International Civil Aviation Organization

MID Region ATM Enhancement Programme Board

Second Meeting (MAEP Board/2)
(Cairo, Egypt, 11-13 April 2016)

Agenda Item 3:   MAEP Projects

OUTCOME OF THE SECOND MEETING OF THE MAEP STEERING
COMMITTEE (MAEP SC/2)

(Presented by the Secretariat)

SUMMARY
This paper presents the outcome of the Second Meeting of the MAEP Steering Committee (MAEP SC/2)   Action by the meeting is at paragraph 3.
REFERENCES
–   MAEP SC/2 Report

1.   INTRODUCTION

1.1   The Second Meeting of the MID Region ATM Enhancement Programme Steering Committee (MAEP SC/2) was successfully held at ICAO MID Regional Office (Cairo, Egypt, 20 – 22 October 2015), back-to-back with the MID Flight Procedure Programme Workshop (Cairo, Egypt, 18-19 October 2016).

1.2   The MAEP SC/2 meeting was attended by a total of thirty two (32) participants from nine (9) States (Bahrain, Egypt, Islamic Republic of Iran, Jordan, Libya, Oman, Saudi Arabia, Sudan and United Arab Emirates) and four (4) International Organizations and Industries (AACO, BOEING, CANSO and IATA).

2.   DISCUSSION

2.1   The MAEP SC/2 meeting was apprised of the latest developments related to the establishment of MAEP. It was highlighted that the MAEP member States (signatories of the MAEP MOA), should assign member/alternate to the MAEP Board. Accordingly, the MAEP SC/2 meeting agreed to the following Draft Conclusion:

DRAFT CONCLUSION 2/1:   MAEP BOARD MEMBERS

That, the MAEP member States be urged to assign member/alternate and advisor(s) to the MEAP Board.

Update on the MAEP Interim PMO Activities

2.2   The MAEP SC/2 meeting recalled that the DGCA-MID/3 meeting recognized the need for the development of a MAEP Master Plan to drive the modernization and enhancement of the ATM operations in the MID Region for the period 2016-2028. The MAEP Master Plan will be a high level document providing essential information on the programme including the identified/agreed projects and associated outcomes, benefits, timelines, etc.

2.3   The MAEP SC/1 meeting recognized that the process of establishment of the MAEP PMO might take long time. In order not to lose momentum the meeting agreed that, until the formal establishment of the MAEP PMO, a MAEP Core Team has been established to act as an Interim PMO. The MAEP IPMO is composed of AACO, CANSO, IATA and ICAO and working on voluntary basis.

2.4   The MAEP IPMO held two meetings at IATA premises in Amman and at ICAO MID Office in Cairo on 30 July 2015 and 26 January 2016, respectively, in addition to the emails correspondences and teleconferences. The MAEP SC/2 meeting reviewed and endorse the MAEP Overview Document at **Appendix A** (previously called MAEP Master Plan), which was developed by the MAEP IPMO.

2.5   The MAEP SC/2 meeting was presented with a progress report on the implementation of the Call Sign Initiative, led by Etihad Airways and supported by IATA MENA and ICAO MID Office. The meeting noted that the initiative is expected to be concluded by end of 2015 with a final report detailing the outcome and recommendations. The Alphanumeric Call Sign Acceptance Test Final Report is at **Appendix B**.

2.6   The MAEP SC/2 meeting commended the work of the MAEP IPMO and agreed that the group continue to work on voluntary basis until the recruitment of the PMO Manager.

Prioritization of the MAEP Projects

2.7   The MAEP SC/2 meeting emphasized that the six (6) projects under MAEP are important for the MID Region. However, the implementation of some projects might be less complicated than other projects, taking into consideration the institutional and financial issues. Accordingly, the meeting agreed to prioritize the projects in accordance with their implementation time frame as follows:

Project	Implementation Time frame
MID Flight Procedure Programme (MID FPP)	July 2016- June 2019
MID ATS Route Network Optimization Project (ARNOP)	Phase I ends June 2016
MID IP Network	January 2016
MID Integrated Flight Plan Processing System (MID IFPS)	2016
MIDAD	2017 and beyond
Regional/Sub-Regional ATFM system	2017 and beyond

MID ATS Route Network Optimization Project (ARNOP)

2.8   The MAEP SC/2 meeting noted with appreciation that Phase I of the project, the CNS/ATM study, being carried out by Airbus ProSky for the Arab Civil Aviation Commission (ACAC), has been extended to cover Kuwait and Tehran FIRs.

2.9   The study is expected to be completed by June 2016. The meeting recognized that the results of the study are enablers for other projects. Accordingly, the meeting urged States to support ARNOP and provide the required data to Airbus ProSky in a timely manner.

MID Integrated Flight Plan Processing System (MID IFPS) Project

2.10   The MAEP SC/2 meeting noted that the system is designed and developed to improve the quality of flight plan messages in accordance with ICAO standards by processing and validating the flight plans. The format of acknowledgement and rejection of the messages is based on EUROCONTROL defined messages.

2.11   The MAEP SC/2 meeting noted that Bahrain IFPS has been implemented in two (2) phases as follows:

- Initial phase of the IFPS was a proof of concept; managed the flight plans through validations, format checks and internal configuration requirements without reply messages.

- Transition phase (second phase) which is currently on live operational trials with selected originators, flight plan messages are now being processed and selected originators are automatically addressed/replied to.

2.12   Upon successful completion of the second phase (end of 2015), Bahrain will be ready to extend the IFPS to other participating States. Accordingly, the milestones for the extension of Bahrain IFPS will be developed in consultation with the concerned States.

2.13   Based on the above the MAEP SC/2 meeting encouraged States to coordinate with Bahrain all matters related to the extension of Bahrain IFPS and the development of the necessary milestones, as appropriate.

MID Regional/Sub-Regional ATFM System

2.14   The MAEP SC/2 meeting noted that Air Traffic Flow Management (ATFM)/Collaborative Decision Making (CDM) objective is to manage the flow of traffic in a way that minimizes delays and maximizes/optimize the use of the available airspace.

2.15   The MAEP SC/2 meeting emphasized the importance of the project. However, it was agreed that the project implementation could be initiated after 2017, providing that all the enablers/prerequisite are implemented and taking into consideration the initiatives carried out by States.

Cooperation Council for the Arab States of the Gulf (GCC) Upper FIR Project

2.16   The MAEP SC/2 meeting noted that the GCC ANC has initiated a project to establish a single Upper Flight Information Region (UFIR) in the airspace of participating GCC Member States. The main objectives of the project are as follows:

- develop a fully integrated Air Traffic Management (ATM) system in the GCC States;

- enhance aviation safety and expand airspace capacity in the GCC States;

- accommodate high growth in air traffic movements in the region; and

- standardise Air Traffic Services (ATS) operation in the participating GCC Member States.

2.17   The MAEP SC/2 meeting noted that the GCC UFIR Task Force is seeking support from ICAO MID Regional Office, GCC Member States, airspace users and industry to develop the requirements for the UFIR and to baseline current arrangements.

2.18   Based on the above, the MAEP SC/2 meeting encouraged all concerned stakeholders to support the GCC UFIR project throughout the project life cycle.

2.19   An update on the MID FPP, MID IP Network and MIDAD projects will be presented in separate papers.

3.   ACTION BY THE MEETING

3.1   The meeting is invited to:

a)   review, amend as deemed necessary and endorse the:

    i.   Draft Conclusion at para 2.1;

    ii.   prioritization of the MAEP projects; and

    iii. MAEP Overview Document at **Appendix A**;

b)   explore means to expedite the implementation of the MAEP Projects.

# MID Region ATM Enhancement Programme (MAEP) Overview

1   Introduction

Aviation is a crucial part of the transport infrastructure globally and in the Middle East Region specifically. The vast geography of the Region and the lack of effective transport alternatives make air transport essential for moving people and goods, hence becoming a natural catalyst to enhance, among other sectors, business, trade and tourism. As a result, aviation is one of the most important economic stimulators in the Region.

Eying the benefits of air transport to sustainable economic development, this Region has been a global model in developing its airport infrastructure. Supported by visions to have air transport at the centre of national strategies, and acknowledging the need for infrastructure development, multi-billion US Dollar projects were put in motion to build new airports and expand existing ones. Those projects are expected to accommodate the growth in passenger numbers in the 10 – 20 coming years.
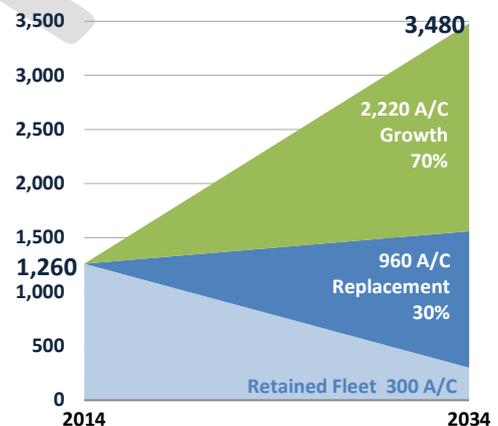
However, infrastructure is not only airports. Airspace is another infrastructure that needs to be used effectively and efficiently in order to accommodate the growth in aircraft movements in the Region.

Middle East Aircraft Movements & Growth
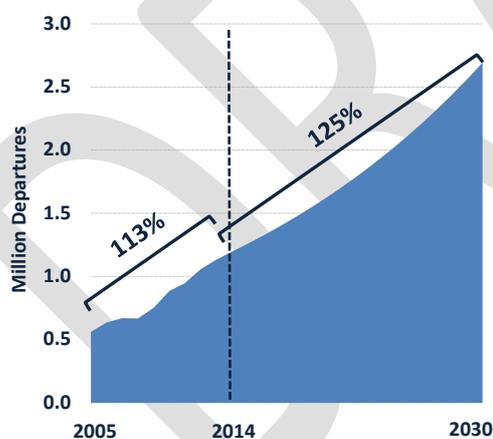
Source: ICAO

Middle East Commercial Aircraft Deliveries

Source: Boeing Co.

The current and projected growth in aircraft movements is driven on one hand by the expansion of the Region's airlines: Although airlines are continuously using bigger aircraft, their expansion is putting more pressure on the existing airspace infrastructure. The second driver is the strategic geographic position of the MID Region that makes it a natural crossroad for overflying traffic.

In order to maximize the benefit from the developments on the ground (i.e. airports), it is paramount that those projects are coupled with the development of a suitable and sustainable airspace infrastructure to meet the increase in demand (i.e. ATM and airspace capacity). ATM modernization, through the renovation of systems, processes and equipment, where needed, has to

be cost effective, environmentally responsible, and in line with global initiatives and Regional priorities. In addition, airspace is a scarce and finite resource that needs to be fully utilized. Expanding the available airspace to civil aviation through the review of the current ATS route network and the implementation of operational concepts which support airspace optimization and availability (such as Flexible Use of Airspace and Performance Based Navigation) is also vital for the sustainability of aviation. Moreover, individual developments in ATM and airspace capacity are not enough to deliver the results to support seamless operations, enhanced safety and sustainability. Harmonization, integration and collaboration among aviation stakeholders are essential to realize the full potential of national projects in air and ground infrastructure.

As a result of the requirement for collaboration between concerned stakeholders to achieve enhanced ATM and airspace capacity in the MID Region, the Second Meeting of the Directors General of Civil Aviation-Middle East (DGCA-MID/2) (Jeddah, Saudi Arabia, 20 - 22 May 2013), through Conclusion 2/4 approved the launch of the MID ATM Enhancement Programme – MAEP, and established its Board.

MAEP will provide the ICAO umbrella under which all Regional air navigation projects would be implemented. MAEP will focus on Regional efforts to overcome the fragmented airspace structure and the reliance on conventional technologies and operations, preventing airlines, Air Navigation Service Providers (ANSPs) and airports from profiting from the capabilities of existing and future systems.

This document is a high level overview providing essential information on the Programme including identified/agreed Regional projects.

2   Strategic Context

The Fourth Edition of the **ICAO Global Air Navigation Plan (GANP)** represents a rolling 15-year strategic methodology (2013-2028) which leverages existing technologies and anticipates future developments based on State and industry agreed operational objectives.

The GANP's Aviation System Block Upgrades (ASBU) methodology is a programmatic and flexible global system engineering approach that allows all States to advance their air navigation capabilities based on their specific operational requirements. ASBUs will enable aviation to realize global harmonization, increased capacity, safety enhancements, and improved environmental efficiency that modern air traffic growth demands in every Region around the world.

On a Regional level, a holistic approach is required to complement the global efforts. The **MID Region Air Navigation Strategy** sets out the ASBU Block 0 Modules considered priority for implementation in the MID Region, with their associated applicability areas, performance indicators/metrics and targets. The Strategy, which is based on the outcome of the different MIDANPIRG subsidiary bodies and other inputs from States and relevant stakeholders, was endorsed by the fourth meeting of the MIDANPIRG Steering Group (MSG/4) and revised by the MIDANPIRG/15 meeting.

Whilst States remain responsible for the implementation of projects to meet the objectives of the MID Air Navigation Strategy, MAEP provides a single platform to support the implementation of Regional projects. MAEP also provides a vehicle for inter-Regional cooperation and collaboration, in particular with other Regional ATM Programmes such as SESAR (Europe) and NextGen (USA), and for industry partners seeking to support the Region.

3   Objectives and Benefits

MAEP scope and strategic objective were endorsed by the Third Meeting of the Directors General of Civil Aviation-Middle East (DGCA-MID/3) (Doha, Qatar, 27-29 April 2015), based on the outcomes of MAEP Board/1, MSG/4 and MAEP Steering Committee meetings as follows:

The MID Region ATM Enhancement Programme (MAEP) is a Regional platform that provides the basis for a collaborative approach towards planning and implementing air navigation projects in support of the MID Air Navigation Strategy, taking into consideration previous initiatives. This includes the following:

1) *Maximize Air Traffic Management performance in the MID Region through project management and within the time frame (2016-2028).*

2) *Improve efficiency and increase capacity to safely accommodate air traffic growth.*

3) *Support the implementation of air navigation projects in the MID Region in a harmonized and collaborative manner in line with the MID Air Navigation Strategy and Global Air navigation Plan (GANP), taking into consideration the users' requirements.*

4) *Addresses ATM community expectations in a cost-effective and environmentally sustainable manner.*

4   Governance and organisational arrangements

MAEP will be executed as an ICAO Technical Cooperation Project, in accordance with the following Organizational Structure:
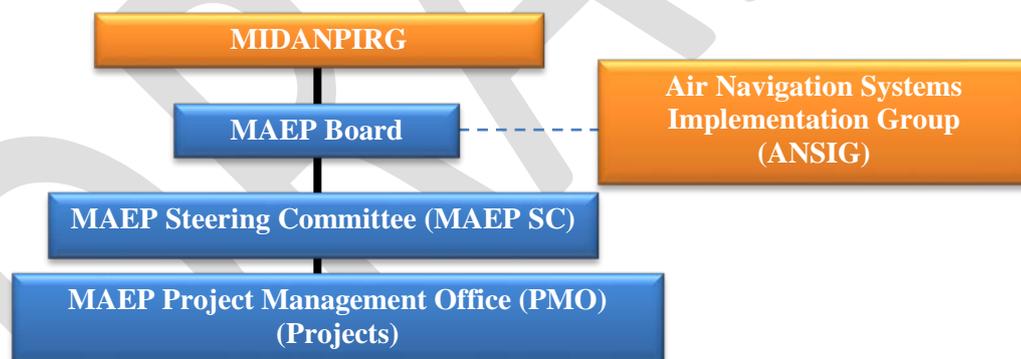
MAEP Board

The Board is composed of high level representatives from States signatories to the MAEP Memorandum of Agreement (MoA), which shall come into effect on the date it is signed by five (05) States. The Board is responsible for overall leadership, supervision, direction, and management of the Programme. It acts as the highest supervisory body over the activities of the Programme, and has the statutory authority and obligation to govern the affairs and business of MAEP in addition to an obligation to promote and advocate MAEP on all levels across the Region.

MAEP Steering Committee (MAEP SC)

The MAEP SC acts as an advisory body to the MAEP Board, guiding MAEP's work and ensuring that its objectives are accomplished in a timely, effective and efficient manner. MAEP SC reviews the

Regional objectives, plans and users' requirements, and recommends priorities to the MAEP Board. The MAEP SC oversees the activities of the PMO in line with the plans and budgets approved by the MAEP Board.

The MAEP SC is composed of all stakeholders and co-chaired by elected representatives from States and Organizations.

MAEP Project Management Office (PMO)

The PMO, a dedicated office co-located in the ICAO MID Regional Office, is the operational arm of MAEP. The PMO operating (running) expenses are funded through contribution from States as per the decision of MAEP Board. The PMO reports directly into MAEP SC and into MAEP Board through the MAEP SC. The duties and responsibilities of the MAEP PMO include the following:

1. Review Regional objectives in line with the development of the Region's priorities and proposes amendments to the MAEP SC.
2. Identify, propose and prioritize projects to meet the Regional objectives.
3. Develop and maintain the MAEP Master Plan by proposing amendments for the review of MAEP SC and endorsement of MAEP Board.
4. Develop and maintain Business Plans for each agreed Regional project and recommend them to the MAEP SC.
5. Manage the implementation of MAEP funded Regional projects in accordance with approved plans.
6. Ensure coordination between national and Regional projects.
7. Develop Key Performance Indicators (KPIs) for tracking the implementation of the projects.
8. Submit progress reports for each project to the Steering Committee, as appropriate and when required.
9. Identify and report projects' risks to the MAEP SC and maintain a risk database.
10. Provide Secretarial support to MAEP SC.

5 MAEP Projects

MAEP Projects will be agreed by the MAEP Board and will directly support the implementation of the MID Region Air Navigation Strategy. Each project will have its own Business Plan including project charter, framework, operating concept, stakeholders, implementation strategy, work plan, duration, budget, timeline and funding mechanism.

The following projects were identified by the MAEP Board/1 meeting and supported by DGCA-MID/3 and MIDANPIRG/15 meetings:

- MID ATS Route Network Optimization project (ARNOP)

- MID Flight Procedure Programme (MID FPP)

- MID Integrated Flight Plan Processing System (MID IFPS)

- MID Region AIM Database (MIDAD)

- MID IP Network

- Regional/sub-Regional ATFM system

A brief description of each project including objectives, challenges, benefits, relation to Regional priorities and global objectives, estimated duration and cost (if possible) is highlighted below:

MID ATS Route Network Optimization project (ARNOP)

Objectives:

The project's objective is to assess the current airspace structure, and present a plan to enhance it. It will be conducted in two phases: The first phase is the assessment of the current airspace infrastructure taking into account the previous studies on the topic (i.e. MIDRAR, ACAC CNS/ATM Study, GCC virtual upper airspace study, etc…). The second phase is the implementation of the outcome and recommendations of the first phase.

Benefits

The project will result in an airspace structure and concept of operations that are:
- ➢ Performance-based
- ➢ Addresses ATM community expectations
- ➢ Cost-efficient
- ➢ Environmentally sustainable
- ➢ Regionally harmonized

Challenges
- ➢ The commitment of States and stakeholders is key for the success of the project.
- ➢ For the first phase, commitment is needed to facilitate and assist Airbus in conducting the study
- ➢ For the second phase, commitment is needed is to support implementation of the recommendations which raises the resource challenges associated with large projects

Relation to ASBU / MID Air Navigation Strategy
- ➢ All Modules

Stakeholders
- ➢ Phase I: Airbus supported by all stakeholders
- ➢ Phase II: States/ANSPs supported by all MAEP stakeholders

Duration
- ➢ Phase I (assessment) – 12 months starting 30 June 2015
- ➢ Phase II (implementation of recommendations) - To be Defined in phase I

Cost
- ➢ Phase I (assessment) will be implemented by in-kind contribution of Airbus
- ➢ Phase II (implementation): It is expected that implementation will be broken down into several projects by MAEP PMO once phase I is concluded and the recommendations developed. Cost of each project and the overall cost for the implementation will be estimated afterwards

MID Flight Procedure Programme (MID FPP)

Objective

The project will provide a Regional solution for procedure design and airspace management.

Benefits

➢ Support and increase PBN implementation
➢ Increase the number of TMAs with approved PBN operations
➢ Increase safety and efficiency in flight operations
➢ Pool resources in order to fill the shortage of procedure designers, procedure design work, procedure design training and of service provision for ATC/ATM training for PBN implementation

Challenges

➢ The commitment of States and stakeholders is key for the success of the project
➢ National technical infrastructure may be required
➢ Organizational and regulatory arrangements
➢ Regulatory

Relation to ASBU / MID Air Navigation Strategy

➢ APTA (Airport Accessibility)
➢ CCO (Continuous Climb Operations)
➢ CDO (Continuous Descent Operations)

Stakeholders

➢ States/ANSPs supported by all MAEP stakeholders

Duration

➢ 3 years renewable

Cost

➢ TBD

MID Integrated Flight Plan Processing System (MID IFPS)

Objective

The project will provide a Regional processing system to check flight plans, acknowledge receipt/acceptance or reject them in case of error.

Benefits

- ➢ Increase interoperability, efficiency, safety, flexibility and capacity
- ➢ Reduce the delays in the exchange of flight plan messages
- ➢ Reduce air traffic controller (ATC) workload and increase data integrity supporting reduced separation, translating directly to cross sector or boundary capacity flow increases
- ➢ Facilitate collaborative decision-making (CDM)
- ➢ Resolve the issues related to the loss of flight plan messages and duplication of flight plan messages
- ➢ Assist operators and service providers to plan and execute better trajectories
- ➢ Adhere to ICAO Standard flight plan format
- ➢ A major element for the implementation of Regional/Sub-Regional of MID ATFM System

Challenges

- ➢ The commitment of States and stakeholders is key for the success of the project
- ➢ National technical infrastructure may be required
- ➢ ATM systems require that policies related to the access and use of information are developed
- ➢ Regulatory, governance and training

Relation to ASBU / MID Air Navigation Strategy

- ➢ FICE (FF-ICE - Flight and Flow Information for the Collaborative Environment)
- ➢ NOPS (Network Operations)
- ➢ SWIM (System Wide Information Management)

Stakeholders

- ➢ States/ANSPs supported by all MAEP stakeholders

Duration

- ➢ TBD

Cost

- ➢ TBD

MID Region AIM Database (MIDAD)

Objective

The project's objective is to establish and maintain a central AIM database for the MID Region.

Benefits

MIDAD will provide the optimal solution for the identified limitations and drawbacks related to the current operational structure and provision of AIS/AIM services in the MID Region such as:

➢ Inconsistent data quality
➢ Lack of cross border aeronautical information coherence checking
➢ Duplicated, redundant and dispersed investments in the development and maintenance of systems by both Aeronautical Information Services and the end users
➢ No single integrated aeronautical information database has been implemented , and no Regional or sub-Regional AIS database has been established
➢ Lack of interoperability between systems

MIDAD will also provide the following benefits to the air transport community:

➢ A reliable source of aeronautical information
➢ Improved data quality, enabled by constant data checking and integrity based on cyclic redundancy checks (CRC), including NOTAM validation and cross-border data coherence verification
➢ A secure channel for timely and efficient electronic distribution of aeronautical information to all users
➢ Reduced investment costs in the development and maintenance of local systems by both AIS Units and airspace users, and reduced workload throughout the complete AIS process

Challenges

➢ The commitment of States and stakeholders is key for the success of the project
➢ National technical infrastructure may be required
➢ Funding of implementation and running cost

Relation to ASBU / MID Air Navigation Strategy

➢ DATM (Digital Air Traffic Management)
➢ SWIM (System Wide Information Management)

Stakeholders

➢ States/ANSPs supported by all MAEP stakeholders

Duration

➢ Phase I: Completed
➢ Phase II: To be concluded in 2017
➢ Phase III (Implementation): ongoing from 2018

Cost

➢ Phase I: Completed
➢ Phase II: US$ 1.5 million
➢ Phase III (Implementation): TBD

MID IP Network

Objective

The project's objective is to establish a secure, closed circuit IP network for the MID Region for internal and cross-border communication.

Benefits
- ➢ Enhance the Point-to-Point circuit arrangement between States to support Aeronautical Fixed Service (AFS)
- ➢ Reduce telecommunication cost
- ➢ Enhance information security
- ➢ Support new enhancements/developments
- ➢ provide a dynamic network which minimizes required coordination for network management and enhancement
- ➢ Respond to Air Traffic requirements in a timely manner

Challenges
- ➢ The commitment of States and stakeholders is key for the success of the project
- ➢ National technical infrastructure development may be required
- ➢ Regulatory, Oversight and Training

Relation to ASBU / MID Air Navigation Strategy
- ➢ FICE (FF-ICE - Flight and Flow Information for the Collaborative Environment)
- ➢ SWIM (System Wide Information Management)

Stakeholders
- ➢ States/ANSPs supported by all MAEP stakeholders

Duration
- ➢ 10 years renewable

Cost
- ➢ TBD

A-10

Regional/Sub-Regional ATFM System

Objectives:

To manage air traffic in a collaborative and efficient manner across the Region, and harmonize the implementation of ATFM measures

Benefits

The project will result in airspace operations that:
- ➤ Are Regionally harmonized
- ➤ Manage flow of traffic in a way that minimizes delay and maximizes the use of the available airspace capacity
- ➤ Address ATM community expectations
- ➤ Ensure smooth flows and manage sector capacity with minimal impact on airspace users
- ➤ Address system disruptions including crises caused by human or natural phenomena

Challenges

- ➤ The commitment of States and stakeholders is key for the success of the project
- ➤ The project has a multitude of pre-requisites which need to be implemented such as:
  - ✓ Maximizing the use of current airspace
  - ✓ Better coordination along FIR borders
  - ✓ CNS improvements
  - ✓ Harmonization of regulations which may require developments on national levels
  - ✓ Integrated Initial Flight Plan Processing System (IFPS)
- ➤ Regulatory, oversight and training

Relation to ASBU / MID Air Navigation Strategy

- ➤ NOPS (Network Operations)

Stakeholders

- ➤ States/ANSPs supported by all MAEP stakeholders

Duration

- ➤ TBD although expected to kick off once the project's pre-requisites are implemented

Cost

- ➤ TBD

ALPHA NUMERICAL CALL SIGN ACCEPTANCE TESTING

ALPHA NUMERICAL CALL SIGN ACCEPTANCE TESTING

INTRODUCTION

The PMO is responsible of implementing and/or supporting the implementation of MAEP objectives.

Project: ATS systems acceptance of Commercial Airline call-signs utilizing Alpha-Numeric within the flight ID per ICAO Annex10 and ICAO DOC 4444 Pans/ATM

In order to achieve its purpose the MAEP PMO shall:

1. Review regional objectives in line with the Air Navigation Strategy and the users' requirements.
2. Identify, propose and prioritize projects to meet the regional objectives as stipulated in   MAEP Master Plan.
3. Develop project plans (business plans, deliverables, timeline, budget and concerned entities) for each agreed regional project for the review of the MSC and/or the Board.
4. Coordinate, support and track the implementation of national projects.
5. Ensure coordination between national and regional projects.
6. Measure the performance of MAEP.
7. Provide regular communications and reports to the MSC, the Board and other stakeholders as appropriate.
8. Manage PMO projects.
9. Maintain communication channels with all MAEP stakeholders.
10. Coordinate the work of Task Forces and implementation bodies.
11. Provide Secretarial support to MAEP Steering Committee (MSC).

Composition & Reporting:

The PMO is a dedicated and independent (both financially and managerially) office hosted at ICAO MID Regional Office. The PMO reports directly into MAEP Steering Committee and into MAEP Board through the MSC. Its work is supported by all MAEP stakeholders as required

ALPHA NUMERICAL CALL SIGN ACCEPTANCE TESTING

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ALPHA NUMERICAL CALL SIGN ACCEPTANCE TESTING

COVER PAGE

Country: UAE

Project title: ALPHA NUMERIC CALL SIGN ACCEPTANCE

Starting date: 22 February 2015

Completion date: ongoing

Responsible for project execution: Etihad Airways

Responsible for project execution: IATA Middle East North Africa

ALPHA NUMERICAL CALL SIGN ACCEPTANCE TESTING

EXECUTIVE SUMMARY

Alpha numeric flight call sign acceptance testing within the Middle East ATS systems is a defined series of structured tests that do not include the element of a live flight associated with the flight plan as to identify any challenges associated in ensuring the regions capability of accepting alpha numeric call signs for commercial flights. Testing will include ATC Systems, regulatory overflight approval, Airport landing and departure approvals. As to validate the testing the project will conclude with a live flight. Etihad Airways has been selected to manage this project that includes a final report and Gap Analysis to the MEAP PMO for review and consideration.

The project is the first phase addressing the regional and global concern relating to call sign confusion. The need to identifying solutions and possible mitigation measures addressing this safety concern will need the co-operation of all aviation stakeholders.

SECTION 1.   BACKGROUND

This document will look at call sign similarity / confusion that often occur within an FIR. The danger is that ATC clearances issued to one flight (call sign) can be – and has been – incorrectly read back and complied with by a similar sounding flight (call sign). This confusion by either flight crews or ATC can lead to possible safety consequences. Whilst it would seem an easy exercise to change call signs to eradicate the confusion, several factors affect this:

- The call sign usually reflects the flight number associated with the airline schedule,
- Overflight approvals in certain countries are requested based on the flight number / call sign and can take an extremely long time to apply for a change (especially in our current geopolitical climate);
- Automation on the ground such as operations systems, flight planning systems, reservations and weight and balance are fed by downlinks from the aircraft (i.e. 0001 messages);
- In areas where datalink is used for communications or surveillance the flight call sign input into the FMS will downlink into ATC systems (meaning the FMS must reflect what is in the ICAO ATC filed flight plan).

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SECTION 2.   RATIONALE

2.1 Problems/Issues to be addressed

ALPHA NUMERICAL CALL SIGN ACCEPTANCE TESTING

States and their respective ATM systems must be ready to accept alpha numeric call signs in any combination.

2.2 Stakeholders and Target Beneficiaries

Stakeholders: States, ANSPs and Operators

Target Beneficiaries: ATC and Operators

2.3 Project Justification

Call sign similarity / confusion have been identified on a global and regional level that creates a safety problem which has proportionally increased within the region and will increase further with the increased growth of commercial aviation. Due to the limited number of current combinations of flight call signs the number of operators using the same flight numbers within the same areas of airspace has and will increase.

As a mitigating factor regions surrounding the Middle East have adopted the acceptance of alpha numeric with a commercial flight id used within the ATS environment.

SECTION 3. PROJECT FRAMEWORK

3.1 Impact

To ensure the Middle East ATS system acceptance of such flight Id's several tests will be conducted, testing will include "dummy Flight Plans" to validate ATC, regulatory and airport acceptance to conclude with a live actual flight.

The testing requires State and ANSP feedback as to provide a gap analysis to the MEAP PMO. The gap analysis might include such defenceless that require States to upgrade their systems or review there regulatory requirements.

3.2 project process and work plan

The following structure and process shall be utilized during the phases of testing and will be adjusted as deemed necessary as to produce a final report and Gap Analysis. (see chart Annex-1)

Prior to any ATC system testing states shall be notified through the IATA MENA office with the relevant information prior to the planned test, these tests will identify any ATC system challenges associated with acceptance of such flight plans.

State overflight, airport landing and departure approvals shall be accomplished through the required application process which can vary from state to state as well as airport to airport. As this phase of testing is solely a paper and approval exercise no prior notification will be provided with

landing and departure approvals only addressing international airports. This phase of testing is to design to identify challenges within the state and airport environments.

As to validate the testing and not solely rely on results done in a test environment a "Stress Test" shall be conducted prior to the actual live flight conclusion. The stress test with consist of several regional airlines per there internal bulk flight plan processing include a flight plan that includes a flight utilizing alpha-numeric. The aim of this test is to finalize the testing phase prior to an actual flight.

Flight Plans:

1. Per ICAO doc 4444
2. Per state AIP

Testing schedule:

Test 1 and 2 - flight plan testing for ATC Systems

Test 3 - Flight plan testing for state overflight permissions which require individual flight plan processing per state over flight permission.

Test 4 - Flight plan testing for international airport landing and departure approvals to be based on airport requirements for processing.

Test 5- Stress test utilizing several Middle East based operators processing several days of bulk flight plans with embedded flight plans that utilize Alpha numerics

Test 7- Actual live flight to validate final acceptance based upon testing results.

SECTION 4. IMPLEMENTATION AND MANAGEMENT ARRANGEMENTS

4.1 Institutional Framework and Coordination

Etihad Airways will provide flight plans to test ATM systems, overflight approvals and airport approvals and conclude with an actual flight testing based on section 3.

ALPHA NUMERICAL CALL SIGN ACCEPTANCE TESTING

SECTION 5. OVERSIGHT, MONITORING, MANAGEMENT INFORMATION, AND REPORTING

5.1 Monitoring

IATA and Etihad Airways will monitor the testing as well as the outcome and provide a final report to the MEAP PMO.

5.2 Communication and Visibility

All communication will be completed by IATA to include MEAP PMO updates as necessary

5.3 Reporting Schedule

TBD

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Annex-1 PROJECT WORK PLAN

Country	ATC System capability	State Overflight Approval	Airpport Landing / Departure Approval
Egypt	YES / EMAIL	YES / EMAIL	ongoing
Saudi Arabia	YES / EMAIL	YES / EMAIL	RUH, JED, MED successful
Kuwait	YES / EMAIL	YES / EMAIL	KWI successful
Iran	YES / EMAIL	YES / EMAIL	ongoing
Bahrain	YES / EMAIL	SEE QATAR	BAH successful
UAE	YES / EMAIL	N/A	AUH successful
Jordan	YES / EMAIL	YES / EMAIL	AMM successful
Iraq	YES / EMAIL	YES / EMAIL	ongoing
Lebanon	YES / EMAIL	YES / AFTN	BEY successful
Qatar	YES / EMAIL	YES / AFTN	DOH successful
Oman	YES / EMAIL	YES / AFTN	MCT successful
Sudan	YES / EMAIL	Sudan already accepts any call sign	ongoing
Syria	NO REPLY	NOT REQUESTED	not planned
Yemen	NO REPLY	NOT REQUESTED	not planned

ALPHA NUMERICAL CALL SIGN ACCEPTANCE TESTING

Annex-2

Flight Plan Test-1 conducted February 22nd 2015

(FPL-ETD42DW-IS
-B77W/H-SDE2E3FGHIJ5M1RWXY/SB1D1
-EIDW0820
-N0482F350 PESIT5A PESIT DCT BAKUR UN546 STU UP2 NIGIT UL18 MID
UL612 RESMI UM728 KISTO UQ160 MEDAL UM729 PNZ UM603 SOR UM736 CRN
UM601 EKTOS/N0467F370 UM601 MIL UN134 ASPIS UG183 PASOS UL550
BOSID B417 KUA B416 AMBIK UB416 KUVER B416 IMDAT R784 ORSAR G666
TANGA
-OMAA0655 OMDW
-PBN/A1B1C1D1L1O1S2T1 DOF/150130 REG/A6ETA EET/EISN0010 EGTT0013
LFFF0043 LIRR0154 LIBB0232 LIRR0242 LGGG0250 LCCC0356 HECC0421
OEJD0449 OKAC0556 OBBB0608 OIIX0613 OMAE0639 SEL/GRLP OPR/ETD
RMK/TCAS EQUIPPED)
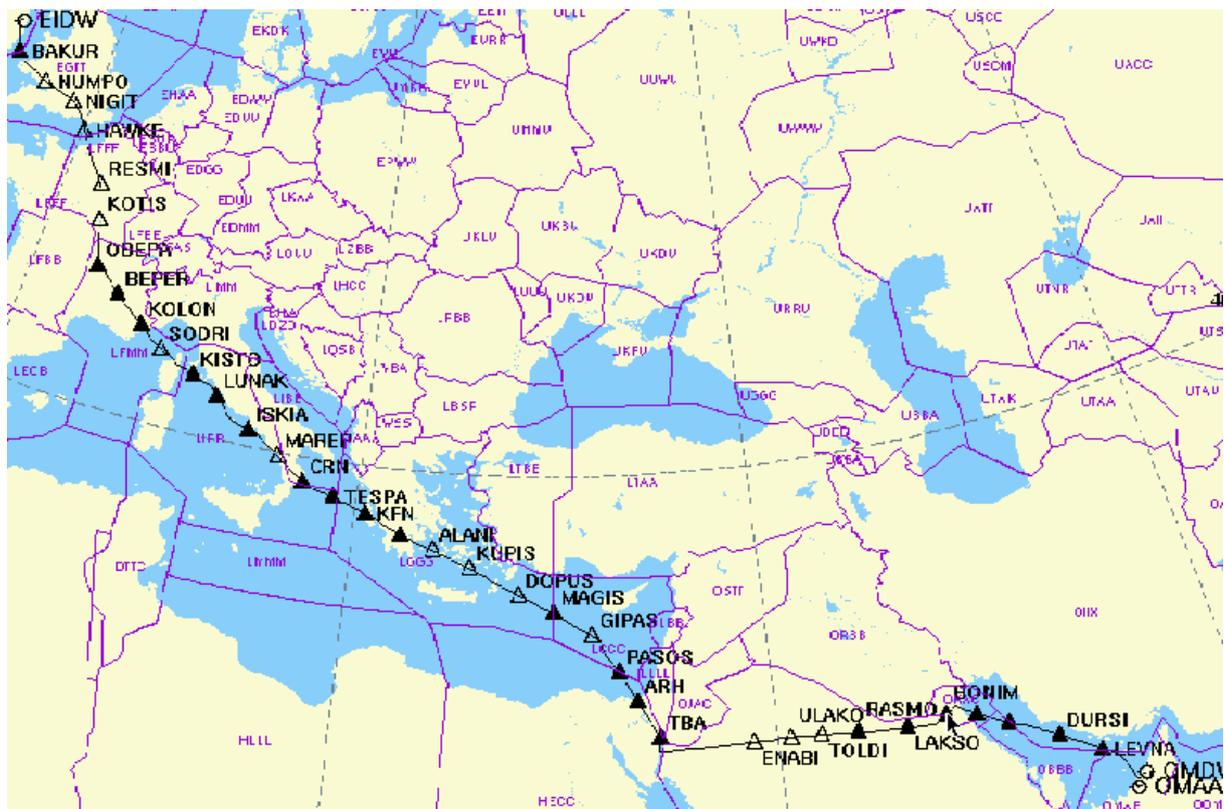
ALPHA NUMERICAL CALL SIGN ACCEPTANCE TESTING

Annex-2

Flight Plan Test-2 conducted March 22nd 2015

(FPL-ETD42DW-IS
-B77L/H-SDE2E3FGHIJ5M1RWXY/SB1D1
-OMAA0800
-N0479F370 DCT MCT/N0482F380 DCT SYN DCT PSD/N0477F390 DCT
LUDAN/N0475F380 DCT KAD/N0456F360 DCT ORER/N0445F350 DCT OTHH DCT
-OMAA0826 OMAL
-PBN/A1B1D1L1O1S2T1 DOF/150316 REG/XXXXX EET/OOMM0010 OEJD0053
OOMM0123 OYSC0128 OEJD0245 HHAA0326 HSSS0334 HECC0403 OEJD0417
OJAC0504 OSTT0524 OLBB0533 OSTT0545 ORBB0614 OIIX0647 ORBB0656
OIIX0657 ORBB0700 OIIX0714 ORBB0716 OIIX0718 ORBB0722 OKAC0726
OBBB0736 OMAE0813 SEL/CJDQ OPR/ETD RMK/TCAS EQUIPPED DUMMY FLIGHT
PLAN ONLY NO AIRCRAFT)

ALPHA NUMERICAL CALL SIGN ACCEPTANCE TESTING

Analysis

The Pool of Standards Required by the Use Case

      Summary of Standards

Test trial summary

Etihad has in addition to the successful test trial introduced several live flights into Europe (already using alpha numeric call signs) and live flights to 6 destinations within the Middle East. The trials will continue until the end of our winter schedule. Below are the flights currently successfully operated with an alpha numeric call sign

Sector	Commercial Flight Number	Alpha Numeric ATC Call Sign
AUH/DUS	EY23	ETD35EY
DUS/AUH	EY24	ETD56EY
AUH/MUC	EY3	ETD46W
MUC/AUH	EY4	ETD16E
AUH/ZRH	EY73	ETD54B
ZRH/AUH	EY74	ETD81C
AUH/FCO	EY83	ETD79EY
FCO/AUH	EY84	ETD26C
AUH/GVA	EY51	ETD28Y
GVA/AUH	EY52	ETD27B
AUH/BRU	EY55	ETD67E
BRU/AUH	EY56	ETD97A
AUH/BRU	EY57	ETD46X
BRU/AUH	EY58	ETD73Y
AUH/KWI	EY301	ETD10RE
KWI/AUH	EY302	ETD87XB
AUH/RUH	EY315	ETD82YR
RUH/AUH	EY316	ETD73UY
AUH/JED	EY313	ETD28TR
JED/AUH	EY312	ETD25TN
AUH/MED	EY345	ETD58UA
MED/AUH	EY346	ETD21EU
AUH/AMM	EY513	ETD10VA
AMM/AUH	EY514	ETD1EY
AUH/BEY	EY535	ETD34CB
BEY/AUH	EY534	ETD47TM

ALPHA NUMERICAL CALL SIGN ACCEPTANCE TESTING

Technical details:

1. **Conversion to an alpha numeric call sign**
   It is important to understand that not every single flight number needs to be changed. This would create a reversed negative affect. Etihad has used the EuroControl CSS tool to de-conflict its own schedule. EuroControl has provided alpha numeric call signs to those flight numbers that are phonetically similar.

   Points to be considered:
   We have tested the use of EY as letters (e.g. ETD1EY) but found that it was not practical. Other airline codes may work better.
   It was also recommended by our crews to use 2 numbers and 1 letter whenever possible. It is easier to say and to remember. Since this is a global issue we may even run out of possible combinations so this is not always possible

2. **Obtaining overflight permissions and airport approvals**
   When applying for overflight it is recommended to apply for both the commercial flight number and the respective alpha numeric call sign. This will help to safeguard the flight in case of any unforeseen problems using the alpha numeric call sign. For airport approvals it is usually sufficient to inform the airport of the alpha numeric call sign that is connected to a commercial flight number.

3. **Internal considerations**
   Flight Plan
   The operational flight plan should include both the commercial and the alpha numeric call sign. The ICAO flight plan however will be filed with its alpha numeric call sign but it is important to add the commercial flight number under field 18 to ensure the connection between the two numbers.
   FMS
   We have tested Airbus A320, A340 and A320, Boeing B787 and Boeing B777. Depending of the FMS used may have to be used to ensure that messages are transmitted to other internal systems such as load planner, fuel dockets etc.
   ACARS
   It is important that the ops control system is set so that it understands both flight numbers. This is important since the aircraft uses alpha numeric in the OOOI messages where the airport offices typically send movement messages with commercial flight numbers.
   Datalink
   We have further tested DCL and CPDLC. We found no issues when using alpha numeric call signs.

ALPHA NUMERICAL CALL SIGN ACCEPTANCE TESTING

Use Case Open Issues

Event	Event Description	Major Assumptions

Gaps in Standards

In this subsection we provide a description of the gaps, including missing or incomplete standards, in standards that are required for the events in this Use Case.

Event	Event Description	Standard Gap

ALPHA NUMERICAL CALL SIGN ACCEPTANCE TESTING

Standards to be profiled in Implementation Guides TBD

In this subsection we provide a list of projected profiles for any standards that maybe utilized

Event	Event Description	Standard Gap

Resolution Recommendations TBD

Event	Event Description	Standard Duplication/ Overlap/Gap Resolution

Next Steps

1. Etihad is planning to introduce alpha numeric call signs (where required) to the following regions starting with the summer schedule

   - Europe (all Etihad destinations)
   - North America (all Etihad destinations)
   - Middle East (all Etihad destinations but depending on the outcome of further trials)

2. Etihad will invite other operators to help testing further destinations within the Middle East.

ALPHA NUMERICAL CALL SIGN ACCEPTANCE TESTING

Interim Summary

The project has found no deficiencies so far with flight plan processing or active live flights with regional ATC or CAA units. Etihad Airways with the support of selected regional and international airlines will continue the flight plan testing phases for International airports' arrivals and departures within the Mid-Region to identify gaps and/or challenges within the airport process, such as IT or human factors, that would limit the use of Alpha-Numeric call signs for commercial flights in the MID region. Any deficiencies will be reported to ICAO and the MEAP S/C upon the completion of the testing phase.

The project has identified that the current Call Sign Similarity process and software which is currently used by Eurocontrol can be utilized in the MID Region. Furthermore, the region will benefit from the lessons learned by Eurocontrol to ensure a better implementation of the tool.

Suggestions overview:
1. Establish a regional call-sign similarity unit (CSS)
2. Establish CSS rules for call-sign conflicts as done by Eurocontrol
3. Establish CSS Working Group through ICAO
4. Operators having an internal process to de-conflict the airline's flight schedule, will provide the internally de-conflicted schedule to the regional call sign similarity unit (CSS).
5. Operators that do not have an internal de-conflicting process that they can utilize to de-conflict their internal flight schedule, will provide data to the regional call sign similarity unit (CSS) for de-confliction.
6. Call- sign conflicts identified through regional call sign similarity unit (CSS) will be provided to operators with options for adjustments (example: XXX123 to XXX12A/XXX12M).
7. Call signs that have been identified with no conflict will be assigned until such time they are no longer utilized by operator.
8. All new call signs will be applied through the regional call sign similarity unit (CSS) prior to utilizations to assure de-confliction and report and assignment provided to submitter by the (CSS)
9. States will report to the regional call sign similarity unit (CSS) attaching the ATC/Airport call-sign confusion reports for review tracking and action if deemed appropriate.