



TEKLA® Structures



VELA SYSTEMS®



CASE STUDY:
USC PORTER B COLLEGE



TEKLA Structures

BIM-ENABLED REAL-TIME SUPPLY CHAIN MANAGEMENT AT DPR CONSTRUCTION, INC. USING TEKLA STRUCTURES AND VELA SYSTEMS

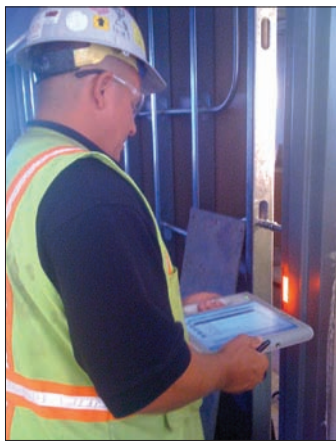
Research by DPR and CIFE at Stanford shows integrated system accelerates schedule 20%, eliminates unnecessary reorders, improves coordination and crew allocation

THE SYSTEM

> During construction of the UCSC Porter B College, DPR Construction, Inc. used field mobility software, tablet computers and Building Information Modeling to manage all aspects of their Door, Frame and Hardware (DFH) process.

The usual DFH work ow involves tracking progress of doors and hardware receipt, quality inspection and installation by making notes on paper logs and drawings and then spending hours explaining, fixing and manually updating printed progress reports.

DPR Construction chose to replace this traditional work ow with a process that is centered on Building Information Modeling and material tracking using construction field software. Prior to construction, the facility and the doors and frames were modeled in 3D using Tekla Structures.



Darrin Sterlinski: DFH Foreman for the UCSC Porter B project scans a Frame Assembly

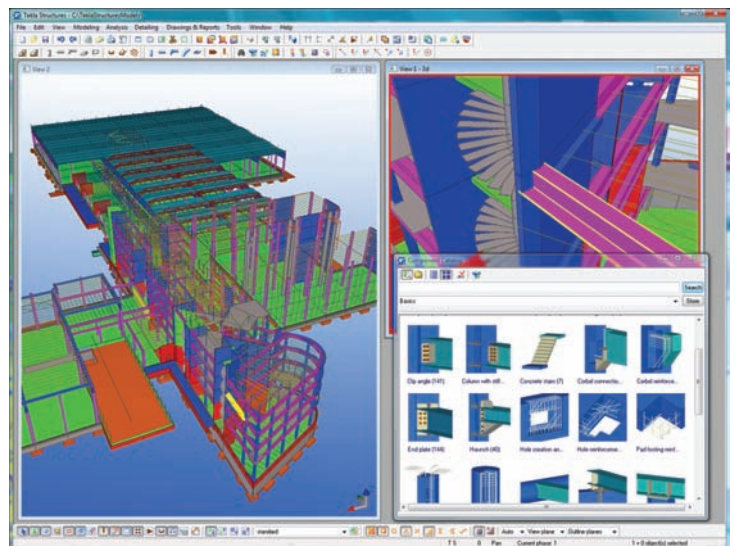
This information was integrated into the Vela Systems field software Materials Tracker product. As each door assembly arrived on site, preprinted barcodes were attached and scanned using Vela Systems installed on Tablet PCs with integrated barcode scanners. The barcodes were scanned at various stages during the installation process (e.g., received, installed, etc).

Status information was synchronized from Vela Systems to the Tekla Structures Building Information Model (BIM) either from the office or the field.

> " Before the new system, it was monotonous recording pieces received and installed. I used paper with markers to track. Green = received, Yellow = installed. We'd coordinate the job and record on paper – a massive waste of time and there were still problems."

– Darrin Sterlinski, DFH Foreman, UCSC Porter B project

In Tekla Structures, each component's status could be monitored visually, and the model could be colored to show its status.



THE BENEFITS

> As a part of a research project affiliated with the Center for Integrated Facility Engineering (CIFE) at Stanford University, a detailed study was done of the implementation and benefits of utilizing this system. Three key benefit areas were identified and expand below.

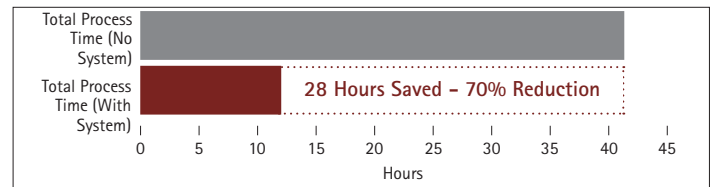
1. TIME SAVINGS

"With the old process, I had to fax huge amounts of paper work (e.g., fax door IDs) and make countless numbers of calls for status updates. We have gained substantial time savings with the new system."

—Darrin Sterlinski, DFH Foreman, UCSC Porter B project

> The research found that using the integrated system DPR realized a time savings of between 50% and 80% (depending on task) for DFH tasks. More than 28 hours of time were saved in recording, documentation, communication, and reporting.

The time savings came from faster processes, removal of steps, and faster information flow. The researchers found that 5 steps were removed in each phase of receipt + QA/QC inspection, installation + QA/QC inspection, and final walkthrough for DFH.

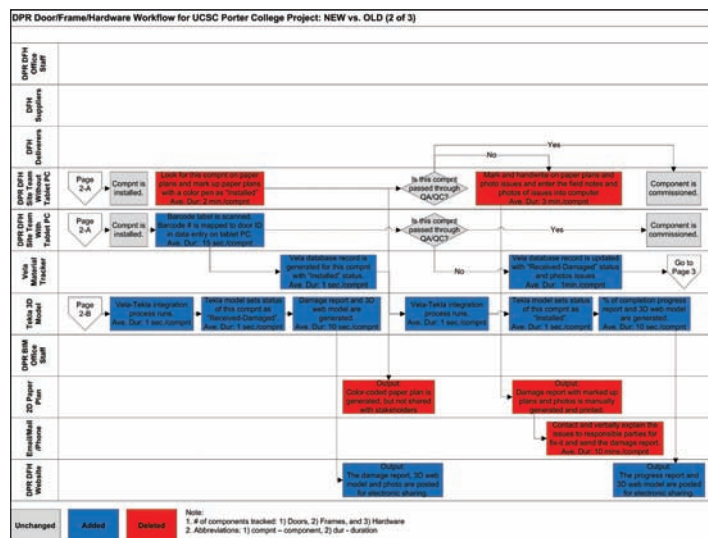


Researchers found significant time reductions from the Tekla-Vela Integrated Solution

As another benefit, the progress visibility was used to gain a better understanding of the productivity of the team members over time.

"On this project, we were able to have an accurate picture of what can actually be installed with the number of people on the project. This helps for future planning."

—Lisa Thomas, Manager, DPR DFH Division



Red workflow steps are no longer needed due to the Tekla-Vela Integrated Solution (details blurred for confidentiality)

2. CLEAR PROGRESS VISIBILITY

"With the integrated system we moved from saying 'We think we are 75% complete' to saying 'We know exactly which 75% is actually complete.'"

—Lisa Thomas, Manager, DPR DFH Division

> Using Tekla Structures web-based Building Information Model, DPR was able to publish the 3D model to their project website. With the regular updates from the field through the Vela Systems software, this web-based model could be updated in real-time. Daily, crews could see in 3D what the current status of each component was and thus what needed to be completed next in the sequence. Not only saving time, it also permitted DPR to calculate accurate progress reports and manpower statistics.

3. REORDER RATE REDUCTION

> Typically, a portion of any reorder of material is unnecessary and a clear financial loss to the project. The Tekla Structures/Vela Systems solution improved visibility into the availability of openings (e.g. ordered, onsite, damaged, installed) such that zero reorders were needed for the project, translating into direct financial benefit to the project. By making information immediately available to the DFH foreman in the field at the point of construction in Vela Systems, better decisions were made about what and when to reorder. Not only did a 3D view of the project provide immediate insight into reorder requirements, but it also provided a high level of assurance and accountability.

"The 2% of job cost related to QA/QC and reorder is now 'virtually nil.'"

— Lisa Thomas, Manager, DPR DFH Division

CONCLUSION

> Like most jobsite material management processes today, traditional DFH workflows involve tedious paperwork, frequent phone calls/faxes and challenging coordination. DPR Construction, Inc. used Tekla Structures and Vela Systems Field Mobility Software to implement a visual, automated and connected solution that brought efficiency and accountability to the process. Whether tracking DFH or any other critical path material, equipment, or components, integrated solutions of BIM and Field Software are streamlining construction industry supply chain management.

TEKLA STRUCTURES – INTELLIGENT 3D MODELING



VELA SYSTEMS®

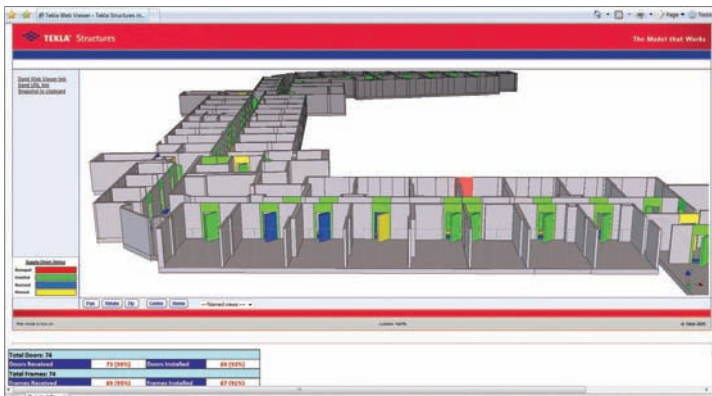
Vela Systems construction field software automates the execution and oversight of field activities on construction and capital projects. Instead of carrying a field notebook and paper plans or specs, jobsite users work with Vela Systems software on mobile computers to electronically access documents and to complete field reports, QA/QC inspections, worklists, punchlists, update the BIM and many other critical field activities. Construction happens in the field - Automate it.™

More information at www.velasystems.com



TEKLA

Tekla's model-based software products make customers' core processes more effective in building and construction and infrastructure management. Tekla Corporation has area offices and partner organizations worldwide. International operations account for more than 80% of net sales. Founded in 1966, Tekla is one of the longest operating software companies in Finland.



DPR Construction, Inc. is a forward-thinking general contractor and construction manager specializing in technically complex and sustainable projects for the Advanced Technology, Corporate Office, Healthcare and Life Sciences markets. A proven leader in green building, building information modeling, and lean/integrated project delivery, DPR continuously looks for opportunities to improve the construction supply chain management and provide a higher level of quality services on projects of all sizes and complexities.

More information at www.dprinc.com.

Tekla's technology creates new opportunities for the disciplines in the construction industry: Tekla Structures is the most advanced BIM (Building Information Modeling) software on the market that provides an accurate, dynamic, and data-rich 3D environment for structural engineers, steel detailers and fabricators, concrete detailers and manufacturers, and construction companies to share.

Tekla Structures for Construction Management is a BIM-based project management solution that supports contractors, sub-contractors, project and construction management professionals by helping them to centralize, visualize and manage project information. Tekla Structures for Construction Management can process large amounts of BIM and non-BIM information regardless of the source. The solution uniquely enables streamlined communication and decision-making throughout all phases of the construction process from design, detailing, construction to project handover.

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