How better project document management revolutionized a construction giant's project life cycle

Habtoor Leighton Group adopt 'Lean'n'Green Project Life Cycle Management' with WRENCH Enterprise

Habtoor Leighton Group (HLG) is one of the largest construction companies in the Middle East with major projects throughout UAE, Qatar, Bahrain, Egypt, and Jordan. HLG is a joint venture company formed between Al Habtoor Engineering – UAE and Leighton International, a leading construction company in Australia. HLG's trademark is large-scale projects; airports, hotels, sports stadiums, high-rise structures, mixed use developments, manufacturing units, entertainment facilities, retail facilities, public buildings and diversified civil works.

Al Habtoor Engineering has given the world landmarks like the famous 7-Star Burj Al Arab Hotel in Dubai, the Jumeirah Beach Hotel in Dubai, The Armed Officers Club in Abu Dhabi, Dubai International Airport Sheikh Rashid Terminal, Concourse 2 and Terminal 3, The Dubai Tower (tallest building in Qatar & under construction), and many others of the same caliber..

HLG wanted a system to manage their procedures and their data, which was in the form of a physical archive. Desired features included:

- A single-window system for managing document
- A way to manage submittals and registers
- A way to automate the 'routing' process for deliverables.
- A way to manage all correspondences

After evaluating four other popular document management system HLG short listed WRENCH Enterprise because of its advanced EDMS and Proejct Management capabilities. As evaluation went on their managers got excited by the unique functions demonstrated to them like real-time reporting and online monitoring. HLG finally adopted WRENCH Enterprise as their new organization-wide technology infrastructure to plan, execute, monitor, and handover projects.

A 4-member WRENCH implementation team worked with a 5-member coordination team from HLG, starting with a week-long system study to understand each department's requirements and existing infrastructure. Deployment took three months with a 'fast track discovery and implementation' approach, and ended with hands-on training and detailed help desk support, plus detailed configuration manuals for each user's roles to ensure easy switchover to the new system.

HLG began by searching for an ideal 'project-oriented document management system' and ended with a project-driven enterprise-wide automated system for all phases of operations, including project planning, monitoring, quality, and delivery.

Results

HLG reported the following statistics* (based on an ongoing project where WRENCH Enterprise is the system in use).

- Design cycle time – down by 34%
- Overall productivity of resources – up by 20%
- Average efficiency of each measurable task - up by 10%
- Number of documented human errors in document management – zero
- Percentage of rework per document trail - down by 60%
- Quality in technical deliverables so far – 100%
- Time spent on scheduling/allocating work - down by 15%
- Paper consumption – down by 65%

Bonus: Greener Project Cycle means reduced carbon footprint AND reduced costs.

Apart from the cost of buying, printing, disposing and storing hardcopy documents, HLG today saves approximately 260 Trees (that's 1 tree almost every working day) per project. This has made Al Habtoor one of the most environmentally-responsible organizations in this industry. According to Mr. Nagman - IT & Systems Director, the transition from a paper-driven to largely paperless working culture has already saved major cost of paper and catridge.

HLG is so pleased with the results that they are adopting these interim steps until full transition to WRENCH:

- Email instead of printed memos wherever possible.
- Scanned copies of documents to replace photocopies.
- Previewing before printing, print only required pages or compress / fit multiple pages in 1 page.
- Printing on both sides and re-use blank side for drafts.
- Scribble a note on the page itself instead of using a post-it note

Conclusion

In spite of the recessive market HLG increased productivity and cost-time efficiency across all its groups by choosing a smart technology that addressed multiple requirements. Profits are protected and resource shortages are manageable thanks to the reduced dependency on human employees. Higher levels of productivity per team/resource/project has made the company positive about expanding business without adding infrastructure or hiring new people. The ever-increasing global focus on conservation has given HLG an added advantage with environmentally-conscious clients.

"We had only thought of electronic data management ...never expected all-round impact like this. Every phase from planning to delivery has been optimized."

Mr. Ghandour, Project Director.

Post-Implementation Report

1. ROI – Measured Return on Investment

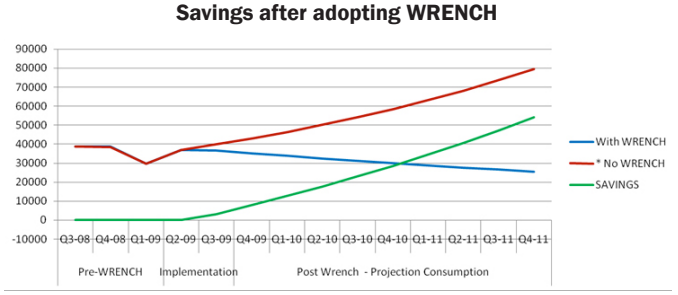
Return on Investment on Implementation of Wrench-Enterprise at Habtoor Leighton Group (HLG)

Mr. Ghandour, Project Director: "We now have a common platform where I and my managers can plan and monitor all deliverables and resources in real-time including facilities to compare planned vs. actual."

The following functionality is in use and has been tested to user satisfaction:

- Plan and monitor commissioning, certification checklist and estimates.
- Electronically capture and store all engineering and non-engineering data.
- Capture all correspondence and ensure mails are responded to promptly.
- Monitor action items of minutes of meeting.
- Share electronic documents in real-time and cost-effectively.
- Allow easy retrieval of files, drawings and correspondence.
- Ensure closed loop change management and allow efficient tracking of changes along with reason for changes.
- Reduce project cycle time by allowing online access to information, online processing of tasks through proper workflow and task automation.
- Prevent possible rework caused by sharing of wrong data.
- Reuse past knowledge to prevent repetition of past mistakes.

The trend analysis below is based on actual figures received from Al Habtoor's site store keeper and verified through their ERP's "Paper and cartridges supply log". It is interesting to see cost "Wrench-Enterprise" cost is easily recovered with the savings made through paper and cartridges only.



*No-WRENCH projected cost increase in consumables is 8%/quarter, which is derived through retro perspective actual data. * With-WRENCH projected cost reduction in consumables is 4%/quarter, which is derived from the current trends.*

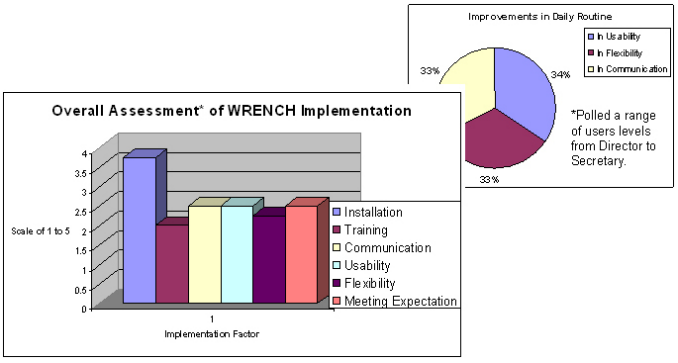
Tangible Benefits of using WRENCH-Enterprise

(Note: the following data is shown as is from HLG, no additions/modifications have been made.)

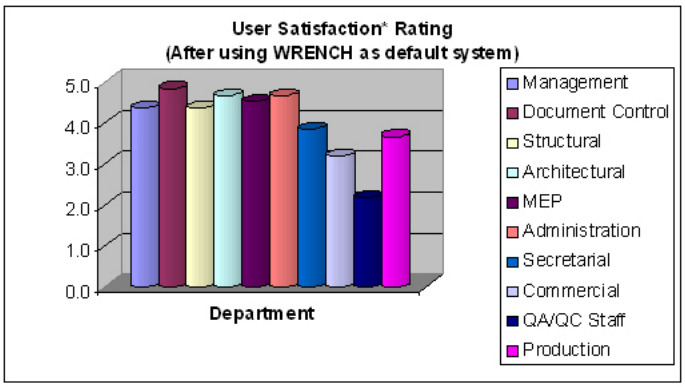
Wrench Deployment Cost vs. Savings thru Consumables (Paper & Cartridge)

	Pre-WRENCH			Implementation		Post Wrench - Projection Consumption							
	Q3-08	Q4-08	Q1-09	Q2-09	Q3-09	Q4-09	Q1-10	Q2-10	Q3-10	Q4-10	Q1-11	Q2-11	Q3-11	Q4-11
With WRENCH	38733	38587	29674.5	36896	36712	35244	33834	32480	31181	29934	28737	27587	26484	25424
* No WRENCH	38733	38587	29675	36869	39819	43004	46444	50160	54173	58506	63187	68242	73701	79597
SAVINGS	0	0	0.5	-26.5	3106.5	7760.5	12611	17679	22991	28573	34450	40655	47218	54173

2. User Feedback

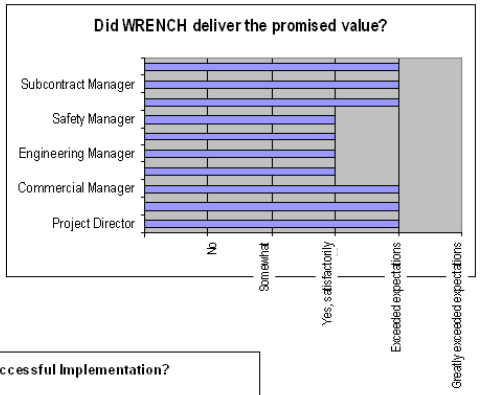


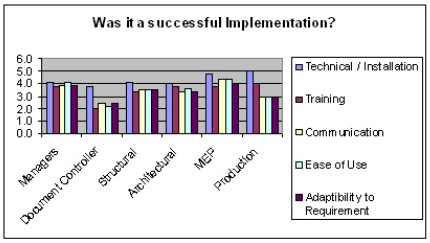
**Assessment based on feedback from Project Director, Deputy Project Director, Commercial Manager, Technical Manager, Engineering Manager, MEP Manager, Safety Manager, Project Manager, Subcontract Manager, and Project Coordinator. (See Appendix B).*



*First-hand feedback taken from Managers, Document Controllers, Structural Dept., Architectural Dept., MEP, Administrators, Secretaries, Commercial Staff, QA/QC Staff, and Production Dept. (See Appendix B).

Source: All polls, feedback, analyses, studies and interviews conducted by customer (Al Habtoor).





"This is a well designed system. They (WRENCH Team) really understand the turnkey project process and this industry...I was surprised by how much functionality is packed into one product and how well it integrates with all our existing systems....I can honestly say that it is best I.T. investment we have made till now."

Mr. Mohd Sadek, Deputy Project Director

Appendix A: Implementation History of WRENCH Enterprise at HLG, UAE.

10 April to 19 June 2009, Abu Dhabi. 4 member-team.

Starting Point:

HLG had been using Primavera as the primary tool for project planning. Their technical department managed their schedules through simple Excel sheets, but there was no detailed planning for the drawing management team. Other software applications included standard Outlook email for correspondence, Auto CAD for drafting, MS Office for word processing system and Document Tracking System (DTS) and other in-house developed systems.

After WRENCH....

One document is equal to one task, tower information is captured in area, workflows assigned to task based on origin (internal , vendor)

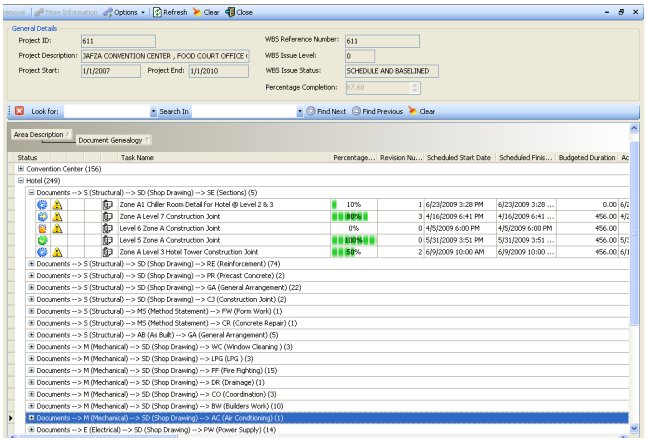
The project plan is updated as and when the user works on the deliverable.

Project Planning and Scheduling

From the old system of setting up a project using Primavera as a static tool, HLG managers today use WRENCH interactive and proactive tools to define and plan the project's deliverable schedules (Drawings/Document Submittals), and to allocate timelines, budgets and task lists for each resource. As work progresses, actual dates are captured automatically via the workflows, while alerts, notifications and escalations are sent based on real-time data as and when captured.

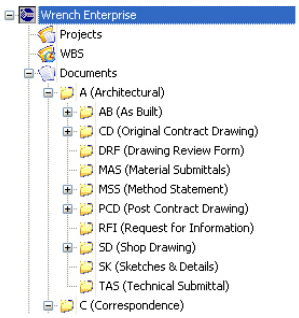
For the technical department, WRENCH has made work efficient and intuitive by digitizing and automating the 'structure' already in use (e.g. Discipline-->Tower (Area: Building divided into mutliple 3D blocks)-->Origin (Internal, Vendor, Consultant)-->Document No.)

Project Management and Monitoring



The technical department had no system to plan L3 schedules earlier but can now import L3 plans and execute and monitor them from within the system. The master document register is taken from the Document Tracking System (DTS), registers are updated automatically according to the progress of deliverables, which are updated automatically by WRENCH. Registers are taken periodically for submission to client/consultant and subcontractors

Document and Data Management



Before WRENCH, documents were managed manually. The meta data would be stored in the DTS which also showed the transactions of the files (drawings and documents) without side parties like client , subcontractor etc. A basic filing system was used for the archival of the hard copy physical files where the documents were categorized into technical and non technical (where 'technical' includes drawings , specifications, calculations, method statements, RFIs, and material submittals, and 'non-technical' is correspondences, quotations, invoices etc.) Different departments and filing systems were used to maintained the archives of both technical and non-technical documents

WRENCH has streamlined and digitized file management, but otherwise follows exactly the same structure as their old and familiar filing system. This has made transitioning from manual to automated working environment much easier.

Documents are classified in to technical and non-technical. Technical is further subdivided in to disciplines (architectural, structural, electrical, mechanical). The second level is the type of documents(technical submittals, shop drawings, method statements, material submittals, drawing review forms, contract drawings, RFIs). Non-technical is subdivided into client /consultant letters, Habtoor internal Memos, etc.)

Routing (distributing) in both cases was also manual. For e.g. Disciplines➔DocumentType➔Activities➔Workflows set for each activity.

Today all document creation, naming, storing and sharing activities is done on a single platform plus a new centralised document archive has been set up and is maintained by the WRENCH system.

No unnecessary hard copies are maintained. This has cut down the excessive work/rework of maintaining hard copy archives, and adds up to huge cost savings.

Revisions and Versioning:

Before WRENCH there was no specific version control, the revisions were incremented whenever transacted and these transactions were managed by the document tracking system. Today all revision details (except physical files) are managed by the optimized DTS and versions are managed automatically by WRENCH. Revisions are captured with the history of comments, markups etc. along with various submissions, and document attributes attached to a document, like document number, document title, activity, revision number, submittal number, submittal revision , submittal title, submittal date, reply date, expected date, tower details, subcontractor details if any, and approval status.

In WRENCH only the latest version of each document is available to the user, and a printout is taken only when the drawing/document is ready for submission to HLG's consultant (Arenco). The document controller/ draftsman can take a printout only when the drawing reaches the submittal stage.

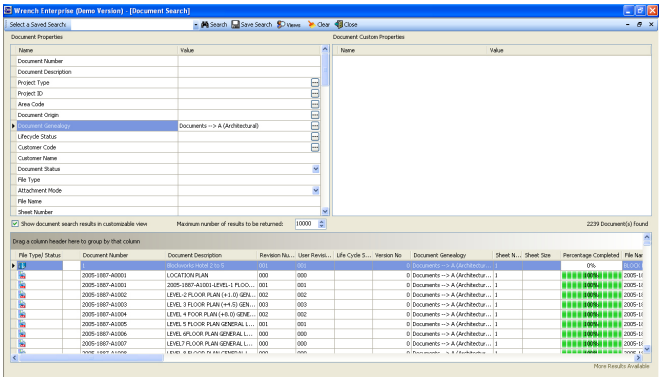
Templates:

In the old system, templates were shared over a windows network which could be accessed and used by different people. Templates were categorized as project-specific and non-project-specific. Now all templates are centralized and mapped to the WRENCH database and manual intervention has been reduced to a minimum.

"After switching to WRENCH, I am confident that even our most demanding customers will be satisfied with the quality of each and every deliverable..... The remote monitoring and automated report functions have given our managers complete control ....for the first time we can avoid most of the rework and delays and from now on our projects can be completed on time without major firefighting."

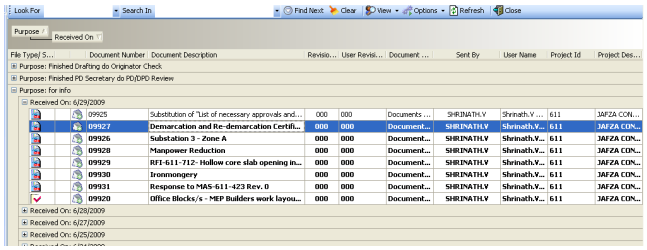
Mr. Nagman - IT & Systems Director .

Searching for files:



Document numbers are automatically generated or reserved and dates, revision numbers, status codes are captured while routing through a pre-defined process. Thus the team can now very quickly search and access the required document version.

Transmittals:

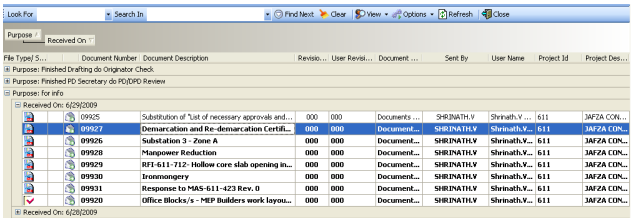


Transmittals were managed through the DTS and excel sheets – again manually. The tracking data was entered by hand into the DTS, and after that Excel sheets were created to track the physical drawings as they were collected from the draftsmen. In WRENCH, transmittals are managed automatically with a transmittal/submittal report being generated by the system with all the necessary details (of drawings). This report is as per the standardized format defined by Al Habtoor. The transmitted copy is maintained in the system for future reference.

File sharing with branch offices and external agencies:

Manual-managed printouts and distribution by email or courier were the only methods available earlier to transfer files between project shareholders and external agencies. Today WRENCH provides an online, digital system to share files, giving Al Habtoor the capability to scale up to connect to more locations.

Project Correspondence Management



In the old system of working the DTS used to capture correspondence metadata using excel sheets to track the letters/email status. The entry was done by a non-technical document controller, and the physical files were archived in files stored in shelves and cabinets.

Now correspondence details are captured automatically by WRENCH, along with any scanned files and/or attachments that are part of the mail. Correspondence distribution is handled through the system with a predefined workflow which can also forward the mail(s) to any person inside the system.

Email/correspondence:

Tracking registers are automatically generated from WRENCH to give accurate information about the letters and actions on them.

Notification and escalation mails which are crucial during project execution used to be managed via an internal tracking by the project director, whose secretary maintained an excel log for the tracking of the letters. This log recorded the actionee and the action taken details, and would be reviewed by the project director on a weekly basis. The project director also decided the status of the letters, closed or opened them based on the action taken by the actionee.

Today, the tracking log is generated automatically in WRENCH and can be used effortlessly by the project director in his decision-making. It allows the director to see what actions were taken on the letters by his discipline managers just by the click of a key.

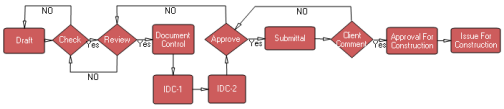
Archiving correspondence:

Earlier, all the letters including emails were archived in non-technical department files in hardcopy format. Today, all mails are added in WRENCH and maintained as soft copy in a centralised system.

As an added benefit, WRENCH captures and maintains the linkage information of correspondence , thus giving users the flexibility to access all the referenced files from the parent file.

Fax, MOM and couriers: were treated as just letters with different templates. Today, any hardcopies received are scanned and digitally added into the WRENCH system, while the body of the emails are incorporated into the system directly from Outlook.

Quality Management and ISO/standards enforcement



Al Habtoor's quality audit trail was completely manual before WRENCH. It involved checking the accuracy of the filing system against their Excel registers & DTS system – an inaccurate and time-consuming process.

> Project teams are confident about delivering quality in each and every deliverable, because they can easily track work at each step of the process without relying on manual effort or follow-up.

Today quality control is a matter of 'by default' i.e, the prescribed procedures are enforced automatically as per the workflow that was agreed on during implementation, and can be doublechecked by checking the stamps and the signatures on each document.

"From a major pain point to a foolproof, automated aspect of project management, quality management is the one of the most impressive benefits we have seen so far."

Mr. Martin Kelly, Director(QHSE)