



Shared Horizons

U.S. – India Aviation Cooperation Program: “A Win – Win Partnership”

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Message from the Co-chairs



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We are pleased to present to you our Bi-annual issue of “Shared Horizons” – Volume 24.

The recently held organizational election has redefined and reinvigorated the US – India Aviation Cooperation Program. Thanks to the wholehearted participation of the ACP members, we had a smooth and orderly transition to the new leadership of ACP. P&W’s Ms. Ashmita Sethi was unanimously elected by ACP members to serve as the Co-chair (Industry), joined by Dr. Daniel Jacob as Co-Chair (Government).

The major highlight for 2024 was the U.S. – India Aviation Summit, that generated open discussions on existing and proposed projects that will provide training and technical expertise in close cooperation with MOCA, DGCA, AAI and BCAS. Along with Ministry of Civil Aviation, the members also endorsed a list of priority areas of focus for ACP. This is an exhaustive list of activities that ACP would undertake in the next couple of years.

The other milestones of the period were: a grant signed for Hisar Integrated Aviation Hub Technical Assistance; ACP Members interaction with Sudhir Rajpal, Additional Chief Secretary – Civil Aviation Department, Govt. of Haryana; ACP Members discussion on Women in Leadership; and; A Symposium on Helicopters for Public Safety. We welcomed the new Civil Aviation Minister Mr. Naidu with a roundtable with ACP Members and he also visited Collins Aerospace, Pratt & Whitney, and Boeing facilities in Bengaluru.

We are excited to welcome Leidos as our latest member to ACP.

In the new year, we extend our best wishes to ACP and its members in strengthening bilateral cooperation in the Aviation Sector.

(Ashmita Sethi)

(Dr. Daniel Jacob)



ACP Over the Years

2024

- Grant Signing ceremony on Hisar Integrated Aviation Hub Technical Assistance between USTDA and HADC on December 9, 2024 at Haryana Bhawan, New Delhi
- ACP Members interaction with Sudhir Rajpal, Additional Chief Secretary - Civil Aviation Department, Govt. of Haryana on November 22, 2024 at Haryana Bhawan, New Delhi
- Symposium on Helicopter for Public Safety with MoCA, NDRF, NDMA, PHL etc. on November 8, 2024 at Hotel -The Leela Palace, New Delhi
- HMCA Mr. Naidu visited Collins Aerospace; Pratt & Whitney; Boeing facilities in Bengaluru and roundtable with ACP Members on 29th October 2024 at Hotel Taj Bangalore
- ACP Members roundtable with Ministry of Civil Aviation on October 15, 2024, Hotel - The Oberoi, New Delhi
- U.S. - India Aviation Summit, June 24-26, 2024 at Washington D.C.
- ACP's participation at Wings India 2024 from January 18-21, 2024 at Hyderabad
- ACP Members roundtable with visiting FAA leadership on January 15, 2024 at Hotel - The Leela Palace, New Delhi

2023

- ACP Members roundtable & Welcome reception in honor of Secretary, MoCA on October 23, 2023 at New Delhi
- ACP's Farewell reception in honor of Secretary, MoCA on October 23, 2023 at New Delhi
- ACP Members roundtable with Ministry of Civil Aviation on "Shared Best Practices for Future Needs" on July 24, 2023 at New Delhi
- ACP Members roundtable with Ms. Enoch T. Ebong, Director - USTDA & Mr. Rajiv Bansal, Secretary, MoCA on January 18, 2023 at New Delhi

2022

- ACP's roundtable meeting with P&W leadership on October 21, 2022 at New Delhi.
- 2nd phase of EDTP from August 14 - 19, 2022 in Washington D.C.
- ACP Members roundtable with Ministry of Civil Aviation followed by EDTP's closing reception on July 23, 2022 at New Delhi.
- ACP's Executive Development Training Program (EDTP) opening ceremony on July 18, 2022 at New Delhi.
- ACP's Farewell reception in Honor of Mr. Philip Matt Ingeneri, ACP Co-chair (Government) & Economic

Growth Unit Chief, EEST - DOS on May 19, 2022 at New Delhi.

- ACP Members roundtable meeting with Minister Scindia and Secretary Bansal, Ministry of Civil Aviation (MoCA) on 25th March 2022 during Wings India 2022 at Hyderabad.
- ACP Members meeting with GMR Leadership on March 24, 2022 at Hyderabad.
- ACP Members' participation at Wings India 2022, Hyderabad.
- ACP Members roundtable with Chris Carter, Director - FAA on March 22, 2022 at New Delhi.
- ACP's webinar "Global Crisis - Devastating New Impacts on Aviation" on March 10, 2022.
- ACP leadership's introductory meeting with Secretary Rajiv Bansal, MOCA on March 7, 2022 at New Delhi.
- ACP Members' meet and greet with Honeywell India's New President, Mr. Rajesh Rege on February 23, 2022 at Gurugram.

2021

- ACP's lunch in honor of Ex. Secretary MOCA, Pradeep Singh Kharola with a unique memento on November 24, 2021 at New Delhi
- ACP Members luncheon with Dr. Shefali Juneja, Chairperson of ICAO's Aviation Security Committee on November 18, 2021 at New Delhi



ACP Over the Years

- ACP's webinar with MOCA; FAA & TSA on "Unmanned Aircraft System (UAS)/Unmanned Traffic Management (UTM)" on August 24, 2021
- USTDA-ACP Virtual Seminar on "Conversations on Sustainable Aviation and Climate Resiliency" on August 17-18, 2021
- Virtual Roundtable with Yamuna Expressway Industrial Development Authority / Noida International Airport Limited & ACP Member Companies
- ACP's webinar with AAI on "Water Resources Engineering & Waste Management"
- Boeing/USC's SMS Training Program with IAA
- ACP Members' own Society "US-India Aviation Cooperation Program" formed and received Certificate of Registration from Registrar of Societies
- ACP's webinar on "Future of Travel & Work Post COVID-19"
- ACP's participation at Aero India 2021 at Bengaluru

2020

- ACP-MOCA's open discussion on Aviation in US & India, post COVID scenario and exchange of New Year Greetings
- ACP-MOCA's interactions on "Ease of Doing Business - Airport Access"

- ACP's webinar with IAA "Navigating through COVID Clouds to Safer Cruising Heights"
- ACP's webinar "Restoring Confidence in Air Travel"
- ACP's participation at Wings India 2020 at Hyderabad

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 MOCA's 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 MOCA's 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



ACP Over the Years

- 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 Enoch 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 2015 US – India 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



ACP Over the Years

- 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

- 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

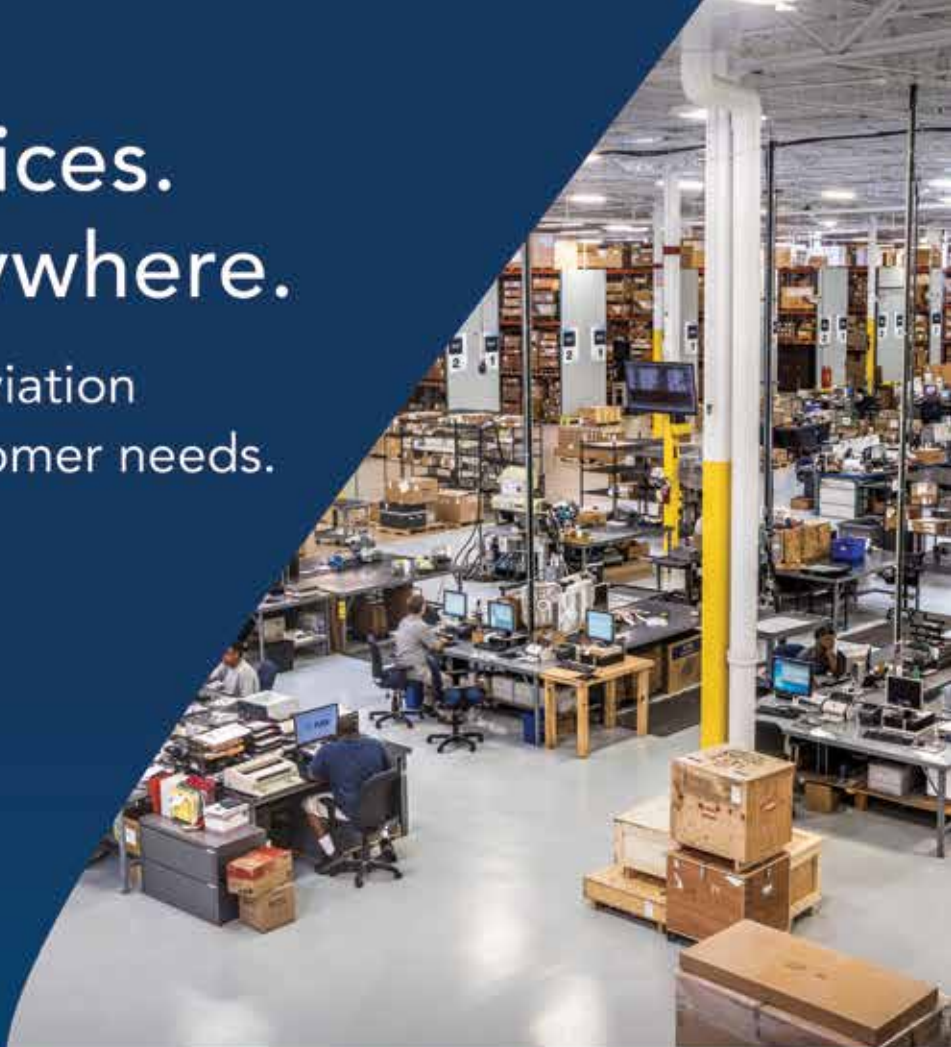
- U.S. - India Aviation Summit at New Delhi
- Grant agreements signed for Technical, Management, and Operational Development Training (TMODT) Phase – I & launching GBAS at Chennai Airport
- Seminar on Airport Economic Reforms – Moving Ahead with Chairman AERA at New Delhi
- Indo – US Aviation Manufacturers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

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ACP Ongoing Projects

- Airport Emergency and Operations Management Pilot Project and Feasibility Study

ACP Past Successes

- Executive Development Training Program (EDTP)
- CNS/ATM Modernization Roadmap
- Sustainability Master plan for Kolkata and Lucknow Airports
- Business Case for GAGAN Extension
- Aviation Safety Technical Assistance Phase - II
- ProVision Body Scanner System Pilot Project
- Aviation Safety Technical Assistance Phase - I
- Aviation Security Equipment Testing & Evaluation Program (ASETPE)
- Airport Geographic Information System (AGIS) for Indian Airport
- Total Airspace and Airport Modeler (TAAM)
- Technical, Management, and Operational Development Training (TMODT) Phase - II
- GBAS Pilot project at Chennai Airport
- Technical, Management, and Operational Development Training (TMODT) Phase - I
- Helicopter Aviation Safety Technical Assistance

- Aviation Standard Technical Training
- AAI Air Traffic Control Officers (ATCO) Manpower Assessment

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), the U.S. Departments of Commerce and State, Transportation Security Administration 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.

Priorities

- Foster and continue to develop stronger government to government ties
 - RTMs to show case US strengths in multi hub operations, cargo/logistics, security and safety technology, air space integration and management
 - System Safety Approach: Promote risk-based data-driven decision making that is built on Safety Management System (SMS) principles to proactively address emerging safety risk by using data to make safer and smarter decisions
 - Support streamline regulatory process, harness innovation, and deploy new concepts, procedures and technology while maintaining environmental stewardship
 - Continued engagement to improve airport operations, safety, capacity, and innovation
 - Foster growth and safe integration of Unmanned Aircraft Systems operations in the present airspace ecosystem



- f. Foster development of robust cyber security platform for applications in civil aviation
 - g. Explore a new paradigm in air traffic management to integrate UAS, Drones etc and to facilitate industry partners' program from low risk Visual Line of Sight (VLOS) operations to complex operations.
 - h. Training and sharing of best practices on aviation operations, safety, and certification
- **Air Logistics and Cargo**
- a. Provide US expertise and technology to help modernize and improve efficiency of India aviation supply chains
 - b. Foster interactions and partnership between U.S.-India aviation cargo industries
 - c. Share knowledge and assist in development of Cargo Specific Airport Development and RCS style subsidy for cargo services
- **Aviation Maintenance Repair and Overhaul (MRO)**
- a. Explore opportunities for industry to partner on India's vision to develop an MRO hub
 - b. Industry-led MRO training to meet expected new demand
 - c. Creation of multiple aviation related parts bank to support MRO and airlines in the region
- **Aviation Training**
- a. Foster partnership between ACP, Indian Airlines and Stakeholders, Global Universities and RGNAU to develop a world class Aviation University
 - b. Provide industry-led cooperation to accelerate excellence in airline operations and management
- c. Assist in Development of advanced studies in Aviation Management (Aviation School) and Aviation Center of Excellence
- **Aviation Security**
- a. Cyber security, 5G integration and roll out
 - b. Upstream US bound cargo screening policy development, undertake projects to enhance cargo screening efficiency and effectiveness
 - c. Undertake projects that investigate use of digital technology and analytics to make airport passenger flows more efficient
 - d. Facilitate government to government interactions on transport security best practices and lessons learned
 - e. Facilitate implementation of seamless process for security access/clearances to aviation facilities for technical experts, pilots & engineers to promote technical cooperation and interaction
 - f. Standardize validation of CT field-performance and evaluate a predictive maintenance program
 - g. Undertake projects to enhance touchless screening and security by evaluating and validating the performance of checkpoint CTs, security scanners, and ASLs
- **Airspace Optimization**
- a. Continue cooperation on Communication, Navigation and Surveillance/Air Traffic Management (CNS/ATM) modernization building on developed roadmap
 - b. Foster US-India government and industry interactions on Unmanned Traffic Management (UTM) implementation in India and explore inclusion in overall CNS/ATM roadmap
- c. Safe airspace integration, framework and policy for regulatory capacity building on UTM and Air Taxis
- d. Safe integration of commercial space launch and re-entry into the current airspace infrastructure for Commercial Space Transportation (CST).
- **Sustainability**
- a. Digitalization and cost optimization of RCS small airports (3-4 tier cities)
 - b. Foster U.S.-India government and industry cooperation in furtherance of national and international aviation sustainability and climate goals
 - c. Work on creating guidelines and execution of green civil aviation (Sustainable aviation fuel, Electric Aircraft, Hydrogen technology etc)
 - d. Ease of doing business related to induction of already ordered new equipments, aircrafts etc.
- **Interest in Helicopter manufacturing in India - need assistance in complete manufacturing**
- a. Facilitate cooperation, joint development and available incentives for manufacturing
 - b. Identify and assist in sharing best practices related to Helicopters operations opportunities and to increase the economic viability of their usage
 - c. Evaluate export options for made in India helicopters

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Future of Aviation in India: Digital Transformation, AI and Technology usage in Aviation Sector

By Murlidhar Mohol, Hon'ble Minister of State, Ministry of Civil Aviation

The Indian aviation sector has witnessed a remarkable recovery and growth in last couple of years, driven by a surge in domestic travel demand, an increase in air cargo services, and the growing number of international flights. The government's proactive measures, such as the UDAN (Ude Desh ka Aam Nagrik) scheme, aimed at enhancing regional connectivity, have further fueled this growth. The sector has also seen the expansion of low-cost carriers and a significant rise in the number of airlines operating within the country. As the economy strengthens and disposable incomes rise, the aviation industry is expected to continue its positive trajectory, making India one of the fastest-growing aviation markets globally.

This growth of Indian aviation industry is coupled with the digital transformation and adoption of advance technologies by current aviation ecosystem. The future of aviation technology, particularly in the context of a few Key areas like Passenger Experience, Connected Airport Management, Unmanned

Aerial Vehicles etc., are poised to be shaped by advancements in Artificial Intelligence (AI) and Machine Learning (ML), aligning with the Government of India's policies and provisions. Few key initiatives which outlines the key IT requirements for integrating air navigation and airport operation facilities in a connected ecosystem are appended below:

- 1. System Wide Information Management (SWIM):** The future of aviation will be deeply influenced by predictive management of Airport Operations and Airside Navigational system resources, which would rely on virtualised infrastructure to meet the growing demands of integrated aviation systems. This will enable the dynamic allocation & augmentation of resources between private and government agencies, offering on-demand access to data storage and computational needs. This flexibility is crucial for adapting to the ever-changing needs of air traffic management and airport operations.

A critical aspect of this transformation would be communication and interoperability across the aviation ecosystem, facilitating real-time data exchange via an open system architecture. This will be pivotal in making vital operational data accessible to all stakeholders in an instant, enhancing decision-making processes. Air traffic control (ATC), airlines, ground services, and airport authorities will benefit from a consolidated, up-to-date view of operational information, empowering better coordination, safety, and resource management across the aviation sector. Infused with the use of AI/ML, system-wide information management and real-time situational awareness would optimize the flow of air traffic and airport operations towards a proactive decision-making procedure.

- 2. Augmented Reality based Passenger Wayfinding (ARPW):** This is a futuristic ecosystem which will leverage

Augmented Reality (AR) and interactive terminal maps in airport operations, revolutionizing passenger experience and operational efficiency. AR-enabled wayfinding overlays digital directions on the physical environment, enabling passengers to navigate complex terminals seamlessly with real-time guidance to gates, baggage claims, lounges, or dining areas. Interactive maps enhance personalization by tailoring suggestions based on flight schedules and preferences, while multilingual support breaks language barriers for international travellers. These technologies also optimize passenger flow by providing real-time updates on congestion, helping reduce bottlenecks, and enabling efficient resource allocation by airlines and airport authorities. By allowing passengers to independently navigate, AR reduces the need for ground staff and integrates with IoT systems for updates on security wait times and facility availability. Moreover, AR drives revenue by highlighting promotions, directing travellers to retail and dining options, and enabling immersive advertising experiences. Accessibility features assist passengers with special needs,

offering audio navigation for the visually impaired and highlighting wheelchair-friendly routes or family zones. In terms of sustainability, AR reduces reliance on printed materials, supporting eco-friendly practices. While airports like Singapore's Changi and the UK's Heathrow have implemented AR-based features, Indian airports like Delhi IGI show potential for adopting these innovations. Despite challenges such as infrastructure requirements, initial costs, and user adoption, AR-enabled wayfinding and interactive maps are poised to transform airports into smarter, greener, and more inclusive hubs of connectivity, paving the way for the "Airport of Tomorrow."

3. **Unmanned Traffic Management (UTM):** The advent of Drones and Air Taxis, is posing a increased demand for advancements in Unmanned Traffic Management (UTM) systems, powered by Artificial Intelligence (AI), Machine Learning (ML) and Internet of Things (IoT), in line with the Government of India's policies. A significant step towards this ecosystem is the Digitization of low height airspace, which serves as a key enabler for drone & air-taxi operations across

the country. This ecosystem brings together various government stakeholders, such as the Central Ministries, State departments, DGCA and Airports Authority of India, creating a unified platform for managing UTM-related workflows.

UTM should ensure safe, efficient, and scalable Unmanned Aerial Vehicles (UAV) operations, particularly as the use of UAV grows for commercial, industrial, and recreational purposes. As UAV become more common, especially for applications like package delivery, infrastructure inspection, and surveillance, there is a growing need to safely integrate them into the existing airspace, which is already used by manned aircraft. The UTM system will provide UAV operators with tools for safe & regulated flight, including collision avoidance with other UAV's. This includes using sensors and geospatial systems for detecting and avoiding obstacles, relying on geofencing & computer vision to prevent UAV from entering restricted areas and automated regulation enforcement by AI/ML based UTM platform.

UTM is expected to play a pivotal role in the expansion of commercial



UAV operations, such as passenger transportation, package delivery, agriculture monitoring, emergency response, traffic monitoring and infrastructure inspection. The system will enable the safe, efficient, and widespread use of UAV for these applications.

4. Proactive Airport Operations Control Centre (P-AOCC):

It is a platform which uses Computer Vision and predictive algorithms to transform airport resource utilization and management. By leveraging high-definition cameras and AI-powered visual recognition systems, airports can gain real-time insights into operational conditions across various areas, including runways, terminals, baggage handling, and security checkpoints. For instance, surveillance cameras equipped with Computer Vision algorithms can detect congestion at security lanes, Foreign Objects at Airside, identify irregularities in baggage handling etc., enabling quick responses to potential issues before they escalate.

In the context of resource management, predictive algorithms are being employed to forecast demand and optimize the allocation of airport resources. These

algorithms analyse historical data, real-time operational information, and external factors such as weather patterns and flight schedules to predict pattern of passenger traffic flow, airport resources usage, and airside resource assignments. This predictive capability allows airport operators to proactively manage staffing, aircraft movements, and other critical resources, ensuring that operations run smoothly and efficiently.

The integration of both Computer Vision and predictive algorithms is further enhanced through the use of interactive dashboards within the P-AOCC. These dashboards provide operators with a centralized, visual representation of real-time data, enabling them to monitor key performance metrics, such as passenger flow, baggage handling performance, and gate occupancy. The ability to visualize operational performance in real-time, along with predictive insights, empowers decision-makers to allocate resources dynamically, resolve potential bottlenecks, and enhance overall operational efficiency. By providing real-time insights and predictive capabilities, these technologies enable smarter decision-making,

improve operational efficiency, and enhance the passenger experience, paving the way for more efficient and futuristic airport operations.

5. **Digi Yatra:** Digi Yatra is a project conceived to achieve contactless, seamless processing of passengers at Airports based on Facial Recognition Technology (FRT). The project basically envisages that any traveler may pass through various check points at the airport through a paperless and contactless processing using facial features to establish the identity.

Components of Digi Yatra

The Digi Yatra solution has two components:

- i) A mobile App based Digi Yatra Central Ecosystem (DYCE) for registration to the Digi Yatra. The app is available at both Android and iOS platforms.
 - a. User creates its identity credentials on Digi Yatra app by registering through DigiLocker or through online Aadhaar authentication. So far, over 92 lakh users have downloaded the Digi Yatra app.
- ii) Digi Yatra Biometric Boarding System (Infrastructure) at the airport to be implemented by



respective Airport operators. Passenger processing happens at following touchpoints at airports:

- Departure entry gates,
- Pre-Embarkation Security Check entry gates,
- Boarding gates.

Since its launch, Digi Yatra has been used more than 4.1 Crore times by passengers to travel

through the Digi Yatra enabled airports.

To prevent data theft/loss and ensure data privacy in Digi Yatra, there is no central storage of passenger's Personally Identifiable Information (PII) data by design/default. All the passenger data is encrypted and stored in the passenger's smartphone wallet and shared only for a limited time duration with the origin airport where passenger ID needs to be

validated. The data is purged from the system after 24 hours of the departure of the flight.

Presently, Digi Yatra is available at 24 airports namely Delhi, Bengaluru, Varanasi, Hyderabad, Pune, Kolkata, Vijayawada, Ahmedabad, Mumbai, Cochin, Guwahati, Jaipur, Lucknow, Chennai, Mopa Goa, Visakhapatnam, Bhubaneswar, Coimbatore, Dabolim Goa, Indore, Bagdogra, Ranchi, Patna and Raipur airport.



सत्यमेव जयते

नागर विमानन मंत्रालय
MINISTRY OF CIVIL AVIATION



Sustainable Airports: Flying Green to Achieve Carbon Neutrality and Net Zero Emissions

By Dr. Sharad Kumar, Member (Operations), Airports Authority of India

Introduction

As concerns about climate change and global warming continue to rise, industries across various sectors are setting ambitious goals to reduce their emissions. The Indian aviation industry is also participating in this initiative. Airports in India are actively working towards achieving net-zero carbon emissions.

To support this transition, the Ministry of Civil Aviation (MoCA) has implemented significant policy measures. It has instructed all operational airports to assess their carbon footprint and create plans for carbon neutrality, aiming for net-zero emissions by 2050 through a phased approach. **Carbon neutrality** refers to offsetting greenhouse gas emissions from human activities by minimizing emissions as much as possible and relying on offsets only for those that cannot be avoided in the short term. **Net zero** signifies a state in which total greenhouse gas emissions are balanced by equal emissions removed from the atmosphere.

The goal is to create a balance between emissions produced and those removed, ensuring no net increase in the overall concentration of greenhouse gases.

Cochin International Airport made history in 2015 by becoming the world's first airport to operate entirely on solar power. AAI, a major airport operator in India with 110 operational airports has switched over to green energy at 74 airports and plans to convert the remaining operational airports in a phased manner.

Airport Carbon Accreditation: A dedicated Guidance on reducing emissions

Airport Carbon Accreditation evaluates and acknowledges airports' efforts to manage and reduce their carbon emissions through seven progressive certification levels: **Level 1:** 'Mapping,' **Level 2:** 'Reduction,' **Level 3:** 'Optimisation,' **Level 3+:** 'Neutrality,' **Level 4:**

'Transformation,' **Level 4+:** 'Transition' and **Level 5.** The certification level, carbon neutrality, mandates that airports offset any remaining CO₂ emissions under their direct control that cannot be further reduced.

Each airport is at a different stage of its carbon management journey, with the program providing a general framework and guidance while allowing each airport to define its path and pace. Airports such as Delhi and Bengaluru have made significant investments to achieve the topmost level i.e. Level 5 Airport Carbon Accreditation programme. AAI airports at Kolkata, Bhubaneshwar, and Varanasi were the first few airports to achieve Level 2 Airport Carbon accreditation. AAI has also achieved ACI-ACA Level 2 certification for 23 additional airports later.

AAI's initiatives for the sustainable growth of Indian Aviation

The Ministry of Civil Aviation has instructed all operational airports to work towards achieving **carbon neutrality** and **net-zero emissions**, which includes the adoption of green energy. Airports Authority of India (AAI), has installed solar power plants with a cumulative capacity of around 57 MW at 63 airports and consume green, renewable energy, promoting the use of sustainable energy at these facilities.

Since 2014, 80 airports have transitioned to using 100% green energy. Out of 80 airports, 15 Airports (13 AAI and 02 Non-AAI airports) achieved this milestone before 2022. Further, since 2022, 65 Airports (61 AAI and 04 Non-AAI) have also achieved this milestone. At present, energy consumption at 102 AAI airports is around 372 MU. Out of which, Renewable energy accounts for 332 MU i.e. 90% approximately. Out of 332

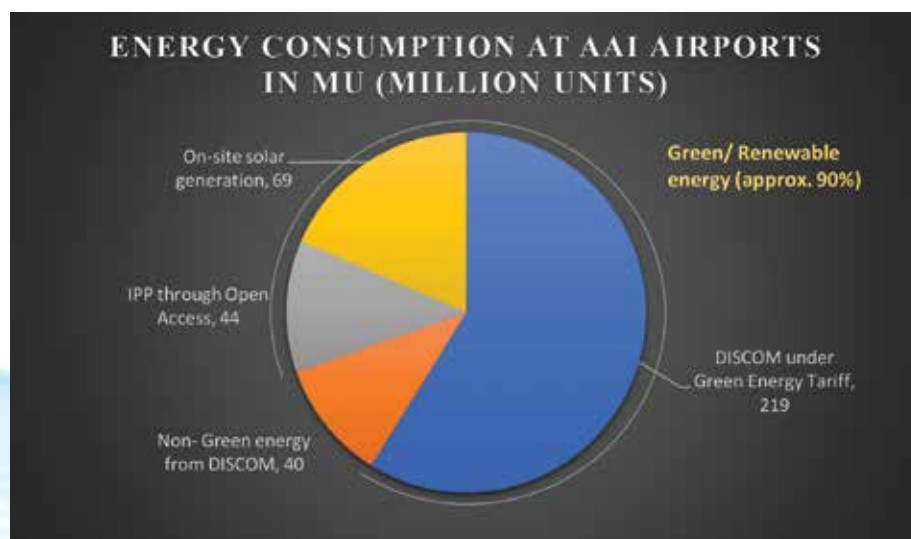
MU consumed through renewable sources, on-site solar power plants accounted for 69 MU of energy, 44 MU was procured through Independent Power Producer (IPP) via Open Access, and 219 MU was procured through Distribution Companies under Green Energy Tariff.

AAI has planned several major initiatives to improve energy efficiency and reduce carbon emissions for the sustainable growth of Indian aviation:

- ➔ **Renewable Energy Initiatives:** AAI has installed solar power plants at 63 airports with a total capacity of approximately 57 MW and is working to add another 8 MW of solar power capacity. Additionally, AAI is planning to install rooftop solar panels for

around 2 MW under the “PM Surya Yojana” to solarize feasible roofs of airport buildings.

- ➔ **Energy Conservation Initiatives:** AAI conducts regular energy audits through specialized agencies, identifying short-term and long-term measures as per the Energy Conservation Act, 2001. Various energy-efficient equipment, such as chillers, motors, and LED lighting, are being installed at all airports to improve energy efficiency.
- ➔ **Green Infrastructure:** AAI has initiated the construction of terminal buildings as Green Buildings with the highest GRIHA rating, incorporating green materials, equipment, and practices in its projects and operations.
- ➔ **Solid Waste Management:** AAI has implemented waste management measures, including a single-use plastic ban at most airports and the establishment of a paper recycling unit, making it the first public sector unit in India to do so. It is also working on a comprehensive waste management system for recycling, reusing, and





properly disposing of waste.

- **Water Conservation & Wastewater Management:** AAI has implemented water conservation initiatives, including wastewater treatment and reuse. Sewage treatment plants (STPs) and rainwater harvesting systems are either in place or planned at various airports to conserve water. AAI has commissioned STPs at 63 airports with a total capacity of approximately 16 MLD and is working on additional projects.
- **Flexible Use of Airspace (FUA):** The implementation of FUA has led to a reduction of approximately 1.93 lakh tons of CO₂ emissions and saved INR 886.6 crores in ATF expenses till 17 December 2024 since its introduction in August 2020.
- **Airport Collaborative Decision Making (A-CDM):** The introduction of A-CDM has improved operational efficiency by optimizing aircraft ground delays, resulting in reduced fuel consumption and GHG emissions.
- **Central Air Traffic Flow**

Management (c-ATFM): This strategy helps optimize air traffic flow in Indian skies, reducing delays, holding patterns, and fuel consumption, leading to lower GHG emissions.

- **Departure Slot Management (DSM):** The use of DSM has improved on-time performance, reduced departure congestion, and minimized fuel consumption and GHG emissions.
- **Performance-Based Navigation (PBN):** PBN supports the development of optimized flight paths, reducing fuel consumption, and enhancing airspace capacity, which lowers GHG emissions.
- **Continuous Descent Operations (CDO):** CDO allows aircraft to maintain a fuel-efficient arrival flight path, reducing fuel consumption, noise at ground level, and GHG emissions.
- **Electric Vehicle Adoption:** AAI is transitioning to electric vehicles and providing EV charging stations at airports to reduce emissions and improve local air quality.

These actions reflect AAI's commitment to sustainable practices and the reduction of its environmental impact.

Conclusion

Airports worldwide are increasingly prioritizing their environmental impact and enhancing their efforts to mitigate the effects of air travel by implementing environmental management systems, certification programs, and other ecological rating frameworks for their operations and infrastructure. Like other sectors, airports are directly affected by climate change and must take proactive measures to address it. Airports are considered critical national infrastructure, facilitating both mobility and economic growth. India has set a global benchmark by fostering a culture of sustainability and carbon responsibility within its airports. Through the joint efforts of government agencies and airport operators, Indian airports are progressing towards full decarbonization of their operations. The path forward promises further innovation and the adoption of advanced green technologies to reduce aviation emissions.





AAI- Transforming Air Travel in India, Pioneering the Path to 'Viksit Bharat'

By Anil Gupta, Member (Planning), Airports Authority of India

India's aviation sector is experiencing a meteoric rise, fueled by soaring demand and the government's unwavering commitment to its growth through supportive policies. The industry has undergone a remarkable transformation, shedding its previous limitations and evolving into a vibrant and competitive sector. This dynamic shift has propelled India to the forefront of the global aviation ecosystem, becoming the third-largest domestic aviation market in the world, after the USA and China. The government's commitment to nurturing aviation growth has been instrumental in this success story. A series of strategic initiatives have been implemented, each designed to empower the industry and unlock its full potential.

Our Hon'ble Prime Minister has put together this growth fittingly in following words: *Today, India is among the top players in the global civil aviation ecosystem. In just one decade, India has achieved a significant transformation. In these 10 years, India has evolved from a country exclusive to aviation to one*

that is inclusive of aviation." – Shri Narendra Modi

Key drivers of Growth:

Aviation sector is one of the key drivers of economic development and it presents significant economic and social benefits such as facilitating tourism, trade and connectivity, fostering economic growth, generating jobs, and providing a lifeline for remote communities and enable a rapid response during unprecedented situations, which is symbolized by 3As: Accessibility, Availability and Affordability. The Regional Connectivity Scheme – UDAN launched in 2016 has revolutionized creation of modern airport infrastructure in the hinterlands of India, enabling last-mile connectivity through the revival of the existing airstrips and airport infrastructure, bringing essential air travel access to underserved and unserved regions, boosting regional economic development. AAI has been the key catalyst in successful implementation of RCS- UDAN.

In 2024, India's domestic passenger traffic was 30.7 crore, a 13.5% increase from the previous year. International passenger traffic was 7 crores, a 22.3% increase year on year. The number of operational airports in India has more than doubled from 74 in 2014 to 158 in 2024. The government plans to raise this number to 350 by 2047, making it the perfect time for all aviation stakeholders to step up and address the challenges ahead.

The Airports Authority of India (AAI), being the sole Air Navigation Service Provider (ANSP) and largest Airport operator in the country has taken firm steps towards developing new airports and expanding existing airport infrastructure aligning with the aspirations of the country, while also bringing in advancements in Air Navigation Services for ensuring safer air travel.

Envisioning and realizing the state-of-the-art airport infrastructure:

The creation of substantial



world class airport infrastructure combined with the right set of innovations in design and technology has improved operating efficiency and passenger experience by leaps and bounds.

In FY 2023-24, AAI operationalized 20 key airport infrastructure projects in the country which includes the development of new Greenfield International Airport at Rajkot in Gujarat and new airports in Uttar Pradesh namely Ayodhya, Aligarh, Shravasti, Chitrakoot, Azamgarh & Moradabad and New Terminal Buildings at Chennai, Port Blair, Surat, Trichy, Kanpur, Tezu, Pune, Gwalior, Kolhapur, Jabalpur, Adampur & Dehradun and CARO building in Hyderabad while Foundation stones were laid for New Terminal Buildings of Jammu, Kadapa, Hubballi, Belagavi, Udaipur, Jodhpur and Datia, Rajahmundry airports. In FY 2024-2025, AAI operationalized airports in Solapur, Rewa and Sarsawa and initiated construction of New Terminal Buildings at Varanasi, Bagdogra and Darbhanga.

This year marks another spectacular achievement as AAI has finalized master plans for more than 100 airports up to year 2047 with focus on seamless and future expansion. These master plans of AAI airports are the result of the consistent efforts of large number of officers, engineers & technocrats over a considerable period of time.

In an attempt to enhance the travelers' overall experience, AAI's new airport terminal buildings are creating a sense of place with a unique combination of environmental characteristics designed to connect passengers to the airport as well as its distinctive geographic location and culture. Be it the famed Bhavani Mandap of Kolhapur, Man-Mandir Palace of Gwalior, Warli Art at Pune Airport or the Gond Art inside Jabalpur Terminal, AAI Airports give an immersive art experience to the passengers while giving a glimpse of the region's or the city's rich heritage.

Boosting 'Make in India':

Strengthening the 'Make in India' initiative of Government of India, AAI has also joined hands with Indian Space Research Organisation (ISRO) for indigenous development of space-based ADS-B surveillance system by leveraging on the ISRO's capability on satellite technology and AAI's expertise on the provision of air navigation services to augment surveillance coverage over oceanic airspace to support and strengthen safe Air Traffic services. This also opens avenues for AAI and ISRO together to gain from business potential of space-based ADS-B by extending our coverage to neighboring countries.

In its continuous efforts to make skies safer and efficient, AAI is

striving towards modernizing the Air Traffic Management System by investing in State-of-the-art ATM Automation Systems, Surveillance, Communication and Navigation systems. AAI over the last few decades gained vast experience and expertise in developing Quality Requirements for the ATM Automation Systems (ATMAS). The joint development of Indigenous ATM Automation System by AAI and Bharat Electronics Limited (BEL), underlines the journey of creativity with excellence, leveraging on their capabilities and expertise in the fields of ATM systems and R&D giving wings to 'Atmanirbhar Bharat' & 'Make in India' mission of Government of India. The new ATMAS will also reduce AAI's foreign dependency for procurement of ANS infrastructure, thereby saving a large amount of foreign exchange outlay, and has etched a new chapter of collaboration in Indian Aviation Industry.

Technology continues to redefine how the Civil Aviation sector operates, and AAI is committed to embracing innovation and digitalization to stay ahead of the curve. To upgrade and enhance the Research and Development (R&D) activities in the civil aviation sector, Airports Authority of India, has also set up the Civil Aviation Research Organization (CARO) in Hyderabad strengthening Hon'ble Prime Minister's vision of 'Atmanirbhar Bharat'. CARO



in collaboration with Industry, Educational and Research Institutions and embracing the make-in-India concept will propel AAI and country's civil aviation sector to emerge as a self-reliant global leader in providing solutions and fostering the overall growth of Industry, Aviation and Economy.

Drawing up for the future:

AAI is expeditiously laying the roadmap for expanding existing airports and development of new airports. With the aircraft orders over 1200 nos. from Indian carriers, air traffic, airports and fleet size are expected to grow at a double-digit growth annually in years to come. Domestic passenger traffic is expected to surge to 350 million by 2030, from 152 million in 2023, while international travelers is expected to grow to 160 million. Indian Airports should be equipped to cater to this growing demand.

Further, significant progress has been made in establishing Flying Training Organization (FTOs) to address the increasing demand for commercial pilots in our country. In the year 2023-24, FTO sites were operationalized at Khajuraho, Jalgaon, Salem & Bhavnagar and land were allocated for establishment of FTO, one each at Kanpur, Hubli, Pondicherry, Kolhapur, Donyi Polo, Solapur, Satna, Juhu, Rewa, Behala and Vellore Airport.

The exponentially rising civil aviation industry, also presents a strong case for the development of the Maintenance, Repair and Overhaul (MRO) industry in India. Although at a nascent stage, the rising consumer demand, increasing fleet size, favorable policy interventions are boosting the growth and development of MRO Industry in India. The benefits would potentially include reduction in foreign exchange outflow, greater employment opportunities, augmentation of domestic MRO capability and reduced turnaround time for airlines/carriers.

Drive for Sustainability:

The Indian aviation industry is steadfast in its commitment to sustainability. Ministry of Civil Aviation is encouraging new Greenfield airports, to prioritize carbon neutrality and net zero emissions in the modern airport infrastructure development plans. Also, this year AAI rekindled the emphasis on sustainable development by devising a roadmap towards realizing India's updated 2030 Nationally Determined Contributions (NDC) on climate change. AAI's Sustainable Green Airports Mission (SUGAM) is the first such effort taken this year, showcasing the sustainability initiatives taken at AAI airports, encouraging other airports to learn from AAI's experiences. As on date, a total

of 74 AAI Airports are running on 100% green energy.

Conclusion:

With significant investments in airport infrastructure, India is poised to become one of the most vibrant civil aviation markets in the world. Efforts are being made to integrate more tier II & tier III cities into the aviation network while simultaneously enhancing metropolitan capacities to support the hub and spoke framework. Suitably, India's aviation industry is accelerating towards an ambitious future, with a focus on infrastructure, workforce excellence, and stringent oversight. Anchored by the vision of 'Viksit Bharat@2047', it stands as a testament to India's emergence as a global aviation leader. With AAI at the forefront, the sector is set to redefine a future marked by innovation, connectivity, and unparalleled growth.





Women in Leadership will key to advancing India's aerospace potential

By Ashmita Sethi, President & Country Head (P&W) India and Managing Director - UTCIPL

Last year, at the Wings India 2024 airshow, Civil Aviation Minister Jyotiraditya Scindia and the DGCA stated that nearly 15 percent of pilots in India are women. This figure is among the highest in the world, especially when compared to the global average of just 5 percent. When it comes to women in aviation, India has long been at the forefront—starting with Nivedita Bhasin becoming the youngest commercial airline captain in the 1980s, to the Indian Air Force recruiting female pilots for helicopters and transport aircraft in the 1990s. Indeed, India stands tall when it comes to women in aviation.

In a traditionally male-dominated industry like aerospace and defense, women are increasingly making their mark across both managerial and technical sectors. Today, women are not only part of flight crews that operate complex, multi-million-dollar aircraft, but also engineers who design and build these machines.

Diversity brings distinct advantages to the table. A diversity

of thought fosters creativity, drives innovation, and creates a foundation for inclusion. It also ensures that women in managerial, engineering, and leadership roles can bring fresh perspectives on tackling current challenges that will shape the future of aviation.

However, there are still barriers in India that hinder the full utilization of the potential and advantages women bring to STEM fields—especially in aviation. From my perspective, two key issues need attention. First, fewer women are pursuing careers in mechanical or heavy engineering, possibly due to assumptions that these jobs are physically demanding. Second, women face slower career progression when aiming for leadership positions in STEM fields.

While societal factors, such as the unequal burden of biological and domestic responsibilities placed on women, may contribute to this situation, there are other areas where we, as a society, can improve. These include advanced skill development, greater

availability of opportunities, and generating early interest in STEM subjects.

The Ministry of Civil Aviation expects the sector to generate 1.5 lakh jobs over the next two years. The direct and indirect jobs created by aviation and aerospace manufacturing are expected to reach 20 lakh by 2024. While the sector currently contributes only 5 percent to India's overall GDP, there is immense growth potential. Imagine the opportunities for women to make a significant impact in this space and accelerate the development of the sector.

For this to happen, several key areas need attention.

Firstly, there is a need to create more skill development opportunities for women within the sector. These opportunities could include encouraging more women to pursue STEM education, or creating specialized and advanced courses in fields such as aircraft and engine maintenance, aerospace operations, supply chain management, and data



analytics. These initiatives would enable women to join the frontline workforce in aerospace.

India already holds a distinct lead in areas like data science, artificial intelligence, computer vision, and machine learning for aerospace, largely driven by India-based start-ups. Nearly all global aerospace manufacturers, including Pratt & Whitney, are collaborating with Indian start-ups. Therefore, encouraging women, through both industry and academia, to take up research and development roles in greater numbers—with enhanced incentives—would significantly accelerate the development of India’s indigenous aerospace ecosystem, particularly as the country focuses on homegrown innovation and the Atmanirbhar Bharat initiative.

Another critical issue is eliminating the pay disparity between women and their male counterparts. Equal pay for equal roles and skills will incentivize women to commit long-term to their careers and the development of the aerospace and defense sectors.

Finally, the principle of “capturing their imagination young” is vital here as well. Focused efforts to foster a scientific temperament among young girls will inspire many to pursue careers in STEM-related fields. That is why we are seeing aerospace companies making targeted investments in promoting STEM education for students in



India, particularly prioritizing girls. At RTX, this remains a key focus for our community investments—hoping that hands-on learning experiences will spark curiosity and inspire future generations to pursue careers in science, technology, and aerospace, ultimately shaping tomorrow’s leaders.

There is an upward trend for women leaders in aerospace in India. With initiatives like the US-India Aviation Cooperation Program’s Women in Aviation Leadership—‘Leadership HERizon’—and similar efforts by the industry, ministries, and regulators, the number of women leaders in the sector is expected to grow exponentially over the next decade.



Pratt & Whitney

An RTX Business



Bell's Bright Future in India's Helicopter Industry

By Wg. Cdr. Shriram Ghatpande (Retd.), Business Development Director India & Nepal, Bell

Bell Textron Inc., a Textron Inc. company, is a leading manufacturer of commercial and military helicopters around the globe. Bell has a reputation for excellence in customer service, innovation, and quality, and Bell supports customers in over 120 countries.

Bell has equipped Indian customers for over six decades. The iconic Bell 47 first visited India in 1956, transporting Sir Edmund Hillary and Tenzing Norgay, and served as the Indian Armed Forces' initial trainer helicopter.

Since introducing the first helicopter to India in 1956, Bell's Indian fleet has grown from two aircraft in 1994 to over 90 currently. Today, Bell helicopters are featured prominently across multiple sectors in India, including tourism, corporate transport, emergency response, and government applications. Particularly widespread are the Bell 407 commercial helicopter and Bell 412, renowned for performance and cost-effectiveness.

The Indian commercial helicopter market outlook remains vibrant with Bell aircraft engaged in diverse national operations. Several high-potential sectors present expansion opportunities:

Helicopter Emergency Medical Services (HEMS)

Emergency response demand arises from India's vast terrain and population. Bell helicopters like the Bell 429 and Bell 412 suit air ambulance, firefighting and search/rescue needs with speed, range, and payload. The Bell 429 especially addresses Indian air ambulance needs with twin-engine power and a spacious cabin for medical crews and advanced life support equipment.

Besides the twin engine Bell 429, the Bell 505 is the only HEMS-capable short light single aircraft in the market with the speed and range to aid global communities and save lives. A range of cabin configurations from a quick-change casualty evacuation system to a complete HEMS interior,

provide the flexibility to meet specific mission requirements.

In the long light single segment, the Bell 407GX is a proven IFR-capable platform for HEMS operators across the globe. With patient care as paramount, the widest door opening in its class and ease of configurability provides medical staff a capable and reliable solution.

For operators requiring a medium twin helicopter for HEMS, the Subaru Bell 412 EPX provides an open and flexible cabin with room for crew and specialty medical equipment. Driven by a legacy of upgrades and modernization over four decades, the 412EPX delivers improved transmission and power in hover.

Looking ahead, the Bell 525 will set the standard for the future of vertical lift and in the HEMS segment. With its expansive and easily customizable cabin, it provides HEMS operations the flexibility and the space for complex missions and specialty equipment.



Tourism

India's natural beauty and cultural attractions drive a booming tourism industry amenable to aerial sightseeing. Destinations in the Himalayas, Kerala and Rajasthan showcase India from the air. The Bell 505 offers panoramic views and spacious cabins ideal for helicopter tours.

Oil & Gas

Oil, gas and mining rely on helicopters to access remote

worksites. Bell aircraft have a proven track record worldwide transporting crews and cargo in energy production via power, performance, and high-altitude capability. Models like the Bell 412, Bell 429 and Bell 525 are go-to solutions.

As India's economy and middle class expand, emergency services, tourism, and energy sectors will surge in demand. Well-positioned to support this growth, Bell will provide high-quality, reliable helicopters and a leading global

aftermarket support and service network augmented by Bell customer service and product support engineers across the globe.

Bell established operations in India in 1995 via a liaison office in New Delhi. Today, with over 130 employees across offices in New Delhi, Bangalore and Mumbai, Bell and Textron maintain a substantial India presence, with a local sales and aftermarket team to support our customers in India.





India's Aerospace Industry: Soaring High towards Aatmanirbharta

By Ryan Weir, Vice President of Commercial Sales and Marketing for India & South Asia, Boeing Commercial Airplanes

Aviation continues to bring the world together, acting as a bridge connecting people, cultures, and economies like never before. Over the past decade, its role in shaping the modern world has only grown stronger. In the South Asia region, India leads the growth story for this sector, driving 90% of the region's economic output over the past three decades, emerging as a key player on the global stage.

As the world's third-largest civil aviation market, India's fleet is expected to nearly quadruple by 2041 compared to 2019. The country is also projected to receive over 90% of South Asia's airplane deliveries, requiring more than 2,500 new aircraft, while its cargo market is set to expand significantly, with the fleet growing from 15 to 80 airplanes by 2042. Boeing's Pilot and Technician Outlook projects a requirement for 129,000 new aviation professionals in South Asia over the next 20 years, including 40,000 pilots, 40,000 technicians, and 49,000 cabin crew. In 2014, India operated 74 airports; today, that number has more than doubled

to 157, creating a network that enhances connectivity and accessibility. The government's vision for 2047, the centenary of India's independence, includes expanding this network to 350 to 400 airports, which will further boost connectivity and offer more people the opportunity to use air travel.

The resurgence of Indian domestic passenger air traffic, surpassing pre-pandemic levels, highlights pent-up demand for travel and underscores the industry's adaptability. This resurgence reflects substantial long-term growth opportunities. India's growing middle class, with rising disposable incomes, is a significant driver of air travel demand, both domestically and internationally. Furthermore, the growth in e-commerce is boosting demand for narrowbody conversions, while the expansion of India's electronics manufacturing industry, particularly in higher-value segments, is fuelling increased demand for cargo services.

Boeing in India today employs over 6,000 employees directly, and a further 13,000+ work with Boeing's Indian supply chain partners. In addition, the company, through its more than 80 years strong presence in India, has been supporting the country's surging civil aviation sector and Aatmanirbharta vision. Boeing has been demonstrating its focus on Make in India, Skill India, and Aatmanirbhar Bharat initiatives in multiple ways.

Supporting the growth of the aviation ecosystem

With over eight decades of partnership with India, today, Boeing is by far the largest foreign OEM in terms of sourcing from India, with over \$1.25 billion annually through its large and growing network of 300+ supplier partners, of which over 25% as Micro, Small and Medium Enterprises (MSMEs), that are an integral part of our global supply base.

Boeing proudly supports the Aatmanirbhar Bharat initiative



as a central pillar of our long-term business strategy in India. Our strong network of Indian suppliers, particularly in the aerospace sector, has made us a leader in exports and underscores our commitment to fostering growth and leadership in Indian aerospace and defence through partnerships, including with start-ups.

Our joint venture with Tata Advanced Systems Ltd. (TASL), Tata Boeing Aerospace Limited (TBAL) in Hyderabad, is a state-of-the-art facility that showcases our commitment to Make in India and Aatmanirbhar Bharat. TBAL manufactures aero-structures for Boeing's AH-64 Apache helicopter, including fuselages, secondary structures, and vertical spar boxes for customers worldwide, including the U.S. Army, and for the six on order by the Indian Army. Fuselages delivered by TBAL are sourced from over 100 MSME suppliers. In 2023, TBAL shipped the first vertical fin structure for the Boeing 737 aircraft.

Partnerships are crucial for supporting India's aviation growth while improving operational efficiency and ensuring safety. Some of the recent contributions made by Boeing include the following:

- In 2024, in alignment with the guidance provided by the Honorable Prime Minister, Boeing has

initiated the Boeing Sukanya Program aimed at further fostering women's participation in the aviation sector. This initiative spans the multiple stages of a woman's professional career, nurturing future leaders, and fostering a more inclusive industry.

- An earlier Maintenance, Repair and Overhaul (MRO) effort launched the Boeing India Repair Development and Sustainment (BIRDS) program. BIRDS enables engineering, maintenance, skilling, repair, and sustainment services of defence and commercial aircraft in India, for India.
- In 2024, Boeing has set up the India Distribution Center in Khurja, Uttar Pradesh for regional customers to maintain higher fleet utilization and mission readiness rates.
- In 2023, Boeing and GMR Aero Technic are partnering to establish a new Boeing Converted Freighter line in Hyderabad. This collaboration supports cargo growth and expands aircraft modification capabilities and MRO services in India. It contributes to India's ambition of becoming a

regional MRO hub.

- India is a strategically vital region for Boeing, supported by its Global Strategic Initiatives team and the establishment of a Global Support Center in Gurugram. Together, these efforts drive growth, safety, innovation, and sustainability through key programs like the India Air Cargo Symposium, India Pilot Roundtable, Executive Development Programs, Sustainability Workshops, and tailored operational efficiency projects for airline customers, regulatory bodies, and industry stakeholders.
- To support the growing demand for pilots and technicians, in 2023, Boeing announced a \$100 million investment in infrastructure and programs to train pilots in India, which will support India's need for new pilots over the next 20 years.
- Boeing, in 2022, also completed a comprehensive 10-year road map for Airports Authority of India to modernize its Communication, Navigation and Surveillance/Air Traffic



Management (CNS/ATM) system. This plan aims to improve airspace utilization across CNS/ATM, aligned with global standards. It was developed with a grant from the U.S. Trade and Development Agency.

Sustainability gains

India and the global civil aviation industry are committed to sustainability, with partnerships aimed at reducing greenhouse gas emissions, modernizing infrastructure, and supporting local communities:

- Boeing aims to make its commercial airplanes capable of flying on 100% Sustainable Aviation Fuels (SAF) by 2030. Collaborating with SpiceJet and the Council of Scientific and Industrial

Research – Indian Institute of Petroleum (CSIR-IIP), Boeing is testing and certifying domestically produced SAF.

- Boeing’s roadmap for CNS/ATM in collaboration with the Airports Authority of India also contributes to sustainability. This plan focuses on enhancing airspace utilization and ensuring safe and efficient aircraft operations.
- As a member of the World Economic Forum’s Clean Skies for Tomorrow (CST) initiative, Boeing contributed to the first report “Deploying Sustainable Aviation Fuels at Scale in India” in 2021 as a starting point for a public-private taskforce to design an implementable policy framework for

decarbonizing aviation in India. As a key contributor to this report, Boeing helped determine that approximately 10% of India’s SAF needs by 2030 can be met through domestic production.

As India nears its centenary of independence, its aviation sector is set to redefine global benchmarks. Boeing’s partnership with India’s civil aviation sector is helping support its unprecedented growth and development. Through manufacturing and infrastructure partnerships, training and workforce development collaborations, and sustainability initiatives, Boeing and India share the goal of advancing the country to the status of a global aviation leader while becoming Aatmanirbhar in aerospace and defence. The sky is not the limit, but it is just the beginning.



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BEYOND THE HORIZON



FedEx India: Empowering Business, Enabling Possibilities, and Leading the Way to a Smarter Future

FedEx has been a key player in reshaping India's logistics landscape, positioning itself as an industry leader. By embracing cutting-edge technologies, harnessing India's tech talent, and supporting businesses of all sizes, FedEx has fostered a new era of smarter, more resilient supply chains. As a global leader in logistics, FedEx continues to invest in solutions that connect India to the world, empower SMEs, and strengthen communities—helping businesses thrive and ensuring prosperity for all.



Leveraging Advanced Technologies for Smarter, Resilient Supply Chains

In today's fast-evolving global economy, supply chains must be both agile and efficient. FedEx is at the forefront of this transformation, using advanced technologies like artificial intelligence (AI), machine learning (ML), and data analytics to create smarter and more resilient logistics solutions. Through real-time data insights and predictive analytics, businesses can optimize their operations, manage disruptions, and stay competitive in a global market.

Technology-driven solutions by FedEx, such as FedEx International Connect Plus (FICP), FedEx One Stop Shop (FOSS), and the FedEx Import Tool (FiT), provide businesses with streamlined shipping processes, greater visibility, and improved efficiency. These tools empower businesses to manage logistics seamlessly and accelerate their global reach.

Strengthening the Network Through Strategic Flight Additions

Extensive FedEx network plays a vital role in improving India's connectivity with the global marketplace. In 2024, we expanded our footprint by introducing new flights out of Bengaluru, connecting South India

to key international markets. This builds on our robust network, with 23 flights per week from major gateways in New Delhi, Bengaluru, and Mumbai, ensuring faster, more reliable access to global destinations.

This expansion strengthens India's trade potential and enhances our ability to provide businesses with the agility and resilience they need to navigate a complex, fast-changing market.

Driving Innovation On and Off the Field

FedEx recently announced its global sponsorship in cricket for Chennai Super Kings (CSK) in India and Johannesburg Super Kings (JSK) in South Africa. As part of this collaboration, the FedEx logo will feature prominently on the back of the team's iconic jerseys, symbolizing a shared focus on performance and reliability. FedEx will leverage its extensive global network and advanced digital tools to ensure the efficient transportation of team kits, match equipment, and official materials from India to Johannesburg, the U.S., and to Super Kings players around the world.

This association is a testament to our shared values of excellence, teamwork, and efficiency. Just as the cricket unites millions of fans; FedEx connects people and businesses with seamless logistics

solutions that enable global trade. Our collaboration strengthens our brand presence in India and underscores our role in advancing logistics innovation.

Bridging Local Businesses to Global Opportunities

Small and medium-sized enterprises (SMEs) are the backbone of India's economy, and FedEx is deeply committed to supporting their growth. Through initiatives like FedEx SME Connect, FedEx empowers SMEs with the tools and resources to scale globally. The SME Connect program offers expert guidance to help small businesses expand beyond India's borders. Through this program, FedEx teamed up with Invest India to support the Government of India's One District One Product (ODOP) initiative. Together, they aim to boost the growth of Indian small businesses by providing them with access to global markets, capacity building, and branding opportunities.

By helping SMEs reach global markets, FedEx ensures that businesses of all sizes have the resources to succeed in a competitive global economy.

Harnessing India's Tech Talent

FedEx is fully invested in leveraging India's immense pool of tech talent. Our Advanced



Capability Community (ACC) in Hyderabad is a prime example of this commitment. The ACC drives innovation by creating next-generation logistics solutions using AI, machine learning, and data analytics to improve supply chain operations.

In collaboration with IIT Bombay and IIT Madras, FedEx is pioneering advanced research and development in the logistics space, shaping the future of supply chains while contributing to India's position as a global leader in technology.

A Future Built on Innovation, Collaboration, and Sustainability

FedEx investments in India go far beyond logistics solutions—they are about fostering smarter, more resilient supply chains that support businesses of all sizes. By embracing the power of technology, strengthening our global network, and supporting SMEs, FedEx is shaping the future of logistics in India.

Our collaboration with India's leading tech institutions, our

focus on sustainability, and our dedication to social responsibility ensure that we are creating a brighter future for businesses and communities across India. Whether through our association with the Super Kings, our growing network, or our commitment to empowering SMEs and driving sustainability, FedEx is helping India's businesses thrive in the global marketplace.





Navigating the skies – Challenges and Opportunities for Regional Airlines

By Girish Nair, Partner & Aviation Sector Lead and Abhishek Somani, Manager - Aviation, KPMG India

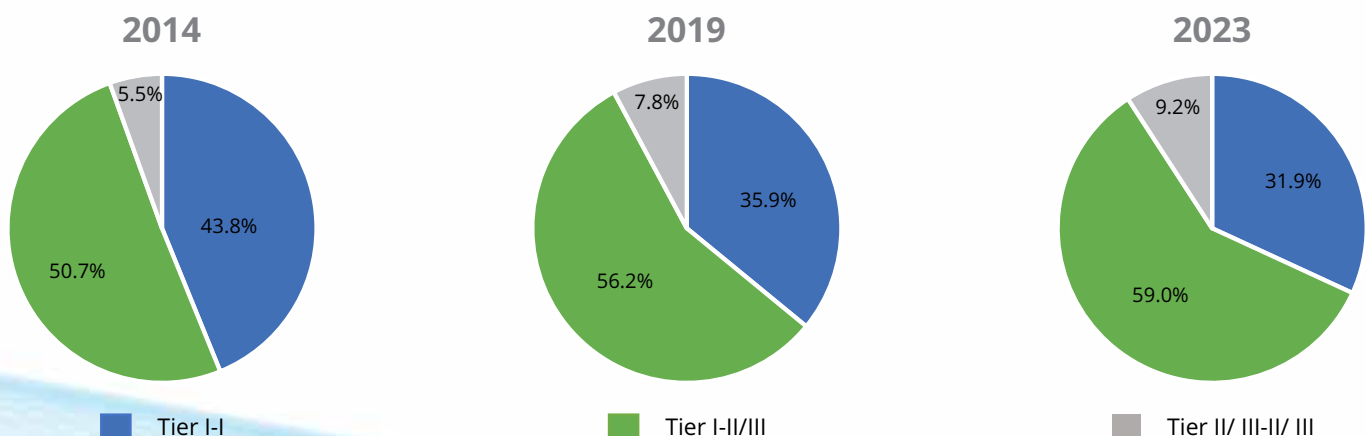
The Indian aviation industry has witnessed remarkable growth over the past few decades, positioning the country as the third-largest aviation market globally. While most of the air traffic is between the Tier I-II/III cities, regional routes served by regional aircraft (<100 seats) have emerged strongly on account of policy incentives through RCS scheme, supported by the economic rise of Tier 2 and 3 cities and aspirational

Indian middle class. Below graph shows that Tier 2 and Tier 3 airport connectivity contribution has increased from 5.5% in 2014 to 9.2% in 2023.

Airlines operating regional aircraft as a part of their fleet include the major airlines as well as airlines operating a dedicated fleet of regional aircraft to enhance regional connectivity.

The regional routes play a vital role in connecting Tier II, III and other remote areas to major cities, promoting travel, business, tourism, and boosting local economies. However, in the past regional airlines in India have faced a multitude of challenges, causing many of them to cease operations. As part of this article, we focus to dwell upon and evaluate the several challenges along with multiple opportunities for the regional carriers.

Domestic Traffic Split 2014, 2019 and 2023¹



¹ Source – KPMG Analysis, Cirium



India's fleet of major airlines operating regional aircraft (<100 seats)

S. no.	Major regional airlines ²	Base Airport	Total fleet	ATR-42/72	DHC Dash 8-400	ERJ 145LR/ E175	DHC-6 Twin Otter	Do-228
1	Indigo	Major airports	45	45				
2	Alliance Air	Major airports	21	20				1
3	SpiceJet	DEL, HYD	32		32			
4	Star Air	BLR	8			8		
5	Fly91	Goa (Mopa)	2	2				
6	FlyBig	Lucknow	3				3	
	Total		111	67	32	8	3	1

Opportunities:

1. RCS-UDAN Scheme:

UDAN (Ude Desh Ka Aam Nagrik) scheme has been pivotal in stimulating the regional air traffic demand. The scheme through its initiatives such as financial subsidies, route exclusivity, and infrastructure development has supported Indian carriers. It has led existing airlines to re-think about their business model as well as led to the start of new airlines and to take advantage of this opportunity. RCS has been pivotal in adding 13 mn passengers on more than 500 routes³ to

Indian skies. The scheme will be completing its 10th year in 2026 and it has constantly evolved itself through addition of seaplane routes, scheme for helicopter connectivity and north-east connectivity during its 5 phases of implementation. However, the Government needs to evaluate the challenges faced by the regional airlines during the current scheme for a sustained growth in traffic in the coming years.

2. Latent air traffic potential of Tier 2 and Tier 3 cities:

Fast pace of urbanization in India is a critical enabler for

future aviation development and strengthening India's position as global aviation leader. The Indian cities accounted for 460 mn population in 2018 which is expected to increase to 876⁴ mn by 2050, accounting for 50% of the Indian population. This is expected to give rise to creation of several new regional/ smart cities (tier-2 and tier-3) with aspirational young population with opportunities to connect to the metro cities (Tier 1) and beyond.

However, the current traffic contribution of Indian airports other than the top 30 airports is a meager ~9%⁵ however, in the US and China, it is ~29%⁶ and ~22%⁷

² Sources-www.goindigo.in,date accessed:10April2024;allianceair.in,date accessed:10April2024;corporate.spicejet.com,date accessed:10April 2024;starair.in,date accessed:10April2024;https://www.planespotters.net,date accessed:10April2024;fly91.in,date accessed:10April2024 Fleet details are dynamic and subject to change this is as on 10 April 2024 as per above sources

³ Source - pib.gov.in, date accessed: 10 April 2024

⁴ Source - niti.gov.in, Cities as Engines of Growth May 2022, date accessed: 10 April 2024



of their respective total passenger traffic. India has a significant growth potential in the regional air traffic and regional airlines should be focused on tapping this demand to fuel India's aviation growth engines.

3. Partnerships with airports and major airlines:

Partnering with mega carriers have been a successful business model for the regional carriers.

The largest regional airline in US (operating dedicated fleet of regional aircraft with less than 100 seats) runs its operations through a partnership arrangement with the mainstream or hub carriers. It connects the regional airports to the hub airports thereby providing feeder traffic to the hub carriers. To enable this feeder connectivity, it gets a fixed fee on majority of its flights irrespective of the passenger throughput.

Keeping in view the above scenarios, a few key takeaways for India to develop its regional traffic could be:

- India's largest airline operates the fleet of 45 regional aircraft with only 5 aircraft pending for delivery. However, it has

not purchased/ ordered a new ATR for last 7 years leading to speculation that the airline has limited expansion plans in the regional space. Further, privatization of flag carrier of India has resulted in splitting of its regional arm (which is under Govt. control) from the main airline, limiting its ability to serve the regional routes. Regional airlines can develop or enhance their network at a hub/large airport in partnership to connect feeder traffic to the network of these main carriers'. Marketing the flights under this partnership will be key to its success. This will allow the regional airlines to diversify their revenue streams beyond the RCS scheme and profitable regional routes.

- Development of domestic hub airports – In collaboration with the airlines, airports can develop themselves as a domestic or regional hub by connecting the regional airports in its catchment to the entire country. This will enhance transfers from

the hub airport provided the current airport infrastructure supports airlines and passengers through optimized and minimum connect time. Key areas to focus would be syncing of the airline schedules, efficient terminal layouts, inter-terminal transportation, and dedicated transfer facilities.

4. Strategic Alliances:

The ongoing push for creating tourism opportunities in India, unlocks a new dimension for regional airlines. Regional airlines can identify the upcoming/ developing tourist hotspots and partner with travel companies and other players in the hospitality sector to expand their base and revenue streams. Partnering through incentives with group of state governments with intra-travel movement for development of niche market routes between the airports and cities not covered under the RCS scheme can be helpful for airlines.

Further, MoCA with strategic stakeholders in the ecosystem is focused on development of hub airports in India to limit the erosion of Indian traffic to foreign hubs

⁵ Source – www.aai.aero, date accessed: 10 April 2024

⁶ Source – bts.gov, date accessed: 10 April 2024

⁷ Source - en.wikipedia.org, date accessed: 10 April 2024



in middle east and Asia-Pacific. Regional airlines can develop its network to strengthen the hub ecosystem in India.

5. Focus on Niche Markets:

Given that a regional airline has a focused presence in a certain region, they can foster a much better understanding of the need of the travelers commuting to and from that region. Based on these insights, the regional airlines can deploy regional aircraft aligned to the market requirement and offer reasonable fares with value added services to these customers, thereby setting themselves apart from airlines which follow a standard national pattern. This will also allow these regional airlines to gain recognition and garner customer loyalty.

Challenges:

1. Unviable business model without RCS scheme:

The RCS Scheme was meant to function as a catalyst to start a new route. In line with the same, new routes were subsidized (VGF) for the first three years. After the period gets over and the subsidy stops, affordability has become a factor on multiple routes, leading to low traction and subsequently complete cancellation of the route. As per the reports, out of the 774 routes awarded

under UDAN 1, 2 and 3, only 371 (~50%) routes had commenced operations. Due to low demand and operational challenges, only 112 routes completed the subsidy period of 3 years. Further, due to the ceasing of subsidy, only 54 routes connecting 17 RCS airports were still operational in March 2023. Further, the routes which continue operations, witness high cancellations. Due to low traction and subsequent cancellations, regional airlines are not able to develop its brand loyalty among the target passengers leading to further deterioration of operations.

2. Operational challenges:

Indian aviation sector lacks skilled manpower including pilots, technicians, etc. On account of their small scale of operations, it is difficult to hire/ retain skilled manpower, especially when the country is expected to face aviation manpower shortage in the next decade.

3. Airport infrastructure constraints:

Mega airports of the country such as Delhi and Mumbai Airport already face traffic congestion – leading to a shortage of slots at peak hours for regional airlines. Without the peak hour slots, regional airlines find it difficult to provide feeder traffic to the

larger domestic network of the airport in reasonable connect time. The new regional airlines have started operations from Manohar International Airport, Goa, a greenfield airport where the airport has capacity during peak slots. Similarly, other regional airline is operating out of Kempegowda International Airport, Bengaluru which has recently undertaken significant capacity addition. With the addition of new greenfield airport in Mumbai and Delhi, regional airlines may get an opportunity to expand their operations.

4. Competition from other modes of transport:

Regional airlines serve destinations within a distance of less than 500 km from the operating airport. With the passenger waiting time at the airport, which sometimes exceeding the duration of the flight itself, makes flying less attractive as compared to other modes of transport such as highways and expressways.

Summary:

The Aviation Sector is one of the sunrise sectors in India in the next decade, courtesy to revolutionary government initiatives such as the RCS UDAN scheme. As per the latest estimates, the scheme is already responsible for activating more than 75 airports/airfields



and more than 500 routes⁸. RCS scheme needs to evolve itself after completing its first 10 years as the increase in the spending power of population in Tier 3 and Tier 4 cities will lead to stabilized regional air traffic demand. Further, the regional airlines need innovative strategies such as partnering with

major airlines, airports, developing strategic alliances, etc. Each airline will need its tailor made strategy to operate in the challenging skies of India successfully.

Large home markets like US and China operates ~8x and ~4x aircrafts than India, and still

shows potential for growth. This shows the potential of the aviation sector in India. Therefore, despite the challenges faced by the regional airlines, it is important for the industry to continue the work initiated in the recent years with more vigor and intent and continue connecting every part of India.





Enhancing Runway Safety Through Advanced Surveillance and Recording Technology



Global air passenger numbers hit about 9.5 billion in 2024, according to the latest Airports Council International report. In line with this, the demand for more efficient, scalable, and safer aviation operations is surging. Airports are facing mounting challenges in ensuring safe aircraft movement on the ground, leading to increased risks of runway

incursions and other hazardous incidents.

In 2023, several near-collision incidents shook the aviation industry. One notable incident at John F. Kennedy International Airport in January 2023 highlighted the dangers of insufficient runway safety protocols when two commercial aircraft narrowly avoided colliding during take-off.

The quick actions of air traffic controllers averted a disaster, but the event underscored the pressing need for advanced safety solutions in the face of rising air traffic.

The complexity of modern airport operations—where increasing numbers of aircraft share busy runways with service vehicles, maintenance crews, and other



ground traffic—has increased the risk of human error or oversight. Traditional safety measures are proving insufficient, necessitating a shift toward smarter, more automated systems to improve runway safety and reduce the risk of incidents.

Time to consider more advanced surveillance technologies

A recent Federal Aviation Administration (FAA) trial has demonstrated the effectiveness of Automatic Dependent Surveillance-Broadcast (ADS-B) In applications such as the Cockpit Display of Traffic Information (CDTI)-Assisted Separation (CAS) and Interval Management (IM) significantly improve airspace efficiency and runway safety. The trial involved L3Harris' SafeRoute+ technology, which was recently certified by the FAA and installed on hundreds of American Airlines aircraft, and showed that 90% of IM operations successfully met their spacing goals within 10 seconds, compared to just 23% of non-IM flights. This achievement underscores the potential of ADS-B In systems to increase airspace capacity by up to 25%, while improving both safety and operational efficiency.

The trial, conducted in collaboration with American Airlines and ACSS - a joint venture between L3Harris and Thales - also highlighted

key improvements in spacing precision, flight path accuracy, and reduced flight time variability. These findings demonstrate how advanced surveillance systems like SafeRoute+ can enhance air traffic management, reduce delays, and improve situational awareness and decision making during critical operations for both pilots and air traffic controllers.

Moreover, SafeRoute+ technology has been shown to optimize air traffic flow, reduce vectoring, and increase predictability, which all contribute to a more efficient and safer airspace. This trial's success reinforces the growing need for advanced surveillance solutions, such as ADS-B In, to address the challenges of increasing air traffic and complex airport operations.

Extended recording technology: a step forward

Another critical innovation is the move toward extended cockpit voice and data recording technology. Most cockpit voice recorders (commonly known as "black boxes") capture only two hours of cockpit audio. However, with incidents on the ground often unfolding over extended periods, there is a growing call for 25-hour recorders.

This extended data capture provides investigators with a more comprehensive understanding of crew communications and decisions leading up to

incidents, helping to identify human factors and potential safety improvements. While the European Union Aviation Safety Agency (EASA) has mandated the use of 25-hour recording devices on certain aircraft, the FAA has yet to make this a requirement. However, it has proposed that newly manufactured aircraft be equipped with the longer-duration recorders, aligning with international standards, and in some cases exceeding them.

The National Transportation Safety Board (NTSB) has also voiced its support for new production and retrofitting older aircraft, arguing that this would help prevent valuable data from being overwritten in incidents with longer flight durations or relying on pilots to pull circuit breakers before audio data is overwritten. This development is part of ongoing efforts to enhance safety measures across the industry.

Improving communication and coordination

While technology plays an essential role in improving runway safety, the human factor remains equally critical. Effective communication between pilots and air traffic controllers is key to preventing miscommunications that can lead to runway incursions.

Innovations like CDTI-Assisted Visual Separation (CAVS) and



CDTI-Assisted Separation (CAS) technologies provide pilots with clearer information on aircraft spacing and, increasingly, runway activity, which reduces reliance solely on verbal instructions. By integrating these tools with existing air traffic management systems, pilots and controllers can operate with a shared, real-time understanding of their surroundings, reducing the potential for miscommunication while increasing operational efficiency.

The future of runway safety

As the aviation industry continues to grow, runway safety is a top priority. The development of advanced surveillance technologies, improved data recording, and enhanced communication systems represent a significant step forward in mitigating runway incursions and other ground-related incidents.

Early trials of these systems at major airports have demonstrated their potential to transform runway safety and improve overall operational efficiency.

Through ongoing collaboration between aviation authorities, airlines, and technology developers, these innovations are poised to play a pivotal role in shaping the future of safe, efficient ground operations in airports worldwide.

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 established in 2009 includes a staff of 200+ employees providing engineering, design, test and certification support 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 B787-9, 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. Moog is also supporting expansion of MRO facilities for Wide Body Commercial Aircraft ATA Chapter 27 LRUs in Middle East & Asia Pacific regions.



Boeing 787-9 Test Rigs

Design of Moog Components for Commercial and Business Jets



Hydraulic Flight Control Actuator & Additive Manufactured Manifold

MITC team extensively supports 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) servactuators and all associated control electronics. The team also supports design and realization of 3D printed prototype manifolds and actuators using Additive Manufacturing Technology. Presently, extensive testing, process certification of these products is in progress.

System Level Testing



COMAC C919 Iron Wing Test Rig

Over the years, Moog has grown from a high technology component manufacturer to become a leading supplier of integrated flight control systems. COMAC C919 Iron Wing is fully commissioned and System Level Hardware/Software testing is being carried out at our facility. 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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“Sikorsky S-92® Helicopter: A Proven Workhorse for Critical Missions”

The Sikorsky S-92 helicopter is the optimal choice for Head of State transportation and other challenging missions due to its unmatched reliability and capabilities



By Leon Silva, Vice President of Global Commercial and Military Systems at Sikorsky

Multi-Mission Capabilities

The Sikorsky S-92® helicopter’s long-term experience has cemented its legacy as the best in class for safety and reliability across a range of missions performing against some of the biggest challenges in the world, including Head of State transportation. Thirteen nations have chosen the S-92 for their critical Head of State missions, and it serves as the baseline for the VH-92A®, which performs the United States presidential vertical-lift mission. Its superior reliability, advanced technology, and unwavering commitment to safety make it the clear choice for this sensitive mission. In other capacities, the S-92 is counted on to bring personnel and supplies to some of the offshore energy industry’s hardest to reach deepwater platforms, it regularly conducts harrowing search and rescues over roaring seas, and





supports lifesaving emergency medical transport missions.

In India, Sikorsky is proud to support helicopters such as the S-76®, the S-92 and the Indian Navy's MH-60R® helicopters. In fact, the Indian Navy's acquisition of the "Romeo" helicopter is the largest contract Lockheed Martin has ever signed with India. Sikorsky's stated mission in India is to collaborate locally in strengthening the country's defence and internal security while simultaneously developing aerospace manufacturing in India. Sikorsky's proven helicopters are well-suited for India's climate, size, topography, developing infrastructure and diverse mission requirements.

Enhancing the Platform: Longstanding Investment and Innovation

The global S-92 fleet—representing more than 300 aircraft and 2.4 million flight hours—is sustained by continuous investments and a commitment to innovation that Sikorsky and Lockheed Martin champions. In recent months, Sikorsky has announced enhancements to the S-92 helicopter allowing operators to safely keep aircraft in service longer between inspections, mitigating downtime and

maximizing availability for the fleet.

In September 2024, Sikorsky announced that it received Federal Aviation Administration (FAA) certification to offer a one-time life extension for specific main gear box housings on S-92 helicopters. By leveraging the Health and Usage Monitoring Systems (HUMS) data, the company developed a methodology to more accurately determine the life-limit for parts and help alleviate supply chain issues affecting the industry. This earned credit is based upon examination of the HUMS data for individual housings, allowing continued operation beyond the current 4,300 hour limit.

By more accurately determining the life-limit for parts, average S-92 offshore oil operators are able to keep gear boxes in service for an additional 12-18 months, and other operators for more than an additional 24 months. This extension is made possible by utilizing Sikorsky's revolutionary LifePlus™ methodology, which determines remaining component life of S-92 helicopter parts based on actual aircraft usage. The FAA certification of the main gear box housing earned life credit is just one of the many examples of

Sikorsky's continued investment in the S-92 platform.

In November 2024, Sikorsky announced that it is increasing the scheduled inspection intervals for S-92 helicopters from 375 flight hours to 500 hours, and from 750 flight hours to 1,000 hours. By increasing these intervals, average S-92 operators will be able to safely keep aircraft in service longer between inspections, mitigating downtime and maximizing availability for the fleet.

This enhancement eliminates more than a full year of downtime caused by inspections, as S-92 operators will now be relieved of the requirement to conduct up to 30 inspections over the course of the aircraft's 30,000 flight hour lifespan. By leveraging 20 years' worth of maintenance data collected from more than 300 aircraft and 2.4 million flight hours, Sikorsky developed a methodology to safely and confidently allow continued fleet operation beyond the current limits. The maintenance data was supplied to and jointly analyzed by the S-92 Maintenance Review Steering Group, a composition of the world's largest S-92 fleet operators who actively collaborate to enhance aircraft safety and reliability. Increasing



inspection intervals for the S-92 is a major victory for operators striving to mitigate downtime and maximize fleet availability, and a testament of the commitment to safety and innovation that Sikorsky champions.

Local Collaboration

Tata Sikorsky Aerospace Limited (TSAL) is a joint venture in Hyderabad between Tata and Sikorsky. TSAL manufactures aerospace components for commercial helicopters & aircraft and has expanded to include aircraft engine components for aerospace industry companies as well. The facility is also fully

integrated into the global supply chain and bears testimony to Sikorsky's contribution to the development of Indo-U.S. defence industrial partnership. Established over a decade ago, TSAL has delivered 157 S-92 cabins to date.

TSAL has positively impacted India's defence economy, and the contributions of Hyderabad have helped the S-92 aircraft surpass more than 2.4 million flight hours, to date. Programs like these create opportunities for knowledge-sharing and strategic technology transfer and strengthen the industries of all involved.

Carrying on Tradition and Superior Performance

The Sikorsky S-92 helicopter has long been considered the gold standard for safety and reliability across a range of missions, including Head of State transportation, offshore energy transportation, search and rescue, and emergency medical transportation. Thanks to recent investments, Sikorsky is poised to continue its tradition of superior performance, equipping operators with the tools they need to succeed in their missions and maximize fleet availability.





Logistics Plus India: Growth, Strategy, and Future Plans

By Sundresh Sarup, Managing Director, Logistics Plus India

Logistics Plus India Pvt. Ltd. (LP India), a key division of the U.S.-based Logistics Plus, Inc., has been making significant strides in the logistics and supply chain management industry. LP India continues to enjoy impressive growth and expanded service offerings under the Logistics Plus global umbrella. Logistics Plus maintains its global headquarters at the historic train station in Erie, Pennsylvania. It was founded by Jim Berlin, its current CEO, 28+ years ago. Logistics Plus now serves thousands of customers, with over 1,200 employees operating in more than 50 countries worldwide.



Jim Berlin, CEO of Logistics Plus pictured here with Sundresh Sarup, Managing Director for LP India.

Rapid Growth and Expansion

Over the past decade, LP India has transformed from a primarily freight forwarding and project cargo provider into a comprehensive supply chain management company. With a network of nine offices across major Indian cities, including Ahmedabad, Bangalore, Chennai,

Hyderabad, Thane, Mumbai, New Delhi, Patna, and Pune, LP India has established a robust presence in the country. Under the leadership of Mr. Sundresh Sarup, Managing Director for LP India, the company has seen rapid growth and expansion, reflecting its commitment to excellence and innovation.

Diversified Offerings

Service

LP India has significantly broadened its services beyond traditional freight forwarding. The company now offers a range of services that cater to various logistics needs:

- **International Express:** Through an exclusive partnership with FedEx,



New and expanded aviation services have been a key focus for LP India the past several years.



LP India provides inbound and outbound express services. This partnership proved critical during the pandemic, enabling the transport of urgent shipments such as medicines, medical equipment, and personal protective equipment (PPE).

- **Warehousing:** LP India has implemented warehouse management solutions similar to those in the U.S., managing dedicated warehouses for clients like Whirlpool.
- **Aviation Logistics:** The Aviation Industry requires solutions that go beyond the ordinary. From the movement of entire aircraft to the transportation of time-sensitive aircraft engines and critical components, aviation logistics demands a unique combination of expert knowledge, precision handling, and adherence to stringent regulations. Logistics Plus India has developed a niche expertise in managing the complexities of aviation logistics, offering tailor-made solutions to meet the evolving needs of clients in the aerospace sector. The company

has a strong focus on aviation logistics, handling consignments for airports, equipment suppliers, navigational support companies, airlines, and part manufacturers.

- **Project Cargo:** LP India continues to excel in project logistics, working with key clients like Siemens and Gas Processing Equipment, often collaborating with the broader Logistics Plus global network.
- **Supply Chain Management:** Evolving into a complete supply chain management company, LP India serves clients across diverse industries, providing customized solutions for complex logistics operations.

Passion for Excellence

What sets LP India apart from other logistics companies is its “passion for excellence” approach. The company emphasizes a “can-do” attitude and a commitment to solving complex supply chain challenges. As Mr. Sundreysh Sarup states, “Many logistics companies say ‘no’ when someone goes to them with a major supply chain issue. Logistics Plus India won’t do that. We find a way to



Mr. Sarup has been with LP India since the beginning over twelve years ago.

say ‘yes.’ It’s how the company was founded and will continue operating.”

Global Collaboration

LP India leverages the global network of Logistics Plus, collaborating on projects and utilizing global expertise. This collaboration enhances their ability to provide comprehensive and efficient logistics solutions.

Despite its diversification, LP India’s relationship with Wabtec Corporation (formerly GE Transportation) remains a significant part of its business. The company is critical in supporting the Indian Railways locomotive project, managing the inbound,



customs, and unloading aspects of importing these massive locomotives into the country.

Logistics Plus uses technology to provide a competitive advantage, streamlining operations with tools such as Transportation Management Systems (TMS). This technological focus helps LP India deliver efficient and reliable logistics solutions.

The ideal customer for Logistics Plus is a business needing comprehensive, customized supply chain management solutions for complex global operations. This includes manufacturers, distributors, and e-commerce platforms seeking to handle logistics operations across multiple modes of transport and regions.

Strategic Direction & Future Plans

Logistics Plus India has firmly established itself as a leading supply chain solutions provider. With a diversified portfolio, strong customer focus, and strategic growth plans, LP India is well-positioned for continued success in the Indian market and as part of the global Logistics Plus network. Its commitment to finding solutions and adapting to clients' evolving needs is a major differentiator. When the world changes, Logistisc Plus delivers.

Looking ahead, LP India aims to continue its growth across all service offerings. The company plans to strengthen its leadership in international express services,

further develop warehousing solutions in India and will continue to support the ACP and its member companies in all aspects of supply chain management.





BELL 429 AIR AMBULANCE READY WHEN THE CALL COMES.

The Bell 429 delivers ultimate versatility to air medical service providers worldwide. The 429 airframe design incorporated EMS customer and operator feedback into its design process making it the ultimate EMS solution for effective patient care.

BELL 429 AIR MEDICAL SERVICE FEATURES TO MAXIMIZE PATIENT CARE:

- The cabin can accommodate:
 - Two patients and two medical crew or
 - One patient and up to three medical crew or
 - A neonatal EMS unit and up to three medical crew
- The largest door opening in its class with 62 in. wide openings on both sides
- A large open cabin with a total contiguous cabin volume of 204 ft³
- Optional aft clamshell doors offer aft patient loading capability to simplify complex loading problems
 - Doors snug up against aircraft when open
- Deck height designed to match litter height and minimize crew strain during loading and unloading
- Modular architecture for quick change mission adaption from rescue to specialty (ECMO, NICU, Heart pump, etc.) calls
- Smooth ride from hover to max cruise speed from Liquid Inertia Vibration Elimination system.
- High main rotor height for enhanced safety for loading and unloading at the scene
- High ceiling for ample headroom and easier mobility
- Access to lower half of the patient for unobstructed patient care

EMS INTERIOR OPTIONS

The Bell 429 offers maximum versatility in its EMS interior configurations and allows for ultimate customization that meets each customer's needs.

NEW IMPROVED LIGHTWEIGHT MEDICAL INTERIOR OPTIONS ALLOW FOR OVER 250 lbs. OF ADDITIONAL PAYLOAD WEIGHT CAPABILITY OR MORE THAN 65 NM INCREASE IN RANGE.

AEROLITE

- Quick-change light weight interior with no permanently attached equipment
- Easily removable equipment and stretcher
- Interior compatibility with 429 Seat Rails
- Loading platform for side- or rear-loading
- Roll-on/Roll-off EMS interior
- Medical floor overlay
- Side- or rear-loading configurability

FOR MORE INFO:



UNITED ROTORCRAFT

- Roll-on/Roll-off stretcher with full EMS interior
- Options for left-hand and right-hand install of roll-on fold-up litter system
- Rear-loading stretcher option
- Medical floor overlay
- Crew seating options with right aft swivel for improved patient access
- Medical equipment wall and integrated medical cabinet enables modularity and quick reconfigurations as needed.

FOR MORE INFO:



SPECTRUM AEROMED

- Side-loading
- Single pivot stretcher
- Medical pivoting seat
- Ceiling valance
- Medical lighting
- Floor protection kit
- LOX cabinet.

FOR MORE INFO:



INDUSTRY-LEADING SUPPORT

CUSTOMER ADVANTAGE PLAN (CAP)

CAP provides a holistic coverage solution with predictable maintenance cost, priority access to parts and assemblies, and enhanced part forecasting capabilities among other benefits.

GLOBAL SUPPORT NETWORK

Available 24/7/365 to provide technical assistance to our customers.

BELL TRAINING ACADEMY

We provide industry-leading training combined with state-of-the-art resources for both pilots and maintenance technicians.

REPAIR SERVICES

Offering post-delivery and spares fulfillment assistance, our in-region service professionals are committed to helping you maintain the operational readiness of your aircraft.

CUSTOMIZATION

Working with our sister brand, Aeronautical Accessories, we can design a tailored solution for your needs.



bell.co/HEMS



ACP Activities Over the Period



A great meeting with Member – ANS team and L3Harris team to talk about new technologies on December 17, 2024



Grant Signing ceremony on “Hisar Integrated Aviation Hub Technical Assistance” between USTDA and HADC on December 9, 2024 at Haryana Bhawan, New Delhi



Grant Signing ceremony on “Hisar Integrated Aviation Hub Technical Assistance” between USTDA and HADC on December 9, 2024 at Haryana Bhawan, New Delhi



ACP Members interaction with Sudhir Rajpal, Additional Chief Secretary - Civil Aviation Department, Govt. of Haryana on November 22, 2024 at Haryana Bhawan, New Delhi



ACP’s Members discussion on Women in Leadership on November 8, 2024 at Hotel - The Leela Palace, New Delhi



Bell/Textron – ACP Symposium on Helicopter for Public Safety on November 8, 2024 at Hotel - The Leela Palace, New Delhi

ACP Activities Over the Period



ACP Members interaction with Ministry of Civil Aviation on October 29, 2024 at Hotel Taj Bangalore



HMCA Ram Mohan Naidu visited Boeing facility on October 29, 2024 at Bengaluru



HMCA Ram Mohan Naidu visited Pratt & Whitney (P&W) and Collins Aerospace facility on October 29, 2024 at Bengaluru



RTX-P&W team meeting with HMCA Ram Mohan Naidu on October 15, 2024 at New Delhi



ACP Members roundtable with HMCA Naidu, MoCA on October 15, 2024 at Hotel - The Oberoi, New Delhi



ACP Activities Over the Period



ACP Members roundtable with HMCA Naidu, MoCA on October 15, 2024 at Hotel – The Oberoi, New Delhi



Thanks to Boeing and team for hosting Indian delegation on June 23, 2024 during U.S. - India Aviation Summit at Washington D.C.



ACP Members roundtable with Indian delegation on June 24, 2024 during U.S. - India Aviation Summit at Washington D.C.



Delegation's site visit at Reagan Washington National Airport on June 24, 2024 during U.S. - India Aviation Summit at Washington D.C.



Delegation's site visit at Smiths Detection on June 24, 2024 during U.S. - India Aviation Summit at Washington D.C.



ACP Activities Over the Period



Delegation's site visit at Washington Dulles Airport on June 24, 2024 during U.S. - India Aviation Summit at Washington D.C.



U.S. & Indian delegation at Kennedy center dinner during U.S. - India Aviation Summit at Washington D.C.



Inaugural session at U.S. - India Aviation Summit from June 24-26, 2024 at Washington D.C.



Ashmita Sethi, President & Country Head - Pratt & Whitney India with Indian delegation at U.S. - India Aviation Summit from June 24-26, 2024 at Washington D.C.



Secretary Vumlungmang Vualnam, MoCA and team with FedEx team members at U.S. - India Aviation Summit from June 24-26, 2024 at Washington D.C.



ACP's special thanks to USTDA team for their outstanding efforts in making the Summit a flawless event



MOOG – The leader in Aircraft Flight Control Actuation Systems

By D. Krishna Mohan, Director, Customer Support – Aerospace & Marketing Group (Middle East, Africa & India), MOOG



TAKE CONTROL
WITH MOOG'S STICK-TO-TAIL FLIGHT CONTROL SYSTEMS
FOR COMMERCIAL, MILITARY AND ROTORCRAFT

MOOG
www.moog.com/aircraft

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leaders in flight control systems and critical control products for the aircraft industry. We provide premier motion and flow control solutions provider for the space and defense industries. Moog has over 13000 employees globally with sales over \$3.0B.

Our engineers have developed the capability to design and manufacture the most advanced motion control products for aerospace, defense, industrial, and medical applications – where precise control of velocity, force, acceleration, and fluid flow are critical. Our motion control portfolio has expanded to include all forms of actuation technology,

sophisticated control electronics, and system software. We are positioned today on virtually every aircraft in the marketplace.

Moog is a designer, manufacturer, and integrator of precision motion control products and solutions. Our high-performance systems

control military and commercial aircraft, satellites, and space vehicles, launch vehicles, missiles, and marine systems. We are world



We are a leading integrator of precision motion control systems, and our products reflect the culture that our people embrace – a culture where the opportunity

to solve a challenging control problem is always welcomed.

Innovation is how we grow



as a company. We are investing in future technologies that we believe will have a great impact in industries from space, defense, aircraft, industrial, medical, and more. We're leveraging new technologies with our amazing employees to come up with groundbreaking ideas.

Moog India Technology center

Moog India was established in 1990. With the impetus from the Aircraft Group, Moog India Technology Center (MITC) was pioneered in 2008 in Bengaluru, India with a focus on research & design on Aerospace. It has witnessed strong growth since then in the areas of design, development, and integration of precision motion control systems

for commercial & military aircrafts, business jets and avionics HW & SW. Our facility is equipped with state-of-the-art, best-in-class infrastructure to bolster our services and delivery capabilities.

Moog India Technology center is spread across 4 acres in Electronics city, Bengaluru. The facility houses more than 250 professionals with leading-edge engineering expertise. With significant capital investment, company is surging ahead to create further opportunities for professionals in the field of aerospace and defense.

Being one of the major design centers for Moog Aircraft Group, we are focusing on investing our talent pool on research and development of aerospace and defense technologies. Be it development of sensors, or

Actuators or composite materials or Flight worthy electronic components, the India technology center is partnering with various suppliers in the region to be ahead in the market.

Moog India has Federal Aviation Administration (FAA) conformity inspection delegation for aircraft LRU qualification programs of major Aircraft OEMs. This is a significant cost savings in terms of resources and time.

Supplier/ Partners footprint & collaboration with MSME

Moog believes in connected and sustainable ecosystem for the industry as well as for the society. Moog has established robust supplier base and continues to





develop new partners in India and surrounding regions. Moog has closely worked with these suppliers and has brought them up in speed and quality over the period of time. Notably, these suppliers are part of the supply bases in local region and are serving the wider industry needs.

Moog is partnered with nearly 40 Aerospace suppliers in the region for Machining, Special Process, Calibration, Test Equipment, Cable Harness, PCBs, and other commodities. We are associated with nearly 50 MSME suppliers as on date. We are continuously exploring options to develop suppliers for other commodities of the Aircraft. This has created more than 200 indirect employments from Moog. With an intention to further bolster the growth of Aerospace and defence segments in the region, Moog continuously works with suppliers and partners to improve their skill which in turn helps the society.

In collaboration with our Aerospace suppliers, Moog is developing complex actuation components for aerospace & defense applications. These components are used on various aircraft platforms.

Value creation

Moog is part of various Industry bodies, such as, InAQG, SAE, AMCHAM & ACP. Through these associations, Moog is closely

connected with Indian Government officials, industry and academia for knowledge dissemination and wider values creation. Moog has been part of the various Standards bodies; creating Standards for the global Aerospace Industry.

In 2016, Moog India took the initiative to establish an Indian chapter of the International Aerospace Quality Group (IAQG) under the Asia-Pacific Aerospace Quality Group (APAQG), called as InAQG. The aim of InAQG is to enable the Indian Aerospace and Defense industries to align with and contribute to Global Aerospace Quality Standards and the membership has now grown to over 120 companies, which includes both Indian and global OEMs.

A significant number of Moog experts have been associated with the national level events as organizers, speakers, Juries, and mentors. Moog has been sponsoring multiple events every year to support the ecosystem of the aerospace and defense industry. Moog has been associated with various universities in designing curriculum for technical courses. Moog has developed and built various types of science equipment and donated to the technical institutes in local region to assist students in practical learning of Science and Technology.

On social front, Moog has been deploying its CSR funds in various

areas, such as, education, medical infra-structure, support to the special needs for physically and mentally challenged citizens, elevating life standards of the destitute and underprivileged citizens, etc.

Skill development / Industry Academia

Moog India has actively partnered with many local institutes/universities and support in skill development of young engineers by giving opportunity to learn on the job through our short term and long-term internship programs for graduate and post-graduate students. We support industry visits that helps students to understand aerospace industry, Moog's contribution and they get to see our actual working set-up, labs and overall facility tour.

Our subject matter experts visit various institutes/universities as jury for events and deliver guest lectures to share industry experience and expectations to connect academic subjects to industry application. We participate as jury/guest in special events (such as Aerothon, Aerocon, etc.) that encourages budding engineers to showcase their technical talent and learn from expert mentors.

Co-development

Moog has collaborations with several Indian partners to provide



solutions for Indian Aerospace & Defense market needs. Genesys Aerosystems, a Moog company, is working on many of the Indian Defense programs furthering the relationship between India and US on Aerospace and defense technology. Moog is working closely with Indian MSMEs, HAL, NAL, and other establishments since 2018, to have local development & service of state-of-the-art Avionics.

Working with HAL on new and upgrade of the glass cockpit for Dornier 228 aircraft

Working with NAL on development of complete Avionics system for SARAS MKII

Moog is proud to have associated with the prestigious LCA program since its very early days. Moog Actuation system on LCA has performed with great reliability. Moog has supplied multiple ground equipment's and simulators for various programs of HAL and other defence bodies. Moog has worked with some of the domestic aerospace companies for testing services. Apart from this, Moog India has established capabilities for MROs globally and can support similar initiatives in India.



With our decades lasting relationship with Indian military programs and our expanding engagements in the Asian regions, Moog see tremendous opportunities to engage in the newer areas. If need be, Moog will be open to explore engagements in local region either directly or through any suitable partners.



Moog Headquarters - East Aurora, New York



MODERN AIRSPACE INFRASTRUCTURE

Mission-critical ATM system connectivity

L3Harris has been leading air traffic management (ATM) modernization efforts for decades. In partnership with air navigation service providers around the world, we provide highly secure and reliable connectivity for mission-critical air traffic control systems in some of the world's most complex and busiest airspaces, including India's civilian airspace. We're partnering with the Airports Authority of India to develop a network infrastructure that connects and delivers essential, safety-critical services throughout India.



Scan to learn more.
[L3Harris.com](https://www.L3Harris.com)





AAR's Worldwide Services

AAR CORP. is an independent global aerospace and defense solutions provider of a wide range of products and services to commercial and government customers. Operating in the industry for nearly 70 years, AAR is involved in various aspects of the aerospace industry, including aircraft maintenance, repair, and overhaul (MRO) services, as well as the supply and distribution of parts and components. They provide a full range of aircraft and engine services for commercial, military, and regional operators and are segmented into different operating segments. Leveraging an extensive global network in the APAC region, AAR is strategically positioned to provide customers with industry leading products and services, while actively expanding their footprint in the region.

Parts supply and distribution

One of AAR's largest divisions is parts supply and distribution. As a trusted aircraft parts supplier and aircraft parts distributor, AAR delivers a broad range of products, from factory-new components to dependable used serviceable

material. The Company maintains one of the industry's largest and most complete inventories of airframe rotables, landing gears, auxiliary power units (APUs), quick engine change (QEC) kits, line-replaceable units (LRUs), and accessories. They stock over one million items from more than 250 manufacturers and can offer exchanges to customers across the globe.

Integrated Solutions

Another area of focus for AAR is their Integrated Solutions business, that provides on-demand solutions for airlines and governments to maximize their aircraft uptime and minimize downtime. Their offerings reduce operating costs while maintaining high levels of safety, service, and quality. Their commercial service offerings includes power and repair by the hour component support, firm- fixed cost or time and material, with a focus on B737, B777, A320 and E-Jet aircraft.

Component Services

AAR recently completed the acquisition of Triumph's Product

Support business to add to their Component Services business. AAR's Component Services team provides maintenance, repair, and overhaul solutions for commercial, military, and regional operators. With MRO capabilities including avionics, interiors components, nacelles, airframe structures, engine and airframe accessories, along with wheels and brakes, AAR has created a full nose to tail offering. With this acquisition, AAR added facilities in Arkansas, Kansas, Texas, along with a facility in Chonburi, Thailand, expanding their footprint in the APAC region. With numerous growth opportunities in the APAC region, AAR offers a comprehensive portfolio of MRO services in the region including airframe and engine accessories, nacelle components, radomes, and wheels and brakes for any commercial platform.

To meet the growing demand in the APAC region, AAR recently announced the formation of a joint venture with Air France Industries and KLM Engineering & Repair supporting next generation aircraft nacelle components. With this joint venture, AAR will expand



their capabilities portfolio and create more effective solutions to serve the growing APAC region. This joint venture will be located within AAR's facility in Thailand.

Engineering Services and interior modifications

Along with their maintenance, repair, and overhaul capabilities in the APAC region, AAR offers extensive engineering services for aircraft interiors along with being an industry leading provider of aircraft cabin and avionics upgrades, reconfigurations, and modifications. They have an experienced Engineering Services team that has accomplished 80+ Federal Aviation Administration (FAA) and European Union Aviation Safety Agency (EASA) supplemental type certificates (STCs), amendments and validations.

They provide complete engineering, integration, certification, and procurement services. Their engineering and design services combine innovation with practicality, focusing on creating functional yet aesthetically pleasing aircraft interiors. AAR's proven program management approach ensures a seamless project from start to finish, offering turnkey services to support the full cabin modification process and securing all required regulatory authority approvals.

PMA

AAR has an extensive list of parts manufacturing approvals (PMA). As an alternative to OEM parts, they provide quality PMA part solutions, engineering support and reverse engineering services. With the acquisition, AAR has added

many interior components to their PMA portfolio. Creating PMA alternatives provides customers with a less expensive alternative to the OEM. AAR Component Services offers a true collaborative approach to PMA development and PMA management.

Through these key areas of AAR's business, they offer their customers a comprehensive portfolio of capabilities. Through these key areas of AAR's business, they are able to offer their customers a comprehensive portfolio of capabilities. AAR's dedication to quality, safety and delivering exceptional solutions, combined with their commitment to DoingItRight®, is what truly sets them apart.





The 3D X-ray scanner powering for the future of airport security checkpoints

smiths detection

In the airport passenger journey, the security screening process is often seen as one of the most congested stages. Passengers are required to separate belongings into trays and remove electronics and liquids from their bags, which leads to the formation of queues. This is where CT technology comes in – it simplifies the identification of benign and suspicious items, allowing liquids, gels, and large electronics to be screened without needing to be removed from hand luggage.

As a trusted partner to airports, airlines, and authorities across the globe, Smiths Detection takes pride in delivering best-in-class, bespoke solutions. That's why the HI-SCAN 6040 CTiX is recognised as the leading CT X-ray scanner for security checkpoints.

With over 1,500 units installed at major airports worldwide, it has the largest installed base of its kind and holds the highest security certifications. This next-generation CT screening system combines advanced detection capabilities with AI-powered automatic detection of explosives and object recognition, ensuring the ability to combat current and

evolving threats.

CT X-ray technology has transformed passenger checkpoint screening, offering unmatched security standards, boosting operator efficiency, and reducing operating costs. The high-resolution volumetric 3D rotatable images, paired with the fastest belt speed in the industry, help streamline security queues, enhancing both the passenger experience and the level of security. In fact, the HI-SCAN 6040 CTiX has been proven to cut security times by up to 50%, with 90% of passengers at Milan Linate Airport passing through security in under five minutes.

A key advantage for airports worldwide is that the HI-SCAN 6040 CTiX requires no changes to existing infrastructure, utilising current electrical systems and resulting in minimal downtime during installation. It integrates seamlessly with both Smiths Detection and third-party security checkpoints. Additionally, it boasts the lowest energy consumption in its class, helping customers achieve their sustainability targets while also reducing noise and heat emissions, creating a calmer

screening environment and lowering ownership costs.

Smiths Detection's iCMORE automated object recognition software can be implemented alongside the scanner, enabling the automatic detection of an ever-growing list of prohibited items. This further improves security outcomes and operational efficiency. Moreover, the HI-SCAN 6040 CTiX includes the latest in data security features to safeguard customer data and assets from cyber threats.

To enhance operational efficiency even further, remote screening allows security operators to work in a calm environment, away from the bustling checkpoint, enabling faster and more accurate decision-making. This ensures a smoother baggage flow through screening, as networked images from all security lanes across the airport are sent to the next available operator. Not only does this optimise staff resources, but it also balances workloads between quiet and busy lanes, improving cost efficiency.

For more information, please visit: www.smithsdetection.com



Citation Longitude and its features prove true in 'whirlwind' around-the-world flight

By Braxton Jones, Multimedia Content Producer, Textron Aviation Inc.

Representing the ideal mix of modern design and cutting-edge technology, the Cessna® Citation Longitude® is the pinnacle of the Citation® family of business jets. The aircraft itself is more than just a means of transportation for Mike Shea, an entrepreneur and pilot, who is no stranger to adventure and opportunity. Instead, he sees the Longitude as a trusted aircraft designed and equipped with the necessities for global exploration. Shea seized the opportunity to experience his jet on an expedition around the world. To his approval, the aircraft and its capabilities surpassed all expectations.

Finding the skies

In his career, Shea mostly saw himself using aviation as a means for business pursuits, creating opportunities and accelerating his schedule thanks to his chosen method of transportation. His love for flying began well before he would find himself in the business landscape, having earned his private pilot's license at 17 years old. After owning several different

Citation® models, Shea took delivery of his Citation Longitude® jet in December of 2020 aiming for more on his missions.

"Now retired and flying for personal pursuits, one of my ambitions for the Longitude was to use it on longer international missions," Shea detailed. Reiterating his

desire for international travel, he found the ideal opportunity to live what he calls a pilot's dream, to fly around the world. Flying 53.5 hours and traveling more than 25,000nm, Shea chronicles how some of the aircraft's most important features enhanced his mission.





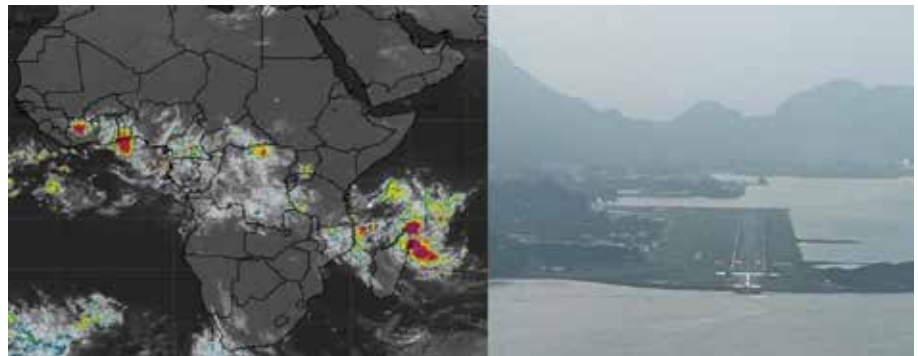
An unmatched cockpit experience, fit for global expedition

Being the only cockpit in its class holding the Garmin® G5000® avionics suite, Shea calls the technology at his fingertips a vital part of his mission.

Along with his full-time pilot Steve Paige, Mike solicited the help of his long-time contract pilot, Manoj Lamba to join the trip and normalize the flying duties required. Additionally, navigating the first leg of the journey from Thomasville, Georgia in the USA, to Cape Town South Africa would necessitate 18 flight hours with only three stops for fuel in a 24-hour span. To accomplish this, Mike sought out Ken Kemna, a friend and fellow Citation owner/pilot to round out a second crew. The all-hands approach would allow for a seamless experience for the initial stretch.

The Garmin® G5000® has several features Shea found to be beneficial on this expedition including FANS/CPDLC capabilities, global Iridium information and communication systems and a dual LASEREF Inertial Reference System. The cockpit was designed with international travel in mind.

Being able to see and digest weather information was one of the most important features Shea and his crew used on their journey. Another capability that



enhanced the pilots' peace of mind, was around-the-clock access to a dedicated support team of engineers, ready to help if needed. While they did not need to report any issues on their route, they felt supported despite the distance.

"Having the satellite phone on the aircraft and to be able to call Team Longitude if we needed was a great confidence builder for me," Paige explained. "We didn't need to, but I know how valuable and responsive this resource is when state side, much less, half a world away!"

When asked about his experience overall in the cockpit, Shea reiterated his confidence in the Garmin® G 5 0 0 0 ® and its importance,

saying, "I have total confidence when I am in the cockpit and when I'm not, I like knowing that my pilots have the best systems available to work with. It is a robust, multifaceted avionics system. It helps make the Longitude the leader of the pack."

Cabin comfort provides next level experience



With an extra emphasis on the cabin during the design of his aircraft, Shea says he takes pride in a cabin experience designed to be a “home away from home”, with passenger comfort in mind.

Sporting the best-in-class cabin decibel level, Shea was convinced that the Citation Longitude® jet represented an opportunity for ideal comfort. When he wasn't commanding the aircraft, Shea used the different seat capabilities, and pull-out couch for comfort and rest.

“When I was looking at the Longitude to purchase, the cabin experience made a huge difference, and we were mindful of that. The low decibel level was noticeable, people always tell me how quiet it is. We spent 18 flying hours in it in one day and it was extremely comfortable.”

The low-fatigue cabin paired with modern amenities such the large galley made the hours spent in the air more relaxing. With the ability to store and prepare fresh meals

for passengers and crew, Shea reiterates how the high level of luxury is an imperative feature of the jet.

“Instead of being a high occupancy aircraft, we were looking for a home-like experience. I have the things I need for long trips. Custom storage for food, the galley sink and a large countertop to prepare food on. I think anyone who could be looking for a top cabin experience would not be disappointed.”





An aircraft built for global reach

Keeping with their schedule using on-board systems to adjust navigation needs and enjoying the luxury amenities, the Citation Longitude® aircraft offers created ideal passage.

"The main thing that stood out would be the reliability of this aircraft, just the idea that you can keep going and going. I hadn't done that before, personally, so to experience it was unique," Shea said. "I gained more appreciation

for the aircraft; we crossed large spans of oceans and

visited very remote places to operate an aircraft. I had the confidence before, now I have the affirmation."

The team said this trip was a whirlwind that could not have gone better and the Citation Longitude® jet performed well beyond their standards. While his next international adventure may not hold the same rigor as this, Shea knows his aircraft is fit for the skies ahead.

"When traveling in the magnificent Citation Longitude® as a passenger or a pilot, there is simply no compromise. It has the speed, range, and a quiet low-fatigue cabin that make the time literally fly by," he beamed. "As a pilot, the precision and confidence gained from flying the most advanced flight deck in its class turns any challenges into routine. From my perspective, the Citation Longitude® is clearly an aircraft truly capable of global reach."





Kempegowda International Airport Bengaluru - T2 & Exploring the Sophisticated Taxiway System at Delhi International Airport - T1

By Jairam Panch, Chief Operating Officer, Turner International

Kempegowda International Airport Bengaluru's Terminal 2 (T2) represents a transformative approach to airport design, blending modern functionality with the rich cultural heritage of the region. Developed and operated by Bangalore International Airport Limited (BIAL), T2 is designed to reflect Bengaluru's identity as the "Garden City" while prioritising sustainability and passenger experience.

Nature-Inspired Design

The most striking feature of T2 is its integration of nature throughout the terminal. The design incorporates extensive interior planting, outdoor gardens, and natural materials, creating a serene environment for travelers. A 24,000 square meter outdoor forest belt surrounds the terminal, featuring indigenous flora, meandering paths, and two-story pavilions inspired by traditional Indian cane weaving. This immersive experience aims to connect passengers with nature

from the moment they arrive. Each step of passenger processing is designed to enhance the garden experience.

Sustainable Materials and Construction

Sustainability is one of the four pillars of T2, alongside Terminal in a Garden, Technology, and Art & Culture. The terminal features bamboo-clad interiors that mirror the forest belt's natural aesthetic. Locally sourced materials like red bricks and ivory-brown granite contribute to a warm and inviting atmosphere. The use of engineered bamboo not only promotes sustainability due to its renewability but also provides structural integrity, reducing the need for additional support. The terminal's design includes solar panels and rainwater harvesting systems that recycle stormwater runoff, ensuring that all indoor and outdoor greenery receives adequate water without relying on external sources.

Technological Innovations

In addition to its environmental focus, T2 incorporates several cutting-edge technology to enhance passenger experience including self-baggage drop systems. The terminal is equipped with 90 check-in positions, 54 immigration counters, and 36 departure gates designed to accommodate future growth. One of the standout innovations is the DigiYatra facial biometric system, which streamlines check-in and boarding processes by minimizing reliance on physical boarding passes. This system enhances security while providing a seamless travel experience.

Future-Proofing Growth

With projections indicating that passenger traffic could exceed 50 million annually in the coming years, T2 has been designed with future growth in mind. The terminal's structure allows for modular expansion without disrupting current operations.



A Multimodal Transit Hub

Adjacent to T2 is a multimodal transit hub covering 123,000 square meters. This hub connects various modes of transportation, including buses and taxis. It also features parking facilities and will include a metro station once the metro line becomes operational.

Kempegowda International Airport Bengaluru's Terminal 2 stands as a testament to innovative airport design that honors local culture while prioritizing sustainability and technological advancement. By weaving nature into the travel experience and employing cutting-edge solutions for efficiency and convenience, T2 not only enhances Bengaluru's status as a major aviation hub but also sets new standards for airports worldwide. As it prepares to welcome millions of passengers each year, T2 exemplifies how modern infrastructure can harmoniously coexist with environmental stewardship and cultural identity.

Taking Flight: Exploring the Sophisticated Taxiway System at Delhi International Airport T1

Delhi International Airport, a major aviation hub in India, boasts a sophisticated network of taxiways crucial for the efficient and safe movement of aircraft. Among its key features is the groundbreaking Elevated Eastern Cross Taxiway

(ECT). This 2.1-kilometer long, dual-lane structure is India's first elevated taxiway, connecting the Northern and Southern airfields.

The ECT offers significant advantages:

- ➔ **Reduced Taxiing Time:** By minimizing ground travel distances, it significantly reduces fuel consumption and emissions.
- ➔ **Faster Turnaround Times:** Aircraft reach gates or takeoff positions quicker, improving airport throughput and passenger experience.
- ➔ **Enhanced Operational Efficiency:** Minimized ground movement contributes to a smoother flight schedule, reducing delays.
- ➔ **Code F Capability:** Designed to accommodate the world's largest aircraft, including the Airbus A380 and Boeing 777.

Beyond ECT, the airport features an extensive network of interconnected taxiways, each designated with specific codes for air traffic control. This intricate system, akin to a network of "highways in the sky," guides aircraft safely and efficiently to their destinations.

Advanced technology plays a vital role in optimizing ground movement. Ground Movement Control Systems (GMCS) provide real-time monitoring and guidance, while clear signage, markings, and intelligent lighting systems ensure safe operations, even in low-visibility conditions.

Safety is paramount. The taxiway system undergoes regular inspections and maintenance, and advanced systems are in place to detect and prevent aircraft collisions with ground obstacles. Robust emergency response procedures are also in place to handle unforeseen incidents.

As air travel demand continues to grow, Delhi Airport is committed to ongoing upgrades and expansions, including potential future enhancements to the taxiway system to further improve efficiency and safety.

Taxiway System

The taxiway system at Delhi International Airport is a testament to the airport's commitment to technological advancement and a focus on enhancing the passenger experience while minimizing environmental impact. It plays a pivotal role in ensuring the smooth and efficient flow of air traffic, solidifying Delhi's position as a leading aviation hub in India.



Conclusion

The Delhi International Airport's taxiway system is a crucial component of its infrastructure, ensuring efficient and safe aircraft movement. The innovative ECT and advanced technology contribute to a smooth and reliable airport operation, solidifying Delhi's position as a major aviation hub.

About Turner

Turner has been working in India since 2007, with our headquarters in Mumbai. We are proud to have shaped some of the country's landmarks and continue to deliver an impressive portfolio of iconic and award-winning developments.

With regional offices in Delhi, Bengaluru, and Hyderabad, our team of over 450 professionals across provides project management, construction management, program management, and preconstruction advisory services.

We have managed the construction of aviation, residential, mixed-use, commercial, retail, hospitality, and cultural projects across India.

We combine local knowledge with global best practices to serve our clients' needs.

Our dedication to driving the most significant value during a project's planning and preconstruction

stages, fostering innovation, and embracing emerging technologies enables us to positively impact our clients and ensure their visions are realized.

Key Contacts

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Atul Shirke

Country Manager, Turner India

Lukas Szymczak

Project Director: Aviation & Special Projects

Turner



United Airlines

By Harvinder Singh, Director - Business Services & Head - Middle East & India, United Airlines



United Airlines, Inc. (United) is the only U.S. airline to consistently serve India for nearly two decades. Currently, United is operating a daily flight between Delhi and Newark/New York City, which it has operated since 2005. United's India flights are conveniently timed to connect to the airline's

extensive network of destinations throughout the Americas beyond Newark and to points across India such as Mumbai, Bengaluru, Chennai, and many others via United's partner Vistara Airlines beyond Delhi. At United, "Good Leads The Way". With U.S. hubs in Chicago, Denver, Houston,

Los Angeles, New York/Newark, San Francisco and Washington, D.C., United operates the most comprehensive global route network among North American carriers and is now the largest airline in the world as measured by available seat miles.

From Delhi fly nonstop to New York/Newark and explore 270 destinations across the Americas. The flights are operated on a state-of-the-art Boeing 777-200ER featuring up to 48 United PolarisSM business class lie-flat seats, 21 United Premium PlusSM seats, 39 Economy PlusSM seats and 149 United EconomySM seats.

United Polaris business class

- ➔ Lie-flat beds providing up to 198cm of sleeping space
- ➔ A feature-rich seatback entertainment system and personal entertainment device with noise-reducing headphones
- ➔ Chef-designed menus and a selection of award winning wine and champagne
- ➔ Sleep-themed amenity kits including spa quality products
- ➔ Cooling gel memory foam pillows and Saks Fifth Avenue luxury bedding — including pillows, blankets and duvets
- ➔ Dedicated check-in counters and security lanes, priority baggage handling and priority boarding with Premier AccessSM
- ➔ Access to United Polaris lounges and select airline partner lounges



United Premium Plus

- ➔ Plush seats with 96 cm of legroom, more recline and more space than most United Economy Plus and United Economy seats
- ➔ Individual power outlets and USB chargers
- ➔ Adjustable leg and footrests for additional comfort
- ➔ Upgraded dining options on dinnerware with flatware, a cloth napkin and complimentary alcoholic beverages
- ➔ A feature-rich seatback entertainment





system and personal entertainment device with noise-reducing headphones

- Saks Fifth Avenue luxury bedding, including a pillow and blanket

United Economy®

- Ergonomically designed seats with up to 81cm of legroom
- Blankets, pillows and earphones
- Complimentary meal service, featuring a 3-course meal, house beer and wines, soft drinks, tea



and freshly brewed ily coffee

- A feature-rich seatback entertainment system and personal entertainment device

The United app

Before their trip, customers should download their all-in-one travel tool that includes:

- Bag tracking
- Ability to store boarding passes
- Dynamic boarding times
- United Private Screening
- Travel Ready Center



Stay connected while you fly

We offer United Wi-FiSM on all mainline aircraft and two-cabin regional aircraft. Customers can purchase a United Wi-Fi plan onboard to gain full Internet access, enable text messaging and more.

Customers can also activate the free messaging plan on all Wi-Fi equipped aircraft*. The plan allows you to send and receive text messages using most apps that send messages over Wi-Fi (such as iMessage, WhatsApp, etc.)

*Except select 757s, 767s and 787s. SMS messages can't be sent or received because they can only be sent over a cellular network.

United customers in India may book flights by visiting united.com or contacting United reservations on 91-124-4315500 (Delhi), or via their travel agent.





Veoci's Digital Solutions for Airlines and Airports. Crisis, Drills, Checklists and a World Class system for Managing Crisis

By Maninder Singh Grewal, CEO - iPrime Services Pvt. Ltd. and Authorized Partner of Veoci



Overview:

The Veoci SaaS Airline Crisis Response Management module is designed to serve as a comprehensive guide to understanding the intricacies of emergency management in airlines, specifically within the context of Veoci Software.

Emergency management in airlines is a critical aspect of aviation operations, encompassing the **Standard Operating Procedures (SOPs)** and best practices that are implemented to prepare for, respond to, and recover from emergencies or disasters. These emergencies can range from aircraft accidents and natural disasters to threats and other

critical situations that could potentially jeopardize the safety and well-being of passengers, crew as well as ground casualties.

Airlines invest significant resources in developing comprehensive emergency response plans, conducting regular drills, and coordinating efforts from across various teams and departments.



This rigorous preparation is aimed at ensuring the highest level of safety and well-being for all passengers and crew during emergencies.

Drills and More Drills

The DRILL mode in VeociSafe allows you to run drills on demand. Run drills-based on one SOP or run multiple drills simultaneously. Run drills based on type of crisis or on a group or groups of responders. Analyze the success of failure of the Drill with a comprehensive after action report. Check response times for each stakeholder and map if there are improvements. Run the drill again and again till you are confident that the Airline or Airport can successfully manage any crisis. .

The ultimate goal is to transition from pen-and-paper processes to a digitized system for managing emergencies in airlines. By leveraging the power of digital technology, we aim to enhance the efficiency, accuracy, and effectiveness of emergency management procedures, thereby further strengthening the safety standards within the airline industry.

In essence, the need for effective crisis management in airlines cannot be overstated. It is a vital component of ensuring passenger safety, maintaining operational

continuity, and upholding the reputation of airlines in the face of potential crises. This module serves as a valuable resource in understanding and implementing these crucial procedures.

Problem Statement

In the high-stakes environment of airlines, effective emergency management is critical. The challenges are many and countless and with a strong Regulatory compliance and a exhaustive after-action reports demanded by Regulators, Airplane manufacturers and the public at large

Communication and Collaboration: One of the most persistent issues is fragmented communication. During emergencies, relying on manual methods like phone calls or emails often leads to delays and miscommunication. Critical information may not reach the right individuals promptly, hindering the swift response required in crisis situations.

Furthermore, coordinating responses across different departments and teams poses a significant challenge. Without a centralized platform to facilitate communication and collaboration, there's a risk of disjointed efforts and confusion about roles and responsibilities. This lack of clarity can result in inconsistencies in the actions taken, potentially

worsening the impact of the emergency.

Moreover, the absence of a centralized system for tracking and documenting incidents compounds the problem. Without a unified repository for incident data, airlines struggle to maintain accurate records and ensure compliance with regulatory requirements.

Manual documentation processes are prone to errors and omissions, making it difficult to provide thorough reports or demonstrate adherence to safety standards.

In essence, the absence of robust software solutions leaves airlines vulnerable to the chaos and inefficiencies inherent in manual emergency management processes. To address these challenges effectively, airlines must invest in comprehensive software solutions that streamline communication, facilitate collaboration, and ensure accurate documentation and compliance with regulatory standards.

Veoci Emergency Response Solution for Airlines

Veoci Software as a Service: Revolutionizing Emergency Management in Airlines

As an expert software for airline emergencies, we leverage our digital transformation expertise to



digitize operations, consolidating disparate applications onto a unified platform. This integration aims to mitigate last-minute chaos by providing an immediate, comprehensive response plan.

- **Quick Response:** With the push of a button, our system triggers an emergency plan that includes all pertinent data on passengers, crew, and cargo for the affected flight.
- **Efficient Communication:** Our platform facilitates seamless communication among various teams involved in resolving the situation, offering dedicated chat rooms to ensure smooth data flow.
- **Centralized Dashboard:** A single, centralized dashboard presents essential information necessary for prompt action, empowering decision-makers with real-time insights.

Simplified plan management and creation

- **Create Plans with Drag-and-Drop Interface:** With Veoci, use its intuitive drag-and-drop interface to build your emergency management plans. Define fields

for crucial information such as incident types, response procedures, resource allocation, and communication protocols. Customize notifications/room templates or create new plans from scratch based on your requirements.

- **Easily Make Edits and Updates:** With Veoci, you should be able to make edits and updates to your plans seamlessly. Whether it's changing details, updating tasks, or incorporating feedback from stakeholders, the software should facilitate quick modifications.
- **Centralize Plans in Digital Repository:** all your emergency plans organized in a centralized digital repository within the platform. This ensures easy access for authorized users and facilitates continuity in emergency preparedness efforts. Maintain consistency by copying existing plans as templates for new scenarios and modifying them as necessary.
- **Regular Reviews and Updates:** Schedule regular reviews of your emergency plans to incorporate lessons learned, changes

in regulations, or updates in best practices. Use the platform to facilitate review meetings, track progress, and document revisions. Continuously improve your plans to enhance your Emergency Operations Center's (EOC) preparedness for various contingencies.

Triage in Minutes:

With just one click, your airline's plan is initiated, initiating a response complete with essential notifications, checklists, tasks, and data. This automated procedure minimizes downtime in your airline's response, assembling a virtual team to triage the incident within minutes.

Callout Steps :

One click Panic button by IOC/FOCC/OCC - Triage Team notified - to join a virtual EOC/Command center.

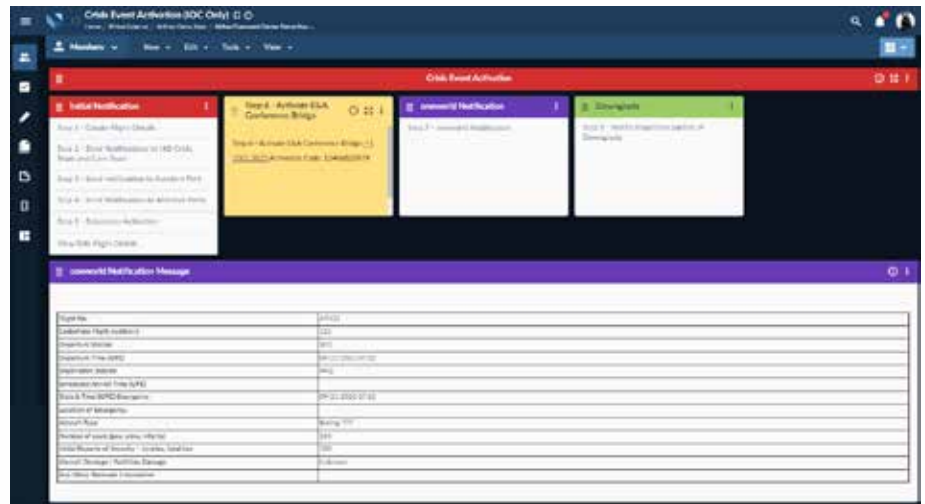
- Triage team online - incoming information updated real time - passenger manifest/crew/cargo/flight etc.
- The HQ team can specify precise contacts at ports and initiate airline alliance notifications to fulfill the airline's communication obligations as part of



aircraft incident response protocols.

- ➔ Assigned Responders; Notified by phone call/SMS/Email/Push notification.
- ➔ Affected & Enroute Ports & Alliance Airlines: Notified by Phone/SMS/Email.
- ➔ One Site: Capture all the responses real time - display on Dashboards or Message threads

Crisis Event Activation Dashboard



Integrate Manifests

Veoci integrates flight manifests from the Airline systems so that with one-click the manifest information is uploaded into Veoci. Veoci offers a comprehensive solution for flight manifest management, streamlining the process for airlines and aviation authorities to seamlessly handle passenger information and manifest updates.

Real-Time Dashboard:

Veoci provides a real-time data display on the dashboard, offering insights for informed decision-making. Users can visualize flight manifests, crew assignments, cargo status, and other relevant information at a glance. This real-time visibility allows stakeholders to monitor operations closely and

respond promptly to any changes or issues.

Activate Sub teams/SAT Teams

To fortify airline crisis management and enable prompt, coordinated responses to emergencies, Veoci implements Side rooms, designated online workspaces for various sub-teams.



Seamless Activation of Sub-teams

- ➔ Veoci enables the seamless activation of sub-teams by providing comprehensive and secure access to the platform. Administrators can quickly assign roles and permissions to team members, ensuring that each sub-team has



the necessary access rights to perform their tasks effectively during emergencies.

Individualized Dashboards for Sub-teams:

- Veoci grants secure access to individualized dashboards for each sub-team, ensuring dedicated and protected information access. Sub-teams such as Emergency Crisis Response, Communications, and Care Teams have their designated dashboards tailored to their specific needs, allowing them to focus on their assigned tasks without interference from other departments.

Manage your Checklists

To enhance crisis management effectiveness during emergencies, Veoci offers robust checklist functionalities tailored to sub-teams.

Convenient Distribution of Checklists:

- Veoci allows for the distribution of pre-populated checklists conveniently via email or direct access through the dashboard interface.

This ensures that each sub-team receives the necessary protocols and procedures tailored to their roles during emergencies.

- Users can access checklists seamlessly from their email or directly from the dashboard interface, eliminating the need for manual distribution and ensuring rapid deployment of response protocols.

Efficient Allocation of Action Items:

- Veoci integrates action items and tasks efficiently into the checklist system, enabling sub-teams to execute their tasks systematically and effectively.

- Checklists can be customized to include specific action items relevant to each sub-team's responsibilities, ensuring clarity and focus during crisis response efforts.

Real-time Monitoring of Checklist Progress:

- By leveraging Veoci's checklist functionalities, organizations can ensure systematic and efficient response protocols

during emergencies. The platform's ability to distribute pre-populated checklists, integrate action items, and monitor progress in real-time enhances overall crisis management effectiveness, empowering sub-teams to confidently execute their tasks and prioritize passenger safety.

Status Updates

In Veoci, the care team/SAT members can efficiently update the status of passengers and crew, document their current locations, and ensure accurate information management during incidents. Here's how:

Status Updates by Care Team/SAT Members:

- Care team members can access the platform to update the status of passengers and crew involved in the incident. They can provide updates on individuals' conditions, injuries, medical needs, and other relevant information.
- The platform allows for real-time updates, ensuring that all stakeholders have access to the latest information regarding the well-being



of passengers and crew members.

- Care team members can document the current locations of individuals involved in the incident using Veoci. This information helps track the movements of passengers and crew members, ensuring efficient response and coordination efforts.

Public Forms for Updates:

- Veoci offers public forms that allow authorized parties and volunteers to provide updates during emergencies. These forms can be accessed via a public link and are designed to collect relevant information from external sources.
- Authorized parties and volunteers can use these forms to report sightings, share information, or provide assistance, contributing to a collaborative response effort.

Real-Time Updates on Dashboards:

- Real-time updates provided by care team members and external sources are

displayed on dashboards for all teams to refer to. Veoci's dashboard interface offers a centralized view of critical information, ensuring that teams have access to timely updates and can make informed decisions.

- Dashboards can be customized to display relevant data, including passenger and crew statuses, location information, incident updates, and more.

Identification of Duplicate or Incorrect Names:

- Veoci's data management features enable the identification of duplicate or incorrect names of individuals involved in the incident. The platform can perform automated checks to detect duplicates and flag discrepancies in passenger and crew manifests.
- Real-Time Updates on Dashboards:

Escalations and Escalations Rules:

Define the escalation rules and protocols to be followed in case of delays or non-compliance at any step of the workflow.

- **Field Types:** Specify the type of data entry expected for each field within the workflow steps (e.g., text, numeric, date, dropdown selection, checkbox, etc.).

- **Mandatory Fields:** Indicate whether each field within the workflow steps is mandatory or -- optional for completion (Yes/No). This ensures that essential information is consistently captured and entered during the execution of the workflow in Veoci.

Exchange of Information from the Field:

By leveraging Veoci's Side rooms and tailored functionalities for sub-teams, airlines can effectively manage crises, prioritize passenger safety, and ensure a prompt and coordinated response to emergencies. The platform's comprehensive support and secure access capabilities empower each team to adeptly address critical situations while maintaining data integrity and confidentiality.

About Veoci SaaS

Veoci stands as a premier cloud-based, no-code software solution, offering unparalleled reliability, scalability, and efficiency to meet the dynamic needs of modern



organizations. Designed to seamlessly integrate into various workflows without the need for extensive coding, Veoci ensures uninterrupted operations with its

robust infrastructure, providing round-the-clock availability and optimal performance.

With a focus on scalability, Veoci effortlessly accommodates large user bases and teams, empowering organizations of all sizes to streamline their processes and enhance collaboration. Whether managing critical incidents, coordinating complex projects, or facilitating routine tasks, Veoci's agile platform adapts to evolving demands, fostering productivity and innovation.

Available on web, mobile, and tablet platforms, Veoci ensures easy access and seamless collaboration across devices, empowering users to stay connected and productive from anywhere. Whether in the office, in the field, or on the go, teams can access Veoci's full suite of features to efficiently drive and achieve their goals.

As a no-code solution, Veoci significantly reduces costs and accelerates delivery times, eliminating the need for extensive development resources and allowing organizations to rapidly deploy customized solutions. Backed by cutting-edge technology and industry-leading security measures, Veoci instills confidence

in users, safeguarding sensitive data and ensuring compliance with regulatory standards.

Summary

Every crisis is subject to intense analysis and inspection to find the underlying Root Cause Analysis and requires sharing of data with Regulators. With the Veoci platform all data is preserved and is available digitally in a single source and there is no searching in folders and files and individual laptops and smartphones to find data.

The Veoci Crisis Management Solution is comprehensive and configurable. It covers all the critical moving parts of a efficient and world class emergency response . The Drill mode ensure that you are confident that your enterprise can meet any challenge and successfully manage any crisis.

About Veoci Inc.

Often Imitated, Never Duplicated.

Veoci Inc., based in New Haven, Connecticut, is a Gartner Cool Vendor and a Gartner Magic Quadrant entrant for Emergency Response Management. Solutions on the Veoci Platform power large organizations as well as

small companies. Continuously evolving and ensuring customer satisfaction at the highest levels, Veoci has a strong customer base, including world leaders in many industry and service segments.

Veoci has been conceptualized and built by pioneers, tracing 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.

Veoci is a platform designed for developing applications, from simple approval forms to coordinated response plans, to highly complex continuity management programs—anything is possible with Veoci.

Veoci works with a large number of aviation customers across the U.S., Canada, and India, delivering the full range of solutions required to run airside operations at an airport. Veoci's airport solutions are comprehensive, easy to use, and quick to deploy. It is as equally suited to single airports as it is too large for multi-airport operators. Customers use the Veoci Platform to manage day-to-day operations, including part 139, and respond to crises and emergencies.

Two of the world's largest airlines use our Airline Crisis Management Solution. Our experience and background from GE Aircraft



Engines means we build everything to be secure, reliable, and safe. The Veoci Presence in Aviation is vast and growing.

About iPrime Services

Based in Noida, India (in the National Capital Region around New Delhi, iPrime Services is Veoci Inc's Authorized Partner in APAC and EMEA since 2016.

As a Technology provider, over the last 25 years, iPrime has enabled companies, institutions, and government agencies to use technology to achieve concrete business and institutional goals. Our customer list includes large companies, enterprises, and two teaching hospitals with a capacity of more than 1500 beds. Many of our clients have been with us over these long years, reaffirming our

core goal of delivering value and maintaining the highest levels of customer satisfaction.

In 2022, iPrime helped secure a game-changing order in the Aviation sector in India to digitize and transform airside operations for a large Airport operator. This lays down a highly scalable and reliable digital framework for airside operations that can easily expand to over 50+ airports (large and small). Iprime has led this project on behalf of our Principles and is in the final stages of completion.

In the airline sector, we delivered an Emergency Response Management (ERM) solution to one of the largest airlines in Asia - a project managed and delivered from the Noida location. The project covers 75+ locations

served by the airline, is configured with multi-layered crisis scenarios, and was released into production, replacing a legacy product after 9 months of rigorous testing. The success has led to subsequent orders for Crisis Response Management (CRM) scenarios and a total Business Continuity Plan (BCP).

We have ambitious plans to build futuristic and Ai driven models for Aviation both for Airports as well as Airlines and use our base in India to engage with customers and provide the highest levels of customer satisfaction to our clients.

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“Structural Innovations in Airport Terminal Design: Long-Span Roofs, Seismic Resilience, Functional Aesthetics and Sustainability”

By Abhishek Bhargava, C.Eng. MIE, Principal, Walter P Moore Engineering India Pvt. Ltd.

The rapid growth of global aviation is driving an unprecedented demand for modern, efficient, and resilient airport infrastructure. As passenger volumes soar and climate change intensifies, airport terminals and ancillary structures must evolve to meet these challenges. The design goes beyond aesthetics and functionality, requiring a tandem play between architectural, structural engineering, façade systems, traffic assessments, parking, and construction methodologies. Long-span roofs, integral to modern terminals, offer vast, unobstructed spaces needed for operational efficiency and passenger experience. Yet, these must be engineered to withstand seismic activity and extreme weather events, ensuring safety and longevity. Robust designs must also incorporate secure features to guard against man-made threats, such as terrorism, insulating passengers, and vital operations.

Equally important is the consideration of erection sequence engineering, optimizing the construction process for



Pic1 – Curb side Canopies – Hartsfield Jackson International Airport

efficiency and cost-effectiveness while minimizing disruptions. Modularization, a growing trend in construction, allows for faster assembly and potential adaptability for future expansions. The synergy between structural integrity and architectural plans must support not only the terminal’s functionality but also integrate seamlessly with airside and city-side developments. With sustainability and resilience at the forefront, the next generation of airport terminals must embody innovative design principles that address the complexities of today’s aviation demands while preparing for tomorrow’s uncertainties.

Synergy between critical engineering services:

Walter P Moore has had the privilege to partner and collaborate on numerous aviation focused projects from the LAX (Los Angeles International Airport) to SFO (San Francisco International Airport) to OMA (Omaha International Airport) to EWR & JFK (Newark, New York International Airport) to Hartsfield Jackson at Atlanta, Louise Armstrong Airport at New Orleans and TPA (Tampa International Airport) besides many others. With over 295 aviation projects since 2000, totalling \$25 billion in construction costs, the team has

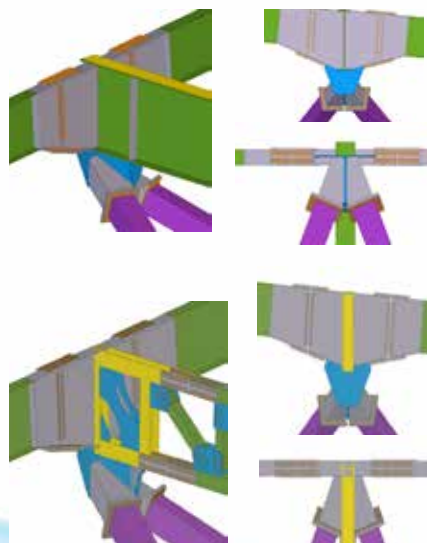


Pic2 – JFK New Terminal One, NYC

experienced numerous challenges and demanding terminal design needs for the next generation of airport infrastructure.

While there are several unique and complimentary disciplines under one roof on any standard aviation project, as a firm, we see that there are a handful that we find to be the most synergistic when working on new construction. The structural and enclosure synergy allows for integrated solutions that offer efficient designs as well as elegant integration of secondary structures. Our construction engineering team, which offers services, like LOD400 modeling of steel and rebar, connection design, and erection engineering is often brought in on the contractor end, but we have seen a lot of success when they are brought in earlier design stages in order to have greater control over quantities, and also provide early stage solutions to the integration of secondary steel

and primary structure to avoid surprises at later stages. *This may seem counterintuitive in the current Indian context but has significant merits to accelerate construction sequences, reduce design latency, and use data for better sustainable goals with Embodied Carbon and Life Cycle analysis offering insights on various alternatives considered.*



Pic3 – Roof Planar Elements Connection options

An increased interest in secure design requirements to provide Vehicle Impact studies and design solutions for drive up and drop off areas as well as studying the site for people and vehicle movement. Walter P Moore's team has also been engaged in the planning and safety design around the location of tanks that house fuel and other explosive/combustible components.

Aviation specific Structural Elements:

For any successful Terminal design, it is extremely critical to understand the underlying long-term and short-term needs for supporting facilities proposed. From Passenger Boarding Bridges (PBBs) to Gate Houses (GHs) to primary terminal zones with concessions and amenity spaces along with supporting security and logistics infrastructure. *Engineering long-span roofs have been a distinct challenge on such projects as it not only provides the large column free space demand for flexibility of space management but also adds to the overall aesthetics and the signature look and feel of a terminal structure.*

It is recommended that a BIM based cost optimization process is adopted for iconic projects where form and function both need to be met. For smaller aviation developments, it may be more prudent for going modular with typical roof spans



Pic4 – Omaha Eppley Terminal Modernization

and column grids for an engineering driven functional layout, since those decisions lead to comparatively lower costs and simplified/quicker construction timelines. Considered New Orleans' most transformative project, the Louis Armstrong New Orleans International Airport's (MSY) iconic curved design is inspired by the "crescent city" and the flow of the nearby Mississippi River. Its massive, curved curtainwall, T-shaped spherical roof, wide-open interior spaces, and hurricane-prone location required an equally unique structure. As lead structural and enclosure engineers, Walter P Moore's integrated team was challenged with providing a hybrid of structural-steel beams and a radial grid of concrete columns, each requiring a unique connection due to the roof's spherical design. *Walter P Moore's innovative digital workflow and design for the new terminal resulted*

in steel bids that were \$800,000 lower than anticipated; 90% fewer RFIs; and a total of eight weeks saved in construction design, steel fabrication, and erection.



Pic5 – New Orleans Airport, New Terminal

Critical facilities like the Air Traffic Control (ATC) tower design demands operational readiness under the most severe of climatic hazards and seismic conditions. The Air Traffic Control Tower and Integrated Base Facility at the San Francisco International Airport represent several firsts for Walter P Moore and the US Federal Aviation Administration (FAA) — the first

tower delivered with the airport offering an observation cabin with a 270-degree unobstructed view.

The tower's structural system, a cast-in-place reinforced concrete core cylinder, was selected employing performance-based seismic design. The tower was designed using vertical post-tensioning to provide a self-centring action in the event of a major earthquake as well as a tuned mass damping system to mitigate accelerations due to wind. At the tower base, a three-story, 55,000-sf integrated base facility (IBF) serves as office and administrative space for both the airport and the FAA. It features office spaces, meeting rooms, wellness spaces, and terminal spaces that provide a secure connection for passengers between terminals. The IBF also incorporates blast resistant design along the roadway. Walter P Moore's team performed a nonlinear time history response analysis to verify that the expected behavior of the structure would meet the airport's performance objective of remaining operational at the maximum considered earthquake (MCE).

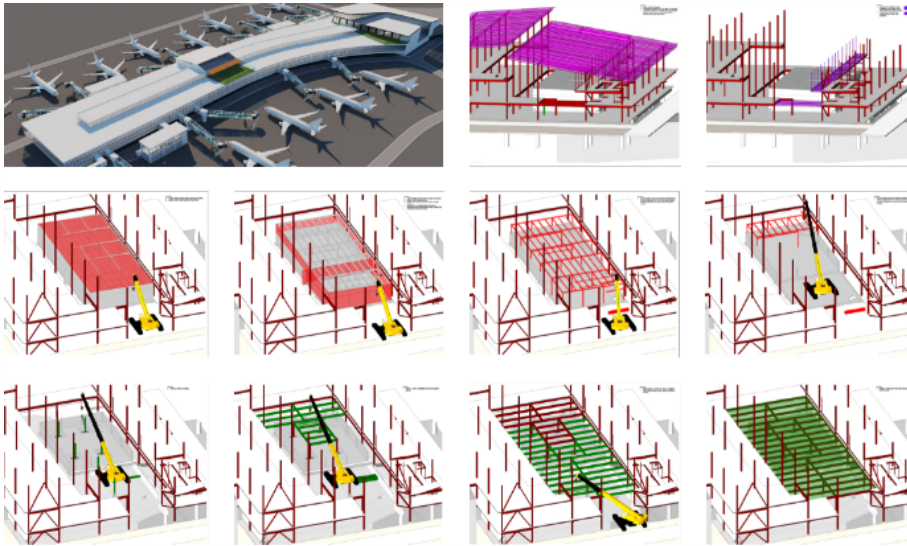
Be it, additional gates, new arrival or departure hall experiences, additional rigging on existing roof, upgradations to baggage handling systems, or connected parking garage modifications, our team at Walter P Moore has been exposed to some interesting challenges and have responded with innovative solutions on all instances.



Pic6 – ATC, SFO

Sequencing of the various enabling projects is a considerable challenge on projects where the primary goals of safety and providing uninterrupted passenger service are paramount OR when the project is built in phases to strategically commission and de-commission various components at specific points in time. Our engineers worked collaboratively to provide a phased design approach that provides the optimal passenger experience and allows all critical airport functions to remain operational during construction. This is highly essential especially when a significant portion of the new terminal concourse is constructed on top of and in between existing, operational portions of the facility.

Modularization within large aviation projects is another opportunity which should not be discounted. This can happen at multiple levels, either at component design level or at erection using similarly fabricated segments. One such recent example from the team’s playbook has been the development of *an innovative modular approach to the fabrication, assembly, and installation of the roof* at the PDX Portland Airport. Walter P Moore supported the client and Contractor to determine how to build, transport, and erect the new roof structure. The design was segmented into multiple “cassettes”, each approximately



Pic7 - Construction Sequencing

80 ft x 170 ft, which were prefabricated in an adjacent laydown area, transported to the terminal building, lifted to the proper elevation, and launched into their final position above the existing terminal.

Generational leap for Aviation projects:

To effectively integrate the skills and services of our practice areas

into a team of experts capable of solving our client's most complex challenges, Walter P Moore has adopted a wholly digital approach to projects. *We use high-fidelity digital models created and updated by our teams who have broad parametric capabilities and BIM skills. From early concepts to fabrication models, our goal is to deliver highly accurate and data-rich models that can be used by every member of the project team.*

This allows us to also tap our subject matter experts on specific topics, integrate data within a centralized database, and move it between various delivery platforms commonly used for coordination in whichever software that may be appropriate. Parametric design capabilities help inform design exploration by providing quick and detailed feedback so that clients can create and evaluate multiple design options. *A digital approach allows our project leaders to estimate quantities and convey complexity so that design teams can quickly and transparently establish budgets and schedules.*

Most importantly, meeting goals related to sustainability shouldn't remain an operational aspiration, but also become an Embodied Carbon-based assessment. Better data management allows better decision-making to steward the project towards larger NET-Zero goals and to create more resilient facilities.



Pic8 - Modularization on Roof Design & Construction

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Reimagining Indian Aviation: Resilience, Sustainability, Digitalization and Global Integration

By Sandeep Bahl, Executive Program Director, US-India Aviation Cooperation Program

The Indian airline sector stands at a crossroads, marked by unprecedented challenges and remarkable opportunities. The dynamic nature of the air transport industry, influenced by both controllable and external factors, has shaped its trajectory over the years. From the disruptions caused by the pandemic to the rising imperatives of sustainability and technological innovation, the industry is undergoing a transformation that demands adaptability and foresight. While some Indian carriers have managed to achieve cost efficiencies through consolidation, better fleet utilization, ancillary revenue generation, and aggressive pricing strategies, the industry as a whole faces challenges in keeping costs competitive. Low-Cost Carriers (LCCs) in India, such as IndiGo have relatively lower CASK (INR3.25 ex Fuel, Q3FY25) compared to legacy carriers but still struggle to match the cost structures of international budget airlines like Ryanair or AirAsia.

Europe's Lowest Costs - Gap Widens							
€ per pax	RYA	WIZ ^{EU}	EZJ	LUV	IAG	LUF	AFKLM
Staff/Efficiency	8	8	14	75	47	44	92
Airport & Hand.	8	14	26	12	47	28	40
Route Charges	6	6	6	-	6	6	6
Own'ship & Maint.	8	17	15	18	40	54	54
S, M & Other	4	7	24	27	19	32	30
Unit Cost Ex Fuel	34	52	85	132	159	164	222
Net Fin. (Inc.) / Exp. ^{EU}	(0.3)	1.9	(0.1)	(2.3)	6.3	2.8	3.7
Gap Widens:	33.7	53.9	84.9	129.7	165.3	166.8	225.7
		+60%	+152%	+285%	+391%	+396%	+570%

Q3 FY25 Results

Source: investor.ryanair.com

A Post-Pandemic Reset

The COVID-19 pandemic was a pivotal moment for India's airline sector. It exposed vulnerabilities in operational and financial structures, leading to the exit of several operators. However, the recovery has been robust, with passenger traffic steadily increasing and airlines regaining capacity. The pandemic underscored the importance of financial resilience and strategic planning, prompting airlines

to rethink business models and embrace ancillary revenue streams such as premium services, co-branded credit cards, and unbundled fares.

Consolidation: Reshaping Competitive Dynamics

India's airline sector is experiencing a wave of consolidation. The merger of major carriers and the exit of weaker players are reshaping market dynamics.



Financial Summary

Particulars (in INR million)	Quarter Ended		Favorable / (Adverse)
	Dec '24	Dec '23	
RSH (Billion)	40.8	36.5	13.0%
Total Income	229,926	200,683	14.0%
RASH* (INR)	5.44	5.34	1.0%
Total expenses	204,057	179,638	(19.9%)
CRSH* (INR)	4.83	4.52	(6.8%)
CRSH ex Fuel** (INR)	3.25	2.64	(23.1%)
EBITDA†	60,947	54,751	10.2%
EBITDA Margin (%)	27.4%	28.1%	(0.7 pts)
EBITDA† (ex-fuel)**	74,560	55,990	34.9%
EBITDA† Margin (ex-fuel)**	33.7%	28.4%	5.3 pts
PBT	25,273	29,985	(15.7%)
PBT Margin (%)	11.4%	15.4%	(4.0 pts)
PBE	24,488	29,981	(18.3%)
PBE Margin (%)	11.1%	15.4%	(4.3 pts)
PBE (ex-fuel)**	38,661	30,490	26.1%
PBE Margin (ex-fuel)**	17.4%	15.7%	1.7 pts

* Net of finance income of INR 7,605 million and INR 5,834 million for quarter ended Dec '24 and Dec '23 respectively.
 † Net of finance loss and gain on forex hedging of INR 501 million and Nil for quarter ended Dec '24 and Dec '23 respectively.

Source: www.goindigo.in

Consolidation offers potential benefits such as economies of scale, improved profitability, and enhanced connectivity through hub-and-spoke models. However, it also raises concerns about reduced competition, higher fares, and regional connectivity. Balancing these factors will be critical to the sector's long-term growth.

Sustainability: The Need for Green Aviation

As climate change becomes a pressing global issue, the Indian aviation sector must prioritize sustainability. The adoption of Sustainable Aviation Fuel (SAF), investment in more fuel-efficient aircraft, and operational measures to reduce emissions are becoming non-negotiable. Global initiatives and partnerships, along with government support, will play a

pivotal role in accelerating the transition to greener aviation.

Technological Innovation: A Game Changer

Technological advancements such as unmanned aircraft systems (UAS), digitalization, and artificial intelligence are transforming the aviation landscape. These innovations are not only enhancing operational efficiency but also opening up new revenue streams. For instance, UAS can revolutionize cargo transport, while AI-driven analytics can improve demand forecasting, pricing strategies, and customer engagement. India's digi yatra with nearly 10 million users has streamlined contactless passenger processing at airports and its achievement underscores the growing popularity with 30,000 daily app downloads and efficient travel experiences.

Open Skies Agreements: Balancing Liberalization and National Interests

India's participation in global alliances and the liberalization of air services through open skies agreements can expand international connectivity and trade opportunities and has immense potential to benefit customers and the economy as a whole. Open skies agreements, which allow greater flexibility in air traffic rights between nations, can lead to increased competition, improved connectivity, and more affordable fares for passengers. However, ensuring that Indian airlines are equipped to compete on a global stage remains a challenge.

Rather than focusing solely on protecting Indian airlines, the emphasis should shift toward creating a competitive environment that prioritizes the broader interests of consumers and the nation. Liberalized agreements encourage foreign carriers to invest in Indian routes, fostering enhanced trade, tourism, and economic growth. By increasing the number of players in the market, passengers gain access to more flight options, better services, and competitive pricing.

At the same time, liberalization can drive Indian carriers to innovate, improve efficiency, and strengthen



their global competitiveness. Instead of being shielded from competition, Indian airlines should be supported in becoming resilient and globally competitive through policy measures.

Skills Gap and Workforce Development

The rapid growth of India's aviation sector has exposed a significant skills gap, particularly in areas such as pilot training, maintenance engineering, and ground handling. Addressing this gap requires a collaborative approach involving government, industry stakeholders, and educational institutions. Initiatives to develop a skilled workforce are essential for sustaining the sector's growth and competitiveness.

Financial Forecasting and Fleet Planning

Financial stability remains a cornerstone of the sector's growth. Accurate financial forecasting, efficient fleet planning, and strategic investments are crucial for maintaining profitability in a highly competitive market. Airlines must strike a balance between expanding capacity and ensuring

financial discipline to navigate economic uncertainties effectively.

The Way Forward

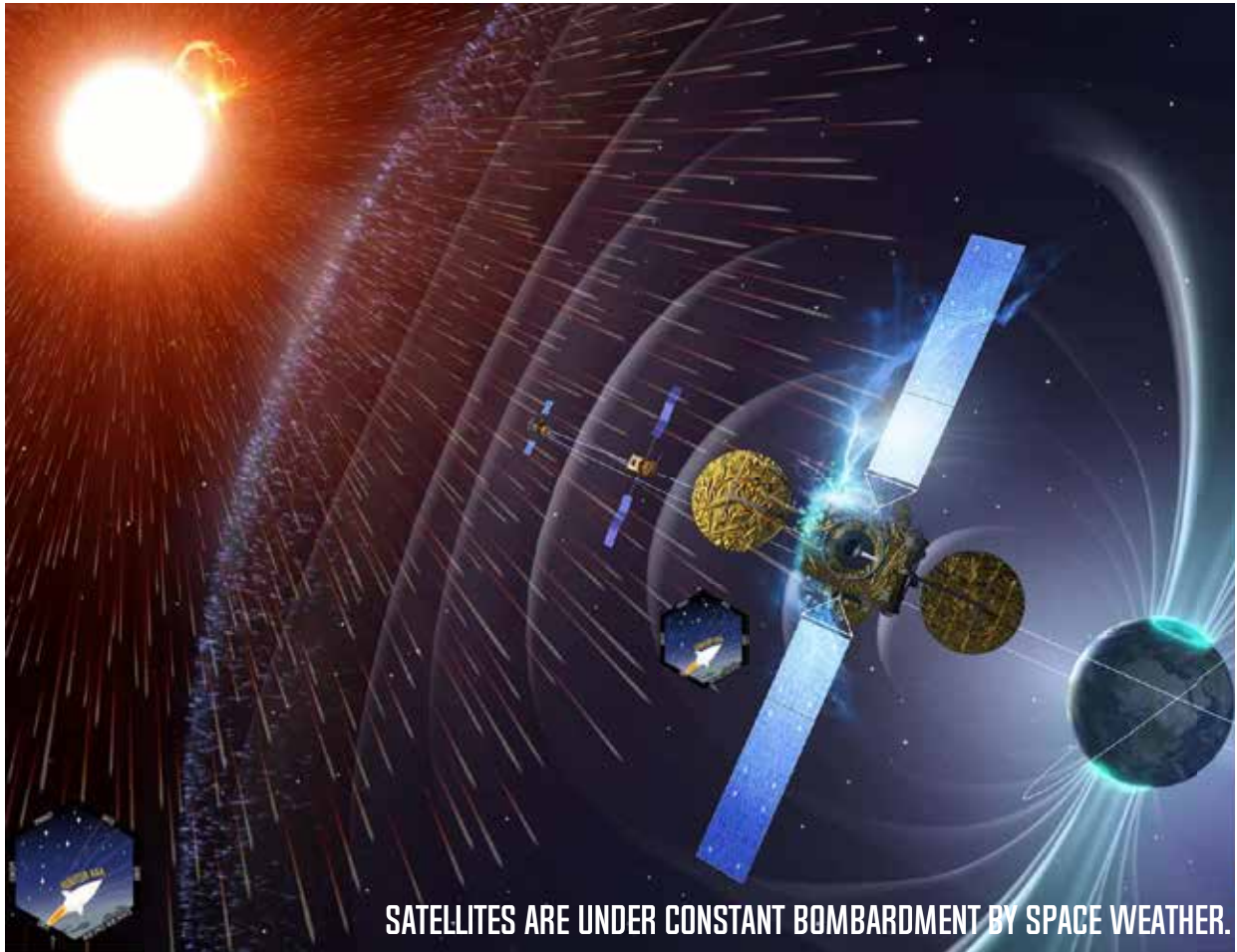
India's airline sector is a microcosm of the broader challenges and opportunities facing global aviation. By addressing critical issues such as sustainability, consolidation, skills development, and technological innovation, the sector can chart a path of sustainable growth. Policymakers, industry leaders, and stakeholders must collaborate to create a regulatory framework that fosters innovation, competition, and resilience.

The government initiative to develop 50 top tourist sites and add 120 more regional connectivity services UDAN scheme will significantly boost local economies through multiple strategic approaches, as this will create opportunity for regional airlines and potentially carry an additional 4 crore passengers over the next decade.

The interconnected elements of India's air transport economics and finance present a complex yet exciting landscape. The U.S.-India Aviation Cooperation

Program (ACP) and its members play a crucial role in supporting this transformation by fostering strategic partnerships, knowledge exchange, and technological advancements. Through collaborative initiatives in areas such as infrastructure development, air traffic management, sustainability, and workforce training, ACP members can help India enhance operational efficiency, safety standards, and overall aviation growth. By leveraging global best practices and innovative solutions, this partnership can accelerate the modernization of India's aviation ecosystem, making it more resilient, digital, sustainable, and globally competitive. By leveraging the both countries' inherent strengths and embracing transformative change, the Indian aviation sector is poised to emerge as a global leader in air transport.

Keywords: Airline Consolidation, Hub-and-Spoke Models, India's Airlines Skills Gap, Ancillary Revenue, Financial Forecasting, Fleet Planning, Global Alliances, Open Skies Agreements, Sustainable Aviation Fuel (SAF), Unmanned Aircraft Systems.



SATELLITES ARE UNDER CONSTANT BOMBARDMENT BY SPACE WEATHER.

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**SRIKANTH KODEBOYINA,
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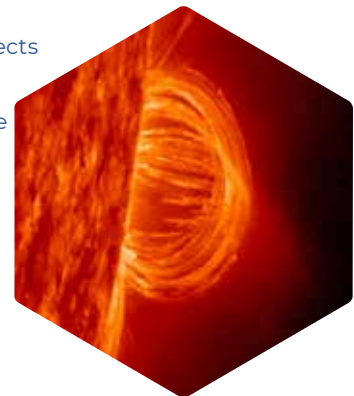
BLUE EYE SOFT (BES) is working to build and mature Space Anomaly Forensics & Environment Resolution (SAFER™), a platform that predicts potential satellite anomalies based on historic space weather data in its initial versions. In its later versions, SAFER™ will provide real-time anomaly predictions using real-time space weather events.

Space weather events such as solar flares impact objects in space as well as on the ground. The civil world, the commercial world, and the defense industry depend heavily on modern infrastructure like aviation, GPS, and communications, all of which are monitored or served by satellites. Impact on satellites and on other infrastructures translates to impact on the global economy and can endanger human life.

We make use of the advanced techniques and models that NOAA/SWPC/NASA/ESA and other space weather monitoring organizations develop to predict potential satellite anomalies based on space weather events. BES combines that data with various satellite telemetry characteristics and orbital conditions using a combination of AI models, predictive analytics, domain specific algorithms, front end visualizations, and an interactive dashboard.

Basically, we use advanced analytics and fusion capabilities to predict these anomalies, and the product will notify satellite operators automatically so they can take the best course of action as quickly as possible. SAFER™ will serve both government and commercial operators and have the highest grade of security protocols.

During the Ignitor program, Blue Eye Soft was selected for the New Mexico Small Business Assistance Program. Working with the Anderson School of Business Global Scaling Challenge, Sri was able to focus on transitioning the company's products to the commercial sector. The company was also honored with an Export Achievement award from the U.S. Dept. of Commerce and the U.S. Commercial Service for achievements in the global marketplace.



Space weather, such as solar flares, can negatively affect satellites.



US - INDIA AVIATION COOPERATION PROGRAM (ACP)

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