



ICAO'S GLOBAL AVIATION TRAINING (GAT) OFFICE: LEADING CAPACITY-BUILDING IN AVIATION

 Aviation is an essential component of a global society, connecting cultures, and providing employment, research and educational opportunities. Aviation makes critical contributions to future sustainability and brings assistance to States in times of need. But the goods and services carried around the globe benefit our own industry as well, as air transport services deliver the final products of civil aviation industries to their customers.

In providing passenger, freight and mail services, air carriers, business aviation and other commercial operators purchase a wide range of products and services from airports and air navigation service providers, manufacturing and service industries who, in turn, depend on numerous suppliers. They are crucial drivers of economic, social and cultural development worldwide, supporting the

roughly 58 million jobs globally, and generating more than USD 2.4 trillion in economic activity. Because of aviation's cross-cutting nature and multiple links to other economic sectors, the total economic impact of aviation amounts to some 3.5 per cent of the world's GDP.

In 2014, over 3.3 billion passengers made use of scheduled air services around the world, representing an annual worldwide growth rate of 4.9 per cent over 10 years. Aviation's important role as an engine for economic development was clearly evident during this period, since it directly supported some 8.5 million jobs and fostered world GDP impacts in the order of USD 700 billion. Those 8.5 million employees require highly specialized skills and a wide array of complementary competencies to achieve their tasks safely and efficiently. Developing the

required skills, knowledge and attitudes of these employees, to help them effectively perform their jobs, can only be achieved through efficient training. The link between appropriate training and the growing contribution of aviation to worldwide economic development is obvious. It is the collective responsibility of the industry to manage and implement training in the most efficient way to support this growth.

INCREASING DEMAND FOR QUALIFIED PERSONNEL

Over the last ten years, because of the strong traffic growth pattern in commercial air transport, not only have many new commercial air transport operators entered the market, but we have the highest number of aircraft orders ever registered. Over the next twenty years, the demand for qualified aviation personnel will need to be correlated to aircraft delivery plans. Because today's training needs are not aligned with the training capacities for the various categories of personnel, we will be witnessing a shortage of training in most areas of the world. We are also faced with the challenge of replacing one generation of professionals with another as the baby-boomer generation reaches the age of retirement – and this is not a simple task.

Our Member States must ensure these, and other attrition impacts, are thoroughly factored into their human resource planning. Increased coordination among States on required training needs and training offerings, whether globally, regionally or locally, is essential to meeting the projected global requirements for our aviation professionals of the future.

HOW CAN WE MEET THE DEMANDS?

ICAO, as the only United Nations body to develop international standards and recommended practices in civil aviation, is strongly committed to providing States with targeted assistance in training and human resources capacity-building. It also coordinates continuous monitoring

programmes that audit the safety and security oversight capabilities of Member States, and develops corrective action plans and other measures in conjunction with them where necessary – all in the service of assessing and assuring the implementation of ICAO's international Standards and Recommended Practices (SARPs).

This assistance will be more important than ever over the next decade, especially in the area of capacity-building. With flight and passenger volumes set to double by the year 2030, global training and capacity-building will remain very important priorities for ICAO. Cooperation is also an important factor in developing training capacity solutions for near- and long-term success. Not only does the ability of students and trainees to access courses and specialized equipment vary from region to region, but online course solutions can be hampered by local technologies and infrastructure challenges.

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DEVELOPING PARTNERSHIPS

The mission of ICAO's Global Aviation Training (GAT) Office is to support and lead strategic coordination on human resources development, and better align all ICAO training activities with defined global objectives. The TRAINAIR PLUS Programme (TPP), ICAO's cooperative network of training organizations, plays an important

role in this process by standardizing high-quality training packages and harmonizing training approaches.

Training organizations that are Members of the programme have access to affordable and cost-effective Standardized Training Packages (STPs), which they can deliver nationally or regionally, thereby drastically reducing enrolment fees for trainees. The fast-growing TRAINAIR PLUS network brings together a community of more than 100 Members in 74 ICAO Member States that are making significant contributions to capacity-building. The development and implementation of competency-based training courses to support the human resources capacity-building of Member States related to all ICAO Strategic Objectives is an important priority.

OUR FOCUS ON THE FUTURE

Responding to human resources challenges requires more than developing various forecasts to gauge the needs for the future. There is a need to open communication within the aviation community and initiate cooperation with industry stakeholders and academic institutions in order to help provide a robust platform for developing and sharing training that aims to engage and retain the current generation. In some professions, on-the-job experience plays an important role in the development of overall human performance, but as technologies advance and processes evolve, continued training ensures efficiencies and fosters new opportunities. The goal is to achieve greater programme standardization in accordance with competency-based frameworks.

TRAINING CHALLENGES

In standardizing global training, several recurring challenges have been encountered. These include insufficient funding; lack of subject matter expertise and qualified instructors; poor specialized equipment; non-recognition of certificates between States (even in the same regions); and a lack of harmonization of curricula and licensing requirements. Scenarios like these make it difficult to implement the ICAO Civil Aviation Training Policy. The Policy provides for a

global training standardization model, which facilitates the effective and harmonized implementation of training in aviation, reduces costs, increases quality and efficiency and generates synergies between two important ICAO initiatives: the Next Generation of Aviation Professionals (NGAP) and No Country Left Behind (NCLB).

DATA-DRIVEN DECISIONS

These challenges are predicated on the absence of suitable and effective links between aviation data and aviation training planning and implementation. Making data-driven decisions is already applied in several aviation fields, such as safety management, passenger distribution, and aviation cargo, as examples. Data-driven decision making (D3M), is a process-driven approach to decision making that addresses issues that could lead to poor decision making. With D3M, effective and informed decisions are based on the results of pertinent data that has been collected and analysed.

Using valid and relevant data helps place the “problem” in the right context to determine a best-fit “solution”. D3M provides credible evidence to stakeholders and management regarding strengths, weaknesses, opportunities, limitations and risks. It mitigates bias, influence and human error.

Applying D3M in conjunction with organizational analyses, and training needs and impact assessment activities, becomes an important element of support to States facing challenges in aviation training. As with any mathematical model, the more information that can be integrated in the model, the more useful it becomes for strategic and operational planning purposes, given that it reflects facts and figures from the field.

Adapting D3M to aviation training planning will lead to the development of targeted training portfolios that respond to identified human resource needs in aviation. Business cases can be developed to acquire the expertise, equipment or facilities necessary to operationalize the portfolio.

AVIATION TRAINING INTELLIGENCE™ (ATI™)

To effectively apply D3M, a management system and methodology needs to be adopted. Existing volumes of diverse information and vast amounts of aviation data need to be managed. At ICAO, data tools such as ilment, iSTARS, the Safety Solution Center, CAA HR-toolkit, Environment data, Economic Development and Aviation Business Analysis tools, Data+, traffic forecasting, and statistics analysis are transformed through a technology-driven process into an aviation training data management environment.

Applying the data-driven business process, using the principle of analysing aviation and training data to provide actionable information for training decisions, provides executives, managers and other corporate end users with ATI™. This intelligence is used to make informed business decisions. Training organizations that invest in technology tools and methodologies to collect, analyse and manage their ATI™ will grow in alignment with aviation growth and training methodologies that are rapidly evolving.

MANAGING AVIATION TRAINING INTELLIGENCE™ (MATI™)

MATI™ is the real challenge of aviation training organizations today. Activities involve continuous improvement planning; implementation of technology systems to manage aviation big data; State aviation forecasts; predictive analytics; needs assessment data; trainee, impact and collaborative data; as well as data generated from new learning technologies, such as machine learning, artificial intelligence, augmented reality, gamification and more. Managing ATI™ is the practice of mapping methods, tools, systems, applications, needs and solutions for individuals and groups.

MATI™ FOR TRAINING EFFECTIVENESS

Excellent learning progression during a training course with positive feedback from trainees and instructors, and appropriate facilities and equipment can

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be a useless exercise and, even worse, a waste of time and money if there is no transfer of the acquired competencies to the workplace. The capability to measure the impact of training on professional performance is critical for personal and professional development, and organizational achievement.

Evaluation of the training effectiveness of each course using the ICAO TRAINAIR PLUS Post-training Evaluation (PTE) methodology offers a scientific basis for measuring the impact of training programmes developed under the guidelines set out in the TDG/Doc 9941. Given the inherent nature of the methodology and its competency-based approach, MATI™ integrates an evaluation procedure aimed to enhance the quality of training developed, the instructional processes used, and provides intelligence on the impact of the training as part of the continuous improvement of the TPP.

MATI™ INTEGRATED PROCESSES AND IMPLEMENTATION

Managing ATI™ necessitates engagement in diverse business practices and processes that generate data and information that will be used for decision making to optimize the training portfolio of the organization. The integration of each essential component is supported by an integrated system architecture with the compatibility and interoperability of projects, workflows, social media management, collaborative management with business networks and communities of practice, business processes, communication and connectivity.



ICAO

GLOBAL AVIATION TRAINING

TRAINAIR PLUS™



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MATI™ Essential Components (EC) are linked through the safety and air transport data collected (EC1, EC2), that are transformed into aviation training data (EC3) and used for training needs analysis (EC4), identifying existing training solutions (EC5) or developing the missing courses (EC6), giving evaluation of its effectiveness (EC7) in the alignment with the State’s Aviation Master Plan and Human Resources and Capacity Improvement (HR/CI) planning and development (EC8). MATI™ integrates a structured plan of action to implement comprehensive and consistent human resources development strategies to meet the State’s strategic objectives, development goals, and the needs of the aviation sector.

BUSINESS EFFICIENCY MODELS

Aviation Data-driven Decision Making (AD3M) and Managing Aviation Training Intelligence™ (MATI™) are the new models for business efficiencies in a complex aviation training world. The ability to provide quality, standardized, competency-based training through a variety of media that meets current and future needs of multiple stakeholders requires multiple

sources of data and information to be systematically collected, integrated and analysed by aviation training managers.

A deep dive into ATI™ reveals that its global implementation will strongly support the generation of strategic partnerships among government, education, academia, and industry, as well as strong alliances among enthusiastic students, competent instructional teams, and committed training managers to attract and transform each trainee into new, competent aviation talent for personal, professional, and organizational success.

These models will help training managers to continue to modernize their operations, better address the training challenges, and meet both the actual needs of the aviation sector, and the demands from industry. MATI™ enables people and organizations to join the scenario where effective training goes beyond training solutions for performance to improving safe, secure and efficient air transport connectivity as a key element to social, environmental and economic growth, supporting UN Sustainable Development Goals and 2030 Agenda. [T](#)