



**WORKING PAPER**

**COUNCIL — SPECIAL MODEL SESSION**

**Subject No. XX: Challenges and best practices for attracting and retaining aviation professionals**  
(Presented by India)

**EXECUTIVE SUMMARY**

A skilled and competent workforce is essential to create a safe and efficient aviation industry. In recognition of the unique and ongoing work-force challenges facing the aviation industry, this paper is a framework that ICAO could advise States to ensure that the next generation of aviation professionals are given the opportunity to explore, practice, and assimilate the skills of the tasks that these professionals must master and maintain.

**Action:** The Council is invited to:

- a) conduct a review of global training requirements to develop a foundation of harmonized training standards for the next generation professionals;
- b) urge States to invest on manpower studies, aviation universities and training institutes adapted to the next generation;
- c) develop appropriate regulatory framework for States for retention of skilled aviation professionals.

<i>Financial implications:</i>	States and industries need to invest on aviation universities and aviation maintenance and repair training schools.
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## 1. INTRODUCTION

1.1 2014 marked the centenary of commercial flight operations, with the first scheduled flight taking off in January 1914. This airboat service carried passengers, one-by-one, between St Petersburg and Tampa in Florida. Today, the global airline industry performs around 32 million commercial flights a year, transporting 3 billion passengers 50 million tonnes of freight. Over these years, the aviation industry has grown manifolds and moved from World War II era technology to the satellite-based NextGen technology. This unprecedented growth and change in technology has sharpened the problem of skilled personnel shortage.

1.2 The aviation manpower requirement projections are staggering. Industry research has revealed that Aviation will require 207,600 new pilots by 2018; 352,900 by 2026. Maintenance personnel figures are even more dramatic, with the IATA Training and Qualification Initiative (ITQI) projections now indicating that 405,500 aircraft mechanics will be needed to fill new and existing positions as of 2018, and almost three quarters of a million (739,000) by 2026. Although the ITQI figures are based on specific research applied only to pilots and maintenance personnel, ICAO, IATA and a wide range of industry, education and human resources stakeholders have also drawn attention to the fact that additional aviation professions (air traffic controllers, inspectors, technicians, etc.) will likely demonstrate similar vulnerabilities.

## 2. BACKGROUND

2.1 The current market realities would likely mean that the pending personnel shortages will be characterized by strong Regional or State-based components; with countries such as China, India and other expanding markets being the first to experience critical needs. In the Asia-Pacific Region, for example, current Boeing projections are that air travel is expected to grow at an average annual rate of 6.5 percent over the next 20 years. That percentage may not seem significant at first, but for China alone that translates into a need to more than triple the size of its fleet to 4,610 airplanes by 2028, also according to the Boeing forecasts, with attendant growth in the number of new professional pilots to get them where they're going.

2.2 The causes for the trends being revealed range across demographic, social, sectoral and political factors. They include the increase in the median age of practitioners, the fact that many aviation skill sets are very desirable for, and transferable to, other industries, that sector needs can vary considerably on the States or Regions under consideration, and the reality that the 'wild blue yonder' is no longer as glamorous or exciting as it was once perceived by younger demographics.

2.3 Today's economic landscape of aviation has changed. The number of companies willing to sponsor traditional retirement plans are steadily shrinking. Massive bankruptcies in the industry are another contributing factor. Government jobs are being threatened by budget pressures and loyalty has become a one-way street. The budgets and resources allocated for training are uncertain. In many States, the government's budget cycles are such that it may take years for proposed training programs to be implemented.

### 3. CONSIDERATION OF ISSUES

3.1 The particularly cynical nature of the air transport economics, with the commensurate hiring and laying off periods these produce, makes personnel attraction and retention more difficult. It is now high time for us to examine what is constraining recruitment, retention and training/ education of pilots, controllers and maintenance personnel as well as other aviation professionals and what global initiatives can facilitate the recruitment, retention and training/education?

3.2 There are various types of jobs within the aerospace industry including jobs that are part of the aircraft and spacecraft design and manufacturing professions, such as aerospace engineers, machinists, tool and die maker, technical writers, blue collar supervisors *et al.* The industry also employs individuals in the airline and transportation infrastructure professions, including air traffic controllers, pilots, flight engineers and aircraft mechanics. While these professions require a great diversity of skills, they all have a primary emphasis on STEM (Science, Technology, Engineering and Mathematics) competencies. In the North American region, there is a significant concern that students who are participating in the postsecondary, apprenticeships, and/or career and technical education are not adequately prepared for employment in STEM careers. Research has revealed that over the past decade, overall science and mathematics achievement have been relatively stable through the 8th grade, but have been on the decline for 12th graders. In addition, while overall graduate enrolments have increased over the past decade, this growth is largely attributable to an increase in foreign born student enrolments. However, the aerospace industry continues to suffer as many of these students choose to return to their country of origin or cannot obtain citizenship or appropriate security clearance for employment opportunities for which they otherwise qualify. STEM education needs to be elevated as a national priority, and teachers need to incorporate up to date technology for tech-savvy students who learn differently than prior generation of students.

3.3 In most of the developing world, despite the existence of large number of private institutions that provide aviation education and training, there is general consensus amongst stakeholders that the number of programmes offered, depth of course content and infrastructure facilities available with them are not sufficient to meet the industry requirements. States could consider setting up of national aviation universities under the direct jurisdiction of their Civil Aviation Authorities. These universities may facilitate and promote aviation studies, training and research with focus on emerging areas of studies such as aviation management, aviation regulation and policy, aviation science and engineering, aviation law, aviation safety and security, aviation medicine, search and rescue, transportation of dangerous goods, environmental studies and such areas as may emerge in future. These universities may also serve as a knowledge partner to safety and security regulators by providing required academic inputs to help them execute their enforcement responsibility better. Together with the Civil Aviation Authorities of the States, these universities could provide scholarships to students. ICAO in partnership with these universities could provide internships thereby exposing them to the industry.

3.4 The Civil Aviation Authorities of States could provide working scholarships which will enable companies to recruit graduates immediately upon graduation and sponsor their part time studies for higher qualifications. The scholarships will aim to allow high calibre students to acquire work experience in the aviation sector, while concurrently pursuing further studies.

3.5 Another initiative the Civil Aviation Authorities of States could undertake is to organize aviation conferences, industry promotion fairs in schools and colleges in partnership with ICAO and the industry. Such an initiative will aim to excite the youth in learning about the dynamism and vibrancy of the challenges and opportunities in the aviation industry. They will also draw strong response from many schools and thousands of participants.

3.6 States could establish aviation maintenance and repair training schools at national level in collaboration with aircraft manufacturing companies, airlines and related industries. The curriculum could consist courses in technical engineering, technician electronics and aviation maintenance technician. Each class could feature both an academic and practical educational experience. Offering financial aid and job placements will attract the youth. Such schools will assist in training of young professionals in aircraft maintenance in those developing States where such facilities do not exist. Such schools could also serve as a training hub for the region with participation of students from other States under the ICAO Technical Cooperation Programme.

3.7 The retention of highly skilled aviation professionals is a big challenge for the industry. States need to conduct studies to understand the manpower requirements of the industry. In order to help the industry in retaining the youth, States could establish regulations on retention policy for the industry viz. airlines and air navigation service providers etc. Regulations could include not only training requirements, but also guidelines to serve the concerned organization for a specific minimum period of time post training. The industry key players could partake in this initiative by offering attractive pay packages, medical insurance, retirement plans etc.

#### 4. FINANCIAL IMPLICATIONS

4.1 States need to invest on manpower studies with industry bodies to investigate issues the industry faces on the ground, understand the future manpower demand and supply over the next 10-20 years. Aviation universities, aviation maintenance and repair training schools need to be established. Industry stakeholders also need to invest in these universities and training institutes by providing internships to young aviation aspirants.

#### 5. ACTION

5.1 The Council is invited to:

- a) conduct a review of global training requirements to develop a foundation of harmonized training standards for the next generation professionals;
- b) urge States to invest on manpower studies and universities and training institutes adapted to the next generation;
- c) develop appropriate regulatory framework for States for retention of skilled aviation professionals.

#### 6. CONCLUSION

6.1 The solutions need to be globally harmonized in nature and there should be wide ranging co-operation among States, industry and concerned stake holders.