

ICAO JOURNAL

NEWS AND DEVELOPMENTS FROM THE INTERNATIONAL CIVIL AVIATION ORGANIZATION - VOL.71 - NO.2



GMBM: SETTING THE STAGE

REVIEWING THE INTENSIVE OUTREACH AND CONSENSUS-BUILDING
IN THE LEAD UP TO ONE OF AVIATION'S MOST IMPORTANT
ENVIRONMENTAL DECISIONS AT THIS YEAR'S 39TH ASSEMBLY

STATE PROFILE SPECIAL FEATURES: INDONESIA AND MALAYSIA

EVOLVING THE PBN GLOBAL CONCEPT
ALIGNING ARABIAN SEA/INDIAN OCEAN ATM
GETTING A JUMP ON FRMS SARPS FOR ATCs
REFINING UNRULY PASSENGERS GUIDANCE
LEADERS INTERVIEW: PATRIK PETERS, IFATCA



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THE ICAO JOURNAL
VOLUME 71, NUMBER 2, 2016

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The *Journal* encourages submissions from interested individuals, Organizations and States wishing to share updates, perspectives or analysis related to global civil aviation.

Subscriptions and single copies

Yearly subscription (4 issues) US \$40.
Single copies available for US \$10. For subscription and sales information, please contact the Sales and Customer Relationship Unit
Tel: +1 (514) 954-8022
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Published in Montréal, Canada. ISSN 0018 8778.

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News in Brief



Dr. Fang Liu

DRIVING GLOBAL CONSENSUS ON AVIATION AND THE ENVIRONMENT

✈ Climate change and climate action are key priorities in ICAO this year, and they were certainly front of mind when hundreds of State officials joined us at ICAO Headquarters in early May to continue their cooperative and intensive negotiations on the proposal for a global Market-based Measure (MBM) design suitable for international flight emissions.

This meeting was one of the most important in a comprehensive series of discussions and global outreach events on this topic undertaken by the ICAO Council over the last two years, closely supported by the technical experts comprising ICAO's Committee on Aviation Environmental Protection (CAEP). All these efforts were designed and carried out to help forge global consensus around this very challenging and complex economic measure.

Should States forge agreement on this proposal at ICAO's 39th Assembly this Fall, it would make international aviation the first of any major global industrialized sector to adopt an MBM for its emissions. It would also significantly complement the climate change progress and momentum initiated under the landmark Paris Agreement last December.

IMPORTANT SUPPORT TO AVIATION'S BASKET OF MEASURES

While emissions from international civil aviation currently account for less than 2 per cent of total global CO₂ emissions, they are projected to increase as a result of the continued growth of air transport.

ICAO forecasts have already shown us that flight and passenger volumes will double again by 2030, and this is why we began addressing the challenge of emissions growth in 2010. At our 37th Assembly that year, States collectively agreed to begin pursuing a basket of measures to reduce emissions and make aviation more sustainable, and to aspirational targets to improve fuel efficiency by two per cent per year, and to strive for carbon neutral growth from 2020.

The basket of measures included innovative technologies, more efficient procedures and operations, the development of sustainable alternative fuels, and a global market-based measure (global MBM). These commitments by ICAO's States have also been bolstered by the extensive capacity-building which ICAO has engaged in, for instance on States' emissions Action Plans.

What all of these collective and proactive actions on the environment speak to, is leadership, and it is important to stress just how much aviation is doing to reduce its emissions.

For instance innovative technologies and operational refinements have driven a 40 per cent improvement in global aviation fuel efficiency over the past 20 years, a record which few industries from any sector can match.

Additionally, five sustainable fuel production pathways have already been approved, enabling the operation of more than 2,000 commercial flights by 20 airlines. I would also highlight Oslo airport in Norway in the biofuels area: it became the world's first 'bioport' recently, offering no less than 2.5 million litres of aviation biofuel annually to its users.

Taken together, all of these actions are helping aviation to surpass the two per cent per year fuel efficiency target we established in 2010. Carbon neutral growth by 2020 is the next step in this process, and that brings us to the need for an aviation MBM.

By this stage in the MBM's negotiations, States have recognized the need for its design parameters to take into account each participant's special circumstances and respective capabilities, while minimizing market distortions. They also have prioritized that it should be administratively simple and cost effective, route-based

“What all of these collective and proactive actions on the environment speak to, is leadership, and it is important to stress just how much aviation is doing to reduce its emissions.”

(to ensure a level playing field) and informed by transparent and objective aviation metrics.

States have also highlighted the need to ensure the quality and effectiveness of the overall system needed to support and validate the MBM, and have therefore explored robust monitoring, reporting and verification (MRV) procedures, as well as criteria for the definition of emissions units.

It was also agreed that every State should have an opportunity to contribute fully to the scheme, and ICAO has already begun collaborating on assistance and capacity-building projects in aid of that goal through various projects with the European Commission (EC), the Global Environment Facility (GEF) and the United Nations Development Programme (UNDP).

WORKING TOGETHER FOR A SUSTAINABLE FUTURE

The history of international civil aviation is replete with examples of States and stakeholders overcoming significant political and technical challenges in order to secure the common good of the countries and peoples our network serves.

Cooperation and consensus-based progress have been key to the realization of our safe and efficient global network, and to the more specific achievement of an exemplary environmental track record when compared to other industries and sectors.

Domestic aviation emissions are included in the Paris Agreement agreed last December. As a specialized UN agency to address all matters on international aviation, ICAO has been diligently addressing international aviation emissions, and it is clearer today than ever before that the peoples of the world are now looking to ICAO's States to deliver clear environmental commitments and take concrete emissions reduction actions.

As we look now to our 39th Assembly this September, I am more confident than ever before that this is precisely what ICAO intends to deliver. ■

Dr. Fang Liu
ICAO Secretary General

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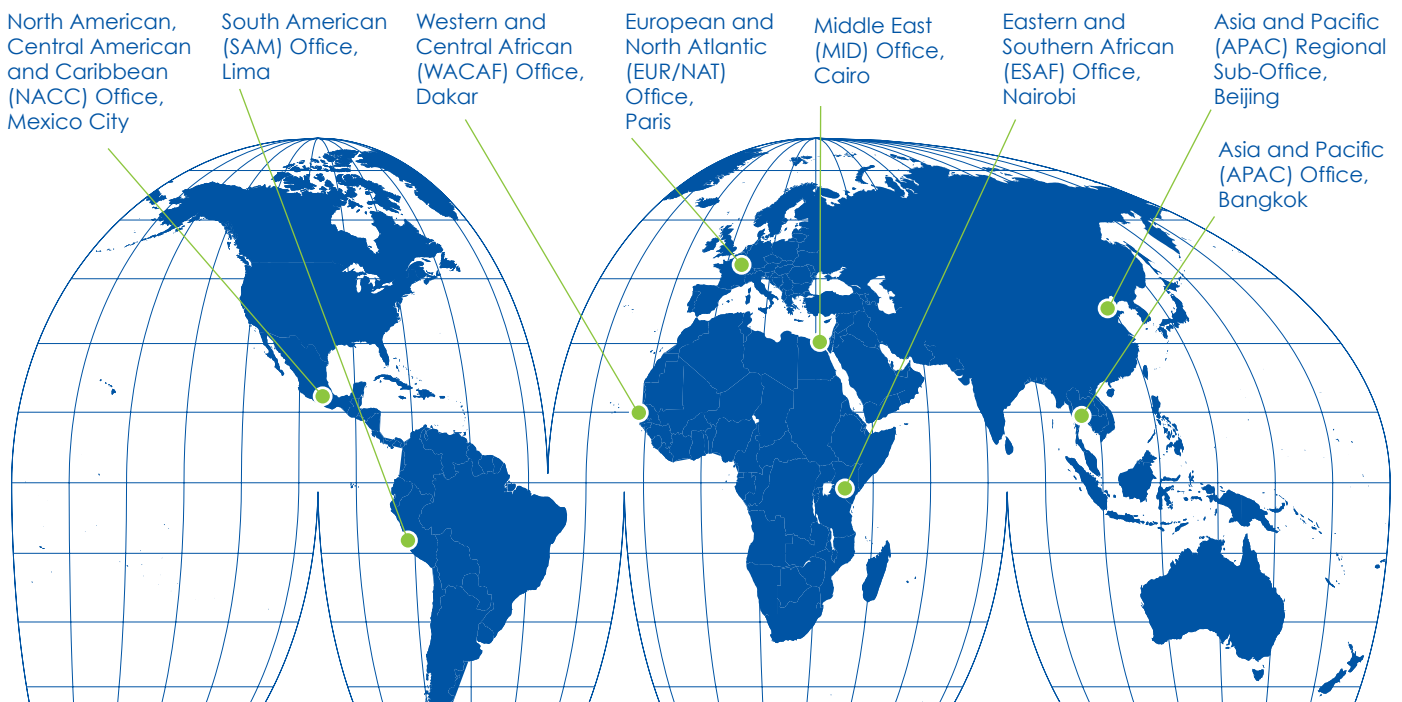
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ICAO's Global Presence



MARKET-BASED MEASURE TEXT IN FINAL PREPARATION FOR 39th ASSEMBLY



The International Civil Aviation Organization (ICAO) is poised to adopt the first major global agreement on climate change since last year's historic Paris Agreement. At the 39th ICAO Triennial Assembly, 27 September – 7 October 2016, Member States will have the opportunity to agree on a global market-based measure (MBM) scheme designed to achieve environmental goals of the international aviation community.

In October 2013, at the 38th ICAO Assembly, via Resolution A38-18, the ICAO Council was requested to “finalize the work on the technical aspects, environmental and economic impacts, and modalities of the possible options for a global MBM scheme; organize seminars and workshops; identify major issues and problems; and make a recommendation for a global MBM” for international aviation for presentation to the 2016 Assembly.

In the ensuing three years, the Council and its agents have performed the assessments and engaged the stakeholders. It is expected to complete its mission of delivering an Assembly Resolution text on a global MBM that a majority of Member States could support.

At the time of publishing, the Council is receiving and reviewing inputs from States, the international aviation community, and non-governmental organizations on the draft text discussed in May at the three-day High-Level Meeting at ICAO Headquarters in Montréal, Canada.

Following bilateral and multilateral consultations over the summer, the Council is expected to issue refinements to the text to be submitted in the form of a provisional Resolution by early September, for agreement at the Assembly.

What's at stake? Quite simply, despite significant improvements in aircraft design (aircraft produced today are 80% more fuel efficient per passenger kilometer than those of the 1960s) and other measures such as improved operations, including more efficient air traffic management, and sustainable alternative fuels, anticipated air traffic growth is expected to increase international aviation fuel consumption by 2.8 to 3.9 times by 2040, compared to 2010 levels.

To meet international aviation's aspirational goal of carbon-neutral growth from 2020, i.e. keeping global net CO₂ emissions at the same level, market-based measures will be a necessary policy tool for addressing environmental goals until further development of the other measures.

ICAO Council President Dr. Olumuyiwa Benard Aliu told the annual general meeting of the International Air Transport Association (IATA) in June: “Our common goal is to respond to the needs of civil society for safe and environmentally sustainable air travel, now and for the coming generations. We continue to make progress on all elements in our basket of measures to reduce aviation emissions and their impact on climate change, and I still firmly believe that the political will exists to realize a global market-based measure (MBM) solution at our 39th Assembly to complement these measures.”

THE GLOBAL MBM DEVELOPMENT PROCESS

How were the draft text and proposed technical details of the global MBM arrived at? As part of Resolution A38-18, the ICAO Council was required to “take into account the need for development of international aviation, the proposal of the aviation industry and other international developments, as appropriate, and without prejudice to the negotiations under the UNFCCC.” The mandate encompassed organizing seminars and workshops, identifying major issues and problems, and making “a recommendation on a global MBM scheme that appropriately addresses them and key design elements, including a means to take into account special circumstances and respective capabilities, and the mechanisms for the implementation of the scheme from 2020 as part of a basket of measures which also include technologies, operational improvements and sustainable alternative fuels to achieve ICAO's global aspirational goals.”

The Council's first action following the 2013 Assembly was to establish the Environment Advisory Group (EAG), mandated to oversee all work related to the global MBM scheme and make recommendations to the Council. The EAG started with a basic proposal with a view to generating discussion and analysis.

As part of the assessment process, the EAG called on ICAO's Committee on Aviation Environmental Protection (CAEP) for a series of analyses, including:

- Future CO₂ emissions volumes from international aviation and cost impacts to achieve carbon-neutral growth from 2020
- Approaches for distribution of offsetting requirements to individual aircraft operators
- Cost impacts using various combinations for operator and international aviation growth factors
- Comparison of approaches to offsetting requirements

THREE YEARS OF ANALYSIS AND DEVELOPMENT OF A GLOBAL MBM SCHEME

Since the 38th ICAO Assembly in 2013, hundreds of international aviation leaders and subject experts have been intensely analysing and discussing the technical, practical and political aspects of the proposed global market-based measure (MBM) scheme. Here's a quick overview of ICAO-sponsored initiatives to drive the dialogue to a consensus conclusion.

ENVIRONMENT ADVISORY GROUP (EAG)

Comprised of 17 ICAO Council Representatives and representatives from the International Air Transport Association (IATA). Mandated to oversee all work related to the development of a global market-based measure scheme and make recommendations to the Council. The EAG met 15 times and in January 2016 considered a draft Assembly Resolution text on the global MBM scheme.

COMMITTEE ON AVIATION ENVIRONMENTAL PROTECTION (CAEP)

The EAG commissioned a series of analyses undertaken by the CAEP on emissions, cost impacts, offset requirements, MRV (monitoring, reporting and verification), emissions unit criteria, and registries.

In addition to the global MBM, CAEP earlier this year made historic recommendations for a global aircraft CO₂ design standard and for an aircraft engine non-volatile particulate matter (nvPM) standard. The proposed ICAO standard is the first global design standard for CO₂ emissions for any sector, not just aviation.

GLOBAL AVIATION DIALOGUES (GLADs)

The GLADs were forums for information-sharing and exchange of ideas. The main objective was to reach out to States not directly engaged in the Council or CAEP.

GLADs were organized in 2015 and 2016 to encompass all ICAO regions. More than 700 participants engaged in the unique facilitated discussions.

For presentations, dialogue questions, reference material, and summaries of small group dialogues, visit the GLAD websites:

- **2015 GLAD website**
(<http://www.icao.int/meetings/GLADs-2015/Pages/default.aspx>)
- **2016 GLAD website**
(<http://www.icao.int/Meetings/GLADs-2016/Pages/default.aspx>)

HIGH-LEVEL GROUP ON A GLOBAL MBM SCHEME (HLG-GMBM)

From the EAG/15 meeting, the HLG-GMBM was established to facilitate the convergence of views in order to finalize the draft Assembly Resolution text. The group was comprised of 18 aviation and transport representatives and met in February and April 2016 to improve provisions in the text.

HIGH-LEVEL MEETING ON A GLOBAL MBM SCHEME (HLM-GMBM)

The High-Level Meeting in mid-May 2016 focused deliberations on the draft Assembly Resolution text in order to make recommendations to the 208th Session of the Council, in preparation for the ICAO Assembly in September. The Meeting facilitated ICAO Member States understanding of the proposed global MBM and each other's positions, and made progress, for example, on the criteria to classify States into different implementation phases.

CAEP undertook additional work on technical aspects of the global MBM scheme such as monitoring, reporting and verification (MRV), emissions unit criteria (EUC), and registries.

Other key contributors to the dialogue on a global MBM scheme include the International Coalition for Sustainable Aviation (ICSA), a group of national and international environmental non-governmental organizations which includes the Environment Federation, Carbon Market Watch, Environmental Defense Fund, the International Council on Clean Transportation, Transport and Environment, and World Wildlife Fund, and the Air Transport Action Group (ATAG), a respected association that represents all sectors of the air transport industry: airports, airlines, airframe and engine manufacturers, air navigation service providers, airline pilot and air traffic controller unions, chambers of commerce, tourism and trade partners, ground transportation, and communications providers.

By January 2016, at its 15th meeting, the EAG considered a draft Assembly Resolution text based on views expressed during previous deliberations.

In February and April 2016, a High-Level Group on a Global MBM Scheme – comprised of aviation and transportation representatives of 18 Member States in the Council – met to improve and clarify provisions in the draft Assembly Resolution text.

Beginning in April 2015, the ICAO Council held a first round of Global Aviation Dialogues (GLADs) to share information and exchange ideas with States, in particular those not directly engaged with the Council or CAEP. The first round of GLADs was conducted in Egypt, Kenya, Peru, Singapore, and Spain, with 362 participants from 79 different States and 22 international organizations. The second round of GLADs in March / April 2016, in Egypt, Indonesia, Mexico, the Netherlands, and Senegal, attracted 390 participants from 60 States and 20 international organizations, who were familiarized with the draft Assembly Resolution text.

“I am pleased that our intensively consultative process to-date has helped us to get very close to our goal for a fair and effective Global MBM for international aviation. As always, the international civil aviation community has relied on its historic strengths, cooperation and consensus, to reach this point, and we will need to preserve our highest respect for those values in the days and weeks ahead. Only in this manner can we determine a concrete, and truly global MBM proposal for the 39th ICAO Assembly this September, and avoid a potentially confusing and acrimonious patchwork of uncoordinated national or regional measures.”



– Dr. Olumuyiwa Benard Aliu
ICAO Council President

Finally, in May 2016, the High-Level Meeting on a Global Market-Based Measure Scheme was held in Montréal. It focused on the elements of the proposed global MBM scheme and making recommendations on the draft Assembly Resolution text to the 208th Session of the Council.

The day before the High-Level Meeting, Dr. Fang Liu, Secretary General of ICAO, addressed the Air Transport Action Group (ATAG) Global Sustainable Aviation Forum: “Aviation has been showing strong leadership in acknowledging the challenge of emissions, and we continue to demonstrate it through our progress on all of the mitigation objectives we are pursuing.”

CHALLENGES TO RESOLVE

The proposed global MBM scheme calls for international aviation to address and offset its emissions where it is most cost-effective. The scheme would require aircraft operators to compensate for their international aviation emissions through the acquisition and redemption of “emissions units.” The buying and selling of eligible emissions units happens through a carbon commodity market, which is driven by supply and demand. One emission unit equals one tonne of CO₂.

There is widespread agreement on the basics of the proposed ICAO global MBM. Of course, as with any new and complicated scheme involving 191 States, thousands of aircraft operators, and other stakeholders, there are also challenges to be resolved.

The proposed scheme incorporates exemptions for States classified as Least Developed Countries (LDCs), Small Island Developing States (SIDS), and Landlocked Developing Countries (LLDCs), while it also encourages States that are not included in the scheme to voluntarily participate.

Another challenge is the cost of implementing the global MBM scheme. IATA Director General and CEO Tony Tyler (recently retired) said: “A market-based cost will be much more efficient and much fairer than the alternative, which is a patchwork of inefficient and ineffective charges and taxes which are cooked up primarily just to raise cash rather than to tackle climate change. We expect that the cost will be not insignificant, but it will be manageable. Industry is resolute. It is determined to do the right thing. We are counting on ICAO States to enable us.”

The costs of implementing a global MBM scheme, however, are expected to have much less impact on airlines than the risk caused by fuel price fluctuations. Ensuring uniform implementation of the global MBM between States is one of the biggest challenges in ICAO’s history, requiring major efforts in such areas as capacity building and assistance for States.

Jane Hupe, Deputy Director, Environment in ICAO’s Air Transport Bureau (ATB) and the Secretary of CAEP, summarized the expectant attitude of the myriad people involved in the deliberations: “We are looking forward to being the next global success on climate change after Paris.” ■

STANDARDIZING PERFORMANCE-BASED NAVIGATION

EVOLVING A GLOBAL CONCEPT



CAPTAIN IAN KNOWLES

He is a Technical Officer focused on PBN in the ICAO Air Navigation Bureau. He was a British Airways pilot for 14 years, flying various Airbus and Boeing aircraft types. He holds degrees in operational research and astrophysics.



On 10 November 2016, new Performance-Based Navigation (PBN) provisions in ICAO Annex 6 (published in January 2016) will become applicable. These provisions are designed to make the approval process for PBN easier for operators and regulators.

As part of this new process, aircraft manufacturers are now required to clearly identify the aircraft PBN capabilities in the Aircraft Flight Manual (AFM), explicitly and clearly stating the Navigation Specifications for which the aircraft is certified. These changes dovetail with the new PBN charting requirements to ensure commonality in the terms and definitions across the different domains that are involved in PBN operations.

Performance-Based Navigation developed from the original ideas of Area Navigation, which utilized the functionality of the new Flight Management System (FMS) avionics to allow aircraft, for the first time, to fly routes which were not defined by ground-based radio aids. The advantages of being able to route directly through a given sector of airspace were immediately obvious to many States and Operators, which led to a rapid development in the use of this technology.

At first there was little standardization and multiple specifications were introduced, all of which were referred to as 'RNAV' – an abbreviation of the term 'Area Navigation.' The result was a confusing mix of terminology and concepts such as GPS approaches, GNSS/VOR, RNP-RNAV, etc. Clearly there was a pressing need to harmonize and reduce the complexity in the system.

The ICAO PBN Operational Approval Manual (Doc 9997) was the international community's response to growing diversity, and introduced a standard set of Navigation Specifications which were to be adopted globally. This included 'legacy' specifications as well as new provisions which were designed based on the required performance of the navigation system and aircraft – hence the name 'Performance-based Navigation.' While this went a long way toward the standardization of the use of Area Navigation, there were still some anomalies that needed to be resolved, in particular with the terminology that had been brought across from the original implementation. This work is still ongoing and is designed to completely align all aspects of PBN. Recent changes to the chart identification and the required inclusions in the AFM represent the latest steps taken to achieve this goal.

CORRECTING THE CHART IDENTIFICATION

Following introduction of the PBN Manual in 2013 and the standard set of global navigation specifications, the next stage in the harmonization plan was to convert the names of PBN approaches from RNAV to RNP. This change aligns the approach chart identification with the PBN concept and was adopted in 2014; it became applicable in November of that year.

Initially, all Area Navigation operations were referred to as simply 'RNAV'. The PBN concept introduced two types of operations, which were called RNAV and RNP – the key difference being the requirement, within RNP, for on-board performance monitoring and alerting (OPMA). Since all approaches were identified as needing this additional requirement, all PBN approaches are correctly identified as RNP applications. Historically, these had been identified on the charts as RNAV, leading to confusion on the part of pilots, especially regarding the type of operation they were conducting.

For example, with the latest version of the PBN Manual, new optional functionality was introduced to some RNP navigation specifications. This means that it is increasingly likely there will be PBN procedures that some pilots will not be approved to operate as they require advanced functionality of the on-board systems. Only around 25% of the global fleet are approved to use this functionality.

The essence of PBN approach procedures is for pilots to have a consistent and clear understanding of the intent of the operation during all processes involved. Pilots need to move away from categorizing everything as 'RNAV' and ensure they have a good operational knowledge of the PBN concept to avoid the situation where they attempt to fly something outside of their approval – potentially resulting in an unsafe situation.

"Understanding the basics of PBN is a fundamental requirement, and pilots are finding it hard to properly grasp the concepts when they learn one thing in training and see another on the charts."
- IFALPA

The new chart identification makes it explicit that the approach is based on an RNP navigation specification and therefore requires OPMA. Aligning these terms reinforces the training that pilots receive and allows a better understanding

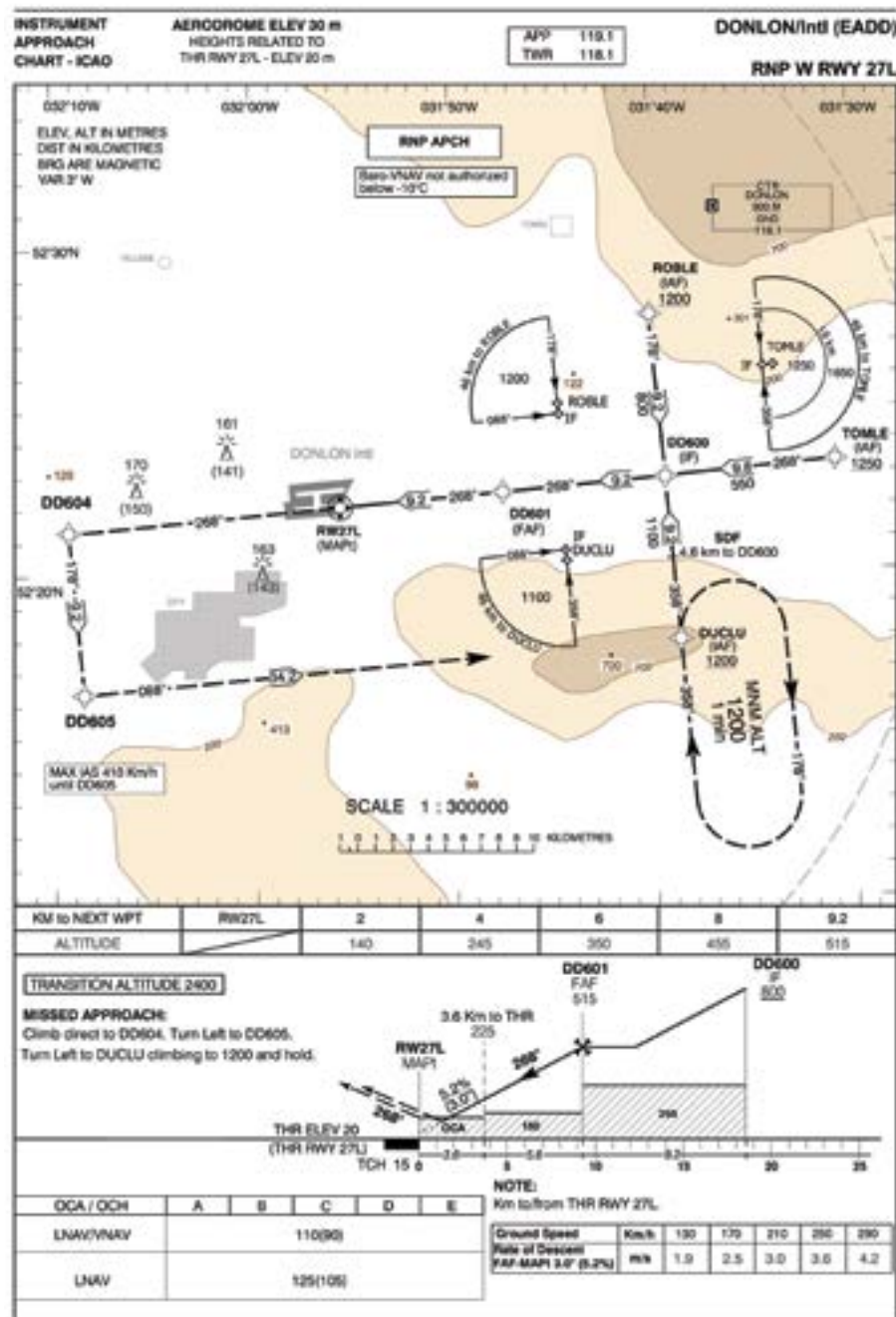
of the basic concepts, which ultimately makes for a safer operation as the crew will always know what they are approved to do.

Also introduced at this time was the PBN Requirements box, which lists the actual Navigation Specification used in the procedure design, along with any additional functionality or features

needed. This feature provides a further link between the Navigation Specifications as detailed in the PBN Manual and the operational approvals as described in the aircraft manuals.

NEW PROCESS FOR OPERATIONAL APPROVALS

One of the main concerns expressed at the ICAO PBN Symposium (October 2012) was



Example instrument approach chart, RNP

“The essence of PBN approach procedures is for pilots to have a consistent and clear understanding of the intent of the operation.”

the continuing need to improve harmonization of PBN to facilitate operational approvals. ICAO has undertaken several initiatives in this regard, the latest of which was the adoption of new PBN provisions in Annex 6 in January.

Prior to this change there was no specific requirement to identify aircraft PBN capabilities, and descriptions of the aircraft capabilities greatly varied. Some used clear references to the Navigation Specifications, while others included highly technical passages detailing the Technical Standard Orders (TSOs) which applied with no simple explanation of what this meant for the potential to conduct PBN operations. Many examples have also been seen where the description in the AFM did not match with the PBN concept at all, and included references to older versions of Area Navigation which are not globally standardized.

Difficulty in understanding the aircraft capabilities affects the Operator's ability to apply for PBN approvals, and also makes the work of the Regulator much harder, as they need to verify that the aircraft is capable of complying with the PBN manual requirements.

“Having OEMs adopt a common approach and simplifying how aircraft PBN capabilities are presented to the Operator will be a great help in airlines adopting PBN Operations. A better understanding of aircraft capabilities should also result in a quicker and easier approval process for operator and regulator alike.” - Atholl Buchan, Director Flight Operations, IATA

Requiring the AFM to include the Navigation Specification will ensure that this information is presented to the Operator and the pilot in a clear and simple manner, and in a way which is consistent with the PBN concept. Guidance due to be published later this year as a circular will explain how it is intended that this information should be presented, to ensure the aim of consistent representation of PBN is maintained throughout all documentation. This guidance will also include advice on how to present the operational capabilities to the crew, which will clearly state what they are approved to operate, since the approval relies on much more than simply an ability of the aircraft to comply with the certification requirements. The current proposal is to include a single-page statement of the operational capabilities which lists everything the crew is authorized to do (Low Visibility Operations, RVSM, PBN, etc.), and again the language used here will tie in exactly with other documentation so there is no confusion.

CONTINUING THE HARMONIZATION WORK

Following the change to chart identification and AFM entries, the flight plan codes which are used to indicate the PBN capabilities of the aircraft will also be updated. This is planned as part of the initial implementation of Flight and Flow Information for a Collaborative Environment (FFI-CE), currently expected in 2018. These codes will include all PBN Navigation Specifications, including optional functionality, allowing Operators to clearly indicate to air traffic control (ATC) what they can and cannot operate.

This final step will complete the harmonization of PBN that began with the publication of the PBN Manual. The overall effect of this work is illustrated in the table below.

In summary, the terminology is now aligned across the PBN Concept, the aircraft PBN Capabilities, the PBN Ops Approval, PBN Chart Identification, and Phraseology to globally standardize the concept, remove inconsistencies and discrepancies, and reduce overall Pilot/ATC confusion. ■

PBN MANUAL NAVIGATION SPECIFICATIONS	AIRCRAFT FLIGHT MANUAL	OPERATIONS MANUAL	CHART	PBN REQUIREMENTS BOX	FLIGHT PLAN	PHRASEOLOGY
RNP APCH	RNP APCH	RNP APCH	RNP RWY 14L	RNP APCH	TBD (2018)	"RNP RWY 14L"



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"A significant key to success for implementation of global and regional air navigation improvements is collaboration among regulators, airspace users, and industry. In this issue of *ICAO Journal*, we feature three examples of implementation collaboration best practices: ASIOACG, INSPIRE, and RISE. Initiatives from other regions will be highlighted in future issues."

Saulo Jose da Silva

Chief, Air Navigation Implementation Planning and Support Section, ICAO

ARABIAN SEA – INDIAN OCEAN COLLABORATION ALIGNS ATM PLANS



MUKESH CHAND DANGI

He is General Manager (ATM – Air Space Management) at corporate headquarters of Airports Authority of India, New Delhi. He is Chairman of the Arabian Sea - Indian Ocean ATS Coordination Group (ASIOACG) and Vice-Chairman of the ICAO Asia Pacific Air Navigation Planning & Implementation Regional Group (APANPIRG) ATM Sub-Group.



Strong growth in air traffic is expected to continue in the Arabian Sea and Indian Ocean airspace for the foreseeable future. The ICAO Air Transport Yearly Monitor showed, for example, that India posted the highest growth in revenue passenger kilometres (RPKs) of +20.2% last year, and the International Air Transport Association (IATA) predicts that by 2026 India will become the third largest aviation market in the world.

The Arabian Sea – Indian Ocean (AS IO) airspace spans across the boundaries of three ICAO Regions: Asia Pacific (APAC) Region, Africa-Indian Ocean (AFI) Region, and Middle East (MID) Region. Each region has its own priorities and varied pace of development in different phases of air navigation plans.

The Arabian Sea - Indian Ocean ATS Coordination Group (ASIOACG) is an informal forum of aviation stakeholders (air navigation service providers - ANSPs, airlines, airports, regulators, and IATA). ASIOACG develops strategies to address air traffic management (ATM) issues in the Arabian Sea and Indian Ocean. It supports implementation of ICAO Global Plan Initiatives (GPIs) in air traffic management and ATM best practices to enhance the safety and efficiency of aircraft operations – structured on Aviation System Block Upgrade (ASBU) timeframes.

ASIOACG aims toward safe, efficient, and seamless flow of traffic by collaboration between various stakeholders.

ASIOACG's primary focus is on air traffic services coordination (including Letters of Agreement for ATS coordination), the alignment of air traffic management plans, harmonizing procedures and technology implementation available among the States around the Arabian Sea and Indian Ocean – Abu Dhabi (GCAA), ASECNA (Agence pour la sécurité de la navigation aérienne en Afrique et à Madagascar) - Madagascar and Comoros, Australia, Dubai (DANS), French Reunion, India, Kenya, Maldives, Mauritius, Oman, Sri Lanka, Seychelles, and South Africa. The strategies are implemented based on transformation plans to ensure safe, effective transition. Participating airlines include Air Madagascar, Air India, Cathay Pacific, Emirates Airlines, Ethiopian, Etihad Airways, Kenya Airways, Qatar Airways, Qantas, Singapore, South African Airlines, and Virgin Australia.



AJAY BHASKAR JOSHI

He is Joint General Manager (ATM) at Mumbai. He is Secretary of ASIOACG and a member of the Civil Air Navigation Services (CANSO) Crossing FIR Boundary Task Force.



ASIOACG/INSPIRE Working Group Meeting, Madagascar, 2015

“ASIOACG action plans utilize modern on-board aircraft equipment and ATM enhancements.”

ASIOACG provides a collaborative platform to the aviation stakeholders to share information and develop plans. This group collectively develops the work programme for conclusive and time-bound actions with effective mitigations to meet the growth aspirations of the airline industry in this region and reports to respective planning and implementation groups (PIRGs).

The cooperation between the airlines and the ANSPs helps understanding of each other's problems and limitations. ASIOACG action plans utilize modern on-board aircraft equipment and ATM enhancements. The work plan priorities are:

- Optimizing Air Traffic Services (ATS) routes and flight level availability
- Transition of airspace from a fixed airway structure to dynamic, collaborative airspace management
- Performance-Based Navigation (PBN) implementation: Required Navigation Performance/Area Navigation (RNP/RNAV) in the en-route and terminal airspace
- Adopting surveillance-based separations, airspace categorization
- Implementing ATS Interfacility Data Communications (AIDC)-based coordination procedures

ASIOACG works jointly with another group, the Indian Ocean Strategic Partnership to Reduce Emissions (INSPIRE), which focuses on specific measures to reduce carbon footprints of aviation in Arabian Sea and Indian Ocean airspace.

THE ASIOACG JOURNEY

At the time when the price of oil was soaring, it was important for the airline industry to work together with ANSPs to find ways to mitigate the costs (fuel, air time) that eventually affect the fare-paying passengers while maintaining commitment to the environment. This remains true, of course.

The collaboration journey began with signing of a Partnering Charter in 2004 between Airservices Australia and Emirates Airlines for the growing ultra-long haul flights between the Middle East and Australia.

The first ASIOACG meeting took place in 2006 in Dubai, UAE with active participation of a few ANSPs along with ICAO, the US Federal Aviation Administration (FAA), and IATA, along with some of its member airlines.

Implementation of AUSOTS (Australian Organized Tracks System) flexi-tracks over Australian-administered Oceanic airspace was the first important milestone in this process. The AUSOTS flexi-tracks allowed optimizing flight routes, avoiding the effect of upper-level winds along with en-route adverse weather on a daily basis. It was only a small part of the total route jigsaw as limitations like fixed routes still applied to flights over the Arabian Sea and Northern Indian Ocean airspace (Indian, Maldivian, and Sri Lankan Flight Information Regions - FIRs). Extension of AUSOTS through Maldivian airspace and later on extension of AUSOTS for westbound over the Australia and South Asian airspace, ensuring safe coexistence with the flexi-tracks and fixed airway structure during specific times, were other important milestones in the journey.

INSPIRE-ing SUSTAINABILITY

The Indian Ocean Strategic Partnership to Reduce Emissions (INSPIRE) – www.inspire-green.com – is intended to be a collaborative network of partners and peer organizations across the Arabian Sea and Indian Ocean region dedicated to improving the efficiency and sustainability of aviation. Initially founded by three ANSP partners in 2011: Airservices Australia, Air Traffic and Navigation Services (ATNS) of South Africa and AAI, the partnership has grown to include dozens of participants working together to support green routes. The meetings of INSPIRE and ASIOACG are jointly conducted every year.

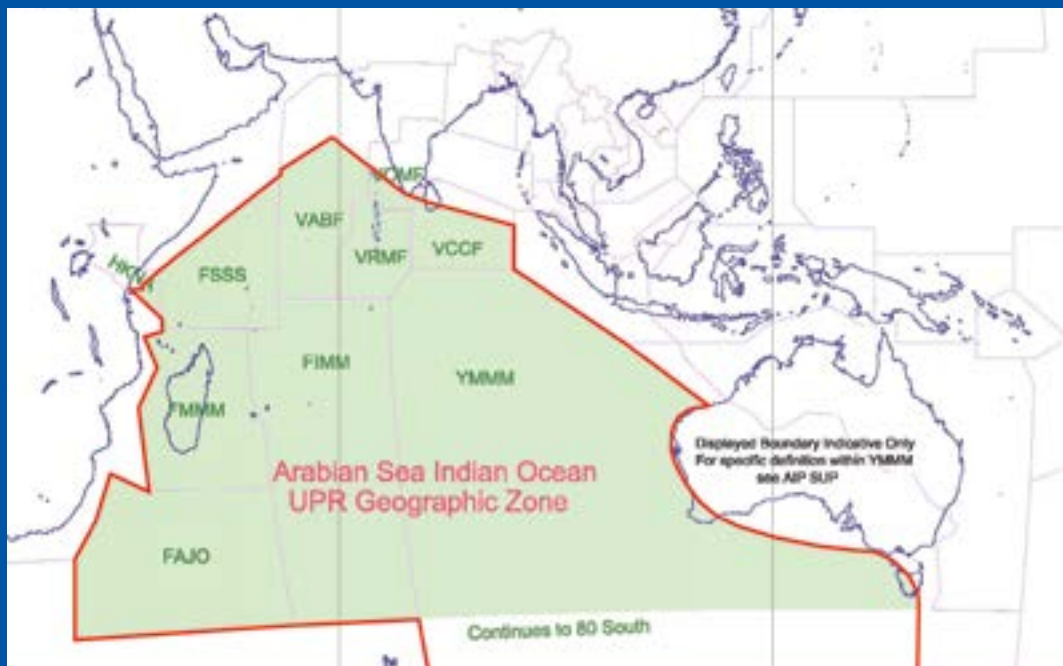
INSPIRE has undertaken a series of initiatives with the specific aim of reducing airline fuel burn and greenhouse gas emissions, thus reducing aviation's impact on the environment.

Gate-to-gate optimized demonstration flights were an important milestone for the partnership. In 2011, INSPIRE Green demonstration flights from the Middle East to Australia achieved 10 tonnes average CO₂ emissions savings per flight. While facilitating the INSPIRE Green flights, ANSPs ensured that no other flights turned Red (inefficient).

INSPIRE Green flights triggered a concept of setting up a User Preferred Route (UPR) Geographical Zone in Arabian Sea – Indian Ocean airspace. A structured programme for this purpose was proposed by IATA at the ASIOACG-INSPIRE combined meeting at Cape Town, South Africa in December 2011. The meeting endorsed the proposal and developed step-by-step action items in a time-bound manner involving 10 ANSPs and 10 IATA member airlines from Africa, Australia, the Middle East, and South Africa.

On behalf of INSPIRE, AAI submitted a working paper to the Air Navigation Commission of ICAO for endorsing the establishment of the UPR Geo Zone in the Arabian Sea and Indian Ocean region that was widely accepted and supported at the ICAO AN-Conf/12 held in Montréal, Canada in November 2012.

During 2012-2013, each ANSP promulgated UPR Zones pertaining to airspace under their jurisdiction, conjoining with the agreed boundaries on neighbouring ANSP airspace so as to form a large Arabian Sea – Indian Ocean User Preferred Routes Geographic Zone. Well-coordinated efforts between ANSPs and airlines along with IATA progressed to establish the UPR Geo Zone spread over 13 million square nautical miles in the record time of 23 months (conceptualization in December 2011 to reality in October 2013).



As the UPR programme progresses, a conservative estimate for 10 UPR flights a day across the region will result in carbon dioxide emissions savings of 10,000 tonnes per year. The group is currently focusing on reducing horizontal separations in the AS IO airspace.

"India has committed support to ASIOACG since its inception. We tried to improve the regional coordination among ANSPs and airlines for adopting ATM best practices, exploring new ideas, and developing collaborative processes to enhance flight efficiencies. Establishment of the User Preferred Route (UPR) Zone is perhaps our biggest contribution," said A. K. Dutta, Member (Air Navigation Services) Board of Airports Authority of India.

INSPIRE received the ATC Global Award 2013 for "Strategic Advancement in Air Transport." ASIOACG won the IHS Jane's ATC Award 2014, Service Provision, for contributing to safe and efficient airspace management.

ASIOACG is also inspiring the BOBASIO (Bay of Bengal – Arabian Sea – Indian Ocean) ATS Coordination Group for implementing UPRs at higher flight levels over remaining portions of the Arabian Sea, Indian Continental, and Oceanic airspace and adjoining Bay of Bengal airspace.



ASIOACG/INSPIRE Working Group Meeting, Doha, 2014

Later on ASIOACG worked jointly to form a UPR Zone in AS IO airspace that facilitates flexible, efficient and safe flight paths. ASIOACG has initiated many steps for safe, efficient and seamless flow of traffic in Arabian Sea Indian Ocean airspace.

The member ANSPs of ASIOACG have identified AIDC – a tool to reduce manual intervention and ground-ground coordination errors between adjacent ATS units – as a key factor in improving efficiency of coordination of traffic across FIR boundaries. Implementation of AIDC features prominently in the ASIOACG work programme. ANSPs that have experience in AIDC implementation have shared their knowledge and provided guidance to the ANSPs who are just initiating an AIDC programme. Also, Airports Authority of India (AAI) assisted Maldives in evaluating their proposed PBN (RNP 1) routes in the Male FIR. AAI also conducted a PBN Workshop for ASIOACG members during a meeting in Doha in 2014. Some ANSPs have drafted guidance material that helps bring uniformity and standardization to the process.

ASIOACG Member States are also located at the confluence of the three ICAO regions – APAC, AFI and MID. As many ANSPs belong to different ICAO

regions, ASIOACG meetings provide the ANSPs a platform to discuss and resolve bilateral issues. ANSPs also discuss initiatives undertaken for skill development and skill enhancement of ATS personnel and opportunities for knowledge sharing. The participation of ANSPs and airlines helps the group to identify and resolve constraints for efficient and seamless flow of traffic across FIR boundaries such as flight level restrictions. ASIOACG has also adopted a time-bound programme till the year 2020 for reducing horizontal separations.

PATTERNED AFTER ICAO MEETINGS

ASIOACG meetings are structured to provide an opportunity for Arabian Sea and Indian Ocean ANSPs and airlines to informally discuss issues that directly affect ATM within the region.

Although it is an informal group, the meetings have always been managed in a formal manner, rather like the ICAO pattern of meetings. Agenda items are handled through oral discussions based on working papers prepared by originators of the agenda item. Working papers are prepared and distributed in advance, providing sufficient time to allow the participants to be able to provide considered input and responses at the meeting.

Recommendations outside the authority of ASIOACG are recorded and conveyed to the appropriate ANSPs; issues with potential impact upon several States are taken up with the relevant ICAO Regional Offices.

ASIOACG and INSPIRE will continue collaborative implementation of best practices and ICAO policies in these areas:

- Demand - Capacity Balancing
- PBN Developments
- Coordination among ANSPs for Technology Adoption
- Developing Seamless ATM group of FIRs
- City-pair Gate-to-Gate Optimization of Flights for High-Density Traffic
- Engaging, Promoting and Inspiring other States and Groups of ANSPs in this Process.

After promulgation of the Arabian Sea Indian Ocean UPR Geographic Zone in October 2013, the ASIOACG/INSPIRE meeting participants realized that: "We are among the most privileged group of people that can contribute to reducing carbon emissions; our each and every act has the highest potential compared with any other individual on this planet for this purpose. As long as international long-haul flights continue to use UPRs in such a vast airspace as the ASIO UPR Geo Zone, the aviation industry and environment will continue to benefit." ■

COLLABORATION THROUGH THE LENS OF RISE



MARIE IOAN

She is the Customer Affairs Manager for Europe and Africa for Airbus ProSky. Marie is also a pilot.



CHRISTELLE LEDAUPHIN

She is the Project Manager for Airlines and Airspace at Airbus ProSky. She specializes in Performance-Based Navigation (PBN) and is the Project Manager for RISE.

The RISE (RNP Implementation Synchronized in Europe) project is the next step in ensuring Performance-Based Navigation (PBN) integration and air traffic management (ATM) transformation in the region. Its success will be key to incorporating additional carriers and airports into the PBN ecosystem throughout the next decade. Furthermore, it is a model that could be replicated in other regions, transforming today's skies for tomorrow's air traffic.

In order to effectively – and efficiently – handle expected worldwide air traffic growth, aircraft operators, civil aviation authorities (CAAs), air service navigation providers (ANSPs), and airports must continue to work more collaboratively to adopt new technologies and solutions.

PBN is a prime example of an area that benefits from increased collaborative efforts. By eliminating an aircraft's reliance on ground-based navigational aids, PBN increases airport accessibility by lowering approach minima and allows for the definition of more direct routes, thus reducing fuel consumption and enhancing safety. It also allows for more flexible routing, avoiding penetration in non-authorized zones.

The global PBN landscape is varied. In the United States nearly all planned Next Generation Air Transportation System (NextGen) PBN approaches have been implemented. Throughout the rest of the world the story is not as positive. In Europe, for example, only 41% of planned PBN operations have been implemented. Adoption has been slow: aircraft operators have a tough time building a business case for seemingly cost-intensive retrofits, while ANSPs and CAAs dislike the time-intensive process of integrating new approaches into their current procedures.

COLLABORATING TO MAKE PBN AN EU SUCCESS STORY

Launched in 2014, the RISE project is a beacon of hope for PBN in Europe and an exemplary case of stakeholder collaboration. Led and co-financed by Single European Sky ATM Research Joint Undertaking

(SESAR JU), the project is managed by Airbus ProSky, in collaboration with four ANSPs – Department of Civil Aviation of Cyprus (DCAC), Navegação Aérea de Portugal (NAV Portugal), Direction des services de la Navigation aérienne (DSNA), France, and Hellenic Civil Aviation Authority (HCAA), Greece – and six airport operators – Air France, Novair, TAP Portugal, Aegean Airlines, Emirates, and easyJet. The partners have initiated a demonstration phase to highlight the airport accessibility, flight efficiency, sustainability (noise and CO₂ emissions), and safety benefits of PBN.

Through 160 flight trails, RISE is demonstrating a large range of PBN procedures – Required Navigation Performance (RNP) and RNP Arrival (AR) approaches, Visual Area Navigation (RNAV) and RNP-to-Instrument Landing System (ILS) procedures. These new procedures are being implemented at 10 airports – Nice and Ajaccio in France, Paphos and Larnaca in Cyprus, Madeira and Horta in Portugal, plus Corfu, Iraklion, Mykonos, and Santorini in Greece. These airports have historically been impacted by high rates of un-stabilized approach diversions and non-optimized trajectories in terms of environmental impact.

All parties are involved in every step of the design and implementation process. From design to simulator validation to demonstration flights, the voice of the airlines, ANSPs, and air traffic controllers (ATC) are taken into account. This ensures that the final procedures are accepted by all those impacted and will be utilized beyond the demonstration period.

RISE: CONFRONTING THE CHALLENGES

PBN implementation, in general, is a complex process, and the RISE project is pushing those in the EU region to realize the benefits and make the necessary investments. A great deal of collaboration is required by CAAs.

Beyond necessary technology investments, controllers must be retrained on new procedures. Particularly when there are mixed operations – those using PBN and those who are not – ATCs require a great deal of knowledge when managing the airspace. Airbus ProSky provides in-depth training on these new procedures as well as incorporating controller feedback from the flight trails into PBN procedure design.

ANSPs and aircraft operators are the key players during the flight trials phase as they collect feedback from crews and ATC in terms of procedures fly-ability and impact on safety, as well as controller and flight crew workload. Once trials are completed, it is expected that the procedures will be fully implemented and will benefit all users. ■



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“A CHALLENGING, CHANGING ENVIRONMENT”

AN INTERVIEW WITH PATRIK PETERS, PRESIDENT AND CHIEF EXECUTIVE OFFICER, INTERNATIONAL FEDERATION OF AIR TRAFFIC CONTROLLERS' ASSOCIATIONS (IFATCA)

Sixth in a series of interviews with world aviation leaders

 **The International Federation of Air Traffic Controllers' Associations (IFATCA) represents more than 50,000 controllers in 126 countries. IFATCA was created in 1961 as an effort to further the interests of the air traffic control profession at the global level. Within two years they were submitting papers to ICAO meetings on technical and human factors topics. IFATCA's head office is in Montréal, Canada, about a seven-minute walk from ICAO headquarters.**

Patrik Peters became IFATCA President and CEO in May 2014 and was recently re-elected to another two-year term through 2018. He also continues as an operational controller – currently as a supervisor at EUROCONTROL's Maastricht Upper Area Control Center in The Netherlands, responsible for the provision of air traffic control service in the upper airspace (above 24,500 feet) of Belgium, Luxembourg, The Netherlands, and Northern Germany.

ICAO Journal Editor Rick Adams spoke with Mr. Peters just after he finished a shift and prior to a conference call with ICAO officials.

How did you become involved in air traffic control as a profession and in the Federation?

I applied for a traineeship with EUROCONTROL [the European Organisation for the Safety of Air Navigation, the central organization for coordination and planning of ATC for all of Europe] and at the same time with BFS [Bundesanstalt für Flugsicherung, the predecessor to German air navigation service provider Deutsche Flugsicherung – DFS]. I successfully passed both selections and I could choose where I wanted to do my training.

The international atmosphere within EUROCONTROL really interested me. This was something I really want to do. I started the traineeship in August 1990 and since that time I'm with the agency. So that's almost 26 years.

In 1995 I became a member of the executive board of our association, the EUROCONTROL Guild of Air Traffic Services (EGATS), holding various positions and being elected President in 2001.

In 2004 when Madame De Palacio [Loyola de Palacio, then European Commission Vice-President responsible for transport and energy] started the Single European Sky (SES) concept, we created “tiger teams” to collaborate with the EC, trying to harmonize the fragmented European airspace. I became leader of the Airspace Team – the ‘A’ Team – within IFATCA. In 2006, I was elected to take on the office as executive vice president for the European region, a big challenge as this is one of the busiest positions in the executive board of IFATCA.

IFATCA emphasizes that it is a non-political and non-industrial organization, that your premier goal is “to promote safety, efficiency, and regularity in international air navigation.”

Our prime concern is safety. We are not here to negotiate better conditions or more money. We are here to set the standards because working conditions directly affect safety. Safety cannot be taken for granted or be seen as a given. Paramount is that together we need to work on a safer system.

You find out very quickly that, despite the different backgrounds, the mentalities, the different races, all air traffic controllers speak the same language. We have the same concerns. We face very similar problems, no matter where people are from: technology that has been wrongly implemented or not implemented, lack of proper procedures, unacceptable working conditions.

Sometimes there are overlapping issues, especially when we discuss working conditions with partner unions. This is why we very closely cooperate with, for example, the International Transport Federation (ITF).

Members of IFATCA can only be the professional organizations of air traffic controllers, not a union body only. Our member associations are either pure professional organizations or sometimes a combined professional organization with a union.



Patrik Peters, President and Chief Executive Officer, IFATCA

We're all in this together. We can only solve the challenges ahead if we tie ourselves together with the service providers and the employees and the unions. We need to work together – tackle the problems together. Find the commonalities and respect the differences. Alone no one will ever succeed.

IFATCA has two key committees, the Professional and Legal Committee (PLC), which addresses human and environmental factors in ATC, and the Technical and Operational Committee (TOC). What are they currently focused on?

In the work programme for PLC we are looking at remotely provided air traffic services – the so-called 'remote towers concept,' separation and airspace issues, cognitive processes, the problem of aging air traffic controllers throughout the world, mental fitness. We are also developing an automation policy, training schedules for on-the-job training instructors, and guidance material on distraction. One of the big problems nowadays is smart phones in operational environments. We have been campaigning to increase the awareness of controllers with regard to distraction, to ideally ban smart phones from operational environments.

TOC is discussing low-level remotely piloted aircraft systems (RPAS). We have a big problem with hobby RPAS, for example, those small ones that you can buy on Amazon which people can possibly fly into the approach path of an airport.

Also, multisector planning is an issue that is arising in various parts of the world. Currently we work with the so-called 'four-eye' principle in many facilities, including mine. You are working with two controllers on any given sector, meaning there is an executive controller and a coordinating or planning controller ... four eyes watching the same screen. With increasing economic pressure, the concept of a multi-sector planner was born – only one planner looking at two sectors. Instead of four people, reduce it to three. This frees a lot of manpower, of course, so there is an interest by the air navigation service providers to go that way.

IFATCA's vision statement expresses concern about technology possibly overtaking the human element in air traffic control.

Technology is these days very often driven by economic factors. Technology appears cheaper to buy than to invest in the human. At least it's more work to invest in the human.

Take the remote towers concept, for example. It is seemingly cheaper to combine towers and have that done from a remote station than equip airports with towers and personnel. This is an issue where IFATCA is vigilantly looking at the development.

I believe controllers will always be needed, assisted by increasing technology under the right and proper working conditions. Technology can assist but I do not see technology taking over air traffic control. We are living in a challenging, changing environment, and as controllers we need to ensure that we manage changes and keep technology at a manageable amount.

There is a lot of technology on the market, but we have to ask ourselves whether we need all this? Or would it be much easier to have a reduced version of certain equipment which can be implemented earlier in regions where it is needed? Not everybody needs all the bells and whistles. Some could do with a more simple system. We need to set technology in place where it is needed and not just flood in money and technology when people are insufficiently trained to deal with it properly.

One of your current emphases is fostering the Just Culture concept.

I would differentiate between the highly industrialized areas of the world, North America and Europe, where we have a good standard and mostly good working conditions. Our focus is on regions where we witness an enormous growth, like for example Asia Pacific and Africa. We have big problems with Just Culture in those regions as there is a prevailing belief in punishment for mistakes. We're trying to educate and propagate that if somebody makes an honest mistake it doesn't help if you punish the person. You're much better learning from the mistake and avoid it next time. Not by punishment, rather by understanding and better training.

We have given briefings and held seminars on Just Culture and voluntary incident reporting. It is part of our mission to educate by holding free educational seminars.

You have related concerns about controllers being criminally charged for mistakes on the job.

Yes, we had cases in Africa, Japan, Kazakhstan, and just recently Taiwan. It happens all around the world but this is hugely due to the lack of understanding of the judges. Together with EUROCONTROL, we developed a training course educating prosecutors to understand our air traffic control system. For the time being this programme is restricted to the European region but we hope to be able to export it one day so we can educate other prosecutors around the world.

What is the current landscape for training air traffic controllers in various parts of the world?

Training of controllers, for me, is one of the most important points. It can never be underestimated. Many of our member associations have no recurrent or refresher training and with the fast-changing environment and new technology, this is a no-go. We need to make sure that our controllers are retrained every year on new technology and procedures and evolve their own professionalism.

START NOW TO IMPLEMENT NEW FATIGUE MANAGEMENT ATS SARPS

To implement an FRMS or prescriptive fatigue management regulations? That is the question. A recent amendment to ICAO Annex 11, adopted in March 2016, has significant implications for States and air traffic services (ATS) providers. New Standards and Recommended Practices (SARPs) require States to establish fatigue management regulations for air traffic controllers by 2020. That may seem well into the future, but the process for adopting and implementing such new regulations can be slow, so the time to get started is now.

"Restricted sleep leads to feeling sleepier, irritability, degraded alertness, slower reaction times, poorer coordination, slower thinking, loss of situation awareness, less creative problem-solving, and lack of awareness of your own performance," said Philippa Gander, Research Professor and Director at the Sleep/Wake Research Centre at Massey University's School of Public Health in Wellington, New Zealand, at the Fatigue Management Approaches in Aviation Symposium convened by ICAO in April in Montréal, Canada.

"The brain needs to go 'off-line' for essential recovery and maintenance, including reduced processing of inputs from the senses (light, sound, smell)," she noted. "In 24/7 operations, fatigue is inevitable – the associated safety risk must be managed."

In general, ICAO SARPs support two distinct methods for managing fatigue:

1. A *prescriptive approach* that requires the service provider to comply with duty time limits defined by the State, managing fatigue hazards using safety management system (SMS) processes in place for managing safety hazards in general, or
2. A *performance-based approach* that requires the service provider to implement a Fatigue Risk Management System (FRMS) approved by the State.

Until the new Annex 11 amendment, there were no standards requiring States to establish prescribed duty limits for air traffic controllers. Nor were there standards for FRMS regulations, should a State desire to establish them.

Whether prescriptive or performance-based, fatigue management must be based on scientific principles, knowledge, and operational experience. Fatigue management is also a shared responsibility between the State, service providers, and individuals.

Under the new SARPs, if a State establishes FRMS regulations, ATS providers have three options for managing fatigue risk for controllers (*none, some, or all*):

1. Comply with the prescriptive limitation regulations in all operations - *none*
2. Choose to implement an FRMS for all operations - *all*
3. Implement an FRMS in parts of their operations and comply with prescriptive limitation regulations in other operations - *some*

An FRMS offers increased operational flexibility as well as safety benefits. An FRMS still requires maximum duty times and minimum rest (or non-work periods), but these are proposed by the service provider and may differ from the prescribed limits. Of course, they must be approved by the State.

One caution, however: an FRMS can require additional resources compared with an SMS. Where a service provider already has sufficiently mature SMS processes in place, it should not be necessary to develop entirely new processes to implement FRMS. Oversight of FRMS, as a performance-based approach, also requires extra resources and a well-trained State inspectorate. So FRMS is not necessarily for everyone.

In many places recurrent training is not enforced; it's not being regulated. Go to places in Africa, Asia Pacific, it's not there. We have to teach that you have a duty of care as a service provider for your personnel. You need to make sure that they are professionally on top of everything and they know what they're doing. Besides proper working conditions, which are a requirement to safely execute our daily work.

If a controller in a certain country cannot make a living off the few hundred dollars that he makes in a month and he has to drive

a cab the other times he is not working in, let's say, the tower, that's unacceptable. He works the same professional work that I do, but he cannot make a living on his work, and possibly endangers his work by coming to work fatigued because he has been driving the cab for eight hours during the night.

We hear frequently about shortages of pilots and shortages of aircraft maintenance personnel. Is there a shortage of controllers?

In Europe, in many countries, we have a shortage of controllers of several hundred if not thousands over the next years. It is

The new ATC FM SARPs are aligned with the approach taken for flight and cabin crews, including a common understanding of the science and fatigue management approaches. They each drew on the expertise of the ICAO FRMS Task Force, which included industry representatives, regulators, and scientists.

NEW FATIGUE MANAGEMENT GUIDES

ICAO has produced a set of four documents constituting the new *Doc 9966, 2nd Edition*, retitled as the *Manual for the Oversight of Fatigue Management Approaches*. (Version 1 was published early in 2011 soon after the Fatigue Management SARPs in Annex 6, Part 1 became effective.)

Doc 9966 focuses on generic fatigue management information such as establishing FM regulations and oversight functions. Three complementary implementation manuals focus on context-specific examples, including Airline Operations, General Aviation Operators of Large and Turbojet Aeroplanes, and Air Traffic Service Providers. A new fatigue management guide (FMG) for helicopter operators is also planned. Regulators (including Civil Aviation Security Inspectors – CASIs) should use Doc 9966 in conjunction with the relevant implementation guide.

The implementation manuals represent collaborations of key stakeholder groups. The FMG for airline operations is co-branded by ICAO, the International Air Transport Association (IATA), and the International Federation of Air Line Pilots' Associations (IFALPA). The FMG for GA Operators of Large and Turbojet Aeroplanes is published by ICAO, the International Business Aviation Council (IBAC), and the Flight Safety Foundation (FSF).

The newest FMG for Air Traffic Service Providers is a product of ICAO, the Civil Air Navigation Services Organisation (CANSO), representing air navigation service providers (ANSPs), and the International Federation of Air Traffic Controllers' Associations (IFATCA), representing front-line controllers.

Patrik Peters, President and CEO of IFATCA, said: "We as controllers have a responsibility. It goes to the duty of care principle that as a professional aviation person we need to make

sure we do our part as much as the service provider or the management do their part. They have to make sure we have an environment we can comfortably work in, and as a professional controller we have to make sure we are not coming fatigued to work. You have to make sure that you're in a good position to execute your work and give every day 100 percent."

"It was very good to get together with ICAO and CANSO on this document and release it as a joint effort – ICAO as the world body on aviation, CANSO as the service provider, and IFATCA as the people working the traffic," Peters added. "Global partnership is the only way we can tackle the challenges of the future."

For further information on fatigue management for aviation professionals, including guidance material and example regulations, visit the ICAO Fatigue Management resources website: www.icao.int/safety/fatiguemanagement/Pages/Resources.aspx#FMGM



“We need to work together ...
Find the commonalities
and respect the
differences. Alone no
one will ever succeed.”



very difficult to get qualified personnel. The attraction of the job is not as big anymore and the dropout rate in training is quite high. From 800 applicants for our unit we got eight suitable candidates and probably only half will successfully complete their training.

A shortage of controllers cannot be solved by overtime. Increased overtime fatigues your controllers. Very often overtime is voluntary but in some countries it's compulsory ... if they call you, you've got to come in.

It's of course easier to use the controllers that are already trained and licenced rather than to train additional staff. It's a cheaper solution in the beginning, but in the end you'll be kicked by it once you are facing an aging workforce or the workforce being fatigued.

We have seen this in Europe. In one ATC centre they had a shortage of controllers and a flu going through the centre resulting in additional unforeseen sickness. Then you have to close sectors and impose restrictions. This can be avoided by proper manpower planning.

Also, with the regulations of the Single European Sky, the European Commission has issued high key performance indicators (KPIs) which results in many service providers pushing their controllers to take on more traffic in order to meet those KPIs. That again adds up to controller fatigue. It is not an easy task for service providers – they sometimes are between a rock and a hard place.

You were a training officer, responsible for coordination of ab-initio student and conversion controller training. What qualities do you look for in a young ATC candidate?
It's not easy to find. We are a rare breed.

You need people willing to perform under time pressure in a team and in a shift work environment.

Shift work is not popular. The flexibility of young people to accept shift work is not very high.

Multitasking – multitasking is the wrong term; nobody can multitask – it's in fact quick switching between different tasks. A controller needs to have good peripheral hearing and observation. You need to observe what's happening around you.

You cannot be too hesitant in taking decisions. We all make mistakes, but if you do, you have to quickly retract and fix it; you cannot be stubborn. You have to be flexible and if that doesn't work, I'll try something else.

You need to be a good learner. There's a lot of material to study during the training. A lot of theory in the beginning.

Three-dimensional thinking. If you don't have a good 3D perception of what is on that two-dimensional screen, translated into a proper picture, then you will not become a controller.

And you should be reasonably good in mathematics.

Of course, language, especially English, can also be a barrier. Some students do not meet the language requirements, be it a national language which might not be their mother tongue if they work in a tower environment or Aviation English at an international centre for the high-level traffic. We require ICAO Level 4 English to enter the training programme. For most of the young students nowadays, English does not pose a problem. But there are regional differences.

Some students cannot take the pressure. I remember students in their 20s who, within half a year, turned completely gray hair from stress. I always say if it is stress, then you're probably in the wrong job; you have to enjoy what you're doing. That's something I feel personally. I feel very, very privileged that I found a profession that I love to do for the last 25 years. and I would still do the same job again. It's a fantastic profession. ■

E-PASSPORTS: FACILITATING TRAVEL, DETECTING FRAUD

 In an e-Machine Readable Travel Document (eMRTD), or e-Passport, a contactless integrated circuit – a ‘smart chip’ – is integrated in the booklet. The chip contains both biographical and biometric information of the bearer. The information in the chip is protected by various digital security features. To verify these security features, an e-Passport reader is needed. Once connected to a computer that has suitable software installed, an e-Passport reader can check the security features, determine the authenticity and integrity of the content, and compare the biometric information with the user of the e-Passport.

The main aim of eMRTDs is to provide greater ability to identify imposters, to enhance security and resistance to fraud, as well as to bring greater facilitation for the document holder and international travel in general.

The issue of fraudulent travel documents has recently received more attention in the general media. For example, German DW-TV aired video documentation about the market for forged and counterfeit passports. Many asylum seekers attempting to come to Europe reportedly destroy their original passports, then purchase forged passports for as much as 3,000 Euros. The report alleged that even biometric chips are being forged.

ICAO-compliant electronic passports have been in circulation since 2005. In May 2003, at the 14th Technical Advisory Group (TAG/MRTD), the members endorsed the Biometrics Deployment Technical Report and ICAO subsequently adopted it as a key component of its global, harmonized blueprint for the integration of biometric identification information into passports and other Machine Readable Travel Documents (MRTDs).

Today, more than 108 countries issue e-Passports, with an estimated circulation worldwide of more than 700 million e-Passports, a number that is growing by the day. Since the e-Passport is now widely available, forgers are beginning to explore how they might attack the e-Passport by circumventing digital security elements within the chip.

Key components of the blueprint to introduce a globally interoperable eMRTD include:

1. **Storage medium** - a contactless integrated circuit also known as “contactless chip”
2. **Primary biometric identifier** - a facial image of the passport holder

3. **Secondary biometric identifiers** - non-mandatory biometric fingerprints and iris, to be integrated at the discretion of contracting States

4. **Structure** - organization of information on the chip using the Logical Data Structure (LDS)

5. **Security** - to secure the data on the chip using a Public Key Infrastructure (PKI) methodology.

In order to conduct a proper check on e-Passports, it is important that contracting States issuing eMRTDs share their PKI certificates with each other and with the Public Key Directory of ICAO. The certificates are necessary to check if the information in the chip is stored by the competent issuing authority of a State and to check the integrity of the data and be able to identify tampering.

One prime example of bringing greater facilitation to the individual traveler was introduction of Automated Border Control (ABC) systems, based on the usage of e-Passports. The traveler enters a gate and places his or her e-Passport on a passport reader. The passport reader extracts needed information from the chip, verifies the authenticity of the content, and uses the Machine Readable Zone (MRZ) data and a biometric identifier – the facial image – for verification purposes. If the biometric and biographical data from the traveler is checked and no issues that would require further investigation are found, the gate opens and the traveler can continue on his or her way without the interference of an immigration official.

Another important benefit of this solution is that no additional specific registration of the traveler is needed at the airport of departure or arrival since the issuing authority already stored the data on the contactless chip.

AUTOMATING FRAUD DETECTION

The International Organization for Migration (IOM), a close partner of ICAO, has been looking into the possibilities of how to best assist immigration and border management agencies to better detect fraudulent travel documents and imposters. As part of its worldwide capacity-building programs to beneficiary governments, the Immigration and Border Management (IBM) Unit in the IOM's Regional Office for Asia and the Pacific in Bangkok has developed an automated system called VERIFIER TD&B. The system is designed to read the MRZ and the contactless chips of e-Passports and conduct a check on a number of digital security features (e.g. Basic Access Control, Passive Authentication, etc.). It is an easy and user-friendly tool to conduct a proper document examination.

VERIFIER TD&B is a stand-alone system for use at secondary inspection. No integration to existing systems or internet connection is required to perform document verification and imposter detection. The system can perform 1:1 facial comparison and 1:1 fingerprint comparison. A “matching score” result is displayed as a percentage once the information in the chip has been compared with the live biometric features from the bearer of the e-Passports.

The outcome will support the decision-making process of the immigration officer. After scanning an e-Passport, the system provides border officials with many useful results in fewer than 10 seconds per examination. Of course, the decision has to be made by the officials themselves based on the received information from the system and their own observations.

Between 9 July 2014 and 14 December 2015, VERIFIER TD&B systems were installed at international airports, border crossing points, and immigration headquarters in 14 countries at 20 locations. As of the end of 2015 a total of 3,715 documents were scanned from which 944 (25%) were identified as fraudulent. From this total, 744 documents (20%) were forged or counterfeit travel documents while 197 ePassports were used by imposters (5%).

NEED FOR CLOSE INTERNATIONAL COOPERATION

To be able to facilitate different immigration-related processes, such as Automated Border Control, Advanced Passenger Information, Document Examination, and other systems, all stakeholders in the e-Passport production and verification chain need to comply with the standards and specifications set by ICAO.

To make this easier for the stakeholders, ICAO recently introduced a new and user-friendly solution to reorganize Doc 9303, *Machine Readable Travel Documents*. The updated Doc 9303 contains all standards and specifications and is divided into the following specific topic sections:

- Specifications for the Security of the Design, Manufacture, and Issuance of MRTDs
- Specifications Common to all MRTDs
- Specifications for Machine Readable Passports (MRPs) and other TD3 Size MRTDs
- Specifications for TD1 Size Machine Readable Official Travel Documents (MROTDs)
- Specifications for TD2 Size Machine Readable Official Travel Documents (MROTDs)
- Machine Readable Visas
- Deployment of Biometric Identification and Electronic Storage of Data in eMRTDs
- Logical Data Structure (LDS) for Storage of Biometrics and Other Data in the Contactless Integrated Circuit (IC)
- Security Mechanisms for MRTDs
- Public Key Infrastructure for MRTDs

For more information on Doc 9303 visit:

www.icao.int/Security/mrtd/Pages/Document9303.aspx

The introduction of the ePassports has added a significant level of security and facilitation to international travel. With the ever-growing number of passengers at international airports, it is important that checking-in, immigration, security, and boarding processes flow fluidly without unnecessary interruption. The ePassport contributes substantially to these processes so long as the travel documents are designed and created according to ICAO standards and specifications and all contracting States following the recommendations precisely and consistently. ■

PHOTOGRAPHIC MEMORY

An Example of ePassport Fraud Detection

During a night patrol at the Suvarnabhumi International Airport, Bangkok, Thailand, in November 2014, Thai immigration police decided to control a female passenger at the gate from which a Thai Airways flight was departing to London. The officer asked for her travel documents and she presented a British passport along with a boarding pass.



The officer escorted the passenger to Suvarnabhumi's Document Verifying Unit to examine the passport. He scanned the passport with “the Verifier” and noted that all information (document validity, check digits, UV image, etc.) was correct. Then he invited the passenger to take a live photo to compare with the photo stored in the e-Passport's smart chip. The automatic facial recognition system compared the photos and revealed the match percentage of only 9.7590%. The officer therefore conducted a manual comparison and found that the shapes of the eyes, nose, and lips were not the same as those of the original bearer.

Searching the passenger's belongings, the officer found a Vietnamese passport with her real name. The evidence gathered by Immigration led to a confession by the passenger that she departed from Ho Chi Minh City to Bangkok on Vietnam Airlines using her real name on the passenger list. Before leaving, she paid US\$5,000 to a man to procure the British passport with a photograph of the bearer of a similar appearance. When she arrived in Bangkok, she presented the British passport to enter the country. She stated that she had planned to work illegally in the United Kingdom.



DIRECTORATE GENERAL OF CIVIL AVIATION OF INDONESIA

CIVIL AVIATION IN INDONESIA

State Profile - Indonesia

Indonesia: A Strategically Located Archipelago

Spanning 5,253 kilometers from East to West, Indonesia covers up to 1/8 of the earth's equator.

It is a country strategically located between the Pacific Ocean and Indian Ocean, bridging Asia and Australia. A total of 17,508 islands inhabited by over 260 million people.

This is Indonesia:
Location Raja Ampat Papua



HIGH FLY

The world's fastest growing aviation market is aiming to intensify collaboration with ICAO and its distinguished Members to help position Indonesia as the leading aviation growth center in the Asia Pacific region

- 260 million people
- 237 airports
- 100 million passengers annually
- Double digit passengers growth
- USD 100 billion pledged for infrastructure development
- 40 billion USD aircrafts orders
- Top ten busiest airport

Indonesia may not all be sunshine and rainbows. But its people are resilient. It survived and came out strong against various crises, economic down turns, disasters and calamities. The country's resilience is strengthened by abundant natural resources, untamed marine potential, stable political conditions, progressive economic growth, large domestic consumption, and most of all SMEs and smallholders as the pillars of our economy. Furthermore, in the next five years, Indonesia is projected to be the world's fastest growing aviation market.



Indonesia's Aviation Potential

One out of every 20 people on the planet is Indonesian. The country spans over 5000 km from the eastern to western tips. It is the world's largest archipelago with over 17 thousand islands and over 80,000 km of coastline. Its biodiversity and under water world is known as rich and is often called The Amazon of the Sea. Of the 7 great Sea Lanes of Open Channel (SLOC), four are in Indonesia. This simply means that both sea and air transportation are vital for the world's supply chain.

Indonesia is the third largest democracy in the world and is home to a very dynamic and fast growing aviation market. Both domestic and international growth is double digit, at 16% and 12 % respectively. Almost 1500 daily departures across its 237 airports cover 277 domestic routes connecting 116 cities, and 129 international routes connecting 51 cities in 30 countries. As domestic airline companies grow, so does our reach to the world. Indonesia is pledging over 35 billion Euro worth of aircraft orders and US 100 billion in infrastructure development within the next 5 years. The plan is to include building and/or refining existing airports, connectivity, logistics, energy and its respective down stream sectors.

Indonesia has 2 Flight Information Regions covering airspace equal to 25 European FIRs. Four out of nine Regional Major Traffic Flows must cross our airspace.

HIGH REMARKS

Indonesia Civil Aviation Year-to-Year Progress and Achievement



The government of Indonesia, together with civil aviation stakeholders, have introduced improved directives and applications to secure better safety, security, environmental protection as well as capacity building measures. In 2015 alone, 71 directives were published covering various aspects of aviation services and performances.

These directives were in accordance with ICAO Standards and Recommended

Practices (SARPs), and we are proud that some of the improvements received flying colors from ICAO and the world's renowned civil aviation authorities, including the FAA. Indonesia has always been in the forefront among developing nations to share capacity building efforts in the form of training, development, expert exchanges and various cooperation to achieve equal and global standards of compliance and air traveler services.

Indonesia has passed ICAO Universal Security Audit Programs (USAP) and is now waiting for ICAO's final result on the Universal Safety Oversight Audit Program (USOAP). At the same time Indonesia is also aiming towards securing FAA Category 1 which grants Indonesia reciprocal entry for Indonesian aircraft entry to US airspace and commercial service.

Indonesia is also proud to introduce its first green airport, in Banyuwangi East Java, and will continuously induce the industry to be energy saving, ecologically friendly and technologically savvy.

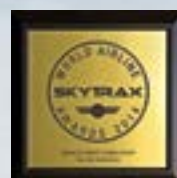
As the world's largest archipelago, less than two percent of Indonesia's population lives more than 80 km from the coastline. This implies a significant role of air transportation to ensure equal growth and inclusive prosperity. So, it is in our interest first that we make sure our people travel safely, secured, and environmentally friendly. Our intention to take more active role in ICAO is an honest reflection of our responsibility to our people and those who come and use our airspace for their travel needs today and in the future.



Major certification and score for improved safety, security and environmental protection initiatives and completion.



Our flag carrier Garuda Indonesia is the world's most improved 5 Star airline.



The best economy cabin crew in the world.



Transportation Safety Award (TSA) 2015.

May 2016, Bali - Indonesia

HIGH FIVE

None of us is as good as all of us. Indonesia is proud to be leading some initiatives in the aviation world together with developing countries in the Asia, Pacific and African regions. After all, most of the world's population and growth are in these regions. We somehow feel that this brotherhood which we all have developed and promoted over the years through various development initiatives are a testimony of friendship and a never ending spirit to earn our place in the global community. A high five salute is a gesture of developing countries' voice to the world.

This year alone Indonesia will contribute around 53 training workshops for developing countries. This is a testimony of our collaborative and supportive role to ensure that no country is left behind.

The spirit is vividly translated with a number of cooperative initiatives that have brought us to where we are today. Late May this year, this spirit echoed again in Bali when we hosted the 1st Transportation Ministerial Meeting of Developing Countries. Indonesia is grateful for this honor and is hoping the country will be elected at the forthcoming ICAO Assembly to ICAO's distinguished Council.



MINISTERS OF TRANSPORTATION MEETING

1. We, representatives of Albania, Bangladesh, Cambodia, Ecuador, Ethiopia, Fiji, Guinea, Indonesia, Kazakhstan, Kenya, Lao PDR, Lesotho, Madagascar, Montenegro, Nepal, Paraguay, Samoa, Seychelles, Solomon Islands, Suriname, Tajikistan, Thailand, Timor-Leste, Ukraine, and Vietnam gathered in Bali, Indonesia to discuss issues on civil aviation with a view to present a vision on strengthening civil aviation cooperation through capacity building.
2. While underlining the leadership role of ICAO, we recognize that improving the global safety, security, capacity, and efficiency of civil aviation is best achieved through cooperative, collaborative and coordinated approach with all stakeholders, so as to avoid duplication.
3. We reaffirm our commitment to abide by the obligations under Article 37 and 38 of the Convention on International

Civil Aviation and recognize the differences in human, technical, and financial resources available among Member States to do so.

Therefore, we stress the importance of international cooperation in supporting States to fulfill their obligations under Article 37 and 38 of the Convention.

4. We further acknowledge the importance of strengthened human resources as well as civil aviation infrastructure to ensure the effective implementation of the ICAO Standards and Recommended Practices (SARPs) as far as practicable by the Member States and to address States with Significant Safety Concerns (SSCs).
5. We recognize and support the ICAO's continuing work to render assistance, advice and other support for Member State's efforts in effective and sustainable implementation of SARPs and to support capacity building in

States, in particular through its "No Country Left Behind" initiative.

We encourage States to make further use of such assistance where it is needed; and similarly encourage States in a position to do so and relevant aviation safety partners, wherever possible, to assist requesting States with financial and technical resources to ensure the immediate resolution of identified SSCs and to make available such assistance in coordinated and comprehensive manner.

6. We continue to support ICAO in continuing to demonstrate its leadership role on all international civil aviation matters related to the environment.
7. We are committed to further strengthen regional and sub-regional cooperation in order to promote the highest degree of aviation safety and security.

Done in Bali, 30 May 2016

List of Civil Aviation Trainings, Seminars and Workshops Provided by the Republic of Indonesia in 2016

Training Programmes	Dates	Application Deadlines	Venue	Website for Registration/Further Information	Contact Person (email of PIC handling training, seminar and workshop)
I. GOVERNMENT OF THE REPUBLIC OF INDONESIA					
A. Provided by the Directorate of Airport, Directorate General of Civil Aviation - Indonesia					
1. Workshop on Get Airport Ready for Disaster (GARD)	September 2016	1 August 2016	Bali	www.hubud.dephub.go.id	Ms. Ade Trisetyo: adeth_rossi@yahoo.com
2. Workshop on Pavement Maintenance	30 May – 1 June 2016	1 May 2016	Jakarta		Ms. Ade Trisetyo: adeth_rossi@yahoo.com
3. Workshop on Apron Safety	9-13 May 2016	25 April 2016	Jakarta		Ms. Raden Ayu Dery Indriani: deryindriani@yahoo.com
B. Provided by the Directorate of Navigation, Directorate General of Civil Aviation - Indonesia					
4. Workshop on Flight Procedure Design	3-5 August 2016	1 July 2016	Jakarta	TBA	Mr. Iyan Andri: andri@aviasi.org
5. Workshop on ADS-B	30 May- 3 June 2016	13 May 2016	Jakarta		Ms. Waya Fadini: waya_fadini@dephub.go.id Ms. Mardiana: dhy_en@yahoo.com
C. Provided by the Agency for Human Resources Development, Ministry of Transportation – Indonesia					
6. Inspector Training System Course	9-20 May 2016	02 May 2016	Bali	http://id.catc-indonesia.org/	Mr. Andi Yuliawan: andhi_yullyawan@yahoo.com and info@catc-indonesia.org
7. ICAO TRAINAIR Plus Training Manager Course	20-26 July 2016	29 June 2016	Bali		
8. Airport Emergency Plan	20-26 July 2016	29 June 2016	Bali		
9. Air Traffic Services Incident Investigation Course	21-27 Sept 2016	31 August 2016	Bali		
10. Airport Security Programme Workshop	21-27 Sept 2016	31 August 2016	Bali		
II. CIVIL AVIATION STAKEHOLDERS					
D. Provided by Garuda Indonesia Training Centre (GITC) – PT. Garuda Indonesia (Persero) & GMF AeroAsia					
11. Training for Flight Operation Officer Recurrent	3 days training (available August & October 2016)	1 month before	Jakarta	http://training.garuda-indonesia.com	Ms. Dwi Astuti: astutid@garuda-indonesia.com
12. Route Navigation Performance (RNP) Training	2 days training (Available August & October J2016)	1 month before	Jakarta		
13. Training on Dangerous Goods	2 days training (available August & October 2016)	1 month before	Jakarta		
14. Aviation Legislation for Aircraft Maintenance Personel	25-26 July 2016	1 month before	Jakarta	www.gmf-aeroasia.com	Mr. Syahrur Hermawan: hermawan@gmf-aeroasia.co.id
15. A320 Familiarization for Aircraft Maintenance Personnel	27-28 July 2016	1 month before	Jakarta		
E. Provided by PT. Angkasa Pura I (Persero)					
16. Workshop Aviation Security Profiling Technique Enhancement	• Batch I: 10-13 May 2016 • Batch II: 23-26 August 2016	• Batch I: 30 April 2016 • Batch II: 30 June 2016	Denpasar	www.angkasapura1.co.id/iftp2016	Mr. Sulkifli: sulkifli@ap1.co.id
17. Workshop Implementation of Screening Process for Aviation Security Service	• Batch I: 23-27 May 2016 • Batch II: 8-12 August 2016	• Batch I: 30 April 2016 • Batch II: 30 June 2016	Denpasar		Ms. Mariah Ulfah: mariah.ulfah@ap1.co.id



THE SECOND ICAO WORLD AVIATION FORUM

AVIATION PARTNERSHIPS FOR SUSTAINABLE DEVELOPMENT

Strongly supporting ICAO's **No Country Left Behind** (NCLB) goals, the Second **ICAO World Aviation Forum (IWAF2016)** will bring States and the donor/development community together to help each side maximize their opportunities to ensure more successful and sustainable local and regional prosperity. Designed for Ministers and other high-level government officials responsible for transport, infrastructure, finance, economy, and tourism, as well as Directors General of Civil Aviation and key industry and financial partners,

IWAF2016 will explore the wide-ranging socio-economic benefits of an effectively supported civil aviation sector, outline ICAO's NCLB evolution and its goal of supporting States in their development of practical business cases for aviation projects, and seek to optimize collaboration between States, industry, ICAO and development partners.

For more information, please contact:
IWAF2016@icao.int or visit
www.icao.int/meetings/IWAF2016



ICAO

UNITING AVIATION

SAVE THE DATE!

AUTOMATIC SCREENING DEVICE FOR NON-METALLIC CARGO

Detect components of explosive devices hidden inside commercial cargo

 Since the late 1990s, security for goods shipped by air has become a significant concern. Following the events of September 11th, 2001, most countries have passed new legislation regarding Civil Aviation Security that includes security screening requirements for air cargo.

Air cargo screening's purpose is to prevent the presence of Assembled Explosive and Incendiary Devices (AEIDs) that would compromise the security of cargo or passenger aircrafts carrying commercial goods. However the inspection of goods may cause difficult and costly operations depending on the type of cargo going through screening. As an example, dense cargo remains an issue for common screening devices such as X-ray scanners because of the physics limitations of the technology that make it difficult to screen dense material and lighter and less dense material when configured in large pallets.

CEIA, world leader in threat electromagnetic detection technologies, has been deploying over the last decade a solution that drastically improves the screening of many types of cargo characterized by low X-ray penetration. The commodity groups of interest are defined as non-metallic commercial cargo such as produce, seafood, meat, printed materials, flowers, and apparel.

The EMIS (Electro-Magnetic Inspection Scanner) quickly and accurately screens packages or pallets using a harmless, low-intensity electromagnetic field to ensure there are no explosive devices hidden within. This method of inspection does not require visual interpretation of an image, unlike typical X-ray scanners, or any direct manipulation of the goods, unlike explosive trace detection equipment. Threats can be detected throughout the entire stack of cargo minimizing operator interaction with the goods.

When methods such as X-ray and explosives trace detector (ETD) focus on trying to detect the possible presence of explosives inside the goods, the EMIS technology based on electromagnetic analysis provides an automatic detection of AEIDs' metallic components such as detonators and batteries. The result is consequently very reliable and guarantees the security of the shipments.

Global supply chain actors such as third-party logistics providers, freight forwarders, air carriers, cargo handlers, independent cargo screening facilities, etc., shall derive great benefit from the use of the EMIS. Indeed, operators avoid disassembling the pallets to inspect each individual package, decreasing the work dedicated to screening operations, reducing greatly the time and cost of inspection and providing extremely reliable security.

The EMIS was first evaluated in the early 2000s by the French DGAC/STAC (*Direction Générale de l'Aviation Civile/Service Technique de l'Aviation Civile*). They were then introduced in the late 2000s as part of the standard screening methods for non-metallic cargo by the European Commission (former Regulation No. 185/2010 and newest Regulation No. 2015/1998) and the U.S. Transportation Security Administration (TSA) Certified Cargo Screening Program – Air Cargo Screening Technology List. More recently, the EMIS was also approved as the most suitable technology for screening non-metallic goods by the United Kingdom Department for Transport and the Australian Office of Transport Security.

The EMIS shall be utilized to fulfil the requirements for most international security programs, according to the latest Aviation Security Regulations. As a consequence, many units have already been deployed successfully in several ECAC member states such as France, the United Kingdom, Norway and Iceland, as well as the United States.



EMIS 8075



EMIS 130160

The series currently includes five models depending on the screening needs: EMIS 6047 and 8075 for small to medium packages; EMIS 110160, 130160 and 130200 for palletized cargo.

Description of the CEIA EMIS scanners:

- The EMIS scanners use an electromagnetic field of low intensity.
- The result of the analysis is supplied automatically and does not require any kind of interpretation by the operator, unlike systems based on X-ray technology.
- Due to the automated process and the use of very high-speed data signal processing, it is possible to inspect up to 3,000 packages per hour with the EMIS 6047 and the EMIS 8075 or up to 120 pallets per hour with the EMIS 110160, 130160 and 130200.
- The fully automatic analysis performed by the CEIA EMIS scanners and their ease of use allow the screeners to quickly operate the system without the need for any time-consuming training courses that also require yearly refreshes.
- The use of the CEIA EMIS scanner shall reduce the amount of goods unnecessarily rejected or that require a second level of screening due to the presence of organic materials, including those with high density and conductivity.
- Thanks to the consistent performance and robust design, no periodic maintenance is required.
- The CEIA EMIS systems do not use any ionizing radiation and therefore are totally safe for the operators as well as for certain types of goods, such as live animals or dairy products.

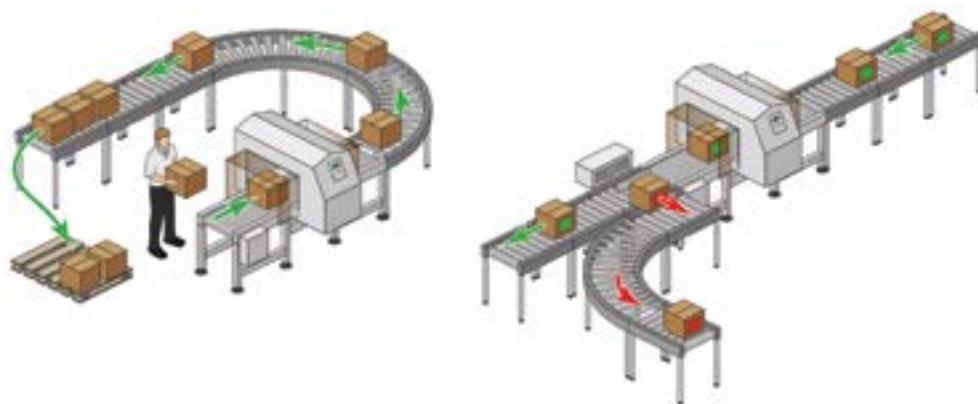


Figure 1: Possible installation layouts for EMIS 6047/8075

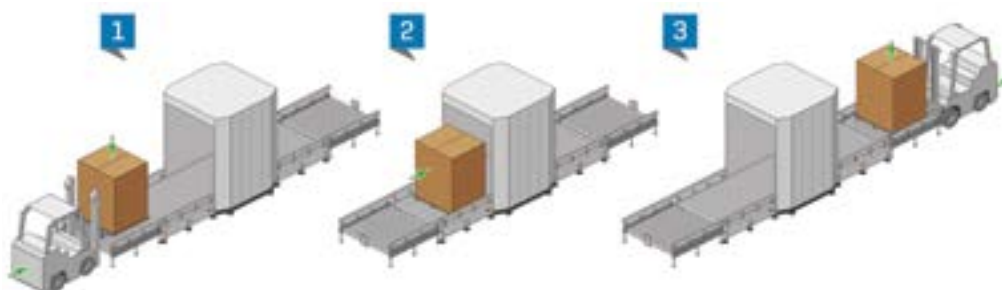


Figure 2: Method of use for the EMIS 110160/130160/130200

Each model offers the following benefits:

- Fast, real-time analysis
- Up to 10 times higher throughput than other technologies
- Automatic detection with no nuisance alarms
- Reduction of analysis time
- No dedicated operator needed
- Reduction of operating costs
- Completely solid-state construction (no periodic maintenance or calibration required)
- Complete data logging and traceability
- Safe for operators and cargo screened (no use of ionizing radiation)

The CEIA EMIS units can inspect the following types of cargo:

- Perishable goods such as
 - » fish, meat
 - » fruits and vegetables
 - » fresh flowers
 - » organic materials in general
- Paper products, plastic, rubber
- Apparel without metal components
- Frozen goods in non-metallic containers
- Live animals
- Non-metallic hazardous materials

For more information about the EMIS automatic screening device for non-metallic cargo, please contact CEIA S.p.A. at: infosecurity@ceia-spa.com and visit www.ceia.net

CEIA (Costruzioni Elettroniche Industriali Automatismi) S.p.A.
Zona Industriale, 54/56 - 52041 Vicinaggio - Arezzo (Italy)

T +39 0575 4181 F +39 0575 418290 E infosecurity@ceia-spa.com

www.ceia.net/



TASK FORCE REFINING UNRULY PASSENGERS GUIDANCE

 Unruly passengers are becoming an increasing concern for airlines. The International Air Transport Association (IATA) estimates that every day an average of 70 flights are faced with unruly behaviours which result in delays, diversions, and the disturbance of the experience of other passengers on board the aircraft.

A Diplomatic Conference held under the auspices of ICAO in April 2014 led to the *Montréal Protocol* amending the 1963 *Convention on Offences and Certain Other Acts Committed on Board Aircraft* and a resolution calling on ICAO to update the Guidance Material on the legal aspects relating to unruly passengers – the so-called *Circular 288*.

To develop possible changes to the Guidance Material, the ICAO Task Force on Unruly Passengers (UPAXTF) was established, chaired by Dr. Malgorzata Polkowska, the Permanent Representative to the Council of ICAO of the Republic of Poland. The Task Force includes three drafting sub-groups chaired by Singapore, Kenya, and Finland.

First meeting in September 2015 in Montréal, Canada, the Task Force concluded that the list of offences in *Circular 288* is still relevant. The list is sufficiently comprehensive to cover the unruly behaviour that takes place on a daily basis. If any unruly behaviour is not specifically listed, it is likely to fall within the scope of the provision concerning refusal to obey the instruction of the aircraft commander. Also, the list of offences does not restrict the power of a State to introduce into its domestic legislation any other offence or prohibited act relating to unruly behaviour on board civil aircraft. The Task Force therefore decided to leave the list of offences unchanged.

The UPAXTF held their second meeting in Geneva, Switzerland on 30-31 March 2016, followed by the ICAO/IATA Unruly Passenger Seminar on 1 April. Participants included members of the Task Force as well as representatives of airlines and governments. Panel topics

included practical problems and legal aspects of dealing with unruly passengers, a potential multi-stakeholder solution, and changes which the *Montréal Protocol* will bring. Also discussed were the prevention of unruly passenger incidents and the issue of providing alcoholic beverages on board aircrafts and in airports prior to boarding, often tied to unruly passenger incidents.

Dr. Polkowska, Dr. Jiefang Huang, Senior Legal Officer, ICAO, and Andrew Opolot, Corporate Secretary/Legal Counsel, Civil Aviation Authority of Botswana, as well as other legal experts from the ICAO Legal Affairs and External Relations Bureau took part in the meeting of the Task Force and seminar. Other seminar speakers included IATA Director General and CEO Tony Tyler (now retired); former representative to ICAO from the International Federation of Air Line Pilots' Associations (IFALPA), Captain Paul McCarthy; Michael Jennison, Assistant Chief Counsel with the US Federal Aviation Administration (FAA); and Transport Canada Legal Counsel, John Thachet.

The Task Force finalized the legislative structure of the introductory chapter and drafted the chapters on legal mechanisms, the list of offences, and jurisdiction. The need for close cooperation between all airport services providers and the enforcement of applicable law was highlighted.

Both events were a great opportunity for the exchange of views on how governments and airlines can approach unruly passenger incidents, taking into account differences in national laws and jurisdictions as well as their interplay with international law.

The next meeting of the Task Force will be in the first half of 2017 in order for the final results to be presented at the next session of the Legal Committee at the end of 2017.

The final version of *Circular 288* will especially benefit countries which do not have any regulations regarding unruly passengers. ■





MALAYSIA: *Spearheading the aviation industry*

MINISTRY OF TRANSPORT MALAYSIA
No. 26, Jalan Tun Hussein, Presint 4, 32100 W.P. Putrajaya



DCA Tower at Kuala Lumpur International Airport

AN OVERVIEW

Malaysia is located in Southeast Asia, consisting of Peninsular Malaysia and East Malaysia with a population over 30 million. The multi-ethnicity, all year long festive seasons and its pristine beaches are a few of the many attractions of Malaysia. In 2015, Malaysia received 25.7 million tourists, contributing RM69.1 billion (USD 17.7B) to the country's revenue. Better accessibility, connectivity and promotions offered contributed to the increase of tourist arrivals to Malaysia.

The Malaysian civil aviation industry has seen a tremendous growth over the last years with the Government and tourism industry players continuing initiatives in raising the tourism and aviation industry in Malaysia. The aviation industry is undergoing a transformation to ensure its progress is in tandem with global trends as Malaysia prepares to achieve a high income developed nation status by the year 2020.

As part of the government's effort to streamline and strengthen the Malaysian aviation industry, numerous measures have been put in place, including the establishment of the Malaysia Aviation Commission, Civil Aviation Authority of Malaysia and the restructuring of Malaysia Airlines Berhad.

Liberalization of Air Transport

Air transport has grown rapidly in the past few decades mainly due to the decline of air transport cost. Liberalisation of air transport contributes to market growth and economic expansion which indirectly reduces the cost of air transport. Malaysia has and continuously promotes a progressive liberal aviation policy internationally and within ASEAN as part of its efforts to develop the air transport system.

Within the ASEAN framework, ASEAN Transport Ministers agreed to formulate the transport vision for post-2015 and develop the successor of the Brunei Action Plan (BAP) which is

the Kuala Lumpur Transport Strategic Plan (KLTP) 2016-2020 during the Twenty-First ASEAN Transport Ministers Meeting held on November 5, 2015 in Kuala Lumpur with the vision

“Towards Greater Connectivity, Efficiency, Integration, Safety and Sustainability of ASEAN's Competitiveness and Foster Regional Inclusive Growth and Development.”

KLTP aims to support the realization of the vision of the ASEAN Economic Community (AEC) 2025 which calls for an integrated region that will contribute towards a highly cohesive ASEAN economy. In this regard, the KLTP, which serves as a guiding regional policy document, outlines 30 specific goals, 78 actions and 221 milestones in the areas of air transport, land transport, maritime transport, sustainable transport and transport facilitation.

Much progress has been made by ASEAN Member States towards establishing a regional open skies arrangement. ASEAN Member States have been actively pursuing development of air connectivity through the implementation of the ASEAN

Single Aviation Market that includes the ASEAN open skies agreements as well as engaging ASEAN Dialogue Partners, such as China, European Union, India, Japan and the Republic of Korea in air services negotiations.

Malaysia together with ASEAN Member States is committed to work towards advancing safer and more secure skies in ASEAN and enhancing air traffic management efficiency and capacity through a seamless ASEAN sky.

Establishment of Malaysia Aviation Commission (MAVCOM)

Following the restructuring of Malaysia Airlines Berhad (MAB) in 2014, the Cabinet on August 27, 2014 has agreed on the establishment of the Malaysian Aviation Commission (MAVCOM). The Malaysia Aviation Commission Act has been approved by the Government and became operational on March 1, 2016.



Malaysia Airlines, the national carrier is a part of one world family



Malaysian Aviation Commission

Suruhanjaya Penerbangan Malaysia

As an independent regulatory body, the Commission's responsibilities will include, amongst others, processing and approval of Air Service Licence (ASL), Air Services Permit (ASP), Ground Handling Licence, Aerodrome Operator Licence, setting passenger service charges and security charges, landing and parking charges, managing and administering the traffic rights and public service obligation routes. The Commission is also responsible for regulating issues concerning the protection of consumer rights, competition and dispute settlements that occur in the aviation industry.

With this existence of MAVCOM, the Ministry of Transport Malaysia will now focus on the establishment of the civil aviation policy, while regulation of the technical aspects and safety are maintained by the Department of Civil Aviation Malaysia.

SIGNIFICANT DEVELOPMENT IN THE AIRLINE INDUSTRY

Passenger movements at Malaysia airports have exceeded 80 million for two consecutive years to 86.4 million in 2015, an increase of 0.86% compared to 2014. The opening of KLIA2, a more liberal air services arrangement and increase of connectivity, the return of British Airways to Malaysia and the restructuring of Malaysia Airlines are among the reasons contributing to the increase of passenger movements in Malaysia.

PASSENGER MOVEMENT (ALL AIRPORTS) 2015

International	40,344,811
Domestic	46,064,502
Total	86,409,313

The emergence of low cost airlines in Malaysia has also contributed tremendously towards the growth of the tourism industry in Malaysia.

Malaysia Airlines Berhad



Malaysia Airlines is the national carrier of Malaysia, offering the best way to fly to, from and around Malaysia. Among the few airlines to have won both a Skytrax five-star rating and World's Best Cabin Crew award, Malaysia Airlines takes 40,000 guests daily on memorable journeys inspired by Malaysia's diverse richness. It also won Best Airline Signature Dish in 2012 and 2013 for its Satay, a traditional Malay dish, served in Business and First Class cabins. Malaysia Airlines



AirAsia, World's Best Low Cost Airline for 7 Consecutive Years From 2009 to 2015

embodies the incredible diversity of Malaysia, capturing its rich traditions, cultures, cuisines and warm hospitality on board, while opening up more of Malaysia's destinations than any other airline.

Since September 2015, the airline has been owned and operated by Malaysia Airlines Berhad. As a member of oneworld®, Malaysia Airlines and its partners in the global alliance offer a superior, seamless travel experience to more than 1,000 destinations in 150 plus countries, with special privileges and rewards for frequent flyers, including access to more than 650 airport lounges worldwide. Up to 90 destinations will be serviced across Asia, Africa, the Americas and the Middle East via a new codeshare partnership with Emirates, signed in early 2016.

In April 2016, Malaysia Airlines showcased its new A330-300 Business Class seats and will see all 15 A330-300 aircrafts fitted with the new configuration by September 2016. The business class seat pitch, which measures at 43 inches with a width of 20.6 inches and length of 76 inches (fully flat), is one of the best received business class seats in the industry. The new Business Class seats will be made available on all A330-300 flights between Malaysia, Australia and Asia.

AirAsia & AirAsia X Group

AirAsia and AirAsia X forms the leading and largest low-cost carrier Group in Asia, servicing the most extensive network with over 100 destinations across Asia, Australia, the Middle East and Africa. Since the inception of AirAsia in 2001 and AirAsia X in 2007, the group has carried over 330 million guests.



AirAsia has grown its fleet from just two aircraft to 200 A320s and proud to be a truly Asean (Association of Southeast Asian Nations) airline with established operations based in Malaysia, Indonesia, Thailand, Philippines, India and Japan. Meanwhile, AirAsia X operates a core fleet of 29 A330-300s, each with a seat configuration of 12 Premium Flatbeds and 365 Economy seats. AirAsia X expanded its regional expansion with Thai AirAsia X operating from Don Mueang International Airport, Thailand and Indonesia AirAsia X operating from Bali, Indonesia.

Skytrax named AirAsia as the "World's Best Low Cost Airline" for seven consecutive years from 2009 to 2015 and awarded AirAsia X for three consecutive years from 2013 to 2015 with the "World's Best Low Cost Airline Premium Cabin" and

"Best Low Cost Airline Premium Seat" at the annual Skytrax World Airline Awards. AirAsia & AirAsia X group is the first airline globally to collaborate with INTERPOL to implement the I-Checkit system to screen the passports of all its prospective passengers against information contained in the world police body's Stolen and Lost Travel Documents (SLTD) database.

Recently, AirAsiaX commenced flights from Kuala Lumpur to the Gold Coast and to Auckland 7 times a week and reintroduced flight from Kuala Lumpur to Delhi, flying 4 times a week. AirAsia has also introduced two new routes from Penang to Yangon and Kuala Lumpur to Jieyang, People's Republic of China, which commenced in March 2016.

Malindo Air



Malindo Air is a Malaysian premium airline with headquarters in Petaling Jaya, Selangor, Malaysia. The name Malindo signifies a cooperative pact between the two countries, derived from the countries' names – *Malaysia* and *Indonesia*. Malindo Air operates from the Kuala Lumpur International Airport (KLIA) and the Sultan Abdul Aziz Shah Airport (also known as the Subang Airport, Subang SkyPark or LTSAAS) in Subang, Selangor, Malaysia. The carrier currently operates a young fleet of Boeing 737-900ER, 737-800 and ATR72-600 aircraft for both domestic and international flights.

Commencing operations on 22 March 2013, Malindo Air is the first airline to operate the brand new dual-class layout B737-900ER in Malaysia. The airline's inaugural flight took off from Kuala Lumpur to Kota Kinabalu, Sabah, Malaysia on 22 March 2013 and has since expanded to include popular regional destinations in Thailand, India, Indonesia, Singapore and Nepal with the first international flight departing for Dhaka, Bangladesh on 28 Aug 2013.

Raya Airways, a renowned name in the cargo airline business in Asia. The airline, established in November 1993, has under its wings, more than 22 years' experience in cargo business. Raya Airways offers scheduled and express delivery, aircraft charters, ground handling, warehousing, trucking connections, and MRO (maintenance, repair and overhaul) services to its prestige line of clientele.

DELIVERING TRUST AND VALUE



● CURRENT ROUTE
● PLANNED NEW ROUTE



MULTIMODAL

- Air transport
- Overland transport
- Charter



WAREHOUSING

- Break bulk
- Storage
- Shipment Unification
- Customs Brokerage



GROUND HANDLING

- Ground handling at all Malaysian Airports
- Warehousing for cargo operations
- Ramp Handling Service
- Aviation Security Services



ENGINEERING SERVICES

- Maintenance
- Repair
- Overhaul
- Workshop: Sheet Metal, Painting, Battery, Oxygen and Brakes



Malindo Air, Smarter way to travel

The carrier operates a network of scheduled passenger services throughout Malaysia, and has spread its wings to regional destinations in Indonesia, Thailand, Bangladesh, India, Singapore, Nepal Sri Lanka, Australia and Pakistan covering an extensive network of almost 40 routes in the region. Malindo Air prides itself in offering its customers competitively low fares, on-time flights and excellent customer service both on-ground and in-flight. In-flight connectivity services Malindo WiFi and Malindo Mobile were introduced in June 2015, as a product enhancement on board its B737-900ER fleet. Currently Malindo Air has 800 flights travelling weekly to over 40 destinations.

Raya Airways



Raya Airways, a renowned name in the cargo airline business in Asia. The airline, established in November 1993, has under its wings, more than 22 years' experience in cargo business. With its'

tagline *Delivering Trust and Value*, Raya Airways offers extensive cargo solutions via its scheduled and express delivery, aircraft charters, ground handling, warehousing, trucking connections, and MRO (maintenance, repair and overhaul) services to its prestige line of clientele.

Raya also has been granted the Truck Flight license by the Malaysian Government which allows the operations of Multimodal transport from and between all domestic airports in Malaysia as well as into Singapore.

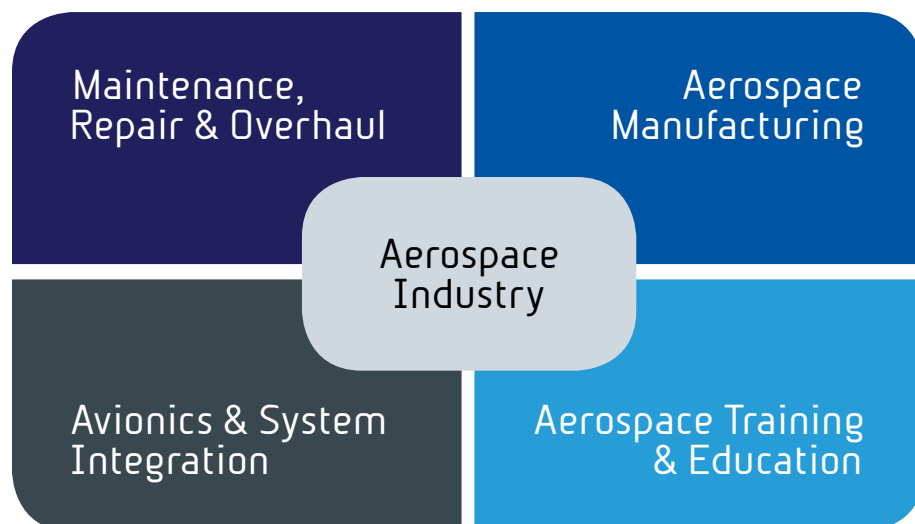
Designated as the National Cargo Carrier by the Malaysian Transport

Ministry in 1996, Raya Airways continue to expand its wings worldwide, garnering experience and expertise in the cargo industry. Raya Airways is embarking on a re-fleeting exercise to triple the volume of cargo carried annually from 30,000 tonnes to 100,000 tonnes in the next 5 years. Raya Airways also provides maintenance, repair and overhaul services for B737-200, B727-200 & B757-200 type aircrafts, operating from a two-bay hangar in Subang. The engineering services also include workshops for sheet metal, composite and painting, battery and oxygen, wheels and brakes.

Raya Airways will be one of the major players in the cargo and logistics cluster for Malaysia's Aeropolis project, a massive development masterplan to create an airport city in KLIA area. Raya Airways, is currently providing services at all Malaysian airports ranging from warehousing for cargo operations, to ground and ramp handling services, and aviation security services.

MALAYSIA AEROSPACE INDUSTRY

The Malaysia Aerospace Industry Blueprint was launched on March 17, 2015 during the Langkawi International Maritime and Aerospace Exhibition (LIMA'15). The new Blueprint outlines the country's plans to be a top aerospace nation in South East Asia and to be an integral part of the global market.





CREATING TOMORROW, **HERE**



3 KEY CLUSTERS



**AIR CARGO
& LOGISTICS**



**AEROSPACE
& AVIATION**



**MICE
& LEISURE**

KLIA Aeropolis is the embodiment of a future airport city and a multimodal business nexus. A national initiative, it is poised to propel Malaysia into a competitive regional air cargo, logistics and aerospace hub. Grow your business with us at KLIA Aeropolis.



www.malaysiaairports.com.my



The industry has contributed to the nation's economy; in 2014 the total revenue generated is RM11.8 billion and has provided more than 19,500 jobs of which 8,600 are in the manufacturing sub-sector, 9,900 in the MRO sub-sector and 1,000 in other sub-sectors. At present there are 159 active aerospace companies established in the country, an increase of three-fold compared to 1998. Amongst the strategies outlined in the blueprint are:

- **Strategy 1:** Apply policies that will impact the future landscape of the industry
- **Strategy 2:** Enhance the effectiveness of institutions that have direct influence on the growth of the industry
- **Strategy 3:** Harmonize civil and military regulations and promote green practices
- **Strategy 4:** Invest in research and technology to develop new capabilities and enhance industry competitiveness
- **Strategy 5:** Promote aerospace investments through incentives and matching funding
- **Strategy 6:** Attract and prepare the workforce of tomorrow for Malaysia and the region
- **Strategy 7:** Capture new markets and strengthen local supply chains

By 2030, the Malaysian Aerospace Industry is forecasted to generate total revenue of RM55.2 billion and provide skilled jobs to more than 32,000.

COMMITMENT TO AVIATION SAFETY AND SECURITY

Malaysia is committed to continuous safety and security enhancements in line with ICAO's Strategic Objectives.

Malaysian aviation authorities are committed to a strong oversight system with the highest standards of safety and security and work closely with all stakeholders in compliance to ICAO Standards and Recommended Practices. In cognizance of ICAO's *No Country Left Behind (NCLB)* goals, Malaysia is fully committed to effectively implement global aviation standards and give priority to aviation in its national development plans.

Malaysia has actively participated and contributed its expertise to the various safety programs of ICAO particularly at the Asia Pacific level. Malaysia has also continuously provided voluntary financial contributions to support environment and safety-related activities. Malaysia's active participation and financial contribution to regional initiatives, such as The Cooperative Development of Operational Safety & Continuing Airworthiness Programme, South East Asia (COSCAP-SEA) and Cooperative Aviation Security Programme, Asia Pacific (CASP-AP) have enhanced safety and security of the civil aviation in the country.

Malaysia will also be hosting the Third Joint ICAO-WCO Conference on Enhancing Air Cargo Security and Facilitation on 26 to 28 July 2016 which aims to provide platform for participants to discuss the current situation, challenges and advancements relating to air cargo security and facilitation.

MALAYSIA AVIATION ACADEMY (MAVA)

To Be The World's Leading Aviation Training Centre and Centre of Excellence.

In supporting ICAO's *NCLB* and *Next Generation of Aviation Personnel (NGAP)* initiatives, Malaysia has continuously extended assistance to other nations via the Malaysian



Bird's eye view of Kuala Lumpur International Airport

Technical Cooperation Programme (MTCP) to fulfil the training needs of the global aviation community. The Malaysia Aviation Academy (MAVA) is an ATC Approved Training Organization and the training arm of the Department of Civil Aviation Malaysia, having completed all the requirements to attain TRAINAIR Plus Programme (TPP) full membership including the successful development of its first Standardized Training Package (STP) entitled 'Handling Emergencies and Unexpected Events in terminal and en-route airspace.' To date, a total of 377 aviation personnel from 65 countries have been trained under the MTCP at MAVA in a range of aviation courses.

MALAYSIA AIRPORTS

GLOBAL LEADER IN CREATING AIRPORTS CITIES

Currently, Malaysia has 22 airports - 6 international airports and 16 domestic airports which contribute greatly to the nation's economic development as well as rapid growth in passenger volume and cargo statistics. Malaysia's main gateway, the Kuala Lumpur International Airport or KLIA, is a testimony of an active investment policy and supply driving airport infrastructure capacity development. Amongst the significant highlights of Malaysia Airports are as follows:

Runway to Success 2020 (RtS2020)

The RtS2020 is a strategy set by Malaysia Airports Holdings Berhad (MAHB) to provide an overview of the next stage of the Airports development for the term 2016-2020. With the vision

"to be the global leader in creating airport cities," MAHB aims to be the worldwide benchmark for spearheading the establishment of urban townships and communities around the airports.

a) KLIA Aeropolis

Aeropolis is the concept of a city airport that can be a catalyst for urban economic developments and the centre of clusters for related technological, innovation and research activities.

The Aeropolis centred around three development clusters Air Cargo & Logistics; Business & Aviation Parks; Meetings, Incentives, Conferences and Exhibitions ("MICE") & Leisure. These clusters are aligned with national agendas such as the National Logistics & Trade Facilitation Masterplan (2015-2020) ("NLTF"), National Aerospace Blueprint (2015-2030) as well as several National Key Economic Areas (NKEA)/ such as Business Services & Tourism of the Economic Transformation Programme (ETP).

KLIA Aeropolis will eventually become a multimodal destination in its own right for business, shopping and entertainment, contributing to the overall prosperity of the airport and the surrounding communities. In line with the Runway-to-Success 2020 Business Plan, Malaysia Airports is expected to develop approximately 1,300 acres over the next 5 years with investment of close to RM1 billion for common infrastructure.



Kuala Lumpur International Airport 2 (klia2)



Kuala Lumpur International Airport (KLIA)

b) Future plans of Malaysia Airports

Malaysia Airports is currently focusing in developing projects on the air cargo & logistics industry as well as the aerospace industry. Malaysia Airports has designated/demarcated land boundaries within the KLIA for various development projects and is currently undertaking on various studies to fully realize the potential of these areas. A key catalyst project in the air cargo and logistics industry in KLIA is the conversion of the former LCCT Terminal into a cargo hub. Other projects also include the development of a Cargo & Logistics Park as well as an Aerospace TechParks.

With the relocation of low-cost carrier terminal operations to klia2 in May 2014, there is an opportunity to convert the LCCT into a cargo terminal serving the future demand that will be created through Malaysia's national supply chain initiatives. Malaysia Airports envisions the conversion of the former facility to be part of a wider logistics and cargo city strategy;

to increase the volume and to offer high-value services for special and time-critical goods and products at KLIA. It will function as a key driver for subsequent phases of the cargo infrastructure development.

Malaysia Airports has subsequently awarded the former LCCT facility to Raya Airways Sdn Bhd ("Raya") and DRB-HICOM through their wholly owned subsidiary, KL Airport Services ("KLAS"), for their cargo handling operations. This is seen as one of the first catalyst initiatives to increase the volume of cargo and logistics services, and to offer high-value services for special and time-critical goods and products at KLIA.

The relocation of Raya Airways also includes world class services such as DHL Express and Dnata which will further increase the service level in the cargo and logistics eco-system in KLIA as Raya has recently entered into a joint venture with both companies. ■



KLIA Air Traffic Control Center



The connecting bridge at klia2

CONNECTING ABOVE AND BEYOND.

Connecting people is at the core of what we do. That's why we're always improving our network to open up connections to new destinations via direct flights or fly-thru services.



WORLD'S BEST
LOW-COST AIRLINE
7 YEARS RUNNING



20
HUBS

MORE THAN

100

DESTINATIONS AND GROWING



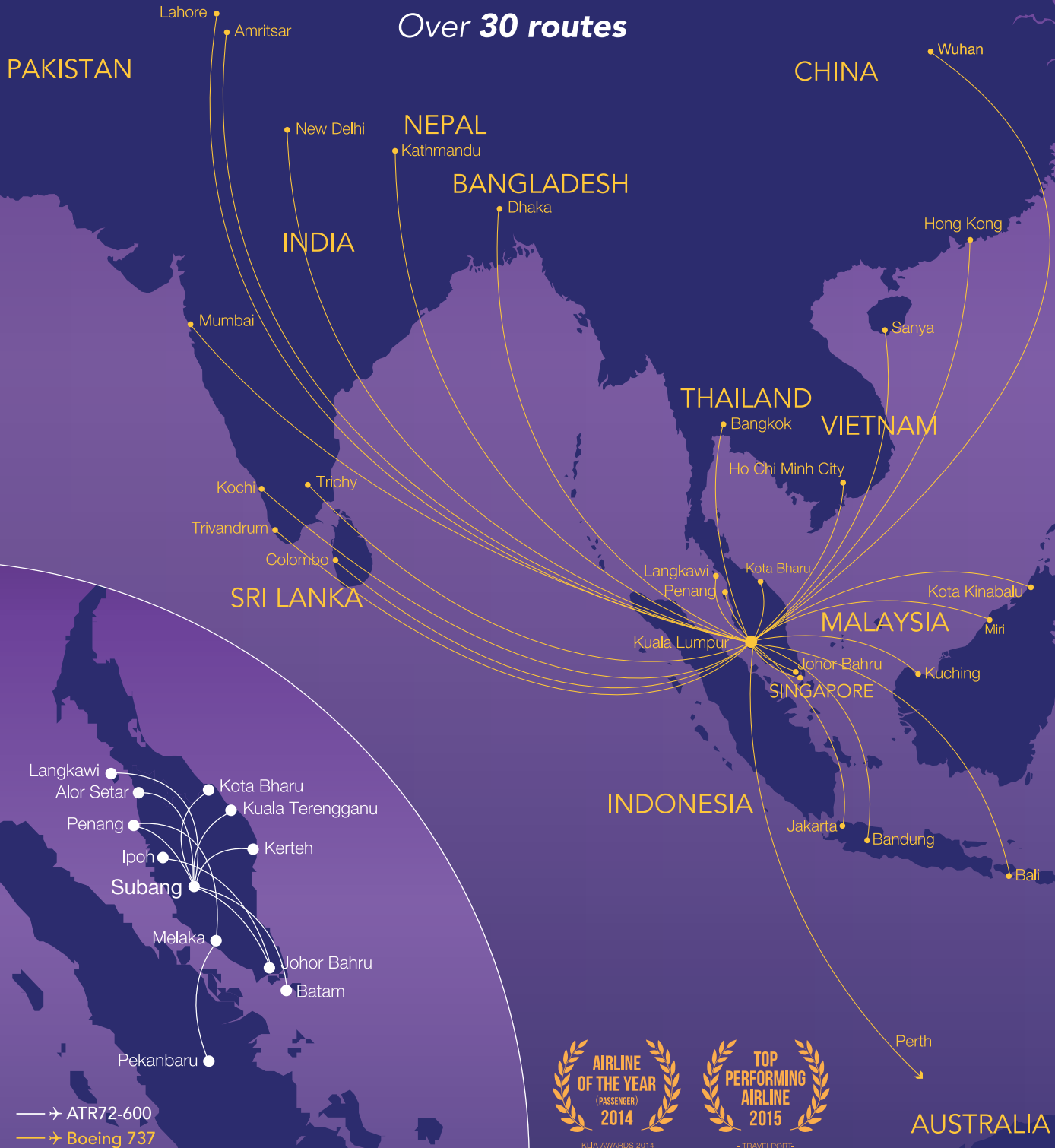
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Over **30 routes**



A METHOD OF ESTIMATING AIR FLEET DEVELOPMENT

A PRACTICAL AND EASY-TO-IMPLEMENT APPROACH FOR STATES



MASSOUD NAKHKOOB

He is Senior Research Statistician, University Lecturer, Systems Reliability Engineer, and Software Designer and Developer in the Civil Aviation Organization of the Islamic Republic of Iran, with 22 years of service. He has published several books in the areas of reliability theory, computer programming, and flight, as well as many articles and research papers. He has also designed and developed several innovative software systems.

✈ One of the biggest challenges that aviation managers and practitioners face is determining the number of airplanes required to respond effectively to increasing air travel demand in domestic and international flight networks. States can effectively estimate fleet development size (FDS) using a simple process based on passenger traffic history and extrapolation to future time periods.

The forecasting method employed here is based on the empirical approach and uses yearly passenger traffic growth rates. This method is intended merely to describe the general mechanism of the estimation of FDS. However, in an actual situation, in order to provide more precise and robust passenger traffic predictions, the general estimates should be replaced with those provided by one of the advanced statistical methodologies.

The empirical method employing passenger traffic data is a general, understandable, and easy-to-implement approach, and does not depend on any complex and ad-hoc software tools. Basically, this solution can be implemented easily and effectively using Microsoft Excel spreadsheet software.

FDS EMPIRICAL ESTIMATION PROCEDURE

For demonstration purposes, the empirical method of estimating FDS will be applied to the set of passenger traffic data for domestic departure flights of Iranian airlines from 1992-2002. Estimating FDS for international flights can be implemented in the same manner.

Yearly growth rates of passenger traffic computed for the dataset are listed in Table 1, Column 3. The average annual growth rate (AAGR) for the period is 4.8%.

However, because of large variations in the yearly growth rates, the Compound Annual Growth Rate (CAGR) is often used. For the dataset, CAGR is computed by the formula:

$$(8,383,879/6,123,891)^{1/(2002-1992)} - 1 = .032 = 3.2\%$$

Table 1: Yearly domestic airline passenger data and growth rates

YEAR	DOMESTIC	GROWTH (%)	YEAR	DOMESTIC	GROWTH (%)
1992	6,123,891	17.8	1998	8,084,709	-12.5
1993	6,898,209	12.6	1999	8,236,516	1.9
1994	7,815,933	13.3	2000	7,938,428	-3.6
1995	8,440,443	8.0	2001	8,563,735	7.9
1996	8,363,374	-0.9	2002	8,383,879	-2.1
1997	9,242,414	10.5			

The Islamic Republic of Iran has estimated that it needs 500 new aircraft to renew the country's ageing fleet.

Next, the CAGR (3.2%) is applied to the 2002 domestic passenger count (8,383,879), yielding a forecasted total passenger of 8,652,163 with the net growth of 268,284 for the year 2003.

Yearly traffic forecasts for 2004 through 2011 can be obtained in the same manner, multiplying the year-end total passenger count by the 1+CAGR to forecast the next year's passenger demand (Table 2).

At the next step, yearly net growth of passenger traffic forecasts should be computed for each successive year as listed in the last column of Table 2.

Table 2: Domestic airline passenger forecasts and net annual growth rates

YEAR	FORECAST	NET GROWTH
2003	8,652,163	268,284
2004	8,929,032	276,869
2005	9,214,761	285,729
2006	9,509,634	294,872
2007	9,966,096	456,462
2008	10,285,011	318,915
2009	10,614,132	329,120
2010	10,953,784	339,652
2011	11,304,305	350,521

Now, to determine the required Fleet Development Size, a key set of parameters should be provided. These parameters include airplane seat capacity, airplane utilization time per day, and the number of days an airplane is available for flight operations in a given year. A various set of values for each of the parameters constructs a various set of scenarios, which will provide a basis for the decision-making process.

- For the seat capacity parameter, the typical values selected include 100, 120, 140, 160, 180, 200, and 250.
- For airplane utilization time, the values of 4, 5, 6, 8, and 10 hours are used.
- For number of days an airplane is available for flight operations during a particular year, the values 200, 220, 240, 260, 280, 300, 320, and 340 are used.

The variability of the controlling parameters provides enough flexibility to estimate fleet expansion.

FDS for a given year can be calculated through the formula:

$$FDS = \frac{T * \eta}{PLF * C * D * U}$$

- T** is net passenger Traffic growth,
- PLF** is Passenger Load Factor,
- C** is airplane seat Capacity,
- D** is the number of Days the airplane is available for flight operations,
- U** is airplane Utilization in terms of hours per day,
- η** is the average flight duration time in each flight leg.

The average flight duration time, η , is assumed to be one hour ($\eta=1$), which means that each flight leg averages one hour. You can adjust with your desired value for longer travel times.

The empirical method employing passenger traffic data is a general, understandable, and easy-to-implement approach, and does not depend on any complex and ad-hoc software tools.



APPLYING THE FDS FORMULA

Now, let's estimate the FDS for an example year – 2004 – by inserting the variables.

In Figure 1, the typical values of airplane available days ranging from 200 through 340 days are listed in the 3rd through 10th rows of Column A.

For airplane utilization time, the typical values of 4 up to 10 hours per day are listed in Columns B through F of the second row.

The airplane seat capacity is specified in the Column I, which is equal to 100.

In Column J the net traffic growth of 280,000 passengers is inserted. (The actual net growth of passenger traffic forecasted for the year 2004 is 276,869, which is rounded to 280,000 for simplicity in the estimation process).

Passenger load factor is assumed to be 0.75. You can replace it with your desired value such as 0.80 or any other appropriate factor in all of the computational cells.

Figure 1: FDS computations for airplane capacity of 100 seats

1	A	B	C	D	E	F	I	J
2	Fleet Development Size Estimations						Capacity	Growth
3	Days	4 Hours	5 Hours	6 Hours	8 Hours	10 Hours	100	280000
4	200	5	4	3	2	2	100	280000
5	220	4	3	3	2	2	100	280000
6	240	4	3	3	2	2	100	280000
7	260	4	3	2	2	1	100	280000
8	280	3	3	2	2	1	100	280000
9	300	3	2	2	2	1	100	280000
10	320	3	2	2	1	1	100	280000
11	340	3	2	2	1	1	100	280000
12	Average	4	3	2	2	1		
13	Std. Dev.	0.7	0.5	0.4	0.3	0.3		
14	Lower	2.8	2.0	1.7	1.3	1.0		
15	Upper	4.6	3.7	3.0	2.3	1.8		

The formula in the B3 cell of the Microsoft Excel spreadsheet for 100-passenger aircraft (highlighted in the tab at bottom) will be $J3/(4*I3*A3*0.75)$, i.e. growth of 280,000 divided by the sum of 4 hours times 100 passenger capacity times 200 days utilization times 0.75 passenger load factor (60,000). This yields 4.6, which is rounded to 5.

Likewise, the formula in the C3 cell is $J3/(5*I3*A3*0.75)$.

The formula in the D4 cell will be $J4/(6*I4*A4*0.75)$

In the same manner, the appropriate formula can be inserted in the other computational cells of the sheet.

At the bottom section of the table, the summary statistics are calculated for each of the columns B through F.

Note: the Lower and Upper bounds of the estimated FDS are calculated by 1.5 times the standard deviation about the "non-rounded" mean (average) value.

The same calculations can be provided in similar sheets corresponding to airplane seat capacities ranging from 120 through 250. In Figure 2, for example, the seat capacity of 100 is replaced by the value of 120 in Column I. You will notice that the range of Lower-to-Upper FDS estimate, which was 2.6 to 4.6 aircraft with seat capacity of 100 is now reduced to 2.1 to 3.8 aircraft with seat capacity of 120.

Figure 2: FDS computations for airplane capacity of 120 seats

1	A	B	C	D	E	F	I	J
2	Fleet Development Size Estimations						Capacity	Growth
3	Days	4 Hours	5 Hours	6 Hours	8 Hours	10 Hours	120	280000
4	200	4	3	3	2	2	120	280000
5	220	4	3	2	2	1	120	280000
6	240	3	3	2	2	1	120	280000
7	260	3	2	2	1	1	120	280000
8	280	3	2	2	1	1	120	280000
9	300	3	2	2	1	1	120	280000
10	320	2	2	2	1	1	120	280000
11	340	2	2	2	1	1	120	280000
12	Average	3	2	2	1	1		
13	Std. Dev.	0.6	0.4	0.4	0.3	0.2		
14	Lower	2.1	1.7	1.4	1.1	0.9		
15	Upper	3.8	3.0	2.6	1.9	1.5		

In this way, a set of various scenarios can be constructed by using different appropriate values for the controlling parameters. The scenarios will result in selecting the best value of FDS in conjunction with financial and technical considerations. FDS obtains an estimation of fleet expansion size but it also provides an important by-product: the total number of required extra seats, which is obtained by multiplying FDS by airplane seat capacity (FDS*C). This allows you to determine a combination of different airplane types accounting for annual net passenger traffic growth in consideration of financial and technical issues. ■



ICAO COUNCIL PROPOSES GENDER EQUALITY PROGRAMMES



In response to an initiative by Representatives from Australia, Japan, Kenya, Nicaragua, Poland, Portugal, and United Arab Emirates, the ICAO Council is proposing a resolution on gender equality programmes "Promoting women in governing and technical bodies of ICAO and in professional and higher positions in the ICAO Secretariat and the global aviation sector."

The resolution is to be considered by the 39th Session of the Assembly in September.

The proposed resolution includes commitments that ICAO would undertake in enhancing gender equality and the advancement of women's development, supporting the United Nations Sustainable Development Goal (SDG) No. 5 – *Achieve gender equality and empower all women and girls*.

In making efforts toward an aspirational goal of 50/50 (women/men) by 2030, ICAO would establish a Gender Equality Programme aiming to facilitate and coordinate targeted programmes and projects to enable progress towards the goal of gender equality. The proposed Resolution highlights

that there are commitments for both States and the ICAO Secretariat in moving toward the aspirational goal.

Efforts at different levels in the global aviation sector are important for increasing the pool of women who are qualified for professional and higher levels of employment within ICAO. The thrust of the proposed resolution is to encourage measures promoting gender equality and enabling women to further develop their aviation careers to be able to contribute to the sector.

Representation of women on the ICAO Council is at its highest level since it was established in 1944; however, the seven females represent only 19% of the membership. For the Air Navigation Commission, there is one woman on a team of 19. In the ICAO Secretariat, as of the end of 2015, 30% of the staff in professional positions is female. In non-professional positions, women represent 67%. This gender imbalance is reflective of a similar imbalance in the field of aviation worldwide.

With the expected continued expansion of the aviation industry, significant benefits could be achieved by attracting and retaining more women with sought-after aviation technical



Mercy Beatrice Awori, the Representative of Kenya and The Eastern Region on ICAO Council, noted that the aviation industry is predominantly a Science, Technology, Engineering, and Math (STEM) workforce: "A holistic approach in generating a pool of skilled women is imperative, so that the current shortage of high-ranking qualified women in highly technical positions is addressed. To stimulate interest at an early age, girls should be encouraged to take up sciences and other relevant subjects which are foundational courses for most aviation careers. Partnerships between aviation organizations and schools to introduce job shadowing in school curricula would allow interaction in the workplace and create awareness to inspire young girls to pursue and prepare for careers in aviation. A good example of mentoring and coaching is the ICAO, IATA, and ACI joint internship programme, which should be replicated by other aviation organizations."



Dr. Malgorzata Polkowska, Representative of the Republic of Poland, said the proposed resolution "will enable ICAO to underscore its ambition to achieve the UN SDGs, not only through its Strategic Objectives but through its own initiatives and actions as well. Achieving the goals of gender equality and empowerment of women and girls in the aviation field is best fulfilled by ICAO."



“We have already begun the process of re-engineering ICAO’s Secretariat so that it can become more efficient, accountable, and responsive to our States and the aviation community’s needs in the years ahead,” stressed **Dr. Fang Liu**, ICAO’s Secretary General.

“An important aspect of that evolution, and one which will help to keep us aligned in support of Agenda 2030 and especially Sustainable Development Goal #5, will be ensuring that the new ICAO is also more suitably focused on providing equitable gender opportunities and the empowerment of women.”

and policy qualifications and experience. Opportunities need to be created at State, regional and international levels in order for more women to have opportunities to pursue careers in the aviation sector and advance those careers on an equal footing with their male counterparts.

Recent initiatives and programmes launched by ICAO such as *No Country Left Behind* initiative, the *ICAO World Aviation Forum*, the *Young Aviation Professionals Programme*, the *ICAO Global Aviation Training office*, and the *Next Generation of Aviation Professionals* expand beyond ICAO’s primary focus on the development of technical standards and policies for aviation and broaden ICAO’s scope into facilitating the sustainable development of the sector.

If adopted by the Assembly, initial actions would include the creation of a committee and development of an action plan. The plan could encompass collecting data on aviation sector workforce statistics from States, the creation of an online platform for sharing such data, a survey on progress among industry stakeholders, and the publication of an annual report on programmes and initiatives concerning empowerment of women.

ICAO is rightly placed within the global civil aviation sector to serve as the central coordinator and to create a platform for



Antonina Cieszczyk is an example of the type of young women the aviation sector needs to attract. She was awarded the 2016 ICAO Assad Kotaite Graduate and Postdoctoral Fellowship. A student of the Polish Air Force Academy (PAFA), Antonina recently graduated from *Ecole Nationale de l’Aviation Civile* (ENAC), the French national civil aviation university, focused on International Air Transport Operations Management. Antonina has been an intern in the ICAO Regional Office in Bangkok, Thailand, where she worked on a project on the Asia/Pacific Seamless ATM Plan and Monitoring and Reporting Scheme. She also holds a CPL(A) pilot licence.

improvements toward the inclusion of women in all levels across the sector. Actions to be undertaken by ICAO – in cooperation with aviation institutions, universities, governments, industry players, and international organizations – may include:

- Establishment of an ICAO Gender Equality Programme by mid-2017.
- Facilitating and coordinating targeted gender equality programmes and projects.
- Delivering regular reports on progress toward the goal of gender equality by 2030, especially in professional and higher levels of employment within ICAO, States and the global aviation sector. ■



Investing in Airports

Creating the conditions to meet future demand

6–8 December 2016 • Goa, India

Join us for the second annual Investing in Airports conference, organized by Airports Council International (ACI) in cooperation with the International Civil Aviation Organization (ICAO) and the International Transport Forum (ITF) at the OECD taking place at the Planet Hollywood Beach Resort in Goa, India from 6 to 8 December 2016.

A few words from Angela Gittens, Director General, ACI World on the conference

"More than anything, the Investing in Airports conference, jointly organized by ACI, ICAO and the International Transport Forum at the OECD, is about fostering the right environment for investment in airports and ensuring that regulation evolves in step with the industry for a sustainable future with the ability to accommodate growth in the demand for air service."

Topics to be discussed include:

- Policy frameworks for sustained capital investments
- State of the airport industry and the investment horizon
- Reconciling the interests of investors, regulators, airport operators, airlines and the traveling public
- Market power and competition
- Service quality and passenger focused approaches to the oversight function
- Airport capacity constraints and infrastructure development across the globe

NEWS IN BRIEF

ICAO SG: Air Connectivity Essential For Landlocked States

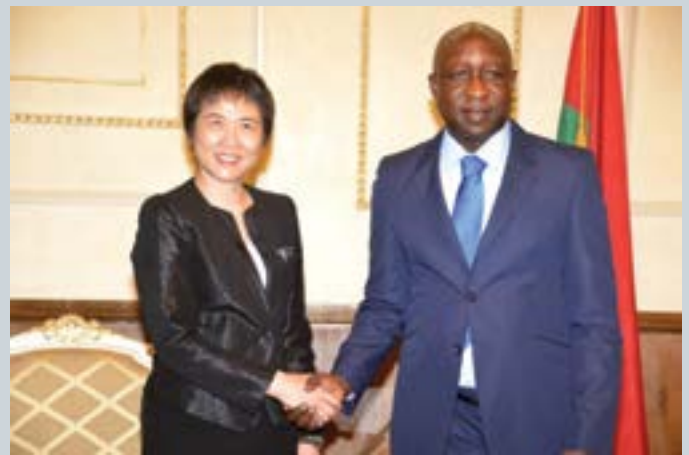
"Aviation is a catalyst for socio-economic development and is particularly critical to the economies of landlocked countries," said ICAO Secretary General Dr. Fang Liu during a recent mission to Burkina Faso, where she conducted high-level bilateral meetings with the country's Prime Minister H.E. Paul Kaba Tieba. She also met with the Transport Minister. The Representative of Burkina Faso on the Council of ICAO, Ambassador Moumouni Dieguimde, and ICAO's Regional Director for Western and Central Africa, Mam Sait Jallow, accompanied the SG on her mission.

"The development of safe, secure, and efficient air connectivity is a strategic global objective for ICAO as it is a vital lever for development. For landlocked countries in particular, such as Burkina Faso, aviation should be identified as a priority sector within its national strategy. Through our *No Country Left Behind* programme and the support of our Regional Offices, ICAO is committed to facilitating all Member States' efforts to improve their air services through greater compliance with the global standards," she declared.

She encouraged the Government to provide appropriate infrastructure and to facilitate air connectivity. "The Government must pursue strong support for the aviation sector, including continuous compliance with ICAO standards and recommended practices. Burkina Faso's role within the implementation of ICAO's continental strategies – the Comprehensive Regional Implementation Plan for Aviation Safety in Africa (AFI Plan) and the Comprehensive Regional Implementation Plan for Aviation Security and Facilitation in Africa (AFI SECFAL Plan) – is particularly essential." She also called on the Government

to lend support to the establishment of a Regional Aviation Safety Oversight Organization (RSOO) for States of West African Economic and Monetary Union (UEMOA).

Dr. Liu also pursued ICAO's regional objectives through discussions with the President of the Commission of UEMOA, Cheikh Hadjibou Soumare, noting the importance of the establishment of a RSOO. ICAO is currently conducting a joint operational safety and airworthiness developmental project (COSCAP) with UEMOA. Its transformation into a full-fledged RSOO, with the support of ICAO's Technical Cooperation Bureau, is expected to be finalized in the next couple of months.



ICAO Secretary General Dr. Fang Liu with the Prime Minister of Burkina Faso, H. E. Paul Kaba Tieba

Kazakhstan Resolves SSC with Multilateral Assistance

ICAO has announced the successful resolution of a Significant Safety Concern (SSC) in Kazakhstan, following a comprehensive multilateral assistance effort coordinated under the *No Country Left Behind* initiative. "By resolving this matter through coordinated capacity-building, and with support from donor States and International Organizations, ICAO and Kazakhstan have helped to further improve the safety of operations in its territory without any negative impacts on the capacity and efficiency of local air services," remarked ICAO Council President Dr. Olumuyiwa Benard Aliu.

ICAO's assistance effort in Kazakhstan to resolve the persisting SSC was jointly led by its European and North Atlantic (EURNAT) Regional Office and the ICAO Technical

Cooperation Bureau. It was implemented through a pre-agreed plan developed in conjunction with the State and supplemented by training through experts contributed by Portugal, Turkey, Singapore, Ukraine, and the ICAO Air Navigation Bureau. Funding for the assistance programme was also collaborative, with contributions coming from Kazakhstan, the ICAO EURNAT Office, and the ICAO SAFE Fund.

"ICAO very much recognizes and appreciates the States and Organizations which contribute resources to these efforts, and which collaborate with us on improving civil aviation safety and other sectoral goals," stressed ICAO Secretary General Dr. Fang Liu. "By driving progress on ICAO's Strategic Objectives through cost-effective collaboration we are helping States to benefit from safe, secure and efficient air transport services, which in turn provides important support for the United Nations' *Agenda 2030* and its ambitious Sustainable Development Goals."

ICAO Council President Aliu Meets with Nigerian President and African Aviation Security & Facilitation Ministers

The President of the Council of the International Civil Aviation Organization (ICAO), Dr. Olumuyiwa Benard Aliu, held high-level discussions in April with the President and Head of State of the Federal Republic of Nigeria, H. E. Muhammadu Buhari. They covered topics including projected aviation growth and associated human resource capacity and infrastructure challenges, ongoing threats from terrorist organizations in the region, as well as Nigeria's potential to position itself as a leader in the provision of air services and aviation facilities, including training for aviation professionals. President Aliu also welcomed Nigeria's confirmation of its pending financial contribution to the Human Resources Development Fund (HRDF) for Africa.

President Buhari was accompanied during the discussions by Nigeria's Minister of Transportation, Chibuike Rotimi Amaechi, its Minister of State for Aviation, Senator Hadi Sirika, and other high officials. President Aliu was joined by the Representative of Nigeria on the ICAO Council, Nwafor Emeka Martins, and ICAO's Regional Director for Western and Central Africa, Mam Sait Jallow.

"Civil aviation in Africa is an essential enabler of growth and social development, and ICAO has been very encouraged by Nigeria's recent leadership and commitments with respect to aviation safety, capacity, security, and human resources development," President Aliu highlighted. "Consistent with the principles and priorities of ICAO's *No Country left Behind* initiative, ICAO will collaborate with Nigeria towards the enhancement of aviation training capacity here and the upgrading of the Nigerian College of Aviation Technology (NCAT) to full status as an ICAO Regional Training Centre of Excellence (RTCE). The establishment of an Aerospace University in Nigeria has also been proposed." It was agreed that a concrete roadmap and masterplan for aviation development will be put in place as a follow up to the discussions held.

During his mission, President Aliu also met with heads of the Nigerian Civil Aviation Authority, Nigerian Airspace Management Agency, the Federal Airports Authority of Nigeria,

the Nigerian Accident Investigation Bureau, and the Nigerian Meteorological Agency, as well as the Nigerian College of Aviation Technology. He visited the new Abuja International Airport terminal project, meteorological installations and weather forecasting facilities, and the Accident Investigation Agency's laboratories.

A few days later, African Ministers responsible for aviation security and facilitation adopted the Windhoek Declaration and Targets during a conference in Namibia to discuss the implementation of the Comprehensive Regional Implementation Plan for Aviation Security and Facilitation in Africa (AFI SECFAL PLAN). The Declaration stresses they will seek to effectively implement ICAO Standards and Recommended Practices (SARPs) and enhance the oversight towards the targets' attainment. The two instruments will be forwarded by the African Union Commission (AUC) and will eventually be considered for endorsement at the African Union Assembly of Heads of State and governments scheduled for this July in Kigali, Rwanda.

"ICAO expects that today's event will eventually be looked upon as a milestone in the evolution of civil aviation security and facilitation in Africa," President Aliu confirmed.

"ICAO's AFI SECFAL Plan has now become a framework through which African States, donor States, organizations, and industry coordinate their efforts and activities, and this event presented us with a unique opportunity to agree on the establishment of sustainable targets and goals in order to reach a comprehensive political commitment."

Saara Kuugongelwa-Amadhila, Right Honourable Prime Minister of the Republic of Namibia, underscored the importance of security in the development of any economic sector, including air transport and tourism. She also recognized that Africa is not immune from emerging threats such as cyber threat and other acts of unlawful interference to civil aviation, and highlighted that the implementation of the ICAO AFI SECFAL Plan will play an important role in near-term and long-term aviation security and facilitation progress.



ICAO Council President Dr. Olumuyiwa Benard Aliu (far left) met with Nigerian President and Head of State H. E. Muhammadu Buhari (2nd from right) in April. They were accompanied by Nigeria's Honourable Minister of State for Aviation, Senator Hadi Sirika (2nd from left) and by its Honourable Minister of Transportation, Chibuike Rotimi Amaechi.

39TH

TRIENNIAL ASSEMBLY

ICAO HQ, MONTREAL, 27 SEP-07 OCT 2016



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