Shared Horizons

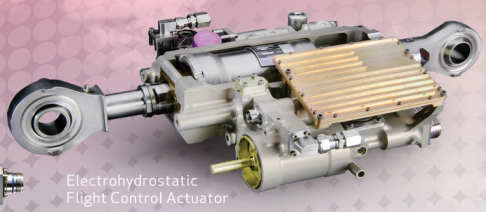
U.S. - India Aviation Cooperation Program : " A Win - Win Partnership"

INSIDE

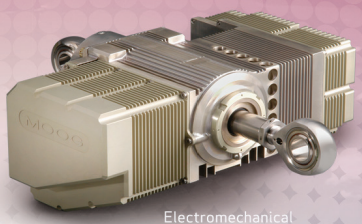
Volume 16 • January - June 2019

CONTINUOUS SUPPORT

FOR THE WORLD'S LEADING COMMERCIAL AIRCRAFT PROGRAMS



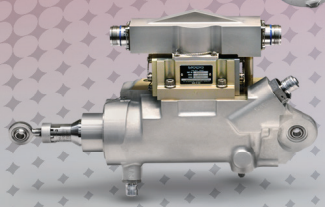
Electrohydrostatic
Flight Control Actuator



Electromechanical
Flight Control Actuator

Servo Control Module
for Flight Surface Actuator

Electrohydraulic
Engine Servovalve



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Message from the Co-chairs

Mohamad Sayegh
ACP Co-chair (Industry)

Thomas M. Miller
ACP Co-chair (Government)

We are pleased to present the January – June 2019 issue of "Shared Horizons".

The recently held organizational election has reinvigorated the US – India Aviation Cooperation Program. Mr. Mohamad Sayegh, Vice President, FedEx India Ground Operations was elected by ACP members to serve as the Co-chair (Industry). Thanks to the wholehearted participation of all ACP members in this successful election.

Some of the highlights covered in this issue are Boeing's contract agreement signed for Communication, Navigation and Surveillance/Air Traffic Management with Airports Authority of India; ACP members' roundtable discussion with Dr. Guruprasad Mohapatra, Chairman-AAI; USTDA's Reverse Trade Mission on Airport Development and ACP's successful participation at Aero India 2019 and the Global Aviation Summit organized by the Ministry of Civil Aviation in 2019.

We are excited to welcome the latest new member to the ACP, Houston Airports.

We look forward to harnessing the immense possibilities that India's Aviation future holds and continue to build on the overall promising performance in 2019.

(Mohamad Sayegh)
Vice President, Ground Operations India, FedEx Express, Middle East, Indian Subcontinent & Africa

(Thomas M. Miller)
FAA Senior Representative, South Asia

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ACP Milestones

2019

- ACP Members workshop with Dr. Guruprasad Mohapatra, Chairman-AAI at New Delhi
- ACP's participation at MOCAs' roundtable discussion on Skills Development at New Delhi
- U.S.- India ACP Aviation RTM - Airport Development, March 24-30, 2019 at USA
- ACP's participation at Aero India 2019, Bengaluru
- ACP's participation at MOCAs' 2019 Global Aviation Summit, Mumbai

2018

- Webinar on update of MOCA's Global Aviation Summit 2019 at New Delhi
- Grant agreement signed for CNS/Airspace with AAI
- Grant agreement signed for AAAE/IAAE with IAA & GMRAA to provide Training, Accreditation Programs
- ACP's "Innovation in Aviation" workshop with Ministry of Civil Aviation at New Delhi
- Grant agreement signed for Executive Development Training Program (EDTP) with RGNAU at New Delhi
- RGNAU's Eminent Speaker Series with Mr. Mark Searle, University of California Berkeley at New Delhi
- ACP's Eminent speakers series with Hugo Yon, U.S. Department of State (DoS) & Kristen Davis, U.S. Department of Transportation (DoT)
- ACP Members roundtable with GoI & USG officials during US – India Aviation Summit at Mumbai
- 2018 U.S. – India Aviation Summit at Mumbai
- Announcement of MoU between ACP-MOCA on specialized aviation training at Wings India 2018, Hyderabad

2017

- Celebration of ACP's "10 years Anniversary Partnership" at New Delhi
- Celebration of "ACP Diwali Nite" at New Delhi
- Grant agreement signed for Sustainability Master plan of Kolkata and Lucknow Airports
- ACP's "Innovation in Aviation" workshop with Ministry of Civil Aviation at New Delhi
- Aviation Institute of Maintenance's "The Award Dinner" in partnership with ACP at New Delhi
- Airport construction codes + specifications and 777x Airport compatibility workshop with DGCA
- ACP Members meeting with Enoh T. Ebong, Acting Director-USTDA at New Delhi
- Creation of Sub-committee on Aviation and Aerospace Skills Development
- Eminent Speaker Series - Blockchain Technology & its effect on the Aviation Industry
- ACP's participation at Aero India 2017, Bengaluru
- ACP & RGNAU partnership to bring the first Executive Development Program (EDP) for Aviation in India

2016

- Memorandum of Understanding Signing: ACP & Rajiv Gandhi National Aviation University (RGNAU)
- Celebration of "ACP Diwali Nite" at New Delhi
- System Wide Information Management (SWIM) workshop with AAI
- Grant agreement signed for GAGAN Extension Business Case
- Memorandum of Cooperation (MOC) Signing: ACP & National Skill Development Corporation (NSDC)
- ACP roundtable meeting in honour of Lee Zak, Director-USTDA & Sr. USG officials visiting India for US-India Strategic and Commercial Dialogue at New Delhi
- ACP farewell reception in honour of CJ Collins, ACP Co-chair (Government) & Sr. Representative to South Asia, FAA at New Delhi
- ACP Members meeting with Manish Kumar, MD & CEO, NSDC at New Delhi
- ACP Project workshop with Ministry of Civil Aviation at New Delhi
- ACP reception in honour of India Aviation 2016 participants at Hyderabad
- Memorandum of Cooperation (MOC) Signing: ACP & Bhogapuram International Airport Company Ltd., (BIACL)
- ACP Members roundtable meeting with Ministry of Civil Aviation (MOCA) during India Aviation 2016 at Hyderabad
- Grant agreement signed for Aviation Safety Technical Assistance Phase – II

2015

- ACP's Yearend social get-together at New Delhi
- ACP Members meeting with Lee Zak, Director-USTDA during Aviation Summit at Bengaluru
- 2015 U.S. - India Aviation Summit at Bengaluru
- Workshop on Next Generation Surveillance and Safety using ADS-B Technology at New Delhi
- Grant agreement signed for ProVision Body Scanner System Pilot Project

- ACP Members meeting with USTDA's Global Procurement Initiative (GPI) team at New Delhi
- ACP Members luncheon with Secretary Anthony Foxx, DoT with Delegation at New Delhi
- ACP Members meeting with Hon'ble Minister of Civil Aviation & Hon'ble Chief Minister of Andhra Pradesh at Aero India 2015, Bengaluru
- ACP Members luncheon with Lee Zak, Director-USTDA at New Delhi

2014

- ACP's participation at India – US Technology Summit at Greater Noida
- Honeywell's Udaan' 14 in partnership with ACP on " Propelling India Aviation Growth" at New Delhi
- Grant agreements signed for Aviation Security Equipment Testing & Evaluation Program (ASETEP) & Aviation Safety Technical Assistance Phase – I
- ACP Members roundtable with Ministry of Civil Aviation at New Delhi
- ACP Members meeting with Arun M. Kumar, DG- FCS at New Delhi
- Farewell reception in honour of Margaret Hanson-Muse, Deputy Sr. Commercial officer at New Delhi
- ACP reception in honour of India Aviation 2014 participants at Hyderabad
- Grant agreements signed for Performance Based Navigation (PBN), Technical, Management, and Operational Development Training (TMODT) Phase – II and Airport Geographic Information System (AGIS) for Indian Airport

2013

- U.S. - India Aviation Summit at Washington D.C.
- ACP Members meeting with Lee Zak, Director – USTDA at New Delhi
- Workshop on U.S. - India Aviation Security at New Delhi
- Seminar on General Aviation: The Next Steps at New Delhi
- Seminar on Bilateral Aviation Safety Agreement (BASA) regime at New Delhi

2012

- Honeywell's Udaan' 12 in partnership with ACP on " Indian Air Traffic Modernization & Airspace Decongestion" at New Delhi
- Grant agreement signed for Total Airspace and Airport Modeler (TAAM) at New Delhi
- ACP's participation at India Aviation 2012, Hyderabad

2011

- U.S. - India Aviation Summit at New Delhi
- Grant agreements signed for Technical, Management, and Operational Development Training (TMODT) Phase – I & launching GBAS at Chennai Airport
- Seminar on Airport Economic Reforms – Moving Ahead with Chairman AERA at New Delhi
- Indo – US Aviation Manufacturers Meet at New Delhi

2010

- Conference on Civil Aviation: Creating Sustainable Growth at New Delhi
- Grant agreement signed for Helicopter Safety Technical Assistance
- ACP's Roundtable Discussion on Airport Regulatory & Financing Best Practices
- ACP's participation at India Aviation 2010, Hyderabad
- Seminar on Automatic Dependent Surveillance – Broadcast (ADS–B) & Ground Based Augmentation System (GBAS)

2009

- U.S. - India Aviation Partnership Summit at Washington D.C.
- Grant agreement signed for Aviation Standard Technical Training
- Farewell reception in honour of R.K. Singh, Joint Secretary – MOCA at New Delhi

2008

- FAA conducts Air Traffic Management Training Program (ATMTP)
- Seminar on Indo – US Aviation Cooperation – Growth of Civil Aviation in India at New Delhi
- AAI Air Traffic Control Officers (ATCO) Manpower Assessment Study
- Seminar on Air Traffic Flow Management (ATFM)

2007

- U.S. - India Aviation Partnership Summit at New Delhi
- U.S. - India ACP Inaugural Session: ACP Formed
- MoU between: U.S. Department of Transportation, U.S. Trade & Development Agency and Ministry of Civil Aviation

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U.S. Department of Commerce
U.S. Embassy New Delhi, India

The Commercial Section of the U.S. Embassy promotes U.S. exports, helps American companies do business overseas, and promotes foreign direct investment into the United States. As part of the U.S. Commercial Service's global network with seven offices across India, over 100 offices in the United States, and more than 80 other international offices, we have many trade and export promotion resources to help you develop your business.

U.S. companies with a commitment to the Indian market of 1.3 billion citizens can find opportunities in diverse industry sectors. You can connect with these opportunities through our export promotion, trade counseling, business matchmaking, and other services. For more details, please go to: www.export.gov/india

For Indian company looking to invest in the United States or searching for U.S. suppliers, the U.S. Commercial Service can help. For more details, please go to: www.buyusa.gov/india

Services for U.S. companies include but are not limited to:

Commercial Advocacy: We work with the Advocacy Center at the U.S. Department of Commerce to coordinate U.S. Government resources to level the playing field on behalf of U.S. companies as they compete against foreign firms on foreign government and public tenders and procurements, both civilian and defense. This includes procurements by Indian government agencies as well as PSU, and DPSU procurements.

Single Company Promotion: The Single Company Promotion (SCP) provides U.S. companies with promotional services to help increase the awareness of their product or service. This promotional event can be customized and might include a seminar, press interaction, or reception, with a targeted e-mail or direct mail campaign to invite attendees.

Gold Key Service: The Gold Key Service (GKS) arranges pre-screened one-on-one appointments with potential customers or business partners. The GKS services includes up to five appointments with pre-qualified customers, distribution channel firms, appropriate government officials, or other contacts, and possible escort by a U.S. Commercial Service staff member for meetings.

International Company Profile: An International Company Profile (ICP) is a due-diligence check that helps U.S. companies evaluate potential business partners. An ICP provides a detailed background report based on a variety of research sources, including an on-site visit by a Commercial Specialist, listing of the company's senior management, comments from company references, banking and financial information, and CS India insight on whether the prospective partner can meet your business needs.

International Partner Search Plus: The International Partner Search Plus (IPS Plus) service provides U.S. firms with a list of up to five agents, distributors, or partners that have expressed an interest in your product or service, and includes virtual introductions via teleconference to the identified contacts.

Customized Trade Counseling: U.S. companies can benefit from customized trade counseling that can provide information on market opportunities, market entry recommendations, regulatory issues, and other relevant information.

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ACP in Partnership with

Ministry of Civil Aviation
Government Of India

Directorate General of Civil Aviation

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AIRPORTS AUTHORITY OF INDIA

BUREAU OF CIVIL AVIATION SECURITY

ACP Ongoing Projects

- CNS/ATM Modernization Roadmap
- Executive Development Training Program (EDTP) with RGNAU
- Sustainability Master plan for Kolkata and Lucknow Airports

ACP Past Successes

- Business Case for GAGAN Extension
- Aviation Safety Technical Assistance Phase – II
- Aviation Security Equipment Testing & Evaluation Program (ASETEP)
- Airport Geographic Information System (AGIS) for Indian Airport
- ProVision Body Scanner System Pilot Project
- Technical, Management, and Operational Development Training (TMODT) Phase – II
- Aviation Safety Technical Assistance Phase – I
- Total Airspace and Airport Modeler (TAAM)
- Performance Based Navigation Procedure Development
- GBAS Pilot project at Chennai Airport
- Technical, Management, and Operational Development Training (TMODT) Phase – I
- AAI Air Traffic Control Officers (ATCO) Manpower Assessment
- Helicopter Aviation Safety Technical Assistance
- Aviation Standard Technical Training

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.

Objective

- 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

- NextGen/Future Air Navigation System
- Air Traffic Management Modernization
  - Satellite-based Navigation System
  - Ground –based Navigation System
  - Automatic Dependence Surveillance Broadcast
  - Radar Integration
- Airspace and Airport analysis, Development and Planning – Using software simulation toolkits and GIS
- Aviation support Industry Development
- Aviation Human Resources – Foster partnership between U.S. and Indian training organizations
- Aviation Safety – Promoting Global Harmonization and sharing of U.S. Best practices
- Aviation Security – Enhance capacity to facilitate early adoptions of cutting edge technologies

FedEx is a facilitator of international trade, enabling businesses to expand their global reach

By Mohamad Sayegh, Vice President, Ground Operations India, FedEx Express, Middle East, Indian Subcontinent & Africa

FedEx provides customers and businesses worldwide with a broad portfolio of transportation, e-commerce and business services.

At FedEx, we believe in connecting people to possibilities and helping communities access opportunities, as we believe that this will help us all move forward. Possibilities will invoke the spirit and potential of a more connected world through the people that make it possible. Since the beginning of time, the desire to connect, communicate and trade has propelled humankind forward. Now, in the twenty first century, with the power of technology, transportation, information, and ideas, human progress has reached unprecedented levels.

FedEx believes that connecting people with goods, services, ideas and technologies creates opportunities. FedEx believes that a connected world is a better world, and that belief guides everything we do. Over the years, FedEx has worked to make international shipping as easy as possible for customers who want to connect with opportunities in global markets.

Today, FedEx Express is the world's largest express transportation company, with an extensive global network. FedEx provides reliable, time-sensitive and competitively superior integrated express transportation services to more than 220 countries and territories, connecting 99% of the global GDP.

In India, FedEx operates 23 weekly international cargo flights, supported by a comprehensive ground transportation system with over 1,000 vehicles. FedEx provides all-cargo international flights from three gateways in India, located in Mumbai, Delhi and Bengaluru.

FedEx reaches more than 19,000 pin codes across the country, with services that cover 90% of the Indian manufacturing GDP through our air and ground operations.

FedEx aims to facilitate trade and support businesses across sectors such as garments, textiles, IT, E-commerce, automotive, pharmaceuticals, engineering, handicrafts, high value items, and electronics industries, and the SME sector in India by providing them with our expertise across international trade.

i. Small Business Enterprises

- FedEx provides in-depth expertise in trade regulations (exports and imports), solutions on customs and packaging, and supply chain management to support small businesses and SMEs.
- FedEx focuses on technology and innovative solutions to help create efficiencies and growth for SMEs.
- FedEx offers tools such as FedEx Ship Manager™ and FedEx InSight for SMEs looking to explore global markets.
- FedEx offers solutions on customs and packaging that integrate into SME businesses, working as an extension of

their business rather than as a service provider.

- FedEx creates programs for specific cluster markets and offers customized solutions such as flexible pick-up timings, packaging and shipping rates.
- In 2017, FedEx launched the FedEx Small Business Grant Contest, with a grant of INR 15,00,000, to help more small businesses connect with a world of opportunities. The contest has now completed its second edition.

ii. E-commerce

- FedEx offers specialized services including 'Cash on Delivery' and FedEx Delivery Manager for customers in the e-commerce sector.
- FedEx Delivery Manager is an interactive e-commerce delivery solution that allows retailers to provide additional flexibility to their customers by allowing them to customize the timing and location of their deliveries at no extra cost.
- FedEx also offers convenient payment systems for 'Cash on Delivery' customers by providing the option of credit and debit card payments.
- FedEx has developed a robust IT architecture to monitor and manage seamless returns and exchanges on behalf of e-commerce shippers.
- Another valued solution for e-commerce players include on-line track and trace

iii. Others

- FedEx Priority Alert Plus™ provides additional intervention capabilities such as dry ice and gel pack replenishments to protect the integrity of the contents.
- 'My Perfect Start' program was designed to provide personalized support to new customers.

FedEx Cares

The FedEx Cares giving strategy is designed to use our core capabilities and charitable contributions to address issues of importance in the communities we live and work in around the world. FedEx has set a goal to contribute $200 million to 200 communities around the world by 2020 with a view to create opportunities and delivery positive change. Since 2016, FedEx has donated $157 million in 250 communities across the globe. The FedEx Cares volunteering program involves FedEx team members and their families donating their personal time and effort in building sustainable and resilient communities.

In FY18, volunteers across the globe dedicated a total of 81,976 volunteer hours contributed by more than 13,000 team members.

Under this initiative, FedEx team members participate in various activities, such as the following Indian programs:

i. Visiting orphanages and organizing celebrations for children

ii. Donating essential commodities, books and stationery items

iii. Organizing and participating in blood donation drives

iv. Visiting old age homes

The focus areas are sustainable transportation, education, entrepreneurship, road safety and disaster relief.

Road Safety

As a leading transportation company, FedEx understands its responsibility to enable and raise awareness on road safety. Road accidents are a significant cause of deaths and injuries in India.

- In 2017, FedEx, in partnership with International Road Assessment Program and national and state agencies, launched IndiaRAP to address road safety in highest risk areas in the country.
- FedEx works with the Safe Kids Foundation across Mumbai, Delhi and Ahmedabad to help educate children and parents about pedestrian safety. This program has received huge support from the team at FedEx India who have coordinated and volunteered in multiple programs.
- FedEx team members have assisted in data collection, served on local task forces and volunteered in schools during the International Walk to School Day.
- As part of the company's community outreach, FedEx team members performed street plays on road safety, to create awareness on road safety.

Sustainable Transportation

FedEx believes that sustainable transportation is a public health, safety and environmental issue.

In collaboration with World Resources Institute (WRI), FedEx supported several projects across cities in India to design sustainable transportation projects and safety programs to improve mobility.

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Moving Beyond the Hype of Predictive Maintenance

By Josh Melin, Director – Product Line, Honeywell Connected Enterprise

Aerospace companies have been banging the drum on predictive maintenance for a couple of decades now. The promise of a major breakthrough always seems to be just around the corner.

Nobody questions the appeal of something that will reduce unscheduled maintenance events, increase technical dispatch reliability, improve maintenance efficiency and trim operating costs. But predictive maintenance hasn't yet lived up to the hype.

No wonder many operators are cynical about the "predictive maintenance" label. Offerings promoted as predictive maintenance tools provide vastly different levels of capability and often fall far short of delivering the implied results. In many cases, operators have had to settle for platforms that provide tons of historical data, advice on how to fix what's already broken and trend monitoring to forecast faults.

Ideally, predictive maintenance solutions monitor onboard equipment in real time and analyze historical data. They use advanced analytics to predict which components will fail and when, so technicians can address potential issues before they can become major problems.

While they can identify a component that is likely to fail, current predictive maintenance tools aren't able to provide much useful information about the nature of the problem. Technicians

still need to go through the time-consuming process of removing, troubleshooting and repairing or replacing the faulty unit. Sometimes, they're unable to duplicate the problem, resulting in a frustrating no-fault-found conclusion.

Even in the age of predictive maintenance, unscheduled maintenance events have big-time impact on an airline's schedule performance, passenger satisfaction and bottom line – to the tune of $10 million-$50 million per year, by some estimates. Still, predictive maintenance has been widely viewed as the best option for airline maintenance teams.

At Honeywell we combined the capabilities of the connected aircraft and the Industrial Internet of Things to develop the aviation industry's first true prescriptive maintenance solution. We call it Honeywell Forge Connected Maintenance.

With Honeywell Forge Connected Maintenance, we provide maintenance teams information that can eliminate the bulk of unscheduled events by preventing faults from happening in the first place. Our breakthrough approach uses advanced predictive analytics to provide alerts of impending failures with prescribed maintenance actions. It uses cognitive diagnostics to accelerate the time to fix. And it uses connected airplane technologies to wirelessly transfer databases, software and flight data to and from the aircraft.

The Honeywell solution generates a preventive maintenance alert that can be accessed with our powerful Honeywell Forge for Airlines platform. In most cases, the alert occurs far enough in advance that the fault can be addressed during the aircraft's next scheduled maintenance event. Cognitive diagnostics pinpoint potential problems down to the part number so that maintenance technicians know exactly which part to remove and replace to prevent an unscheduled event.

Our unique connected maintenance solution uses the latest artificial intelligence and machine learning techniques to find problems quickly and efficiently, eliminating the need for technicians to monitor and interpret data. We put actionable information at their fingertips using an intuitive mobile application, reducing the time spent troubleshooting potential problem units and speeding the process of getting key mechanical systems back on line.

In June 2018 we deployed our predictive analytics to solve top challenges facing environmental control system components. We're currently deploying predictive analytics on wide variety of aircraft systems, including brakes and landing gear, as well as various mechanical components. We have more than two years of real-world operational experience and extensive data that proves the value of our unique solution for auxiliary power units.

Airlines using Honeywell Forge Connected Maintenance for APUs have experienced a 30-50 percent reduction in operational disruptions caused by the APU and a 10-15 percent reduction in costly premature removals. The no-fault-found rate has been reduced to 1.5 percent and the service has achieved 99 percent predictive accuracy.

Our focus so far has been the kinds of equipment that cause the highest number of delays and cancellations, as reported by the Air Transport Association. Eventually, prescriptive maintenance techniques will no doubt be used nose-to-tail, boosting efficiency throughout the airline value chain.

Honeywell

Rajiv Gandhi National Aviation University – the one and only full-fledged Aviation University in the Country

By AVM Nalin Tandon (Retd.), Vice Chancellor

India has emerged as one of the fastest growing aviation markets in the world. With around 200 million passenger trips annually now, Indian aviation market is expected to grow more than five times to a billion trips in the next decade or two. The civil aviation industry today is a skill-oriented and highly technology-enabled industry.

The Government is cognizant of the immediate and long term requirements and therefore, has established India's first national aviation university, Rajiv Gandhi National Aviation University (RGNAU) at Fursatganj, Uttar Pradesh, to be the enabler in imparting international standard of aviation education to the country's youth. The output of this University -be it the students, the graduates or the post graduates - would be the force that engineers reform and galvanizes the Indian civil aviation sector.

RGNAU: The Background

The Rajiv Gandhi National Aviation University (RGNAU) has been established by an Act of Parliament called the Rajiv Gandhi National Aviation University Act, 2013 at Fursatganj Raebareli, Dist. Amethi, Uttar Pradesh. The university has been envisaged as the premier institution of higher learning within the aviation milieu aimed at providing cutting edge and critical research to enhance the aviation industry in India. The Act of Parliament empowers the University to award Diploma, Degree and Post Graduate Degrees in the field of civil aviation.

A strategic vision with high aims

The objective of the University is to facilitate and promote aviation studies, teaching, training and research in conjunction with the industry to achieve excellence in operations and management of all the sub-sectors within the aviation industry. The University aims to achieve excellence in areas of aviation management, policy,

science and technology, aviation environment, training in governing fields of safety and security regulations on aviation and other related fields.

The University intends to offer a number of courses required to bridge the skill gap within the Indian aviation industry at present as well as taking into consideration future requirements. At the same time collaborations with the leading international universities and institutions in the aviation domain, are being forged towards proffering global knowledge that is customized for local requirements.

Excellent Infrastructure

RGNAU has state-of-the-art infrastructure setup which includes high-tech IT infrastructure and smart class technology enabled 1.2 lac sq.ft. of Academic Block; Wi-Fi enabled hostel accommodation facility for 588 students with recreation and gym facilities; 2 libraries with dedicated provision for digital library; 2 Seminar halls with video conferencing facility; and open air theatre with space frame structure.

Academic Block

Academic Block

Hostel Block

Faculty Housing Block

Major Accomplishments

1. Short-term EDP/MDP programs:

The University successfully conducted three short term programmes (Management Development Programs/Executive Development Programs) in 2017 on Aviation Management, Implementation of Safety Management Systems (SMS) and Human Factors in Aviation. These programmes were aimed to provide specialized knowledge for mid-level and senior aviation professionals already engaged in their professions. The bouquet of courses offered as part of the EDP/ MDP framework were tailored to suit the requirements of the Indian Aviation industry while providing them with a certification that is globally accepted as a benchmark for their respective sectors/ sub-sectors.

Following the success of these short term EDP/MDP programmes, the University plans to conduct a series of Management Development Programs in the areas of Aviation Law, Aviation Security Management and Implementation of Internal Audit Framework etc. in the year 2019 20.

2. Industry Collaborations:

With an objective to develop the University as a leading research hub for aviation and to ensure industry relevance of the courses, the University has forged several collaborations.

The Hon'ble Minister for Civil Aviation, Shri Ashok Gajapathi Raju Pusapati lighting the lamp for inauguration of the Executive Development Programme

The Hon'ble Minister for Civil Aviation, Shri Ashok Gajapathi Raju Pusapati addressing the gathering at the inauguration

The Hon'ble Minister of State for Civil Aviation, Mr. Jayant Sinha addressing the gathering at the inauguration

Pioneer batch of the Executive Development Programme in Aviation Management (2017)

US-India Aviation Cooperation Program - RGNAU has signed MoU with US-India Aviation Cooperation Program (ACP) for knowledge partnership. The US-ACP supported RGNAU in successfully concluding University's first "Executive Development Training Program (EDTP)" on Aviation Management by providing faculty and content development support. The US-ACP is also helping RGNAU in exploring partnerships with foreign Universities in the US and identifying new areas of partnerships with Indian industry players.

Exchange of MoU between Rajiv Gandhi National Aviation University and US-India Aviation Cooperation Program

MRO Association of India **-** The University signed MoU with MRO Association of India in 2016 to collaborate in the area of education and towards social responsibility commitment/ obligations. The collaboration with MRO Association of India will support RGNAU in drafting of course curriculum; providing relevant experts (CXO level) to deliver talks; joint contribution of funds for setting up education and research infrastructure; support in placements and internships among others.

Exchange of MoU between Rajiv Gandhi National Aviation University and MRO Association of India

Rolls-Royce - Rajiv Gandhi National Aviation University signed an Memorandum of Understanding (MoU) with Rolls-Royce to build future competencies required by the Indian aviation industry. With this MoU, Rolls-Royce will support the University to help develop curricula and offer international experts for guest lectures. Rolls-Royce also agreed to offer internship positions to qualified students across Rolls-Royce sites in India.

Exchange of MoU between Rajiv Gandhi National Aviation University and Rolls-Royce

RGNAU further signed MoU with **GMR Aviation Academy** in 2017 for joint delivery of Post Graduate Diploma course in Airport Operations. RGNAU also signed MoUs with **Bird Worldwide Flight Services** for development of professional aviation and aerospace education programs & research to benefit the civil aviation industry of India. A tri-partite agreement was signed between MoCA, RGNAU and the **International Air Transport Association (IATA)** in 2018, with an objective to develop quality courses in the field of aviation.

3. Launch of its first Post Graduate Diploma in Airport Operations:-

The University is going to start its first course i.e. Post Graduate Diploma in Airport Operations in association with GMR Aviation Academy in Aug 2019. This will be an industry led program with faculty derived from the Industry. The duration for the course is 18 months, which includes 12 months classroom teaching at RGNAU campus and 6 months of internship at GMR airports.

Future plans

Going forward, the University plans to launch a series of academic programmes as a part of its five-year growth strategy from 2019-20 to 2023-24. These include MBA in Aviation Management; Executive MBA in Aviation Management; B.Sc. in Aviation and B.Sc. in Aircraft Maintenance through affiliation along with various short-term certification courses.

Way forward

Being a niche university solely focused on Aviation, RGNAU presents a strong case for collaboration on research or operational areas in the aviation and its related field. The University is seeking proposals and cooperation from institutions, industries and universities in India and abroad to give students and professionals better academic and practical exposure on the aviation sector.

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राजीव गांधी राष्ट्रीय विमानन विश्वविद्यालय

United Airlines and United Express

By Harvinder Singh, Country Manager - India, United Airlines

United Airlines and United Express operate approximately 4,700 flights a day to 356 airports across five continents. Annually, United and United Express operated more than 1.6 million flights carrying more than 148 million customers. United is proud to have the world's most comprehensive route network, including U.S. mainland hubs in Chicago, Denver, Houston, Los Angeles, Newark/New York, San Francisco and Washington, D.C. United operates 760 mainline aircraft and the airline's United Express carriers operate 546 regional aircraft. The airline is a founding member of Star Alliance, which provides service to 193 countries via 28 member airlines.

United has served India since 2005 by providing daily, nonstop service between Newark/New York and each of Delhi and Mumbai. United is proud to be the only U.S. airline to operate consistently between India and the U.S. for more than a decade. Flights from Delhi and Mumbai are conveniently timed to connect at our New York area hub – Newark Liberty International -with an extensive network of destinations throughout the Americas. Starting December 2019 United will add a third route and flight between the U.S. and India when it launches nonstop Delhi - San Francisco service, making United the only U.S. carrier to provide service from India to both coasts of the U.S.

As the world's leading airline, United is committed to being a responsible global citizen. In towns and cities across the U.S. and around the world, United connects families and friends, colleagues and companies. We strive to meet our responsibilities by taking an active role in our global citizens hip by implementing programs and services that help protect our environment, show pride in our communities, celebrate our diversity, protect our human rights and lead our industry in providing a clean, safe and reliable product.

Every day, United helps unite the world by connecting people to the moments that matter most. This shared purpose drives us to be the best airline for our employees, customers and everyone we serve. United's "Shared Purpose" consists of four pillars by which we operate daily, including:

Fly Right: On the ground and in the air, we hold ourselves to the highest standards in safety and reliability. We earn trust by doing things the right way and delivering on our commitments every day.

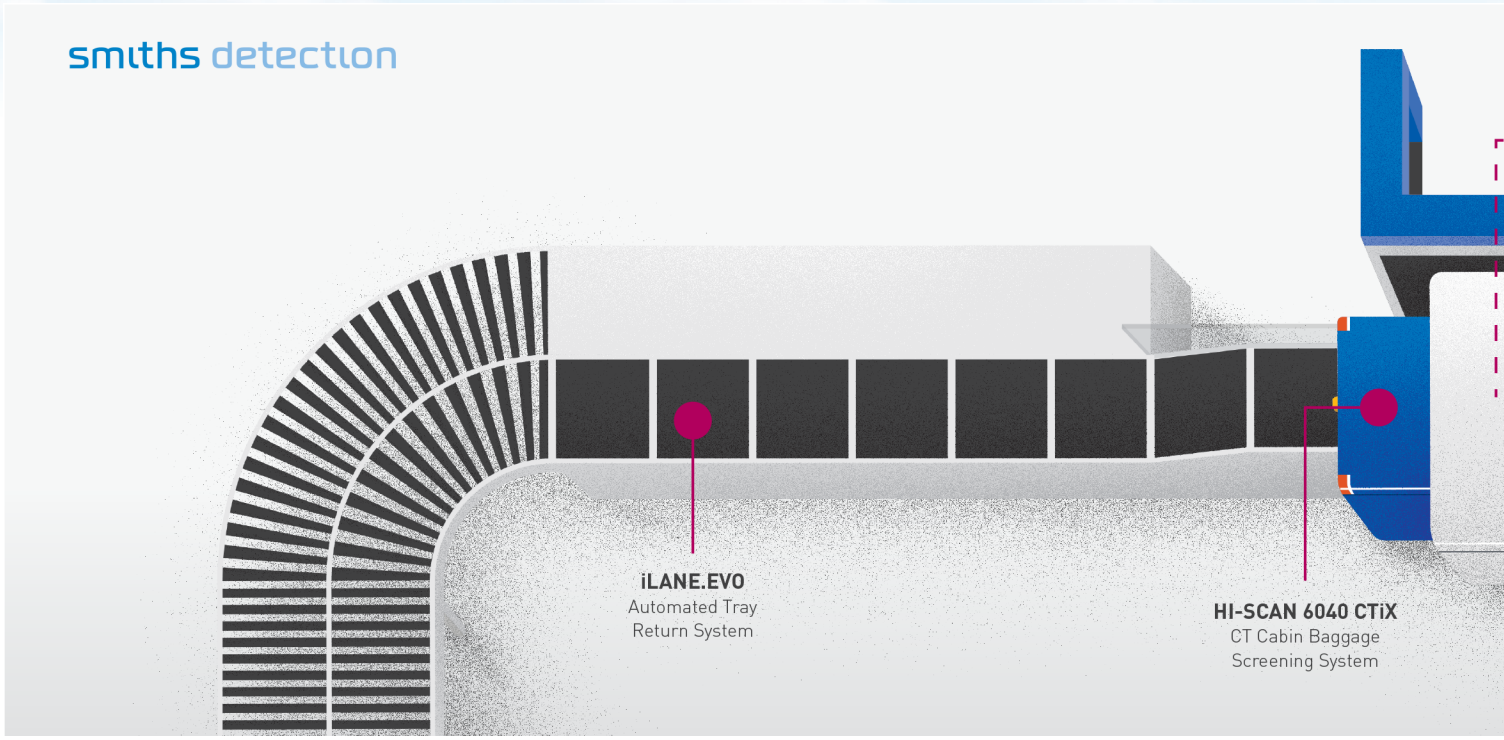
Fly Friendly: Warm and welcoming is who we are.

Fly Together: We respect every voice, communicate openly and honestly, make decisions with facts and empathy, and celebrate our journey together.

Fly Above and Beyond: With an ambition to win, a commitment to excellence, and a passion for staying a step ahead, we are unmatched in our drive to be the best.

UNITED AIRLINES

A STAR ALLIANCE MEMBER



The Future of Airports is Here:

Opening New Doors with Integrated Checkpoints and CT Technology

By Ravinder Chauhan, Program Manager, Smiths Detection India

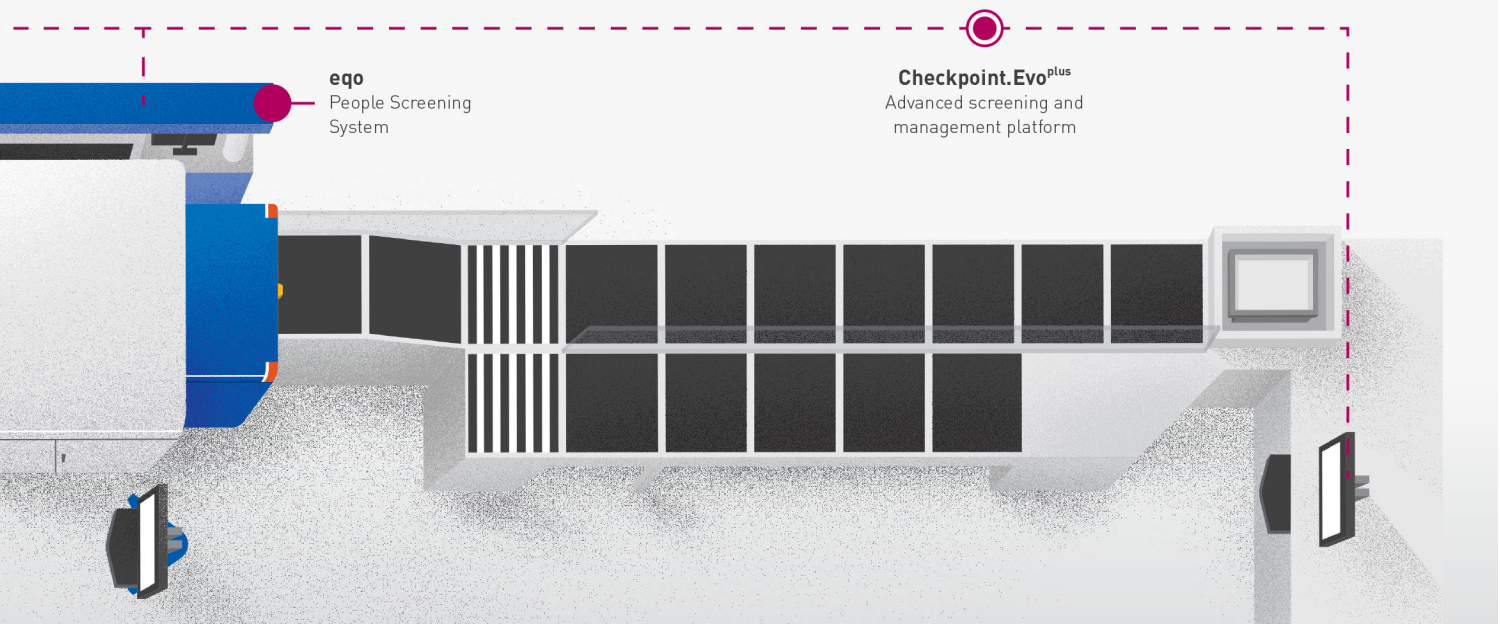
Today's airport operations are highly complex. As travel and tourism continue to grow, so do the difficulties faced by both domestic and international airports. An increase in passenger numbers, a demand for service excellence, exacting business goals as well as shifting threats and regulations — are all major challenges facing the aviation industry. Often, tackling these obstacles means that airports need to address three objectives:

- Holding security operations to evolving global standards
- Increasing operational efficiency
- Delivering quality service to passengers and airlines

Such an initiative is no mean feat. Fortunately, modern technology and system integration capabilities are continually devising a range of smart and practical solutions. That when combined with the right processes, can bring about significant improvements to airport management.

MANY CHECKPOINTS, MULTIPLE PARTS AND ONE INTEGRATED SOLUTION

For checkpoints to function optimally, some key considerations include imaging accuracy, speed, throughput and cost effectiveness. In terms of an effective checkpoint solution, it primarily consists of



four components:

- Lane design
- Baggage and people screening
- Image management
- Business intelligence

GET ON THE FAST LANE TO ACCELERATED CHECKPOINT SCREENINGS

Smiths Detection's iLane.evo takes full advantage of automation to create a seamless screening experience. Once screened baggage has been collected, trays are automatically sent back to the start of the checkpoint for other passengers to use. Officers no longer have to move trays by hand and can focus their attention on crowd control and passenger service.

Other benefits:

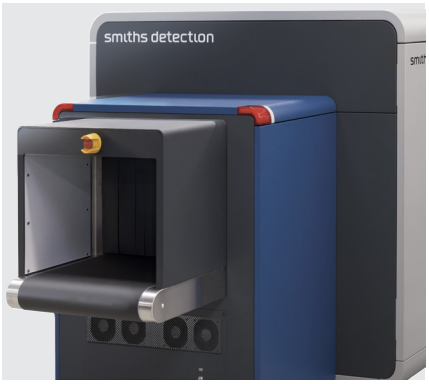
- Modular design allows for customisation of the length of the lane
- Multiple divestment stations so baggage can be deposited concurrently for several passengers
- Automatic baggage diverter to facilitate secondary checks

With more than one divestment station, multiple passengers can place their baggage onto the belt for inspection, reducing waiting time. The iLane.evo also features a re-routing belt so that baggage which require additional screening can be automatically diverted to recheck stations, preventing bottlenecks. These features bring about results that are difficult to replicate with a traditional lane design. The iLane.evo helps raise throughput and reduce operational costs so that optimum operational efficiency can be achieved.

For maximum results, lanes should integrate with other checkpoint components and offer a variety of configurations to meet various demands. To be future-ready, checkpoint technology

needs to have the scalability and sustainability to incorporate emerging systems and functions.

CT TECHNOLOGY: SIMPLY LEAVE YOUR LAPTOP AND LIQUIDS IN YOUR BAG



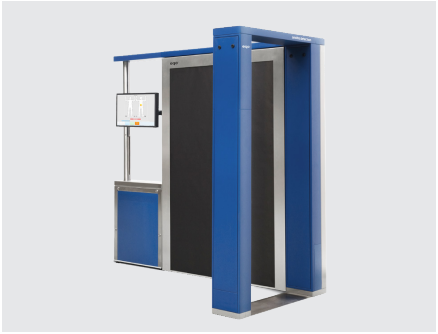
HI-SCAN 6040 CTiX is ECAC EDS CB C3 approved, TSA AT-2 certified and uses CT technology. Carry-on bags can be scanned without having to remove laptops and liquids.

Many regulators today are pushing for the deployment of Computed Tomography (CT) technology scanners. Unlike conventional X-ray scanners, which create 2D X-ray images from fixed generators and detectors, a CT checkpoint scanner gantry rotates at a constant speed as the baggage is carried through. It spins around the object taking hundreds of images at slightly different angles, and the HI-SCAN 6040 CTiX is currently in use at major airports around the world including Jeju International Airport. Passengers and operators have welcomed this improved screening technology as the inconvenience of taking out electronics and liquids is eliminated. Baggage is simply deposited with no extra procedures, speeding up the screening process and enhancing overall passenger experience.

The new CT screening equipment provides enhanced capabilities while maximising passenger throughput. Our airports will be equipped with cutting- edge security technology on par with the best airports internationally. Darwin and Alice Springs will be the first airports in Australia to be fully equipped with this advanced technology. This will not only lead to fewer physical bag searches, but greater ease for passengers passing through our screening points.

ROBERT PHILLIPS
Head of Security & Contingency Planning
Northen Territory Airports

RAPID, AUTOMATIC THREAT DETECTION FOR PEOPLE



eqo body scanner indicates concealed object locations by displaying a marker on a mannequin representation of the person being screened. It requires minimal footprint and can be easily integrated into any checkpoint configuration.

Besides enabling the efficient screening of carry-on baggage, security checkpoints also need to perform smooth and thorough passenger screenings. The eqo body scanner fulfils this requirement by using flat-panel millimetre-wave technology to detect concealed contraband of any material type and produces a high probability of detection with a low false alarm rate. Passengers are scanned in seconds, and the results are instantly displayed on a mannequin representation with suspicious areas clearly marked out.

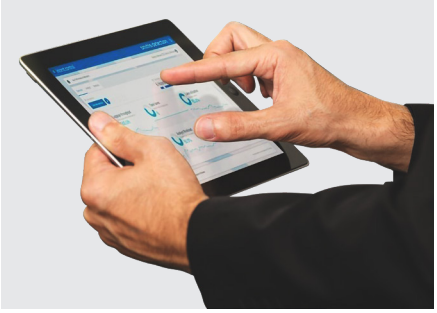
Easy integration, total process speed, false-alarm rate and user-friendliness are amongst the top reasons why customers prefer the eqo body scanner. Copenhagen Airport implemented the scanner and saw tremendous results, both in operational efficiency and customer satisfaction. Instant results and low false alarm rates speed up the screening process and boost throughput, with process statistics available directly from the system.

ALWAYS CONNECTED, ALWAYS READY TO ACT

For lanes to reach optimal performance, Checkpoint. Evoplus enables full integration of all checkpoint components. With advanced screening and management that offer the convenience of both centralised and remote screening, Checkpoint. Evoplus brings together individual components and sensors, and transforms them into a fully networked checkpoint system that

Copenhagen Airport is satisfied with the introduction of the eqo security scanner, a move that enhances the security performance of our checkpoints. The technology raises our detection capability to comply with new EU regulations, while at the same time improves the experience of our passengers. Integrated seamlessly into our existing checkpoints, the eqo security scanner is a welcome addition to the security infrastructure of our airport.

JOHNNIE MÜLLER
Head of Security
Northen Territory Airports Copenhagen Airport



Checkpoint.Evoplus enables X-ray images to be collected from all security lanes and delivered to operators based in a remote location.

provides real-time data collection, distribution and management. It offers real-time and historical data for analysis and reporting, in addition to allowing operators to share information and monitor the entire screening operation via remote portable devices such as a tablet PC. X-ray images can be collected from all security lanes and delivered to operators based in a remote location. Suspicious areas are marked and classified on the images so officers can focus on them during secondary inspections.

Looking to the future in search of new heights

Emerging technologies, artificial intelligence, the proliferation of biometrics and new processes offer airports a world of possibilities. Tapping into these areas will go a long way in helping them meet security, operational efficiency and compliance needs, for many years to come. At the same time, airports need to embrace a future that is automated and passenger-centric for their security standards and procedures to truly evolve.

As a leading supplier of security solutions for the aviation sector, Smiths Detection works closely with our customers and technology partners to help navigate constant shifts — be it catering to passenger and operational expectations, or finding new approaches to stay ahead of travel trends. Because every checkpoint is unique, we utilise modelling and simulation to customise solutions that bring out the best in our products. Most importantly, we rely on our deep expertise and advancements in technology to transform the movement of people and goods, with the aim of making the world a safer place.

To find out more about our checkpoint solutions and how we can help take your airport screening security to a whole new level, visit **smithsdetection.com/solution/checkpoint-solutions** or scan the QR code on the left.

Critical Success Factors for the Regional Connectivity Scheme

By Ashwin Noronha Director, Aerospace & Defence KPMG in India

India's aviation sector has seen rapid growth in the past few years, with high demand propelling the country towards becoming the world's third largest domestic aviation market. This growth has been driven by scheduled commercial airlines that emphasise on establishing domestic and international connectivity to metros and Tier 1/2 cities – markets where the demand density can sustain their aircraft fleet. India's regional, low-density commuter markets, on the other hand, remain largely untapped.

India has experimented with the idea of regional airlines for over three decades, but with limited success. Over time, the failure of traditional regional airlines such Air Costa and Air Pegasus, gave way to regional arms of, and regional services provided by full-service commercial airlines. Today, India's regional aviation market is dominated by the likes of Spicejet and Air India's Alliance Air. As a result, smaller commuter carriers such as TruJet and Zoom Air face stiff competition and struggle to remain viable.

In the past, the absence of an incentivisation mechanism for regional air connectivity, limited spending power of regional airlines, and low economic activity in remote geographies have heavily contributed to the stagnation of regional air transport. However, the Indian Government's recent efforts to boost regional air connectivity, in the form of the Regional Connectivity Scheme (RCS), have the potential to drive substantial foreign and domestic investment into this sector.

Regional Connectivity Scheme (RCS)

To make air travel affordable and widespread, the Government of India released the Udey Desh Ka Aam Nagrik (UDAN) scheme in 2016, with specific emphasis on capped air fares for pre-planned stage lengths. Under UDAN, the government is offering up rights to operate regional routes through competitive bidding. In order to make these routes viable, air operators are to have monopoly over the routes they win for 03 years, and the option to avail of Viability Gap Funding (VGF) for RCS operations. In addition to these, both central and state governments have announced a slew of tax and duty concessions to promote RCS flights.

Bidding of routes and RCS

In order to accelerate regional connectivity in a structured manner, the government divided the route bidding process into different phases, of which two phases have been concluded so far.

In the first phase, the government awarded over 128 routes, expected to connect 70 different airports across India, to five different air carriers. Air Odisha secured the highest number of routes with 50 routes, followed by Air Deccan at 34 and TruJet at 18 routes. Among scheduled commercial operators, Alliance Air secured 15 routes, followed by SpiceJet, which secured 11 routes.

In the second round of bidding, the focus was on improving connectivity to priority areas like the North East, Jammu & Kashmir, Uttarakhand, Himachal Pradesh, Andaman & Nicobar Islands and Lakshadweep by introducing more operational flexibility and promoting helicopter operations. This phase of bidding saw the government award over 325 routes to 15 air carrier and helicopter operators, that are expected to connect 25 new airports and 31 new helipads to India's aviation network.

While both rounds of RCS bidding were extremely successful at face value, commuter operations remain far from achieving their full potential. Carriers such as Air Odisha and Air Deccan are yet to commence full scale RCS operations, despite having won exclusive rights to operate certain routes under UDAN.

There are multiple factors that contribute to the lacklustre on-ground performance of UDAN operations in the country. To some extent, the slow uptake of RCS operations can be attributed to an insufficient understanding of region-specific market dynamics, and the absence of an adequate infrastructure ecosystem. Yet, the biggest challenge faced by air operators is the difficulty in obtaining appropriate aircraft and ground assets for sustainable regional operations.

Regional air transport operations until UDAN

Since most regional flights today are undertaken as secondary operations by leading domestic airlines, the specific requirements for commuter aviation play second fiddle to aircraft requirements for the operators' existing high density routes. Coupled with the fact that easy financing and leasing options are available only for aircraft types that have an established global presence, this has led Indian regional operators to opt for quasi-regional aircraft, such as Bombardier's Q-400 series and Airbus's ATR series of aircraft on all regional routes.

However, air operators have been unable to achieve the frequency of flights required to generate and sustain a critical mass of regional passengers, due to a major mismatch between region-specific demand and the capacity of aircraft in use.

With airlines unable to remain viable solely through commuter routes, they are increasing compelled to depend on traffic flow from established metro and Tier 1 markets network to ensure sufficient capacity utilisation. In doing so, stand-alone regional and commuter operators have put themselves in direct and undesirable competition with major scheduled carriers. This competition has often resulted in ceasing of operations and bankruptcy of the regional and commuter operators.

The failure of regional operators, though, is a self-fulfilling prophecy. In any established aviation market, the key to success for regional aircraft operators is to work in conjunction with larger scheduled operators, while ensuring that they both do not compete head-on for the same markets. In order to make this possible, commuter airlines need to create a strong network of regional routes.

To this end, airlines would first have to operate aircraft appropriate for low density regional routes, since the success of regional aircraft operations in India hinges on the type of aircraft being used.

Aircraft selection for regional markets

The selection of aircraft for regional operations, if done properly, plays an important role in the success of commuter airlines - right from creating a robust network, to strengthening local supply chains, capturing critical airport slots and ensuring long-term sustainability through synergising the regional network with domestic and international air networks of larger airlines.

This is true for both – the regional passenger market and the regional freight market. In fact, air freight forms a significant proportion of the demand for regional air transportation, and thus it is important for air operators to leverage the high cargo demand towards maximising aircraft usage and revenue. This need for simultaneously catering to both passenger and freight markets is best satisfied by small combi-aircraft that can be quickly configured to carry either passengers or freight or a combination of both.

There are several regional markets where combining passenger and freight services can be beneficial for the sustainability of airlines.

The North East region, for example, has a unique characteristic, defined by limited surface connectivity, ecological sensitivity, and in some cases a delicate security situation. Here, air freight forms a significant component of air transportation, accounting for about 40% of the revenue generated by carriers[1]. By opting for combi-aircraft in this region, operators will not only serve the passenger market, but also capture sizeable revenues from the freight market.

Coastal states in peninsular India can also vastly benefit from commuter airlines operating such quickly convertible aircraft. As the traditional ports such as Mumbai, Chennai, Kolkata and Trivandrum become more and more heavily congested, commuter air operators with configurable aircraft can provide much-desired relief by offering a faster alternative to road transportation for freight consignments to smaller, interior airports where scheduled commercial operators may find it unviable to fly. For example, the small port city of Ratnagiri, Maharashtra, offers an immediate opportunity for such operations. As the port capacity in Mumbai gets increasingly constrained, Ratnagiri could potentially act as an intermodal hub for smaller freight consignments, providing an assured market for regional air operators.

Regional carriers that opt for using combi-aircraft will be afforded significant flexibility in managing their passenger and cargo capacity. With the ability to change aircraft configuration on an immediate basis, operators will have means to maximise the utilisation of their aircraft on a daily basis. Operating both configurations during their respective peak times, and a combined configuration during lean hours will ensure that the aircraft fleet generates revenues without losing either markets to competition.

By using smaller, 20-seater combi-aircraft, airlines will have the opportunity to increase frequency of operations while maintaining adequate aircraft utilisation, thus offering more options to both passengers and cargo shippers, capturing critical time slots in newly operational or existing regional airports and stimulating the market. This in turn will allow commuter operators to build a lucrative feed/de-feed market for larger domestic and international carriers, and also successfully compete with surface and shipping transport to connect regions with low accessibility.

Given the Indian Government's push for development and operationalisation of more than 100 airports within the next 5 to 10 years under RCS scheme, the country's regional network would have the capacity to absorb more than 200 twenty-seater aircraft in the same duration.

This potential for immediate high demand presents a lucrative opportunity for aerospace manufacturers to invest in the country, whereby they would be able to easily capture the demand for combi-aircraft, and at the same time be major contributors in the "Make in India" initiative.

Convergence of UDAN and "Make in India": An opportunity for aircraft manufacturers

While the initial demand is expected to be for around 200 twenty-seater commuter aircraft[2], market stimulation in the long run could potentially result in regional

1 Source: KPMG Analysis

2 Source: KPMG Analysis

operations connecting over 400 airports. Coupled with eventual aircraft replacement opportunities and the early-mover advantage of capturing the nascent civil aerospace market, this offers both the industry and the government a golden opportunity to converge their interests and rewrite the way India's aviation and aerospace sectors operate.

So far, India's regional aircraft manufacturing ecosystem has been dominated by state-run enterprises. The aircraft produced by these manufacturers are based on designs which have limited convertibility, and are seldom used for commercial operations due to the implementation of older and less efficient technology.

Thus, there is a significant supply and demand gap in aircraft requirements for regional aviation, which can be easily captured by global aerospace manufacturers. Given India's large scale demand for commuter aircraft and its eventual impact of stimulating the larger hinterland and semi-rural aviation market, a strong case can be made for setting up a dedicated facility for manufacturing and assembly of combi-aircraft within India, which would be essential for supporting and sustaining the rapid growth potential of the country's regional aviation market.

While the potential market for regional air connectivity is highly attractive for both commuter airlines and combi-aircraft manufacturers, it is crucial that an adequate financing mechanism be put in place to ensure tenable and profitable regional operations.

Financing: Need of the hour for air operators

In India's current aviation ecosystem, there is significant need for dedicated financial institutions, backed by both private and public sector banks, which provide easy financing options for regional aircraft operators.

Air operators face a very high the cost of capital primarily due to the sheer cost of acquiring aircraft. Without government assistance and financial support, a new regional operator would be left with no choice but to turn to global aircraft leasing and financing institutions, thus being compelled to buy established aircraft that are not suited for regional operations within India.

This asset financing bank set up for fulfilling requirements of the regional aviation ecosystem will be effective only if it is established as a separate government entity, with active funding participation from different public and private sector banks, such that, it is able to provide cost-effective financing options at very low interest rates spread over a longer amount of time.

The successful development of this ecosystem, with active participation from air operators, aircraft manufacturers, financial institutions and the government, will lay the foundation for creation of a robust and thriving commuter aviation industry, which will stimulate both regional economic growth as envisaged under RCS, and local manufacturing as promoted by the "Make in India" scheme.

Boeing and Airports Authority of India sign agreement to jointly develop a comprehensive 10-year roadmap for modernizing Air Traffic management in India

By Ashmita Sethi, Director - Communications & Corporate Affairs, Boeing India

- Air traffic management roadmap will improve airspace utilization and help maintain safe and efficient aircraft operations
- Roadmap will focus on Communication, Navigation and Surveillance / Air Traffic Management (CNS/ATM) modernization
- 18-month project is being undertaken with a grant from the U.S. Trade and Development Agency (USTDA)

Boeing and the Airports Authority of India (AAI) have signed a technical assistance agreement for developing a comprehensive 10-year Communication, Navigation and Surveillance/Air Traffic Management (CNS/ATM) modernization roadmap for India, undertaken with a grant from the U.S. Trade and Development Agency (USTDA).

This objective of the agreement is to develop a roadmap for AAI to use as guidance in the modernization of the Indian National Airspace System (NAS) based on global and local best practices to optimally utilize airspace capacity, enhance communications and invest in navigation, surveillance and air traffic management.

"The implementation of modern technologies and global practices will allow India to increase its airspace capacity significantly by improving communications, enabling flexible use of airspace and allowing the safe processing of additional flights using air navigation infrastructure for smoother and more efficient skies in India" said Dr. Guruprasad Mohapatra, Chairman, Airports Authority of India.

"India is experiencing unprecedented growth in civil aviation. With this kind of growth comes the need for safe and efficient aircraft operations, as well as improving the airport infrastructure, said Salil Gupte, President, of Boeing in India. "This is a proud moment for Boeing to be partnering with the Airports Authority of India to enable the continued growth of India's aerospace industry. We also thank USTDA who has been a catalyst in furthering this project.

"USTDA is proud to build on its long time relationship with India's aviation sector," said USTDA's Director (Acting) Thomas R. Hardy. "We believe this project will play an important role in supporting India's rapidly growing aviation sector and connecting American industry with new export opportunities."

"India and the United States have been strong partners in economic growth. This agreement between the Airports Authority of India and Boeing is a significant step in furthering collaboration on aviation between the two countries," said Kenneth I. Juster, U.S. Ambassador to India. "We look forward to such opportunities, where both countries can utilize their expertise and innovation, to develop blueprints for cutting-edge technologies for the future."

Boeing will analyse current technologies and processes to identify efficiency improvements that can be implemented while maintaining a practical and safe airspace system. As part of the project, Boeing will also work closely with the Directorate General of Civil Aviation (DGCA), airlines operating in India, airport operators and other airspace stakeholders like the U.S.-India Aviation Cooperation Program (ACP).

VEOCI – a new approach for Aviation Compliance , Collaboration and Social Media

By Maninder Grewal, M.D, iPrime Services – Partners for Veoci in Asia / Middle East

Aviation is news

Good News: GE9X Breaks GUINNESS WORLD RECORDS

The GE9X engine for the Boeing 777X sets a new GUINNESS WORLD RECORDS title for thrust to become the most powerful commercial aircraft jet engine (test performance) after reaching 134,300 pounds. This is the most powerful engine developed yet and over 700 orders have already been received.

https://www.aviationpros.com/engines-components/aircraft-engines/press-release/21088454/ge9x-breaks-guinness-world-records-title-for-thrust

Good News : Greenfield Airports and Terminals : There are open bids for new terminals in Qatar and more in in India where almost one new destination is unveiled every month and growth is in double digits for the past so many quarters.

Beijing's new Daxian International Airport opens to rave reviews and a new standard for passenger convenience and safety. Changi continues to dazzle. There is good news all over

Aviation is Bad News

Like the continuing grounding for the Boeing 737Max or the passengers hurt in unexpected turbulence or the fact that a plane got diverted twice and was finally able to land with only 5 minutes of fuel left.

And others, like increasing incidents on runways:

"With the onset of monsoon, there has been an unusual increase in the number of incidents of runway overruns by domestic airlines at Indian airports. At least three have involved a SpiceJet plane at the airports Mumbai and Kolkata."

https://www.cnbctv18.com/aviation/dgca-launches-investigation-into-series-of-safety-lapses-at-spicejet-after-technician-death-runway-overruns-3986441.htm

Aviation and Flight Safety

The Aviation industry has the highest standards of flight and aircraft safety whether on ground or in the air and it is this very matured and consistent deep focus on each aspect of safety that keeps passengers and lives safe. Every individual in the industry is aware of the very critical work that he/she is doing, and it is this collaboration and teamwork that makes the skies safe. Growth, Safety and Regulatory Compliance have to be in sync and this starts with much greater open and realtime collaboration.

Veoci redefines collaboration

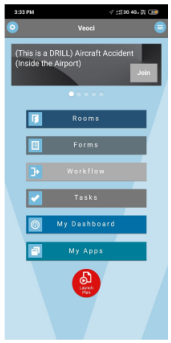
The core feature in Veoci is collaboration and communication. In a mature collaboration mode, participants need real time actionable information and Veoci has all the features that enable information and data to be available to the response teams in real time. These include a powerful workflow engine that uses user defined forms to capture data and make it flow through user designated hierarchies integrated with assigned tasks.

It is a single application platform that can be configured to meet multiple safety standards and to comply with FAA/ICAO regulations while adhering to local regulatory and compliance parameters. It can be used for Airlines and for Airports and the strong collaboration and communication features in Veoci bring all stakeholders to one platform quickly and easily.

Key Features

Veoci is hosted on the cloud which means that a customer does not need to invest in any kind of server infrastructure or server security device. All that the customer needs are workstations and smartphones – most of which are already available in the organisation.

Veoci being on the cloud enables users to communicate and collaborate from anywhere at any time. There are no geo or time barriers. In fact, the audit features can map users by time, date and geo coordinates as well if permitted by company policies and if location tracking has been enabled.



Executive Summary and Key Benefits :

- Across the system of Airports
  - Real time availability of information
  - Regulatory and Compliance Reporting at your fingertips
  - Single Click Emergency Response Launch.
- Single Application Multiple uses

This is particularly useful where situational awareness is needed and where teams sitting far away from each other need to collaborate. **The Emergency Operations Center is a Virtual Emergency Operations centre with screens and data being shared across Veoci .**

Safety Management Systems

A key takeaway from the 8th AAPA (Association of Asia and Pacific Airlines) Emergency Response Conference Singapore on the 26th / 27th of May 2019

Conference , was the importance of Safety Management Systems. While ICAO and the FAA has guidelines for airlines and airports to have a SMS and have made it mandatory for many, this still needs serious consideration.

A Veoci SMS system maps the probability of an event occurrence to a matrix designed by the Safety Manager incorporating incident history and severity of impact. Using the matrix as a base, the airline / airport has a view to the overall impact that an event probability can have on operational safety. Some examples of incidents can be weather patterns like heavy rain or squalls or a history of wind shear. Another can be oil spills, and these can be classified on amount of spill and location. One sure parameter for a safety manager will be electrical issues which can be extremely severe.

As an example

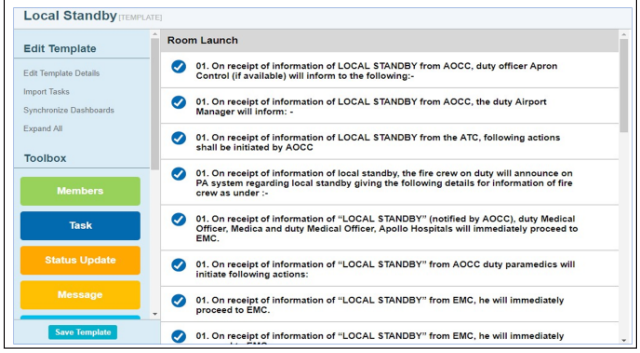
"NAGPUR 02JULY 2019: After being diverted to Nagpur airport, two Mumbai-bound IndiGo flights carrying 200 passengers had a precarious landing as the runway lights got turned off due to a technical fault just when the planes were heading downwards. As both the planes were running out of fuel, the pilots took the risk of landing the aircraft in the dark."

https://timesofindia.indiatimes.com/city/nagpur/2-indigo-flights-land-in-the-dark-at-nagpur-airport/articleshow/70047353.cms

Veoci provides the essential framework for building an SMS and an Emergency Response System linked to the assessment of the most likely risk and threats made in the Safety Management System.

Using Veoci the Safety Manager can build his SMS framework according to predefined templates and arrive at a daily analysis of the issues and threats impact to the enterprise. An SMS can be built for a single airport or a system of airports or for making a single matric from the many airports that an airline service. This gives senior management a simple holistic view of SMS across their organisation

Plan Elements/ Checklists (Tasks, Workflows)



Social Media

A second takeaway from the AAPA Conference was the need for airlines and aviation stakeholders to understand that social media was here to stay. It is now an instagrammed world and this is changing the way Airlines and Airports need to respond. A twitter

or an Instagram posting is often viral before managements have even begun to assess an emergency or an issue and are just setting up their first triages to assess the situation and decide on a response. Media overtakes the management.

Keeping track of these feeds and of what is being talked about in Social Media with reference to an Airline or an Airport, is a whole-time task. News and media must be addressed appropriately and adding to the growing complexity, there will be posts and feeds going out into twitter, Instagram and other social media channels. If not taken care of bad publicity and reputational losses follow.

Veoci provides live dashboards integrating social media open feeds to enable EOC members to monitor them and respond in a coordinated and measured manner.

A configured press room can be useful for ensuring that whatever information is passed out, is vetted and approved by a process SOP. By building the process in Veoci, it can be configured such that it passes through all the levels required before being made public whether through a press release or an Instagram / twitter post on the company handle.

With the rapid growth of Aviation in Asia, Veoci has made a significant commitment to develop the support and operational skills with a team based in Noida, India. The team is growing to be over 100+ people at end of calendar year 2019. The team has completed a full Veoci implementation at a large Airline in Asia and a new assignment has been delivering an Emergency Response and BCP system for a major South American carrier which was successfully completed in June. In addition, a major POC for a large airport in india was commissioned and has been completed. One portion involved engineers mapping airfield lighting to a longitude/latitude grid on a GIS and automating workorder processing for any defects or replacements. This was part of the POC for delivering a full Annex XIX report as part of the assignment.

Veoci brings a dedicated team of deep tech professionals collaborating with ICAO and IATA experienced Aviation professionals to deliver disruptive solutions to the explosive growth story that is Aviation today. Dedicated to flight and passenger safety.

Appendix

Maninder Grewal, M.D, iPrime Services – Partners for Veoci in Asia / Middle East - Maninder graduated from IIT Kharagpur with a degree in Mechanical Engineering and has the distinction of ranking in the top 75 in the IIT JEE. He has 30+ years of experience in the information technology sector serving small, medium and large enterprise with technology solutions aimed at improving customer ROI on IT spend.

He has been active member of Nasscom and anchors the Nasscom National Annual Tech. Conference. The 6th Edition will be Gurugram on the 26th and 27th August 2019 – www.nasscom.in/natc and focusses on the challenges to taking technology to scale . The Industrialization of Technology. This means integrating user experience into AI / ML and the other buzzwords of tech and tackling real world issues like AI on streaming video or tweets to stop malicious uploads in real time.

He mentors start-ups for growth and value creation and believes that going digital is now a core tool for managing disruption. His wide experience in many domains makes him an integrated part of Veoci' s growth story.

Usually online at 1 AM IST playing bridge.

For more information, please contact:
Maninder Grewal,
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Email: msg@iprimeserv.com

Aviation Careers – Aviation Skills is a Big Business

By Sandeep Bahl, Executive Program Director, ACP

Over 65 million jobs are supported worldwide in aviation and related tourism. Of this, 10.2 million people work directly in the aviation industry.

As of October 2018, there were 103 operational airports in India and approximately 620 airplanes were in-service in the fleet of scheduled Indian operators and have direct employment of 404,000. Boeing has projected that during the period of 2019-2038 India will grow its fleet size to 2,300 and for overall Asia 21,000 more planes will be needed to capture new demand or for replacement of the current fleet.

The airline industry is labor-intensive and more than one-third of the revenue generated each day by the airlines goes to pay its workforce. Airlines' labor costs per employee are among the highest of any industry and industry employs a virtual army of pilots, flight attendants, mechanics, baggage handlers, reservation agents, gate agents, security personnel, cooks, cleaners, managers, accountants, lawyers, data scientists, software programmers, air traffic controllers etc. New technologies have enabled airlines to automate many tasks, but there is no changing the fact that as a service business, where customers require personal attention airlines do need to provide face to face human interaction between its customers, stakeholders, service providers and internal organization. And because of all of the sophisticated equipment and facilities involved in air transportation, it is easy to lose sight of the fact that this is, fundamentally an industry that requires very advanced level of skilled people.

As new planes are incorporated into Asia including India's aviation during the next 20 years there will be more need in Asia for 334,000 pilots, 335,000 technicians and 431,000 cabin-crews. To address the critical and growing need for skills development in the Indian aviation sector as well as have the pool of skilled aviation industry people for rest of Asia India needs to seriously look at developing aviation-specific educational institutes similar to what USA and more recently China has done. For India the focus to develop skills in a particular sector is not a new thing as it has succeeded in the past developed and churned out the world's best institutions and people for Hotel and IT sectors.

Many of ACP member companies in India are contributing to aviation skills development of their own and have developed world's best training centers but to have a complete dynamic ecosystem for aviation advanced skills development a cohesive joint approach is required that India's Ministry of Civil Aviation can champion together with ACP. Smart aviation-specific skills will help to develop a workforce that will eventually make the airline sector efficient, safe and profitable for whole Indo-Pacific region.

Aviation Careers

Human resource requirements in India's civil aviation – Slide 2
India's immediate need – Slide 3
Benefits of Aviation – Slide 4
Global Air Transport Employment - Slide 5
Aviation Human Capital Issues
MOCA/RGNAU Roundtable outcomes - Slides 6-8
Aviation Careers – Slides 9-13
Comparative Aviation Institutes in US and China – Slides 14-15

In India current direct employment in aviation sector is of **400,000** people

By 2040 this will increase to **1,000,000** people and

Catalytic effect on related sectors will create **25 million** jobs

Source: vision 2040 for civil aviation industry in India / FICCI – January 2019

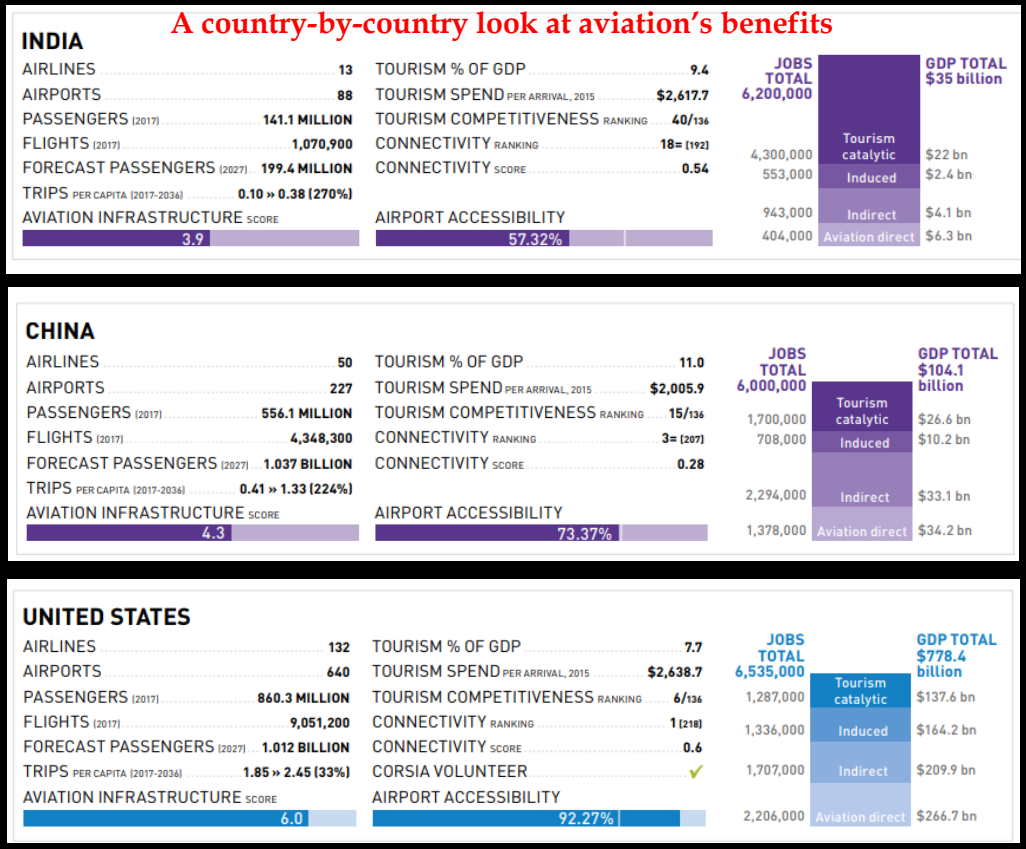
In 2019 - India needs more

500 Pilots
1300 Cabin Crew
6600 Ground Staff

And in 2020 will need additional **18000** jobs in aviation sector

Source: Economics times / New Delhi 2nd April 2019 No turbulence for talent in Aviation/IATA

A country-by-country look at aviation's benefits



Source: Various Oxford Economics Aviation Beyond Border 2018/Sandeep Bahl

THE VIEW FROM ABOVE… is quite something in aviation

AVIATION IS A BIG BUSINESS

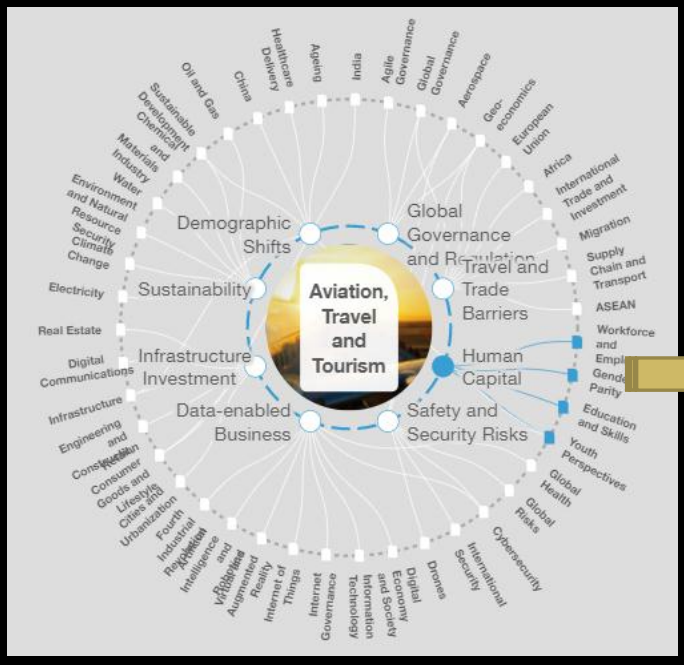
Not only does it span the globe, generating more than $800 billion in revenues but also it covers a wide spectrum of careers.

Global Air Transport Employment - Careers

- The air transport industry supports 62.7 million jobs globally
- It directly creates 9.9 million jobs worldwide
- Airlines, airports and air navigation service providers (ANSPs) employ 8.9m
- The civil aerospace sector employs 1.1 million people
- 11.2 million indirect jobs are created via purchases of goods and services from companies in the air transport supply chain
- 5.2 million jobs are induced through spending by industry employees
- Almost 36.3 million additional direct and indirect jobs are created through air transport's catalytic impact on tourism

Source: IATA

AVIATION TRAVEL and TOURISM
Human Capital - ISSUES

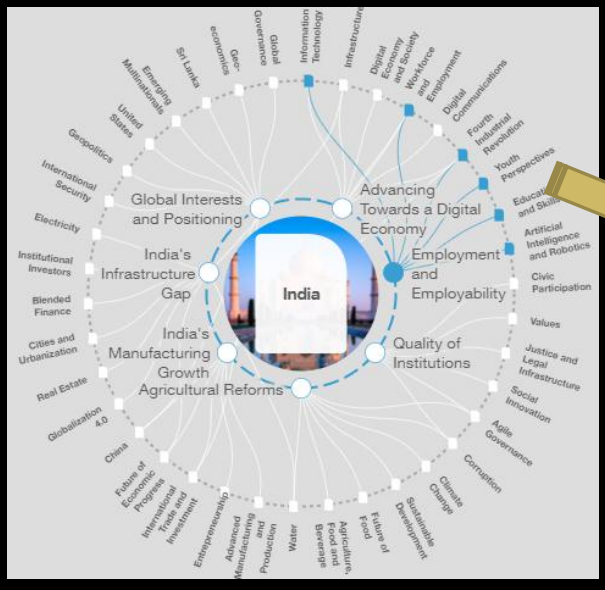


Human Capital

- Workforce & Employment
- Gender parity
- Youth Perspectives
- Education and Skills
- Access to Institutions
- Regulatory Framework

Source: WEF, MOCA/RGNAU Skills Roundtable with Industry April 2019

INDIA's FOCUS on NEW CAREERS
PERCEPTION



Employment and Employability
Advancing towards Digital

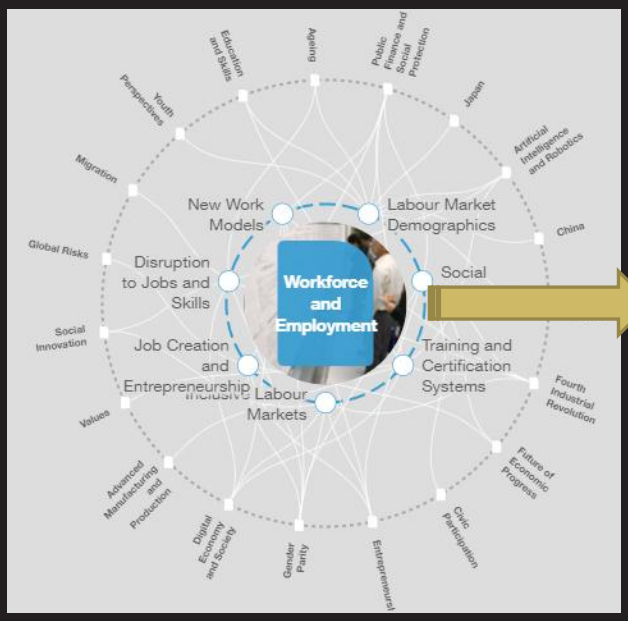
- Information Technology
- Fourth Industrial Revolution
- Artificial Intelligence
- Robotics

- Youth Perspectives
- Education and Skills

- Access to Institutions
- Regulatory Framework

Source: WEF, MOCA/RGNAU Skills Roundtable with Industry April 2019

AVIATION CAREERS
Perception



- Disruption to Jobs and Skills
- Job Creation & Entrepreneurship
- Labor Market
- Demographics
- Social Protection
- Training & Certification Systems
- New Working Models
- Location of Jobs

Source: MOCA/RGNAU Skills Roundtable with Industry April 2019

AVIATION CAREERS …

Pilots, cabin crew and check-in staff are the visible face of airlines. But the engineers that ensure the aircraft's safety, the ramp planners that coordinate on-ground activity, the air traffic controllers that instruct pilots, or the regulators that set the rules with which airlines comply are also big employers of aviation. Some of the careers are :

Air Navigation Services
Air Traffic Controllers
Flight Procedures Specialists
Air Navigation Service Professionals
AIS Safety and Change Management

Airline Operations & Quality Management
Head of Operations
Quality Managers

Airline Business Management
Revenue Manager
Network Planner

Airport Planning, Operations and Management
Airport Planner
Emergency Response Manager

AVIATION CAREERS …

Cargo and Logistics
Cargo Operations Manager
Cargo Business Development Manager
Dangerous goods specialists
Airline Cargo Station Managers

Civil Aviation Authorities
Safety, security, risk, airworthiness, airspace policy, law, economic regulation, efficiency, and sustainability
Principal Inspectors
Policy Specialists

Fares and Ticketing
Passenger Revenue Accounting
Ticketing Specialist
Fare Filing and Rules Managers

Finance, Controller, Taxation
Chief Finance Officer
International Tax Managers

Environment
Aviation Medicine and Health
Environmental health officers
Compliance Specialists

Ground Operations
Station Manager
Aircraft Turnaround Supervisors

Security
Security managers
Risk Assessment Managers

AVIATION CAREERS …

Aviation Law and Regulations
Aviation General Counsel
Aviation Legal Adviser
Manager Regulatory Affairs

Sales and Marketing
Marketing Executive
Customer Satisfaction Managers
Regional Sales Managers

Information Technology
Chief Information Officer
Business Process Re-engineering
Analytics and Consulting
Technology Audit and Implementation

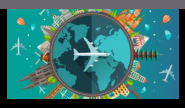
Safety
Airline Auditors
Safety Manager
Emergency Management Systems Managers

Management and Leadership
Aviation Department Heads
Instructors
Human Resources Managers

Travel and Tourism
Travel Agents
Tour Operators
Public Relations Officers
Destination Marketing Adviser

…Jobs in Aviation Covers A Wide Range of Activities

These Include:



- Skilled work by technicians building and maintaining aircraft;
- Technical engineering jobs from aircraft engine design to component production;
- Air traffic control and airspace design planning;
- Logistics for airlines and airports;
- Information technology systems on board aircraft and in other areas such as baggage handling systems design;
- Service industry support jobs such as chefs in catering companies;
- Creative positions in design and marketing;
- Customer services occupations in airline ticketing, check-in, cabin crew and retail;
- Manual labour on airfields;
- Air traffic controllers and pilots;
- Emergency response personnel at airports; and Leadership, management and executive roles.

Overview of the types of jobs at a typical European Large Hub Airport

Source: ACI Europe and Intervistas, *Economic Impact of European Airports*,2015.

USA and China have several dedicated Institutions for Civil Aviation Industry and Skills Development

Embry-Riddle Aeronautical University
5 Campuses

Aviation Institute of Maintenance
12 campuses

Other top Universities : Aviation as main course and Pilot Training Academy

Purdue University

University of North Dakota

Ohio State University

Western Michigan University

San Jose State

USA and China has several dedicated Institutions for Civil Aviation Industry and Skills Development

Civil Aviation University of China is a national university in Tianjin, China under the Civil Aviation Administration of China. The university was established in 1951 to provide civil aviation tertiary education and training for new pilots and aviation sector in China.

Postgraduates: 1,200
Students: about 22 000

Civil Aviation Flight University of China is the largest civil aviation university in Asia and the world's largest flight training institution. It is under the direct leadership of Civil Aviation Administration of China.

Administrative Staff : 1800
Students: 16,000

Bell 505 Jet Ranger X receives certification for High-Altitude operations

By David Sale, Managing Director - Asia Pacific, Bell

Bell recently announced Type Certification for performance information expansion at up to 22,500 feet density altitude for the Bell 505, setting the bar for high altitude operations for aircraft in its class.

"The Bell 505 is the most advanced short light single helicopter in the world, and we are proud to bring more performance to our operator's missions," said David Sale, Managing Director, Asia Pacific, Bell. "High-altitude demonstrations are another testament to the aircraft's ability to perform in the most demanding environments, across a variety of segments."

This spring, the Bell 505 showcased several performance capabilities during a successful high-altitude flight test demonstration in Nepal. Testing efforts included numerous take offs and landings at density altitudes between 18,000 and 18,500 feet as well as the evaluation of landings with the loss of control system hydraulic boost.

Elsewhere in Asia, Northern Vietnam Helicopter Company, a subsidiary of state-owned helicopter operator Vietnam Helicopter Corporation, has launched the first ever helicopter tourism flights with the Bell 505 in Vietnam's iconic Ha Long Bay. The company plans to offer point to point transfers from Hanoi to Ha Long Bay, charter flights, wedding photography and aerial surveys with the Bell 505 helicopters.

The Bell 505 continues to expand its footprint into many different sectors, such as training new coast guards cadet pilots in Japan, airborne law enforcement in the United States and agriculture work in New Zealand, proving its versatility and reliability.

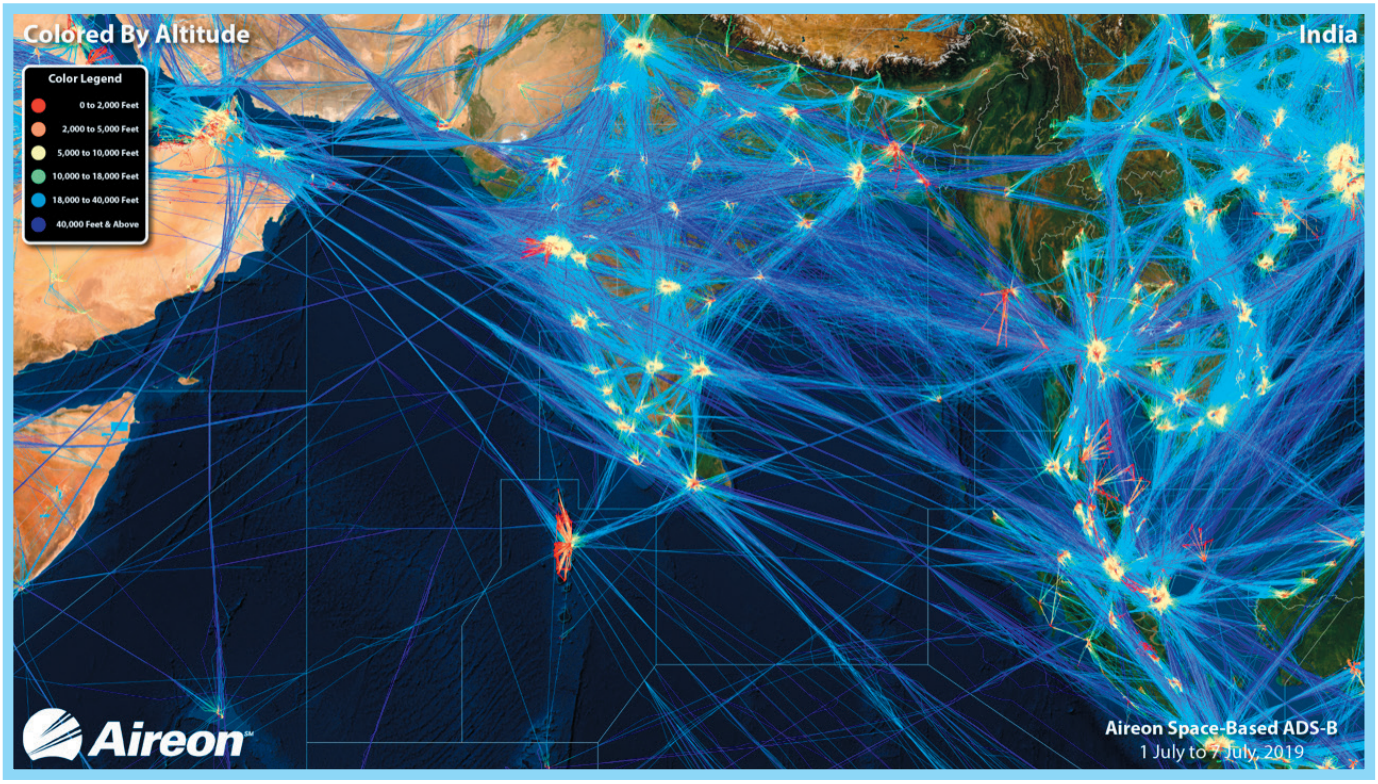
Globally, the Bell 505 has crossed the 13,000-flight hour mark and is flying across six continents. With over 150 aircraft delivered worldwide, the Bell 505 is already demonstrating excellent performance.

The Bell 505 Jet Ranger X incorporates the familiarity of the Jet Ranger family with new advanced avionics technology. Its reliability, speed, performance and maneuverability are integrated with a flat floor and open cabin that is configurable for a wide variety of missions and payloads.

Deploying Space-Based ADS-B in one of the World's Densest Oceanic Airspaces

Airports Authority of India Leading with Innovation

By Cyriel Kronenburg, Vice President, Aviation Services, Aireon



Aireon: Taking Oceanic Operations to the Next Level

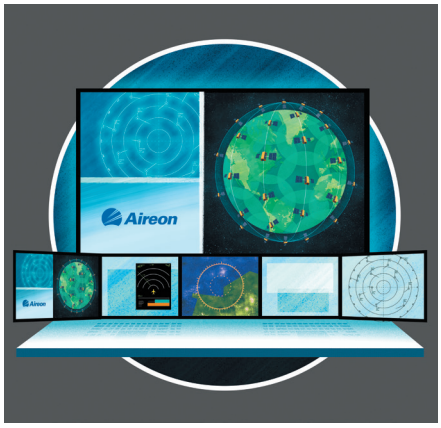
As of 2 April 2019, the Aireon system is operational. Space-based Automatic Dependent Surveillance-Broadcast (ADS-B) is currently being used by NAV CANADA and NATS to provide reduced separation minima over the North Atlantic (NAT) and significant areas of Northern Canada. Other launch customers are progressing towards live service. However, the entire planet has Air Traffic Services (ATS) grade surveillance available to them.

For a quick overview, Aireon has created the first ever, global air traffic surveillance system using a space-based ADS-B network that meets the strict, real-time ATS surveillance requirements for air traffic separation services anywhere in the world.

ADS-B is an air traffic surveillance technology that relies on aircraft broadcasting their identity, a precise Global Positioning System (GPS) position and other information derived from on-board systems. The data is broadcast every half a second from the aircraft and is being used

by Air Traffic Controllers (ATCs) to identify and separate aircraft in real time.

ATS surveillance service requirements are defined by the International Civil Aviation Organization (ICAO) but, put simply, it's the ability to reliably and in near-real time detect key flight attributes such as position, altitude and speed.



Space-based ADS-B provides full, continuous, global air traffic surveillance, whereas before the system was available, over 70 percent of the world had no access to ATS surveillance information (i.e. the oceans, polar regions, mountainous regions, jungles, deserts). Space-based ADS-B significantly improves Air Traffic Management (ATM) safety, efficiency, predictability and capacity, while reducing overall infrastructure costs.

How does the Aireon System Work?

Space-based ADS-B provides unparalleled global surveillance coverage to receive and process ADS-B signals broadcast from aircraft equipped with 1090 MHz ADS-B transponders, which operate on the same frequency as traditional radar transponders.

Iridium is hosting the Aireon system and is the only satellite constellation with the capability and reach to enable global air traffic surveillance due to its orbital configuration. ADS-B information broadcast from the aircraft will be received by the Aireon payload, which transfers aircraft data from satellite to satellite, down to Aireon's ground-based Teleport Network (TPN) and Aireon Processing and Distribution (APD) system. The APD decodes and verifies the data and delivers the data to the appropriate stakeholder facilities that have subscribed to the Aireon service.

The Gold Standard in Safety Certification

In June 2019, Aireon was officially approved by the European Union Aviation Safety Agency (EASA) as an Air Navigation Service Provider (ANSP) Organization to provide ATM/Air Navigation Service (ANS) surveillance services, to support the separation of aircraft. This authorizes Aireon as the first-ever certified provider of aircraft surveillance-as-a-service. This designation represents the culmination of a three-year long collaboration between Aireon and EASA, the agency that determines and promotes civil aviation safety standards for the member States of the European Union (EU) and other associated States. EASA's rigorous and holistic certification process ensured the performance of the Aireon data for use in critical safety-of-life ATS surveillance.

Aireon is committed to the safe delivery of space-based ADS-B services to its customers ATC systems. By recognizing the performance of Aireon's ADS-B service, this EASA certification is a major milestone to legitimize the world's first set of global real-time air traffic data.

With these many milestones in the first half of 2019, space-based ADS-B is becoming the default and go-to technology for real time air traffic surveillance in remote, oceanic and inhospitable terrains.

As of 25 July 2019, Aireon and AAI

inked an agreement to implement space-based air traffic surveillance service in Mumbai, Chennai and Kolkata's oceanic airspaces. These regions are located in the Arabian sea, Bay of Bengal and Indian Ocean and represent over 6.0 million square kilometers. The goal is to deploy space-based ADS-B by the end of 2019. This contract signing comes three months after the Aireon service went live on 2 April 2019. India will join 26 other countries who are actively deploying Aireon's space-based ADS-B for air traffic surveillance by the end of the 2019.

Innovation as a Driving Force for Enhanced Safety and Accommodating Growing Capacity in India

This landmark agreement to deploy space-based ADS-B in Mumbai, Chennai and Kolkata's oceanic airspaces will immediately provide AAI coverage of all ADS-B OUT 1090 MHz equipped oceanic air traffic, ensuring one of the densest oceanic airspaces in the world has access to the best tools to enhance safety and efficiency and accommodate unprecedented double-digit growth, year over year.

"The decision to implement Aireon's technology is not only a major step in improving safety and enhancing capacity for our flying public, but also ensures that as one of the globe's fastest growing markets, we are planning for our continued growth," said Dr. Guruprasad Mohapatra, Chairman, AAI. "AAI will be the first Air Navigation Service Provider in the region to implement a technological initiative, on this scale, and offer enhanced air traffic surveillance services to its users."

In order to maintain a safe and efficient operation, while accommodating the growing capacity, AAI plans to introduce Aireon's space-based ADS-B for real-time air traffic surveillance over its entire oceanic region.

The Airports Authority of India (AAI), a Miniratna, central public sector undertaking, under the Ministry of Civil Aviation, Government of India, is committed to creating, upgrading, maintaining and managing the civil aviation infrastructure, both on the ground and air. AAI provides ATM services over the entire terrestrial portion of India and the adjoining oceanic areas covering over nine million square kilometers of airspace, as delegated by the ICAO.

AAI leads the way in the region with their adaptation of new technologies and has achieved many international awards for their contribution to the global aviation industry. Introduction of ADS-B through ground sensors in the domestic airspace, deploying satellite communication technologies, implementing surface technology like Advanced-Surface Movement Guidance and Control System (A-SMGCS), Ground-Based Augmentation System (GBAS) and airspace optimization through GPS-Aided GEO Augmented Navigation (GAGAN) and Central Air Traffic Flow Management are just a few recent notable program implementations.

Current air traffic surveillance in AAI's Mumbai, Chennai and Kolkata's oceanic regions, are largely based on voice or data-link position reporting using procedural ATC separation services. Although AAI is able to provide radar separation services to over nearly 100 percent of its domestic airspace, and ADS-B has been introduced in much of the region, AAI still manages and operates a significant volume of high seas international airspace without real-time visibility.

India has become the third largest aviation market in the world with

a rate of sustained double-digit growth for the last 50 months. Forecasts suggest that this growth will continue, and Indian airspace is going to experience additional congestion. This will require extra capacity both in airspace and airports to meet the demand, including continued growth on overflights between South Asia, the Middle East and Europe.

The Benefits of 100 Percent Oceanic Airspace Coverage of ADS-B Equipped Aircraft

Space-based ADS-B will cost-effectively provide coverage for the six million square kilometers of airspace in Mumbai, Chennai and Kolkata oceanic regions. Implementation of space-based ADS-B will enable ATC to utilize enhanced safety tools and reduce separation of aircraft in this dense airspace, allowing for the efficient growth of capacity, while substantially reducing risk through the availability of real time air traffic surveillance services.

Over time, AAI expects that the use of space-based ADS-B will improve operators' flexibility to fly user preferred, better routes and offer optimal altitudes and speeds to maximize flight efficiency. This will allow for enhanced coordination and collaboration with neighboring countries and an improved handoff between the domestic and oceanic sectors and quicker response time to emergency and distress situations with search and rescue.

Using real-time air traffic surveillance over the oceans, paired with AAI's advanced communications capabilities, will allow AAI to safely reduce aircraft separation to 15 Nautical Miles (NM) longitudinal and lateral separation for Controller-Pilot Data Link Communications (CPDLC) equipped aircraft. In situations where aircraft operate with Direct Controller-Pilot Communications (DCPC) over VHF, the standard separation minimum of five NM will remain applicable.

Accelerated Adoption of Space-Based ADS-B

AAI joins 11 other customers who have already signed agreements to deploy the Aireon system. These customers include NAV CANADA, NATS, Enav, The Irish Aviation Authority (IAA), Naviair, The Civil Aviation Authority of Singapore (CAAS), Isavia, South Africa's Air Traffic and Navigation Services (ATNS), Dutch Caribbean Air Navigation Service Provider (DC-ANSP), The Agency for Aerial Navigation Safety in Africa and Madagascar (ASECNA) and the Seychelles Civil Aviation Authority (SCAA).

US - INDIA
AVIATION COOPERATION PROGRAM (ACP)

Public Members

Transportation Security Administration

Corporate Members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PROFITS.
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A LEGEND REIMAGINED

Born again and breaking barriers. When speed, safety, and affordability matter, the Bell 505 is redefining rotorcraft ownership and the way the world flies. Built by the customer, for the customer, this aircraft opens doors to new horizons. Bell is moving tomorrow's world Above and Beyond Flight.

BELLFLIGHT.COM