Harnessing the power of aviation’s information age
A big topic of conversation in our industry right now centers on managing and optimizing the massive volume of data and other information generated throughout the aviation ecosphere.

I’m proud to say Rockwell Collins is a leader in this discussion. We have expertise in information-enabled flight decks and cabin systems, network connectivity solutions, ground infrastructure and integration capabilities.

So as you’ll read in the cover story in this issue of Horizons, “Harnessing the power of aviation’s information age,” Rockwell Collins is now in a great position to provide seamless and secure information pathways that deliver the right data to our customers exactly when they need it.

Today, the solutions we’re offering our customers enhance air travel efficiency, comfort and safety — from planning and executing a trip and maintaining aircraft systems, to keeping passengers engaged and enabling greater situational awareness on the flight deck. As technology evolves, we’ll only be limited by our imaginations in continuing to design and provide innovative products and services that go beyond our customers’ expectations.

Enjoy reading how Rockwell Collins is innovating for the aviation information age and helping transform the world.

Kelly Ortberg
CEO and President
Pro Line Fusion® takes off
After years of research and development, Pro Line Fusion® is flying on multiple platforms.

COVER STORY
Harnessing the power of aviation’s information age
Rockwell Collins is innovating seamless, optimized and secured connectivity solutions for enhanced safety and efficiency.

Exceptional achievement
Five engineers are named to the 2015 class of Technical Fellows.

Mission to Mars
A Rockwell Collins engineer might soon realize her dream to be a space explorer.

Staying on course in space
Our space wheels keep unmanned spacecraft on the right trajectory.

Teaming up for international success
In-country business relationships are key for entry to global markets.

In the news
Horizons is going all digital
Service anniversaries

On the cover
Rockwell Collins is poised to provide the full connectivity value chain across the aviation ecosphere.

On the back
This ad highlights our leadership position in providing solutions that unlock the full potential of aviation information.
Pro Line Fusion® takes off

After years of investment and research and development, Pro Line Fusion® is flying on multiple platforms in multiple markets.

Since he was a young boy, Jamie Johnson has always had a fascination with airplanes. He clearly recalls how easy it was to maneuver and fly his model planes with just the touch of a remote control.

Today, the principal systems engineer based in Cedar Rapids, Iowa, helps bring new levels of efficiency and control to pilots flying multi-million dollar airplanes.

Since joining Rockwell Collins in 1997, Johnson has been a part of the Pro Line Avionics team, specifically working with the Engine Indication and Crew Alerting System (EICAS). Over the years, he’s watched the product line, originally launched in 1975, develop and transform into its most recent generation — the Pro Line Fusion® Integrated Flight Deck.

“When I started, I didn’t imagine that I’d be working on a product that is so innovative and adaptive,” said Johnson, who is currently working on our Pro Line Fusion avionics for Bombardier’s CSeries commercial aircraft which is expected to enter service in 2016. “The excitement generated by Pro Line Fusion’s potential is what makes me look forward to coming to work each day.”

Pro Line Fusion platform wins

2007
Bombardier Global 5000 business jet
Bombardier Global 6000 business jet
Mitsubishi MRJ regional jet
2008
Embraer Legacy 450 business jet
Embraer Legacy 500 business jet
Gulfstream G280 business jet

Jamie Johnson, principal systems engineer, tests the Pro Line Fusion® Engine Indication and Crew Alerting Systems (EICAS) for the Bombardier CSeries regional jet.
Since the beginning in 2005, the vision for Pro Line Fusion has included unprecedented levels of situational awareness; the industry’s first synthetic vision system on a head-up display; information enablement to improve operational efficiencies; and an architecture that would enable it to adapt to multiple platforms in multiple markets.

Johnson said it’s been fun to watch it take off — literally.

Rockwell Collins’ Pro Line Fusion integrated avionics system has been selected for 17 aircraft platforms including business jet, air transport, tilt-rotor and military flight decks. It’s even been flight-tested as an unmanned aerial system. More than 300 Pro Line Fusion flight decks have been delivered since 2012. And, to date, customers around the world have flown the system more than 150,000 flight hours on multiple platforms that have entered into service including Bombardier’s Global series and Embraer’s Legacy 500 business jets.

In addition, deliveries of Beechcraft King Air turboprops from Textron Aviation — featuring our latest version of Pro Line Fusion — are expected to begin this year.

**In the spotlight**

“It was a really special moment,” said Adam Evanschwartz, director for Business & Regional Marketing in Cedar Rapids, as he recalled walking through the 2015 European Business Aviation Convention and Exhibition (EBACE) in Geneva, Switzerland, in May. He realized that Rockwell Collins and Pro Line Fusion were the talk of the show.

EBACE is where our company officially announced that new production King Air turboprops will feature Pro Line Fusion and commercial aviation’s first touchscreen primary flight displays. Previously, it was announced as a retrofit on the aircraft.

“Touchscreen was a big move, and there were some people who were a bit skeptical when we introduced it in 2011,” added Evanschwartz. “But we’ve seen great responses from customers and Federal Aviation Agency representatives as they’ve experienced it in flight.”

This Pro Line Fusion flight deck will be on all new King Air 350i, 250 and C90GTx airplanes, which Textron believes will only improve the flying experience for its customers.

“The Pro Line Fusion flight deck enhances situational awareness and brings the simplicity of icon-based activity while minimizing traditional menus,” said Christi Tannahill, senior vice president, Turboprop Aircraft and Interior Design for Textron Aviation. “Whether you are a single pilot owner-operator commuting between business locations, running a special mission operation, or flying as a corporate crew,
you benefit from the ease of operation and resulting confidence in your flight.”

The King Air win is just one example of how Rockwell Collins continues to innovate and adapt this technology. And not for just commercial platforms, but for government platforms, as well.

On a mission
One of Chad Williams’ responsibilities is to work with engineers on adapting commercial applications of Pro Line Fusion for government customers. It’s a task he admits hasn’t always been easy.

“The challenge is that our military customers want the civil-certified pedigree of a product like Pro Line Fusion, but they don’t want to lose their military mission capabilities,” said Williams, a principal project manager for Next Generation Products in Cedar Rapids. “Adapting this technology for military aircraft involves extensive collaboration with our peers in Commercial Systems, as well as direct communication with our customers to understand their needs.”

As a result of this collaboration, the Pro Line Fusion avionics being developed for Embraer’s KC-390 tanker-transport, AugustaWestland’s AW609 TiltRotor and other Government Systems customers is largely based off Commercial Systems solutions, said Williams.

A big focus recently in Government Systems has been on adapting the hardware and software for the rotary wing aircraft market. This has required engineers to continue to innovate and adapt Pro Line Fusion to handle helicopter vibrations; provide helicopter-specific display symbology and functions; adapt the situational awareness to fly at lower altitudes; and introduce additional flight management services to include helicopter approaches, heliports and helipads.

Rockwell Collins debuted Pro Line Fusion for the commercial helicopter market earlier this year. In addition, our company, along with Airbus Helicopters and Vector Aerospace, entered into an agreement in June to jointly develop and market Pro Line Fusion integrated avionics solutions to upgrade Airbus Helicopters’ platforms. The first upgrade implementation is expected in 2016.

What’s next?
Matt Carrico, senior engineering manager in Advanced Concepts and a Rockwell Collins Technical Fellow in Cedar Rapids, was among the engineers involved in the development of Pro Line Fusion. And while he admits it feels great to see it working as it was envisioned — being scaled to work on multiple platforms in multiple markets — he knows there’s still a lot of work left to do.

“The demand for a product to have great features and be easy to use never goes away,” said Carrico. “No matter how successful Pro Line Fusion is, we always have to be thinking of ways to make it more intuitive for pilots.”

One of the areas Carrico knows will continue to grow in popularity is touch-user interfaces. In a world where people are spending hours a day on smartphones and tablets, that same kind of functionality is now desired in the cockpit. And while touchscreens are integrated into smaller displays for the King Air turboprops, they haven’t been incorporated into platforms with large displays, yet.

“The issue we find is that cockpits are getting larger, and pilots have to be able to easily reach and interact

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Pro Line Fusion platform wins

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<tr>
<th>2013</th>
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<tr>
<td>Piaggio MPA multi-role patrol aircraft</td>
<td>Avic MA-700 regional airliner</td>
<td>Airbus AS332/532 MK1 helicopters cockpit upgrades</td>
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<tr>
<td>King Air C90GTx turboprop</td>
<td>King Air 250 turboprop</td>
<td>King Air 350i turboprop</td>
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with the displays. And that presents a challenge," said Carrico.

He added that connected aircraft and airspace also are driving much of today’s innovation. Teams in Advanced Concepts are working to find better ways to enable pilots to easily and securely transfer information from their electronic devices into the flight deck so they don’t have to manually reprogram the flight plan. Advances in network connectivity also will enable Rockwell Collins to better leverage the work of our Information Management Services business by making it easier for pilots to get in-flight updates such as airspace status, weather, airport conditions and runway closures.

But when it comes to identifying and executing new features for Pro Line Fusion, we also listen to the customer.

“We regularly run pilot advisory groups at Rockwell Collins, and we’re also invited to participate in groups organized by the aircraft manufacturers we work with,” added Carrico. “Those are such valuable sources of information for us because we hear straight from the pilots about the features they want in the future.”

Carrico believes Pro Line Fusion will continue to evolve along with our customers’ expectations and enable Rockwell Collins to maintain our innovative edge in an increasingly competitive avionics market well into the future. And with approximately 75 percent of our investment in this technology complete and an estimated 90 percent of revenue ahead, Pro Line Fusion plays an important role in accelerating our growth.

And as Jamie Johnson continues to log hours on the CSeries Pro Line Fusion rig in preparation for the platform’s entry into service, he’s looking forward to the next Pro Line Fusion innovation.

“I keep model planes in my office of all the aircraft that I’ve worked on,” said Johnson. “I look forward to adding another one very soon.”

By Megan Strader
Rockwell Collins is innovating seamless, optimized and secure connectivity solutions for enhanced safety and efficiency.

From Annapolis, Maryland, a team of engineers is regularly monitoring our ARINC aviation communications network system performance on a Hawaiian Airlines commercial aircraft. Engineers are watching the system performance when the aircraft flies in oceanic airspace.

It’s part of a key safety trial with Hawaiian Airlines and the Federal Aviation Administration. The purpose is to evaluate the latest generation of Inmarsat’s SwiftBroadband (SBB) satellite communications technology in the cockpit, according to Scott Malone, director of ARINC GLOBALink™ engineering. The new variant of SBB enables voice, Aircraft Communications Addressing and Reporting System (ACARS) and Future Air Navigation System (FANS) data transmissions.

ACARS enables exchange of messages between the aircraft and entities like Air Operational Control and Air Traffic Services. FANS is a subset of ACARS messaging used for communications between the pilot and air traffic control in oceanic airspace.

“Over the past couple of years, we have been developing the gateway to interface our ground-to-air communications network before we brought it online with the Inmarsat system,” said Malone. “For the industry, getting SwiftBroadband connectivity into the cockpit is a big step. And we’re the first to do a safety service trial with a commercial airline.”

In addition to gaining a faster, broader information path to transmit ACARS/FANS data, the high bandwidth Inmarsat SBB can drive timely, graphical weather information to a tablet device. With a more complete weather picture, flight crews — in conjunction with air traffic control and the airline — can make better-informed decisions whether or not to reroute the aircraft due to turbulence and poor weather conditions.

This is just one example of how technology is evolving and advancing in the midst of the aviation industry’s information age. And Rockwell Collins is in a unique position to develop innovative applications and services to harness the power of that data.
Optimizing data

While information is critical to the safe and efficient operation of the aviation industry, the volume of that data is massive. Today’s new information-enabled airplanes are gathering and generating much more data than their predecessors. It comes from critical flight deck avionics systems and from cabin systems that keep passengers informed, entertained and connected, according to Kent Statler, executive vice president and chief operating officer of Commercial Systems.

“In the flight decks alone, next generation Boeing 787 and 777X aircraft produce ten times the amount of information compared to the previous generation 767. And the same thing can be said of the Airbus A350 compared to the A330,” said Statler.

As we look to the future of the aerospace industry, the operative words are more and faster. By 2030, an estimated 80 percent of the expected 85,000 active air transport and business aircraft will be equipped with information-enabled systems.

Meanwhile, leading-edge innovations are creating faster air and ground networks and more streamlined airline and airport operations.

Rockwell Collins is a long-time industry leader in flight deck information management systems, such as our Pro Line Fusion® integrated avionics.

In 2013, we acquired ARINC, a leader in global air-to-ground and ground-to-ground networks. That brought us another step closer to achieving our vision of providing the full connectivity value chain for airlines and business aircraft operators, according to Jeff Standerski, senior vice president of Information Management Services.

“We have flight deck and cabin systems, network connectivity solutions, ground infrastructure and integration expertise,” said Standerski. “Our focus going forward is to create additional value for our commercial and business aviation customers by providing them with the right information, at the right time, and in the right form. And to deliver it all securely. We’ll do that by innovating applications and services that enhance safety and efficiency and engage passengers.”

Standerski pointed to our ARINC MultiLinkSM flight tracking service that is now being evaluated by nine airlines around the world. Instead of relying on a single data source, our solution merges multiple data sources already in use, including our high frequency (HF) data-link network.

As a result, this service can reliably report the location of an aircraft anywhere in the world — even in remote regions and over oceans.

These evaluations will be completed soon, and we expect to begin offering ARINC MultiLink to our customers this fall.

The aviation information age also is transforming the operations of today’s airports. Rockwell Collins offers information management solutions to help improve airport processes while managing operational costs. One such technology is our integrated biometrics solutions designed to streamline passenger processing.

“Our focus going forward is to create additional value...by providing the right information, at the right time, and in the right form. And to deliver it all securely.”

Jeff Standerski, senior vice president, Information Management Services

The suite of self-service solutions integrates our ARINC vMUSE™ and ARINC VeriPax™ passenger processing capabilities with an industry-leading provider of biometric technology. A traveler’s identity is captured using biometrics — such as an iris scan, fingerprint or facial recognition — and our system matches it with the passenger’s passport and boarding pass information. Airports will be able to securely automate every step from check-in to boarding the airplane, improving passenger flow.

Secure connectivity

Information passed between ground-to-ground and air-to-ground systems offers great potential for efficiency and safety enhancements. However, concerns remain about the integrity and security of that data.

Rockwell Collins has an industry advantage in providing secure information management solutions. In the aircraft, for instance, our commercial avionics teams work hand in hand with Government Systems (GS) colleagues who develop mission-critical, military grade security protocols for government aircraft.

Linda Peyton, senior director of Avionics Products Engineering and a Rockwell Collins Technical Fellow in Cedar Rapids, leads a team of engineers who are focused on information security in commercial avionics. The team includes Continued on page 10
Unlocking the full potential of aviation information

On the flight deck, our information-enabled communication, navigation, surveillance and display systems — including our Head-up Guidance System with enhanced vision system and MultiScan ThreatTrack™ weather radar — help get planes to their destinations safely and efficiently. In the cabin, our portfolio of solutions, including PAVES™ in-flight entertainment systems, engage and empower passengers.

Rockwell Collins’ global aviation network touches every facet of the aviation ecosystem. Our air-to-ground ACARS network is the industry’s only pole-to-pole ACARS data link infrastructure. Once data reaches the ground, our ARINC AviNet® private global data network securely and reliably delivers the information to sources around the world — from air traffic control messages to weather data to passenger reservations.
Rockwell Collins’ voice and data network seamlessly and securely transmits critical information between the airline back office, aircraft, ticketing systems and more. Airlines and manufacturers use our networks to monitor and measure performance of today’s information-enabled aircraft systems, reducing unplanned aircraft-on-ground issues.

Our solutions seamlessly integrate systems to optimally move and manage information for air traffic control, airport operations, passenger processing and airport communications.
engineers with GS information assurance knowledge, as well as those with expertise in information technology and networking.

“We’re developing new technologies that enable improved security in embedded systems in avionics. And we’re identifying future security enhancements,” said Peyton.

For instance, engineers recently evaluated data separation technologies applied to airborne networks to provide assured integrity and confidentiality across flight deck interfaces.

According to John Borghese, vice president of the Advanced Technology Center (ATC), secure guards and gateway technology developed in ATC also are adapted for commercial use.

Borghese cited the example of the AAMP7 microprocessor developed for safety applications in aircraft flight control systems. The AAMP7 is accredited at Evaluation Assurance Level 7 — the highest safety grade assigned to an information technology product or system following a common criteria security evaluation. It’s the only microprocessor in the world to have that level of accreditation.

“We’ve adapted it for use in many of our Government Systems products,” said Borghese. “And we’re using this hardware technology for commercial applications, most recently in a large air transport avionics system.”

Ongoing knowledge and research collaboration across the enterprise also can provide opportunities to leverage Rockwell Collins’ secure commercial networks and technologies for the government market as well, according to Simon Tudge, senior director of Business and Strategy Development in Annapolis.

“We see opportunities to create custom solutions for head of state and VIP aircraft,” said Tudge. “We can combine the power and flexibility of our Venue™ cabin management system with the security of our military-grade command and control infrastructures and the reliability and impenetrability of our global network services to create value-added solutions for these customers.”

Growing market
Standerski and Statler believe the amount and value of data generated in the aviation industry will only continue to expand. And they say Rockwell Collins’ skills and solutions match up well with this huge market opportunity.

“We have the aircraft solutions that enable information management and connectivity services, and we’ll continue to make the necessary investments in systems and services to create a robust portfolio for our customers,” said Standerski. “This is the natural next space for us to realize our vision of providing seamless end-to-end solutions.”

“We have the building blocks,” added Statler. “Over the next few years we’ll continue enabling the aircraft with information management solutions and expanding the broadband data capacity. Once the integration of these capabilities is complete, we’ll continue to grow our applications and services that meet and exceed the needs of our customers.”

By Annette Busbee
To be a Rockwell Collins Technical Fellow means an engineer is setting the standard for technical excellence. Five engineers recently were named Technical Fellows for outstanding accomplishments in their respective fields.

They are Bob Foote, Vlad Gavrilets, Linda Peyton, James West and Ken Zimmerman. They join the 25 engineers named Technical Fellows in last year’s inaugural class.

According to Matt Carrico, who was a member of that first class and is a senior engineering manager in Advanced Concepts, this honor is about more than having a title or award.

“It’s an engineering position that plays an important role,” said Carrico. “It’s expected that you will be a mentor and inspire the next generation of engineers.”

Technical Fellows also advise our leaders on technology trends as well as potential strategies to respond to competitive threats and technological, regulatory, and customer opportunities, according to Nan Mattai, senior vice president of Engineering and Information Technology.

“These individuals are consistently recognized as leaders who deliver innovation both inside and outside Rockwell Collins in ways that are instrumental to our growth and continued competitiveness,” said Mattai.

By Elizabeth Wagner
The much anticipated conversation between Laura Smith-Velazquez and her husband, Matthew Velazquez, was raw with emotion. Both teary-eyed and somewhat anxious about what lies ahead, the couple — married just four years — talked about whether they could still make their dreams come true. Could they still share their lives even if one of them was living on Mars?

“It’s not every day you talk with your spouse about taking a one-way trip to Mars,” admitted the 39-year-old Smith-Velazquez, a human factors and systems engineer in the Rockwell Collins Advanced Technology Center. “But Matthew knows I’ve wanted to be an astronaut since I was 8 years old. He knows how passionate I am about science.”

In February, Smith-Velazquez — who works in Columbia, Maryland — became one of 100 finalists selected to proceed to the next round of the Mars One astronaut selection process. Founded in 2011, Mars One is a not-for-profit foundation based in the Netherlands with the goal of establishing a permanent human settlement on Mars.

More than 200,000 people from around the world — including Smith-Velazquez’s husband — applied for the Mars One program. The list of 100 will ultimately be narrowed to 50 and then 24 finalists by the fall of 2016.

The first unmanned mission will be a demonstration to ensure the technologies work correctly and to launch a communication satellite in Mars’ orbit. It’s scheduled to depart in 2020. A four-person crew is scheduled to begin the one-way journey to the red planet in 2026, and subsequent crews are scheduled to leave Earth every 26 months thereafter.

Family passion for science

For Smith-Velazquez, the journey to places unknown began in the small Midwestern community of Dorr Township, Michigan. Born with an innate sense of curiosity, Smith-Velazquez was about 3 years old the first time she disassembled her parents’ stereo. At age 5, she fell in love with the American
science fiction TV series, “Star Trek.” In fact, “Star Trek” and science-related TV shows “NOVA” and “National Geographic” were the only programs permitted in the Smith household.

“We watched “Star Trek” as a family, and I always wanted to go on the five-year missions they flew to galaxies to find life on other planets,” recalled Smith-Velazquez. “When my parents gave me a telescope for Christmas, that sealed the deal. I was 8 years old, and I knew right then I wanted to be an astronaut.”

Smith-Velazquez credits her father, Paul Smith, for instilling in her his love of science and psychology as well as his thirst for knowledge. He attended college later in life and earned anthropology and behavioral science degrees.

“Dad used to take me out on digs, and I spent a lot of time hanging out with him in the anthropology lab at Grand Valley State University,” said Smith-Velazquez. “While most girls were dressing their dolls and playing with Barbies, I was helping my dad excavate a mastodon and dressing the skeleton in a lab coat.”

Smith-Velazquez also grew up with posters and maps of Mars covering her bedroom walls. So it’s no wonder that 25-plus years later she is excited about the chance to live, work and survive the rest of her life on a planet that is about 140 million miles from Earth.

“The mission to Mars is very different from a normal space mission where you come back to Earth,” said Smith-Velazquez, noting the one-way trip will take an estimated 260 days. “Mars One is about a vision — a vision of advancing technology and us, as humans, exploring and living on another planet.”

Facing the unknowns

Since qualifying for NASA’s astronaut program a decade ago, Smith-Velazquez has been regularly applying with hopes of one day realizing her dream. Today, she is closer than ever and, while she admits she will be disappointed if not selected as one of the 24 finalists for Mars One, she says the experience has been beyond anything she could have imagined.

But Smith-Velazquez also fully understands the risks that come with this mission. During the spaceflight, the crew must be protected from exposure to solar flare radiation. Once on Mars, average summer temperatures in the mid-latitudes are about 32 degrees Fahrenheit during the day, dropping to around -58 degrees at night. Dust storms can be a half-mile high and last a month. However, she insists she’s not afraid.

“Without question, there are many unknowns about this mission,” she said. “But everyday life can be challenging. I’ll face these challenges with the determination to resolve them.”

Because Mars One is a non-profit organization, much of the funding will come from investors and crowdsourcing. The third round of the selection process will include group challenges during which participants are judged on how well they can live and work together as a team to solve the myriad of problems they might face on Mars.

If Smith-Velazquez does make it to the final round, Rockwell Collins employees around the world will likely have an opportunity to help determine her fate. The final selection phase is currently planned to be broadcast in a reality TV format — something about which Smith-Velazquez is less than enthused. That said, she will continue doing whatever it takes to make her dream come true.

“How many times in your life do you get a chance to make an impact on the world?” asked Smith-Velazquez. “When I think about the amazing contribution and the ability to evolve technology and evolve us as a species — I just can’t imagine how awesome it would be.”

By Jill Wojciechowski

Mars settlers will rely on the Life Support Unit that is connected to the Living Unit by a tube that feeds oxygen, nitrogen and argon to create a habitable atmosphere. The Life Support Unit also will be in charge of the water purification and removal of waste gas (carbon dioxide) from the Living Unit atmosphere.
On April 29, 2015, NASA’s Messenger spacecraft completed the first-ever probe of the planet Mercury. The successful four-year mission in Mercury’s orbit ended when — as planned — the spacecraft ran out of fuel and fell to the planet’s surface.

Mercury is between 48 and 77 million miles from Earth, depending on the positions of the two planets in their orbits around the sun. It took Messenger nearly seven years to enter Mercury’s orbit after flying by Earth, Venus and then Mercury. If on its journey, it had even minutely gone off course, it easily could have been lost in the vacuum of space.

But thanks, in part, to Rockwell Collins’ TELDIX® Space Wheels, Messenger was able to successfully reach its destination and complete its mission. The four space wheels in the spacecraft were designed and manufactured at our facility in Heidelberg, Germany.

These devices are “attitude actuators,” essential for satellite navigation and function by maintaining and regulating the direction of the spacecraft, according to Wolfgang Kupferschmitt, director of Space Products in Heidelberg. "Once a satellite is in orbit, you need to keep its orientation in a certain direction,” said Kupferschmitt. “For example, a TV satellite needs to have its antennae pointed at the ground for signal transmission.”

Rockwell Collins is capable of producing more than 120 space wheels a year. Most of our customers require a standard “flight deck” of four wheels per satellite, said Artur Redeker, managing director of Rockwell Collins Germany.
“Every three weeks on average, somewhere in the world, a satellite goes up with our wheels,” said Redeker. “Communication satellites are the strongest drivers of our business.”

**Quality matters**

Because most satellites require multiple wheels, customers are extremely selective in choosing suppliers of space wheels for their unmanned spacecraft — and with good reason. Defective wheels can render the spacecraft inoperable. And once a wheel is in orbit, it can no longer be reattached, repaired or maintained.

“We have a very sensitive product, and that’s why we have strict quality management procedures in place,” said Kupferschmitt. “Because of the knowledge and experience of our employees, we have developed design and manufacturing processes to ensure our wheels perform to the highest standards.”

Space wheels often are designed for a customer’s specific mission needs. As the Messenger spacecraft was orbiting the planet closest to the sun, we had to prove to NASA, via analysis, that our space wheels could survive the extremely intense temperatures and radiation from the sun.

And to demonstrate the life cycle of our product to customers, there’s visual proof at our facility.

“We have wheels that have been running on the ground in life tests for more than 40 years,” noted Kupferschmitt. “In orbit, the standard requirement is a 15-year lifetime. We present this data to customers as an indicator of the quality of our product.”

Rockwell Collins entered the space wheels business in 2006 when TELDIX was acquired. TELDIX was a design and manufacturing company in Heidelberg formed as a result of a joint venture in 1960 between a military aviation supplier and a telephone company. The acquisition gave Rockwell Collins a local presence in Germany, thus increasing our opportunity to win in-country government aviation contracts.

It also came with an established space wheels business. Since 1974, 1,332 space wheels have been installed in 420 satellites. That represents 7,300 years of accumulated orbital operation. Today, the space business accounts for approximately 25 percent of sales at Rockwell Collins Germany.

**A shifting market**

A new market segment is opening up for space wheels. A number of companies are planning to establish worldwide broadband internet connectivity service over the next few years.

This type of broadband service will require a vast constellation of hundreds of low-orbiting satellites. As dozens of satellites will launch simultaneously, space wheels will need to be mass produced.

“This is quite different than what we are used to delivering. This is a more commercialized approach,” said Redeker. “The idea behind these satellites is that they will be low-cost, designed with a life cycle of five rather than 15 years and easier to replace.”

That means customers will expect low-cost wheels, he added. The challenge will be to come up with new ideas for a different design to meet these new mission objectives. But, it’s a challenge the team is ready to take on.

“We’re at the top of the list of global suppliers of space wheels when comparing years of orbital operation and experience,” said Redeker. “With our expertise in space, I believe we’ll have an advantage in this market. And we want to be part of the game.”

*By Nick Hassett*
Teaming up for international success

In-country business relationships are key for entry to global markets.

Earlier this year, Rockwell Collins agreed in principle to form a strategic alliance with an Abu Dhabi-based company that will enable us to be part of one of the largest military maintenance, repair and overhaul (MRO) centers in the world.

Under the alliance, Rockwell Collins and Advanced Military Maintenance Repair and Overhaul Center (AMMROC) will provide MRO services and avionics upgrades for a broad range of military aircraft.

Rockwell Collins will provide expertise in avionics MRO and our retrofit business, while AMMROC will offer its state-of-the-art facilities and strong relationships with military customers in the region. Operations are expected to begin in 2016 and will be based out of AMMROC’s new facility in Al Ain, United Arab Emirates.

Expanding our business in global markets often requires a business model that is different from those in the markets Rockwell Collins traditionally serves, according to Rich Eisenhart, vice president of Strategy. Forming long-term relationships with local companies is one of those differences.

One benefit from these relationships enables our company to meet legal offset requirements. When we win business in international countries, offsets require us to buy products or provide services with local companies. Rockwell Collins’ alliance with AMMROC enables us to meet our offset requirements in the UAE.

“It also gives us a seat at the table to try to win business with the Mubadala Development Company, a key aerospace and defense asset in the UAE that owns AMMROC,” said Eisenhart. “And it positions us to provide our service capabilities not only to the UAE, but to countries in the South Asia, Middle East and North Africa region — all of which are target areas of growth for Rockwell Collins.

Local capabilities wanted

In-country business relationships are necessary for Rockwell Collins to meet our strategic goal of having 50 percent of our revenue come from outside the United States by 2019, according to Colin Mahoney, senior vice president of International and Service Solutions. To date, approximately 44 percent of our revenue comes from international sales.

“We won’t be successful reaching this goal if we try to do it all by ourselves,” said Mahoney. “Many countries want to create local jobs and grow their
indigenous capabilities in areas such as manufacturing and engineering. It isn’t easy establishing strategic relationships that are meaningful for both parties, but it’s part of doing business internationally.”

For example, last year the prime minister of India launched a “Make in India” campaign to facilitate international investment, develop local skill sets and enhance the manufacturing infrastructure in that country.

Following the launch, Rockwell Collins signed a Memorandum of Understanding (MoU) with Zen Technologies, based in Hyderabad. The MoU calls for combining the capabilities of the two companies to offer industry-leading simulation and training solutions to Indian military customers. Just four months later at the Aero India 2015 air show, the two companies presented a jointly developed Rotary Wing Simulator.

Mahoney believes this relationship, along with our teaming agreement with TataPower Strategic Engineering Division to pursue wins in Indian software-defined radio programs, are maturing well. TataPower is one of the largest defense prime contractors in India.

“India has stringent requirements for international companies,” he said. “These relationships position us with opportunities to win some big programs.”

Benefits to both parties
For business relationships to be successful there must be a value proposition for both parties, said Alan Prowse, vice president and managing director, Americas and Global Services Business Development. Rockwell Collins looks for companies that can provide access to a market, fill a technology gap, provide a funding stream and align with our values. In turn, we offer a broad portfolio of innovative products and services, engineering skills to back our products and manufacturing capability.

“Our approach shouldn’t be that they need us more than we need them,” said

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**Commercial Systems**

**CHINA**
- JV — Rockwell Collins CETC Avionics Co. (communication and navigation systems)
- JV — ACCEL (Tianjin) Flight Simulation Co. (commercial flight simulation)
- JV — AVIC Leihua Rockwell Collins Avionics Co. (integrated surveillance system products)
- MoU — Hubei Ali Jiatia (airline seat maker — seats to feature PAVES™ On-demand IFE)

**Information Management Services**

**SOUTH KOREA**
- MoU—Incheon International Airport Corp. (enhanced passenger processing solutions)

**Government Systems**

**RUSSIA**
- MoU — Transas Aviation (forward-fit and retrofit civil helicopter avionics)

**INDIA**
- MoU — Zen Technologies (military flight simulation)
- Teaming agreement — TataPower Strategic Engineering Division (military software-defined radios)

**BRAZIL**
- MoU — Avionics Services (military avionics displays)

**Services**

**CHINA**
- JV — Collins Aviation Maintenance Services Shanghai Limited (commercial aircraft)

**SAUDI ARABIA**
- Strategic alliance — Advanced Electronics Co. (military aircraft)

**UNITED ARAB EMIRATES**
- Strategic alliance — Advanced Military Maintenance Repair and Overhaul Center (military aircraft)

**COLOMBIA**
- Cooperation agreement — Corporacion de la Industria Aeronautic Colombia S.A. (military aircraft)
The type of business arrangement we enter into depends on the particular situation and our business objectives. Agreements can range from a Letter of Intent (LoI) — which is typically non-binding — to a Joint Venture (JV), a binding, detailed agreement that creates a new company, according to Jeff MacLauchlan, senior vice president of Corporate Development.

“We often skip the non-binding agreement step in the United States,” he said. “But it can be an important phase in a number of international business cultures where it’s meaningful to have a document commemorating the parties’ intentions.”

With strategic alliances — like the one Rockwell Collins has with AMMROC — companies agree to take their complementary skills and resources and pursue market opportunities together.

“In JVs, each party’s obligations in forming and operating a new company are firmly established,” said MacLauchlan. “Rockwell Collins has a good framework with processes in place for forming JVs around the world.”

Protecting our Intellectual Property

Entering into any new business agreement comes with inherent risks. In many cases, the price of admission for doing business in international markets includes granting licenses to our Intellectual Property (IP) for the manufacture, repair and modification of product components.

Rockwell Collins has approaches and processes in place to protect the company’s IP, according to Bill Elkington, senior director of Intellectual Property Management. One is to provide access only to the Rockwell Collins IP that the other party needs to do its work.

“For example, we might share software source code for a module in a product suite that interfaces with an airplane,” he said. “It would enable a business partner to tailor our product to a particular aircraft, but in the process we keep our other related product IP to ourselves.”

In the case of Joint Ventures, Rockwell Collins establishes a chief technical officer — who is a Rockwell Collins employee — in the new company. This officer has direct control over how our IP is used and monitors the behavior of the JV around the protections that are built into the contract.

“Taking this extra step gives us a level of comfort that our IP is being protected and used as directed,” he said.

Commitment to global growth

Rockwell Collins is on track to meet our goal of 50 percent of revenue coming from outside the United States within the next four years. Our international sales total more than $2 billion and continue to grow by double digits.

Markets our company is focusing on for expansion include the BRIC countries — Brazil, Russia, India and China — along with the UAE, Saudi Arabia and South Korea. The next group of countries we’re looking to for growth opportunities include Colombia, Mexico, Poland and Japan.

Entry into these markets will involve finding and establishing new strategic business relationships, and Mahoney is confident we’ll accomplish that.

“Our global mindset and practices continue to evolve, and I applaud that,” said Mahoney. “We need to stay focused on our mission for international growth. It’s important to accelerating our growth and to our future.”

By Annette Busbee
IN THE NEWS

ARINC UrgentLink™ introduced for disaster communications – The first national disaster communications network for public safety was unveiled by Rockwell Collins in August. ARINC UrgentLink™ enables first responders and public health, public safety and critical industry officials to communicate with each other when traditional networks are destroyed or damaged.

Natural disasters such as Hurricanes Katrina and Sandy demonstrated the limitations of the current communications infrastructure. ARINC UrgentLink uses Federal Communications Commission (FCC) licensed radio frequencies authorized for disasters and Rockwell Collins’ proprietary High Frequency (HF) technology.

ARINC UrgentLink is the first disaster communications network capable of providing reliable communications coverage, even inside the impacted area.

Event celebrates delivery of the first GEN III F-35 Helmet Mounted Display System – Delivery of the first GEN III F-35 Helmet Mounted Display System (HMDS) was commemorated during a special event held last month in Cedar Rapids, Iowa.

Rockwell Collins, through its joint venture, Rockwell Collins ESA Vision Systems LLC, is providing advanced technology for warfighters with the F-35 HMDS. It provides pilots with unprecedented levels of situational awareness by displaying critical flight and tactical information on the helmet’s visor. It also enables them to “look through” the airframe.

U.S. Sen. Joni Ernst (R-Iowa) and Lockheed Martin and Rockwell Collins executives participated in the event that provided dignitaries and employees with the opportunity to wear an F-35 HMDS and “fly” the Lockheed Martin F-35 Lightning II demonstrator.

Rockwell Collins is part of a Collier award-winning team – The National Aeronautic Association (NAA) presented aviation’s highest honor to the Gulfstream G650 team — which includes Rockwell Collins — during a ceremony in June at Reagan Washington National Airport.

Gulfstream was awarded the 2014 Robert J. Collier Trophy for the “design and development of the G650 business jet family, which strengthened business aviation through significant technological advancements in aircraft performance, cabin comfort and safety.”

Rockwell Collins supplied the G650 with its Head-Up Guidance System (HGS™), the pilot control system and the horizontal stabilizer trim actuator.

Rockwell Collins acquires International Communications Group, Inc. – Rockwell Collins acquired Newport News, Virginia-based International Communications Group, Inc. (ICG) in August.

ICG is a leading provider of satellite-based global voice and data communication products and services for the aviation industry. Its product portfolio, which includes the latest generation of Iridium® satcom terminals and smart routers, is a highly complementary addition to our flight deck and cabin connectivity offerings.

Rockwell Collins unveils the new DF-500 for advanced direction finding capabilities – Building on the search and rescue (SAR) mission success of its predecessor, Rockwell Collins has introduced the new DF-500 Direction Finder. The system enables aircraft to receive and immediately locate activated 406 MHz Emergency Position-Indicating Radio Beacon (EPIRB) signals, enabling rescue crews to go directly to people in distress.

The next generation DF-500 direction finder replaces the DF-430 which serves government and military SAR operators in all domains worldwide.

Software-defined radio technology developed for the DF-500 enables higher sensitivity, immunity to interferences and stability of bearing indications.
horizons is going all digital

Dear Horizons Readers,

For a number of years, Horizons has been delivered to your home or workplace as a print magazine. Going forward, we see a number of advantages in presenting this same information in a digital and more interactive format. So this will be the last print issue of Horizons.

Rest assured, you will still be able to access the same great Horizons content you’ve come to expect — including in-depth stories, infographics and service anniversaries — on Rockwell Collins Online as well as through rockwellcollins.com. And you’ll be able to share it with family and friends with just a click of a button.

By serving up individual stories instead of a full magazine, information can be provided in a more timely manner and will always be available at your fingertips — at work and from home — even on your phone or mobile device. Plus, going digital is good for the environment.

We’re excited about the opportunities this new format offers — from engaging photography and videos to interactive graphic illustrations — to celebrate our successes and more easily share the strategic direction of our company.

We hope you enjoy this new approach to Horizons.

Look for our first digital stories early in FY’16.

David Yeoman
Publisher

Service anniversaries

Rockwell Collins offers congratulations to employees who have marked significant service award milestones in recent months.

CELEBRATING 50 YEARS

Dixie Dahl
In 1965, Dixie Dahl joined Rockwell Collins as a stockroom clerk. Fifty years and a number of positions later, Dahl serves as the executive administrative assistant for the Advanced Technology Center in Cedar Rapids, Iowa.

Dahl said she’s had great challenges and proud accomplishments at Rockwell Collins. She was an integral part of the formation of the Administrative Effectiveness Team in 1990. And, today, she continues to play a key role in the coordination and execution of the 10X Innovation Fairs and the Rockwell Collins Enterprise-wide Innovation Fairs.

50 YEARS

JUNE
Dixie L. Dahl
Claude L. Howell

JULY
Ronay A. Divis
Hugh (Pat) Guido
Dorance M. Porter

35 YEARS

JUNE
Edna D. Aigorovasquez
Dale M. Braun
Theodore J. Herbst
John M. Jump
Lora J. Mayland
Debra K. Schutte
Jan E. Treise

JULY
Andrew T. Flach
August
Roger L. Patterson
Don A. Stulken
Cynthia A. Tippett
Perry J. Tormey

30 YEARS

JUNE
Jeffrey P. Ausman
Dean A. Daniels
Linda C. Dobbs
Gerrard Faure
Gregory H. Gemmer
David E. Gray
Chris A. Jameson
Jeffery C. Rambo
Tiera Tinsley
Jerry J. Winter

JULY
Daniel Audibert
Donald J. Barrett
Wanda E. Harris
Lisa M. Keel
Melvin L. Martinez

AUGUST
Barbara J. Bator
Michael D. Cole
Myrna A. Foltz
James A. Giglio
Louis C. Hong
Angelina H. Simkins
Gail M. Smith
Diane M. Wilder

50 YEARS

JUNE
Allan J. Meyer
John E. Mueller III
Daniel F. Patterson
Barbara A. Pederson
Thomas E. Reberry
Mary Ann Schmit
Edward A. St. John
Joseph J. Sullivan
Christopher J. Swanke
Karen M. Thinnes
Catherine S. Wilhelm
Mcneal
Rick A. Williams

JUNE
Gary M. Althoff
Donald J. Altschwager
Gary L. Bachman
John R. Bader
Carl L. Barnhart
Jeanne M. Beachler
Richard A. Campbell
Ricardo Carrillo
Guzman
Jean-Michel Cluzel
John J. Day

20 HORIZONS • 2015
Lenny Howell has been part of Rockwell Collins’ mechanical assembly and installation teams for nearly all of his 50 years with the company. He began his career in 1965 as a mechanical assembler and, today, holds the title of senior technical support specialist in our Richardson, Texas, facility.

Howell has had many memorable moments throughout his career including taking part in the installation of the first WSC-6 Antenna on the USS Mount Whitney command ship. Another was being part of the team that removed the navy shipboard satellite communication system from the USS LaSalle to install it on the USS Coronado in Manama, Bahrain.
Challenge yourself to understand all aspects of your job as it relates to the work flow and Rockwell Collins and strive to improve it.
CELEBRATING 40 YEARS

Don Stulken
Cedar Rapids, Iowa
Start date: August 1975

Original position: Engineer/Scientist I, Government Avionics Division

Current position: Pr. Engineering Manager, Government Systems Architects and Experimentation

What is your proudest accomplishment at Rockwell Collins?

On multiple occasions, I have had the great fortune to contribute to teams that have pursued, won and successfully executed critical programs. I was then able to watch as those programs produced solutions that saved lives or altered the path of world history.

Willy Setiawan
Thomas S. Shaver
Larry D. Sills
Meropi Sias
Stephanie D. Smith
Bruce G. Snyder
Gregory M. Spak
Brent M. Gargano
Jay B. Gallagher
Brent A. VanWey
Franklin E. Vaughn
Mark Walkington
Michelle L. Wanttie
Benjamin M. Wiley
Chad M. Williams
Linda G. Williams
John W. Wing
James L. Wingert Jr.
Martin J. Wittrock
Tiffany J. Wittrock
Steven J. Clayton
Nathan A. Coates
Christophe Courtade
Dewayne E. Curry
Candace L. Dearmore
David A. Downing
Tony B. Duong
Jennifer A. Emond
Pascal Enjalbert
Jay B. Gallagher
Brent M. Gargano
Chris A. Goudy
Kevin C. Gray
Timothy N. Hammond
Earle W. Harrison
Ian S. Harrold
Teresa C. Haven
Paulette M. Hearn
Nathan L. Hoffman
Jeffrey R. Huffman
Drifa Jelloul
Lucan M. Jones
Joy L. Klaaßen
Wojciech Kossowski
John R. Laufer
Philippe Lievin
John W. Lord
Cecilia Elizabeth Loya Martinez
Lorena J. Madden
Cheri A. Manternach
Trent D. Martin
Sherrie L. Maschmann
Jerome Mercadal
Brent S. Mohasci
John Monto
Mark G. Ney
Violette P. Nivera
Timothy A. Pearson
Thomas E. Pederson
Ian L. Pratt
Richard M. Rademaker
Christie L. Reynolds
Karla Ivonne Rivera Guillon
Robert E. Savage
Jeremy Scarpetta
Damién M. Schmitt
Dennis A. Secours
Ron J. Sellner
Eric C. Sellon
Philippe Serre
Michèle L. Steepleton
Katie E. Sullivan
Thomas B. Susen
Jason E. Swartzendruber
Adriane R. Van Auker
Robert M. Varastiqui
Kimberly S. Ward
Mary K. Waterhouse
Elizabeth A. Wehner
Hailin Wen
Barbara A. Wiley
Angela R. Wilhelmi
Kevin J. Wilkinson
Todd M. Winchester

JULY

Randy P. Ackerman
Margurite V. Arnold
Roderick B. Aubrey
Alan Bachmeier
Robert S. Bahr
Derek M. Balavac
Philippe Barret
Richard Bernis
Chrystal D. Berstler
Christina R. Berthel
Michael Blackford
Timothy A. Brown
Tyler W. Bushnell
David V. Cheaney
Xuan Chen

Enid Otun
Jason R. Owen
Tami S. Plessl
Mathieu Prevot
Martha Cindia Reyes Carrillo
Brian S. Rodenbaugh
Jose Benito Rojo Meza
Steven J. Schaumb
Pamela A. Schneider
Amy M. Short
Jerry W. Snyder
Tamra K. Spokelfer
Kelly L. Storey
Jeffrey S. Thomas
Jason J. Valetin
Levi D. Van Oort
Phat Van Truong
Yanko Videv
Larry Whithby
Linda M. Wiley
Wendy S. Willenbring
Maria Z. Winters
Maria Wojciechowski
Larry R. Wright
Belinda Wright

MAY

Paul D. Albrow
Matthew J. Barth
Penny A. Bauer
Gregory G. Baxter
Amy E. Beer

Apr 10 YEARS

VOLUME 20 • ISSUE 3
What piece of advice do you have for new employees?

Take advantage of opportunities to learn new technologies.
CELEBRATING 35 YEARS

Jeff Rambo
Cedar Rapids, Iowa

Start date: June 1980

Original position: Software Engineer, GPS Phase IIB

Current position: Systems Design Engineer, Modernized GPS

What is your proudest accomplishment at Rockwell Collins?

My proudest accomplishment was being part of the Precision Lightweight GPS Receiver (PLGR) design team when we won a production contract by passing government qualification tests and providing the lowest production costs among the competition.

Eric J. Loren
Maribel Lorente
Kok K. Low
Akhila Machnoor
Kristopher L. Martin
Jacob R. Mauermann
Andre F. Mitchell
April J. Monk
David C. Mosteller
Rufus Mullins III
Primus G. Mutasingwa
Tin T. Nguyen
Loc V. Nguyen
Daniel F. Ohalloran
Satyananda Patnaik
Jeffrey J. Payne
Anne Sophie Piloz
German Pineres
Linda M. Pullen
Jane M. Quint
Robert G. Quinton
Donald J. Rachels
Josefina Ramirez
Godinez
Rebecca Raymond
Hari Prakash Reddy
Edward W. Richman
Rachel M. Ries
Rodney J. Rivers
Daniel L. Robinson
Krstyna T. Rodriguez
Daniel B. Roggendorf
Thomas V. Rooney
Hao Ruan
Conrad C. Rustenburg
Cameron H. Sadler
Mohit Saini
Stephen J. Schmidt
Hannah E. Schmidt
Madhavan Sekar
Monica A. Severson
Scott M. Severson
Christine L. Shaw
Randall S. Shaw
Clayton L. Shotwell
Abdul A. Siddiqui
Renee L. Simon
Timothy Sitkauskas
Timothy W. Smith
Craig A. Sossi
Maricela Sotelo Moya
Bhanuprakash Sunkara
Lisa M. Trujillo
William F. Tuscher
Landon J. Tweeton
Juan Valenzuela
Deepthi Vemulapalli
Salvador Villalta
Lucas J. Villhauer
Katarzyna S. Wagner
Stephen M. Wagner
Gary L. Webb
Christopher J. Wilhelm
Kevin C. Williams
Joshua J. Wilson
Sherif T. Youssef
Wayne E. Zikus

JULY

Sandro Almonte
Bara Alyusuf
Kyle D. Andrews
Frederick J. Babb
Wanda K. Baez
Radha Balasubramanian
Eric P. Bauer
Mark Bishop
Ceyon Brock
Stephanie C. Buonadonna
James M. Byington
Christopher A. Carle
Rhonda M. Causey
Brandon M. Cady
Kyle S. Cryderman
Andrew A. Dibble
Lita M. Donaldson
Jordan R. Englert
Melissa K. Erdahl
Brian A. Fletcher
Shantelle L. Franzen
Clara E. Garman
Michelle L. Gericke
Travis J. Goldberg
Arpit Gupta
Marie S. Hauke
Clark D. Havran
Linda J. Hobbs
Ricky L. Hosler
Martin J. Jennings
Angel Jimenez
Jeffrey Johnson
Kevin P. Johnson
Roberto Juarez
Guerrerrama
Qusay A. Kammona
Tysn D. King
Patricia A. Koch
Nicole M. Koch
Iranna Konasirasagi
Jeffrey E. Laban
Lucas T. Lampe
Alan Lantigua
Priscila Lazaro
Venegas

Anna Maria Leonard
Matilda G. Livadaru
Brandon L. Locklear
Marvin R. Lovato
Jeremy D. Luerkens
Richard M. Matus
Richard L. McQueen
George S. Mellado
Gregory M. Mockensturm
Chad B. Odgers
Casey M. O’Donnell
Suman K. Onteru
Brian D. Pawlowicz
Jeffrey J. Penington
JoAnne Powers
Anupriya Prakash
Leslie M. Prior
Ravi Shanker Rama
Moorthy
Lisa A. Rapaglia
Sandeep Sajja
Nicolas Sanchez
Stan R. Sandoval
Noboru Satowaki
Joshua M. Sevcik
Joshua D. Smith
Brian P. Stapley
Anthony R. Starr
Aaron M. Studwell
Jacob G. Teague
Cecile Terrat
Kiran Thallapaka
Angela C. Thurman
Gail Smith
Cedar Rapids, Iowa
Start date: August 1980
Original position: Software Engineer, GPS Phase IIB
Current position: Program Manager, Airborne Solutions Military Transports
What is your proudest accomplishment at Rockwell Collins?
My proudest accomplishment was completing my first C-130 avionics system upgrade and getting to sit in the pilot seat of the completed aircraft.
Retirees

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

<table>
<thead>
<tr>
<th>Employee Name</th>
<th>Location</th>
<th>City, State</th>
</tr>
</thead>
<tbody>
<tr>
<td>William K. Arthur Jr.</td>
<td>Ellen L. Coleman</td>
<td>Marion, Iowa</td>
</tr>
<tr>
<td>Lawndale, California</td>
<td>David C. Heldt</td>
<td>Ely, Iowa</td>
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<tr>
<td>Douglas L. Bader</td>
<td>Steven L. Herda</td>
<td>Hopkinton, Iowa</td>
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<tr>
<td>Cedar Rapids, Iowa</td>
<td>Patti R. Marconi</td>
<td>Cedar Rapids, Iowa</td>
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<tr>
<td>Richard Balvanz</td>
<td>Marfaret A. Hoff</td>
<td>Annapolis, Maryland</td>
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<tr>
<td>Lisbon, Iowa</td>
<td>Randy E. Maring</td>
<td>Robins, Iowa</td>
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<tr>
<td>Jan M. Barcz</td>
<td>William A. Holden</td>
<td>Las Vegas, Nevada</td>
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<tr>
<td>Central City, Iowa</td>
<td>Nancy K. Marsh</td>
<td>Cedar Rapids, Iowa</td>
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<tr>
<td>James P. Barcz</td>
<td>Joseph T. Culwell</td>
<td>Troy Mills, Iowa</td>
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<tr>
<td>Central City, Iowa</td>
<td>Gary W. Jones</td>
<td>Garland, Texas</td>
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<tr>
<td>Jan M. Barcz</td>
<td>Helen T. Dains</td>
<td>Amana, Iowa</td>
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<tr>
<td>Central City, Iowa</td>
<td>Roslyn Jones</td>
<td>Sanford, Florida</td>
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<tr>
<td>Debra L. Bernier</td>
<td>Eugene E. Eilers</td>
<td>Beaverton, Oregon</td>
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<td>Palm Bay, Florida</td>
<td>Gary D. Krause</td>
<td>Cedar Rapids, Iowa</td>
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<td>Peter H. Brochard</td>
<td>Steven C. Fairbanks</td>
<td>Cedar Rapids, Iowa</td>
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<td>Cocoa, Florida</td>
<td>Michael E. Kitson</td>
<td>Marengo, Iowa</td>
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<tr>
<td>Barry A. Brown</td>
<td>John H. Mohr</td>
<td>Marion, Iowa</td>
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<tr>
<td>Cedar Rapids, Iowa</td>
<td>Debra S. Murphy</td>
<td>Iowa City, Iowa</td>
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<td>Paul A. Cardinale</td>
<td>Michael D. Fossum</td>
<td>Clutter, Iowa</td>
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<tr>
<td>Hayward, California</td>
<td>Michael A. Leclere</td>
<td>Cedar Rapids, Iowa</td>
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<tr>
<td>James A. Carollo</td>
<td>Mary A. Kurovski</td>
<td>Cedar Rapids, Iowa</td>
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<td>Cedar Rapids, Iowa</td>
<td>Nancy J. Lee</td>
<td>Cedar Rapids, Iowa</td>
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<tr>
<td>Douglas D. Carpenter</td>
<td>Keun M. Lee</td>
<td>Cedar Rapids, Iowa</td>
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<td>Cedar Rapids, Iowa</td>
<td>Vicki A. Lester</td>
<td>Anamosa, Iowa</td>
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<tr>
<td>William C. Chandler Jr.</td>
<td>Richard D. Hanson</td>
<td>Toddville, Iowa</td>
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<td>Marion, Iowa</td>
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<tr>
<td>Debra L. Charlier</td>
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<td>Marion, Iowa</td>
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<td>John C. Cirkl</td>
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<td>Marion, Iowa</td>
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<tr>
<td>Dan J. Claffin</td>
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<tr>
<td>Cedar Rapids, Iowa</td>
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</tr>
</tbody>
</table>

Pamela J. Sullivan
Melbourne, Florida

Maureen L. Tanury
Toddville, Iowa

Peter E. Tilly
Cedar Rapids, Iowa

Jan E. Treise
Melbourne, Florida

Steven R. Waller
Cedar Rapids, Iowa

George D. Weihrach
Aguas de Del Sur, Spain

Jack C. Werling
Mechanicsville, Iowa

Bryan N. Wesner
Marion, Iowa

David M. Whitmer
Union, Michigan

Rick A. Williams
Coralville, Iowa

Peggy H. Wilson
Oceanside, California

Cathy R. Yoder
Vinton, Iowa

Delmer H. Yonts
Grant Valkaria, Florida

John A. Young
Cedar Rapids, Iowa

Deann M. Zenor
Cedar Rapids, Iowa
In memoriam

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

- Eileen J. Algaze*
  Monarch Beach, California
  May 9, 2015

- Steven R. Ball*
  Cedar Rapids, Iowa
  June 17, 2015

- Todd A. Biegler
  Marion, Iowa
  May 11, 2015

- Arthur J. Blonker*
  Rialto, California
  May 26, 2015

- Orville S. Brightwell Jr.*
  Richardson, Texas
  June 13, 2015

- Dale W. Corbett*
  Cookeville, Tennessee
  March 2, 2015

- Mary L. Crawford*
  Long Beach, California
  June 8, 2015

- Edward Durbin*
  PT Richmond, California
  April 12, 2015

- Thomas J. Eldridge
  Allen, Texas
  April 12, 2015

- William A. Engle*
  Desert Hot Springs, California
  July 2, 2015

- Rodney L. Hollon*
  Alger, Ohio
  March 10, 2015

- Patrick J. Hope*
  Laguna Woods, California
  July 5, 2015

- David L. Huss*
  Melbourne, Florida
  March 21, 2015

- Barbara A. Jensen*
  Marion, Iowa
  July 10, 2015

- Larry D. Johnson
  Dallas, Texas
  May 20, 2015

- William S. Jones
  Alameda, California
  May 1, 2015

- Katherine M. Kelley
  Plano, Texas
  April 14, 2015

- Robert H. Kettledon*
  Corona, California
  April 11, 2015

- Wayne S. Kranz*
  Oshkosh, Wisconsin
  July 3, 2015

- Anna C. Lerma*
  El Paso, Texas
  June 9, 2015

- Barbara J. Riddle*
  Cedar Rapids, Iowa
  July 15, 2015

- William A. Lightle Jr.*
  Newark, Ohio
  May 28, 2015

- Ruby D. Matthews*
  Cedar Rapids, Iowa
  May 15, 2015

- Michael E. McCoy*
  Newbury Park, California
  March 7, 2015

- Judy S. Ogawa
  Cerritos, California
  June 10, 2015

- Ellis Prater*
  Kenton, Ohio
  May 19, 2015

- James L. Ramsey*
  Cedar Rapids, Iowa
  April 6, 2015

- James L. Rayner*
  Collinsville, Texas
  April 12, 2015

- Kyle W. Rhoades
  Houston, Texas
  May 19, 2015

- Ralph D. Ricks*
  Huntington Beach, California
  May 5, 2015

- Leonard C. Sweeney*
  Winchester, Kentucky
  April 10, 2015

- Lonny D. Tajil*
  San Jose, California
  June 2, 2015

- Thu N. Tran*
  Garden Grove, California
  May 22, 2015

- Fritz K. Tuchel*
  Cocoa, Florida
  May 26, 2015

- Roger L. Vickers*
  Dresden, Ohio
  June 15, 2015

- Winston W. Walker*
  Irvine, California
  March 26, 2015

- Milford L. Watson*
  Richland, Iowa
  March 13, 2015

- Bonita C. William Selle
  Cedar Rapids, Iowa
  June 10, 2015

- Tommy J. Wood*
  Manchester, Iowa
  June 5, 2015

*Retirees
Harness the power of aviation’s information age.

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