single system and have real-time access to all data relating to operational projects, supplies, administrative tasks, and plans.

Nearly all of The Institute's data arrives or is generated in paper form. Using Computhink's ViewWise application, the paper, in a wide range of sizes and graphic qualities, is scanned and organized around other information from email, fax, or direct from applications via a ViewWise print driver or direct import.

Once captured and designated, documents and or data can be passed to Metastorm e-work for automated processing via the use of templates of predefined maps of business rules customized to The Institute's needs. Upon completion of the business process all information and documents, including the full audit trail of all actions in the business process, are seamlessly handed back to ViewWise, where it is readily available.

e-Maintenance signed, sealed, delivered

With a business process management solution integrated with the data capture and storage functionality, ICE initiated a new e-engineering department. While currently facilitating the refinement of their internal electronic business process, ICE's primary goal is the deployment and refinement of the new e-Maintenance service offered to its national and international network of customers and associated Institutes across Europe. Hermes Consulting, the project director for the main document processing system at ICE, is also the key figure in implementing the architecture of e-Maintenance.

"The e-Maintenance project is the first of its kind in Croatia, but one that can be replicated throughout the country," said Dr. Dragan Radic of Hermes Consulting. "It also represents a true partnership between two complementary software products, tailored to fit the needs of a complex process, with the skills that the Institute of Civil Engineering can apply."

Ministries, units of local self-government, education, health care systems, judiciary systems, financial institutions, large and medium-sized firms, industrial, traffic, and tourist companies can communicate with ICE electronically for immediate assessment and repair.

This means the process to report new faults, manage the vendor relationship, and track work orders is automated. Authorities manage job and budget approval - all using the underlying document and imaging system.

The e-Maintenance service encompasses three components:

- o Service for establishment of buildings' needs assessment
- o Service for decision support system
- o Service for partners' network development for on-site activities

In addition, software designed by ICE calculates manpower required, costs, and other details that are integrated into the documentation for electronic distribution.

Reaping ROI

The Zagreb local government, responsible for the maintenance of all buildings in the city, from schools and hospitals to ministries and banks, will be one of the first customers to realize the benefits of this initiative. The e-Maintenance service will provide rapid reporting of structural and maintenance problems coupled with a monitored maintenance program that will dramatically reduce escalating problems and the monthly emergency repair costs.

"With this system in place we have been able to realize the automation and utilization of the extensive professional expertise of the institute in a way not previously possible," said Smiljan Juric, general manager of ICE. "We predict that e-Maintenance will provide savings in excess of \$100 US million for building and maintenance projects for the local government of Zagreb over the next five years."

The regularly scheduled inspections and assessments, built into the program and online system, will head off the damage and substantial costs incurred for emergency repairs due to inefficient administration of the never-ending maintenance and update of government buildings.

In the Institute itself, for the general management of images, drawings, and documents, the new system is delivering a significant saving in storage costs, reallocation of available space, reduced transaction time by 80%, increased productivity of up to 50%, and has halved processing times. Overall, ICE will see an ROI in excess of \$1 million US dollars over 12 months.

On the 5th of December 2001, the e-Maintenance product was sanctioned by Eureka, a Europe-wide network for industrial research and development institutions backed by 31 countries (www.eureka.be). This recognition, as a new technology that will impact both business, social, and environmental affairs, has led to rapid adoption and interest from a number of other government and commercial authorities across Europe.

With current demand, the e-Maintenance initiative is on schedule to rollout across Croatia to 6,000 users by the end of 2002, with international expansion via the Eureka channel in Europe adding a minimum of 10,000 seats in 2003, followed by a national and international expansion in 2004 of an additional 30,000 to 40,000 seats. As well as showing how two technologies have been combined and applied, it also illustrates the way that the country is moving in using technology to improve systems and is a milestone in Croatia's ability to do business with other industry players around the globe.