Bottlenecks eased

AEW&C team gets involved, trims engineering response times

By Maureen Jenkins

When it comes to problem solving, it often works best if those closest to the challenge create the solution.

And that's just what the PRIMER team supporting Airborne Early Warning & Control (AEW&C) did earlier this year when it came to streamlining engineering response times. Since February, this team-proposed solution has been contributing improvements that boost this developmental program's bottom line.

Made up of members of AEW&C's Integrated Product Teams (IPT), the PRIMER (Process Improvement in Engineering Response) team now more efficiently prioritizes and distributes engineering tasks throughout the program, which incorporates a variety of aircraft control and advanced radar systems into Boeing 737-700 aircraft platforms. About 20 design and manufacturing engineers have helped lead this Lean+ activity, continuously improving their own processes to boost value and productivity for AEW&C, a part of Integrated Defense Systems' Airborne Anti-Submarine Warfare and Intelligence, Surveillance and Reconnaissance Systems (ASW&ISR) division. Visual work flow aids—which include colorful status boards posted throughout the program's Kent, Wash., offices—help keep the team on track.

"We decided the IPT task was not just engineering, but engineering and planning," said 1st Pass Quality Project Coordinator Sylvia Swanson. Team members come from across Aircraft Systems, including Structures, Wiring, Payloads/Interiors and Mechanical/Electrical Sub-systems as well as Business Operations, Industrial Engineering and Change Management.

"Our vision is to morph it into a continuous improvement team where we form projects that will mitigate the bottlenecks," Swanson added. "We needed to be able to quantify our emergent statement of work and measure our cycle time. We decided as a program [this effort] was a cost-saving initiative, even though we couldn't easily attach a dollar figure to it. It was intuitively obvious it would save money and add value."

The PRIMER team's work reflects Boeing's enterprisewide Lean+ initiative, which accelerates continuous improvement by aligning and integrating successful efforts across the company.

Borrowing from practices already existing within Commercial Airplanes, Swanson and manager Mark Young devised the idea for this activity after visiting the 737 Lean group in nearby Renton, Wash. Within AEW&C, engineering work cycle times were too long and weren't measurable. Its work was on a different rhythm than the rest of AEW&C's supply chain, affecting on-time parts delivery.

After being formed, PRIMER needed to identify work product flow, determine how to measure it, and identify where quality "defects" were clogging up the engineering process. These defects required rework within teams, which cost the program time and money.

The solution began in February with an event led by Bob Sterley, a Lean consultant embedded within AEW&C's Aircraft Integrated Product Team. The goal: meet AEW&C's 2008 cost and schedule targets by reducing its engineering work flow time.

Sterley helped the group document its current process flows and propose new ones, taking emergent changes into account. PRIMER incorporated "Go/Slow Go" steps into the system. It wanted to reduce engineering work cycle times by 25 percent, and to reduce work defects by 50 percent. The team also set the standard of taking no more than 48 hours to resolve all emergent engineering requests while maintaining 100 percent on-time engineering releases that supported AEW&C aircraft deliverables. No small feat, indeed.

"We wanted to use a phased pilot approach," said Swanson.

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–Sylvia Swanson, 1st Pass Quality Project Coordinator

"We couldn't afford on this project to turn the program upside down."

IPTs represented by members of the PRIMER team took turns implementing the new processes. AEW&C Structures went first and after receiving its "Go" decision, Payloads and Interiors was up next, followed by Wiring. The program's remaining IPTs then began using the PRIMER's processes.

By May, "every IPT had agreed to the work flow," said Swanson, "had documented it online, had a board that documented it, and started measuring their cycle times." Daily and weekly "tag-up" meetings also kept teams updated on their processes.

David Chapman, who leads design for AEW&C Interiors, is one who holds such gatherings and maintains a whiteboard in his area. The process "just makes things more efficient," said Chapman, whose teammates go online to view engineering drawings that need follow-up action—and to view the changes that have already been made. "It's about what's going to work, not just what won't work."

Said Swanson: "The largest challenge has been getting the team to show the metric of the cycle time. That's the idea of Lean+: (Making Lean+ changes) doesn't take that much longer, but it's a different way of doing things."

Several months later, the PRIMER group is on track to meet its goals. Now, ownership of tasks is clearly defined. Management can easily see and track work flow, work load, and the engineering team's priorities. And as recognition for members who volunteered extra hours beyond their "day jobs" to streamline the process, PRIMER designed a team logo they wear on vests at the office.

"When you see success, this is what it looks like," said Jim Welch, a Lean consultant now supporting AEW&C's Aircraft Integrated Product Team. "It's being able to identify challenges in their quick turnaround of support requests, and then for us to provide them the resources to overcome these challenges. The main thing I'm looking for is the learning they get from this."

And the PRIMER team's idea is one that can be replicated across Boeing. "Zeroing in on the universal metric of time and establishing process duration standards will help us target process anomalies," he said. "We can perform root-cause analysis on why those anomalies occur and then provide the proper resources to fix them. That's what Lean+ is all about—increasing productivity and providing better quality of life." ■

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PHOTO: Colorful "status boards" help members of AEW&C's PRIMER team track engineering work flow across the program. Here, Perry Woodford shares information with (clockwise from top right) Eric Yost, Sylvia Swanson, Karl Rainwater, Mark White, Sheri Finley, Bryant Owen, Mark Swanicke, Steve Simmons, Diana Figgins and Linh Luong. MARIAN LOCKHART/BOEING