

Lean Construction ensures on-time delivery and quality on all projects, and increases efficiency and productivity across multi-located teams.



Overview

Customer: CH2MHILL VECO
Location: Abudhabi (UAE), India
Industry: Engineering Consultancy
Website: www.ch2m.com

Business Need

To plan and execute multiple projects across various locations, and to control costs, timelines and quality.

Requirement

Apply 'lean construction' principles to set up an infrastructure that could integrate all teams, data, and systems into a single platform.

Give managers a way to define all the deliverables of a project, monitor them, capture the design data generated by each user, and route them automatically to all concerned groups in a streamlined, secure manner – and to achieve all this online, and in real-time.

Solution chosen: WRENCH Enterprise™

Benefits

Can now plan, execute and monitor multiple projects at a fraction of the earlier cost and time spend. The single online platform has maximized the value of all the existing technologies previously in use, including Primavera, MSOutlook, MSExcel, etc. All employees can now share information and communicate online, while managers can track progress and enforce quality in realtime.

- All stakeholders are able to collaborate cost-effectively,
- Engineering cycle time, down by 40% through online access of data and reuse of data across projects.
- Clients assured of ISO compliance.
- Team efficiency is up by 25%.

CH2MHill VECO - “The team that delivers”

VECO Corporation was founded in 1968 as an Alaska-based oil pipeline service and construction company and grew to become a major player in the global oil industry, with divisions in many major oil markets.

In September 2007, VECO was acquired by CH2M HILL, and is now an integral part of the firm's global energy and industrial business. With the addition of VECO, CH2M HILL has grown to more than 23,000 professionals in 31 countries. The company has since expanded its consulting into program management, integrated engineering, procurement and construction (EPC). Its operations and maintenance services are offered in the fields of Drilling Oil & Gas Wells, Oil & Gas Field Services, Highway & Street Construction, Water, Sewer & Utility Lines, Heavy Construction and Engineering Services.

The company today delivers more than 39 years of project delivery experience in some of the most extreme environments on the planet, including Arctic EPC and operations, pipeline integrity, modular fabrication and laser scanning, and has a reputation of providing unique solutions to help their clients manage their global programs and safely deliver projects on time and within budget.

“...I was hesitant at first. (EPC) Industry is so unique, our needs were so diverse – and project management is so complex.....I could not envision clearly the benefits that were foretold....but now I have seen them tangibly. I am very impressed.”

Nazir Ahmad,

Manager-Planning, CH2M Hill VECO



The Need

To design, plan and execute concurrent projects more efficiently; to complete them on time and to highest quality standards (and thus maximize profit).

To avoid the costs and delays of managing teams and timelines across different locations and time zones by eliminating waste, errors, and rework from the project lifecycle.

To get more out of existing resources (and processes, software, systems etc.) and so increase ROI and productivity across all teams.

As a global engineering service organization with service offerings in multiple fields and industries, CH2MHill VECO has numerous large-scale projects running at all times, with project teams, engineers, managers, vendors, consultants and other third-parties working across different and often remote locations.

Project planning, monitoring and communication were primarily driven by manual effort. Juggling quality, resources, budgets and schedules (without adding costs or delays) was becoming a challenge as the number of projects increased.

CH2M HILL VECO relied on Primavera and Excel as their primary project management systems, which made them a manual and resource-driven organization facing bottlenecks in information sharing and collaboration across all departments. There was a high percentage of human error and time wastage even in simple tasks like searching for files, updating dates, file revisioning, etc. On closer analysis, primary inefficiencies were found in:

- Project Planning and updating of schedules.
- Project Monitoring.
- Drawing & Document Management.
- Correspondence Management.
- Change management.

Solution: 'Lean construction' with WRENCH Enterprise

The WRENCH team recommended a "lean construction" strategy that would immediately and permanently solve the pressing business, operational and management bottlenecks CMH2HILL VECO was facing. Based on 'lean manufacturing', lean construction principles are designed to reduce waste, increase efficiency and optimize all processes, resources and time management across the board. WRENCH Enterprise is built on these principles, and was the perfect solution for a company like VECO CMH2HILL, as it would also integrate their existing systems (Primavera, MS Outlook, 2D/3D CAD and MSOffice) into a single automated system where data could be accessed and shared quickly and cheaply throughout the project lifecycle - regardless of which application it was generated in.

Lean Construction enables:

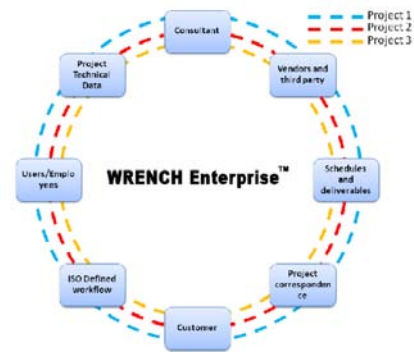
- Teams get access to only the latest data.
- Teams can find and view any file in a few seconds.
- Files transfer to be done quickly and without relying on human effort to coordinate the transfers.
- Teams could collaborate online.
- Managers can track real-time work progress from their desktops.
- Changes, updates and revisions would be stored and notified automatically, and older versions would become obsolete automatically.

CH2M HILL VECO would get an online platform that stretched across the entire organization, enabling even widely scattered teams to function as a cohesive unit.

What is WRENCH Enterprise™?

A technology infrastructure that implements lean construction methodology and helps engineering organizations to:

- Greatly increase efficiency across entire organization via automation and optimization
- Let all teams work on a single integrated platform in real-time.
- Get location-independent access to all project data so that managers can monitor all project activities at any time, from anywhere
- Automate key processes and workflows and eliminate human error and data redundancy
- Enable cost-effective and fast document sharing across entire organization with enhanced security and archival features

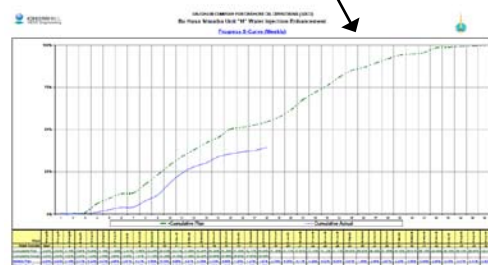


The project processes and **workflows would be enforced automatically**, making each resource and deliverable monitorable in real-time. Managers would no longer need inputs from individual managers to formulate reports or assemble documentation histories to deal with demanding clients. This platform would automate and greatly speed up daily tasks. Quality would be assured at all stages, since automation of the workflows ensured that each required procedure would be followed without fail.

Before WRENCH

Effort-driven project planning/scheduling: VECO used Primavera as its primary tool for project scheduling and planning. Updates were manually entered by each project's planning engineer into Excel sheets (using their homegrown Engineering Drawing and Document

Report created manually in Excel



Schedule in Excel, updated manually

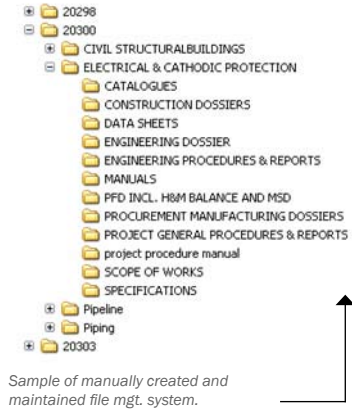
20/Dec/08										Start	Draft Complete	IDC Complete	Issue for ADCO Approval			
VECO	ADCO Doc. No:	Area	P	Doc	Doc	Doc	Doc	Weighting								
Internal Control	Doc. #	Area	Area	Code	Sr.	Document / Drawing Title	Doc. Clas	Doc. Ty	Weighting (%)							
20321-00-PG01-003	12	99	91	0601	0601	Site Visit Report	3	A4	Doc	0.71%	29-Aug-08	26-Sep-08	17-Oct-08	17-Oct-08	17-Oct-08	17-Oct-08
20321-00-PG01-003	12	20	03	0601	0601	MR For Geotechnical Investigation	2	A4	Doc	0.18%	3-Sep-08	17-Oct-08	17-Oct-08	17-Oct-08	17-Oct-08	17-Oct-08

Register (EDDR) import tool), and leading to little or no tracking of project dates. Initial project schedules were maintained separately in the EDDR, the revised dates were entered as forecast dates, and forecast dates were overwritten on each revision.

Offline and resource-dependent project management: This crucial aspect of the business was handled completely by hand, with success depending on the ability of individual managers and resources. Project data was tracked and updated manually, involving lengthy follow-ups and chasing of data across the various groups. Schedules, workflows and other execution data were updated manually, and reports and progress trackers/graphs were generated manually. There was practically no automation in play for the entire complex task of monitoring the project deliverables and teams.

Redundant drawing & document management systems

File naming and storage: All project drawing documents created using 2D and 3D CAD packages, including standard templates, were managed on a network drive, using a basic folder structure (Level 1: Project id, Level 2: Discipline, Level 3: Document type), and with drawings cross-referenced across disciplines in the same folder structure (Only a single level of xrefs was used).



Sample of manually created and maintained file mgt. system.

Quality Assurance: Since there was no automated audit trail or any way to ensure that each ISO-defined process was being enforced properly, CH2M HILL VECO used a system where each document was manually stamped after the required squad checks and approval. Human managers were responsible for ensuring that each deliverable went through the right procedures with no assistance from a system or technology.

After WRENCH

The WRENCH Enterprise™ platform brought together all the project resources into a single cohesive unit that works together efficiently and collaboratively. Project files are automatically stored, updated and shared via the powerful document-management features that WRENCH offers.

Document, project, correspondence and resource management are no longer disparate, independent functions that must be managed separately – instead they have been ‘stitched’ together into a single enterprise-wide process that is driven not by human effort but by an automated system.

Example of a report generated automatically in WRENCH Enterprise™. Time spent to create and send report – 8 seconds.

Version management: Older versions of documents were stored in separate folders (with the file title and revision number as the folder name). Finding files was a lengthy and tedious process.

Transmittals: These were sent manually through MS Outlook using a transmittal template.

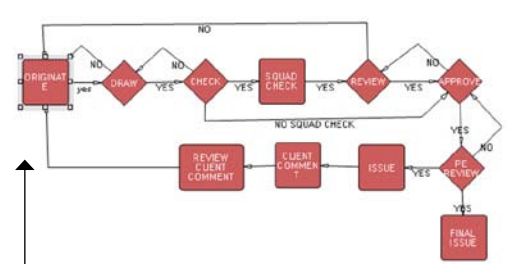
Manually-managed correspondence: Similar to document management, CH2M HILL VECO relied entirely on generic email program (MS Outlook) to manage all project correspondence, both internal i.e. between the project team members, and external i.e. with clients, vendors, consultants, etc. Emails were archived in a folder structure under a project folder. There was no system of notifications or escalation (and therefore no way to make sure pending replies and to-be-sent mails were actually sent out on time).

This means quality is no longer a matter of human effort, since each step of ISO-required procedure is enforced by the system-driven workflow. VECO’s managers are freed from routine tedious tasks and are

Example of a project workflow drawn in WRENCH Enterprise™.

Once released, each defined step will be driven forward by the system.

Individual tasks associated with each step are released automatically to the relevant user's desktop as his/her ToDo list.

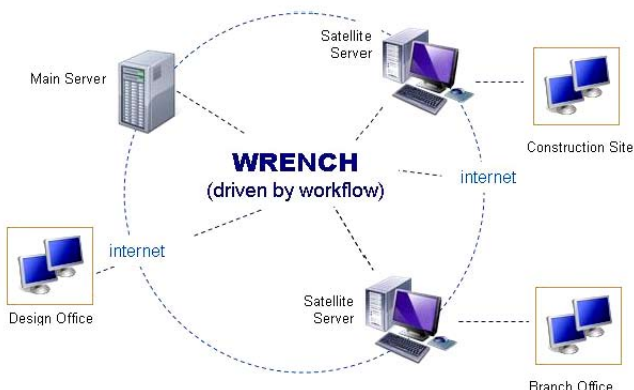


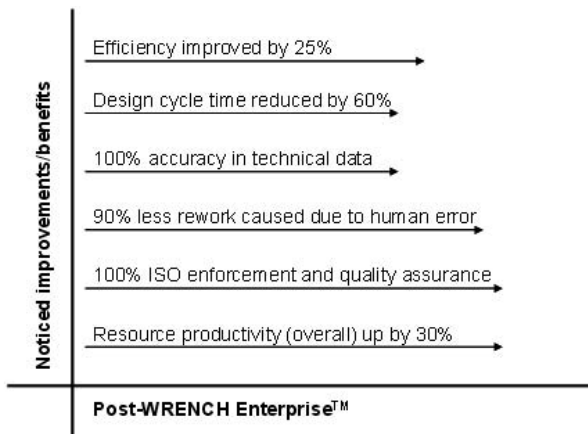
able to get the maximum productivity from each individual resource and team.

Benefits

In the new integrated working environment, the status of each task, document, deliverable, activity and schedule is immediately accessible to any manager from any desktop. Firefighting and crisis management is significantly more effective and less draining on the company’s resources and profits.

Timely delivery (and ability to predict and prevent delays and bottlenecks) has greatly reduced losses linked to late delivery or quality issues, and thus the company is geared to maximize profits in the current recessive market climate.





Summary

CH2MHILL VECO is very happy with their decision to implement WRENCH-Enterprise™, despite their initial discomfort at investing in a little-known and little-understood technology.

Today CH2MHILL VECO's engineering cycle time has shrunk by 40%, Planning Engineer's 60% of time spend for creating reports manually has been saved, overall project efficiency has gone up by 30%. VECO is also reporting high levels of customer satisfaction since using WRENCH Enterprise™ (because they are able to ensure quality and know progress of work in real-time). Managers are able to control schedule, thanks to the automation and digitization at every level. Business growth in a hostile market is eased now that the organization can take on even more projects with confidence and without taking on more resources, and still be assured of quality delivery.

“We have found WRENCH-Enterprise™ (to be) an excellent tool to maintain project documentation integrity, monitor workflows and provide project status in real time. Furthermore its web-base and capability to integrate with Primavera, Oracle, SP Materials and other databases is of great value for complex projects. Its use has made work sharing with our Indian office as easy as if India was simply in another room.”

Romolo Raciti

Vice President (Operations)
Ch2Mhill VECO Engineering,
Abudhabi, UAE

About WRENCH Solutions

WRENCH Solutions Pvt. Ltd is a 15 year-old ISO 9001-2000 certified Software Product Development Company. It develops and implements the WRENCH suite of IT products that provide end-to-end document, process and time management solutions for the engineering sector. With 60% market share, WRENCH SOLUTIONS is India's leading player in the domain of information and process management for medium-to-large enterprise.

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