

# PAKISTAN CAA-CATI PERIODICAL



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CIVIL AVIATION TRAINING INSTITUTE HYDERABAD

## INNOVATIONS IN AVIATION

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### From The Editor Desk

Dear Readers,

CATI is pleased to introduce the first edition of our quarterly periodical for the year 2024, themed 'Innovations in Aviation'. This edition brings together a collection of insightful articles and features that explore the latest advancements and trends in our industry.

In this issue, we are thrilled to present articles on 'Innovations in Aviation Trainings' and 'Global Aviation Trends', offering valuable perspectives on the cutting-edge developments shaping the future of aviation. We also cover the latest ESP and CPD events held at CATI during 1<sup>st</sup> Quarter of 2024, highlighting the key takeaways and discussions from these distinctive gatherings.

Additionally, we shine a spotlight on "Aviation History in Subcontinent," providing a rich historical context to our ongoing journey of progress in commercial aviation. Our regular segment, "News & Snippets," keeps you informed of the latest developments and happenings in the CATI.

We eagerly anticipate your feedback and contributions, as your engagement is pivotal to our shared journey of knowledge and advancement.

Happy reading!

Best Regards,



Nawaz Ahmed Sipra,  
Chief Editor

# \* Innovations in Aviation Trainings

By Nawaz Ahmed Sipra  
Chief School of Air Navigation Services

Nvidia's CEO, Jensen Huang, predicts AI advancements may make traditional coding obsolete. AI could enable software creation through natural language, changing how programming is done. In aviation training, AI driven simulators enhance learning by providing realistic, personalized, and adaptive scenarios for air traffic controllers and pilots. This aligns with Huang's vision of leveraging AI for improved safety and efficiency in aviation.

Almost a decade ago, manual simulators were used for Air Traffic Control training, but they were not very effective. Most of the effective training was taking place during the on-the-job training period. In 2016, CATI Hyderabad revolutionized its training environment by introducing 3D Aerodrome and Air Traffic Management Simulators. These state-of-the-art upgrades create a realistic training environment for Air Traffic Controllers, capable of simulating a wide range of aircraft types and diverse weather conditions, thereby enhancing the overall training standards and experience.



Fire Fighting Training on Live Fire at CATI

personalized learning, adaptive training programs, and predictive maintenance training, leading to more efficient and tailored learning experiences. Furthermore, the incorporation of big data analytics will allow for better monitoring of trainee performance and identification of training gaps. These advancements will result in safer, more efficient, and more effective aviation training programs. It is our collective aspiration that the Civil Aviation Training Institute will uphold nothing less than the highest international standards to stay competitive in the modern world.

Besides the regular training programs, CATI also conducts quarterly workshops/seminars on the Continuous Professional Development (CPD) and Experience Sharing Platform at CATI. These activities provide the opportunities not only for the trainers and trainees but also the aviation community to gain first hand knowledge about advancement in the industry and to learn from the experiences of Aviation experts.



ATCOs' Training on 3D Aerodrome Simulator at CATI

In essence, the future of aviation training is on the verge of a significant transformation through the utilization of cutting-edge technologies. Virtual Reality (VR) and Augmented Reality (AR) are set to revolutionize training for Controllers, Firefighters, Electrical / Electronics engineers, Pilots, and Crew by offering immersive, lifelike simulations that enhance situational awareness and decision-making abilities. Artificial Intelligence (AI) will play a vital role in

# \* Advancing Aviation: Exploring 5G, AI, and Cybersecurity at CATI's CPD Seminar

On 15<sup>th</sup> February 2024, CATI Hyderabad, recognized as a Professional Engineering Body (PEB) by the Pakistan Engineering Council, organized its 8<sup>th</sup> Continuing Professional Development (CPD) Seminar. Titled "Impact of 5G, Artificial Intelligence, and Cyber Security in Aviation", the seminar brought together experts to explore the intersection of technology and aviation. Engr. Dr. Mujeeb Memon, Vice Chancellor of Sindh Madrassah-tul-Islam University, Karachi, graced the occasion as the Chief Guest, underscoring the seminar's significance. The Director CATI opened the event with a speech emphasizing the need to stay current with technological advancements for aviation safety and efficiency. Five distinguished presenters shared their expertise. Mr. Rizwan Malik, Senior Assistant Director Airworthiness, discussed the implications of 5G technology in aircraft operations. Mr. Harris Zikr-ur-Rehman, Joint Director CNS, examined the role of AI in enhancing aviation safety and efficiency. Joining online from Riyadh, Saudi Arabia, Mr. Sanaullah Malik, Ex-Additional Director Airworthiness, offered an international perspective on these advanced technologies. Mr. Mansoor Ali Leghari, Deputy Director ATS, explored the future potential of AI in air traffic services. Finally, Mr. Farhan Ali Qureshi, Senior Assistant Director IT, emphasized the critical importance of cybersecurity measures in protecting aviation infrastructure. Each presentation provided valuable insights into how these technologies can be integrated to improve aviation operations and safety, sparking engaging discussions and interactions among attendees.



The event underscored the importance of 5G, AI, and cybersecurity in modern aviation, providing practical knowledge and best practices for integrating these solutions to ensure operational excellence and safety. Engaging question-and-answer sessions followed each presentation, allowing attendees to delve deeper into the subjects discussed.

The Chief Guest, Engr. Dr. Mujeeb Memon, concluded the seminar with closing remarks that emphasized the transformative potential of these technologies. He highlighted the importance of continuous learning and adaptation in the aviation industry to keep pace with technological advancements and maintain high safety standards. His insights and encouragement were greatly appreciated by all attendees. The CPD event was deemed a resounding success, with the CATI auditorium filled to capacity. The audience included trainees from CATI, officers from the aviation industry, domain experts, university students, and academics from several universities. The seminar not only highlighted the current trends and future directions of aviation technology but also reinforced CATI's role as a leading institution in professional aviation training. The participants expressed their satisfaction with the quality of the presentations and the overall organization of the event. This CPD event further cemented CATI's commitment to fostering a culture of continuous professional development and staying at the forefront of aviation training and education.



# Wisdom and Inspiration : Learning from the Aviation Elders

Amidst the springtime splendor of CATI Hyderabad's riverside venue, the 10<sup>th</sup> Experience Sharing Platform (ESP) unfolded on March 7<sup>th</sup>, 2024. Air Marshal (R) Saleem Arshad, the esteemed Chief Guest and keynote speaker, is celebrated for his visionary leadership and transformative policies at PCAA. Additionally, Mr. Ahsan Malik and Mr. S. Maqbool Raza, both respected Ex-Directors from PCAA, shared their insights as keynote speakers, recognized for their significant contributions to the aviation industry. The event, attended by aviation professionals, trainees, teachers, and officials, offered a platform for valuable networking and knowledge exchange.



Mr. Sumair Saeed, Director of CATI, inaugurated the event, extending a warm welcome to the Chief Guest, keynote speakers, and attendees. He expressed gratitude for their presence, underlining the significance of sharing experiences to enrich the wisdom of aviation professionals. Mr. Saeed emphasized CATI's commitment to continuous learning and innovation, highlighting various initiatives implemented as part of taken under the Vision 2030. He encouraged active participation in discussions and networking, aiming to inspire collaboration and exchange of ideas for the advancement of the industry. With this, Mr. Saeed officially opened the event, setting the stage for a day dedicated to exploring and celebrating aviation excellence.



Mr. Ahsan Malik, Ex-Director Technical & Director P&D, brings over 40 years of experience in the aviation and engineering sectors. He notably managed the groundbreaking Aeronautical Communication and Control (AC&C) project, revolutionizing communication and radar technology at PCAA. The introduction of wide-body aircraft necessitated controlled airspace, prompting the development of navigation aids, communication, and navigation facilities. Mr. Malik embraced this challenge, delivering the project successfully. His commitment to training and development was exceptional. Reflecting on the AC&C project, he discussed challenges, such as unreliable data transmission networks, which led to the innovative use of VSAT technology. This approach, though risky, proved successful, earning acclaim for the AC&C project. He stressed the importance of innovation and integration in technological solutions, highlighting their role in promoting inclusivity and equal opportunities in society and the economy.

Air Marshal (R) Saleem Arshad, former DGCAA, was the esteemed Chief Guest at the event. His extensive experience spans various professional organizations, showcasing his diverse expertise. During his tenure as DGCAA, the organization experienced exceptional growth under his leadership, setting the highest standards of professionalism. He expressed satisfaction and appreciation for the ongoing work at CATI, emphasizing the need for modernization, adoption of the latest curriculum, and promotion of research-based learning.



He highlighted the importance of time management, noting that it allows for thoughtful decision-making, weighing options, and considering consequences. Effective time management creates opportunities for

learning, personal development, and taking on challenging projects, all crucial for long-term success. He stressed the importance of self-analysis, which enhances self-awareness and helps in making informed decisions. By analyzing experiences, challenges, and successes, individuals can identify areas for improvement and set meaningful goals.

Additionally, he emphasized the significance of matching the right person to the right job, highlighting that an organization's success depends on how effectively human capital is utilized. He advocated for an effective rewards and punishment policy to ensure a positive organizational culture, noting that such policies serve as motivators for desirable behavior and provide incentives for individuals to work towards goals. He appreciated CATI for following this policy diligently.



The 10<sup>th</sup> ESP proved to be a resounding success, offering a platform for aviation professionals to connect, learn, and gain inspiration. The diverse experiences and insights shared by the speakers left a lasting impact, motivating

participants to strive for excellence in their respective fields. As we conclude this enlightening gathering, we anticipate its enduring impact, fostering a culture of shared knowledge and community in the aviation industry.

It has been a tradition of each ESP, to pay a collective tribute to our colleagues who have departed this world for their eternal abode. In ESP-10, we commemorated the following deceased CAA employees:

- Mr. Zahur Ahmed (Ex-Director CATI)
- Wing Cdr (R) M Jahangir Khan (Ex-Director CATI / Ex-Director Operations)
- Mr. Hazoor Bux (Ex-Additional Director E & M)
- Syed Tanweer Haider (Ex-Snr Joint Director ATS / Ex-Deputy Chief School of ANS)
- Mr. Ahmed Hussain (Ex-Deputy Director Admin)

Mr. Maqbool Raza, a former Additional Director (Civil) at PCAA, dedicated 17 years to the organization with exemplary devotion. Renowned for establishing and maintaining high standards of professionalism and excellence, his expertise span various aspects of project management, including conceptualization, development, contractor evaluation, dispute resolution, project audits, and ensuring timely project delivery. Mr. Raza commended PCAA's systematic procedures, crediting the foresight of its founders. He emphasized the importance of continuous learning and loyalty to the organization. Reflecting on his tenure, which included overseeing the construction of the AC & C building, Mr. Raza highlighted the challenges of working under pressure. He advocated for breaking tasks into manageable steps, seeking assistance when needed, and fostering collaboration to achieve organizational objectives. He referenced the 80/20 rule, which suggests that 80% of outcomes result from 20% of efforts, emphasizing the importance of efficiency and focus in goal achievement.



During the event, Mr. Shah Monis Ahmed, Ex-Director Works and Development, conveyed his appreciation on behalf of all guests and the audience. He praised the management and execution of the event, highlighting the value of learning from the experiences of senior professionals. Mr. Ahmed commended the initiative, noting that such events ensure the continued transfer of wisdom and knowledge from seasoned experts.



As the event drew to a close, Mr. Sumair Saeed, Director CATI, extended heartfelt thanks to Air Marshal (Retd) Saleem Arshad, the Chief Guest, and all participants for their valuable contributions. He highlighted the profound insights shared during the event, emphasizing the importance of collaboration, knowledge exchange, and continuous learning and innovation at CATI. Mr. Saeed expressed eagerness for future events to further enhance growth and excellence in the aviation community.



## Insight on Global Aviation Trends

By Muhammad Arslan  
Deputy Director Air Traffic Services



The allure of aerospace technology has captivated humanity for generations, propelling our exploration of the skies and beyond, leading to profound breakthroughs. In a world that prioritizes connectivity and efficiency, these advancements hold profound significance. Presently, 51% of the global population resides within a room radius of an International Airport. Notably, approximately 400 departures are initiated every hour. Projections indicate that by the mid-2050s, the daily volume of flights worldwide is anticipated to surpass 200,000 departures and landing. With the inclusion of AI in automation, it remains intriguing to observe how technological advancement will continue to drive these transforming changes.

1

Big data encompasses vast and diverse sets of structured, unstructured, and semi-structured data that grow exponentially over time. These datasets are massive and intricate in volume, speed, and diversity, surpassing the capabilities of traditional data management systems for storage, processing, and analysis.

The rapid growth in data volume and accessibility is being driven by advancements in digital technology like connectivity, mobility, the Internet of Things (IoT), and artificial intelligence (AI). With data continuing to expand, new tools for big data are emerging to assist companies in collecting, processing, and analyzing data swiftly to extract maximum value from it.

Airlines can enhance their operations significantly by utilizing big data and connected aerospace technologies for Predictive Maintenance.

Data analytics, for instance, can forecast potential failures of aircraft parts, enabling maintenance crews to address issues up to three days in advance. Honeywell Technologies has developed more than 70 analytics models across multiple aircraft systems and types.



2

Biometric technologies such as facial recognition, fingerprint authentication, and retinal scanning will become the default way of verification. The verification process will soon become paperless with the integration of biometric systems for border control, airport checkins, onboarding, and immigration formalities. This will further extend to expedite the baggage claim processes.



Thales, a leading company, has unveiled Fly to Gate, an innovative biometric system centered around passenger convenience. This technology enables travelers to authenticate their identity using their mobile devices ahead of their departure or upon reaching the airport.

With this initial verification, traditional travel documents like passports and boarding passes become redundant. Facial biometrics play a pivotal role in confirming crucial stages of the journey such as check-in, baggage drop, security clearance, and boarding.

Consider the ease of conducting duty-free transactions or purchasing snacks with just a glance at a camera!

3

With 60% of the global population expected to reside in urban areas by 2030, the era of hybrid and electric flights is on the horizon. Airbus, Hyundai and other leading manufacturers are actively developing their e-VTOL models for urban air travel. One of these models, the City Airbus NextGen, is an electric, four-seat vertical take-off and landing (eVTOL) prototype. It operates on a lift and cruise concept, offering an 80-km operational range and a cruise speed of 120 km/h, making it ideal for various flight operations within cities and communities.

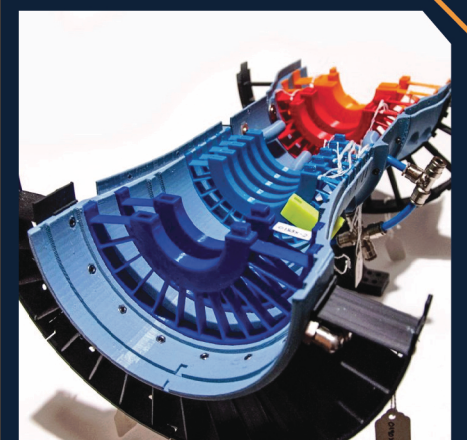


4

NASA, General Electric, and other aviation technology firms are collaborating on advanced four-dimensional trajectory (4DT) procedures for the Next Generation Air Transportation System (NextGen). These procedures involve precise aircraft navigation relative to moving references like other aircraft. For instance, Self Separation is for en route operations, aircraft would be able to alter their speed and trajectory in advance to avoid potential conflict, thereby increasing efficiency and reduce delays.

5

In 2015, the aerospace industry embraced 3D printing early on, with a value exceeding 4 billion dollars. Unlike traditional methods, 3D printing enables the production of intricate designs and customized components. Engineers can now manufacture complex geometries and lightweight lattice structures that were previously unattainable. Additive manufacturing allows for innovative solutions tailored to the specific requirements of aircraft. Unlike subtractive manufacturing, which involves cutting away excess material, 3D printing constructs objects layer by layer. This method reduces material waste, making it both environmentally friendly and cost efficient. Airlines and manufacturers benefit from minimized scrap and optimized resource utilization.



6

From AI-driven predictive maintenance to sustainable biofuels, these trends are shaping the future of air travel. As airlines and manufacturers embrace digital transformation, passengers can expect safer, more efficient flights and a seamless travel experience. The sky is no longer the limit; it's the canvas for groundbreaking technologies that propel aviation into new horizons.

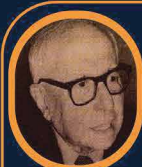




## Aviation History in Subcontinent

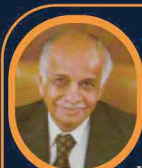
Compilation by: Zia ullah sheikh, FCILT  
Rtd. Sr.ATCO, Ex Dy Chief (ATS) CATI HYD

Aviation history in Pakistan has its own legacy since the beginning of this invention and arrival of first commercial aircraft in sub-continent in 1920's, many of legends who remain associated with initial aviation development made the solid foundation of aviation in newly established state of Pakistan in such a way that in 1970s Pakistan become the regional market leader in the field of aviation and helped many countries to establish their own airlines, Air Navigation system, Air traffic control & Airspace management. This includes the UAE, Singapore, Afghanistan & Libya. Some of the legends from the period 1947 to 1982 include:



Mirza Ahmad Ispahani, was a Perso-Bengali businessman based in Chittagong as a leading industrialist. He born at Yangoon (Burma) in 1898, went for schooling in Madras in India and after his early education at the age of 20, he joined his father's multi-dimensional business activities including jute, tea, textiles, engineering, shipping, matches and plywood in Calcutta.

Adamjee Haji Dawood businessman and philanthropist who founded Adamjee Group and activist in the Pakistan Movement - born in 1880 in Kathiawar, Gujarat in British India on 23<sup>rd</sup> October 1946. In 1947 the company was moved to Chittagong, East Pakistan. During the Pakistan independence movement Mr. Jinnah realizing that with the formation of the two wings of Pakistan, separated by 1100 miles, a swift and efficient mode of transport in the shape of an airline will be required. Orient Airways was founded by Mirza Ahmad Ispahani and Adamjee Haji Dawood by moving their airline business to Karachi the Capital city of newly established state of Pakistan. On the merger of Orient Airways with PIA Mr. Ispahani become the first Chairman of PIA. He is the longest serving chairman of PIA from its inception until 1962.



Mr. Ever Jamall is considered as one of the legendary pioneer / born Aviation man engaged in aviation since arrival of first civil aircraft in subcontinent brought by Mr. Tata. He joined Tata Airline in the Technical engineering branch as Apprentice engineer in June 1939 and remain associated with Tata Aircraft factory in connection with to setup manufacturing of aircraft in Bengaluru, India. His father was running insurance business in Karachi. After the creation of Pakistan when Pakistan National Airline PIA was in establishing process, he decided to migrate to Pakistan in 1952 and joined PIA on 1<sup>st</sup> March 1952 as Dy. General Manager Aircraft Engineering. He became the 7<sup>th</sup> Chief executive of PIA (1974 - 1980).

Mr. A.R. Khan joined Civil Aviation department as Air traffic Controller in 1950. Having the rich back ground of Navigation training with Royal Navy / Air Force and with the Australian counterparts was known as the Father of Flight Navigation in Pakistan Aviation circles. Being in Civil Aviation due shortage of flight navigator in PIA, He was used to go on PIA flight as flight navigator between Karachi and Dacca. He retired in 1982 as Director in CAA. Later his three sons joined PIA in the flying, flight operation and Engineering branch.



To Be Continued

## News and Snippets

### CATI Receives Historic Cessna Aircraft from Walton Flying Club for Monument Display

On 9<sup>th</sup> February 2024, CATI received two meticulously preserved Cessna aircraft, a 185C Skywagon and a 150D Skywagon, from Walton Aerodrome, Lahore.

Manufactured in 1964 and previously unserviceable, these historic aircraft now enhance CATI's aesthetics and symbolize aviation's rich heritage. Their display provides trainees and visitors with a tangible connection to aviation history, enriching the educational environment at CATI. This successful relocation shows CATI's commitment to celebrating and maintaining aviation history.

### Inaugural Training Initiatives by School of Regulatory Services/Functions

- On 25<sup>th</sup> February 2024, the School of Regulatory Services/Functions conducted its first course on Audit Techniques at the PEL Directorate, HQCAA. This course equips participants with essential auditing skills, covering methodologies, regulatory compliance, and best practices, marking a milestone in training regulatory professionals.
- Additionally, on March 20<sup>th</sup> and 21<sup>st</sup>, 2024, inaugural workshops on air passengers' rights were held at Jinnah International Airport Karachi. Focused on compensation for delays, cancellations, and baggage mishandling, the workshops saw participation from CAA, PIA, Airblue, Serene Air, and other stakeholders. These interactive sessions provided comprehensive insights into passenger rights and responsibilities, fostering discussions among attendees.

### Hands-On Training on Audit Module SAMS at CATI

On 28<sup>th</sup> March 2024, Mr. Khurram Shehzad Akram, Director SQMS, conducted a hands-on training session on the Audit Module SAMS at CATI. The session provided practical knowledge of the new SQMS audit system, engaging sectional heads, Chiefs of Schools, and the Director of CATI. This interactive training enhanced participants' ability to use the system effectively, marking a significant step towards strengthening CATI's quality management processes. The session equipped key personnel with the necessary skills to implement and manage the new audit system proficiently.

### Khatam-e-Quran Event at CATI

On the blessed night of 27<sup>th</sup> Ramadan, a Khatam-e-Quran event was held at the CATI Masjid on 30<sup>th</sup> March 2024. The Holy Quran was completed during Taraweeh prayers, marking a significant spiritual milestone. The event brought together trainees, staff, and members of CATI, who participated in and witnessed the completion of the Quran. The night was filled with spiritual reflection and devotion.