International Civil Aviation Organization

Regional Aviation Safety Group - Middle East

Fourth Meeting (RASG-MID/4)
(Jeddah, Saudi Arabia, 30 March - 1 April 2015)

Agenda Item 3: Regional Performance Framework for Safety

GLOBAL AVIATION DATA MANAGEMENT WORKSHOP

(Presented by IATA)

SUMMARY

This paper provides an update on the GADM Workshop held in Abu Dhabi, UAE on 8 December 2014.

Action by the meeting is at paragraph 3.

REFERENCES

- Workshop Agenda attached in **Appendix A**.
- FDX Advisory attached in **Appendix B**.

1. INTRODUCTION

1.1 The Global Aviation Data Management (GADM) Workshop was held in Abu Dhabi, UAE on 8 December 2014 and kindly sponsored by Etihad.

1.2 The Workshop targeted safety people in the different airlines. 18 participants from 12 different airlines registered for the Workshop.

2. DISCUSSION

2.1 The Global Aviation Data Management (GADM) is IATA's platform for safety data. It consists of several databases which cover reactive, proactive and predictive safety information.

2.2 The Workshop aimed at:

a) Providing an overview of the IATA Global Aviation Data Management (GADM) Databases with special focus on FDA, FDX and GDDB.

b) Providing hands on experience and practical examples to airlines on how to utilize the GADM databases for better reporting and data analysis.

c) Obtaining user feedback on existing databases utilized by the airlines (such as STEADES, GDDB…etc) at the aim of continuously improving GADM and catering for the Airlines needs.

2.3 It is also worth mentioning that IATA is a major contributor to the RASG-MID Annual Safety Report (ASR). The annual safety report team is facing challenges in collecting predictive safety data due to the low level of participation of the different airlines in the IATA database which allows for collecting this type of information (Flight Data Exchange – FDX). Therefore, IATA organized this Workshop to also promote for this tool and increase the levels of participation of the different airlines and thus enhance the predictive safety information in the MID region.

2.4 The Workshop outcomes were presented in the RASG-MID Steering Committee/3 (RSC/3) in Cairo, Egypt, 9-11 December 2014 and the following Draft Conclusion was agreed:

DRAFT CONCLUSION 3/3: FLIGHT DATA EXCHANGE (FDX)

That, IATA develops a Draft RASG-MID Advisory Circular to promote the use of the FDX.

2.5 IATA developed a RASG-MID Informative Advisory Circular attached in **Appendix B**.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

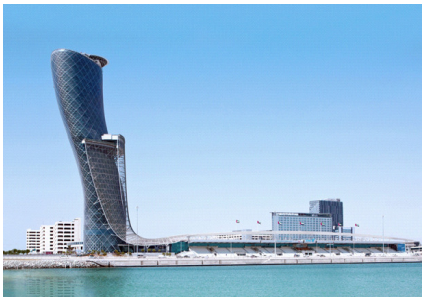
a) note the update on the GADM Workshop; and

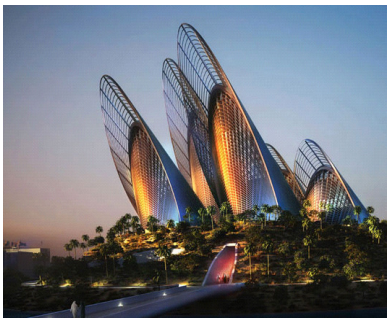
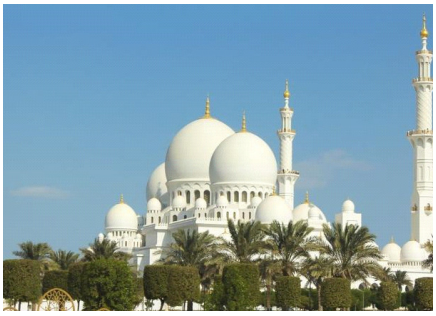
b) review and endorse the RASG-MID Safety Advisory for FDX.

The Global Aviation Data Management (GADM) Workshop

8 December 2014
Abu Dhabi, United Arab Emirates





GADM
Workshop Schedule

Introduction of GADM

- ✓ GADM Databases
- ✓ Areas of activities
- ✓ Enhanced Safety Report

Background for a Flight Data Analysis

- ✓ Regulatory requirements
- ✓ IOSA, other audit programs

IATA Flight Data Analysis

- ✓ Flight Data Analysis (FDA) Service description
- ✓ Flight Data Exchange (FDX)
  (Members today, Website/dashboards, Reports)
- ✓ Differences between FDA, FDX, additional benefits from an FDX membership

Practical Examples

- ✓ On different GADM databases as per request
- ✓ Airline reports, identified issues
- ✓ Experience
- ✓ Discussion

Outlook

- ✓ Next steps and upcoming enhancements

APPENDIX B

RASG-MID SAFETY ADVISORY – XX

(RSA-XX)

April 2015

Flight Data Exchange (FDX)

This document is an informative advisory developed by the International Air Transport Association (IATA) under the auspices of the Regional Aviation Safety Group – Middle East (RASG-MID).

Disclaimer

Contents

Introduction

The objective of the RASG-MID Annual Safety Report is to gather safety information from different stakeholders and to identify the main aviation safety risks in the MID Region in order to deploy mitigation actions for enhancing aviation safety in a coordinated manner.

Three editions of the RASG-MID annual safety report have been published so far. All editions include detailed reactive and proactive safety information; yet, the annual safety report team is facing some challenges in collecting predictive safety information.

The International Air Transport Association (IATA) has developed a very useful tool called Flight Data Exchange (FDX), which acts as a platform that allows for predictive safety data gathering and assessment. However, and due to the low levels of participation by the operators in the MID states in FDX, the tool could not be optimized to its full potential where comprehensive predictive safety assessments could be performed.

This informative advisory was developed based on requests from the different states that were part of the RASG-MID/3 Steering Committee meeting (RSC/3) held in Cairo, Egypt between 9-11 December 2014 which agreed to the following draft conclusion:

DRAFT CONCLUSION 3/3: FLIGHT DATA EXCHANGE (FDX)
That, IATA develops a Draft RASG-MID Advisory Circular to promote the use of the FDX.

Purpose

The purpose of this informative advisory is to elaborate more on FDX and raise awareness among the different aviation stakeholders on who can join FDX, how the tool works, and what it offers.

Overview of Flight Data Exchange (FDX)

1. Definition of FDX

The Flight Data Exchange (FDX) is an aggregated de-identified database of Flight Data Analysis (FDA) events. FDA events are also known as Flight Data Monitoring (FDM) or Flight Operations Quality Assurance (FOQA) events. Raw flight data is collected from Participants and processed against a pre-defined event set. Results data is aggregated into a single de-identified database, and displayed via a website only when there are at least three (3) operators with the same aircraft type into an airfield. Users may access the de-identified results and query more than 50 different measurements. Reporting capabilities and other outputs are also included in FDX.

2. Benefits of FDX

The FDX program allows flight operations and safety departments to proactively identify safety hazards. Currently, more than a dozen different event types are displayed by location including Ground Proximity Warning System (GPWS/TAWS) locations, Traffic Collision and Avoidance System (TCAS, or ACAS) events,

windshear warnings, unstable approaches (low and high risk), go-arounds, and high tailwind landing events. More events will be added as the system is developed.

The analysis of the different types of events would allow the operator to:

- identify safety issues that the airline did not even know they existed and share safety hazards with flight crew
- anticipate safety concerns at new airports or new routes
- view flight animations for safety and training purposes
- compare and benchmark the airline's operations against the entire industry
- compare global and regional statistics

3. Data Processing Overview

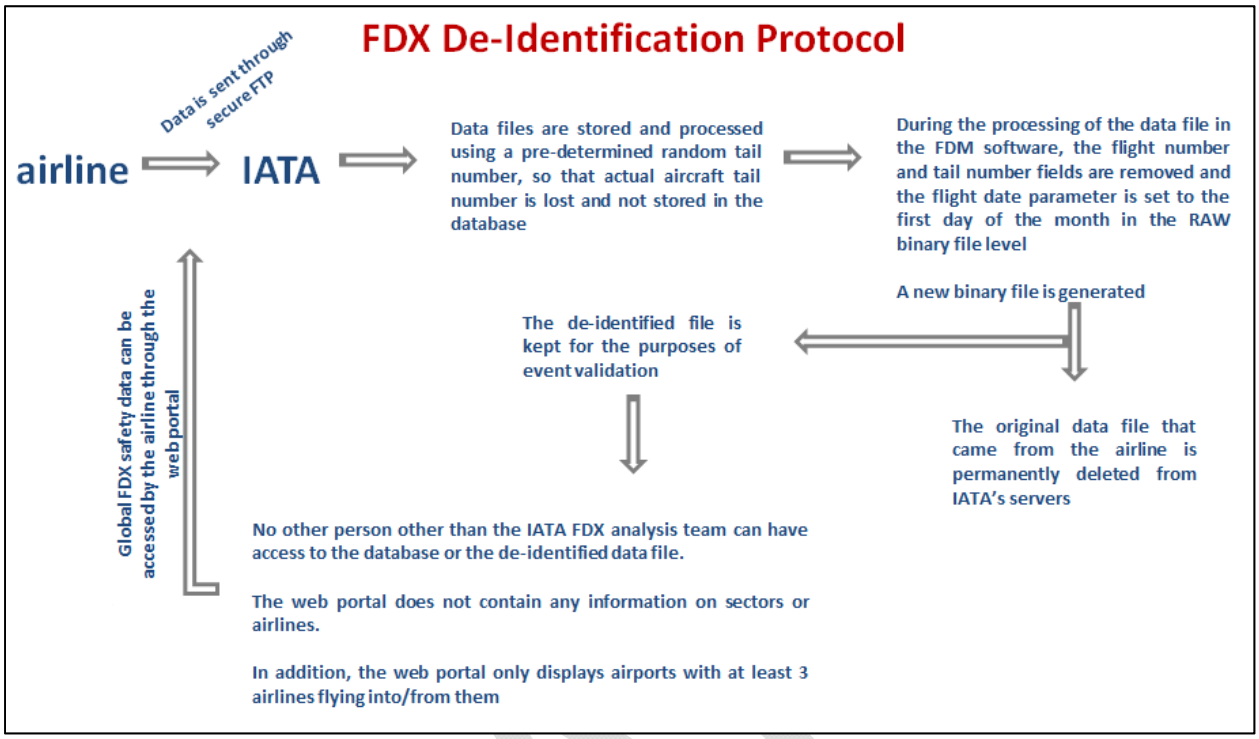
The FDX program merges de-identified Flight Data Analysis (FDA), Flight Data Monitoring (FDM), or Flight Operations Quality Assurance (FOQA) Binary Data from multiple operators into a de-identified global database, and then provides that aggregated information back to Participants via the website and various forms of reporting and other outputs. FDX is expected to become an essential component in an operator's Safety Management Systems (SMS) program, allowing operators to continuously monitor departure and destination airports, multiple hazards, and proactively assess new destinations before starting service.

Binary flight data is sent to IATA (minimum monthly) or an IATA vendor via secure File Transfer Protocol (FTP) site where it is processed using a common set of events including, but not limited to:

- Unstable approaches
- EGPWS/GPWS/TAWS
- Excessive tailwind on landing
- TCAS
- Hard landing
- Rejected Takeoff
- Go Around

Further events will be added as the system develops. IATA stores the Results Data in a de-identified database. Collated Information is stored in a separate de-identified database.

Below is an illustration of the de-identification protocol implemented by IATA towards FDM/FOQA data submitted by the airlines:



4. Events Types and Definitions

FDX currently captures a standard set of event types. Further events will be added as the system develops. Moreover, each event type has a threshold by which it is triggered and captured.

Below is a table which lists all the events and their respective triggers in FDX.

EVENT NAME	TRIGGER
Excessive Glideslope Deviation - Above (1000 – 500 ft)	> 1 dot between 1,000 and 500ft AGL
Excessive Glideslope Deviation - Above (Below 500 ft)	> 1 dot between 500 and 200ft AGL
Excessive Glideslope Deviation - Below (1000 – 500 ft)	< -1 dot between 1,000 and 500ft AGL
Excessive Glideslope Deviation - Below (Below 500 ft)	< -1 dot between 500 and 200ft AGL

Excessive Localizer Deviation (1000 – 500 ft)	> 1 dot between 1,000 and 500ft AGL
Excessive Localizer Deviation (Below 500 ft)	> 1 dot between 500 and 200ft AGL
High Rate of Descent (1000 – 500 ft)	RoD > 1200 ft/min between 1,000 and 500ft AGL
High Rate of Descent Below 500 ft	RoD > 1200 ft/min between 1,000 and 0ft AGL
Late Flap Configuration (1000 – 500 ft)	Landing flap selected between 1,000 and 500ft AGL
Late Flap Configuration (Below 500 ft)	Landing flap selected between 500 and 0ft AGL
Late Gear Configuration (1000 – 500 ft)	Landing gear selected between 1,000 and 500ft AGL
Late Gear Configuration (Below 500 ft)	Landing gear selected between 500 and 0ft AGL
Low Power on Approach (1000 - 500)	Low power between 1,000 and 500ft AGL
Low Power On Approach Below 500 ft	Low power between 500 and 0ft AGL
High Speed on Approach (1000 - 500)	Vref Deviation > 20kt between 1,000 and 500ft AGL
High Speed on Approach Below 500 ft	Vref Deviation > 20kt between 500 and 0ft AGL
Low Speed on Approach (1000 - 500)	Vref Deviation < -5kt between 1,000 and 500ft AGL
Low Speed on Approach Below 500 ft	Vref Deviation < -5kt between 500 and 0ft AGL
Excessive Tailwind on Landing	Tail Wind > 10kt
Go Around	Go Around executed below 3,000ft / 1,000 and 500ft
Hard Landing	Vertical Acceleration > 1.8g
Rejected Takeoff	RTO executed > 60kt
TCAS RA	TCAS RA when available in data frame

TCAS TA	TCAS TA when available in data frame
GPWS	All GPWS modes when available in data frame

5. Samples from FDX Web Portal

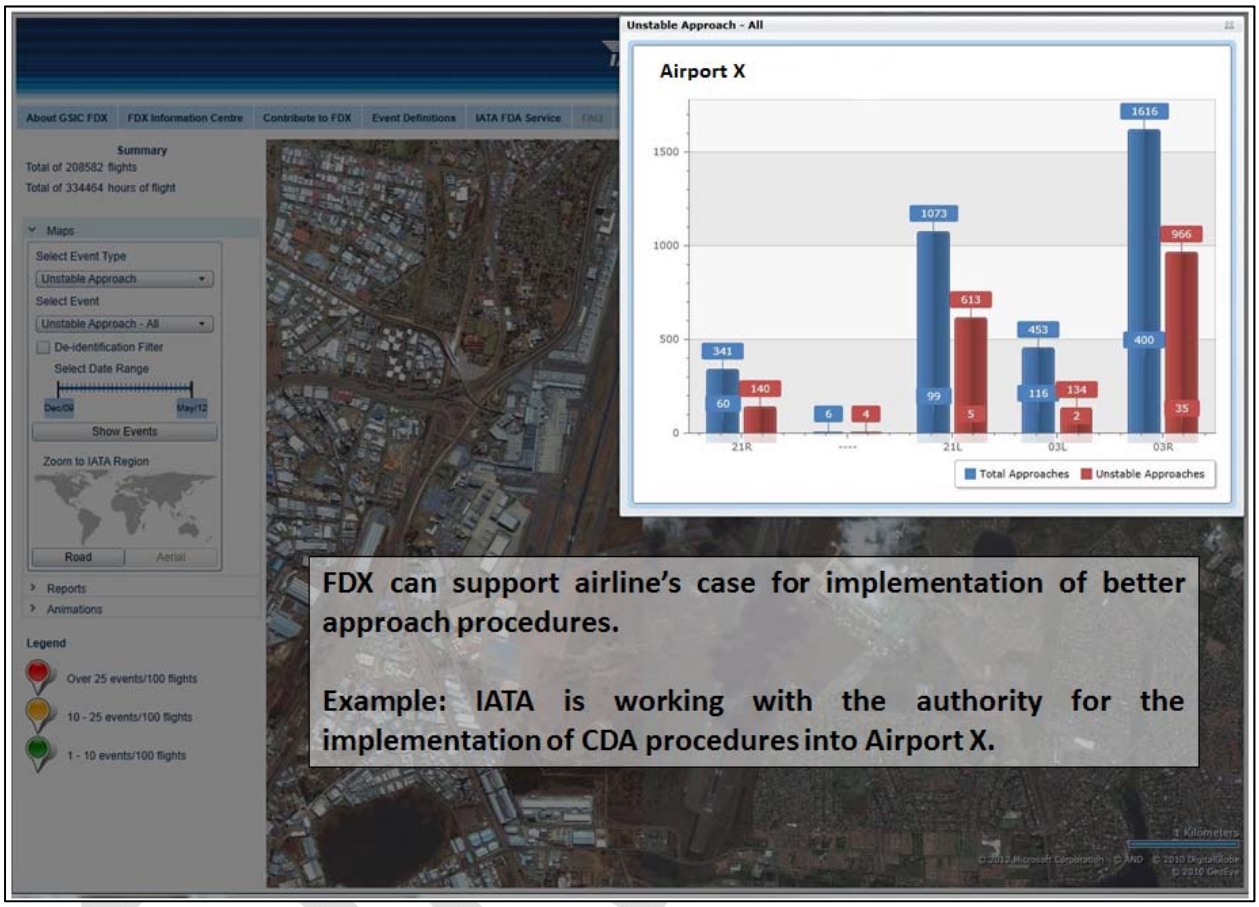
FDX information is available to users either through the IATA safety reports or through the web portal. The web portal uses google maps to show the distribution of events across the different locations as in the screenshot below:

To query a specific event type, the user would need to:

- Select the event type (for example: unstable approaches)
- Specify the date range
- Specify the region

Afterwards, the query results would show on the google map with the distribution of the event rates across the different airports. It is worth mentioning here that the user can only see airports with at least 3 airlines flying into them to ensure the de-identification of the data.

Queries can be also run per airport for the different event types as in the example below for Airport X. The screenshot illustrates the rate of unstable approaches compared to the total approaches per runway in that specific airport. Therefore, and upon analyzing this information, IATA has been working with the authority to implement CDA procedures into Airport X.



Furthermore, FDX has a Global Animation Archive where animations will be created during the course of the program. Contributing airlines can share and use these animations for training and safety awareness. Data is always de-identified. Below is a screenshot of an animation sample for GPWS events due to excessive rate of descend and low flap configuration near to the ground.


IATA GSIC FDX
Animation
FROM ABOUT 300 FT AGL (0.6 DME) A SERIES OF GPWS WARNINGS OCCUR DUE TO EXCESSIVE RATE OF DESCENT AND LOW FLAP CONFIGURATION NEAR TO THE GROUND. SPEED IS STILL 60 KT ABOVE VREF. THE SPOILES ARE RETRACTED AT ABOUT 240FT AGL AND FULL FLAP IS SELECTED.
Flight Data Analysis Service
VREF DEV: 54 KT (VREF: 124 KT)
SEL SPD: 152 kt
VSI: -820 FT/MIN
DME: 0.4
HAA: 199 FT (AGL)
RECORDED TIME: 112873
GPWS - TOO LOW TERRAIN
FLAP HANDLE POS: 40
FLAP SURF POS: 18
Play
01:50 / 03:25