case study: tailored solution eliminates costly production delays for large, international shipbuilder

results at a glance:

Problem: This shipbuilder's ability to maintain its inventory of construction materials was faltering as new defense contracts increased its workload. Supervisors would have to halt construction to await the delivery of materials. The firm's ERP solution lacked the necessary tracking functionality. Delays were costly and potentially jeopardized their existing contracts.

Solution: The client turned to Randstad Technologies for help in documenting requirements and developing software that would improve materials management. The solution was a Manufacturing Resource Planning type application that could handle materials procurement. This new application would be capable of interfacing or using data from the client's existing CAD/CAM, ERP, and project management applications.

Results: Increased visibility into material constraints has virtually eliminated costly delays. This has resulted in millions of dollars saved in unnecessary idle labor costs and has allowed the firm to meet production schedules and retain valuable military contracts.

client profile:

This Randstad Technologies client is a world leader in the design and construction of customized aluminum defense and commercial vessels. With shipyards around the world, the firm's U.S. shipyard was established in late 1999, and is now one of the largest employers in its geographical area. This shipbuilder has delivered more than 220 vessels for customers around the world. Their product range includes passenger and vehicle-passenger ferries, patrol boats, theatre support vessels, combat ships, multi-role vessels, and luxury private live-aboards. This firm is also an established provider of worldwide vessel maintenance and management services.

business problem:

Shipbuilding is a large and complex undertaking. The process requires millions of dollars in materials and manpower. This firm's workload had grown fast as they acquired major U.S. Navy contracts. Scaling their processes to accommodate their growth was a major challenge. As with any major construction or manufacturing project, delays can be costly and frustrating – and there is nothing more frustrating than avoidable delays. This was one of this client's biggest problems.

Supervisors would reach a point in a shipbuilding project only to find that they lacked the necessary materials to proceed. That part of the project would stop and workers would be idled until the necessary materials were acquired. Delays were financially costly and could potentially jeopardize military contracts if unaddressed. Even though the firm was using a sophisticated ERP solution, it lacked the project-based tracking functionality needed to alert procurement and project managers about pending material shortages.

This client's rapid growth was the source of another IT-related problem. Such a complex business was dependent on a variety of software applications.

For example, in addition to their ERP package they used Oracle's Primavera software for production scheduling, ShipConstructor® for vessel design, and an assortment of other packaged and homegrown applications. Much of their software required customization to meet the firm's specific needs. With only one application developer on staff, the growing demands for enhancements couldn't be met. There were also Quality Assurance (QA) issues that plagued development efforts. Without a more formal QA process, it was difficult to produce high-quality software that met users' timelines.

the Randstad Technologies solution:

This firm had first turned to Randstad Technologies in 2008 for an IT Assessment. One of the recommendations contained in that project was for the firm to hire a CIO. Randstad Technologies' staffing arm helped them fill that position. The client also looked to Randstad Technologies when they decided to outsource their helpdesk and for help with network infrastructure.

This outsourcing relationship was in its fourth year when material related delays became a significant problem for the shipbuilder. It was then the firm asked Randstad Technologies for help in documenting requirements for a solution that would improve visibility into material constraints. They wanted a Manufacturing Resource Planning-like (MRP) system that could serve as a material procurement engine.

They also asked Randstad Technologies to perform another Assessment — this one focused on their application development and QA practices.

The Requirements Definition for the material procurement engine began in May 2011. A number of the client's employees representing the engineering group, logistics, procurement, and the production control group would help identify those current business processes the application's functionality would address. The application would be designed to use the initial aggregate bill of materials from the shipbuilding CAD/CAM application ShipConstructor. From the ERP solution the new application would acquire inventory levels, work packages, purchase orders, etc. The Primavera project management software would provide the required timing parameters from production schedules.

This new application would calculate materials supply and demand and compare the results against the ERP's inventory details. From the input from the various systems, the material procurement engine would highlight for a given period when material constraints would arise. The system would be capable of identifying open purchase orders that if expedited, could eliminate the constraint. If speeding material delivery proved infeasible, early notification of bottlenecks allowed for shifting production schedules. The procurement engine would also produce alternatives on how to leverage existing inventory to meet a production deadline based on calculations assessing material transfers, scrap factors, and substitute parts. By using the solution, procurement personnel would have time to correct material shortages or identify a valid substitute using a part that was already in inventory.

The functional/technical design of the material procurement engine, ninety percent of which was performed remotely, was completed in four months. Phase 2 scope launched approximately seven months later. Randstad Technologies had completed its assessment of the client's applications development and QA processes. Four Randstad Technologies technology and consulting specialists conducted interviews with the shipbuilder's management and staff and reviewed their IT documents. Their findings identified the root causes of the application development/QA issues confronting the firm. Among them were issues common to fast growing firms: lack of a repeatable application development methodology; a limited number of resources to handle their project demands; the stakeholders didn't always perform user acceptance testing; there was a lack of adequate, repeatable QA processes; applications went to production with requirements gaps. Randstad Technologies set about helping this client regain control of their stressed application development/QA functions.

Recommendations contained in the Assessment gave the manufacturer a game plan to surmount the obstacles that hindered them. Among other suggested steps, it proposed a more iterative style of application development; the use of new testing methodologies; organizational modifications and staff additions; new communications channels; the implementation of enhanced project management capabilities; and the adoption of QA best practices.

benefits delivered:

Increased visibility into material constraints by using the material procurement engine to arm procurement with the data it needs to research and remediate potential constraints early in the project has virtually eliminated production delays saving the firm millions of dollars in unnecessary idled manpower costs. Through expediting purchase orders, transferring parts from other projects, and alternative part substitution, production schedules are met thereby avoiding penalties or the loss of business.

A more iterative and structured approach to application development and the adoption of QA best practices has greatly enhanced this client's ability to manage their development processes — thereby saving time and money.

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