Shared Horizons

US - India Aviation Cooperation Program

U.S. - India Aviation Cooperation Program : "Uddein Saath Saath - Together We Fly"

INSIDE

Special Issue - Wings India 2020

Message from the Co-chairs

Mohamad Sayegh
ACP Co-chair (Industry)

Thomas M. Miller
ACP Co-chair (Government)

We are pleased to present to you the July – December 2019 issue of "Shared Horizons".

The highlights of the period were ACP's Year-End Get-Together; ACP Members roundtable meeting with Thomas R. Hardy, Director (Acting), USTDA & Pradeep Singh Kharola, Secretary, Ministry of Civil Aviation and USTDA's Reverse Trade Mission on Air Navigation Services.

On 17th October, ACP's "Innovation in Aviation" workshop with MOCA allowed for open discussion on existing and proposed projects that will provide training and technical expertise in close cooperation with MOCA, DGCA, AAI and BCAS.

We are excited to welcome the latest new member to the ACP, Black Sage.

In this 12th year of the US – India ACP, we seek to expand our efforts to rethink ACP's role in the modernization of India's aviation systems. You can be assured that we will continue to approach these efforts with determination, tenacity, innovation and passion.

On behalf of the entire ACP membership, we wish you great success in 2020.

(Mohamad Sayegh)
ACP Co-chair (Industry)
Vice President, India Operation,
FedEx Express, Middle East,
Indian Subcontinent & Africa

(Thomas M. Miller)
ACP Co-chair (Government)
FAA Senior Representative
South Asia

ACP Milestones

2019

- ACP'Year-End Get-Together at New Delhi
- ACP's annual "Innovation in Aviation" workshop 2019 at Hotel – The Oberoi, New Delhi
- ACP Members roundtable with Mr. Thomas R. Hardy, Director (Acting), USTDA & Mr. Pradeep Singh Kharola, Secretary, Ministry of Civil Aviation at New Delhi
- U.S.- India ACP India RTM - Air Navigation Services, July 28 – August 3, 2019 at USA
- ACP Members Meeting 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

MOOG

Moog is a global designer, manufacturer and integrator of precision motion control products and systems, and is a world leader in flight control systems and critical component control applications. Moog has been in India for more than two decades, and Moog India Technology Center (MITC) in Bangalore started in 2009 includes a staff of nearly 200 people providing engineering, design, test and certification for mission critical aerospace and defense systems.

Moog India Technology Center, Bangalore

MITC Provides Software, Electronics, Mechanical Design, Test Equipment Support and Qualification Testing for Commercial & Business Jets


Moog provided lateral control electronics (LCE) for Boeing 747-8, Level A software for flight control systems on the Gulfstream G280/G650 business jets, system analysis and independent verification and validation (IV&V) to support the overall system certification. MITC was also engaged in supporting Boeing B787-8, Airbus A350-900, A350-1000, Embraer E190/E175, COMAC C919, Gulfstream G500/G600/G650 aircraft programs in mechanical detailed design and electronics system design activities.

Gulfstream G650 Systems Test Rig

Design of Moog Components for Commercial and Business Jets
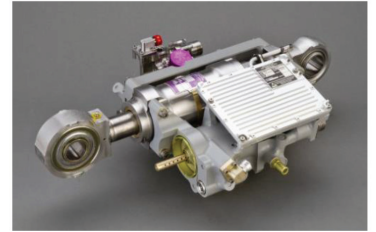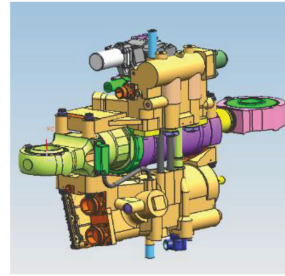
Typical Hydraulic Flight Control Actuator Model & Hardware

MITC team extensively supported in design and analysis of commercial flight control actuation system hardware consisting of primary flight surfaces on the airplane, as well as the spoilers and horizontal stabilizer, and includes a mix of electrohydraulic (EH) and electromechanical (EM) servoactuators and all associated control electronics. The secondary flight control high lift system is comprised of discrete assemblies including: power drives, electronic controls, trim controls, geared rotary actuators, rack and pinion roller assemblies, transmission shafts, gearboxes, sensors and accessory components.

System Level Testing

COMAC C919 Iron Wing Test Rig

Over this period, Moog has grown from a high technology component manufacturer to become a leading supplier of integrated flight control systems. We are continuously investing to extend the depth of our product expertise while simultaneously expanding our capabilities to take on the challenges and responsibilities of a changing industry. As a result, we are positioned today on virtually every aircraft in the marketplace, supplying reliable flight control systems and specialized control products that are highly supportable and add significant value for our customers.

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ACP in Partnership with

Ministry of Civil Aviation — Government Of India

Directorate General of Civil Aviation

AIRPORTS AUTHORITY OF INDIA — भारतीय विमानपत्तन प्राधिकरण

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

U.S. Commercial Service
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.

U.S. COMMERCIAL SERVICE
United States of America
Department of Commerce

Indian Aviation Academy
(NIAMAR Society)
A joint venture of AAI, BCAS & DGCA

iaa
Nurturing Aviation Future

We train present and future leaders of aviation industry.

- Established in 1988, empowering aviation professionals with knowledge and skill for last 30 years.

- A pool of competent, trained and ICAO certified course developers and instructors

- Hosting international and national programmes of aviation in collaboration with ICAO, ACI, IATA and reputed Management Institutes.

- A spacious, modern new campus equipped with state-of-the art infrastructure and facilities.

- Facilitating corporates and academic community by outsourcing our facilities.

Accreditation
- ICAO TRAINAIRPLUS full Member
- ICAO Aviation Security Training Centre
- Global ICAO • ACI Airport Management Professional Accreditation Programme (AMPAP) Training Centre India • ICAO Fellowship Centre

Areas of expertise
- Aviation management
- Airport Operation management
- Aviation security
- Airport Cargo management
- Airport Engineering
- Airport licensing
- Airport commercial and finance
- Airport Safety management system

Major Facilities
- 12 Training Classrooms
- 2 Computer based Training (CBT) Rooms
- 2 Conference Halls
- Auditorium
- Hostel
- Dining Mess
- Swimming Pool
- Gymnasium
- Tennis, Basket Ball and Badminton Courts
- Small Open Air Theatre

Indian Aviation Academy (NIAMAR Society)
Behind Indian Spinal Injuries Centre,
Vasant Kunj, New Delhi – 110070
Contact: 011-2613-4313
Website: www.iaa.edu.in

Accreditations from

IATA   ICAO   ACI

Carving a niche for the nation on aviation horizon.

Indian Aviation Academy (IAA) has carved a niche on aviation horizon as a premier aviation training institute in Asia- Pacific region, fostering a culture of continuous learning. Established in 1988, it has constantly been engaged in nurturing aviation education, training to empower aviation professionals . Crafting their credentials by imparting in-depth knowledge and well-honed skills; shaping their careers as present and future leaders of aviation is the mainstay of our endeavours.

A full member of International Civil Aviation Organization (ICAO – the apex body in Aviation) TRAINAIR PLUS (TPP) program, IAA has collaboration with IATA, ACI, AAAE and reputed management institutes to host international and national training programs on various aviation courses i.e. Aviation Management; Airport operation management; Aviation safety and security; Airport cargo management; Airport engineering and licensing; airport finance and commercial management etc. The Academy has a pool of competent, trained and ICAO certified instructors, course developers, training managers to achieve its aspired objectives.

The Academy has a spacious, modern new campus situated in Vasant Kunj, New Delhi. Set in a picturesque, serene and green ambience; the campus with world class infrastructure, state-of-the art facilities provide an ideal ambience for learning.

It has 12 class-rooms with a capacity to train 400 participants along with CBT (computer-based training) room, video-conferencing room and conference halls. The academy boasts of a well-furnished hostel to accommodate 100 trainees, dining hall, an auditorium, open air theatre and other sports facilities like gym, swimming pool, lawn tennis court.

India is poised to become third largest aviation market in the world very soon. This entails grooming a large pool of trained and competent aviation personnel to meet the industry's demand. The academy is fully geared up to give a fillip to knowledge-sharing activities by benchmarking our course

curricula with industry-relevant best practices, undertaking research work to explore next practices, equipping aviation professionals with enhanced and diverse skill sets.

IAA aspires to help India attain coveted place of pride on global aviation arena by:

- Engaging in collaborative path-breaking aviation education, research and co-creation.
- Optimizing human, technological, financial and physical resources.
- Benchmarking course content and training material to cater to emerging training requirements of all aviation stakeholders.
- Organizing global aviation events.
- Creating an integrated eco-system which will lead to sustainable growth of aviation and associated sectors.

The Boeing 777X Airplane Family

By Salil Anil Gupte, President, Boeing India

The 777X is Boeing's newest family of twin-aisle airplanes. Based on the most successful twin-aisle airplane ever, the 777, and with advanced technologies from the 787 Dreamliner family, the 777X will be the largest and most fuel efficient twin-engine jet in the world, with an exceptional passenger experience. Boeing Commercial Airplanes announced the family in November 2013 at the Dubai Airshow, the largest product launch in commercial jetliner history by dollar value. Production of the 777X began in 2017. First flight is scheduled for early 2020, with first delivery targeted for 2021. The 777X has 340 orders and commitments from eight leading customers around the globe.

Offering Complete Market Coverage and New Revenue Opportunities for Airlines

The 777X family includes the 777-8 and the 777-9, both designed to respond to market needs and customer preferences. The 777-8 competes directly with the A350-1000, while the 777-9 fills a unique segment in the twin-aisle market.

Opening new growth opportunities for airlines, the 777-9 seats 426 passengers in a typical two-class configuration, with a range of 7,285 nautical miles (13,500 km). In addition, the 777-9 will have the lowest operating cost per seat of any commercial airplane.

The 777-8 seats 384 passengers with an incredible range capability of up to 8,730 nautical miles (16,170 km). However, range is only part of the story with the 777-8. The 777-8 also has the capacity to provide more revenue to operators through more payload and improved fuel efficiency at both short and long ranges. This capability also allows the 777-8 to carry that increased payload at more challenging airports such as those constrained by high altitudes or hot temperatures. The 777-8 offers both range and payload – without any tradeoff – maximizing its value to operators.

Advanced Technologies Drive Efficiency and Environmental Performance

The 777X family is designed to maximize efficiency. Engineering design improvements and innovative new technologies, including a new carbon-fiber composite wing, all-new engines

and a natural laminar flow nacelle, together will help the airplane to achieve 10 percent lower fuel use and emissions and 10 percent lower operating costs than the competition.

Engine supplier GE was the first partner announced on the program. The GE9X engine will be the most advanced, fuel-efficient commercial engine ever – greater than five percent more efficient than anything in its class.

In addition, the fourth-generation 777X composite wing has a longer span than today's 777. Its folding, raked wingtip and optimized wingspan of more than 72 meters deliver greater efficiency, significant fuel savings and complete airport compatibility.

Advancing the Passenger-Preferred Interior

Boeing is the market leader in wide-body airplanes and in airplane cabin design. Our designs are informed by decades of research, experience and innovation to benefit both passengers and crew. The new 777X will take that advantage to the next level by incorporating the best of the passenger preferred 777 and 787 Dreamliner families with new advances to deliver the flight experience of the future.

When creating the new 777X, Boeing focused on enhancing the total experience so that everyone enjoys a smoother ride and arrives feeling refreshed. Just like the 787 Dreamliner, the 777X offers a more comfortable cabin altitude and humidity, a smoother ride, a quiet cabin and soothing next-generation LED lighting. Windows on the 777X are 30 percent larger and placed higher for more natural light and a view from every seat. Stow bins hold twice as much yet close easily up and out of the way, offering passengers easy access to their belongings while also maintaining the spacious, open feel of the cabin. That cabin is 16 inches wider than the competition, offering comfort the competition simply can't match. With the uniquely customizable architecture of the 777X, airlines can easily create custom ceiling and bin design combinations in each section of the same airplane.

The 777X also adds other proven 787 technologies where they add value such as in the flight deck, flight controls and other systems.

3D X-ray Image Interpretation – the Key to CT Screener Success

By Neal Owens, Senior Business and Program Management Representative, Battelle

Computed Tomography (CT) screening technology is essential to civil aviation security for fast and effective threat detection screening of cabin and hold baggage. CT technology accomplishes this by applying automatic threat detection algorithms (ATDs) to high quality three-dimensional (3D) X-ray images produced by the CT machines to automatically identify potential threats at high speed. But because ATDs are not perfect, suspected bags must be reviewed by screeners to ensure that suspected items are not false alarms and not true threats. Therefore, screeners are critical to the application of CT technology for aviation security screening.

To be effective, screeners must learn how to interpret the complex 3D images produced by CT machines quickly and accurately. Interpreting 3D X-ray images is much more difficult than interpreting conventional 2D X-ray images, and thus, image interpretation training (IIT) is critical to a CT screener's success.

Battelle recognized the critical need for high quality IIT training and in 2017 we produced ProDetect™

CT Security Screener Training, the first computer-based training (CBT) for CT screeners. We relied on our extensive background in security screening technology research, development, test and evaluation (RDT&E) for the U.S. Department of Homeland Security and the U.S. Transportation Security Administration (TSA), combined with our software development competency, to develop the ProDetect CT system. Since its introduction, we have interacted extensively with the marketplace in the U.S. and internationally and received valuable feedback regarding screening organization preferences for training and we have used this feedback to continuously improve ProDetect

CT. Through our interaction with airports, screening organizations and government regulators, here's what we learned about what these organizations require and here's how it meets these requirements.

Realism

Screening organizations want their screeners to train on computer-based training (CBT) systems that look like the CT systems they use every day.

Until ProDetect was offered, CT simulators provided the only means to provide realistic training for screeners, but simulators do not provide all the requirements for effective training. ProDetect's unique design allows us to simulate
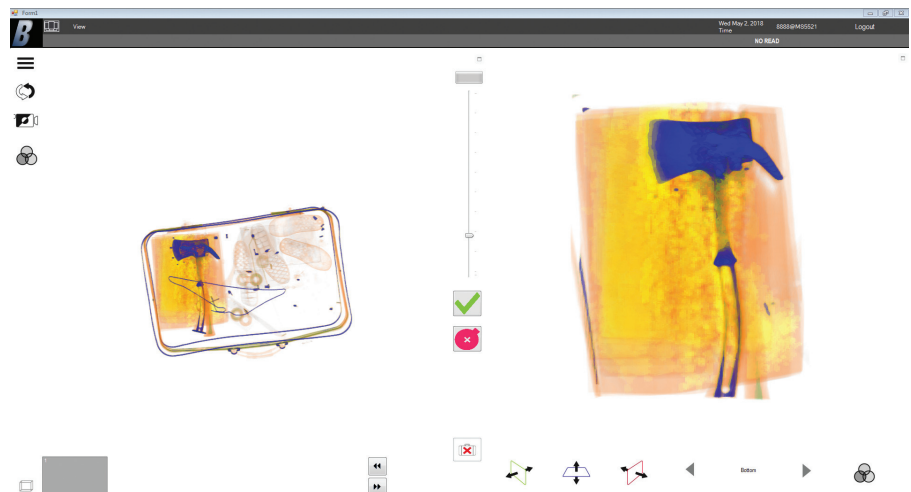
any CT machine by rendering images from our cabin and hold baggage image libraries and presenting them on the screen in a graphical user interface (GUI) that the screener uses every day. These GUIs are realistic as to the layout (appearance) and controls of the GUI and the color pallet used to colorize items. Based on this approach, the same ProDetect system can provide training for cabin baggage and hold baggage screeners with different system GUIs and image libraries, all from the same CBT system.

Efficiency

Screening operations must work on tight schedules and within small operating margins and so they want screener training that is efficient as well as effective.

To address this need, ProDetect CT provides independent, self-paced training. Trainees can access pre-established and assigned training playlists appropriate for their level and conduct their training independently and at their own pace and schedule, without supervision. This independent, self-paced CBT approach minimizes training costs for airports and screening companies alike.

Effectiveness

The critical nature of the CT screener's job requires that they not only be effective at reviewing

suspect bags and making accurate assessments about potential threats, but they must also be fast. This requires effective IIT training.

ProDetect achieves learning effectiveness through numerous features. First, ProDetect's self-paced approach, noted above, ensures that trainees learn at their own pace. This is a well-established technique for effective training. Second, trainees receive immediate feedback of the results of each bag "trial" (bag resolution), so they get immediate highlighting of errors or reinforcement of successes, also an effective means of learning. Third, ProDetect employs the immersive training technique wherein trainees are instructed in-depth on required information and skills to ensure proper skill retention. After each bag trial, trainees are presented with a series of follow-up modules that reinforce key aspects of the bag/threat they just resolved.

In the immersive training mode, trainees are provided the same bag views (whole bag, slice/slab, and threat) that were just reviewed, with full GUI controls available. In conjunction with this view, three modules provide immersive training: 1) A Question and Answer (Q/A) module poses specific questions about the bag/threat and trainees are provided an immediate response as to the correctness of their answers. 2) A second module

challenges trainees to place a dot on the threat in the bag image and feedback is provided as to the accuracy of their placement. This counteracts guessing and ensures understanding. 3) A tutorial module provides technical detail about each component (power supply, initiator, explosive, and switch-PIES) in identified threats and shows these components as pictures and 2D X-ray images, including the assembled IED. In addition to these immersive training modules, ProDetect's IED Builder module allows trainees to virtually build their own IEDs by selecting one of each of the four components (PIES) that constitute an IED from an extensive menu of components. IED Builder then virtually builds the IED and presents it as a photo and as a 2D X-ray image. Again, this allows trainees to familiarize themselves with IEDs independently and at their own pace.
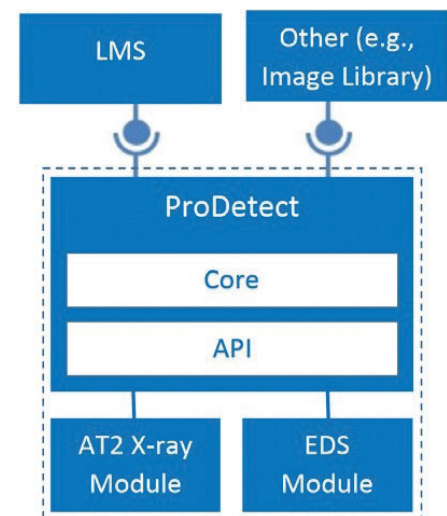
Supervisory Controls

Airports and screening company management want the ability to organize their own training, personalize their bag images and playlists, and produce reports that analyze and summarize training results for internal purposes and regulatory review.

Since it is based on a human factors research platform, ProDetect CT is rich with capabilities and flexibility to address the range of supervisory needs for personalization, detail and reporting. Supervisors can establish as many user groups as necessary to accommodate their needs and assign any trainee to multiple groups as appropriate. They can also develop their own playlists for training or testing from ProDetect's 1000 image cabin and hold baggage libraries (750 clear images and 250 threat images each). Supervisors can also add images imported from their own CT machines to complement their Battelle-provided playlists. Any such imported images can be tagged by the supervisor as to the type of image (e.g. threat, shield, clear) and characterized as to degree of difficulty to aid in playlist development. In a future version of ProDetect, degree of difficulty characterization will facilitate our adaptive training feature, which will automatically increase the degree of difficulty of images as trainee skills improve. And finally, supervisors can develop their own questions in the immersive training Q/A section to personalize that section.

When it comes to reporting, ProDetect's research-based platform provides it with exceptional depth and flexibility regarding training results and assessment tools. Filters provide supervisors with the ability to filter reports on training based on Group, User, Time Period and Playlist, indicating successes, failures and probability of detection. And this information can be displayed as data or graphs. In addition, ProDetect captures every action taken by a trainee during bag trial exercises including controls used, mouse clicks made, elapsed time for each action, and decisions taken. This data is available for downloading to external data bases for further analysis. Such analysis can be used, for example, to identify why successful screeners perform so well so their decision strategies can be incorporated into protocols and training for other screeners.

Flexible Architecture and Future Growth

Airports and screening organizations alike want assurance that their training systems will be flexible enough to grow and adapt to new screening platforms, training curricula and regulatory requirements and function standalone or in a networked environment. In response, ProDetect was designed with a flexible architecture which starts with an operating "core" that manages its fundamental processes. This core interfaces with external modules to provide external training functionality and to access external resources such as learning management systems (LMS) or image libraries. In this way, ProDetect can grow and adapt to new capabilities and requirements without having to update the entire application.

Summary

ProDetect represents state of the art CBT training for CT screeners and is based on Battelle's extensive experience in screening technology RDT&E and on feedback from screening specialists at airports, screening companies and aviation security regulators around the world. Go to www.battelle.org/aviation-security for more details about Battelle and ProDetect CT.

BATTELLE

It can be done

3 Ways Technology is Speeding Airline Turnaround Times   **Honeywell**

The ground support team swings into action as soon as an arriving airliner reaches the gate. There's not a minute to spare as they work with the precision of a dance team to get the aircraft checked, cleaned, refueled, unloaded and reloaded, and ready for its next flight.

Airline passengers place a high value on on-time performance. So do airline executives who know better than anyone that time is money. New connected aerospace technologies are helping airlines shave precious minutes off their turnaround times, resulting in happier passengers and a healthier bottom line for the operator. Here are three ways technology enables better turnaround times.

Connecting Ground Vehicles

Flight line operations are a lot more efficient these days thanks to connectivity and advanced telematics that create a new way for airlines and airports to manage ground activities, improve safety and increase efficiency. Telematics hardware is installed on emergency vehicles, fuel trucks and other ground vehicles so that airlines and ground handlers always know their location and operational status. As part of the Ground Handling portfolio, Honeywell has pioneered these technologies, which can save maintenance costs, prevent on-ramp accidents and reduce turnaround time by five minutes per flight.

Integrating the Ground Handling Process

There are many opportunities to use connectivity to improve the ground handling process. With Ground Handling, Honeywell gives ground handlers a powerful mobile application to manage every aspect of the turnaround process. It also includes a web-based component that provides airline and airport operations teams with the status of each aircraft and its likelihood of pushing back on time. In real world operations, the solution helped a European airline reduce the number of delayed flights by 22 percent.

Reducing Unplanned Maintenance

Avoiding mechanical problems at the gate can have an enormous impact on on-time performance. Some airlines that have implemented Honeywell's industry-leading Honeywell Forge Connected Maintenance service have experienced a 30 percent reduction in unscheduled maintenance. That's because we use data from various sources to predict when a part will fail so the maintenance team can address it proactively. In addition, our integral health monitoring proximity sensors reduce the chances of time-gobbling false alarms on controls, doors and other aircraft elements.

There are lots of reasons flights run late but better ground-handling efficiency is one of the few ways that airports and airlines can make up time and improve their schedule performance.

About Honeywell Aerospace

Honeywell Aerospace products and services are found on virtually every commercial, defense and space aircraft. The Aerospace business unit builds aircraft engines, cockpit and cabin electronics, wireless connectivity systems, mechanical components and more. It's hardware and software solutions create more fuel-efficient aircraft, more direct and on-time flights and safer skies and airports. For more information, visit https://

aerospace.honeywell.com and https://aerospace.honeywell.com/hes or follow us at @ Honeywell_Aero.

Honeywell (www.honeywell.com) is a Fortune 100 technology company that delivers industry specific solutions that include aerospace and automotive products and services; control technologies for buildings, homes, and industry; and performance materials globally. Our technologies help everything from aircraft, cars, homes and buildings, manufacturing plants, supply chains, and workers become more connected to make our world smarter, safer, and more sustainable. All of Honeywell's global businesses have a strong legacy in India, built over the last eight decades. Honeywell's India commitment is evident in three state-of-the-art manufacturing and engineering operations, and five global centers of excellence for technology development and innovation. Honeywell employs close to 13,000 people across 50 locations including Bengaluru, Chennai, Delhi, Gurugram, Hyderabad, Madurai, and Pune. For additional information on Honeywell India, please visit https://honeywell.com/country/in

Honeywell

Opportunities and Challenges in India Aviation
with focus on regional connectivity, MRO and Aviation training

By S Vasudevan, Partner and Global Sector Lead - Airports, KPMG India

India is the epicenter of aviation growth, being one of the fastest growing domestic markets in the world. The country is poised to emerge as the third largest global aviation market in the next decade. Despite a temporary slump in the Indian economy, also influenced by global events, the story of aviation in India continues to be strong and promising.

During 2019, more than 210 million domestic and International air-trips were recorded. Over the last decade passenger traffic has grown by a CAGR of 12% making India the third largest domestic aviation market in the world. India's low air traffic penetration and latent demand for regional connectivity, which are becoming important hubs for increased tourism and economic activity are together expected to drive growth in both passengers and air cargo over the next two decades. With a population of more than 1.35 Billion, air-trips per capita in India is a mere 0.15 as compared to 0.47 in China and 1.9 in USA.

MoCA's Vision document envisages 1.1 billion air passenger trips by 2040, a five-fold increase from recorded traffic in 2019. Indian carriers are expected to have a combined fleet of over 2,300 aircraft by that time. The industry will need more than 30,000 commercial pilots to meet the demand, in addition to adequately qualified, trained engineers and technicians to support the maintenance, repair and overhaul requirements of the large and diverse fleet of aircraft. The aviation sector is, indeed, poised is play a pivotal role in India's growth story and generate unprecedented direct and indirect economic benefits.

The government of India's flagship UDAN scheme has opened up more than 240 underserved and unserved routes in the last 3 years, connecting major airport hubs across the country. There are structural and financial challenges constraining operation of more routes but these can be addressed through suitable policy interventions as both carriers and investors remain optimistic about future growth prospects. Open sky agreements with countries beyond 5000 km from India have attracted more services from Europe, Africa, US and the Far East adding to the growth momentum. Enhanced bilaterals with countries within the 5000 km range will also get triggered as Indian carriers add capacity to the Gulf and ASEAN routes, which carry a significant proportion of India's traffic to the West and East respectively.

While many issues and challenges need to be addressed, there are three core areas that the government will need to focus on immediately to promote and sustain the growth momentum.

Regional Connectivity

UDAN is a path-breaking initiative under the National Civil Aviation Policy 2016 aiming to create an equitable growth of regional air-connectivity and making flying affordable. It envisions widespread regional connectivity, aided by redevelopment and construction of more than 400 airports and airstrips, connecting them with metros and tier-II airports under multiple phases. Award of routes to various carriers has been done through an open, competitive bidding process, where fares for

different routes are capped for a proportion of seats, based on flight distance and subsidies are paid for a denominated number of RCS seats subject to a floor and a cap. Carriers also get exclusive rights for a period of three years to operate these routes.

More than 3.5 million passengers have flown between April 2017 and December 2019 under the UDAN scheme. This number may seem low compared to the overall traffic volume handled by major airports, but it does indicate the strong and growing preference for air-travel across tier – II and tier-III towns, in a country with low air traffic penetration.

Challenges

Out of the 130+ towns for which routes were awarded in first three phases of UDAN, flight operations have commenced to only 44 towns till January 2020. Only 35% of 690 routes i.e. 248 RCS routes have been commissioned with regular services. The closure of Jet Airways and Air Odisha has partly contributed to this deficit. Further, engine, capacity and slot availability issues have also limited operations by other carriers, which won the rights for these routes. The scheme was initially envisaged to be led by regional carriers. Not surprisingly. competitive bids

from established carriers which had network and cost advantages ensured the won many of the RCS routes in the first three rounds of bidding.

The continued success of RCS will need quick and smart policy reforms and initiatives given the high operating cost structure of airlines, scarcity of airport slots, constraining regulations on acquisition and repatriation of aircraft, fare wars and high tax incidence. At the minimum, the government will have to usher in a local aircraft leasing market that will support quick capacity addition by regional airlines, rationalization of taxes on aviation turbine fuel and MRO services, a strong refinancing market with innovative strictures, low interest rates and longer debt tenures, and a liberalized regulatory regime that encourages market aggregators, flexible schedules, competitive slot allocation mechanisms and code share agreements.

Maintenance, Repair and Overhaul (MRO)

The problems in the MRO industry are well-known, where the answers are clear and the benefits are undebatable, but no concrete action has come forth from the state and central governments. Indian MRO

companies service only about 10% of the overall commercial fleet in India (excluding standard line maintenance services). We concede more than USD 800 million in foreign exchange to our overseas MRO counterparts in Singapore, Sri Lanka, Dubai, Turkey and other countries because of skewed tax and import duty rates which make foreign markets more attractive for Indian carriers. We have also lost close to 100,000 jobs in the process and put many companies out of business while others struggle for growth and survival This is ironical in a sector that has put us on the global map on both performance and potential.

Challenges

With the forecasted traffic growth and addition to the fleet, India's MRO business has the potential to become a USD 10 billion market in the next 10-15 years. Five changes can make this a reality and also open up opportunities for creating more than 200,000 jobs. 1) a flat GST of 5% on ATF (right now subject to a VAT ranging from 1% -30% across States); 2) a 5-year tax holiday for Indian MRO service providers; 3) full input tax credit for airlines procuring services from Indian MRO service providers; 4) treating MRO services provided by domestic MRO companies to

overseas contractors as deemed exports (entailing them for a tax waiver on the value of services "exported") and 5) providing incentives to attract 100% FDI or JVs for MRO services in India under the Make In India initiative.

Pilots training

An estimated 9000 pilots currently fly ~650 planes in India today. Some part of this requirement (~4% to ~5%) is being met by foreign pilots who presently operate Indian fleet, at a substantially higher remuneration, not to mention the associated logistics costs for their travel, accommodation and perquisites. The demand is for an additional 1000 pilots every year on an average for the next 20 years, which could be more depending on the pace of fleet addition and number of turns per flight. This demand cannot be met today even considering the combined capacity of all certified flying training schools in the country. Further, meeting this demand also requires a significant increase in the number of simulators apart from training fleet and classroom infrastructure, presenting a huge challenge to the industry and the government. The costs of training overseas are also significantly higher than in India.

Challenges

The good news is that many entrepreneurs are looking at this opportunity keenly and drawing up plans with carriers, OEMs, simulator manufactures and instructors to set up training schools and associated infrastructure in India. However, the current demand- supply gap and the gestation period required to create capacity can result in perverse incentives for some stakeholders to potentially abuse the market. Therefore, there is a greater need for better oversight and tighter regulation to deter malpractices and gaming by the industry. Technology, data integration and periodic audits can ensure better compliance and enhance overall safety of the eco-system.

Since land near major airport hubs and unhindered air spaces are both critical success factors for training school, state and central governments will need to work in tandem to support investors in expediting land acquisition, transfer and approvals in addition to providing necessary fiscal and commercial incentives to make these investments attractive. These could include reduced stamp duties, higher FSIs, permissions for ancillary commercial uses where feasible, and financing support to reduce costs (such as soft-loans), considering that such facilities will create jobs locally and enhance the local value-chain.

The next decade belongs to the aviation industry and will be the decade of transformation

KPMG

Landrum & Brown

By Debayan Sen, Associate Director – India, L&B

Landrum & Brown (L&B) is a leading global consultancy specialising in aviation planning and development for close to seventy years. You could say that airports and aviation are in our DNA.

L&B is a global organisation that has worked on projects in every continent. In an industry as international and dynamic as aviation, our clients benefit from our unsurpassed breadth of international experience as well as our local and regional presence. We are proud to say that we have worked across all seven continents, including Antarctica.

Airport infrastructure and operations are technically complex with multiple stakeholders, different ownership models, business needs, emerging technologies and wide ranging, economic and community impacts. L&B's range of capabilities offers an integrated solutions approach to our clients.
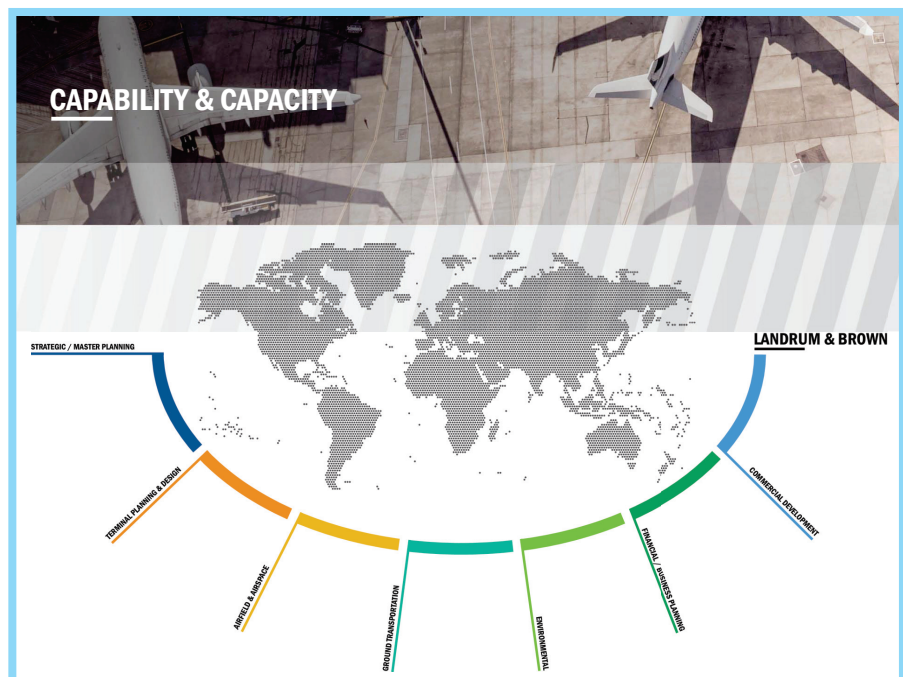
Our team members range from technical planning and architectural design professionals to economic, financial and environmental specialists.

L&B's Asia Pacific regional presence is unsurpassed in the airport consulting industry. The Asia Pacific headquarters in Melbourne was established in the year 2000 closely followed by the China regional office in Shanghai.

Other offices have been established in India, Bangkok, Hong Kong, the Middle East and South Africa. Over 50% of L&B global business is now accounted for in these regions. We adopt a deliberate strategy to continue building our capabilities, addressing high growth markets by growing and broadening resources. To that end, L&B recently acquired the Ambidji Group, a highly respected Melbourne based air transport consultancy. This acquisition adds valuable skillsets to L&B, including airspace planning, air traffic management system development, aviation policy regulation and strategy development, airport business analysis and transactional advisory services for investors in aviation infrastructure. We have also enhanced our capabilities to integrate design services with terminal planning. This offers our clients a 'one stop shop' approach during early design stages, thus allowing for a higher level of terminal and commercial

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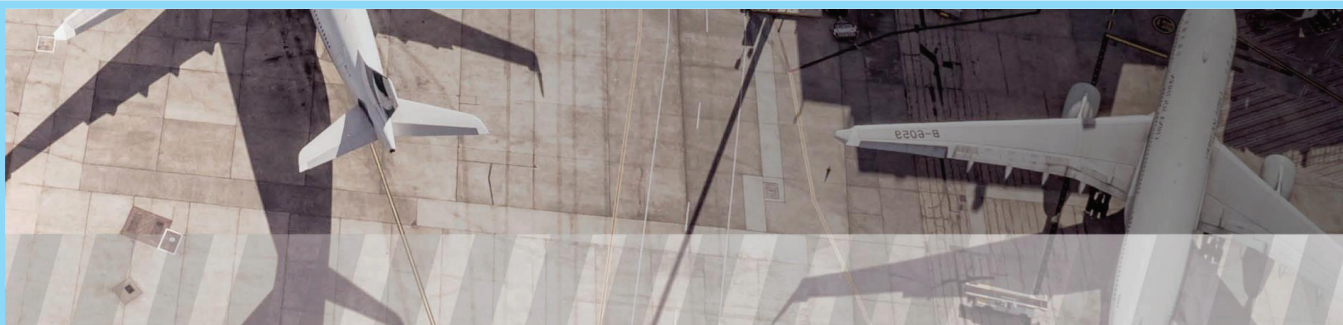Los Angeles • Melbourne • Mexico City • Miam

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Our team examines all opportunities and challenges conventional thinking to explore innovative and robust solutions to unlock the full revenue potential of the airport.

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L&B services extend well beyond the airport boundary to encompass aviation sector-wide planning, regulatory strategy development and policy reform.

development, supported by communicative and evocative visualisations.

With over a decade of experience in the India market, Landrum & Brown (L&B) have completed multiple airport consulting assignmentsfor all the major privatized airports in India. L&B's in depth knowledge of the Indian market is unparalleled and L&B staff are often calledon to provide commentary on policy initiatives and regulatory issues and invited to speak at leading airport conferences and participate intraining of senior executives in the Indian government and industry.

L&B staff based in Mumbai and Delhi continuously research and track trends in the India market. Related macro issues such as economics, demographics, consumer trends, regulatory developments and technology are researched and updated. The highly skilled team of analysts provide intelligence in a variety of areas covering not only aviation but also related macro issues such as economics, demographics, consumer trends, regulatory developments and technology.

L&B
Aviation Planning at the Leading Edge

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: Off the Shelf Innovation Available Now

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 is clearly 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, level and intent.

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 Mode A/C/S 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. This contract signing came three months after the Aireon service went live on 2 April 2019. India joins36 other countries who are actively deploying Aireon's space-based ADS-B service.

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 16 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), the Irish Aviation Authority (IAA), Corporación Centroamericana de Servicios de Navegación Aérea (COCESNA), Papua New Guinea Air Services Limited (PNGASL), the Federal Aviaigton Administration (FAA), the Seychelles Civil Aviation Authority (SCAA) and others.

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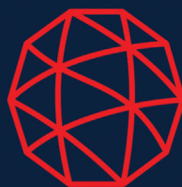
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United Airlines

By Harvinder Singh, Country Manager - India, United Airlines

United is the only U.S. airline to consistently serve India for well over a decade. Since 2005 United has offered daily, nonstop service between Newark/New York and each of Delhi and Mumbai. In December 2019 United launched its third flight and its third U.S. – India route with the commencement of nonstop San Francisco – Delhi service. United is proud to be the only U.S. airline to connect India to the East Coast and West Coast of the U.S. Flights from Delhi and Mumbai are conveniently timed to an extensive network of destinations throughout the Americas via our Newark/New York and San Francisco hubs. United customers in India may book flights by visiting united.com or contacting United reservations on 91-124-4315500 (Delhi), 91-22-40908000 (Mumbai), or via their travel agent.

United's shared purpose is "Connecting People. Uniting the World." We are more focused than ever on our commitment to customers through a series of innovations and improvements designed to help build a great experience: Every customer. Every flight. Every day. Together, United and United Express operate approximately 4,900 flights a day to 358 airports across five continents. In 2018, United and United Express operated more than 1.7 million flights carrying more than 158 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, New York/Newark, San Francisco and Washington, D.C. United operates 788 mainline aircraft and the airline's United Express partners operate 560 regional aircraft. United is a founding member of Star Alliance, which provides service to 193 countries via 27 member airlines.

Risk-Based Screening: From Intriguing Hypothesis to Hot Topic

By Vikrant Subhash Trilokekar, Managing Director – India, Smiths Detection

Ever increasing air passenger traffic plus advances in biometrics, artificial intelligence and integrated screening technology are driving some very exciting developments -Risk Based Screening (RBS) is now firmly on the fast track.

FLEXIBLE AND TARGETED

Unlike typical 'one size fits all' screening, RBS varies the process based on risk assessments made by combining a unique identifier (for example, biometrics or shipping ID) with information gleaned from criteria such as destination or region, ticketing or routing data, behaviour and contents, 'watch lists' or membership of traveller programmes. Customs organisations, for example, may also be interested in the point of departure.

It could potentially reduce the level of screening (and speed up the process) in some cases and add additional measures as required - specific people, bags, shipments, flights or destinations/origins could be targeted for more stringent screening. This more streamlined approach elevates security and operational efficiency, delivering significant benefits

to airlines, airports, air cargo handlers, regulators and control authorities. It requires a system which can adapt in real-time to the required level of screening.

TSA Pre ✔®; the Department of Homeland Security's TASPD system for air cargo; IATA's NEXTT as well as ACI's Smart Security initiatives have all demonstrated some early applications of risk-based screening. More recently, it was announced that the EU-funded iBorderCtrl project* will test a combination of risk-based assessment, biometrics and deception detection to improve accuracy and efficiency of checks at EU external borders.

In France the Vision Sûreté programme involves risk assessment; and the UK Aviation Security Strategy includes a focus

on a data-driven approach to identifying and targeting higher risk people and goods. Also in the UK, the Future Aviation Security Solutions (FASS) programme is helping to trial and test new technologies and solutions. Internationally, risk management is also central to the ICAO's approach to security.

Going forward, how could RBS be developed specifically for aviation?

MULTIPLE APPLICATIONS

RBS is particularly relevant for aviation as captured information can be used multiple times across the network to benefit stakeholders at departure, transit and arrival airports. And it is not just about passenger screening, RBS can also be applied to hold baggage and air cargo security.

1. At the checkpoint

Security operators would spend more time with passengers they know least about or who represent the highest risk – and therefore provide the best experience for those they know most about and who are low risk. With RBS, the system will adapt and respond to dynamic threats and change the level of screening where necessary by individual passenger, flight or destination.

A key requirement is a unique identifier to associate passengers with their baggage which could be created using biometrics. Once the passenger name, record or advance passenger information is amalgamated with data from third party sources, a risk score can be generated.

So in this scenario, each tray is matched to a passenger at the checkpoint divest using a camera and RFID reader. When the passenger is screened and identified, the appropriate workflow is triggered; and similarly, the bag scanner would read the tray ID and change the detection algorithm accordingly. The recent development of smart and adaptable object recognition algorithms offering automatic detection of an ever expanding list of dangerous, prohibited and contraband goods, provides a

quick and effective method of ramping up security as and when needed.

Using artificial intelligence and machine learning, airport authorities would have a greater understanding of each passenger and his or her risk level. In turn, this means smoother passenger flow and a better travel experience.

2. In the hold

A typical hold baggage scenario shows how the information can be shared and used several times. It is applicable to international inbound passengers transferring to internal or international outbound flights - for example, passengers arriving from a 'safe' point of departure could enjoy a much faster and more efficient security procedure at the transfer airport.

X-ray images taken at the departure airport would be sent to the transfer and/or destination airport for review by local Customs, Security, Agriculture or

other controlling authorities while the plane still is in the air. The appropriate algorithms (including object recognition) would be used on each bag to filter and identify those of concern. This would support decisions on which bags warrant additional scrutiny on arrival and where to focus resources. Combining data from both hold baggage and passenger checkpoint analysis would deliver even more insights.

The many operational benefits include better flight connection times, fewer delays and less disruption to the passenger journey. Easing the pressure on inbound screening resources, reduces costs and streamlines the process.

3. For air cargo

Sharing outbound information to facilitate a more effective and efficient inbound customs clearance process also offers significant benefits in air cargo operations. Object recognition algorithms could again be used

here to alert local authorities to contraband as well as uncovering dangerous goods such as lithium batteries before departure.

This sector already executes a degree of differentiation as additional measures are required on some flights carrying consolidated shipments. RBS would apply appropriate and proportionate measures to screen all consignments based on the linked risk level.

The shipping manifest acts as a unique identifier and the risk assessment criteria include destination, routing information, contents and source (e.g. secure countries or approved forwarding companies). Assessment could

start at an external cargo site or directly in the forwarding hub and involve information on the shipper and the goods, plus dimension and weight of the shipment.

This data would be transmitted for use before the screening process and updated when necessary at

touch points during the journey. The system would recognise each shipper/ shipment and trigger an appropriate level of screening based on the risk assessment.

The goal here is to create an effective, adaptable and seamless process which does not impact the flow of goods. With no passengers involved and less privacy issues, there are considerable opportunities for RBS in air cargo

It seems sure aviation will continue to benefit from increasingly sophisticated RBS developments and applications. A few technical, social and regulatory matters - cybersecurity; data protection; cultural differences; and certification – are all being actively addressed and RBS initiatives continue to gain momentum.

Source: https://www.iborderctrl.eu/The-project

To find out more about Risk Based Screening, visit **https:// tinyurl. com/SmithsDetection-RBS** or scan QR code here:

MRO: A problem and an Offset Opportunity

By Rajeev Vaid, Chief Operating Officer, Boston Analytics

Humble middle-class population with decent disposable income and vying to fly to their destinations in style and speed rather than wandering via grimy railroads makes the Civil Aviation Industry in India one of the fastest growing. Bare statistics pertaining to the growth of India's Civil Aviation Industry are quite telling: in FY 2017-18, 123.32 million domestic passengers, more than the entire population of most countries, flew India's fleet of ~500+ aircrafts (as of July 2018) across some 100 airports in the country marking a growth of 18.86 percent over the previous financial year. In 2017 alone, domestic air traffic nearly doubled to 117 million with 100 flights taking off every hour compared to 67 in 2011. Flights operated at a fuller capacity from 75.5% in 2011 to 86.1% in 2017. It's therefore no surprise that over 500 million of this mass mid segment population is driving India to become the world's third largest air passenger market by 2025 overtaking the UK and following behind the US and China. Under the UDAN (Ude Desh ka Aam Nagrik) scheme, which is aimed at regional airport development and regional connectivity, the Government of India (GoI) aims to cover 235 routes including water aerodromes too.

By any measurement, this industry presents humungous growth opportunities.

Juxtapose this projected growth and therefore the need to set up aviation MRO (Maintenance, Repair and Overhaul) with the offset responsibilities of various global OEMs (Original Equipment Manufacturers) which is estimated to be US$ 6 billion as per the Defense Procurement Policy.

These OEMs – the likes of Boeings, Safran, Lockheed Martin, Pilatus and Textron – with obligations to fulfill such offset responsibilities could naturally be driven towards development of a very effective MRO if the two government arms of aviation and defense can work seamlessly. Let's take a closer look at the driving force behind such a statement.

Growth in Civil Aviation

With business growth in India and global vacation population swelling up year on year, international passengers in FY 2017-18 have grown to 60.58 million. The total passengers in FY 2017-18 accounted for almost 184 million reflecting a growth of 16.08 percent over the previous year.

A significant increase in e-commerce coupled with improving air connectivity to small airports and growing GDP would also push growth in air cargo traffic if infrastructure bottlenecks are addressed well. Between 2007-08, the domestic capacity for cargo grew at 8.3% and the domestic demand at 10.87%. In 2017 alone, aircrafts transported 0.7 million metric tons domestically, marking growth rate of 9.25% over the previous year and a high of 1.5 million metric tons internationally marking an increase of 14.61%. Once again, these figures are only expected to rise considerably in the decade ahead. Thus civil aviation presents an enormous opportunity in our country. Permissible FDI of 100% in the Aviation Sector, introduction of advanced information technologies and the ever-growing emphasis on regional connectivity have all combined towards an ever-dynamic expansion.

India's current aircraft inventory of 500+ and orders of another 1,200+, large pool of engineering talent and low labor costs, India has the potential to become a global aviation hub for MROs.

Airport Expansion

The Airports Authority of India (AAI) has planned a capital expenditure

of about US$9.3 billion for airports in the country which will include US$3.1 billion for brownfield expansion in New Delhi, Mumbai and Bengaluru and another US$2.95 billion for greenfield airports. New airports have been planned for Deogarh, Rajkot and Allahabad while other new projects include the Navi Mumbai airport (expected cost US$2.58 billion), a new airport in Greater Noida, near New Delhi and six new airports in Andhra Pradesh to name a few. Recently, new airports have been added in the states of Odisha, Sikkim and Kerala. In fact Kerala has become the country's only state to have four fully functioning international airports.

Furthermore, 325 air routes have been awarded to airlines and helicopters with the aim to enhance flight services to hilly and remote areas across 78 airports and 31 helipads under the Regional Connectivity Scheme.

Growing pains

Despite the run so far and the projected growth, airlines bleed today and need to be rescued often by external funding and investments. They face a crisis the moment there is currency depreciation and cost of ATF (aviation turbine fuel) rises. About 25 to 30 percent of aviation cost in India is 'dollar denominated' and comprises expenditures related to issues such as aircraft lease rents, maintenance, ground handling, aircraft parking charges overseas etc. Cost of ATF alone accounts for 40 percent of the operating expenses compared to about 20% for many foreign carriers. The 14% excise duty on ATF plus a sales tax as high as 29% by states has made ATF expensive to a point of huge concern. Therefore any hike in crude prices directly impacts pricing and hence flight occupancy. Passenger volume growth at 12% during 2018 Q4 was slowest in the last four years due to hiked prices to offset higher fuel costs and a weaker rupee.

Lack of local MRO to support growth

India has a major MRO opportunity and problem. This is strongly linked to a prominent part of India's industrial base and also its massive military aviation requirements and establishment.

The NITI Ayog or erstwhile Planning Commission estimates that India's MRO industry is expected to increase to US$986 million per annum by 2020 although it will remain smaller than that of the UAE and China. India has the potential to be a major world MRO hub due to its steadily growing aircraft fleet, location advantage and availability of talent. Low cost carriers, which are a success story in India, would prefer servicing of aircraft locally to save cost and time in a highly competitive market.

But development of MRO units has not been happening at the speed and scale required. And herein lies both the challenge and opportunity. Taxes and royalties and the many hesitations of local investors have been an impediment. Indian MRO players have to bear additional tax burdens over foreign MROs due to a 'discriminatory' policy of import duties, service tax etc. The rents at Delhi and Mumbai for MRO providers is estimated to be 50 to 100% higher than that charged for equivalent facilities in many countries in Europe including Turkey.

India flies over 60 types of aircraft and helicopters, the individual type of which requires trained technical manpower, tooling and approvals from the regulator as well as from the OEMs to enable an MRO to offer world-class maintenance services. But for reasons mentioned, infrastructure creation requires a level of investment which most MROs don't find viable to support.

Apart from a need for reasonable rents and procedures, a key challenge is the non-availability of spare parts in the region because local MROs are unable to maintain an inventory of key spare parts

which leads to grounding of aircraft for longer periods. This is driven by limitations of OEM support for the Indian market and the custom duty regime which discourages MROs from stocking spare parts on behalf of customers.

Thus airlines are finding it cheaper to send aircrafts overseas to countries such as the UAE (Dubai), Singapore and Malaysia for maintenance even though labor cost is higher in these countries. The value of MRO work in India is expected to rise to $1.75 billion when almost another 1200 aircraft are added in the next few years. If the same scenario continues, civil aviation growth in India will continue to strengthen MRO industry of neighboring region.

The airline industry spent US$950 million in 2016-17 on aircraft maintenance and servicing but only 10 percent went to Indian MRO companies. While global players such as Boeing, Airbus, SIA Engineering, ST Aerospace and Lufthansa Technik have initiated MRO services in India, GoI needs to incentivize airlines to set up their dedicated MRO hubs through joint ventures with MRO service providers and airlines, significantly reduce the high tax structure, fuel costs and the user charges.

Can mounting Defense offset obligation on OEMs be utilized to push the Civil Aviation MRO? A staggering over US$6 billion offset responsibility in India on possibly all major global Aerospace and Defense OEMs can actually be an opportunity for Indian government to push investment into the much-needed MRO refinement and development in India. The Offset and establishment of a sound MRO system will create and support an ecosystem for defence procurement and maintenance in the area of military aviation.

With similar aircraft platforms and global OEMs in Civil and Defense Aviation, this can be a huge win-win situation and a turning point towards growth. The Indian Air Force and the Indian Navy fly the Dornier-228 and so do some of the domestic Indian airlines in short routes in the country. The IAF also flies the B 737 and the Embraer aircraft as do some private players. The latest Defense Procurement Procedures permit Public Private Partnership and qualification of MRO under the Offset guidelines which will further the MRO capabilities in the country. The Indian Armed Forces are in dire need to replace much of its aviation fleet which is outdated. In addition to the need to acquire ten squadrons of fighter aircraft (about 160 to 180 fighters), it needs between 80 to 100 new fixed wing transport aircraft as replacement to the ageing Soviet- origin An-32s and many light, medium and heavy capacity helicopters. The IAF has purchased 11 C-17 Globemaster heavy transport aircraft and two squadrons worth C-130 medium lift transport aircraft.

Likewise, the Indian Navy needs to replace much of its light helicopter (Cheetah and Chetak) and anti-submarine warfare helicopter fleet (SeaKing) and also the Soviet-origin IL-38 maritime reconnaissance aircraft fleet. Similarly, almost the entire light helicopter fleet of the Army needs replacement.

The rapid growth of civil and military aviation in India, the fast adding numbers to the civil aircraft fleet with a projected demand for 2,000 in the next two decades, the potential for more airlines, the need for at least another 600 to 700 military aircraft of various types for the four services including the Coast Guard, both the civil and military aviation sector open to 100 percent FDI, the need for a serious MRO facility and the huge Offsets involved – we can easily state the sky is literally the limit.

About Boston Analytics

Boston Analytics (BA), established in 2004, is a foremost US based Artificial Intelligence and Strategy Consulting firm driving transformation in enterprise

decision making. BA is at the leading edge of helping large corporations embed AI and Analytics in their DNA. BA's core competence is:

Large Scale Public–Private Partnerships

a. Driving industry indigenization in Aerospace and Defense (A&D)- helping countries conceptualize and build Military Industrial capabilities

b. Advisory on Strategic Offsets- helping global companies develop and execute on compelling Offset Programs

c. Setup and management of Investment Funds for building A&D capabilities

Strategic Advisory

a. Advisory for Global A&D companies to develop industrial partnerships with Indigenous Companies of Growth Markets

b. Scaling up/ Supply Chain Integration and M&A Advisory for Indigenous Companies of Growth Markets

c. Digital Transformation- using AI and Analytics in decision making

Globally Unique Artificial Intelligence (AI) based Solutions

a. A&D, Technology and other Industry segments and companies mapped in an analytics application to facilitate decision making on Supply Chain Integration, Partnerships and M&A

BA has worked on transformation projects in Growth Markets of BRICS and the Next 11 Economies.

For more information, please contact:

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Covid aka Corona Virus : Veoci as a Emergency Operating Center

By Maninder Singh Grewal, Managing Director, Iprime Services Pvt. Ltd. / VEOCI

The outbreak of Corona Virus has everyone scrambling to devise ways and means of controlling the spread of the virus while at the same time ensuring that infected people are getting the treatment that is needed.

Veoci has a simple blog on an earlier concern on the Zika Virus and worked to create databases and workflows that allowed responders and authorities to set up a collaborated response to the emergency.

Many hospitals and public health systems turned into virtual EOCs streamlining their preparedness and response processes, provide full visibility and centralizing all communication and data on one, single platform Bringing Everyone onto the Central Information Hub Public health officials were faced with the task of coordinating information with local, state, federal and even international organizations that are tracking the same disease. Healthcare providers, hospitals, other local/county agencies and private sector organizations were geographically scattered but are instantly united in a virtual EOC in times where immediate, real-

time communication is key.

For more information please read the blog below or go to

https://veoci.com/blog/epidemic-management-responding-to-zika-or-any-disease-in-a-virtual-eoc

2/17/2020   Epidemic Management: Responding to Zika, or any Disease, in a Virtual EOC

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Recognized as a Leader on Gartner Magic Quadrant for BCMP Solutions, Worldwide

Epidemic Management: Responding to Zika, or any Disease, in a Virtual EOC

Nov 21, 2016

Back to Veoci Blog

ZIKA VIRUS TESTING AND REPORT FORM #128

Facility Fax Number
555-555-5555

Facility Phone Number
555-555-5555

Contact Person for Specimen(s)
Jane Snow

Contact Person Phone
555-555-5555

REQUIRED EPIDEMIOLOGICAL INFORMATION

1. Resides in Los Angeles County?
Use http://gis.lacounty.gov/districtlocator/ to lookup address
Yes

2. Has a history of travel to a Zika affected country (click hyperlink for list)?
Use the link (http://www.cdc.gov/zika/geo/active-countries.html) for list of countries
Yes

Country
Brazil

Cancel   <   >   Details   Edit

https://veoci.com/blog/epidemic-management-responding-to-zika-or-any-disease-in-a-virtual-eoc   1/6

Julie Reynolds
Event Marketing Manager

With over 4,000 cases of Zika in the U.S alone, Zika is no longer a problem only for those who have visited South America recently. As the threat has become more and more pressing, hospitals and public health systems across the country are receiving grants and looking for the most efficient and effective way to manage Zika. A similar process was taking place back in the spring of 2015 as Ebola outbreaks were spreading and shaking up the health care system.

Yale New Haven Health System teamed up with Veoci to create a "Playbook for Disasters" as a real-time solution to manage Ebola preparedness, drills and responses to suspected outbreaks. Click here to read about our Ebola playbook with YNHHS-CEPDR. The features that make the playbook successful are features that Veoci is proud to share with hospitals for just about any type of crisis or disease outbreak.

Many hospitals and public health systems are turning to a virtual EOC to streamline their preparedness and response processes, provide full visibility and centralize all communication and data on one, single platform. **Bringing Everyone onto the Central Information Hub** Public health officials are faced with the task of coordinating information with local, state, federal and even international organizations that are tracking the same disease. Healthcare providers, hospitals, other local/county agencies and private sector organizations are geographically scattered, but are instantly united in a virtual EOC in times where immediate, real-time communication is key.

- Share messages, pictures, videos, files, and locations instantly in a real-time chat room and integrate with your emails
- Send alerts and notifications across all departments for reminders, urgent messages or check-in requests
- Create custom forms on a drag-and-drop template and automatically generate reports to collect relevant data
- View all high-level information from a customizable dashboard
- Stay connected and access all features from anywhere via our mobile app for iOS and Android

Activating a Plan: Preparing for Zika

 Prior to a case of Zika or any major disease ever appearing in your county, health care officials need to have a preparedness plan that is tailored to their unique processes.

https://veoci.com/blog/epidemic-management-responding-to-zika-or-any-disease-in-a-virtual-eoc

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VEOCI – the NEW PaaS for Airlines & Airports Platform as a Service

The laws of change seemingly don't apply to either the Information Technology Sector or Aviation. While Moore's law means that CPU power measure by the number of transistors on the chip doubles every 2 years, it is a software and data driven world that is the original driver for change. We are connected like never before and Twitter/Instagram/Facebook and equivalents have become the preferred means of communication.

Data is being created every second. It is being created by the 45% of the world's population that is engaged in Social Media for an average of 2hours and 23 minutes a day

Consider the numbers :

Smartphones : 3.5 billion smartphones i

Total Mobile Devices : 4.78 billion

Users who say they are always connected : 60%

Average Tweets a day : 500 million Tweets , or 6000 a second or 200 billion a year.

YouTube Videos watched every day : 5 billion

- At the click of a button, assign tasks and workflows as you track progress each step of the way to completion
- Instantly access and review automatically generated reports and dashboard information for quick decision making

Mapping and Tracking Data Visually

In order for a plan to activate and unfold smoothly, key people, assets and resources must be ready and in place.

- Enter preexisting demographic data and map people, resources and assets as well as their condition and current status with color-coded icons on a digital, interactive GIS map
- Share map access with the public and media to ensure valuable information is shared with those who need to know

Security Measures to Protect Data

With critical and sensitive data, security is everything.

- Ensure HIPAA compliance and industrial grade security
- Compartmented information with different access levels to ensure certain information is only accessible by those authorized

One Stop Shop

Maintaining an up-to-date one stop shop for all communication, data collection, reports, your paperless paper trail of customized forms related to Zika, all maps showing assets and demographics data, and, of course, your means of instant notification during an emergency, ensures that the response team feels more prepared to respond collaboratively across departments and sectors. And after the response is over, you now have a full record of every action and exchange that took place. For those who want a streamlined, efficient response to any crisis or outbreak that may arise, paper is out and virtual communication and response centers are in.

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https://veoci.com/blog/epidemic-management-responding-to-zika-or-any-disease-in-a-virtual-eoc

WhatsApp has 1.5 billion active users in 18 countries of which 1 billion are active daily

Facebook : 2.5 billion active users as in Q4/2019.

Instagram : 1 billion active use 4.2 billion Likes per day

All of this means data. Masses of Data- Gigabytes, Terabytes, Petabytes and as bigger units are needed we have exabytes, zettabytes an yottabytes !!!!

These are separate applications and data and users are mapped to each though we see emergence of sign-on linked to Gmail and Facebook IDs. These are different platforms and to see a clear unified picture of any subscriber would be impossible unless there are multiple permissions and even in the remote possibility of that happening, this would be an extensive exercise for a large big data team. It is not expected that these large corporations controlling these applications and much of the world's social media, would come to a single platform.

In the enterprise space, customers are consolidating applications migrating towards single platform as a service models to be able to have all data in one place and mine that date. As this explosion happens there

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Think of all the departments and organizations you have operating within your jurisdiction. Currently, each organization is likely

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January is a key time for many emergency managers in higher education (and other industries). Your budget will soon be due, and it's

Mitigation: The Key to the Future of Wildfire Prevention

Recently that world has been watching, and lending a helping hand when possible, as Australia is ravaged by wildfires. Australian citizens have lost

comes a need to consolidate and use data for analytics and to detect patterns. It also makes possible different types of analysis. Analysis to see and determine past behaviour and predictive analysis to forecast what can happen and more.

In aviation this is a specific need. An AODB is the Central Information Center or data warehouse of all flight related data. However, more and more applications are needed to run an airport, and each has its own issues. Training, Maintenance, More servers, more security, more firewalls etc.

Veoci is a very advanced no code Application Platform as a Service allowing users to configure and build complex workflows and processes. Since all of these are being built on one platform, customers then have the ability to combine data from all of those processes and databases and look at the data as one data lake. This allows for building complex analytical and simulation model.

Veoci for Airlines and Airports

We began with one Airline, United, three years ago and together with them across many drills and incidents we have reached the point where we provide a compelling answer to the needs of Airlines. For

Airlines, there was a significant gain from leveraging the Incident Command System (ICS - procedures for responding to an incident developed by the US Federal Emergency Management Agency (FEMA). VEOCI provides all the ICS forms.) Over the last three years VEOCI has been used for multiple exercises and drills with many unique scenarios including one with a remote island with just one runway that is not operational.

Today, Veoci is in daily use at three of the ten busiest Airports in the US – DFW, DEN and SFO and at over one hundred Airports in North America. Global expansion is now taking place with Athens (ATH) and Entebbe (EBB) both coming online.

Veoci has revolutionized process digitization and application development over the course of 18 years (and counting). Veoci is a team of pioneers, tracing their roots to the very beginnings of the no-code transformation. We offer the most straightforward, easy to use platform for you and your teams, and we know what it takes to ensure your applications never stop running.

Build Anything

Wildlife management systems, business continuity management programs for global financial

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functioning independently, with brief communication crossovers with other departments when necessary. But what if you could bring all of these entities under a single umbrella?

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time to consider how your department's funds should be spent. If you want new tech or just resources to help your program grow, now's the time to push for them. Getting those resources depends, however, on strategically constructing your budget.

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their homes, businesses, and loved ones to the raging flames, and wildlife on the island may never be the same. As Australia battles these bushfires, one question is on many people's minds: What can we do to prevent a wildfire crisis of this magnitude from happening again?

Continue reading

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Join us on our journey to improve emergency, operations, and continuity management!

(f) (t) (in)

Face crisis and continuity challenges with expert solutions designed for you and your teams.

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Our Company	Aviation	Business Continuity	195 Church Street	
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Blog	Government	Mass Notification / ENS	New Haven,	
Jobs	Healthcare	Communication	&CT 06510	
Privacy Policy	Higher Education	Collaboration	United States	
Terms and	Utilities	Application Platform	(203) 782–5944	
Conditions		(aPaaS)	info@veoci.com	

Middle East and Asia

iPrime Services is the authorized Veoci partner in the Middle East and Asia

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institutions, environment of care rounding for hospitals, and reunification drills are just a fraction of the applications our users have built. Good technology enables its users to create the solutions they need, including for mobile.

Empower Your Organization

Reinvent your operations by incorporating powerful automations and ditching paper and spreadsheets. Empower the people in your organization by quickly building and deploying the applications they need to do their jobs better. Establish efficient and collaborative workflows to help your team reach their full potential. Let them focus on their primary responsibilities, instead of filling out paperwork or spreadsheets, and keep them happy by constantly evolving and improving your applications.

The Application Development Platform for Enterprise

Veoci is an operating system for your entire organization. Having a single system for all your processes fosters collaboration and leaves no gaps in knowledge or communication. Break silos and seamlessly move information between your departments. You can manage every application in Veoci effortlessly, too; make changes where you need to,

when you need to. Customize your system from top to bottom to fit your organization.

Veoci Asia & India

With India's aviation sector expanding at double digit rates both Airports and Airlines scramble to meet deadlines and ensure regulatory compliance. The India growth is matched by growth in Asia and Africa where multiple new airports are coming up and connectivity between cities rapidly emerging into new routes and new models.

Veoci gives the ability to leapfrog traditional aviation architectures into a single no code application platform as a service. Base on AWS, there is no local infrastructure requirement which means low upfront CAPEX and lower runtime costs as there are no server AMCs or large IT teams to manage hardware.

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. The team has completed a full Veoci implementation at a large Airline in Asia and is fully trained to meet the needs of airlines and airports. A significant part of the software development is in Noida as well and poised to double by YE2020.

Summary

Veoci is the fastest growing Application Platform as a Service in the aviation space – both at Airlines and Airports .

Veoci has been a product for choice for its rapid implantation, high quality and security, uptime, customer service and a flexible platform designed for continuous improvement and flexibility to adapt to changes of the organization's needs. With a large team in Noida working with the original team in New Haven with talent from Yale University, Veoci is set up to change paadigms in the Aviation space and enabled to deliver the software and support that can meet expanding Asian Aviation needs.

Appendix : The Author

Maninder Grewal, M.D, iPrime – Sole Veoci Representative for India/ Africa/Asia - Maninder graduated from IIT Kharagpur with a degree in Mechanical Engineering and has the distinction of ranking in the top twenty-five in the IIT JEE. He has 30+ years of experience in the information technology sector serving small and medium size businesses with technology solutions. He has been active member of Nasscom and anchors the Nasscom National Annual Tech. He mentors start-ups for growth and value creation and believes that going digital is now a core tool for managing disruption. His experience in enabling with large global customers to leverage technology for maximising business productivity across Aviation, Health and Hospitals, Financial Institutions makes him an integrated part of Veoci's growth story.

Let's Make Airport Water Positive

By Hrushikesh Sandhe PE LEED AP, Head- Civil/ Water, Walter P Moore

INTRODUCTION

Water conservation is important worldwide due to acute shortage of potable water in many of our most populated areas. The increasing impervious cover due to urbanization has impacted infiltration of rainwater into sub-soil and recharging of groundwater. Hence artificial storage or recharging of groundwater is required to restore our natural groundwater supply. Rainwater harvesting is one of the artificial recharge applications that can help to either store for beneficial use or recharge groundwater back into the aquifer.

Airports have one of the highest water demands (potable and non-potable) in the country. The typical categories that require water are irrigation, flushing, domestic

drinking etc. In addition, airports typically have large areas for safety zones that can provide water collection and storage. Hence airports are a good place where rainwater harvesting application can be very useful. It is estimated that if rainwater harvesting is planned and implemented as per design, 100% airport potable water demand can be provided for an average rainfall year. This will help reduce airport capital expenditures in the long term and make airports water self-sustainable. In addition, the rainwater harvesting techniques can help reduce flash floods both at the airports and in the surrounding areas.

Walter P Moore has been associated with airport related civil/water infrastructure design globally. Recently we have started supporting Indian airports using global standards and

expertise to provide a sustainable solution to water conservation. The interconnected rainwater harvesting network on airport property can help maximize storage on-site helping to reduce flood risk and help to provide water for beneficial use during dry months.

APPROACH

The approach to developing a sustainable water supply begins with a review of the on-site drainage areas to make sure maximum storage is captured by storage tanks or ponds. Also, existing infrastructure for non-greenfield airports should be reviewed to understand site outfalls to determine how best to capture rainfall runoff. The rainfall data from Indian Meteorological Department (IMD) gaging station near airport can be analyzed to understand trends for the site of interest. The recent trend in most parts of the country has shown increase in average annual rainfall and reduction of recurrence of dry year due to change in monsoon patterns. See Figure 2 below showing rainfall pattern for one of the airports in India.

The surface excess runoff that occurs post rainfall event is

Figure 1: Typical Airport Runway

collected via the airport drainage network. The drainage network discharges this runoff to storage areas, either an open pond or underground tank. The water from the storage areas is then distributed to an on-site water treatment plant. The treated water is then distributed to provide for the airport water demands. The waste water generated from airport is also treated through on-site sewage treatment plant (STP) and recycled water is used for irrigation and flushing purposes.

The Indian sub-continent does not receive consistent rainfall throughout year. Hence a water management plan should be developed in such a way that excess runoff during the monsoon season can be captured to supply water during deficits in dry months.

To support the water harvesting process, the water balance calculations need to account for the rainfall refill volume that gets added to the pond during the rainy months.

The simultaneous removal of water to meet the airport's water demand and the addition of water from runoff during monsoon is analyzed using water balance equation. The inflow to the pond is added and the outflows are subtracted to estimate the monthly available volume stored at the site. Figure 3 below showcases rainfall volume pattern for a year. The pond or underground tank operation rule should be setup in such a way that the storage is empty before monsoon season starts. The empty storage tank ensures maximum storage of runoff during the monsoon season. It is important that the operation of the system be aligned with the Meteorology Department forecast for the year.

It is recommended that the latest available tools and technology be used to model this setup and analyze various scenarios. The system can be modelled using various water resources software such as US Corps of Engineer's developed HEC-HMS, US EPA SWMM, and others. The hydrologic modeling helps replicate the storm event volume as it passes the site and routes the runoff through rainwater harvesting ponds. Also, the models can represent interconnectivity between pond and get more realistic information on how the transfer of volume will work. Using historical rainfall data, models can be set up using several years of data to help predict how best to design and operate the system. The modeling helps in designing the network and determining the maintenance protocols. The design goal is to provide solutions to store rainfall runoff to the most practical capacity possible in all the catchments and optimize the supply capacity of the storage system. In order to improve the system, the enhancements in the storage capacity, pond size and outflow structure parameters are always required. The interconnectivity can be achieved by using gravity pipe or a pumped distribution system. To conserve energy, the pump system is activated only during the dry periods to transfer water to the treatment facility. The pump
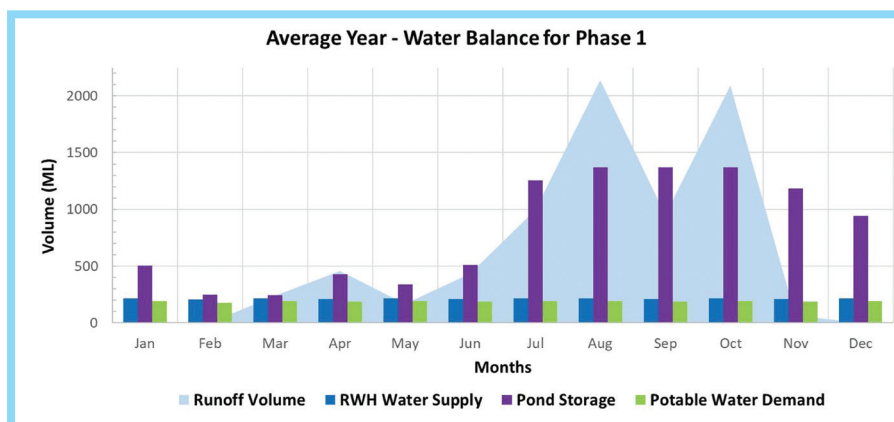

Figure 2: Rainfall Volume Month wise

Figure 3: Tank/Pond Interconnectivity

system can either be manual or automated.

The interconnectivity between ponds can be monitored using sensor or metering applications. The data collected through this application is used to optimize storage and usage for future years. It is recommended that active rain gages be installed at the airport and be integrated into the system operations. The gages will collect airport rainfall information data which can help forecast the impact of any rain event.

As per design standards, the airport drainage network should be designed for 100-yr or 1% chance of exceedance return interval storm event. Hence the rainwater harvesting storage provides benefit of detention and controlling floods and erosion offsite downstream of the airport. This approach is cost effective, environmentally friendly over the life cycle of the facility while integrating well with the existing infrastructure.

CONCLUSION

The water supply at the airport depends on various on-site and public sources. The water is mostly used for domestic activities. Hence conservation approaches such as rainwater harvesting have multiple benefits such as water supply, groundwater recharge, flood control and energy conservation. Assessing and managing rainfall on-site can help provide a long-term sustainable solution and help airports become water positive.

About Walter P Moore

Walter P Moore is an international company of engineers, designers, innovators and creative people who solve some of the world's complex structural and infrastructure challenges. Providing structural, diagnostics, civil, water resources, traffic, parking, transportation, enclosure

and construction engineering services. We design solutions that are cos- and resource-efficient, forward-thinking, and help support and shape communities worldwide. Founded in 1931 and headquartered in Houston, Texas. Our 700+ professional work across US offices and five international locations. Walter P Moore established office in India in 2011. The office enhances the firm's ability to serve clients and projects throughout India for a wide variety of project types, including aviation, commercial, residential, healthcare, hospitality, sports, entertainment and government facilities. We are currently working with Bangalore International Airport providing Sustainable Water management solutions to make the airport water positive.

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EDITOR'S NOTE

By Sandeep Bahl, Executive Program Director, US-India ACP

United States President Donald Trump arrived in India on 24th March to a planned mammoth welcome ceremony in Gujarat at Motera Stadium, where a member of the US-India Aviation Cooperation Program (ACP) has served as the structural engineer and connection designer for the roof of world's largest cricket stadium.

The US-India Aviation Cooperation Program (ACP) was established as a public-private partnership between the U.S. Federal Aviation Administration (FAA), the U.S. Trade and Development Agency (TDA), the U.S. Departments of Commerce and State, the Transportation Security Administration (TSA) and U.S. aviation industry related companies.

The civil aviation industry in India has emerged as one of the fastest growing industries in the country during the last three years and is currently considered the third largest domestic civil aviation market in the world. India has 126 operational airports and plan is to increase the number of operational airports to 190-200 by 2040. The Indian government is planning to invest US $1.83 billion for development of airport infrastructure along with aviation navigation services in the next four years. In the next 20 years India will need 2,380 new commercial airplanes from its current fleet of 726 airplanes.

ACP members are well placed to benefit from the opportunities of growth in India's civil aviation. With grants from the U.S. Trade and Development Agency (USTDA), Airports Authority of India (AAI) has signed a technical assistance agreement with a member company to jointly develop a comprehensive 10-year roadmap for modernizing air traffic management in India and also hired a member for creating a 20-year master plan aimed at expansion of operational capacities of the Kolkata and Lucknow international airports.

ACP's technology member company has a contract to develop the Airports Authority of India's (AAI) Futuristic Telecommunications Infrastructure (FTI) initiative and Security Technology provider is to install and integrate high-speed explosives detection systems (EDS) for hold-baggage screening at multiple airports across India. Our members in the field of jet engines has over 300 narrow-bodied and 40 wide-bodied engines in operation in India and also have current orders of 800 narrow-bodied and six wide-bodied engines. Quite a few Members have state of the art training centers such as in Hyderabad where a member has build a center for its Geared Turbofan (GTF) engine that can provide engine technical training to 5000 students a year and also a leading provider of Avionics in India.

Hence there are quite a few areas in which ACP members are involved to develop the civil aviation industry's ecosystem. Members are working on training and skilling, developing R&D centers, exploring advanced manufacturing and providing logistics services to grow trade and commerce. Consultations are also going on in creating digital platforms and policy framework to support civil aviation areas related to maintenance, operations, customer experience, safety and security.

ACP members' activities support the missions of both the US and India's governments such

Enjoy the Glimpses of ACP activities over the year...

GLIMPSES OF THE YEAR 2019

ACP's Year-End Get-Together on 13th December 2019 at Hotel – Taj Palace, New Delhi

AAAE/IAAE-India accreditation academy class in New Delhi with 40 senior officials from the India Aviation Academy (IAA) and GMR Aviation Academy on 25th November 2019 at New Delhi

ACP's annual "Innovation in Aviation" workshop on 17th October 2019 at Hotel – The Oberoi, New Delhi

ACP Members roundtable with Mr. Thomas R. Hardy, Director (Acting), USTDA & Mr. Pradeep Singh Kharola, Secretary, Ministry of Civil Aviation on 19th August at Hotel – The Leela Palace, New Delhi

U.S.- India ACP India RTM - Air Navigation Services, July 28 – August 3, 2019 at USA

GLIMPSES OF THE YEAR 2019

Aireon sign the contract with AAI for implementation of Space-based ADS-B technology on 25th July 2019 at AAI, New Delhi

Boeing & AAI sign the contract of (CNS/ATM) modernization roadmap for India on 30th May at AAI, New Delhi

ACP Members Meeting with Dr. Guruprasad Mohapatra, Chairman-AAI on 1st May 2019 at AAI, New Delhi

U.S.- India ACP Aviation RTM on India Airport Development on 24th – 30th March 2019 at Washington, DC

U.S.- India ACP Aviation RTM on India Airport Development on 24th – 30th March 2019 at Washington, DC

ACP's participation at MOCAs' 2019 Global Aviation Summit on 15-16th January at Hotel-The Grand Hyatt, Mumbai

as investment promotion, employment generation, equitable trade balance and building of an inclusive capable, competitive and sustainable civil aviation industry to benefit both nations. With growth in travel between the US and India by citizens of both countries ACP member airline has almost doubled its footprint in India from last year and two other major U.S. Airlines have started or are planning direct flights between U.S. and India. Indian and U.S. Airlines are now connecting direct flights from Delhi, Mumbai to New York, Washington, Chicago, San-Francisco.

India's civil aviation needs support to ensure profitability. However, this demands a robust regulatory framework and organization, adoption of world standard security and safety norms and the agility to introduce rapid changes in air mobility equipment and sustainable aviation initiatives. Some areas where ACP members can contribute include fuel efficient planes and bio-aviation fuel, support related to general aviation and remote access, eVTOL & autonomous travel, hearable, wearable & voice technology, sustainability, biometrics and inflight connectivity. Technology is central to the future of the air transport industry, and ACP members are launching breakthrough technologies such as reality display screens at the airport, connected operations and 3D digital twins of facilities, captivating in-flight entertainment options, full-body wearable robotics and security body scanners, and AI machine learning platforms that will allow operational superiority and customer service to be competitive and profitable in future.

Leveraging the expertise of US ACP member companies presents a real opportunity for India to realize its vision of a continuously growing, safe and profitable future for its civil aviation industry.

ACP supports the growth of the Indian civil aerospace sector by working directly with the Government of India's Ministry of Civil Aviation (MOCA) to identify and execute projects that encourage collaboration between U.S. and Indian stakeholders in the area of civilian aerospace and security equipment technology, infrastructure design and sharing of best practices.

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.

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