



Presentation

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In the first three decades of the 21st century, the world's society has realized the influence and importance of safety and security as the foundations of sustainable development. Moreover, recent events and developments, especially the coronavirus SARS-CoV-2 pandemic and the continual development of technology and global economic uncertainty, have indeed sharpened the problem of, among others, food safety and security, legal safety, land, and cyber security. The aviation industry is not immune to these developments, being inherently linked to all these safety and security dimensions. Thus, security and flight safety are of key strategic importance to the aviation industry, as accidents have the potential to affect customer choice and can severely impact an airline's business viability. For this reason, continual improvements are central to the growth and sustainability of the industry. According to Ascend (2017), fatal accident rate within the commercial aviation industry was 1 per 4.83 million flights in 2017, and the fatality rate was 1 per 900 million passengers carried. Despite being one of the safest sociotechnical systems ever developed (ICAO 2009), there is no such thing as absolute safety within aviation (De Florio 2016). In the years 2000–2010, Brazil witnessed its two deadliest accidents in history—Gol Airlines flight number 1907 on September 29, 2006 and TAM Airlines flight number 3054 on July 17, 2007—which generated the so-called Brazilian aviation crisis, exposing several vulnerabilities in the country's airline industry training and procedures, air traffic control and certification authorities' management mechanisms and associated dimensions (LABD 2007).

Being one of the top 10 economies in the world, Brazil is an important player in the international aviation scenario. Two important aspects in this context are: (1) Embraer, its aircraft manufacturer, has consolidated itself as the world's third most important player in this industry, led by Airbus and Boeing Aircraft Company; (2) along with India and China, Brazil were expected to have most of world's air traffic growth in the next decades (5–7%), occupying the 5th place passengers' increase by 2034 in the pre-pandemic scenario (Forbes 2016).

Brazil was one of the 52 nations to sign the Chicago's International Civil Aviation Convention on December 7, 1944 (ICAO 2022). In that same decade, the Technological Institute of Aeronautics (ITA), Department of Aerospace Science and Technology (DCTA)'s educational, scientific and technological was conceived and started its activities in 1950, in São José dos Campos, São Paulo state. Fifty-four years after, in 2004, ITA's Congregation approved the creation of its first aviation safety course, PE-Safety, the Specialization Course in Aviation Safety and Continued Airworthiness. For the last 18 years, ITA has offered certificates to more than 705 specialists who are spread and working over all continents. PE-safety's implementation involved the contribution of high-experienced professionals in the aviation sector, most of them coming from DCTA's institutes (mainly the Institute of Industrial Fostering and Coordination [IFI] and the Institute of Research and Flight Tests [IPEV]), Embraer and University of Southern California (USC).

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The success of the specialization offers in the first four years paved the way to the submission and approval of the Professional Master in Aviation Safety and Continued Airworthiness (MP-Safety) by ITA Graduate Council and Congregation in November and December 2006, respectively. Other than the organizations that contributed in the creation and establishment of the Specialization course, for the MP-Safety consolidation ITA's counted on the support of the Center of Investigation and Prevention of Aeronautical Accidents (CENIPA), DCTA's Institute of Advanced Studies (IEAv) and Institute of Aeronautics and Space (IAE). Up to now, 150 Master's degrees were offered in this course. Likewise the Specialization course, MP-Safety alumni are professionally working worldwide. From its inception, MP-Safety has been focused on the qualification of professionals dedicated to act in the Aviation and Aeronautical sectors complementarily to Aeronautical Engineering, of which major foster in Brazil is the Professional Master in Aeronautical Engineering course, offered by ITA in partnership with Embraer. The course's research areas and lines involve disciplines dedicated to Aviation Management and Administration, Aeronautical Technology linked to operations and product integrity, aeronautical products safety along their life cycle, air transport economy, airports management and operational analysis, air traffic control interfaces, crises management and contingency planning, aerospace medicine, psychology in aviation, aviation business, among others (de Andrade 2018).

ITA's Aviation Safety and Continued Airworthiness courses have noteworthy differentials: (1) they are unique in Latin America scenario focused on preparing professionals based on systematic presentation of the most important aspects in Aviation with a high-degree connection with Aeronautical Engineering context due to the proximity of DCTA's research and development institutes and Embraer; (2) we have hundreds of specialists and dozens of masters working over all the continents, sharing the brand image of our school, mostly known so far by the recognized success of Embraer, the Brazilian aeronautical industry; (3) ITA's Aviation Safety and Continued Airworthiness courses attracted professionals who work hands-on in Aviation: besides engineers, ITA has pilots (from commercial, general, executive and military aviation) including *ab-initio* and very experienced international flight commandants, administrators, economists, air traffic controllers, physicians, psychologists, physical educators, marketing professionals, among others—all of them having Aviation as their core professional activity. With the decision of offering our courses outside ITA's installations in São José dos Campos, from 2010 on (offers have happened in Rio de Janeiro, São Paulo, Belo Horizonte, Fortaleza, Brasília) and online-mode offers that started in the pandemic scenario, what included students from more than 15 Brazilian States and several countries, we have amplified the borders of our activities. Clear spin-offs of this scenario have shown already: our alumni have assumed protagonism with their activities in many countries for most of the aforementioned activities, most of them due to their good preparation and entrepreneurship.

The decision to publish these articles in the Journal of Aerospace Technology and Management (JATM) in a Thematic Section dedicated to Aviation Safety and Continued Airworthiness has its roots in the characteristics of ITA's courses, as previously registered herein. In addition to the aspects involved in Aviation Safety, the interface with Continued Airworthiness has a considerable overlap with Aerospace/Aviation Management. For this thematic section, authors of well-evaluated articles—all of them approved by exam committees nominated by ITA's Graduate Studies' Continued Education Department in the last years—were invited to submit their work. Such articles were evaluated in single-blind peer review by editors and specialists revisors. Articles involve topics related to risk management in flight training; eVTOL certification aspects and operational requirements, automation mode confusion in Brazilian airline pilots, resilience analysis of air traffic systems, intelligence and airport security, transport category rotorcraft operation requirements in the context of certification and performance, data model for integrated process of requirements and configuration management, airline pilots reactions with respect to startle effect, surprise and automation, among others.

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