Taking flight with China’s rising middle class

How increased purchasing power is driving long-term demand for air travel and Rockwell Collins’ expertise.
Why we can’t stand still in China

I’m told that there is an old Chinese proverb that says: Be not afraid of growing slowly, be afraid only of standing still. This saying, while written a long time ago, certainly exemplifies our business in China today.

As you’ll read in the cover story of this issue of Horizons magazine, China is one of our emerging markets of focus as part of our international growth strategy. Over the next 10 to 20 years, it’s projected to be the largest air transport growth region in the world. And although Rockwell Collins has had a significant presence in China for more than 30 years, we recognize that for us to be successful in the long term, we can’t stand still.

That’s why we’re expanding through joint ventures with in-country partners. We’re collaborating with the Civil Aviation Administration of China when it comes to standards and technology roadmaps to improve flight reliability and safety. And we’re focused on building new levels of trust with airlines in China.

I’ve said that my number one priority is to accelerate our company’s return to growth. It’s no exaggeration to say that as defense markets in the U.S. and Europe soften and more opportunities arise in emerging markets, we have to consider what will help us grow today along with what will better position us for the future. Success is never accidental. Moving forward, no matter where you are in the world, your work is critical to our growth strategy.

Full speed ahead,

Kelly Ortberg
CEO & President

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A celebration of working together

The Rockwell Collins Chairman’s Team Award celebrates the value of teamwork.

Winning with Lean

One team’s use of Lean Electronics helped Rockwell Collins win a key position on the Boeing 737 MAX.

Centers of Excellence raise the bar

Premier programs support innovation across Rockwell Collins.

Closing the situational awareness gap

Rockwell Collins’ new Helisure family of products improves helicopter safety.

An engaging leader

Why Principal Engineering Manager Shannon Standing believes being attuned to the voice of engineers helps advance our company.

Service anniversaries

New customer support center provides the answer faster.

On the cover

The Chinese middle class – which today includes 307 million people – is expected to grow to 700 million by 2020, driving what’s projected to be the largest air transport growth region in the world over the next 10 to 20 years, according to Rockwell Collins strategists. And as China’s recent economic growth has slowed to a more dramatic pace than anticipated, the continued expansion of the region’s middle class makes China one of the emerging markets of focus for Rockwell Collins as part of our long-term international growth strategy.
Rockwell Collins announced on Aug. 11 that it reached a definitive agreement to acquire ARINC Incorporated, a portfolio company of The Carlyle Group and a leader in communications and information processing solutions for the commercial aviation industry, for $1.39 billion. The transaction will bring together two leading players in the growing field of aviation information management, combining ARINC’s trusted networks and services with the industry-leading avionics and cabin technologies developed by Rockwell Collins. “Strategically, this acquisition is a natural fit for Rockwell Collins,” said Kelly Ortberg, Rockwell Collins Chief Executive Officer and President. “It accelerates our strategy to develop comprehensive information management solutions by building on our existing information-enabled products and systems and ARINC’s ground-based networks and services to further expand our opportunities beyond the aircraft.” ARINC broadly touches the entire aviation ecosystem, including pilots, operators, maintenance, passengers, controllers, regulators, security and airport operations. In addition, ARINC provides communications and information processing for the rail, industrial security and public safety segments. Its 2013 revenues are expected to be in excess of $600 million. When completed, the acquisition will shift the balance of Rockwell Collins’ business to approximately 54 percent commercial and 46 percent government. The transaction is expected to close upon receipt of regulatory approvals and other customary conditions within the next month.

Bombardier CSeries aircraft takes flight with Rockwell Collins Pro Line Fusion® avionics, Primary Flight Control Computer

Rockwell Collins’ Pro Line Fusion® avionics and Primary Flight Control Computer (PFCC) played a key role in the successful first flight of Bombardier’s CSeries commercial aircraft, which took place Sept. 16 in Montréal, Québec. “We congratulate Bombardier on the successful first flight of its new single-aisle aircraft and look forward to more collaboration with the aircraft maker during flight testing and entry into service,” said Jeff Standerski, vice president and general manager, Business and Regional Systems for Rockwell Collins. “This flight is especially meaningful to Rockwell Collins, as it further proves Pro Line Fusion’s flexibility throughout the business and commercial aircraft market segments.”

Pro Line Fusion for the CSeries aircraft, designed with five 15.1-inch diagonal LCD displays, provides an open architecture that enables extensive situational awareness capabilities; comprehensive integration with aircraft systems such as Rockwell Collins’ MultiScan™ weather radar and optional single or dual Head-up Display (HUD), and a growth roadmap to future air space requirements. Performance-enhancing capabilities that Pro Line Fusion will bring to the CSeries aircraft include RNP AR 0.1 and Category IIIa/b autoland, which couples with Rockwell Collins’ PFCC for Bombardier’s fly-by-wire (FBW) flight control system.

Rockwell Collins’ PFCC provides an enabling platform to execute complex aircraft control laws, optimize aircraft fuel efficiency, improve passenger safety and enhance overall passenger ride comfort.

Bombardier’s CSeries commercial aircraft flew for the first time with Rockwell Collins Pro Line Fusion® avionics on Sept. 16.

Rockwell Collins selected by Australian Army to provide “eyes and ears” for Australian soldiers

The constant monitoring of threats against military bases, forward observation posts and other secure facilities can be time-intensive and dangerous. To solve this problem for the Australian Defence Forces, Rockwell Collins developed and recently delivered the Patrol Persistent Surveillance System (PPSS). This system has provided the eyes and ears for Australian Defence Forces operating in potentially hazardous regions where information is critical to mission success,” said Colin Mahoney, senior vice president of International and Service Solutions for Rockwell Collins. “Our ability to develop and deliver this system in a short period was very much appreciated by our customer.”

PPSS is made up of a meshed network of unmanned ground sensors and video cameras that monitor movement, sound and vibration. Alarms from the system are relayed to an operator console and are displayed on a digital map system. In fact, the program has been so successful to date that the combined project team was recently recognized by the Australian Institute of Project Management for Excellence in Project Management.

Rockwell Collins’ Receiver Cards enable first live M-code signals to successfully navigate an aircraft

Rockwell Collins’ Receiver Cards were recently used in an historic test flight resulting in the first time any aircraft has used live Military code (M-code) signals to successfully navigate. The M-code signal is one of the key elements in the modernization of military GPS capabilities. This testing supports a congressional mandate to implement next-generation M-code technology on all U.S. Department of Defense platforms.

The flight, which took place at Holloman Air Force Base near Alamogordo, N.M., in June, successfully tested the Rockwell Collins GB-GRAM-M (M-code GPS Receiver) integrated into the EQ-11B Raven unmanned aerial system, one of the lead integration platforms for the Modernized User Equipment (MUE) development program. The Raven navigated using the position, velocity and time solution provided by the GB-GRAM-M Receiver processing of the live M-code signal. Additionally, the government tested the robustness of the Rockwell Collins GB-GRAM-M Receiver in a hostile radio frequency environment. Rockwell Collins is executing one of the MUE card development contracts, awarded by the U.S. Air Force Space and Missile Systems Center, aimed at developing the military user equipment portion of the next-generation GPS system that incorporates a new military signal and security architecture.

“This milestone is a major step forward in providing enhanced integrity, exclusivity and improved anti-jam capabilities to our military and adds to our rich legacy of achieving GPS technology firsts at Rockwell Collins,” said Mike Jones, vice president and general manager of Communication and Navigation Products for Rockwell Collins. “From receiving the very first GPS signals from space to this most recent achievement, Rockwell Collins continues to provide our customers with secure, precise and reliable navigation solutions.”

Our company’s Receiver Cards were part of a historic test flight at Holloman Air Force Base near Alamogordo, N.M.
Service First: New Customer Support Center provides the answer faster

A new Customer Support Center in Cedar Rapids, Iowa, recently ushered in a new era of faster response times for our company’s commercial customers.

The center, which opened in late summer in Building 124 on the Rockwell Collins C Avenue campus, incorporates video conferencing technology and a large video wall that displays aircraft-on-ground, critical and high-priority situations.

Developing the center was part of our company’s Service First™ commitment, which calls for providing real-time, world-class customer support using state-of-the-art technology and a highly trained, dedicated staff.

Jeff Sadowitz, director of Customer Support Operations, said the center elevates the overall experience for both the customer and the staff.

“Our goal in designing and developing the new Customer Support Center was to improve the overall customer experience through better technology, training, collaboration and, most importantly, improved situational awareness of issues,” said Sadowitz.

The center has a team of support generalists prepared to address a broad range of customer questions and issues. The team has full access to teams of specialized experts who will work to resolve the issues as quickly as possible.

According to Sadowitz, the addition of mobile video conferencing will greatly reduce reliance on emails and verbal descriptions of the problems our customer support engineers see in the field.

Last month, those mobile capabilities were enhanced with the introduction of the Service First application for the iPad®. The app provides customers and original equipment manufacturers a one-stop shop directory of Rockwell Collins contact information for our Commercial Systems sales, support, authorized dealers and service centers.

With information for more than 150 of our sales and support representatives, the app offers users a quick and easy way to seek assistance and obtain information about the latest Rockwell Collins news and events.

Maps and information for more than 250 authorized dealers and 12 service centers also are on the free app, which is available for download at the Apple® iTunes® App Store. Quick links to additional information about training, technical publications and repairs are included within the app.

Teri Nunez, manager of Customer Support Services, said Rockwell Collins is the first avionics company to launch an iPad app that contains this much detailed information to help users quickly obtain contact information and resolve issues.

“Now we’re using (Apple) iPads and FaceTime™ so that our product support managers here can actually see the issue,” Nunez said. “Because of this, we’re able to solve many problems within a matter of minutes.”

The center can be reached by calling 319.295.5000 and is open from 7 a.m. to 7 p.m., Central Time 365 days a year with on-call support available after hours.

By Dave Orkeltte
Taking flight with China’s rising middle class

How increased purchasing power is driving long-term demand for air travel and Rockwell Collins’ expertise.

Inside Rockwell Collins’ facility in Shanghai, China, Ron Ho explains some of the economic indicators he looks at to develop our business strategy in China—the country’s gross domestic product (GDP), per-capita income and consumer demand for air travel. While each of these data points has different implications for the future, the overall meaning for international corporations like Rockwell Collins is the same: opportunity.

“As the economy and middle class grow in China, the numbers indicate a growth in long-term demand for air transport and business jet travel,” said Ho, who is the managing director of Rockwell Collins in China. “That means there will be a greater need for Rockwell Collins avionics and cabin systems solutions, as well as a demand for our simulation and training technology to train additional pilots.”

The Chinese middle class—which today includes 307 million people—is expected to grow to 700 million by 2020, driving what’s projected to be the largest air transport growth region in the world over the next 10 to 20 years, according to Rockwell Collins strategists. And while China’s recent economic growth has slowed at a more dramatic pace than anticipated, the continued expansion of the region’s middle class makes China one of the emerging markets of focus for Rockwell Collins as part of our long-term international growth strategy.

Yet, there’s more to the story than just economic indicators. The other important data point for Ho is Chinese government investments in the aviation industry. China has a national goal of developing its own commercial aviation industry starting with Commercial Aircraft Corporation of China’s (COMAC’s) ARJ21 regional jet and the C919 single-aisle aircraft.
“China wants to expand its aviation industry and has the money to do it,” explained Colin Mahoney, senior vice president of International and Service Solutions. “Our expertise and long-term relationships in the country put Rockwell Collins in a position to benefit from that expansion.”

Expertise respected

For more than three decades, Rockwell Collins has had a presence in China. And before that, our company’s avionics solutions were on board Boeing 707s in the 1970s. Today, our avionics are on nearly every aircraft operated by China’s airlines, including the new Boeing 787 acquired by China Southern Airlines and the Airbus 350 XWB to be acquired by Air China.

Over the last decade, an integral part of Rockwell Collins’ overall strategy in China has been focused on building and maintaining trust with the in-country aviation industry. Along with the Chinese airlines, Rockwell Collins has established relationships with COMAC, Aviation Industry Corporation of China (AVIC), China Electronics Technology Group Corporation (CETC), Civil Aviation Administration of China (CAAC) and the Air Traffic Management Bureau of CAAC (ATMB).

These groups, which were formed with the approval of the Chinese government and administered by China’s State Council, are looking to Rockwell Collins for expertise with new technology and proven avionics solutions. For example, our company’s experience with Head-up Displays (HUD) led to a collaboration with CAAC – the equivalent of the Federal Aviation Administration in the United States – to develop HUD standards for lower landing minima at a number of Instrument Landing System (ILS)-equipped airports throughout the country. These standards will help improve flight reliability and safety.

The efficiency and safety benefits of HUDs also have led to a larger initiative by CAAC to issue a roadmap that all Chinese airlines have this technology installed on all aircraft by 2025. Rockwell Collins was the first company to certify its HGS™ Head-up Display for this operation.

Another example is the COMAC contracts to develop the new C919 single-aisle aircraft. COMAC selected our company to provide communication and navigation solutions, Integrated Surveillance System (ISS), Cabin Core System (CCS), In-Flight Entertainment System (IFE) and the engineering simulator.

As part of the contracts to develop, manufacture and deliver solutions for the C919, Rockwell Collins has established a joint venture (JV) agreement with China Leihua Electronic Technology Research Institute (LETRI). Other relationships being formed to support the C919 program are with the China Electronics Technology Avionics Co. (CETCA), Shanghai Aero Measurement-Controlling Research Institute (SAMRI) and Xian Aviation Science and Technology Company (XASC).

“China is looking for experienced partners to develop its aviation industry, particularly its original equipment manufacturing market. Rockwell Collins is looking for channels to the local market, as well as the ability to expand and support our customers from in-country,” said Ho. “It’s all about the value each partner can bring.”

The table-less meeting

A senior vice president of engineering for Air China once told our company’s senior leadership, “We make friendships first and then do business.” According to Hailin Wen, director of Asia Pacific Commercial Sales and Support in Beijing, this is very much true of all business relationships in China, emphasizing that for international corporations to be successful, it takes patience and an understanding of the Chinese culture.

One example of this is executive-level business meetings. The meetings usually do not take place around a table. Rather, two chairs are positioned in the middle of a room – one for the customer’s senior leader and the other for the senior leader from Rockwell Collins. Interpreters are then positioned behind each leader.

The language of business in China is Mandarin Chinese, but an accurate translation often involves an understanding of the country’s history, culture and the background of the person speaking.

“For example, ‘yes’ is not necessarily an affirmation,” explained Wen, a native of China who has worked for...
Aircraft programs in China

- **CR919** — Rockwell Collins was selected by the Commercial Aircraft Corporation of China Ltd. (COMAC) to provide communication and navigation solutions, integrated surveillance system (ISS), Cabin Crew Interface System (CISE), In-Flight Entertainment System (IFE) and the engineering simulator for the new CR919 family of single-aisle aircraft.

- **ARJ21** — Rockwell Collins was selected by COMAC to supply the ProLine 21™ integrated avionics system for the ARJ21 and to serve as the avionics system integrator.

- **MA600** — Building on the success of MA60, the Xian Aircraft Company (XAC) selected Rockwell Collins to upgrade its MA600 aircraft with ProLine 21 avionics.

- **MA60** — Rockwell Collins supplies the Pro Line™ avionics to XAC for the Y7-200/208 (commonly called MA60), including Electronic Flight Instrument System (EFIS) for the display system and many Rockwell Collins communication and navigation products.

- **XX Y8 and XX12** — Rockwell Collins equipment is installed on the XX Y8 and XX12 commercial airplanes. With training and initial assistance provided by Rockwell Collins, engineers at the aircraft companies have successfully integrated the advanced electronic equipment into their aircraft.

- **AC312** — Our company was selected by AVIC Harbin Aircraft Manufacturing Company to supply display systems and Pro Line 4™ avionics for AC312 commercial helicopters and also to serve as the avionics system integrator.

- **AC352** — Rockwell Collins’ ProLine 21 solutions are equipped on AVIC Harbin Aircraft Manufacturing Company’s AC352 commercial helicopter platform, which is primarily used for search and emergency rescue purposes.

**Rockwell Collins’ commercial aviation milestones in China**

- **2002** — Rockwell Collins and China Eastern Airlines establish a joint venture (JV), Collins Aviation Maintenance Services Shanghai Limited (CAMSSL), to provide avionics maintenance, repair and overhaul (MRO) services in China. In 2012, the two companies sign a 10-year agreement to renew the MRO joint venture.

- **October 24, 2012** — Rockwell Collins and China Electronics Technology Co. (CETCA) sign an agreement to establish a JV to develop and manufacture the communication and navigation systems for the Commercial Aircraft Corporation of China Ltd. (COMAC) CR919 aircraft.

- **June 3, 2013** — Grand opening of AVIC Leihua Rockwell Collins Avionics Company, a JV between Rockwell Collins and China Leihua Electronic Technology Research Institute (CLETI), a subsidiary of the Aviation Industry Corporation of China (AVIC). Located in Wuxi, the JV will initially develop, manufacture and deliver integrated surveillance system products for the CR919 program in China.

- **June 5, 2013** — Rockwell Collins and Beijing Bluesky Aviation Technology, an AVIC subsidiary, sign a Memorandum of Agreement to establish a JV to develop and manufacture advanced electronic components and to develop joint ventures in China, with future plans to address the global commercial simulation and training market segment.

Rockwell Collins for 23 years. “In Chinese, it can mean ‘I’m hearing you’ or ‘These are things we can try.’” While translating Mandarin Chinese to English can be challenging, it’s part of cultivating and maintaining essential relationships, according to Wen. Chinese customers must trust the people they do business with before they will sign a contract.

**Intelectual property important**

Chinese customers are certainly not alone when it comes to valuing trust long before a deal is finalized. Of all the questions Mahoney receives in his role as senior vice president of International and Service Solutions about Rockwell Collins’ growth strategy in China, most are tied to the sharing of Rockwell Collins’ intellectual property.

The terms of a joint venture agreement often are complicated — particularly when it comes to the creation, ownership and exchange of intellectual property — because these partnerships are designed to build expertise in-country while also providing our company with market share.

Yet, joint ventures only make sense for Rockwell Collins if we gain competitive advantages — not lose competitive advantages — with our intellectual property over the long term, according to Mahoney. “That means we have to have proper parameters in place when forming joint ventures and trust that our partners in China will uphold the agreements,” he said.

In June 2013, Rockwell Collins signed a Memorandum of Agreement to establish a joint venture with Beijing Bluesky Aviation Technology, an AVIC subsidiary, to design, manufacture and market commercial flight simulators, as well as establish a center of excellence for commercial flight simulation in China. According to LeAnn Ridgeway, vice president and general manager of Simulation & Training Solutions, which is headquartered in Sterling, Va., this agreement came together after years of building confidence and trust with Bluesky through our company’s existing simulator programs in China.

“We both have a long-term goal to address the unique training needs of airlines around the world, starting with China’s rapidly growing aviation market,” said Ridgeway. “There’s a lot of value for both groups by combining the strengths of Rockwell Collins technology, such as our industry-leading visuals and scalable CORE™ Simulation Architecture, with Bluesky’s expertise with Chinese commercial aircraft simulation and training.”

**Dramatic ascent in the industry**

By 2033, it’s expected that Chinese airlines will acquire 5,580 new aircraft valued at $780 billion, according to projections from The Boeing Company. And in the business jet market, China is forecasted to become the third largest region in terms of deliveries with more than 1,400 business jet deliveries over the next 20 years, according to a recent Bombardier Aerospace Business Aircraft Market Forecast.

This dominant growth in the air all ties back to the rising economy and growing middle class in China that wants to travel, said Ho. And while Rockwell Collins is poised to benefit from the growth over the near term, Ho is even more enthusiastic about the long-term potential in China as the country’s aviation industry continues to evolve.

“Customers in China are loyal and value mutual relationships. Once they build trust with you, they will stay with you in the long term,” he said. “I strongly believe the foundation Rockwell Collins has established in China will pay off today and in the future.”

By Annette Busbee and Crystal Hardinger
A celebration of working together

The Chairman’s Team Award celebrates the value of teamwork that is expressed in our company’s Vision: “Working together, creating the most trusted source of communication and aviation electronic solutions.” The award recognizes Rockwell Collins employees who have worked side by side, bringing their particular expertise and viewpoints together in a team effort, to realize our business goals.

The imagination, innovation and commitment to excellence shown by the finalists for the award make Rockwell Collins stronger and make our customers stronger – ones that are better positioned to address the increasingly complex challenges of the global marketplace.

This year, nominations for 22 teams were submitted. Cross-enterprise panels narrowed the selection down to 12 teams, and then five finalists were named through a peer selection process. Finally, Rockwell Collins’ senior executive team selected one Chairman’s Team Award recipient.

**Winner**

**737 MAX Large Format Displays (LFDS) Capture Team**

**Challenge:** For Boeing to consider our company’s unsolicited proposal for the 737 MAX displays, this team had to provide a display solution with less weight, less cost and more capability than the incumbent solution.

**Accomplishment:** Rockwell Collins was selected by Boeing to provide its large-format flight displays as standard equipment on the 737 MAX flight deck. The multi-year agreement solidifies our position as the preferred supplier for Boeing display solutions.

Team members include:

- Eric Anderson
- Mark Anderson
- Chris Biggers
- Scott Bruner
- Allan Cooke
- Matt Corbett
- Marc Cronan
- Adam Evanschwartz
- Jessica Griffin
- Craig Harwood
- Phil Huedepohl
- Sara Jump
- Rob Kishiue-Koval
- Tony Krieger
- Bill Lang
- Dan Mazuk
- Mike McCollum
- Brian Piddington
- Neil Rud
- John Schneider
- Rachel Sparks
- Keith Stover
- Randy Tietz
- Travis Vanderkamp

**Finalists**

A350 IMO Global Development Leadership Team

**Challenge:** Rockwell Collins was selected to provide the hardware, system software and system integration for the Airbus A350 XWB Information Management Onboard System, which serves as a hosting platform for flight operations, aircraft maintenance and airline applications. This contract required our company to build new levels of trust with Airbus due to the groundbreaking technology and the fact that Airbus had done all system integration work in the past.

**Accomplishment:** Even after a challenging start, this team was able to meet program milestones, proving to Airbus that our company could manage more risk and deliver on much wider integration capabilities.

ARC-210 Tactical Secure Voice Team

**Challenge:** Rockwell Collins was selected to implement the first-ever modern encryption for the U.S. Navy.

**Accomplishment:** Working internally with the Joint Precision Approach and Landing System (JPALS) Program and externally with the National Security Agency and Naval Research Laboratory, this team overcame multiple challenges to deliver a modernized cryptographic solution that safeguards vital military communications. When the government customer encountered potential fielding issues, the team designed and implemented a solution to save the customer upgrades and logistics management costs over the product life cycle.

**TTR-2100 Concurrent Development Team**

**Challenge:** Rockwell Collins wanted to develop a high-quality Traffic Collision Avoidance System (TCAS) that met emerging requirements of the NextGen airspace.

**Accomplishment:** This cross-functional team, which included employees from Engineering, Operations, Component Engineering, Procurement, Design Quality and Life Cycle Value Stream Management, simplified and dramatically improved the TCAS design while also maximizing automation. The TTR-2100 not only enables NextGen capabilities, it also weighs less, uses less power and has double the expected field reliability of its predecessor.

**767 LDS Retrofit Team**

**Challenge:** It was vital for the Boeing 767 retrofit program team to shorten the typical displays development program duration by approximately 50 percent in order to meet the customer’s aggressive schedule.

**Accomplishment:** By reapplying existing technologies, while utilizing Lean Electronics™ tools and leveraging organizational advantages, including the Rockwell Collins certification office, the team was able to meet the customer’s schedule. Had the team not been able to shorten the program schedule, Rockwell Collins would have lost the business to a competitor.

Team members include:

- Eric Anderson
- Mike Anderson
- Chris Biggers
- Scott Bruner
- Allan Cooke
- Matt Corbett
- Marc Cronan
- Adam Evanschwartz
- Jessica Griffin
- Craig Harwood
- Phil Huedepohl
- Sara Jump
- Rob Kishiue-Koval
- Tony Krieger
- Bill Lang
- Dan Mazuk
- Mike McCollum
- Brian Piddington
- Neil Rud
- John Schneider
- Rachel Sparks
- Keith Stover
- Randy Tietz
- Travis Vanderkamp
Winning with Lean

One team’s use of Lean Electronics helped Rockwell Collins win a key position on the Boeing 737 MAX.

By the numbers

737 MAX Display Hardware

Team achievements

- 57 to 7
  - The number of hand-placed parts in each display
- 2,651 ft. to 294 ft.
  - The display processing-in-plant travel distance
- 80%
  - Reduction in adhesive scrap in display manufacturing
- 50%
  - Reduction in display recurring material costs
- 33%
  - Reduction in build and test times
- 46.5 pounds
  - Estimated weight savings from existing displays

The Rockwell Collins 737 MAX Display Hardware Team approached the design of a new generation of displays for the Boeing 737 MAX aircraft with targets so aggressive that some might have thought their requirements were wishful thinking.

Reducing costs by 50 percent and slashing build and test times by one-third were just two of the team’s breakthrough goals.

“What made this project different from the beginning was the complete buy-in from the team to use lean tools aggressively,” said Rick Johnson, a principal engineering manager in the Head Down Display Center in Engineering and Technology. “The key was just attacking waste.”

Starting in late 2011, Rockwell Collins began looking at ways to develop 9-by-12 inch displays with higher graphics capability, reduced weight and significantly less cost.

“The goal: To regain a display position on the Boeing 737 MAX,” said Ekman.

“Having larger displays for pilots to view will definitely add to the appeal of the Boeing 737 MAX,” said Ekman.

Did everything work as planned? Absolutely not. One breakthrough goal the team didn’t achieve was the complete elimination of hand-placed parts on the display assemblies, a process that requires manual precision. While the team was able to reduce hand-placed parts by almost 90 percent, they recognize their Lean activities are never truly over and done.

Instead, the team continues to look for ways to make improvements as part of an ongoing process.

“We’re still trying to realize more savings as we go,” said Grunewaldt, calling the award an honor for the team, “but we hope some of our successes will help other programs realize similar opportunities.”

Material costs were another area of Lean focus. The team scheduled “Go and See” events at our Manchester, Iowa, facility where the displays were to be assembled to better understand workflows in the manufacturing process. These lean events helped the team reduce adhesive scrap by 80 percent and reduce processing travel distance from 2,651 to 294 feet, both of which saved time and money.

Frequent visits also were made to our facility in Coralville, Iowa, where printed wire boards—the brains of the display—are manufactured. Key design breakthroughs resulting from the collaboration allowed the functions of two printed wireboards to be consolidated into one board per display. The design decision reduced cost, weight and the need for active cooling of the displays.

“By engaging our counterparts in Operations and Test Engineering much earlier than we historically would have, we were able to realize and solidify a lot of the savings sooner in the program,” said Grunewaldt.

Impact important

In addition to helping win the 737 MAX displays contract, the hardware team won Rockwell Collins’ inaugural Lean Achievement Award. While competition for the award was intense—more than 130 nominations were received—the team stood out due to its impact both inside and outside our company.

“The award is amazing,” said Ekman. “Absolutely not. One breakthrough goal the team didn’t achieve was the complete elimination of hand-placed parts on the display assemblies, a process that requires manual precision. While the team was able to reduce hand-placed parts by almost 90 percent, they recognize their Lean activities are never truly over and done.

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By Dave DeWitte

Lean helps us become more efficient through the elimination of non-value added activities. Employees can learn more about the Five Principles of Lean, which identify focus areas to achieve operational excellence, on the Lean Electronics page on Rockwell Collins Online.
HoRIZ oNs

(October of 2012, Roberta Cortez understood what

When the Rockwell Collins Senior Leadership Council

Why expert groups are needed to promote best practices, commonality

Centers of Excellence raise the bar

...and Technology organization. "We needed to raise the bar on quality," said

When the Rockwell Collins Senior Leadership Council approved the formation of the three new Centers of Excellence (CoEs) in October of 2012, Roberta Cortez understood what would be expected from her new group.

"We needed to raise the bar on quality," said Cortez, manager of the Design Assurance Center (DAC), a 125-member Center of Excellence set up within Rockwell Collins’ Engineering and Technology organization. While we had not lost our overall focus on quality, there were concerns that our company’s progress and performance had reached a plateau. Rising customer expectations reinforced the need for a more proactive approach. The DAC was charged with making necessary changes.

Previously, design assurance engineers were being engaged late in the design process, when budgets had largely been spent, and corrective actions were costly. By creating a Center of Excellence focused on earlier engagement in the development process, design assurance engineers can now better share their expertise and implement these methods earlier in engineering processes throughout the enterprise. The new model promotes reducing or eliminating escapes linked to design as well as helping to facilitate two-way knowledge transfer between engineers in the DAC and experienced engineers in the development teams through an engineering rotation program.

Progress made through the DAC’s engagement on programs was clearly apparent during a hardware audit that helped the Airbus A350 XWB Information Management Onboard (IMO) Program meet customer commitments.

"You can’t ‘inspect-in’ quality," said Cortez. "You have to be thinking about quality from the onset of design and development to ensure we design that quality into our products."

Why the expansion of CoEs?

Centers of Excellence are becoming a larger part of the organizational landscape at Rockwell Collins. A CoE provides capabilities that offer a source of value creation shared across our company to ensure we deliver cost competitive solutions that meet – or exceed – customer expectations.

"CoEs are chartered to optimize commonality," explained Nan Mattai, senior vice president of Engineering and Technology. "For example, engineering CoEs focus on the optimization of products and technologies across multiple business units."

Outside of engineering, CoEs have arisen in less formal to some, according to Wood, it’s really about being respected and valued for your expertise and constantly finding ways to improve and innovate.

"We think of ourselves as a business unit helping win new flight deck positions and serving our external customers," said Wood. "We’re a slightly different flavor of CoE."

"The comment I get from people is, ‘Now I know who to call. It’s easier to pick up the phone and get the answer I need,’” he explained.

CoEs are not a new concept

Our Head-up Guidance Systems facility in Wilsonville, Ore., designs, manufactures and services Head-up Displays (HUD), Head-up Guidance Systems (HGS) and Helmet Mounted Displays (HMD). This facility’s CoE designation is not well known because it was formed indirectly through acquisitions and consolidations over the years, according to Bob Wood, director of Head-up Guidance Systems Engineering. Wood said the consolidation in 2010 that brought head-up display engineering for both government and commercial markets under one roof in Wilsonville "had a lot of benefits."

"There’s been a merging of technologies to benefit both government and commercial customers," Wood said. "I believe there’s a real synergy there in terms of both skill sets and technology."

While a Center of Excellence designation may sound formal to some, according to Wood, it’s really about being respected and valued for your expertise and constantly finding ways to improve and innovate.

"We think of ourselves as a business unit helping win new flight deck positions and serving our external customers," said Wood. "We’re a slightly different flavor of CoE.”

Centers of Excellence raise the bar

Why expert groups are needed to promote best practices, commonality and standardization at Rockwell Collins.
Closing the situational awareness gap
Rockwell Collins’ new HeliSure™ family of products improves helicopter safety.

Situational awareness is different for helicopter pilots than for pilots of other aircraft. Sheer vertical ascents and descents, backward flight and obstacles encountered while flying at lower altitudes are among some of the obvious differences between rotorcraft and fixed wing aircraft. Helicopter pilots also face blackout and whiteout conditions when landing on snowy, sandy or dusty surfaces due to the powerful backwash of the large rotating blades.

A full five seconds of disorientation is not uncommon as the pilot relies on training and experience to decide whether to abort the landing or attempt to safely guide the aircraft to ground.

In fact, pilot situational awareness ranked third among the primary causes of helicopter accidents in Europe between 2000 and 2005, according to a 2009 study prepared by the European Helicopter Safety Team (EHST). It contributed to 38 percent of those accidents.

HeliSure to the rescue
Recognizing the potential to save lives and add value for rotary craft customers, this year Rockwell Collins introduced the first two products in its new HeliSure™ line of helicopter technology—the industry’s only complete helicopter portfolio offering increased situational awareness through a unique combination of integrated visualization, displays, sensors and database components.

The HeliSure Synthetic Vision System (H-SVS) gives pilots a “real-world” view of terrain and obstacles on their flight paths with the most detailed displays available on the market. Its displays are designed to be integrated with other situational awareness products to provide better visibility in degraded visual environments by showing the terrain features of the outside world on the screen. These high-resolution displays enable pilots to “see and avoid” even when visibility is low outside the aircraft.

The other technology-HeliSure Terrain Awareness and Warning System (H-TAWS)—graphically depicts terrain and known obstacles along the flight path, providing advanced warning to the pilot. It minimizes false alerts by combining pilot intent with a terrain and obstacle database. H-TAWS is night vision goggle-compatible when integrated on large-format displays, a key requirement for military or public safety operators.

A different approach required
As a pioneer in synthetic vision systems, Rockwell Collins had the underlying technology to develop these new rotorcraft products, but there were a number of differences that had to be addressed. For instance, helicopter manufacturers require more resolution to show greater detail of terrain and obstacles. Additionally, the systems had to be more rugged to withstand the greater vibration and heat of a helicopter, along with contaminants such as saltwater, fog, sand and dust.

According to Dan Toy, principal marketing manager for Airborne Marketing in Cedar Rapids, Iowa, the focus for HeliSure was to improve the safety of rotorcraft through situational awareness.

“What we’ve done with HeliSure is to raise the level of situational awareness available to helicopter pilots by providing capabilities not available anywhere else,” Toy said, pointing to the combination of 3D visualization, displays, sensors and databases working together.

A crucial distinction for this product line is increased situational awareness that can reduce pilot fatigue rather than adding to information overload. That meant filtering out the unnecessary information and making the right information easy to see and understand, Toy said.

The synthetic vision systems for commercial helicopters were developed by our eAirborne group at our facility in Toulouse-Blagnac, France, which also performed the H-TAWS integration work. A parallel effort for developing synthetic vision software for military helicopters is currently underway in Cedar Rapids, Iowa.

The next product in the HeliSure portfolio will be the radar-based Proximity Hazard Alerting System (P-HAS), which will sense hazards—both stationary and moving obstacles—that are 70 meters or less from the aircraft. This revolutionary solution provides one short-range sensor that looks behind the aircraft and one long-range sensor that looks forward.

“The idea is to combine the short distance and long distance detection,” said Olivier Pedron, principal marketing manager for Government Systems in France. “There is no equivalent on the market today. We are hoping to be able to secure contracts and launch the product in the very near future.”

Vast market opportunity
HeliSure marketing opportunity is significant, according to Toy, with safety as the primary selling point for both government and commercial customers. For the former, safety is of utmost concern when using helicopters to transfer heads of state, or diplomatic/military leaders. For commercial helicopter charter operators, safety records are of the utmost importance to prospective clients, Toy said.

In addition, demand for H-TAWS could be driven in the next few years by new federal mandates. The Federal Aviation Administration (FAA) recently issued a Notice of Proposed Rule Making that suggests mandating the use of the H-TAWS by helicopter Emergency Medical Service (EMS) operators. Currently, that represents about 12 percent of the civilian helicopter market, explained Toy.

Not only can improved situational awareness enhance safety, it can also prevent damage to and downtime for helicopters, which can cost millions each. Helicopter blades alone can easily require $100,000 to replace.

In June, AgustaWestland selected H-SVS and H-TAWS for several of its platforms and discussions are underway with numerous other potential customers.

“We are hoping these products become standard equipment on many of the helicopters that are manufactured, whether they go to civilian, military or paramilitary operations,” Toy said.

By Dave DeWitte
An engaging leader

Why Principal Engineering Manager Shannon Standing believes being attuned to the voice of engineers helps advance our company.

As principal engineering manager of Rockwell Collins’ Rotary Wing Platform Systems (RWPS), Shannon Standing understands that the success of her department not only depends on innovative engineering talent, but also on clear and open communication.

“Standing oversees a team of approximately 75 technical project managers and system engineers in Cedar Rapids, Iowa, who work on the majority of the helicopter programs within Government Systems Anti-terror Solutions Engineering.

Her department is the bridge between program managers and the customer, and our company’s software engineers. As the link between these groups, communication is critical for project success. Standing said part of her job is to mentor her leaders on having the conversations that are needed to keep programs moving forward.

“Everybody has a lot of projects on their plates, so there’s always a lot of push and pull,” she explained. “Often, it comes down to, ‘Are we being clear on what we need?’ and ‘Do we understand why other people can’t commit to certain deadlines?’”

When it comes to communication, Standing practices what she teaches. She prides herself on being very approachable.

“In the departments I’ve led, I’ve always facilitated an open environment where engineers can bring issues forward and know that we’re going to tackle as much as we can,” she said.

Even though Standing has led the RWPS team for over a year, her ongoing communication with engineers helped to realign some roles to better match team members’ strengths and desires. The result has been improved project execution and overall employee satisfaction.

“Over the last nine months the attrition in our department has been virtually zero, and that’s something to be proud of,” she noted.

Her ability to create a culture of engagement made her a natural choice for our company’s Voice of the Employee (VOE) engineering program. In this initiative, selected leaders from Government Systems, Commercial Systems and the Advanced Technology Center are helping lead efforts to improve engagement and satisfaction in our engineering workforce.

Standing is excited to be a part of this project.

“To me, as a leader, the biggest thing you can do is be a part of positive change,” she said. “We can take the voice of the engineers forward to help improve people, improve processes and help advance the company.”

Standing believes this initiative is an opportunity for our company to stand back and evaluate if the way things have been done in the past are the right things to do moving forward. And she’s hoping engineers will continue to be forthcoming with information.

“We want to hear about their experiences and incorporate that feedback into changes that will help Rockwell Collins evolve into the company we all want to work for now, but also five to 10 years down the road.”

Catering to customers

LaDonna Davenport

Cedar Rapids, Iowa

Start date: September 1968

Original position: Voice of Engineering (VOE)

What is your favorite aspect of your current position? I like being responsible for what I need to accomplish in a day.

By Annette Busbee
HoRIZ ons for new employees?

Engineering Technician
Industrial Avionics Assembler

Original position: Start date:
Melbourne, Fla.
Veronica Lybarger

It’s a challenge current position?

Senior Lead Mechanic

Original position: Start date:
Cedar Rapids, Iowa
Liane L. Kennedy

CELEBRATING 35 YEARS

What is your favorite aspect of your current position?

Assembly Operator

Current position:

Original position:

Start date:

Cedar Rapids, Iowa

CELEBRATING 35 YEARS

What is your proudest accomplishment at Rockwell Collins?

MR. BUMP

James D. Schuler
Jason W. Smith
Sean P. Smith
Christine A. Seba
Felisha R. Standberry
Neil J. Sudduth
Emmet L. Taylor
Robert P. Toney
Brian T. Stomp
Bethany S. Soward
Henry G. Day
John S. Dixon
Linda M. Ely
Aubrey D. Elkins
Michelle M. Engkelken
Charles W. Elting
Diane C. Ely
David J. Gilbert
Margaret A. Grattan
Crystal G. Gray
Ken J. Hamilton
Adam Hamros
Barry G. Hampton
Manuel M. Herna
Christopher J. Hoeger

Cedar Rapids, Iowa

Start date:

July 1978

Current position:

Original position:

Start date:

November 1977

CEO

CELEBRATING 35 YEARS

What is your favorite aspect of your current position?

Thermal Lab Technician

What is your favorite aspect of your current position? The opportunity to work on a wide variety of technologies and designs.

Testing for the DU-7000 program.

What is your proudest accomplishment at Rockwell Collins? Doing the baseline development and conceptual design for our Air Transport Aftermarket Display upgrade for the Boeing 757/767 airplanes. The conceptual design became the basis for the USAF KC-46 Tanker flight deck and the FedEx flight deck upgrade.

What is your proudest accomplishment at Rockwell Collins?Was selected to speak to a Russian delegation while working on the DU-7000 program.

What is your proudest accomplishment at Rockwell Collins? Being able to work on so many different projects for the amount of years I’ve worked here.

What is your proudest accomplishment at Rockwell Collins? Still providing quality contractors in the contract labor program to better serve Rockwell Collins.

What is your proudest accomplishment at Rockwell Collins? Developing the Luftwaffe’s A-400 cargo plane, and designs.

What is your proudest accomplishment at Rockwell Collins? The selection to I was selected to work on a variety of technologies and designs.

What is your proudest accomplishment at Rockwell Collins? The level of expertise in current position?

What is your proudest accomplishment at Rockwell Collins? The opportunity to work on a wide variety of technologies and designs.

What is your proudest accomplishment at Rockwell Collins? The expertise in current position?

What is your proudest accomplishment at Rockwell Collins? Developing the Luftwaffe’s A-400 cargo plane, and designs.

What is your proudest accomplishment at Rockwell Collins? The selection to I was selected to work on a variety of technologies and designs.
Retirees

Rockwell Collins offers congratulations and best wishes to the following employees, who have recently announced their retirements.

George J. Ahlken
Cedar Rapids, Iowa

Margaret J. Altheide
Cedar Rapids, Iowa

Douglas G. Anderson
Monticello, Iowa

Rick L. Arnold
Central City, Iowa

Susan E. Babcock
Central City, Iowa

Fenny L. Barton
Cedar Rapids, Iowa

John E. Hairston, Jr.
Vinton, Iowa

Elizabeth J. Gloede
Marion, Iowa

Jack C. Ginther
Anaheim, Calif.

Fred P. Galbraith
Saint Cloud, Fla.

Doris M. Fulton
Knoxville, Iowa

Joyce A. Kitson
Palm Bay, Fla.

Lee A. Johnson
Solon, Iowa

Dick J. Hubbell
Calmar, Iowa

Mark A. Kovalan
Marengo, Iowa

Joyce H. Stepanek
Hills, Iowa

Ruth Anne Denker
San Tan Valley, Ariz.

Luann L. Demoss
Cedar Rapids, Iowa

Mark A. Schultz
Cedar Rapids, Iowa

Margaret J. Altheide
Cedar Rapids, Iowa

Rockwell Collins offers condolences to the families and friends of the following employees and retirees, whose deaths were recently reported.

In memoriam

Louis F. Acosta*
Brea, Calif. June 5, 2013

Charles A. Alderman*
Portland, Tenn. April 3, 2013

James N. Arnold
San Jose, Calif. July 1, 2013

Joseph W. Boyer*
Neswick, Ohio May 21, 2013

Danny L. Devroy*
Wichita, Ky. May 21, 2013

Brian W. Garbe*
Cedar Rapids, Iowa July 30, 2013

Deanna L. Gibson
Palm Bay, Fla. Aug. 18, 2013

Brenda E. Gordon
Melbourne, Fla. Aug. 27, 2013

Mary L. Green
Palm Bay, Fla. June 18, 2013

Iida M. Lieb*
Atkins, Iowa Aug. 27, 2013

Winifred L. Jacobs*
Salida, Colo. July 20, 2013

Patricia E. Johnson
Columbus Junction, Iowa March 6, 2013

Ronald G. Redington
Cedar Rapids, Iowa July 18, 2013

Roy T. Vaughan*
Biloxi, Miss. June 18, 2013

Clarence T. Vitous*
Berey, Ill. May 10, 2013

Louis F. Acosta*
Brea, Calif. June 5, 2013

William F. Madison*
Cocoa, Fla. June 29, 2013

Jerry L. Moreo*
Orange, Calif. May 30, 2013

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Brea, Calif. June 5, 2013

William F. Madison*
Cocoa, Fla. June 29, 2013

Jerry L. Moreo*
Orange, Calif. May 30, 2013

*Retiree

Advertising globally

This Rockwell Collins corporate ad, which also is in Mandarin Chinese in this issue, highlights our company’s commercial solutions that offer smart, new ways to deliver information faster, easier and more reliably. The Mandarin Chinese version has appeared in publications in China.
所需信息
尽在眼前

成功取决于所需信息的获取、何时接收，以及如何利用它们。罗克韦尔柯林斯为您提供一种全新的智能途径，传递更加快捷、简洁和可靠的飞行信息。我们以直观的方式使航空电子设备的相关信息一览无余，增强了飞行员的态势感知。加载了合成视景功能的平显系统可使飞行员从起飞到降落保持平视的飞行姿态。综合飞行与客舱信息系统为您保持实时通讯畅通。这一切都为满足在您需要的时候提供及时适当的信息。

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Your mission’s success depends on getting the information you need, when and how you need it. Rockwell Collins provides smart new ways to deliver that information faster, easier and more reliably. Like intuitive, context-sensitive avionics for enhanced awareness. Head-up displays with synthetic vision for eyes-forward flying from takeoff to landing. And integrated flight and cabin information systems that keep you up-to-date and connected. All focused on providing you the right information, at the right time.

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