

Digital Signatures

Electrifying the Structural Engineering Workflow

By Dr. Gadi Aharoni

"New Flyer was looking to implement an end-to-end digital sign-off process to keep up with its high-pressure engineering and manufacturing environment. Our engineers can now electronically add their signature and professional seal to CAD, Microsoft Word, Excel, and Adobe PDF documents, significantly enhancing our processes; reducing paper, scanner and labor costs."

- Dave Fraser, New Flyer CAD Systems Manager

To reduce time consuming and expensive paper-based processes, electronic documents are increasingly used by structural engineering organizations in business processes from bidding and design through project completion. However, when preparing to sign electronic documentation, engineers often find themselves forced to reintroduce paper into the workflow, extending project schedules and increasing costs.

Printing a hard copy of an electronic document just to sign it leads to a cumbersome and needlessly long process: physically routing the original for signatures across multiple office locations, and then shipping the document back to the project team to be scanned into a document management system. Such a scenario is like putting stoplights on the Autobahn. It brings efficient businesses to a grinding halt and increases operating costs.

This reality nullifies the benefits of utilizing electronic documentation in the workflow. Applying a hand-written signature to printed electronic files extends project schedules and increases budgets. Additionally, the costs associated with archiving and auditing paper documentation significantly increase an organization's overhead, affecting a firm's ability to efficiently manage and scale operations. Moreover, printing a hard copy requires the organization to store and maintain both a signed paper-based copy and an unsigned electronic copy. This doubles the necessary archiving space for documentation, and fails to leverage a key benefit of electronic documentation – the lack of space required for archival.

Secure and durable electronic approval is therefore vital to realizing the full benefits of a firm's investment in project efficiency and regulatory compliance. That said, more and more organizations are adopting digital signatures. In fact, analysts expect the market for advanced authentication and data protection to reach nearly \$1 billion in 2010.[†] Three trends are driving this growth: 1) Continuing adoption of electronic documents and document management; 2) Increasing pressure to meet government and industry regulations; and 3) Growing demand for secure and trusted collaboration with customers, partners, and suppliers.

Today, there is a very simple solution for all engineering organizations that enables them to maintain and enjoy the benefits of a completely electronic workflow. The solution to breaking the cycle of a paper-based workflow is a digital signature (standard electronic signature).

Business Benefits for SE Firms

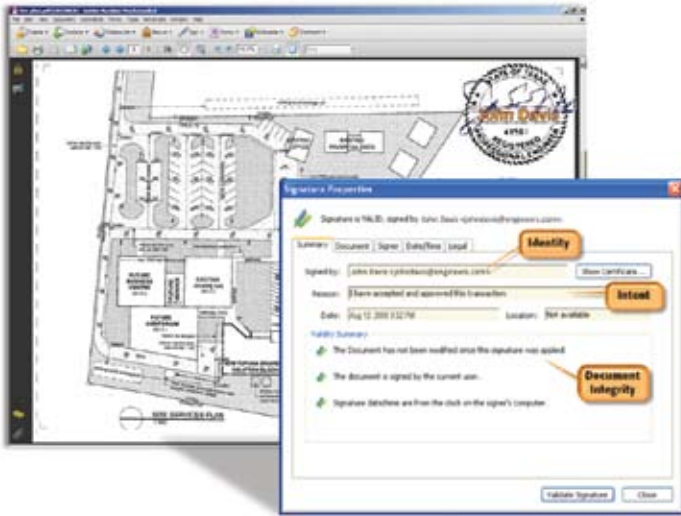
By incorporating digital signatures on drawings and into business processes, engineering organizations can reduce approval cycle times as well as the costs of handling, distributing, and archiving signed documents.



CoSign Digital Signatures allow anyone to seamlessly verify and retain proof of identity, intent, and document integrity without costly, complicated or proprietary software.

Digital signatures use the concept of traditional paper-based signing and convert it into an electronic "fingerprint". This fingerprint is unique to both the document and the signer. Digital signatures are based on a fundamental technology called Public Key Infrastructure (PKI), which invalidates the signature if any changes are made to the document after signing, thereby protecting against signature forgery and information tampering. As such, digital signatures are fundamental in helping organizations sustain proof of the signer's identity, intent, and the integrity of electronic documents – valuable characteristics for engineering organizations with secure documentation concerns, or engineering organizations that rely heavily on project collaboration or documentation review. A digital signature capacity essentially eliminates the need to ever reintroduce a paper-based signature into an engineering organization's electronic workflows.

Moreover, recent advances in non-proprietary digital signature technology free the organization that created the file, and the company's customers and partners, from being locked into a specific vendor's proprietary software. These advances allow recipients to verify the digital signature with any commonly used application such as Microsoft® Word, Excel®, PDF or AutoCAD®, as opposed to requiring the recipient to use software plug-ins for verification purposes.



Secure Document Exchange and E-Submissions

With a non-proprietary digital signature, electronic documents can be trusted and exchanged with external parties that need access to the records, entirely independent of the vendor and organization that created them. Digital signatures bridge the geographic, technical, and corporate boundaries with outside parties, making document collaboration seamless. Global organizations encounter no challenges accessing documents created thousands of miles away.

Business Solution

Structural engineers need to look no further than a non-proprietary digital signature solution that will allow them to maintain a completely electronic workflow that streamlines their business processes and cuts back on overhead. The benefits of a digital signature go well beyond a simple signing capacity. From the verification of signer identity and intent to a collaboration-enhancing solution, digital signatures are a business-enhancing technology that engineering organizations are quickly adopting as an industry standard. ■

CoSign Digital Signatures allow anyone to seamlessly verify and retain proof of identity, intent, and document integrity within engineering documentation.

Structural engineering organizations can leverage today's digital signature solutions – which cost 90 percent less than they did five years ago – into several significant organizational benefits including the following:

Reduced Approval Cycle Times

With an intuitively verifiable and non-proprietary signing solution, an organization can expect easy and rapid document routing (both internal and external). Structural engineering documents ranging from contracts and site analysis reports to AutoCAD drawings can all be approved in minutes.

Lower Costs

A digital signature allows engineering organizations to reduce the costs associated with authorizing and signing paper-based documentation (i.e., eliminating paper, printing, scanning, faxing, postage, and processing time). In smaller engineering firms, these costs can be thousands of dollars a month. In larger organizations, the costs related to physically signing documentation can total hundreds of thousands of dollars a year. A digital signature solution allows a quick Return on Investment (ROI) and the cost benefits of faster workflows. Additionally, maintaining an electronic workflow from document creation through signing authorization allows for easy management via a Document Management System (DMS), further reducing the costs associated with physically archiving paper documents.

Simplified Compliance

When using digital signatures, engineers not only have access to a simple tool for signing-off on Standard Operating Procedures (SOP) and work instructions, they also have an ability to comply with industry-related signing requirements like those established by the American Society of Civil Engineers.

Dr. Aharoni is the CEO of ARX (Algorithmic Research), a global provider of cost-efficient digital signature solutions. Dr. Aharoni has held a number of engineering positions at companies in the UK and Israel. His background and degree are in Computing.

† IDC “ARX Private Vendor Watchlist Profile”, Dan Yachin: September 2008; available from IDC

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