PROJECTS
AT WORK

Critical Cases

by Bob Tarne, PMP: December 14, 2011

An equipment manufacturer is turning away new business. An airline is delaying flights due to maintenance issues. A homebuilder is struggling with a regulatory-driven software implementation. Here is a look at how three companies turned to Critical Chain to fix debilitating project management problems.

The Project Flow 2011 Conference in San Diego, California, focused on the use of Critical Chain techniques in project management, and included a number of case studies of organizations that successfully applied Critical Chain principles to address significant project challenges, including resource constraints and inefficient processes. This article summaries the efforts of three such organizations.

Delta Airlines was faced with a challenge. After the merger with Northwest, Delta became the largest airlines in the world with over 700 aircraft across 13 fleets and 2500 daily departures around the world. One of the issues Delta knew it needed to address was the number of daily flight cancellations. To do this, the company turned to Critical Chain.

Critical Chain was not new for Delta — its Engines & Components department, part of TechOps, started implementing Critical Chain in 2007. The results: a 30 percent reduction in engine turn-around time. In 2010, Critical Chain was brought into the Line Maintenance organization with a goal of improving its "completion factor," or how many flights complete the scheduled trip.

One technique Delta implemented was **reducing the work in progress** (WIP) or "deep cleaning" the aircraft as the airline referred to it. Before implementing Critical Chain, Delta would perform the same work across 350 aircraft in a cycle — a combination of checks and preventive or scheduled maintenance. For 350 aircraft, it required about 2.5 days of preventive maintenance, which meant each aircraft was due more maintenance in another two and half days.

The reduced WIP technique focused on how many planes were worked on each night. Instead of 350 planes, the maintenance team only performed the scheduled maintenance on 60 planes, but did planned work for the next 15 days rather than just 2.5 days. This change, among other improvements, helped reduce cancellations by 62 percent between the summer of 2010 and this past summer.

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ASAHI Seisakusho, a laboratory glassware and chemical processing equipment manufacturer, was facing its own challenges. ASAHI had been on the process improvement path but was faced with constraints in its engineering department — too many projects, people spread too thin, and not enough focus on actual design work by the engineers. The company was turning away 30 percent of its business opportunities due to insufficient capacity.

ASAHI set a goal of increasing the number of projects it completed by 20 percent while reducing the amount of overtime being performed. ASAHI turned to Critical Chain to help reach these goals.

One Critical Chain technique that helped ASAHI was **full kitting**, a technique to make sure all the materials needed to conduct a task are ready when it's time to do that task. For example, in the area of systems development, software testing may be a critical task for the project. In order to complete that task, the hardware has to be in place and the operating system needs to be installed. In full kitting, these tasks are done well in advance of testing, so any delays in completing these activities won't impact completion of the critical task. The task itself won't start until the full kit is ready.

By using Full Kitting and other Critical Chain techniques, ASAHI was able to increase the completion of projects by 23 percent while reducing overtime by 35 percent.

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Critical Chain can come to the rescue of software projects as well. Daiwa House, the leading Japanese construction company, used Critical Chain to help turn around a troubled SAP implementation. Daiwa House was faced with trying to comply with international accounting and finance regulations and a legacy system that couldn't meet its needs. The company decieded to implement an SAP system, and a two-and-a-half year project was launched. However, even before design was completed, the project was already falling behind schedule and costing Daiwa an estimated $100,000 per day for each day the project was delayed.

During this difficult design phase, Daiwa House first started applying the techniques of Critical Chain. When the design phase was finally completed, the estimate for completing the remainder of the project exceeded the budget; something more had to be done. At this point the project was frozen for two months in order to conduct a thorough review. Like ASAHI, Daiwa House starting using Full Kitting. Daiwa House also **recognized the harm of multi-tasking** and took steps to reduce it. One step was to have more full-time resources assigned to the project.

A year later after Daiwa starting applying Critical Chain techniques to the SAP project, even with the delays encountered early in the project and the two-month freeze, the project completed the testing phase on time this past September.

These three very different companies have one thing in common — their choice to use Critical Chain. Each came to the realization that it could not continue business as usual, that it needed to make a change in order to reach its goals.

Delta was faced with a more diverse fleet of planes and had stretched its TechOps team as far as it could. ASAHI was turning away business because it couldn't meet the demand. Daiwa House saw a critical software implementation unraveling. These companies knew working harder wasn't the answer. They knew they had to try something different, find a way to make people more effective, and fix broken projects.

Critical chain was the answer. By reducing multitasking, people began working more effectively. By using techniques such as full kitting, they reduced the root causes of delays on the project. It was through Critical Chain that each of the companies saw success.

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