

# Shared Horizons



A Biannual Publication of the US-India Aviation Cooperation Program



## Inside



Message from Co-chairs

ACP in Action:  
ACP Members engage  
at Aviation Security Workshop

ACP Members  
Meet USTDA Director Lee Zak

Shared Horizons Over The Years

ACP Board  
Elects New Leadership Team

Oshkosh Corporation Establishes  
Operations in India

Safe, Fast And Efficient Screening

Cessna Turbo Skylane JT-A™  
Takes First Production Flight



# US-INDIA AVIATION COOPERATION PROGRAM

## US Government



John A. Volpe National Transportation Systems Center  
U.S. Department of Transportation  
Research and Special Programs Administration

## US Industry



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SUPER AWOS



**VaughnCollege**  
of aeronautics and technology



**CJ Collins**  
ACP Co-chair (Government) &  
FAA Senior Representative  
to South Asia



**Yash Kansal**  
ACP Co-chair (Industry) &  
Country Manager-India/SAARC  
Oshkosh Corporation (India)

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*The recently held organizational elections have redefined and reinvigorated the U.S. – India Aviation Cooperation Program. Thanks mainly to the wholehearted participation of the ACP members, we have witnessed a smooth and orderly transition to the new leadership of the ACP. Boeing, GE, Honeywell, Oshkosh and Raytheon were elected to serve as the Executive Committee of the ACP. Plus, Oshkosh was elected by ACP members to serve as the Co-Chair (Industry).*

*The newly-elected Executive Committee hosted a working lunch, on the margins of the U.S. – India Strategic Dialogue, to brief the visiting USTDA Director Leocadia Zak on the capacity enhancement projects proposed by the ACP. We are happy to report that the event was successful and fully met our objectives.*

*Along with the publication of this edition of Shared Horizons magazine, the ACP website is being upgraded and the staffing of the ACP Secretariat is in progress.*

*The main thrust of our cooperation program remains:*

- ✈ Maintaining high standards of business conduct in fostering partnerships;*
- ✈ Providing world-class training opportunities to GOI entities;*
- ✈ Modernizing air navigation infrastructure to increase throughput and reduce environmental impact while meeting the overarching goal of enhancing aviation safety; and*
- ✈ Delivering on commitments made to our partners, industry members and other stakeholders.*

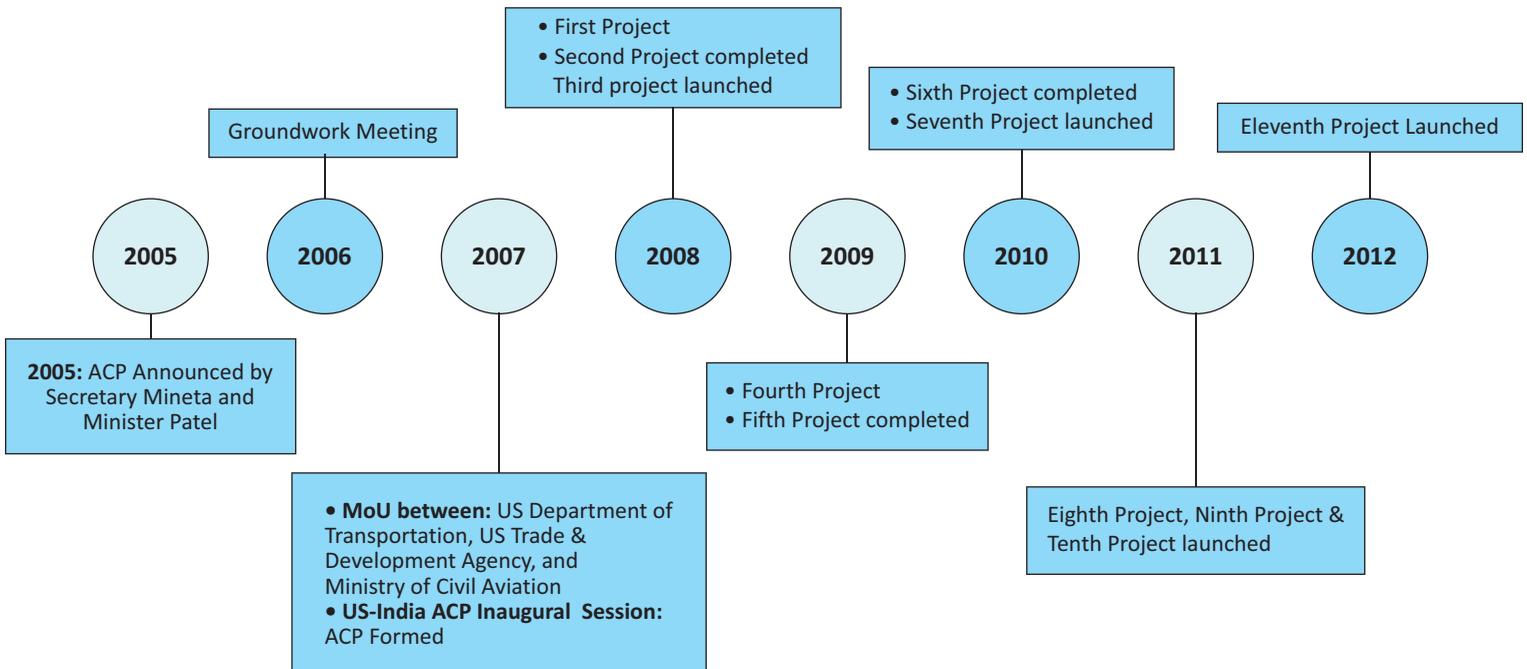
*We seek to expand our efforts to rethink ACP's role in the modernization of India's aviation systems.*

*There is much more ACP can do to serve India's growing aviation market by incentivizing the deployment and use of U.S. technologies, solutions and services offered by the entire spectrum of ACP companies.*

*You can be assured that we will continue to approach these efforts with determination, tenacity, innovation and passion.*



## HISTORY



## USTDA Grant Approvals January – June 2013

- ✈ A grant to the Airports Authority of India (AAI) for a Performance Based Navigation Project to assist India in adopting technology to increase aviation airspace capacity and energy efficiency. This project will be undertaken by Naverus, a GE subsidiary.
- ✈ A grant to DGCA for second phase of Technical, Management, and Operational Development Training (TMODT) Program. The program will offer industry-based training to assist India in developing regulatory and safety capacities. U.S. companies Hi-Tec, Pratt and Whitney, Honeywell, and Universal Weather and Aviation have committed to support the program.
- ✈ A grant to the Airports Authority of India (AAI) to support a feasibility study for the implementation of the Jeppesen’s Total Airspace and Airport Modeler (TAAM) system. TAAM is a gate-to-gate simulator of airport and airspace operations that creates 4D models of the aviation facilities to facilitate decision-making, planning and analysis.



## Mission

The U.S-India Aviation Cooperation Program (ACP) was established in 2007 as a public-private partnership between the U.S. Federal Aviation Administration (FAA), the U.S. Trade and Development Agency (USTDA), other US Government agencies and U.S. Companies.

The ACP supports the growth of the Indian civil aerospace sector by working directly with the Government of India (GOI) to identify and execute projects that encourage collaborations between US and Indian stakeholders, in the area of aerospace technology and best practices.

## Objectives

- ✈ Promote greater engagement between US and Indian Government agencies and industry to enhance civil aviation in India.
- ✈ Undertake projects that advance Cooperation in domains such as aviation safety, security, regulatory oversight and management.
- ✈ Provide training and technical assistance to accelerate excellence in aviation operations.
- ✈ Within India, increase awareness of, and facilitate access to, US expertise, technology and best practices to assist India's aviation growth.

## Focus Areas

- ✈ Air Traffic Management Modernization
- ✈ Airspace & Airport Analysis, Development and Planning
- ✈ Aviation Support Industry Development
- ✈ Aviation Human Resources
- ✈ Aviation Safety
- ✈ Aviation Security



# ACP Members Meet USTDA Director Lee Zak to Advance Bilateral Civil Aviation Cooperation

On June 25, 2013, U.S. – India Aviation Cooperation Program (ACP) Board Members met with Leocadia I. Zak, Director, U.S. Trade and

Dialogue in New Delhi. During the Strategic Dialogue, USTDA highlighted the breadth of its engagement in the Indian market and the tangible

members, Director Zak announced USTDA's continued support to ACP through a grant to the Airports Authority of India (AAI) for a Performance Based Navigation (PBN) Project and also approval for a Technical, Management, and Operational Development Training (TMODT) Program with the Directorate General of Civil Aviation (DGCA).



ACP Board Members with Lee Zak, Director, USTDA

Development Agency (USTDA) to discuss upcoming projects to advance civil aviation cooperation between the United States and India.

Director Zak was visiting New Delhi to participate in the U.S.-India Strategic

outcomes that are being achieved - from expanding economic development in India to increasing exports of goods and services from the United States to meet India's needs.

During the meeting with ACP

" USTDA has funded three aviation summits to date, as well as several technical workshops, technical assistance and feasibility/pilot activities within the ACP." stated Director Zak. USTDA and the Government of India, in cooperation with the ACP, will soon sponsor the fourth aviation Summit during October 29-31, 2013 in Washington, DC. Senior aviation leadership from the US and Indian governments and public / private sector will be in attendance at the event. Director Zak encouraged ACP members to actively participate in the upcoming Summit.

The ACP is in its sixth program year with



Yash Kansal, ACP Co-Chair presenting a memento to Lee Zak.

“The Aviation Cooperation Program mirrors the long-term commitment of U.S. Government agencies as well as the leading lights of U.S. industry to bring in advanced technologies, solutions and provide trainings to contribute to the modernization of India's air traffic management system and scale up regulatory capacity to foster a safe air transportation system,” stated Ajay Kumar, who was speaking on behalf of the U.S. Government Chair and South Asia Senior Representative of the Federal Aviation Administration.

Also, present at the occasion were Margaret Hanson-Muse, Minister-Counselor for Commercial Affairs, US Embassy, Henry Steingass, USTDA Regional Director and Atul Vyas, Acting Secretary General, Indo-American Chamber of Commerce.

a current membership of 25 companies and growing. The members include Boeing, Beechcraft Corporation, Cessna, CH2M Hill, FedEx, GAMA, GE, Harris, Hi-Tec Systems, Honeywell, IBM, L&B, L3 Security & Detection Systems, Metron Aviation, Moog, Oshkosh Corporation, ProMark Associates, Raytheon, SuperAwoS, Supreme Aviation, TATI, United Technologies, Universal Aviation, UPS & Vaughn college

to India thereby strongly supporting the economic and trade cooperation pillar of the US – India strategic dialogue”.

Speaking on the occasion, Yash Kansal, Country Manager, Oshkosh Corporation and Co-Chair (Industry), ACP said “ the ACP member companies with combined global annual turnover in excess of \$ 500 billion collectively contribute more than 10 percent of overall US exports



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# ACP Board Elects New Leadership Team

The ACP had its first management elections in May 2013 when all the Board Members voted to elect an Industry Co-Chair and Executive Committee members.

Bios of the Co-chairs & Executive Committee Members.



## CJ Collins

ACP Co-chair (Government) & FAA Senior Representative to South Asia

CJ Collins serves as the FAA Senior Representative in New Delhi covering South Asia, and has recently returned to the FAA after serving eight years with the International Civil Aviation Organization (ICAO) in Montreal. CJ performed ICAO safety oversight audits in 53 countries, including 30 as audit Team Leader, and has worked

extensively within the Asia Pacific region. Prior to her ICAO posting, she served as the FAA program manager for the DOT's Safe Skies For Africa initiative. Her prior FAA positions include regional operations specialist in the FAA's Northwest Mountain Region and principal operations inspector in Portland, Oregon. She holds five FAA certificates: Airline Transport Pilot, Flight Engineer, Aircraft Dispatcher, Certified Flight Instructor, and Advanced Ground Instructor. Her flying experience includes flight instruction, air taxi operations, air ambulance, and flying B-727 for an international airline. She holds a Master of Aeronautical Science degree from Embry Riddle Aeronautical University. Before transitioning to aviation, CJ received a Bachelor of Journalism degree from the University of Texas and maintained a career in journalism, including positions with Hearst Publications in New York. CJ enjoys art, photography, and travel, and has lived and worked in Ecuador, Mexico, Switzerland, Saudi Arabia, Brazil, and Canada.



## Yash Kansal

ACP Co-chair (Industry) & Country Manager – India/SAARC Oshkosh Corporation (India)

Yash Kansal was appointed Country Manager for India/SAARC at Oshkosh Corporation's fully owned Indian subsidiary, Oshkosh India, in May 2012. Yash leads the Oshkosh India team and is responsible for the company's entry, market development, and sales growth in the SAARC region. Oshkosh Corporation, a US \$8 billion Fortune 500 Wisconsin-based company, is the world's largest manufacturer and marketer of access equipment, specialty vehicles and truck bodies for the primary markets of defense, airports, construction, and fire & emergency.

Prior to joining Oshkosh, Yash worked for fifteen years in the U.S. Department of Commerce as Programs Director/Senior Commercial Specialist and was based at the American Embassy in New Delhi.



Yash served as the Country Coordinator for USTDA, EXIM and OPIC during 1997-2006 and was the country lead for aerospace and defense sectors during his entire career at the US Embassy. Yash was felicitated with several Franklin, Meritorious Honor and other awards from successive US Ambassadors in recognition of his outstanding support to US companies and for advancing US interests in India.

Yash started his career with Swedish multinational Tetra-Pak and has also worked for British Consulting firm Mott McDonalds and Indian conglomerate Dalmias prior to his assignment at the US Embassy.

Yash earned his Bachelor's degree in Business Studies from the University of Delhi, and Post Graduation in Management from IRMA. In addition, Yash holds a Certificate in Business Counseling and Export Assistance from the Commercial Service Institute, Washington DC. Yash also serves on AMCHAM's Northern Region Executive Council.



**Pratyush Kumar**  
Vice President, Boeing International  
President, Boeing India

Pratyush Kumar was appointed vice president of Boeing International and president of Boeing India in December 2012. Based in New Delhi, Kumar is Boeing's senior in-country leader and leads development and implementation of the company's strategy in India. He aligns business priorities, expands Boeing's presence, and develops and enhances local relationships and partnerships with business and government stakeholders in the region. He reports to Shep Hill, president of Boeing International and senior vice president, Business Development and Strategy of The Boeing Company.

Before joining Boeing, Kumar was the president & CEO of GE Transportation, South Asia. He also served as the president & CEO of GE Infrastructure in India which included Aviation, Energy, Water, Oil & Gas and Transportation businesses of GE in the region. Kumar first joined GE in 2003 in the United States and worked for GE Transportation as the leader for global marketing.

Prior to GE, he founded a Boston based biotech company in 2002. Kumar started his career in 1994 as a consultant with McKinsey & Company, working in their Atlanta and New Delhi offices.

Kumar is the co-chair of Federation of Indian Chambers of Commerce and Industry's (FICCI) Infrastructure Committee. He serves on the national

executive board of the American Chamber of Commerce (AMCHAM) India and as a member of The Energy & Resources Institute's (TERI) advisory board.

Kumar earned a bachelor's degree in mechanical engineering from the Indian Institute of Technology Delhi and a doctorate in materials engineering from the Massachusetts Institute of Technology.



**Nalin Jain**  
President and CEO, South Asia  
GE Transportation  
GE Aviation

Nalin Jain leads GE's Transportation and Aviation businesses in South Asia region.

He joined GE Aviation in 2005 as Director Sales and was promoted to lead the overall business in 2008. Under his leadership, the Aviation business made significant gains in the region and established a strong footprint for GE. He assumed additional responsibility for GE Transportation's business in India in 2012.

Prior to GE, he was Director Global Partnerships with Bombardier Inc



focused on business development and strategy in India and SE Asia. In this role he was instrumental in getting Bombardier engaged with this region including completion of some significant transactions. He started his career with French engineered materials company Saint-Gobain occupying different positions of increasing responsibility in sales & marketing, business development and general management.

Nalin holds a Bachelor's degree from NIT, Surat and an MBA for the Indian School of Business, Hyderabad.

Nalin is a member of various infrastructure related industry associations and committees and provides his inputs on these sectors on a regular basis.



**Pritam Bhavnani**  
President, Honeywell  
Aerospace – India

Pritam Bhavnani was named President, Aerospace-India in June 2010. In this role, he provides strategic direction for aerospace and defence operations and initiatives in India.

Mr. Bhavnani brings a strong background in strategic global leadership to this role, having previously served as Vice President of Customer & Product Support for Honeywell Aerospace's Air Transport & Regional (AT&R) business since 2007. Responsible for meeting the service and support needs of airlines around the world, Mr. Bhavnani and his global team brought increased focus to international customers in expanding markets including India, China and the Middle East. Additionally, he was responsible for strategy and execution of Entry into Service for the Airbus A380 aircraft.

Mr. Bhavnani began his tenure with Honeywell in 1996 as a Manager of Finance for Product Cost, and served in a variety of progressively responsible roles in Finance leadership until becoming the Director of Financial Planning & Analysis for the Consumables Solutions (CS) business segment in 2003.

At CS, Pritam led the business wide effort to consolidate multiple acquisitions, IT systems and locations.

Following his work in CS, Pritam served as Director of the Aerospace Information Warehouse, then Director of Information Technology (IT) for the Finance function, where he developed common IT tools and processes to support meeting key customer

objectives. Prior to assuming his role with Customer and Product Support, he served as Director of Program Management in AT&R, where he was responsible for developing the tools and processes to ensure product development programs meet customers' requirements for cost, schedule and quality.

Prior to joining Honeywell, Pritam was Vice President of Turbine Services/Installation Parts & Services for Siemens Power Corporation.

Pritam earned a Bachelor of Technology degree in Mechanical Engineering from the Indian Institute of Technology in Kharagpur, India. He also received a Master's degree in Mechanical Engineering from Marquette University in Milwaukee, Wisconsin, and a Master's of Business Administration from the University of Phoenix. He is Design for Six Sigma (DFSS), Project Management Professional (PMP) and Black Belt certified.



**Nik Khanna**  
Country Director – India  
Global Business Development  
Raytheon International Inc.



Nik Khanna is the country director for Raytheon's business development and marketing efforts in India. Raytheon Company (NYSE: RTN), with 2012 sales of \$24 billion and 68,000 employees worldwide, is a technology and innovation leader specializing in defense, homeland security and other government markets throughout the world. Raytheon's global headquarters is in Waltham, Mass.

Khanna is responsible for Raytheon's strategic relationships with Indian customers and teaming partners. He serves externally as the primary interface for Raytheon's senior customers and U.S. Embassy leadership and internally as the senior voice of the customer to ensure that key pursuits are identified and won.

Before joining Raytheon, Khanna was an Associate Vice President at The Cohen Group, advising defense and aerospace industry clients on strategic and tactical planning, business development, government relations and partnerships in India and Southeast Asia.

Prior to that role, Khanna was the Director of Aerospace, Defense & Security / Civil Aviation at the U.S. - India Business Council, leading policy and customer advocacy initiatives for the U.S. defense and aerospace industry. He began his career with

American Management Systems, Inc (now CGI) in Boston, Mass., where he held key positions in business analysis and strategy, business process reengineering and change management – providing IT and systems engineering solutions to some of the largest U.S and international financial institutions.

Khanna is a graduate of James Madison University, with a bachelor's degree in computer information systems.

The U.S-India Aviation Cooperation Program (ACP), a public-private partnership between the U.S. Trade Development Agency (USTDA), the U.S. Federal Aviation Administration (FAA) and U.S. aviation companies, has been established to provide a forum for unified communication between the Government of India and U.S. public and private sector entities in India. The ACP is designed to work directly with the Indian Government to identify and support India's civil aviation sector modernization priorities.



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# Safe, Fast And Efficient Screening

Contributed By : L3 Security & Detection Systems

In a world of growing security risks, it's imperative to rapidly detect potential threats. Airports need to screen large numbers of people and baggage for a very broad set of threats, which presents a challenge for operators. Security is paramount and must be done quickly and efficiently.

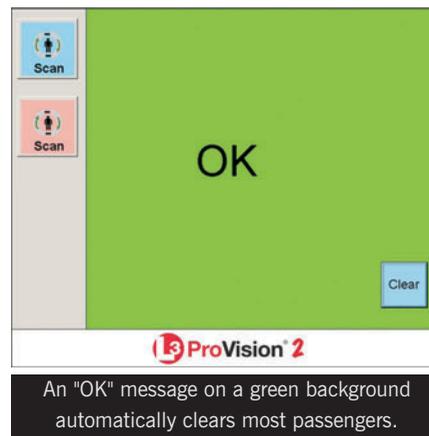
## Checkpoint screening



The passenger's experience with the ProVision® 2 is convenient, straightforward and efficient, requiring only a single position during a 1.5-second scan.

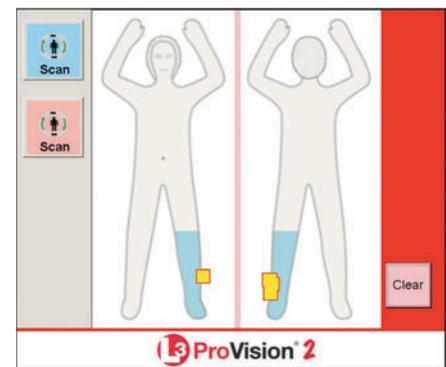
L-3 Security & Detection Systems new and compact ProVision 2® checkpoint security scanner uses safe and powerful automatic threat detection technology that ensures passenger

privacy by highlighting a broad range of metallic and non-metallic threats and anomalies on a generic human figure. The ProVision 2 is approved for European screening following testing under the European Civil Aviation Conference (ECAC) Common Evaluation Process (CEP).



The image-free ProVision 2 system offers airports the ideal balance between addressing regulatory requirements and meeting high-volume operational demands. The passenger experience with the ProVision 2 is convenient, straightforward and efficient, requiring only a single position during a 1.5-second scan. The system does all the

work for the customer and requires no special movements or motions, and areas of potential threats are indicated on a generic mannequin image. By highlighting the specific locations, the system enables security personnel to conduct a localized investigation that improves the customer experience and enables a high rate of throughput. Surveys find that the traveling public and security staff greatly prefer security scanners to the alternative invasive pat-downs.



Concealed items are highlighted on a generic mannequin image.

The compact design of the ProVision 2 enables it to fit into space-constrained checkpoint areas with low (2.4-meter/8-foot) ceilings. The system



needs less floor space than the ProVision ATD system seen in airports around the world and features an open design that allows passengers to maintain visual contact with their belongings throughout the entire screening process.

The ProVision 2's radio wave-based sensing technology is identical to that of the ProVision ATD and poses no health or safety risks. The radio wave signals pass through all types of clothing, but do not penetrate the body and are tens of thousands of times less powerful than other commercial radio frequency devices, such as cell phones, wireless handsets and standard household devices. The ProVision 2 does not use ionizing radiation found in X-rays.

The ProVision 2 is L-3's second passenger scanner to meet the EU CEP standard, following the qualification of the widely deployed ProVision ATD last year. The ProVision ATD was installed in Schiphol in 2007 and has been in other European airports since 2010. More than 1,000 ProVision ATD and ProVision 2 systems have been procured worldwide by nearly 250 airports, with deployments on six continents. The ProVision platform has proven reliability, robustness and operational performance in real airport environments.

With new threats constantly emerging, the system's software-based architecture offers a simple upgrade path to new EU regulatory requirements. L-3 actively invests in innovative, new approaches to detect these threats at the lowest possible false alarm rates, fulfill customer requirements and maintain its leadership position in the security scanning marketplace.

For carry-on bags, compact, accurate and fast screening is critical. The ACX® 6.4-MV combines the industry's most sophisticated explosives threat detection algorithms with powerful multi-view screening technology. The unit is TSA-qualified for air cargo and checkpoint applications, meets European checkpoint requirements for Liquid Explosives Detection (LEDS) and is Department for Transport (DfT)-qualified as an Advanced Cabin Baggage X-ray (ACBX) system.

### High-performance checked baggage screening

Checked baggage screening is a growing market as airport groups and regulators focus on combating sophisticated and emerging threats. In the U.S., the TSA screens 100% of checked bags in commercial airports and in the EU, many airports are moving forward with purchasing EU

Standard 3 Explosives Detection Systems (EDS) ahead of the mandated September 2014 deadline. Checked baggage screening involves a combination of X-ray scanning and image analysis technologies, which examine checked bags for potential threats and contraband, including weapons, drugs and explosives. From small airports to large international hubs, implementing the right screening solution means understanding your environment – and what fits your needs best.

L-3 Security & Detection Systems meets the most stringent explosives detection standards of regulatory agencies worldwide and is a leader in full-suite advanced technology/computed tomography (AT/CT) systems, from stand-alone to high-throughput in-line configurations. L-3 SDS has supplied airports from North America to Asia and everywhere in between, having installed



Checkpoint carry-on screening – ACX® 6.4-MV



The eXaminer® XLB checked bag CT scanner

close to 2,000 inline, automated, high-throughput checked baggage systems. Its high-speed, dual-energy eXaminer® XLB is the first certified system to meet the industry's high-speed EDS classification and achieve EU Standard

3 approval under the Common Evaluation Program (CEP) of Security Equipment. The advanced MVT-HR® meets the stringent explosives detection standards of regulatory agencies worldwide. This multi-view system is approved by DfT and EU Standard 2 for checked bags, and TSA for air cargo.

lower decks of passenger flights inbound to the US.

L-3 Security & Detection Systems designs equipment for shipments of varied sizes and applications. With more than 30 years of experience, L-3 offers scanning inspection systems for break-bulk, skids, pallets and ULDs. L-3's equipment screens cargo ranging from containers of fruits and vegetables to electronics, and is currently in operation at shipping, forwarding and certified cargo screening facilities (CCSF) worldwide.



The MVT-HR® checked bag multi-view automated CT scanner

### Faster, multi-view air cargo screening systems

The air cargo security market is growing and investments are being made worldwide to screen freight on passenger aircraft. The TSA requires screening of all cargo moving in the

L-3 offers multi-view architectures



along with best-value, single-view systems and this year introduced three new TSA-qualified multi-view air cargo and freight screening systems: the PX™ 10.10-MV, PX™ 15.17-MV and PX™ 18.18-MV. All of these systems are deployed at freight forwarders and shippers.

L-3's broad range of security products reflects the company's commitment to delivering innovation for its customers.

The company works closely with regulators and operators worldwide to develop advanced detection capabilities and high-throughput screening solutions that keep commerce moving in a cost-effective manner.

For more information:

Email: [inforequest.sds@L-3com.com](mailto:inforequest.sds@L-3com.com)

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## ACP in Action: U.S.-India Aviation Security Workshop in New Delhi, March 4-6

“India and the U.S. share common goals for effective security in both our domestic and international aviation arenas. USTDA is pleased to help bring together our two countries' leading public and private sector stakeholders to expand this important cooperation under the U.S.-India Aviation Cooperation Program (ACP),” stated Henry Steingass, Regional Director for South and Southeast Asia, USTDA at the start of the three day workshop on Aviation Security in New Delhi.

The Workshop panels discussed the challenges and opportunities for closer cooperation between the United States and India in the aviation security arena. The aviation market in India is growing at one of the fastest rates in the world and is projected to be among the top three globally in terms of passenger enplanements by the year 2020. The high growth rates in both passenger and air cargo volume over the past six years demonstrate the

need for future aviation and cargo operations to be more efficient, a major focus of the long-running U.S.-India Aviation Cooperation Program (ACP).

At the same time, streamlining security checkpoints and cargo security at airports, meeting the demand for an increased workforce across the industry, and ensuring that aviation personnel maintain training that meets international standards are key goals for India's civil aviation sector.

Addressing the inaugural session of the workshop, Anil Srivastava, Joint Secretary in the Ministry of Civil Aviation said that security has become a challenge due to technological advancement as undesirable people were finding ways to evade security arrangements. He said India, in cooperation with global partners, has been implementing various cooperation programs in the field of aviation security.

The workshop, which was part of the US-India Aviation Cooperation



Workshop Seeks to Increase Bilateral Cooperation in Aviation Security



Mr. Chaukiyal, Member (Operations), AAI addressing a panel

program, focussed on measures to expedite passengers screening and enhance customer service, integration of human security manpower and technology and current and future risk-based security programs in the US and India.

The Workshop highlighted current technologies and industry and

government best practices for ensuring a strong and efficient aviation security environment. Indian officials represented public and private sector organizations responsible for the future development of India's aviation security systems and practices.

The Workshop was sponsored by Oshkosh Corporation, L-3 Security and

Detection Systems, United Airlines, Hi-Tec Systems, Rapiscan Systems, Tyco Fire and Security, Universal Weather and Aviation, Inc., Sabre Airline Solutions, OCR International, and the Business Aircraft Operators Association.





“where do I find thinkers

who keep the world connected?”



– **Ted Gavrilis**, Former President  
Commercial Space Systems  
Lockheed Martin  
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# Working Collaboratively to Deploy Required Navigation Performance Programs Around the World

Contributed By : GE Aviation

India's aviation sector is one of the fastest growing aviation markets in the world. In the last decade, domestic air traffic has more than quadrupled from 13 million to 60 million while international traffic more than tripled to 40 million. On the flip side, India is already experiencing the effects of increased air traffic, including congestion, extra fuel burn, noise levels around airports and flight delays.

Aviation stakeholders in India have been working to alleviate air traffic congestion through their Future Air Navigation System (FANS) master plan to "modernize the skies" – part of which is the use of Performance-based Navigation (PBN) technologies that will allow aircraft to fly more accurate, yet flexible, flight paths.

As the cornerstone to airspace modernization efforts, PBN has the ability to bring efficiency, predictability and increased capacity to airspace. These flight paths, which utilize satellite-based navigation technology,

have the ability to solve a number of operational issues including improved airport access, reduction in flight time and fuel burn, and simplification of pilot/controller workload.

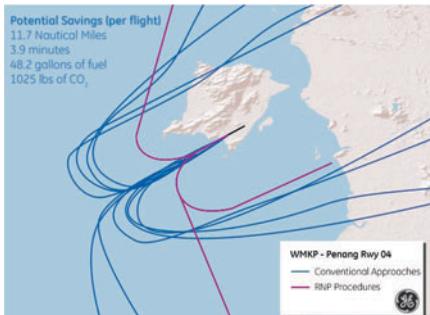
Required Navigation Performance (RNP) procedures, the highest performing type of PBN, are superior to that of conventional procedures because they are more flexible, require less airspace and can be engineered with aircraft performance in mind. Unlike conventional procedures which utilize a series of straight legs, RNP offers curved flight paths. These curved legs allow it to go around terrain or obstacles that the straight-in localizer of an ILS just can't do. Less space is required for obstacle clearance due to superior track-keeping capability. Finally, paths can be designed to take into account the flight characteristics of a single or group of aircraft performing various maneuvers. RNP procedures can be made to accommodate the profile of a continuous descent approach or the

climb gradient of an aircraft with one engine inoperative.

Recently, GE Aviation has worked with airlines, regulators, air navigation service providers (ANSP) and airport authorities to deploy RNP programs that solve specific airspace issues in Malaysia, Jiuzhai, China and Queenstown, New Zealand.

## Implementing a Nationwide RNP Program in Malaysia with AirAsia

GE Aviation is deploying the world's first network of ICAO Required Navigation Performance Authorization Required (RNP AR) flight paths designed by a third-party in Malaysia. The program includes GE-designed ICAO 9905 compliant RNP AR approach paths at 15 Malaysian airports. The new flight paths will improve operating efficiencies for AirAsia by reducing track miles and fuel burn while also providing aircraft with precise lateral and vertical arrival and missed approach guidance.



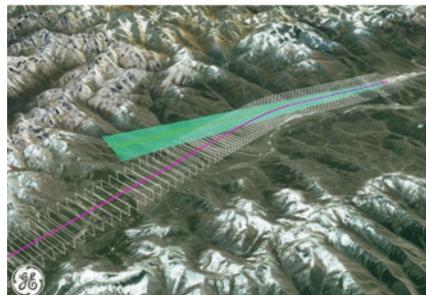
GE is custom-engineering flight paths at Jiuzhai for both Boeing and Airbus aircraft variants to ensure the most efficient procedure. All 11 scheduled airlines at Jiuzhai will comply with the recent RNP-only operations mandate.

In collaboration with the Malaysia Department of Civil Aviation Authority (DCA), the regulator ANSP, GE is designing and deploying the network of procedures to utilize the performance characteristics of AirAsia's A320 fleet. Work has been completed at the first two airports - Kuching International and Penang International. A preliminary review of Penang airport showed potential flight track miles savings of up to 8 miles for runway 04 and up to 13 miles for runway 22.

### Deploying a Common RNP Flight Path for All Airlines Serving JiuzhaiHuanglong Airport

As the third highest airport in China, Jiuzhai is located at 11,311 feet in the Min Shan mountain range and the steep terrain can make airport access challenging, especially during poor weather operations, causing flight delays, cancellations and additional

pilot workload. The GE-designed RNP paths, implemented in 2011, improve airport access and payload for operators, while providing an optimized lateral and vertical guidance to the runway. GE harmonized the approach and departure paths to allow for simultaneous operations.

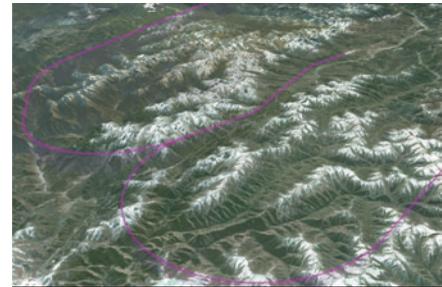


GE is designing RNP paths at 15 Malaysian airports; the paths at Penang can save participating airlines up to 8 track miles per flight vs. conventional procedures.

Recently, seven new airlines joined the program and GE is custom-engineering the flight paths for both Boeing and Airbus aircraft variants to ensure the most efficient procedure. This will enable a common RNP path for all airlines while giving each airline the best performance possible for their fleet-type. All 11 scheduled airlines at Jiuzhai will comply with the recent RNP-only operations mandate.

In addition, an RNP to Instrument Landing System (ILS) procedure was implemented at the airport to improve all weather operations. The procedure also connects to a RNP - Authorization Required missed approach, providing

a fully contained and guided flight path in the event of a go-around.



GE designed an RNP to ILS procedure at Jiuzhai to provide additional predictability and efficiency into this terrain-challenged airport

“Because of the positive experience and results from the RNP programs at Jiuzhai and other Chinese airports, the CAAC mandated six airports, including Jiuzhai, become 100% RNP capable as of April 1,” said Zhu Baosheng, vice president of Jiuzhai Airport. “We can now ensure all operators at Jiuzhai are flying the safest, most accurate flight paths while maximizing aircraft and airspace efficiency and improving on-time arrival rates.”

### Doubling Hourly Airport Capacity at Queenstown by Redesigning the Airspace

More than a million people a year fly into the vacation destination of Queenstown, New Zealand—the airport has seen a 30% rise in passenger numbers over the past three years alone. New Zealand ANSP Airways New Zealand needed to redesign the airspace to support safety initiatives and capacity increases while



Reduction in delays: 19,200 – 28,800 min

Reduced fuel use: 1,058,200 – 1,587,300lbs (480,000-720,000kg)

Dollars saved through reduced fuel and delays: \$630,000 – \$950,000

CO2 saved = 3,343,000 -5,015,000 lbs (1,500,000-2,250,000kg)

The initial GE-designed RNP flight paths implemented at Queenstown in 2004 served as mechanism for one aircraft to maneuver through the mountainous terrain on a reliable, repeatable flight path. As Airways undertook a larger airspace redesign, GE was able to redesign the paths, since they are unrestrained by ground-based navigation aids, to accommodate the capacity requirements for current and future air traffic growth.

greatly improving efficiency in the terrain rich environment where no full-service radar is available.

The cornerstone of the redesign project is the new RNP flight paths that enable concurrent arrivals and departures at the airport. The accuracy of the RNP paths allows air traffic control to confidently manage up to 12 aircraft per hour, compared to five with previous procedures. Controllers can now to monitor arrivals and departures as opposed to continuously providing tactical separation.

GE, Airways and the New Zealand Civil Aviation Authority worked closely with the participating airlines to optimize

the RNP arrival and departure flight paths, ensuring maximum operational efficiency. The new RNP paths, which were implemented in November 2012, have cut the average flight delay from more than six minutes to less than one minute per flight. The new RNP flight paths were integrated with other non-jet flight paths to streamline traffic, and all airlines are benefiting. Flight delays have been reduced from approximately 2,400 minutes a month to around 200 minutes a month.

**With the significant savings already achieved, Airways estimates the following annual savings:**

“Performance-based Navigation, and in particular the RNP AR design criteria that allows curved approach and departure paths to reduce carbon emissions, avoid terrain and noise sensitive areas, are aligned perfectly with Air New Zealand's intent to have the highest possible environmental credentials in the world,” said Captain Phil Kirk, PBN program manager for Air New Zealand. “GE Aviation came through with procedures that deliver benefits on all counts. We appreciate that our crew and passengers no longer have gate holding and spend very little time in holding patterns.”

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*A data visualisation of the flow of baggage traffic at Amsterdam Airport Schiphol.*



# Shared Horizons



US – India Aviation Partnership Summit, December 7-9, 2009 at Washington D.C.



US – India Aviation Partnership Summit, December 7-9, 2009 at Washington D.C.



Signing - MOU in Exhibition Civil Aviation, India - Aviation 2010 at Hyderabad



Seminar on ADS-B & GBAS, January 28-29, 2010, New Delhi



Conference on Civil Aviation, July 29-30, 2010, New Delhi



Exhibition Civil Aviation, India - Aviation 2010 at Hyderabad



# Over the Years



Seminar on High-level Roundtable Discussion "Airports Regulatory & Financing Best Practices", March 2, 2010 at Hyderabad



Seminar on Indo-US Aviation Manufacturers Meet, April 26, 2011 at New Delhi



Seminar on General Aviation, February 9, 2012 at New Delhi



Seminar on Bilateral Aviation Safety Agreement (BASA) Regime, January 11, 2013 at New Delhi



Interactive Session with Chairman, Airports Economic Regulatory Authority (AERA), August 6, 2012 at New Delhi



Seminar on General Aviation with Hon'ble Minister, Ministry of Civil Aviation, March 6, 2013 at New Delhi



# Oshkosh Corporation Establishes Operations in India

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Wilson Jones, President and COO, Oshkosh Corporation, with Judy Reinke, Minister-Counselor for Commercial Affairs, US Embassy; PS Nair, CEO (Airports), GMR Group and Desmond Soh, President – Asia, Oshkosh Corporation

specialty vehicles and truck bodies for the primary markets of defense, fire & emergency, concrete placement, refuse hauling, and access equipment .

The Fire and Emergency business division of Oshkosh Corporation designs and manufactures ICAO/ US NFPA & US FAA Compliant Aircraft Rescue & Fire Fighting Vehicles (ARFF), Airport Incident Command Vehicles, Airport Building Fire-Fighting

best airports choose Oshkosh and as such, more than 1500 airports in about 130 countries are protected with



Access Equipment

In 2009, Oshkosh F & E sold its first Aircraft Fire Fighting Vehicles to India's busiest Mumbai International Airport Limited (MIAL) and then in 2012 delivered its next two Aircraft Fire Fighting Vehicles to Durgapur airport (Bengal Aerotropolis) in West Bengal. With India investing heavily in infrastructure, transport, and defense modernization, Oshkosh will continue



Mobile Command Post



Oshkosh staff at the opening of Oshkosh India office on October 22, 2012

to increase its investments in India in the coming years. Oshkosh Corporation's newly established office in New Delhi will serve as its Indian operating headquarters for Indian/SAARC operations and foster growth in this region.

On October 22, 2012 Oshkosh Corporation (NYSE: OSK) formally opened its South Asia regional office in New Delhi, India— Oshkosh India Pvt. Ltd. The Wholly Foreign Owned Entity (WFOE) marked yet another milestone in the Oshkosh's commitment to the important emerging markets and further enhanced the Corporation's international presence.

“The official opening of the India office gives Oshkosh Corporation, a strategic advantage to better serve our Indian

and South Asian customers,” said Wilson Jones- Oshkosh Corporation— President & COO. “It allows us to respond more quickly to customer requirements in this very important market.”

Oshkosh actively participated in the U.S.-India Aviation Security Workshop

during March 4-6, 2013 in New Delhi. The workshop was organized by the U.S. Trade and Development Agency (USTDA) in cooperation with the U.S. Transportation Security Administration, the U.S.-India Aviation Cooperation Program and the Government of India to assist Indian aviation officials in seeking the appropriate aviation security technology and solutions.

Desmond Soh, President-Asia, Oshkosh Corporation was an eminent speaker on Plenary IV and spoke on Successful Methods to Involve Industry Stakeholders in Aviation Security Programs – Government and Industry Partnerships. Oshkosh provides Mobile Command Posts (MCP) to airports to ensure secure and safe airports and appropriate emergency response in the event of a security threat or an incident.



Oshkosh Team with Henry Steingass, Regional Director, USTDA at Aviation Security Workshop.



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# Cessna Turbo Skylane JT-A™ Takes First Production Flight

Contributed By : Textron India



Cessna Aircraft Company, a Textron Inc company, announced the first production flight of its Turbo Skylane 182 JT-A which took place on 21 May, 13 at the company's facility in Independence, Kan. The aircraft has the distinction of being the first modern single engine aircraft powered by a piston engine **specifically designed to run on Jet-A fuel.**

"The Turbo Skylane JT-A performed just as expected," said Cessna senior test pilot Dale Bleakney. "The weather conditions were fantastic, and we took

the Turbo 182 up for what turned out to be a very normal first flight. We flew for 2.3 hours, achieved a flight level of 8,000 feet, and attained a true air speed of 158 kts. We brought it in and did some takeoffs and landings, and everything went as expected."

"This Cessna aircraft is in the unique position to change the way single-engine pilots approach flight planning due to the aircraft's incredible performance envelope," said Jodi Noah, Cessna's senior vice president of single engine/propeller aircraft. "The

Turbo Skylane JT-A is evidence that Cessna is committed to delivering the groundbreaking fuel solution that general aviation customers have been seeking for a long time."

"The JT-A is the result of years of hard work put in by our engineering, research, and manufacturing teams," said Jeff Umscheid, business leader for the Cessna 172, 182 and 206 model aircraft. "This is groundbreaking in that it is the first aircraft powered by a diesel engine specifically designed for aviation. Operators will find many



surprising advantages with the JT-A, and pilots will enjoy the lower workload. Add to this the benefit of being able to fuel it with a much cheaper, more available fuel anywhere in the world and it's not difficult to see why the JT-A is in such demand."

Industry observers have noted a looming fuel issue for general aviation in most parts of the world. Avgas is typically used to fuel most single engine aircraft, but the fuel is becoming scarce, expensive, and even unavailable in many parts of the world. With the advent of a single engine craft designed to run on the much more common Jet-A fuel, operators can now access many more parts of the world without worrying about the unpredictable availability and price of increasingly scarce avgas.

The Safran-made SMA engine in the Turbo Skylane JT-A is engineered specifically for aviation. It uses only 11 gallons per hour of the typically lower-cost Jet-A fuel at the estimated maximum cruise speed of 156 knots. The 227 horsepower engine will offer customers increased range or payload capacity without sacrificing performance. Flight at the maximum cruise speed demonstrates greater fuel efficiency, and it is expected to burn approximately 30 percent to 40 percent less fuel than comparable avgas engines.

The Turbo Skylane JT-A has a seating capacity for four and an estimated range at max cruise speed of 1,025 nautical miles (1,893 kilometers). The certified ceiling will be 20,000 feet (6,096 meters). The Garmin G1000 avionics suite is pilot-friendly and

highly-functional, bringing great levels of situational awareness to the cockpit. The engine diagnostics are shown on the primary and multi-function flight displays. Fuel capacity is 87 useful gallons (329 liters), with an estimated useful load of 1,018 pounds (462 kilograms).

The aircraft was flown from Wichita, Kansas, to Northampton, England by ferry pilot Brian Quindt of Weaver Aero International for its European debut at UK AeroExpo 2013. The event was held at the Sywell Aerodrome from 31 May to 2 June in Northampton. "I've been flying the JT-A for 30 hours, putting it through its paces, and it is just a fantastic aircraft," said Quindt, during a stopover in Nova Scotia. "I am truly convinced Cessna is at the forefront with this aircraft. They've made a plane that will be in demand for another fifty years."

For more information on the Turbo Skylane JT-A, please visit [Cessna.com](http://Cessna.com).



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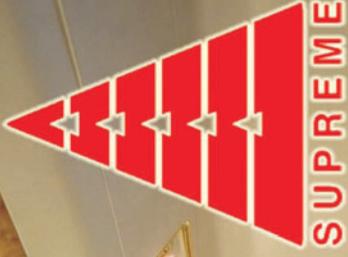
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# Honeywell Udaan 12 on “Indian Air Traffic Modernization & Airspace Decongestion”



Honeywell and the US-India Aviation Cooperation Program (ACP) organize Udaan '12



Pritam Bhavnani  
President, Honeywell Aerospace India

In 2011, as India celebrated 100 years of civil aviation, Honeywell organized UDAAN'11 to support the Ministry of Civil Aviation's efforts in defining India's Civil Aviation Vision 2020. It was evident from the vision papers presented by airlines that Air Traffic

Modernization is key to meet airline profitability and efficiency needs while ensuring passenger safety and comfort. UDAAN '12 focused on precisely this.

The number of passengers flying India's skies in commercial aircraft is expected to nearly double over the next five years, putting immense strain on the country's air traffic management (ATM) system and transportation infrastructure, according to Tim Mahoney, Honeywell Aerospace President and CEO. Mahoney was speaking at the Honeywell – US-India Aviation Cooperation Program (ACP) event Udaan '12, on “Indian Air Traffic Modernization & Airspace Decongestion”, held in October 2012.

“India will move from seventh to third in air passenger miles by 2017, behind only the U.S. and China,” Mahoney told the audience of Indian aviation officials and aerospace opinion leaders attending the UDAAN '12 conference. “Meanwhile the number of commercial aircraft

flying in Indian airspace will grow from about 425 today to more than 1,000 by the end of the decade. It is obvious to Honeywell that India needs to act quickly to modernize and keep up with growing demand.”

Mahoney shared several recommendations with the group, including the need to improve airports, runways and aircraft parking, which he said needed to be completed in the 2016-2018 time period. Nearer term, he recommended that India move ahead with mandatory outfitting of aircraft with Automatic Dependent Surveillance-Broadcast (ADS-B) technology, which would enable more aircraft to operate with less separation in a given airspace. Other recommendations included improving interfacing radar coverage, introducing new procedures, enhancing training for air traffic controllers and improving technological support.

Honeywell Aerospace Vice President and Chief Technology Officer Bob Smith was also a keynote speaker at the event.



At the 2011 edition of UDAAN, airline representatives described products and services required from technology companies like Honeywell to make vision 2020 come true. Capt. Saleem Zaheer, IndiGo's VP Flight Operations, had presented on Approach-cum-Trajectory Management with vision for zero holding time. Mr. Uday Naidu, VP Engineering of Go Air had presented on Flight Safety with vision for zero incidents. Mr. Amarish Agarwal, GM Line Maintenance of Jet Airways had presented on Technology Upgrades with vision for on time performance and comfortable passenger experience. Lastly, Capt. Gurcharan Arora, Chief Development Pilot of SpiceJet had presented on Data Communication Solutions with vision for all aircraft to be ADS-B enabled. In his presentation, Bob Smith updated attendees on the progress Honeywell has made since last year's conference that move the group toward achieving its Vision 2020 aspirations, which include goals for flight safety, approach and trajectory management, technology upgrades and data communications.

In her speech, Judy Reinke, Minister Counselor for Commercial Affairs, spoke of the need for the industry to come together more often to address industry issues such as Air Traffic Management. She spoke of the support USTDA and the US-India Aviation Cooperation

Program have been providing to support training programs for DGCA and AAI personnel, and other projects to improve technology adoption by industry and the AAI.

In their speeches, Mr N. Ganesh, Executive Director (ATM), Airport Authority of India, and Mr S. V. Satish, General Manager (ATM), Airport Authority of India provided an update on AAI projects to modernize India's ATM system, and the status of the GAGAN (India's Satellite Based Augmentation System), respectively.

The event saw active participation from Indian aviation officials and industry leaders alike, willing to openly table thoughts and concerns, and most importantly, supporting a shared vision for the growth of the industry.

Some of the key guests who participated actively in the discussions were Aditya Ghosh, President, IndiGo Airlines; Marcel Hungerbeuhler, COO, DIAL; C. S. Tomar, VP Engineering, Jet Airways; Capt. Chris Grazel, VP Flight Operations, Go Air; Capt. Saleem Zaheer, VP Flight Operations, IndiGo Air; and Avik Bhattacharya, Director, Boeing Commercial Airplanes, India.

The event was cosponsored by Honeywell and the US-India Aviation Cooperation Program (ACP)



**Judy Reinke**  
Minister Counselor for Commercial Affairs  
US Commercial Service



**Aditya Ghosh**  
President, IndiGo Airlines



**N. Ganesh**  
Executive Director (ATM),  
Airport Authority of India



**S. V. Satish**  
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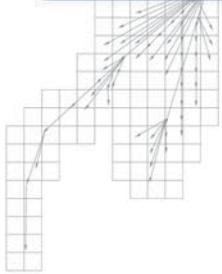
# HOW DO YOU MEASURE A METRON?



$$\mu_k < M_k - \sigma_k$$

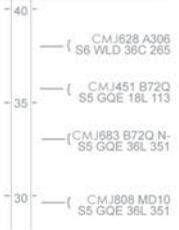
$$M_k - \sigma_k \leq \mu_k \leq M_k + \sigma_k$$

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$$(v, w) = \sqrt{\sum_{k=1}^8 \frac{(v_k - w_k)^2}{\sigma_k^2}}$$

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# THE GENERAL AVIATION MANUFACTURERS ASSOCIATION

## General and Business Aviation in India



The General Aviation Manufacturers Association (GAMA) represents over 80 of the world's leading manufacturers of certified general aviation airplanes, rotorcraft, engines, avionics and components. Our member companies in the U.S., Canada, Brazil and Europe also operate aircraft fleets, airport fixed-based operations, completion centers, and pilot training and maintenance facilities worldwide. Many of our member companies have long-standing ties to India and are committed to the development of a

general and business aviation industry and community in India under the highest possible standards of safety.

GAMA's focus is on safeguarding the growth and vitality of general and business aviation around the world. Our activities support a dynamic and sustainable global general aviation manufacturing industry whose purpose is to link communities, facilitate business, create jobs and increase prosperity. GAMA works closely in India with the Business Aircraft Operators Association of India (BAOA). Together we support the development of a regulatory system and infrastructure that recognizes the unique characteristics of general and business aviation.

Given the geographic characteristics of India, its still-developing commercial aviation infrastructure, and the dynamism of its people and economy, general and business aviation can play a significant role in economic development and help Indian business

integrate more effectively into the global marketplace.

India is the ninth-largest aviation market in the world and is growing at a fast rate. The country has 449 airports and airstrips, with about 100 of them operational. BAOA has estimated that the general aviation fleet consists of slightly over 1,000 aircraft, including helicopters. The number of business jets has grown quickly over the past five years and now stands at close to 200. Likewise, the number of non-scheduled operators has grown from just 36 in 2000 to nearly 200 by 2012.

Among the issues that GAMA and other stakeholders in the general and business aviation industry are concerned with in India are the following.

**Safety-Based Regulations and International Harmonization:** The aviation market and manufacturing supply chains are global in nature. It is vital that regulatory authorities



worldwide cooperate closely and that standards for initial and continued airworthiness are harmonized across jurisdictions. The development of bilateral aviation safety agreements such as that between the U.S. and India can lead to increased efficiencies in the reciprocal acceptance of each other's safety oversight of aviation products.

**A Regulatory Framework Tailored to General and Business Aviation:** BAOA has estimated that the fleet of business aviation aircraft in India will grow roughly threefold between 2012 and 2020 to nearly 1,800 aircraft. This is larger than the commercial fleet and represents a large number of individual operators. Business aircraft are a productivity tool that allows businesses to take advantage of market opportunities on short notice. It is vital that regulations take account of the unique nature of business aviation while ensuring the highest possible level of safety. We support the specific recommendations that BAOA has made to address issues such as the availability of aircraft parking space at major airports, clearance procedures, multiple-leg flight plans, and the payment of fees to air traffic control and ground service providers, among others. It is equally important that the

procedures for issuance of permits for overflights and landings by international business aviation be streamlined and allow for efficient and flexible operations.

**Infrastructure:** Rules should facilitate the establishment of FBOs and the establishment of maintenance, repair and overhaul (MRO) facilities for business aviation, adequate parking for aircraft in important business centers, ground handling services tailored to business aviation, and the development of secondary airports that are the lifeblood of a general aviation network.

**Fiscal policy:** India imposes a combination of import duties, value-added-tax and other special levies on the importation of general aviation airplanes for private or corporate use totaling approximately 23%. This is a disincentive to the acquisition of new aircraft by businesses seeking to expand. Other policies such as punitive taxes on aviation turbine fuel (ATF) are also a disincentive to the development of a strong general and business aviation industry. The latest central government budget includes positive changes to the fiscal treatment of spare parts, which should facilitate aircraft repair and maintenance and enhance safety.

**Helicopter Operations:** Helicopters play a vital role in search and rescue, emergency relief, medical evacuation, security surveillance, pipeline inspection, offshore operations and transport in places and during times when other transport modes may be unavailable. No segment of the general aviation fleet is more emblematic of the need for special regulations and procedures than rotorcraft. A study completed under the auspices of the US-India Aviation Cooperation Program (ACP) in 2011 identified measures and practices that would support safely increasing the volume of helicopter operations in India. The recommendations in that report should be implemented.

The general and business aviation sector in India is growing rapidly and holds enormous promise. It is essential that regulatory oversight and infrastructure development keep pace. GAMA stands ready to do its part to support these developments further.

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## General Aviation Manufacturers Association



## GAMA Member Companies

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From its start in 1970, GAMA has been devoted to one primary objective: promoting the safety and growth of general aviation. With offices in the United States and Europe, GAMA represents the interests of its members throughout the world. For more information: [www.GAMA.aero](http://www.GAMA.aero)



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# Air Traffic Control Turns to Dynamic Routing for Enterprise-wide Voice Communications

Contributed By : Harris Corporation

Voice Communication Control Systems (VCCS) serve as a nexus for various air traffic control resources, among them VHF, UHF, and HF radios, as well as weather information displays and traffic-flow management systems. Typically, these elements are integrated on a 'local' level – at an individual airport or flight control center, for example.

The drawback to this approach is that it creates a silo of communications capabilities, integrated only within the single location. The system operates independently of other VCCS systems within a country or region, and often uses different equipment providing varying capabilities. This poses significant drawbacks in an increasingly interconnected, digital world.

How to solve this challenge going forward? Air traffic control organizations are looking to the application of Internet Protocol (IP)-based systems to provide effective voice control and data communications capabilities across the total enterprise. This includes the US Federal Aviation Administration as well as European agencies, which are seeking to modernize their VCCS with platforms that deliver new technology and capabilities across the voice enterprise.

## Why IP is a Reliable Solution for VCCS

VCCS networking today means much more than voice communications. ATFM, weather, voice, radar, RCAG and other applications are shared or must be available wherever needed. Using IP to network VCCS and other sites provides the solution.

Only one primary connection – and one alternate for critical sites – is required to provide access to all sites connected to the network. Network routing equipment sends the data packets along a network using the most efficient available route. IP also provides error-correction schemes to ensure data integrity.

In addition, bandwidth is shared among applications, supporting burst mode requirements, and can be adjusted quickly without a major infrastructure change.

The routed IP network is self-healing and adapts immediately to path failures, increasing reliability.

There is little question that industry data clearly show a trend toward an all-IP design for modern voice communication networks. In 2000, 94 percent of global PBX shipments were TDM switches. By 2011, 92 percent of global PBX

shipments were IP systems. IP systems are replacing legacy TDM systems in many mission-critical applications, from military command and control operations to commercial call centers.

IP is, in fact, a reliable and effective means of communication that allows us to do many things that TDM did not:

- Connect dissimilar devices – transmission path timing and format are no longer critical
- Connect many devices together in a network rather than each device being connected one-to-one, as with TDM
- Share bandwidth – costs are reduced by utilizing common communications links
- Reduce manually intensive configuration – IP is software-controlled and self-adjusting, while most TDM applications require that new configurations be initiated manually.
- Less cabling and equipment is required – with IP, many self-healing connections are possible not only with large networks but also small networks such as VCCS position equipment. Rings, hub-and-spoke, web, are all possible with a minimal amount of equipment and cable when compared with TDM installations.



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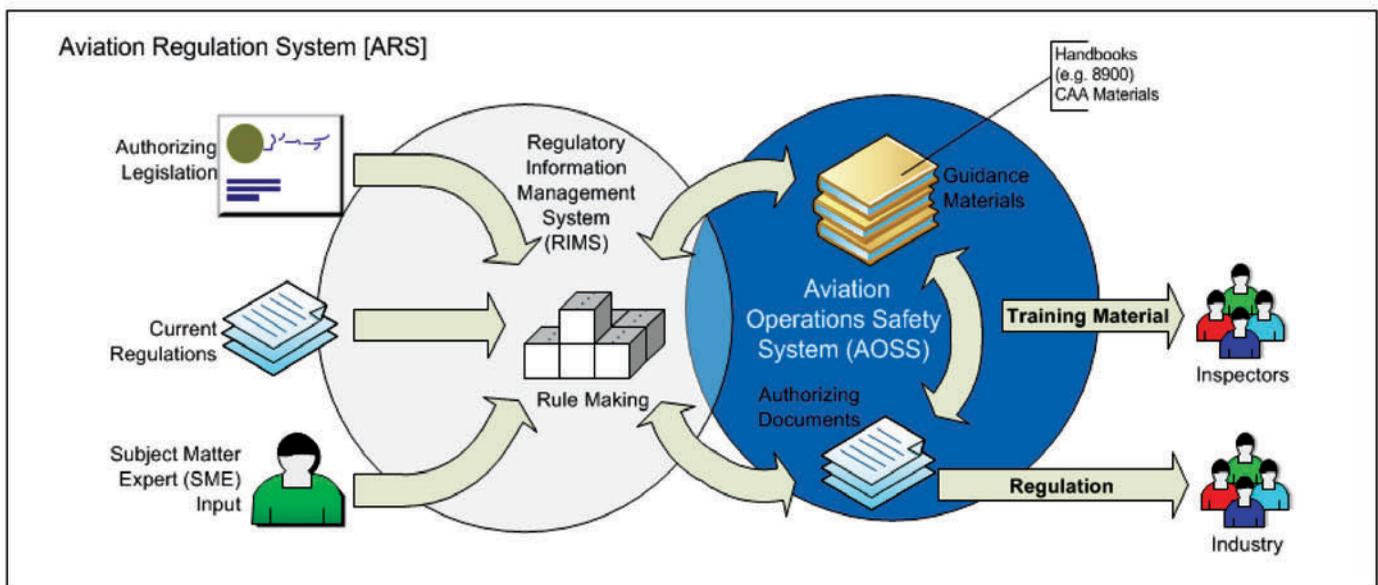
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**Experience.** We have years of experience working with civil aviation authorities developing ICAO compliant regulations, policy and guidance materials, automation systems and related state safety program enablers

**Expertise.** Our network of professionals include former civil aviation regulation executives, pilots, attorneys, technical writers, programmers, and aviation experts.

**Dedication.** Our first priority is customer satisfaction. We understand that a clearly defined and well aligned regulatory framework enables the conduct of safe aviation operations and promotes economic development of the aviation industry in India.





# Boeing and India: One Partnership, Endless Possibilities

Boeing has been active in India for 70 years. Today, a strategic and progressive partnership is fast developing that is encompassing manufacturing, supply chain activity, aerospace infrastructure, engineering services and skills, research and technology, and social initiatives.

Since the dawn of the jet age, Boeing aircraft have helped develop India's passenger and cargo service at Air India, Jet Airways, and SpiceJet. The revolutionary 787 Dreamliner is now in service with Air India connecting passengers to more places non-stop.

More recently, opportunities in defense opened up for Boeing to support India's defense modernization efforts. In June, the first of 10 C-17 Globemaster III airlift aircraft for the Indian Air Force arrived in country, a month after delivery of India's first P-8I long-range maritime reconnaissance and antisubmarine aircraft to the Indian Navy. More of these aircraft will be delivered by 2014 to 2015.

The Boeing AH-64E Apache and the CH-47 Chinook have been selected as India's attack and heavy-lift helicopters. This selection, when finalized, will firmly establish Boeing as a long-term key partner of India and its armed forces.

Boeing established a wholly owned

subsidiary in Delhi in 2003. Other subsidiaries and centers are located in Bangalore, Mumbai and Hyderabad. About 350 highly qualified people work for Boeing across its offices in India. Boeing's IT partner companies employ about 1,900 Boeing dedicated engineers at their software development centers.

Boeing continues to partner with customers to help them win and be competitive by providing proven, reliable, state-of-the-art products. These products are supported by Boeing's services business that anticipates customer needs and delivers on availability and readiness.

Not only does Boeing view India as an important market, but is collaborating with major public and private companies—like Hindustan Aeronautics Ltd, Bharat Electronics Ltd, the TATA Group, Larsen & Toubro, Dynamatics Technologies, Wipro, Infosys, HCL Technologies, Tata Consultancy Services, and Infotech Enterprises—with a view to capitalize on India's competencies.

There is a conscious effort to bring expertise and training in advanced engineering to India through Boeing subsidiaries—Narus, Jeppesen and Continental Data Graphics. Boeing's suppliers in India are already an

important part of the company's worldwide supply chain network, delivering best practices and world-class standards.

Boeing has a global network of university centers and aerospace research partnerships

focused on 21st century science and technology developments and challenges. The company has recreated similar models in India and is investing with the country's leading universities, such as the Indian Institute of Science and the Indian Institutes of Technology.

To further expand its R&D footprint in India, Boeing has also opened a Research and Technology Center in Bengaluru and initiated the National Centre for Aerospace Innovation and Research, a public-private partnership with IIT Bombay and the Indian Department of Science and Technology.

Boeing contributes to India in several other ways and is committed to improving the quality of life for the communities where it operates. The company supports various health and human services in India, partnering with a number of NGOs across the country.

Boeing is in India definitely for the long-term and wants to be a part of India's future success and growth story.



## ONE PARTNERSHIP. ENDLESS POSSIBILITIES.

As the new 787 Dreamliner takes to the skies for Air India, it marks a monumental milestone in a 70-year partnership between Boeing and civil aviation in India. This landmark moment further enhances the promise of an even brighter future with continuous technological advancements. In a partnership that keeps getting stronger, the possibilities of more such achievements are, indeed, endless.



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# The Bell 525 Relentless

Contributed By : Bell Helicopter

Bell Helicopter's mission is to change the **way** the world flies, but part of this mission is to change **what** the world flies with its clean sheet design Bell 525 Relentless™. The Bell 525 will fly farther and provide a flight command experience unlike any commercial helicopter on the market today.

The Bell 525 Relentless will offer outstanding payload and range



capability, best-in-class cabin and cargo volumes coupled with flexible cabin layout options, and exceptional crew visibility with wrap-around windscreens, all of which can be designed and customized to meet any mission need.

Throughout its development, Bell Helicopter has worked closely with a customer advisory panel from around the world to make sure the Relentless is created specifically to meet not just their needs of today, but also to complete the missions of tomorrow. The Bell 525's recently updated performance specifications exceed the critical value parameters defined by the customer advisory panel, including speeds of 287 kph (155 kts), 926 km (500 nm) of range, a maximum gross weight of 8,754 kg (19,300 lbs) and 7,400 lbs (3,357 kg) of useful load.

Bell Helicopter's customers are the driving force behind the Bell 525 Relentless. Through extensive customer integration and feedback, the Bell 525 will offer those who fly it unparalleled situational awareness. An advanced fly-by-wire

(FBW) flight control system will provide the ability to operate demanding missions in austere environments safely and reliably with decreased pilot workload, and Garmin G5000HTM avionics include the first touch screen fully integrated glass flight deck.

Incorporating an advanced aerodynamic design, a Next Generation GE® engine and a rugged airframe, the Bell 525 will be an ideal platform for any mission, including offshore oil and gas support, VIP transport, helicopter emergency medical services, search and rescue and parapublic operations.

Highly anticipated by helicopter operators around the world, the Bell 525 is racing towards a first flight in 2014 with tangible progress across the board. The 525 program has completed the detailed design phase and is moving into aircraft production with a continued high level of integration between the design team and the customer advisory panel.

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# U.S.-INDIA AVIATION SUMMIT

OCTOBER 29-31, 2013 | GRAND HYATT WASHINGTON | WASHINGTON, D.C.

Save the date for the U.S.-India Aviation Summit scheduled for October 29-31, 2013 at the Grand Hyatt Washington in Washington, D.C. This event will encourage high-level dialogue on major issues relating to air traffic management and control in India, and will promote U.S. technical solutions to support India's growing aviation market.

With a domestic base of over 60-million passengers, and an average growth rate of 11 percent per year, India possesses one of the fastest growing aviation markets in the world. It is expected that India will be among the five largest aviation markets by the year 2020 and third in terms of domestic market after the U.S. and China. In fact, India is expected to cross the 450-million mark of domestic passengers by 2020. Given these dramatic increases in air traffic, airline operators, air route connectivity and air passenger flow, the safety and integrity of India's airports and commercial aviation sector have become vitally linked to the country's economic growth.

For U.S. Industry representatives interested in sponsoring and/or speaking on a panel, please contact Spencer Dickerson, C.M., American Association of Airport Executives, at (703) 824-0500 ext. 130 or [spencer.dickerson@aaae.org](mailto:spencer.dickerson@aaae.org). If you would like to receive general information about the summit, please contact Scott Boeser, C.M., ACE, American Association of Airport Executives at (703) 824-0500 ext. 225 or [scott.boeser@aaae.org](mailto:scott.boeser@aaae.org). If you would like to contact a local ACP representative, please contact Nidhish Jain, US - India Aviation Cooperation Program (ACP) at +91-11-26602302 or [nidhish.jain@acp-india.com](mailto:nidhish.jain@acp-india.com).



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