

The initiative to Win

By improving the yield of Boeing's R&D investments and the efficiency and effectiveness of its development programs, the Development Process Excellence initiative is helping Boeing better execute existing programs and win new ones.

By WILLIAM COLE

Having innovative technologies and processes helps companies win new business and grow. And having the right processes and tools for effectively identifying, applying and demonstrating those technologies in the development of competitive new products and services is equally essential for success.

That's why Boeing Chairman, President, and Chief Executive Officer Jim McNerney has said more than once that – contrary to popular belief – innovation and discipline in business are mutually reinforcing, not incompatible.

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Nan Bouchard, Development Process Excellence initiative leader: "We are involved in a dynamic effort. Already we have established an operating rhythm and our teams are engaged. These initiatives promise to transform our company."



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“To achieve continuous improvements in productivity and growth, we must ensure our investments in technology are properly focused and balanced to meet both far- and near-term needs and that our development programs – large and small – are running smoothly,” he says.

These two challenges are the focus of the Development Process Excellence (DPE) initiative, sponsored by Jim Jamieson, senior vice president for Engineering, Operations & Technology, who also plays an integration role for all the initiatives, including Internal Services Productivity, Lean+ and Global Sourcing.

A multi-pronged attack

The approach being used to meet these challenges is to

- Find opportunities where synergy can be achieved in R&D investments across the enterprise.
- Identify best practices and Lean process improvements for R&D, engineering, operations, supplier management and program management – both internally and externally – that can be replicated across the business units to help them achieve their business goals.
- Optimize the cost of Lab and Test services.
- Establish specific goals and metrics for DPE and monitor progress toward them.
- Serve as an enterprise resource for DPE.

“Pursuing the goals of all our initiatives is going to require significant cross-enterprise collaboration and cooperation, especially for the initiative leaders,” Jamieson says. “But the yield of their ongoing efforts is going to be increased operating efficiency and competitive strength for winning new programs and improving our margins.”



Leading the DPE initiative is Southern California-based Nan Bouchard, who began her career at Boeing as a chemical engineer and rose through the management ranks in the International Space Station and the Future Imagery Architecture programs.

“I see this initiative as a tremendous opportunity to put Boeing on a solid footing for years to come,” she says. “If we are to continue to be competitive and build a strong future, then we must derive all the value we can for our customers. That means working with the business units, functions and other initiatives to see how we can derive more value through improvements in the R&D planning and development program processes.”

Pursuing these objectives are three teams: the Enterprise Technology Team, the Product Development and Large Scale Integration Team, and the Lab and Test Asset Team.

“The Enterprise Technology Team is trying to better leverage our R&D investments to get maximum benefit,” says Bouchard. “We have to look at all our R&D investments to make sure they are being made in the areas that meet the business units’ near-term and long-term business goals, and that we are avoiding duplication of effort. We also want to make sure that the advanced technologies and processes that we develop are replicated across as many

programs as possible.”

Says team leader Julie-Ellen Acosta, vice president of Phantom Works’ AeroStructures, Manufacturing and Support Technologies, “We’re creating a link between people and technology road-mapping and making the technologies we are working on match up with the business strategy at Boeing as a whole as well as in the business units.”

Acosta and Bouchard recently participated in an R&D review that included representatives from all parts of Boeing. “During these reviews we asked ourselves how we are spending our money, whether it’s in line with our business strategy, and how to best spend our money in the upcoming years,” Acosta said. “It’s important to note that we are not trying to tell the business units what to do, only trying to help them make a better plan by providing them best practices, tools, data bases and people.”



In the area of technology replication, Bouchard pointed to several examples where Boeing-funded technology is used by multiple business units and programs. One is friction stir welding, a more efficient and effective method for joining aluminum structures than traditional welding or mechanical fastening. Developed by Phantom Works,

the technology was first used on the Delta rocket program, but has since been transitioned to save time and cost and improve quality on the C-17 and 747F programs.

Additional examples include the Flex Track low-cost automated drilling system process originally developed by Commercial Airplanes. Phantom Works expanded the development of the system and it is now being used to build F-15 center and aft fuselage sections, to join the 787 test barrels, and to drill the wing skins on the 787 wing test box. Others are an aero-elastic analysis process, leveraged from BCA and X-32 development work, that is now being used on the P-8A Multi-mission Maritime Aircraft program; and multi-head tape-laying technology that was funded by both BCA and Phantom Works and is being developed for the 787 fuselage manufacturing.

Best practices for development programs

The Product Development and Large Scale Integration Team is working to ensure that the people who are working on development programs have access to our best practices, Lean engineering projects and tools that will allow them to improve efficiency, reduce performance variation and seamlessly communicate program risk. Key programs include the U.S. Navy’s P-8A Multi-mission Maritime Aircraft and the U.S. Army’s Future Combat Systems for Integrated Defense Systems and the 747-8, and 787 programs for BCA.

“Members of our team represent all the Boeing businesses that do product development and large-scale integration,” says John Tracy, vice president of Engineering and Mission Assurance for IDS, and one of the four steering team leaders. “What we are trying to do is look at the various projects across the enterprise so that our team is aware of the various approaches, practices and risks associated with them so that we can learn from each other and improve.”

Adds Jim Morris, another of the steering team leaders and

vice president of Engineering and Manufacturing at BCA, “There is a wealth of best practices to identify and share. Our goal is to improve development program efficiency and reduce or eliminate the variations in performance. In the end we will be able to successfully complete our development programs on budget and schedule and provide products and services that meet our customers expectations.”

The other steering team leaders on the Product Development and Large Scale Integration Team are Steve Goo, vice president of Program Management and Business Excellence for IDS, and Tim Vinopal, director of Engineering for Connexion by Boeing.

The key enablers for Product Development and Large Scale Integration Excellence are establishment and adherence to best



Nan Bouchard, right, confers with Jim Cassidy, director of Plans and Resources Strategy Management for Integrated Defense Systems, and Julie Lee, office administrator for IDS Business Development in Seal Beach, Calif.

practices, standard tools and processes, and the ingraining of Lean principles into Boeing development processes. The Program management function has established a set of best practices and a standard deck of metrics to be used for program reviews. The Lean and Efficient team has developed the first version of “Program Lifecycle Management in a Box” to provide links to standard software along with the associated training material and process documentation (see Portrait on back Page). And many teams across the enterprise have moved Lean principles into the engineering and supplier management world providing visibility tools and conducting value stream mapping to eliminate waste and rework. The efforts of these teams will be captured in the initiative database to enable replication across the company and accelerate the adoption of Lean principles on Boeing development programs.

The best use of labs and testing facilities

Working in conjunction with both of the above teams’ efforts, the Lab and Test Asset Team is looking at the utilization of

Boeing’s labs and testing facilities relative to the needs of R&D projects and development and production programs and seeing if there are ways to reduce costs.

“In some cases there we have labs and testing facilities that are underutilized,” Bouchard says. “Underutilization can be result of a cyclical demand for core test facilities, or it can be the result of overcapacity. The team is doing an assessment of our current capabilities versus our business needs to determine where we can divest assets, where we can move work internally to improve utilization and where we might be better served by using government and other external test facilities.”

According to Lab and Test Asset Team leader Bill Schane, the team has over the last several months prepared a joint plan based upon past successes benchmarked from internal and ex-

ternal consolidations over the past 15 years. “We’ll be managing the sub-initiative as a program targeting a corporate-level process that focuses on reducing Net Acquisition Cost of assets,” he says. “We expect to achieve a significant reduction through this process and by working together to strategically and tactically support Boeing’s interests and needs for test and evaluation capabilities.”

Bouchard is careful to point out that the goals of the Development Process Excellence initiative are not exclusively near-term targets. “We’re in this for the long haul,” she says. “We’re involved in a dynamic effort that will continue and evolve as we improve our development processes and incorporate Lean throughout the company. Already we have established an operating rhythm and our teams are engaged. “As we move forward, we will all experience the difference these initiatives will make, because as Boeing grows, so will our own personal opportunities.” ■