



Flight Data Exchange

A Global Approach to Local Risks

FDX
FLIGHT DATA EXCHANGE

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IATA – Asia Pacific

100
YEARS OF
COMMERCIAL
FLIGHT



Overview

Accident Trends

Global / Asia Pacific

Five Year Summary / 2012

Flight Data Monitoring

“Aviation’s most important safety tool”

An ICAO and IOSA requirement

FDX – Flight Data Exchange

How FDX can be an effective risk management tool

Why all airlines should subscribe



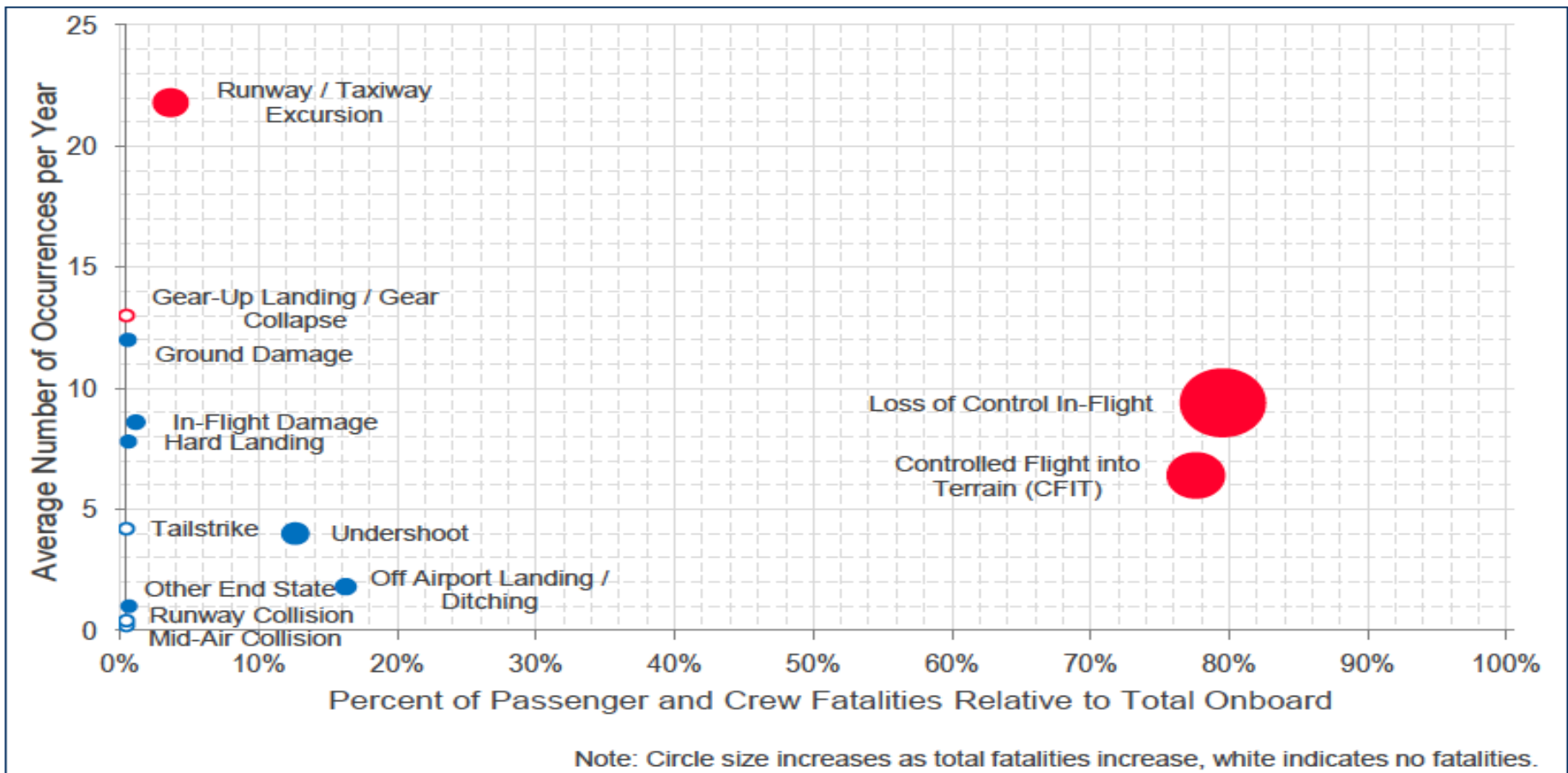
Yogi Berra – American Baseball Player



“It’s tough to make predictions, especially about the future.”

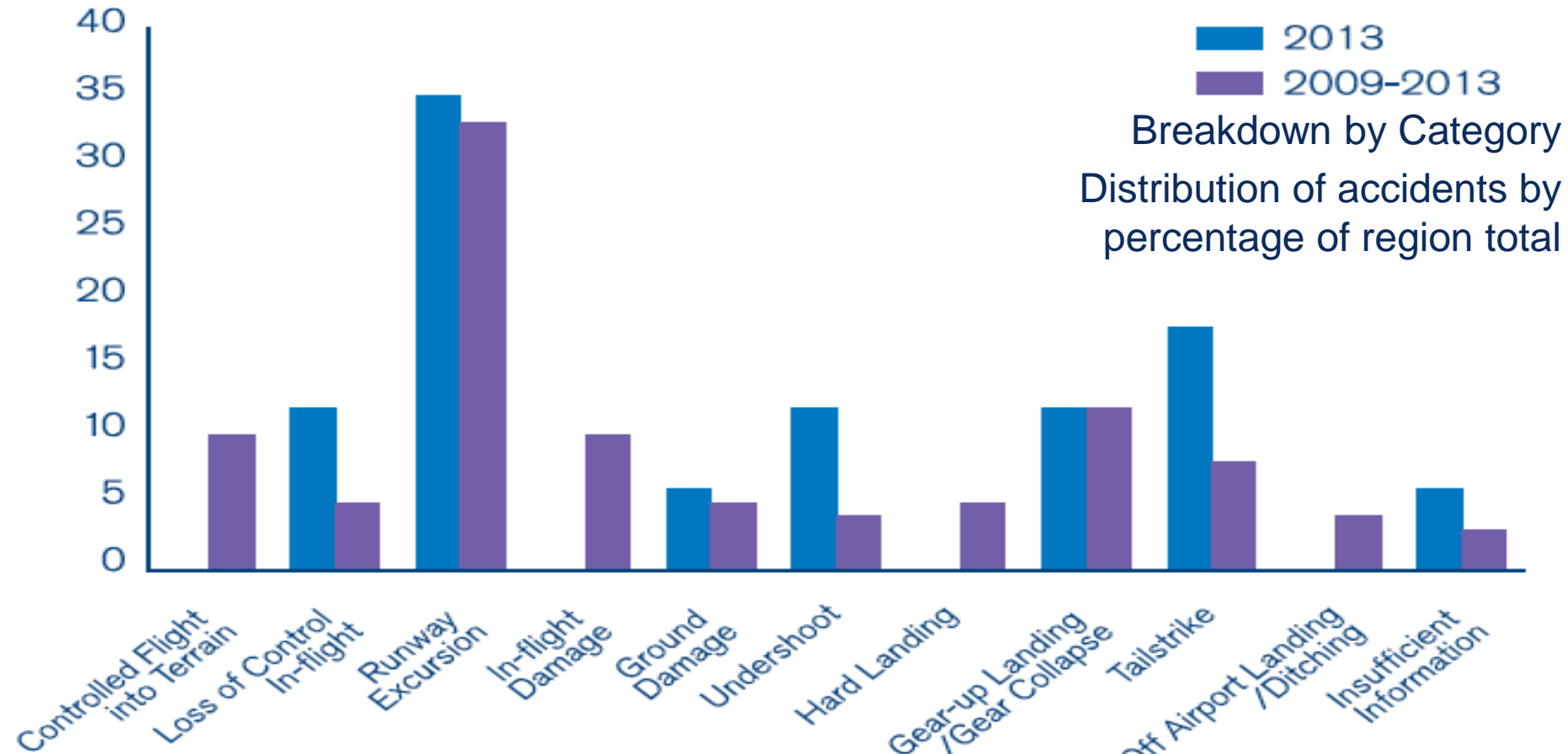
Accident Trends

Frequency and Severity (2008 – 2012)



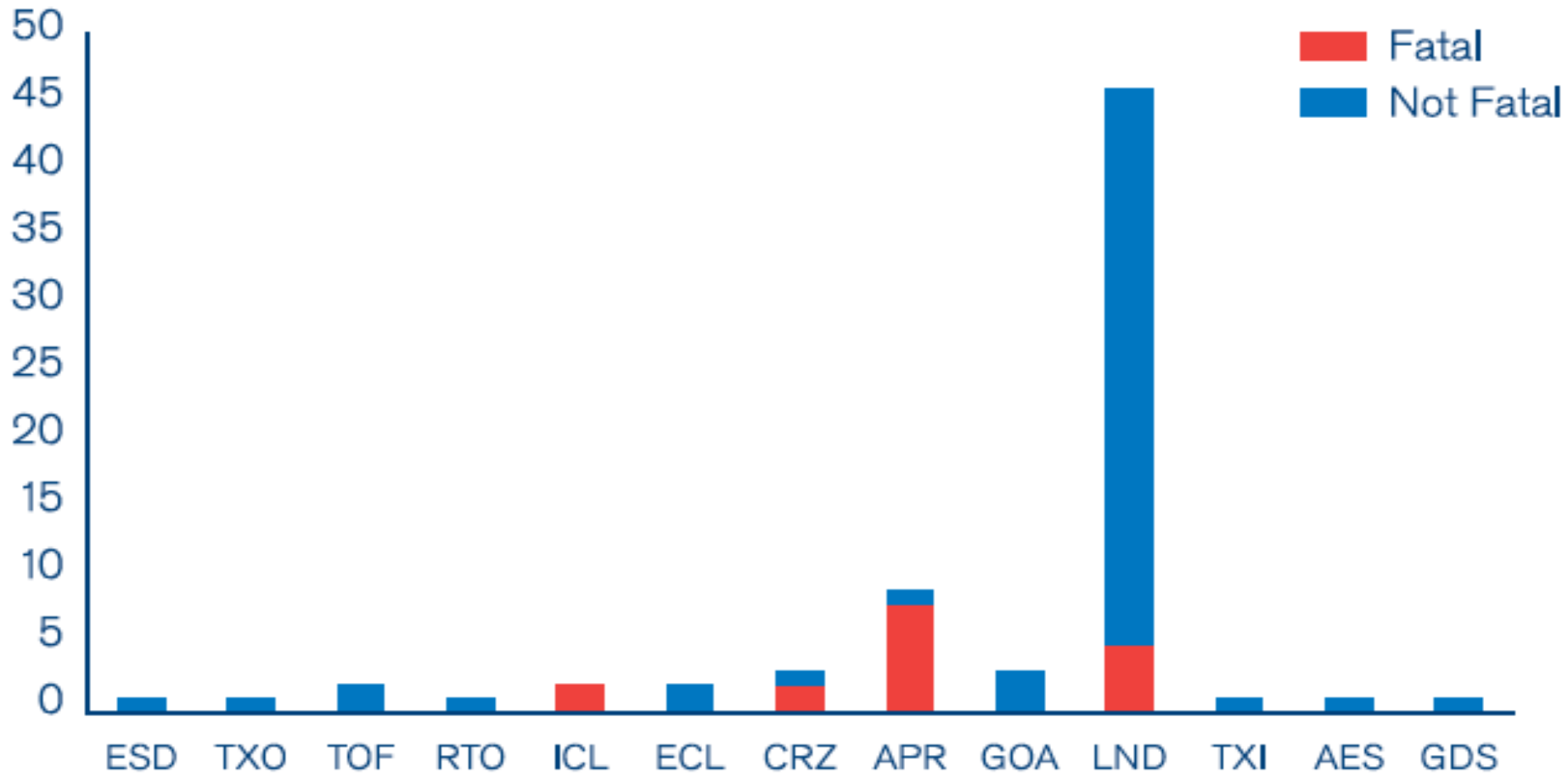
Asia Pacific

2013 – 17 accidents / 2009 to 2013 – 73 accidents



Asia Pacific

Accidents per Phase of Flight (2009 – 2013)



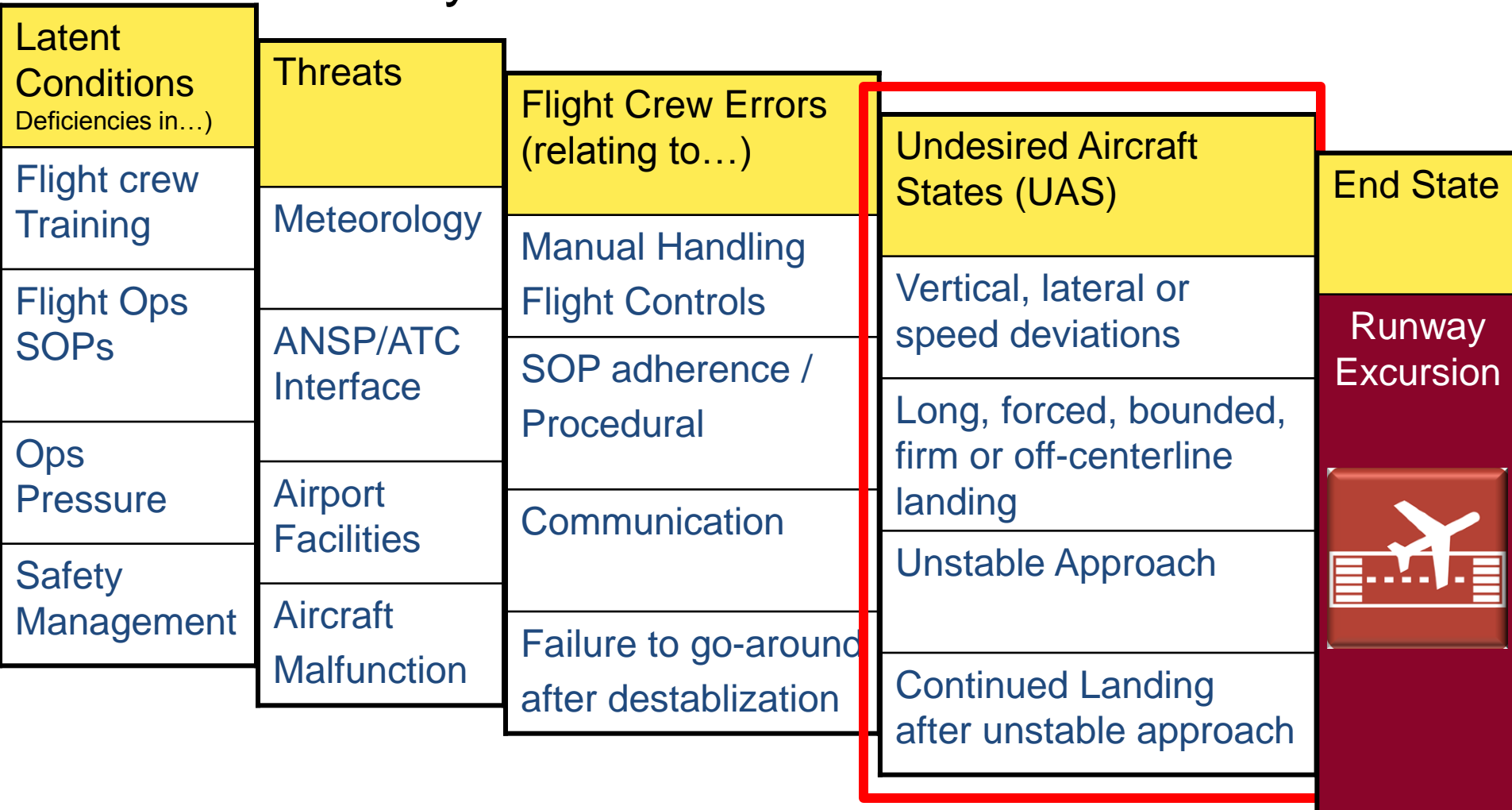


Asia/Pacific

Top Contributing Factors, 2009 – 2013

Latent Conditions (deficiencies in...)		Threats		Flight Crew Errors (relating to...)		Undesired Aircraft States (UAS)	
50%	Regulatory oversight	Environmental		38%	Manual handling/flight controls	27%	Long, floated, bounced, firm, off-centerline or crabbed landing
		34%	Meteorology Wind/ wind shear/ gusty wind (78% of events) Thunderstorms (22% of events)				
41%	Safety management	20%	Ground-based nav aids not available	27%	SOP adherence/cross-verification; intentional non-compliance	23%	Vertical / lateral speed deviation
19%	Flight operations: Training systems	11%	Contaminated runway / taxiway	9%	Failure to go-around after destabilization on approach	14%	Unstable approach
		Airline				13%	Continued landing after unstable approach
		13%	Aircraft malfunction				

Runway Excursions – Chain of Events



Flight Data Monitoring – can break the chain

Flight Crew Errors (contributing to...)
Procedural Handling
Flight Controls
Procedure adherence / Non-compliance
Communication
Failure to go-around or destabilization

Undesired Aircraft States (UAS)
Vertical, lateral or speed deviations
Long, forced, bounded, firm or off-centerline landing
Unstable Approach
Continued Landing after unstable approach



Flight Data Monitoring



“The systematic, pro-active and non-punitive use of digital flight data from routine operations to improve aviation safety” Regulation (EU) No 965/2012

The first step to managing anything is to measure it

Flight Data Monitoring

(Also Known as FDM, OFDM, FOQA or FDA)



Compare Standard Operating Procedures (SOPs) with those performed in everyday line flight

Feedback loop within the Safety Management System (SMS) to monitor corrective actions

FDM data can also be used to identify training gaps

Flight Data Monitoring

Per ICAO, since 2005...



A requirement for international civil aviation aircraft over 27 tonnes

Is recommended for aircraft over 20 tonnes

“A flight data analysis programme shall be non-punitive and contain adequate safeguards to protect the source(s) of the data.”

Most National Aviation Authorities (NAAs) have introduced a legal requirement for FDM

IOSA Standards and Recommended Practices

3.1 Safety Risk Management

The Operator should have a hazard identification program...

i) A combination of reactive and proactive methods for safety data collection;

ii) Processes for safety data analysis that identify existing hazards and predict future hazards to aircraft operations.

Note - Effective 1 September 2015, this recommended practice will be upgraded to a standard



IOSA Standards and Recommended Practices

ORG 3.3.13

The Operator shall have an FDA program that is non-punitive and protects data sources.



Typical processes for hazard ID:

Confidential Reporting

Investigation of Accidents / Incidents

Flight data analysis

Observation of crew performance

Quality Assurance / Safety Auditing

Safety information exchange from
external sources

**There are 90,000 take-offs and landings
every day worldwide**



and if you could...

have a team working on issues you didn't even know existed

anticipate safety concerns at new airports or new routes

compare your operations against the entire industry

compare global and regional statistics

...would you?



FDX

FLIGHT DATA EXCHANGE

Raw data from the aircraft is downloaded routinely for FOQA/FDM/FDA

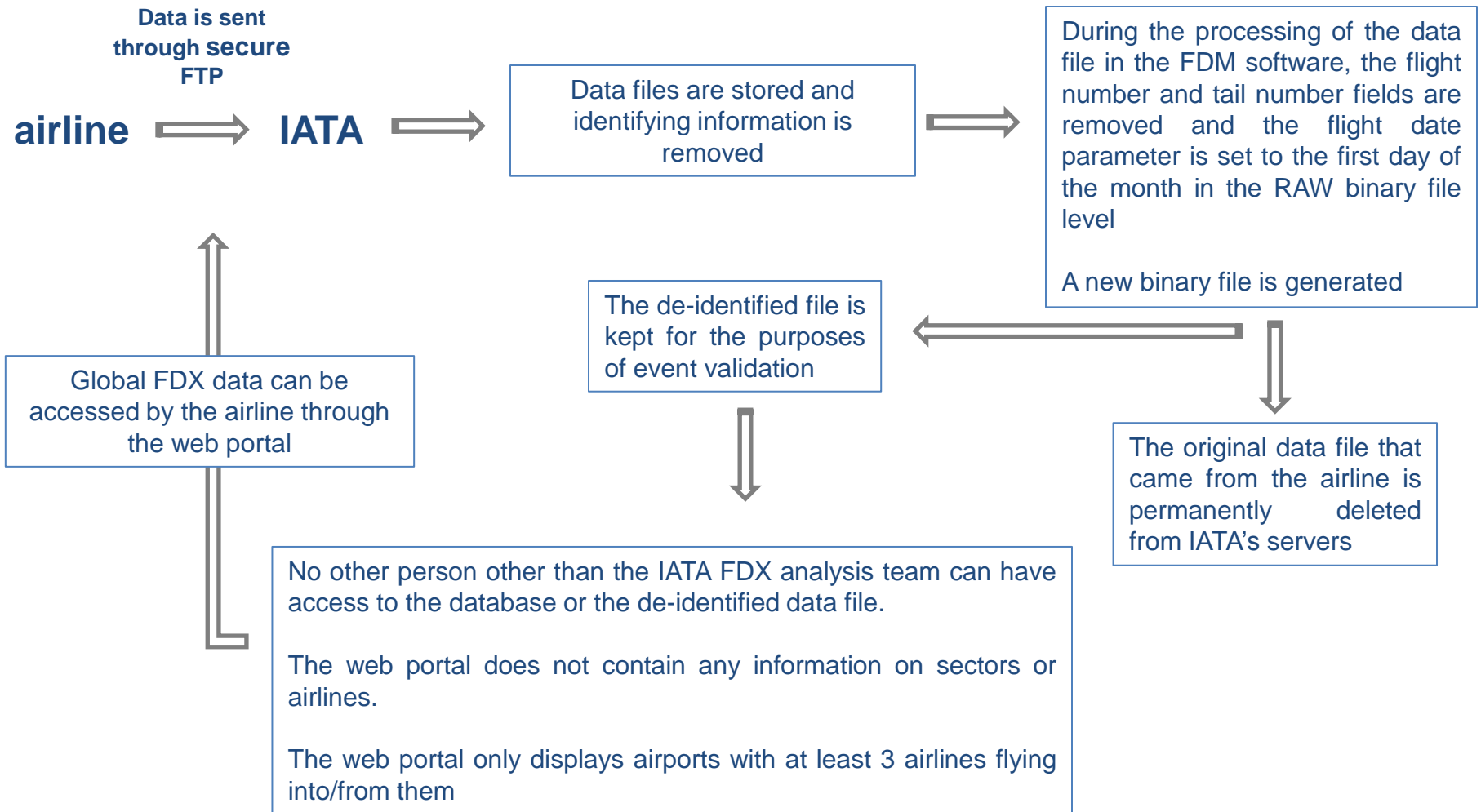
Data is processed internally by the airline or its service provider



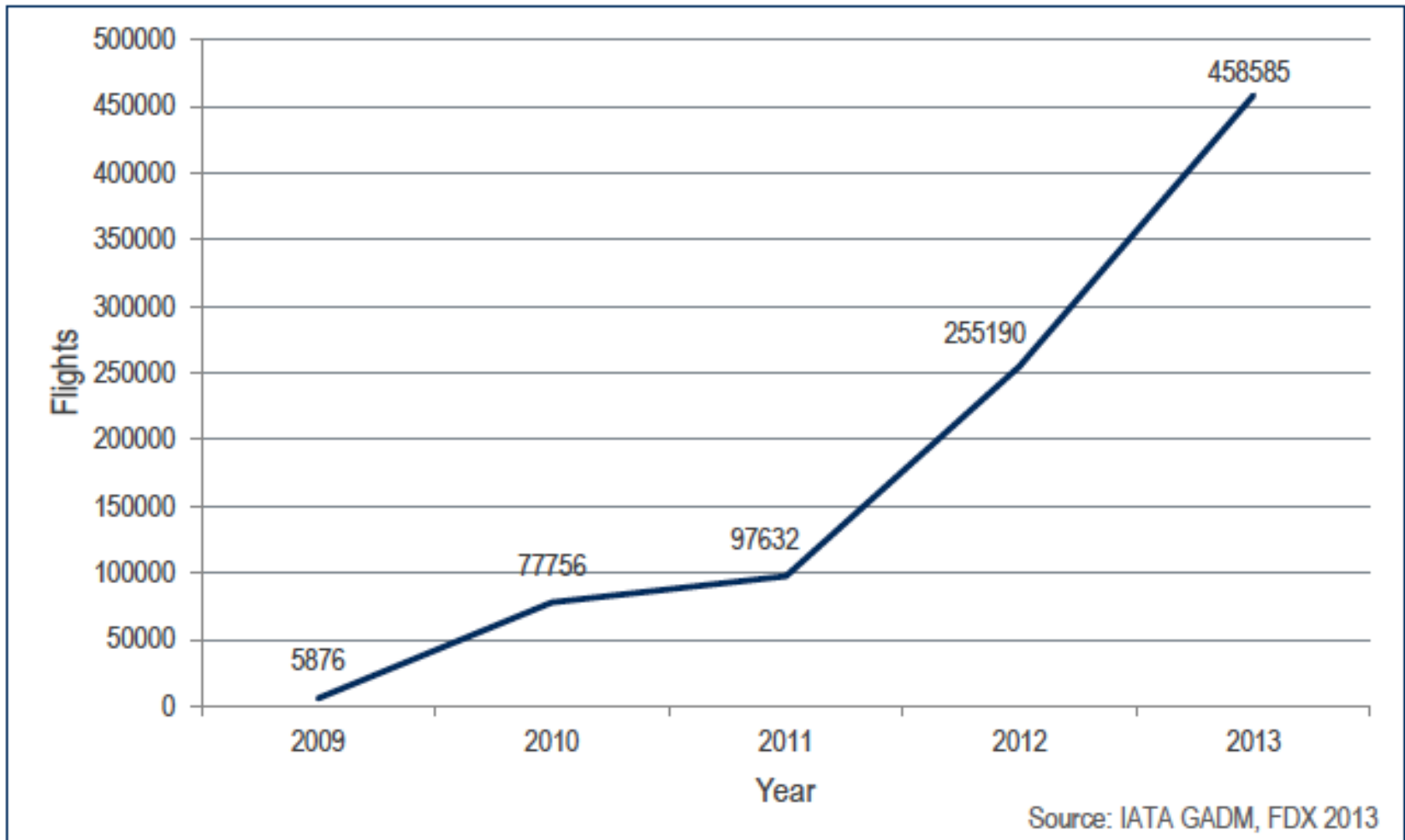
In FDX, Data is also sent to IATA where it gets processed using a common set of events including:

- **Unstable approaches**
- **GPWS**
- **Tailwind on landing**
- **TCAS**
- **Hard landing**
- **Rejected Takeoffs**
- **Go-Arounds**

De-Identification Protocol



Growth in Membership and Sectors



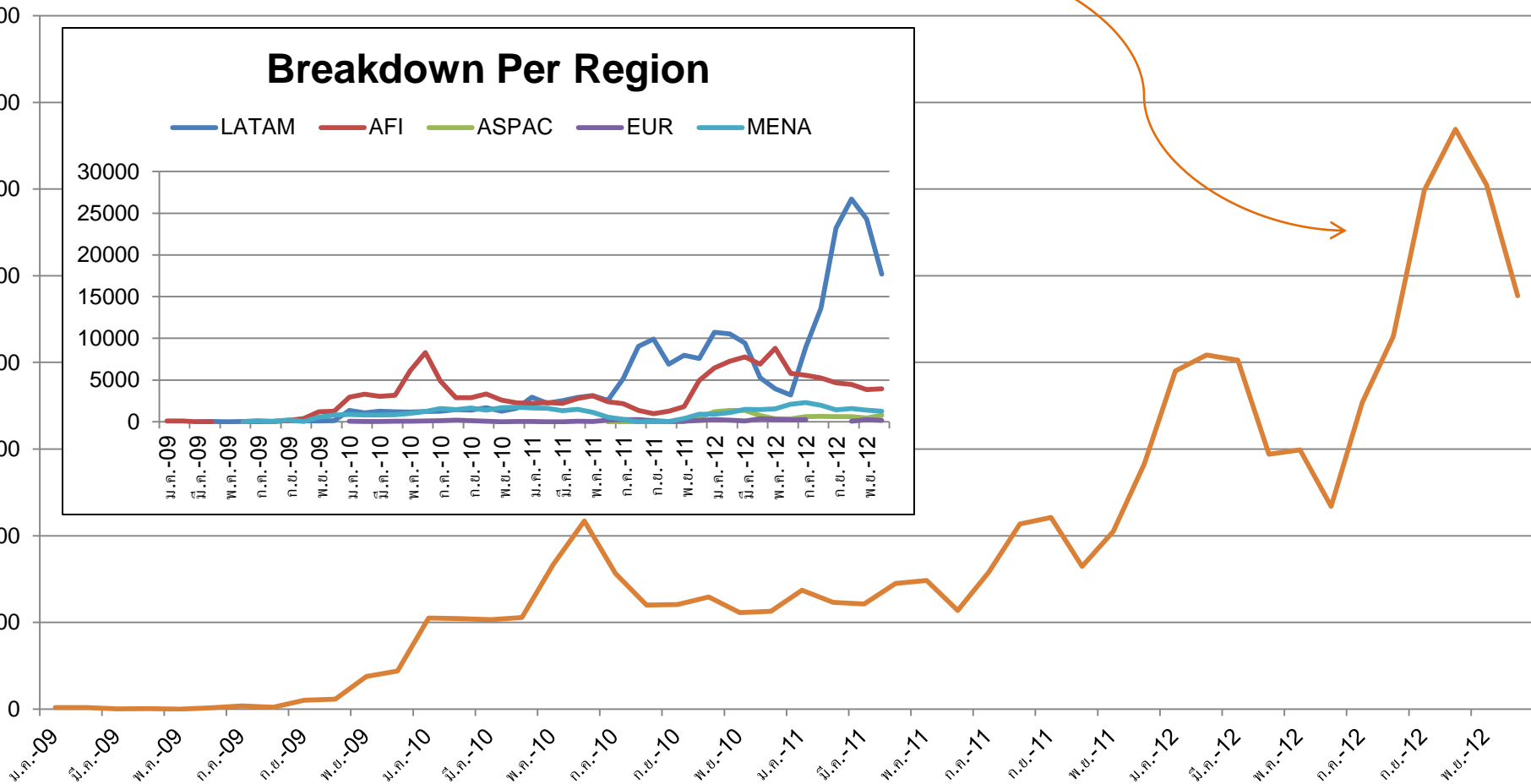


Data Submission

Total Flight Count

Breakdown Per Region

LATAM AFI ASPAC EUR MENA



User's Access of Information

The database outputs data in two forms

web portal

reports



Summary

Total of 468200 flights
 Total of 704189 hours of flight



All data, rates and trends are based on the selected date range in the above slider.

Maps

Select Event Type

Select Event

Zoom to IATA Region

> Reports
 > Animations



(Regions are based on airline origin)

Region	Average (%)	Trend
Global:	14.3329	▼
Africa	14.3514	▼
Middle East and North Africa	17.0691	▼
Latin America and The Caribbean	10.7399	▼
Asia Pacific	9.3138	▼
Russia and CIS	7.9365	▲
Europe	23.2486	▼
North America	22.2962	▲
China and North Asia	NaN	▼



The web portal shows data against a world map background which in this example is showing airports with unstable approaches.

The user can only see airports with at least 3 airlines flying into them.

Summary

Total of 468200 flights
Total of 704189 hours of flight



All data, rates and trends are based on the selected date range in the above slider.

Maps

Select Event Type

Unstable Approach

Select Event

Unstable Approach - All

Show Events

Zoom to IATA Region

Road Aerial

Reports

Animations

Legend

- Over 2 standard deviations from average
- Between 1 and 2 standard deviations from average
- Within one standard deviation from average

(Regions are based on airline origin)

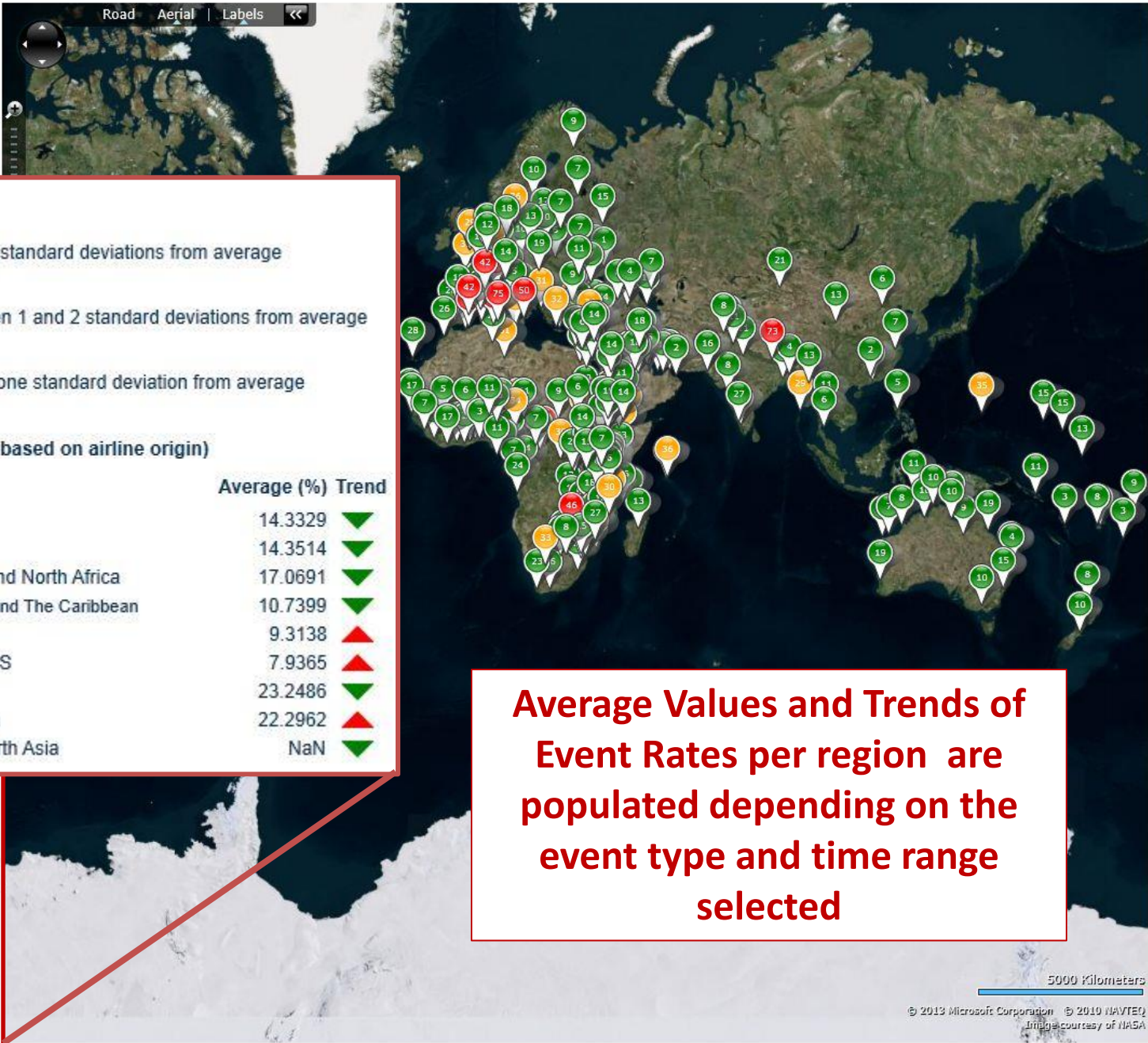
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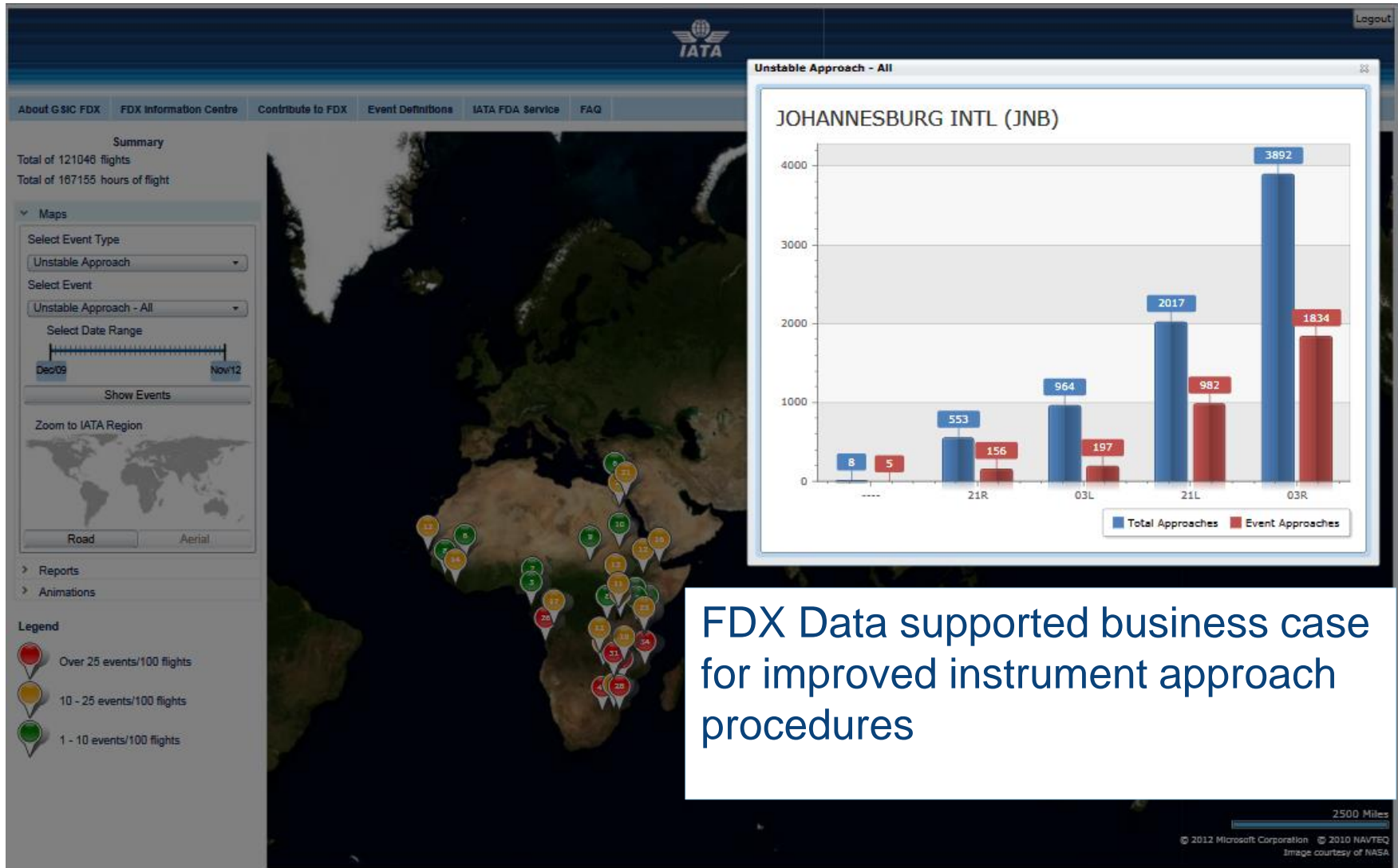
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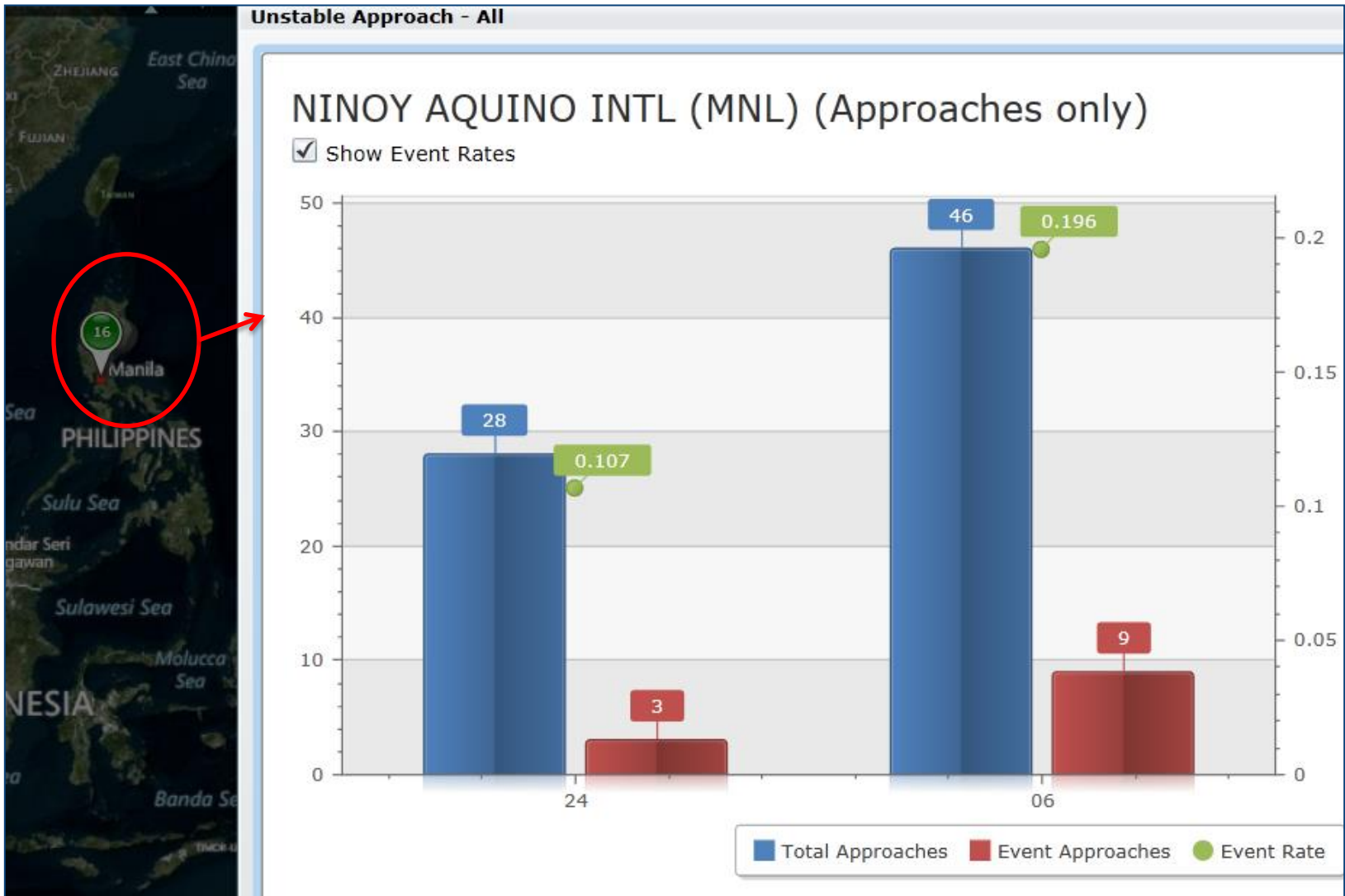
Average Values and Trends of Event Rates per region are populated depending on the event type and time range selected

JNB INTL – Unstable Approaches

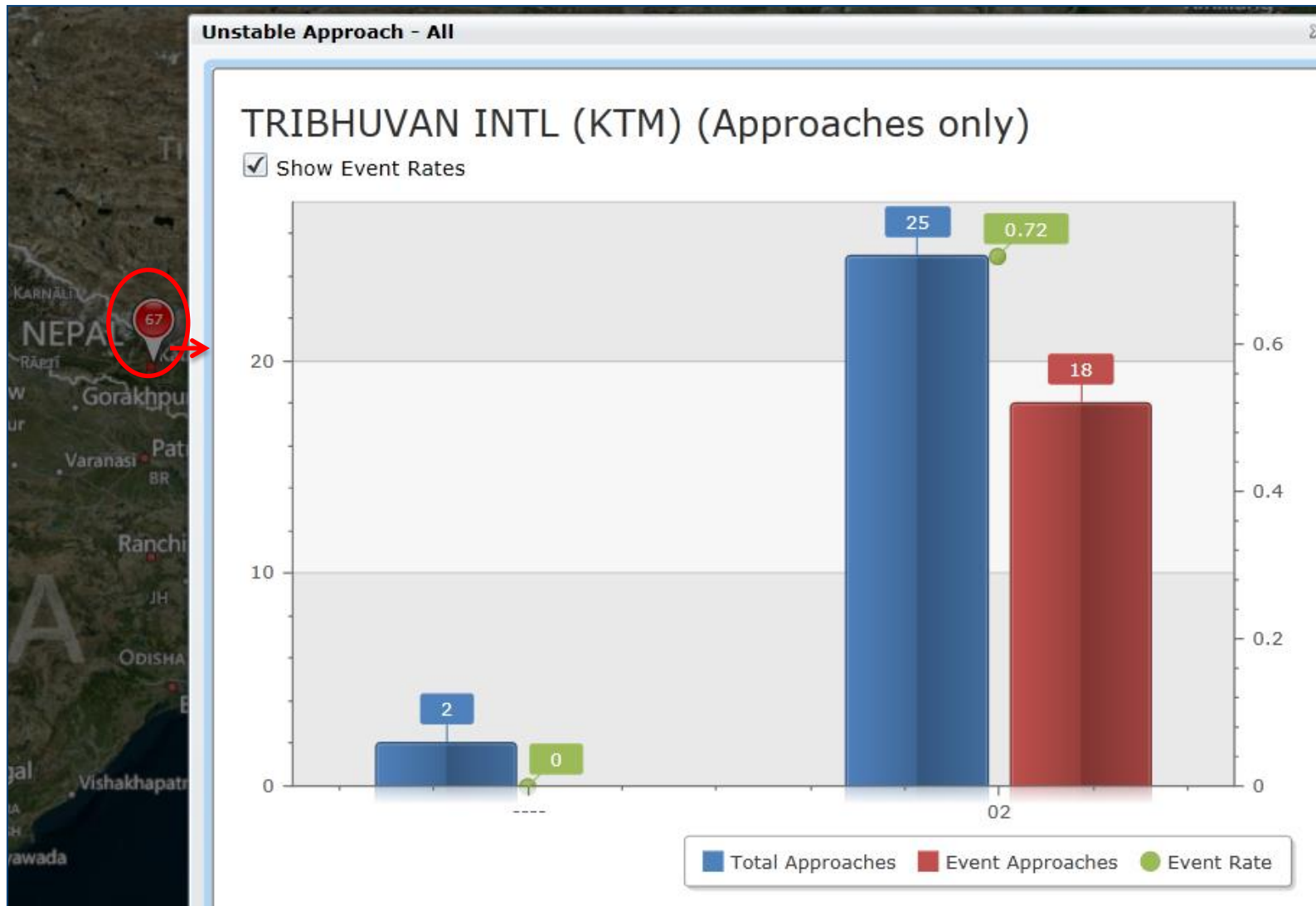


FDX Data supported business case for improved instrument approach procedures

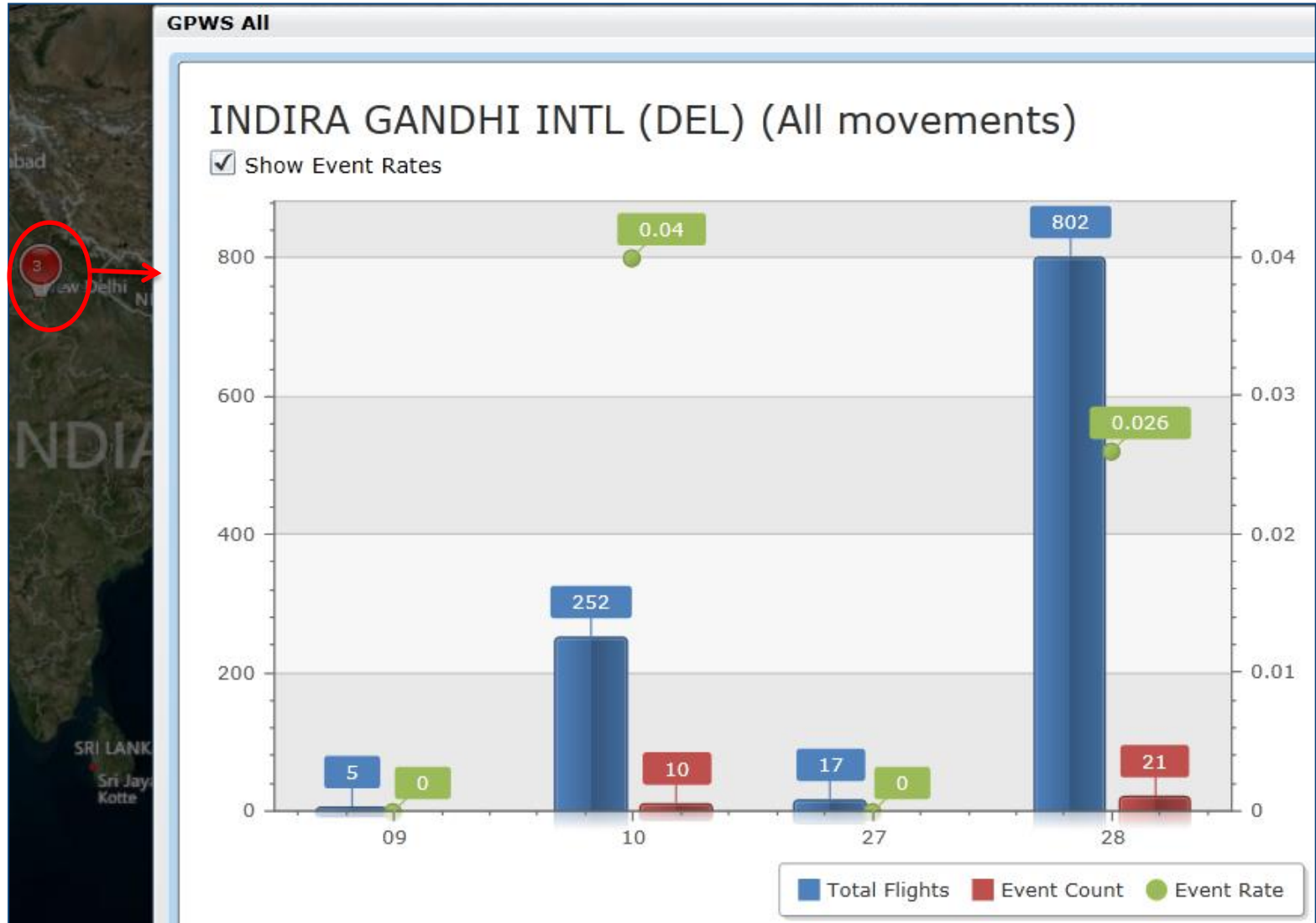
MNL INTL – Unstable Approaches



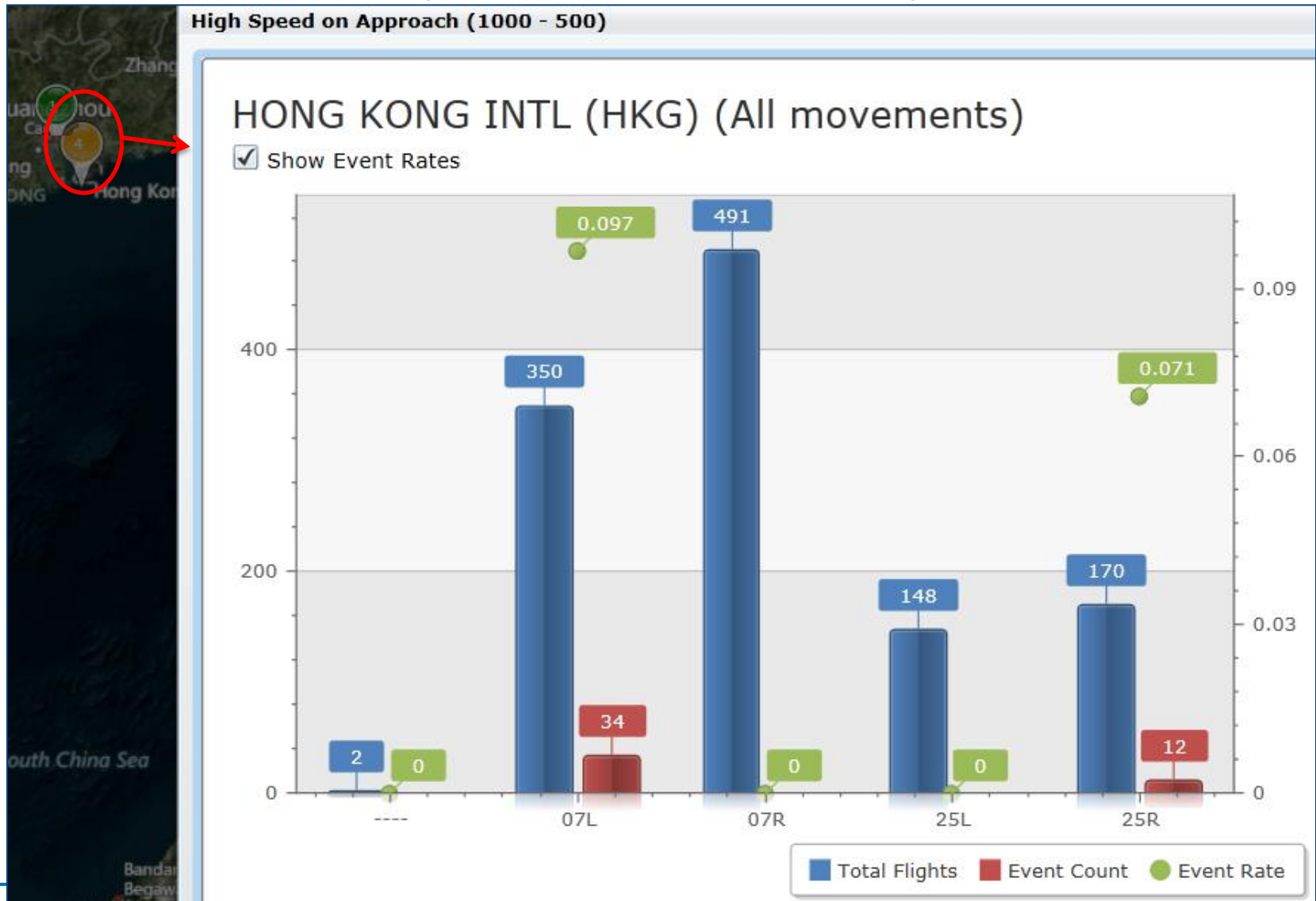
KTM INTL – Unstable Approaches



DEL INTL – GPWS Events



HKG INTL High Speed on Approach Events January 2010 – January 2014




Browser: <https://www.flightscope.com/fdx/> | 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.

IATA Flight Data Analysis Service
Powered by Flightscope




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



Legend

- Over 25
- 10 - 25 e
- 1 - 10 ev

152 VORLOC VIS 3700
220 200 180 160 140 120
20 10 0 10 20
175 01
CS 188

TAT +45C ENG 1 ENG 2
70.6 1.06 32 117 17

FLAP HANDLE POS: 40

Play

Included in FDX is a Global Animation Archive, where animations are 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.

FDX Quarterly Reports

Typically Cover



Global and Regional benchmarks

Airport analysis (Airport Safety Index)

Analysis on specific events on a global, regional and local level

Identify common issues in the region

Common airline concerns with FDX

~~Accessibility and Potential for Misuse~~

- IATA takes extensive measures to de-identify all data collected
-

~~Technical difficulties and standards~~

- Simple FTP of raw data file required
-

~~Level of maturity of the airline SMS and/or FDM~~

- Support is available through training and workshops

FDX - A Global Approach to Local Risks

Enables global and regional analysis and sharing of flight data trends

Helps to pinpoint specific threats to operations

A quantitative and qualitative boost to FDM

Insurance underwriters already provide discounts for FDM programs...

FDX might also be considered

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FLIGHT

Small World,
Big Future

www.flying100years.com

