



Global Aviation Data Management (GADM)

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Safety Management Workshop
Kuwait , 25-27 May , 2015

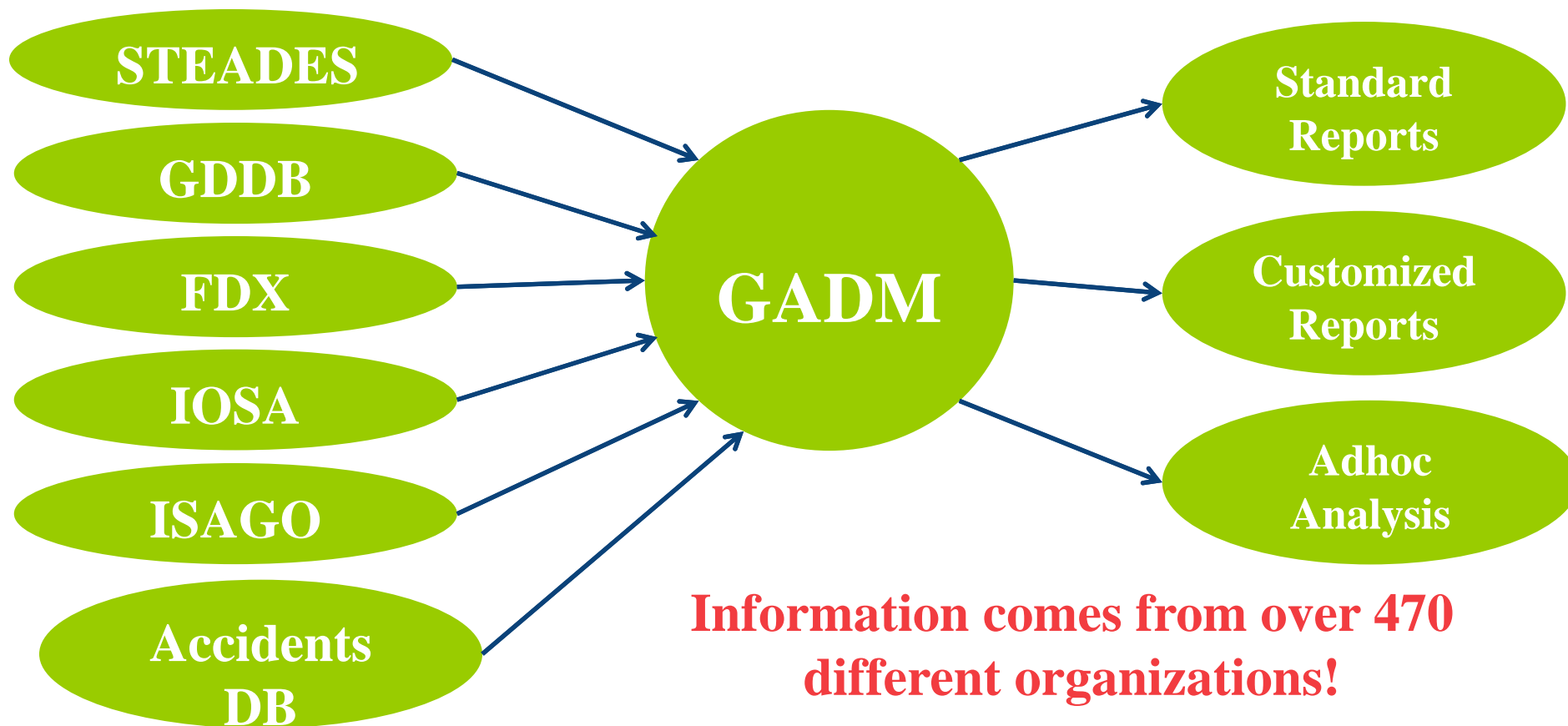


Global Aviation Data Management

“The way forward is to collect data from as many information sources as possible, complemented with the well developed analytical tools to unlock critical information”

Tony Tyler

Global Aviation Data Management

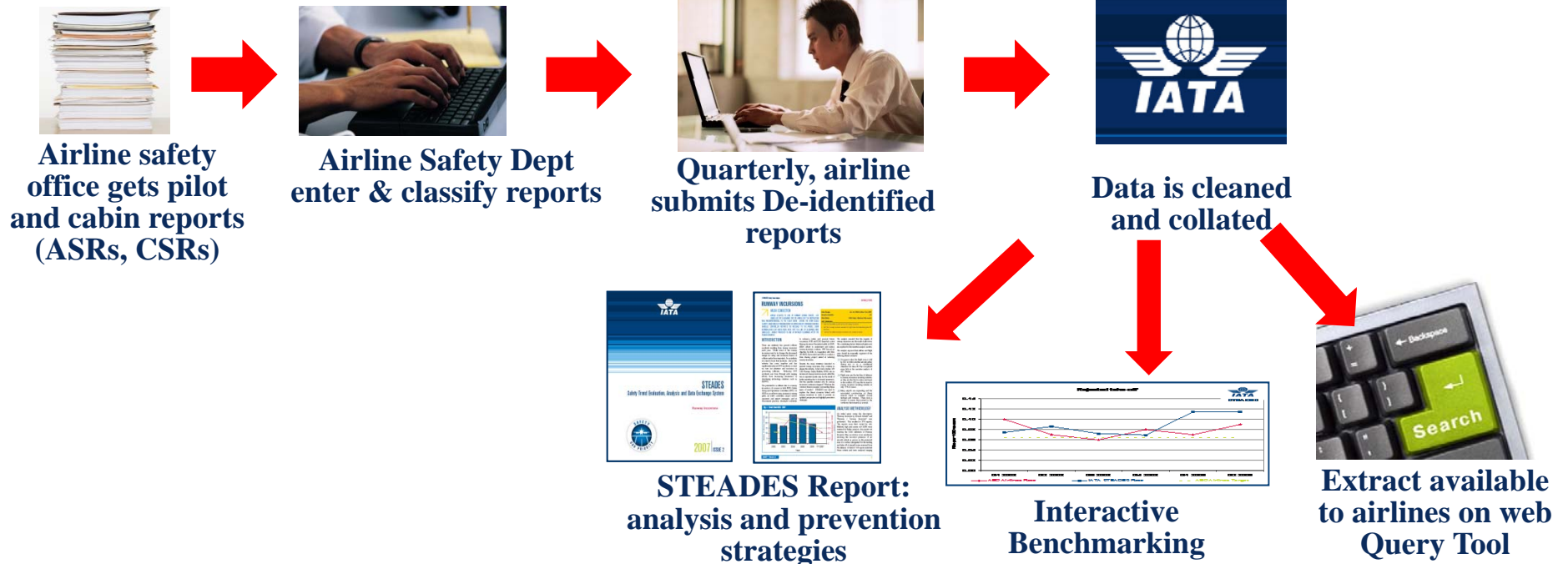




STEADES

World's largest safety database!

Safety Trends Evaluation, Analysis & Data Exchange System.





Airport Analysis using STEADES

- The analysis was conducted on Air Safety Reports (ASR) held in Evaluation and Data Exchange System (STEADES) database.
- The STEADES database is comprised of **de-identified safety incident reports** from over **175** participating airlines,
- Annual reporting rate now exceeding **190,000 reports** per year.



Report Distribution (2009 Q1 – 2013 Q4)

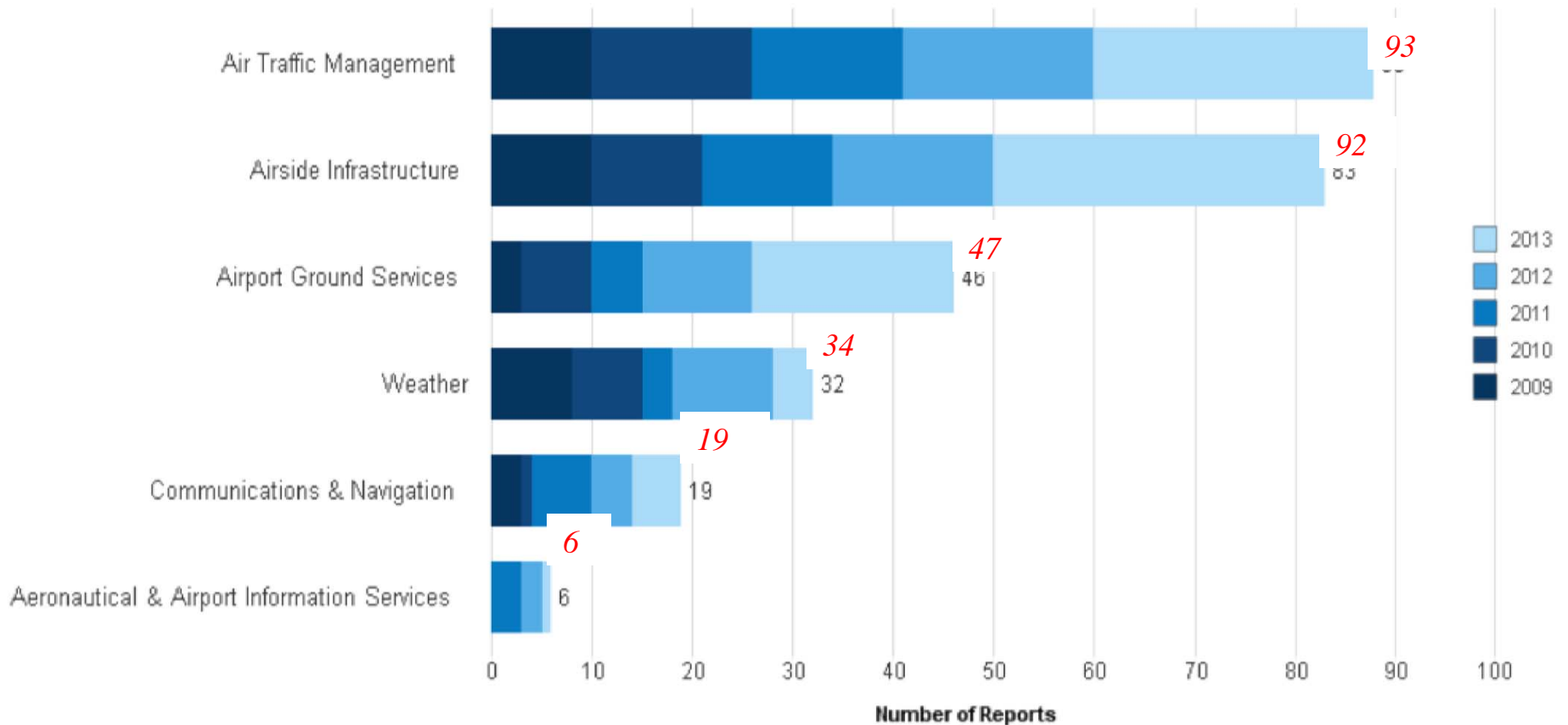
	Occurrence GLOBAL	Occurrence Region MENA	Occurrence Country	Occurrence Airport
Total Reports	667,871	27,928	???	????
Total World Flights	172,619,536	NA		
Total STEADES Flights	39,578,359	NA		
% of World's Flights	23%	NA		



Airport Analysis Criteria

- An Average minimum of 100 reports /year per airport should be available spanning at least 3 years.
- Rule of three is respected :Data from at least 3 separate operators
- # of Airports in GADM /STEADES: 1,468
- # of airports with Average of 100 reports/year: **142**
- # of airports with Average of 75 reports/year : 165
- # of airports with Average of 50 reports/year : 229
- Topics of interest based on the scope for IATA airport operational visits

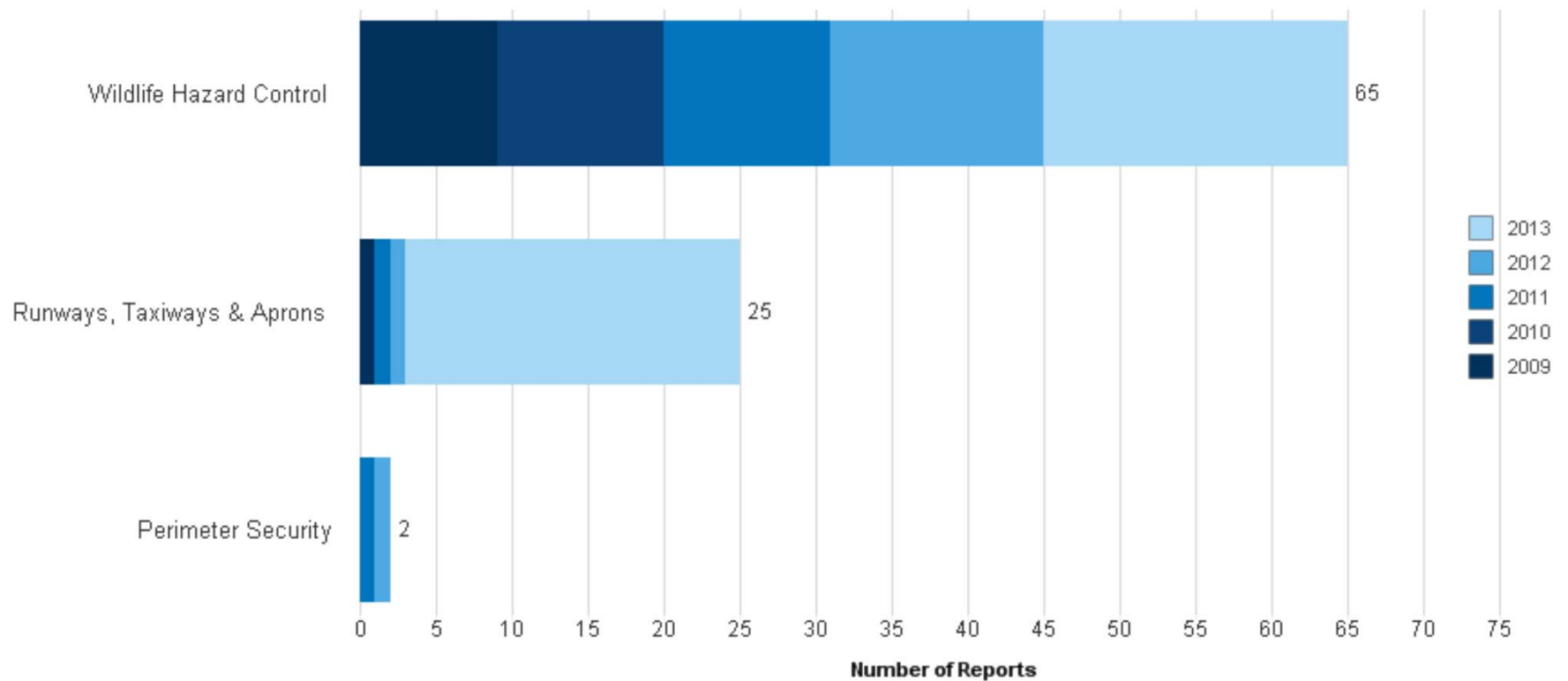
Topics of Interest



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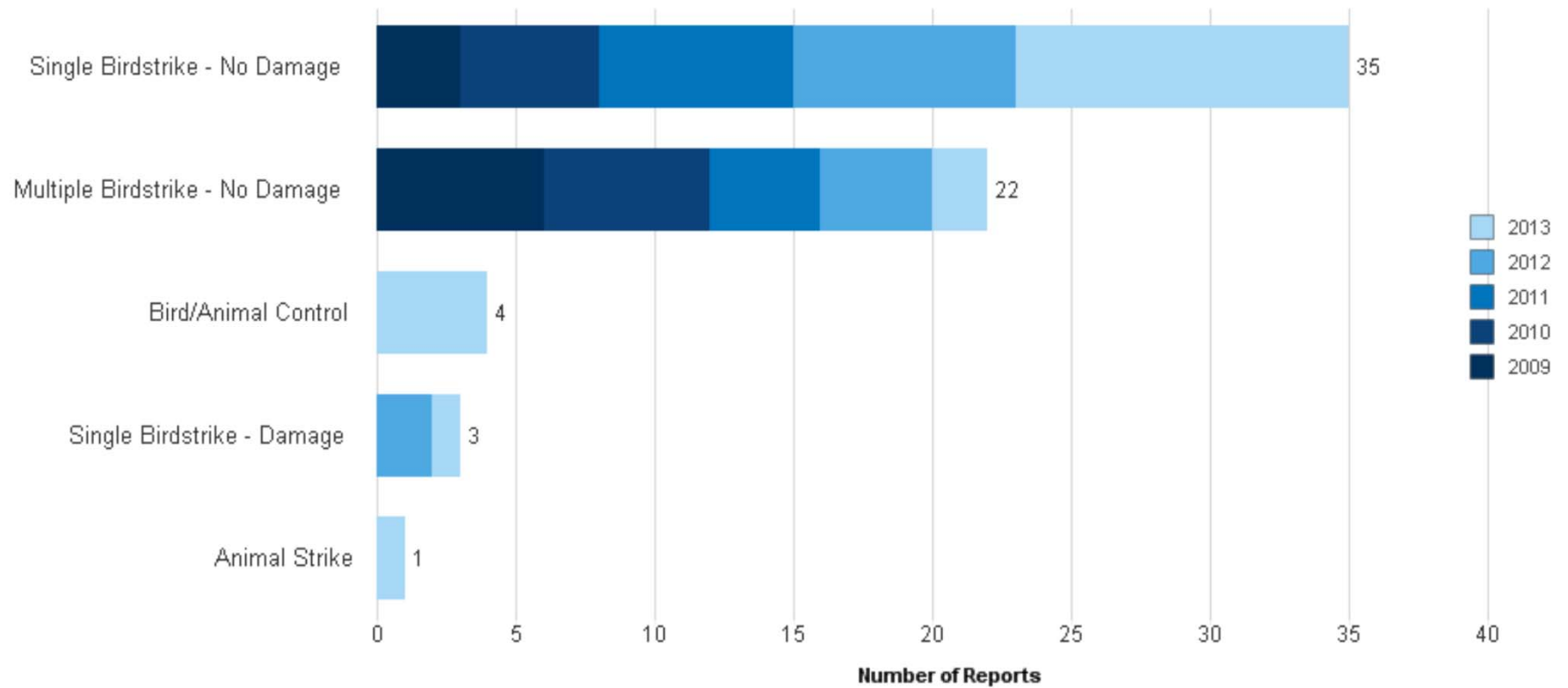


Airside Infrastructure



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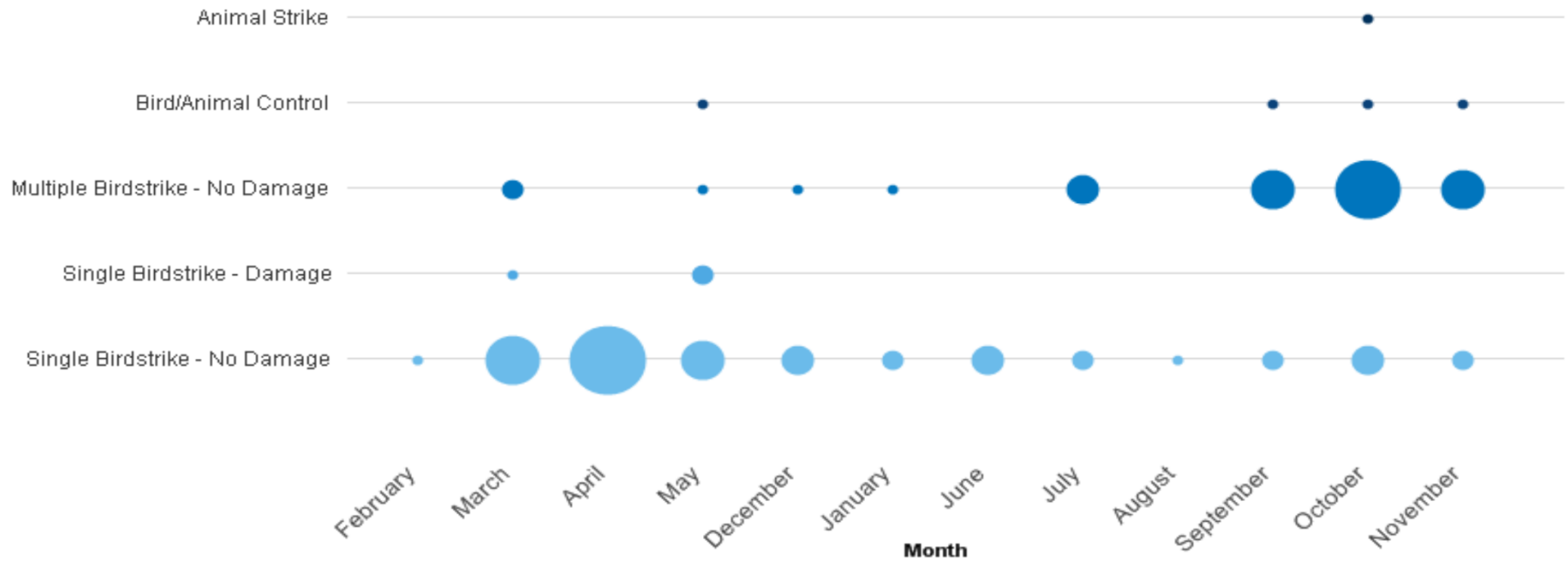
Wildlife Hazard Control



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Wildlife Hazard Control



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Ground Damage Database (GDDB)

- Quarterly data submission by airlines, ground service providers and airports providing ground services
- Data is de-identified
- Benefits:
 - Quarterly report & analysis on ground damage accidents
 - Interactive tool for querying ground damage accidents



**some 90,000 take-offs and landings
happen every day in the world**



**chances are you are facing the
same problems as everyone else**

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



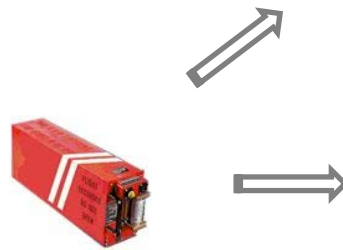
...would you?

F **D** **X**

FLIGHT DATA EXCHANGE

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

Data is processed by the airline or its service provider (internal FOQA – IATA doesn't get any of that information)



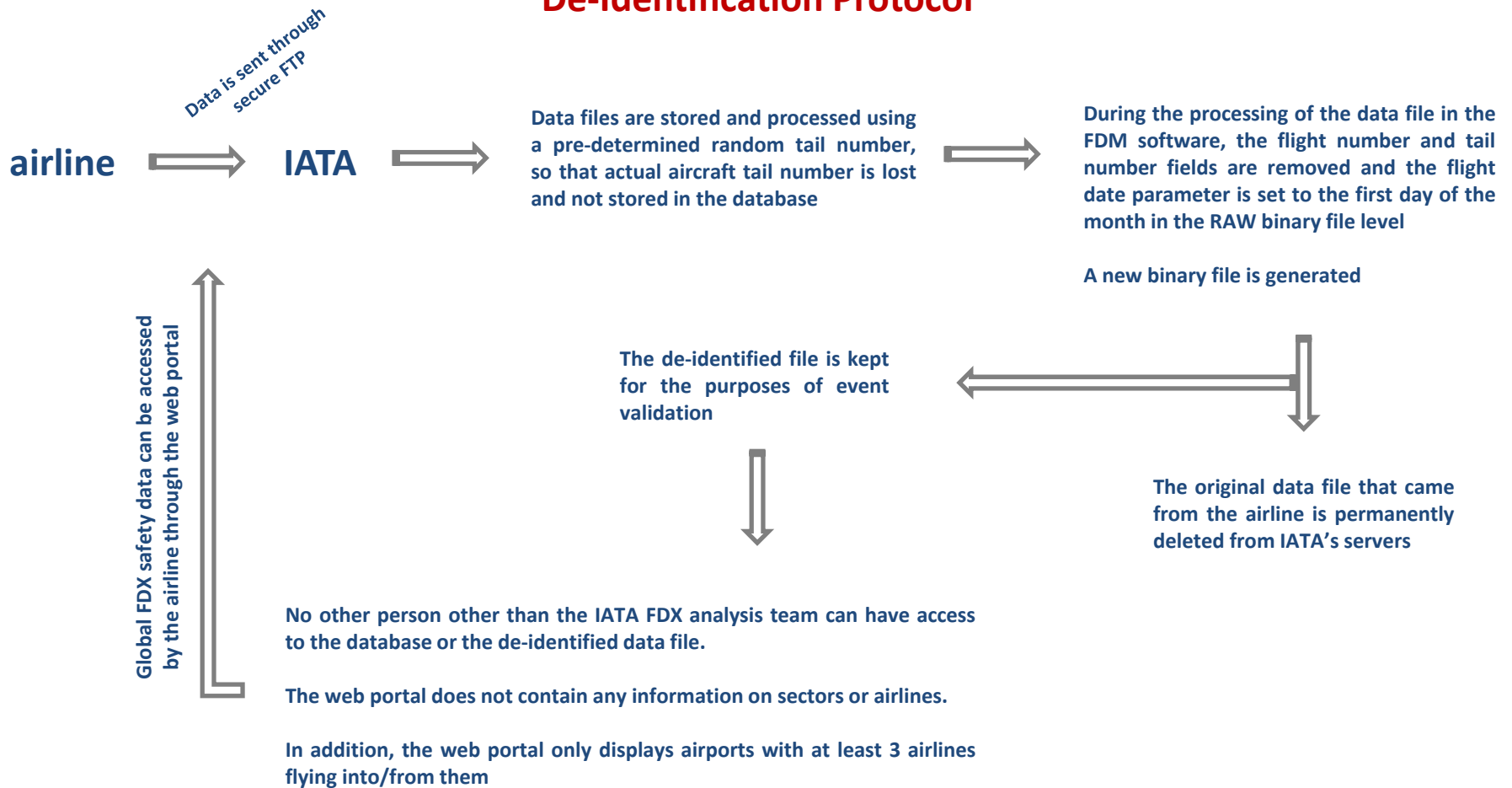
Data is sent to IATA where it gets processed using a common set of event covering:

- Unstable approaches**
- GPWS**
- Tailwind on landing**
- TCAS**
- Hard landing**
- Rejected Takeoff**
- Go Around**





De-Identification Protocol



User's Access of Information

The database will output data in two forms

web portal



safety reports





web portal

Summary

Total of 209226 flights

Total of 335958 hours of flight

Maps

Select Event Type
Unstable Approach

Select Event
Unstable Approach - All

De-identification Filter

Select Date Range
Dec/09 Jun/12

Show Events

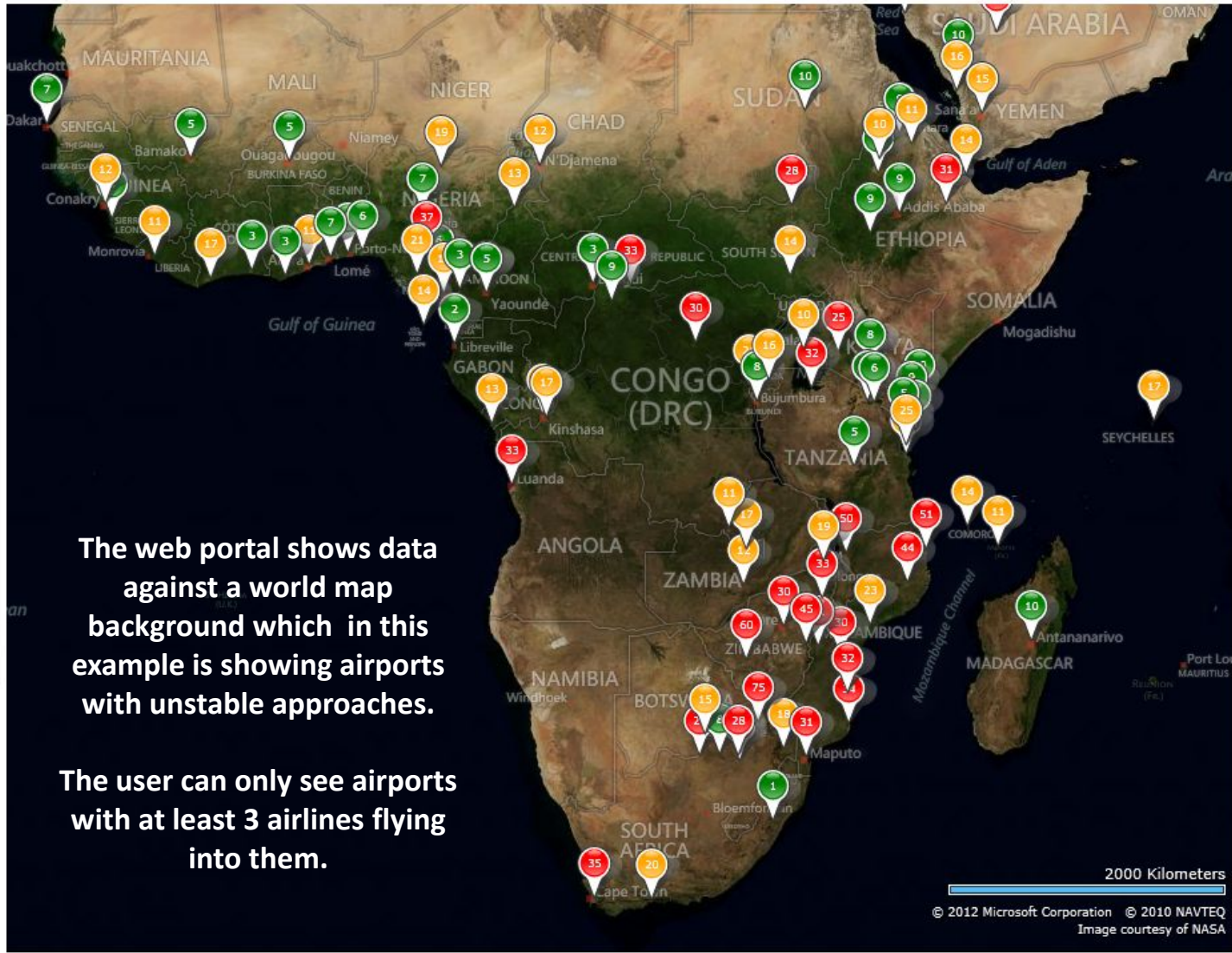
Zoom to IATA Region

Road Aerial

- Reports
- Animations

Legend

- Over 25 events/100 flights
- 10 - 25 events/100 flights
- 1 - 10 events/100 flights



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 209226 flights

Total of 335958 hours of flight

Maps

Select Event Type

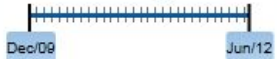
Unstable Approach

Select Event

Unstable Approach - All

De-identification Filter

Select Date Range



Show Events

Zoom to IATA Region



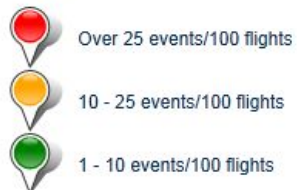
Road

Aerial

> Reports

> Animations

Legend



the numbers & colors indicate the event rate in each airport

Summary

Total of 209226 flights

Total of 335958 hours of flight

Maps

Select Event Type

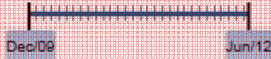
Unstable Approach

Select Event

Unstable Approach - All

De-identification Filter

Select Date Range



Show Events

Zoom to IATA Region



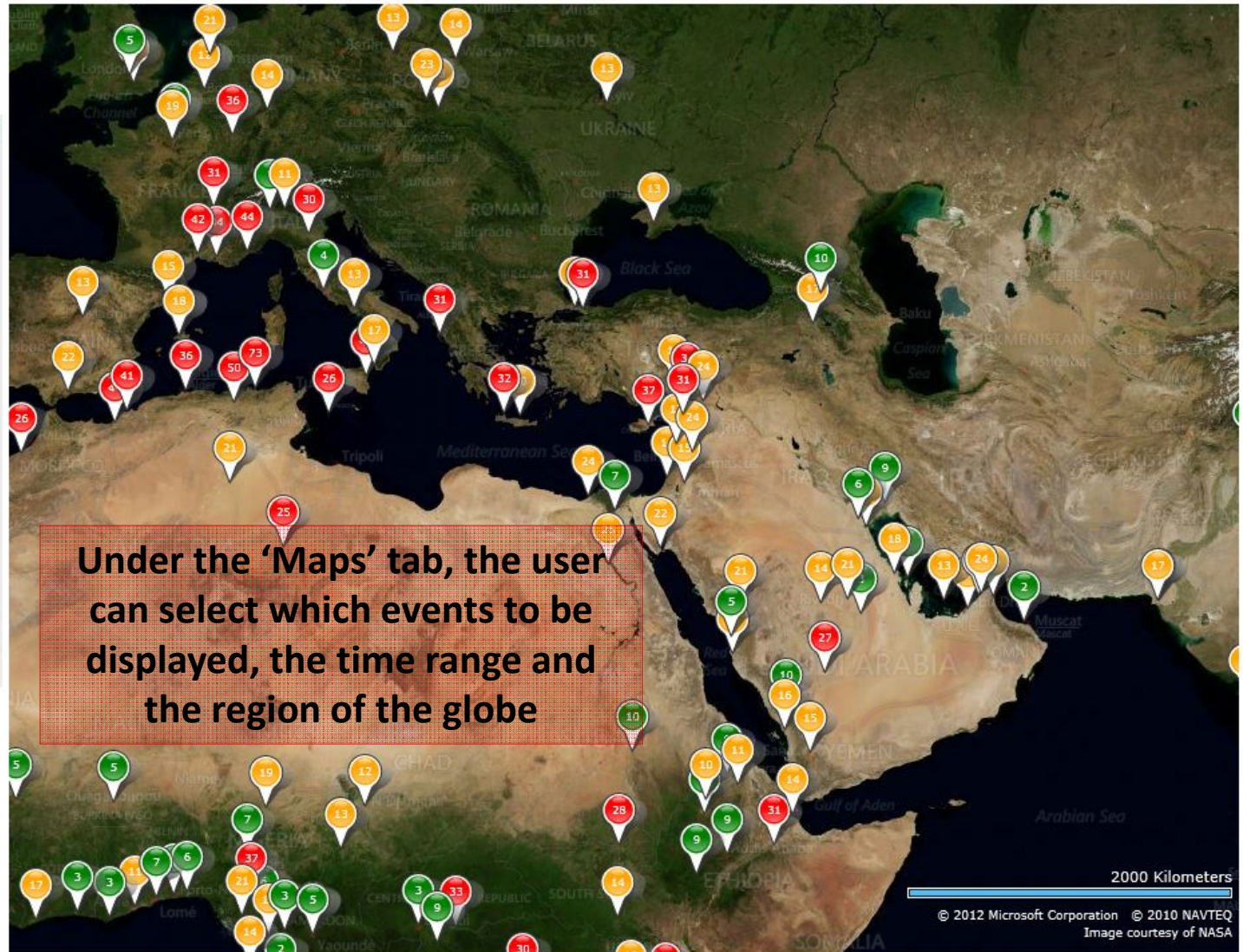
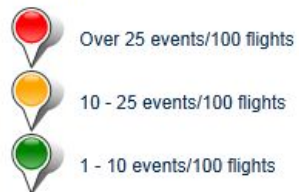
Road

Aerial

> Reports

> Animations

Legend



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

Summary

Total of 208582 flights
Total of 334464 hours of flight

Maps

Select Event Type

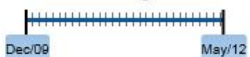
GPWS Scatter Plot

Select Event

GPWS All

De-identification Filter

Select Date Range



Show Events

Zoom to IATA Region

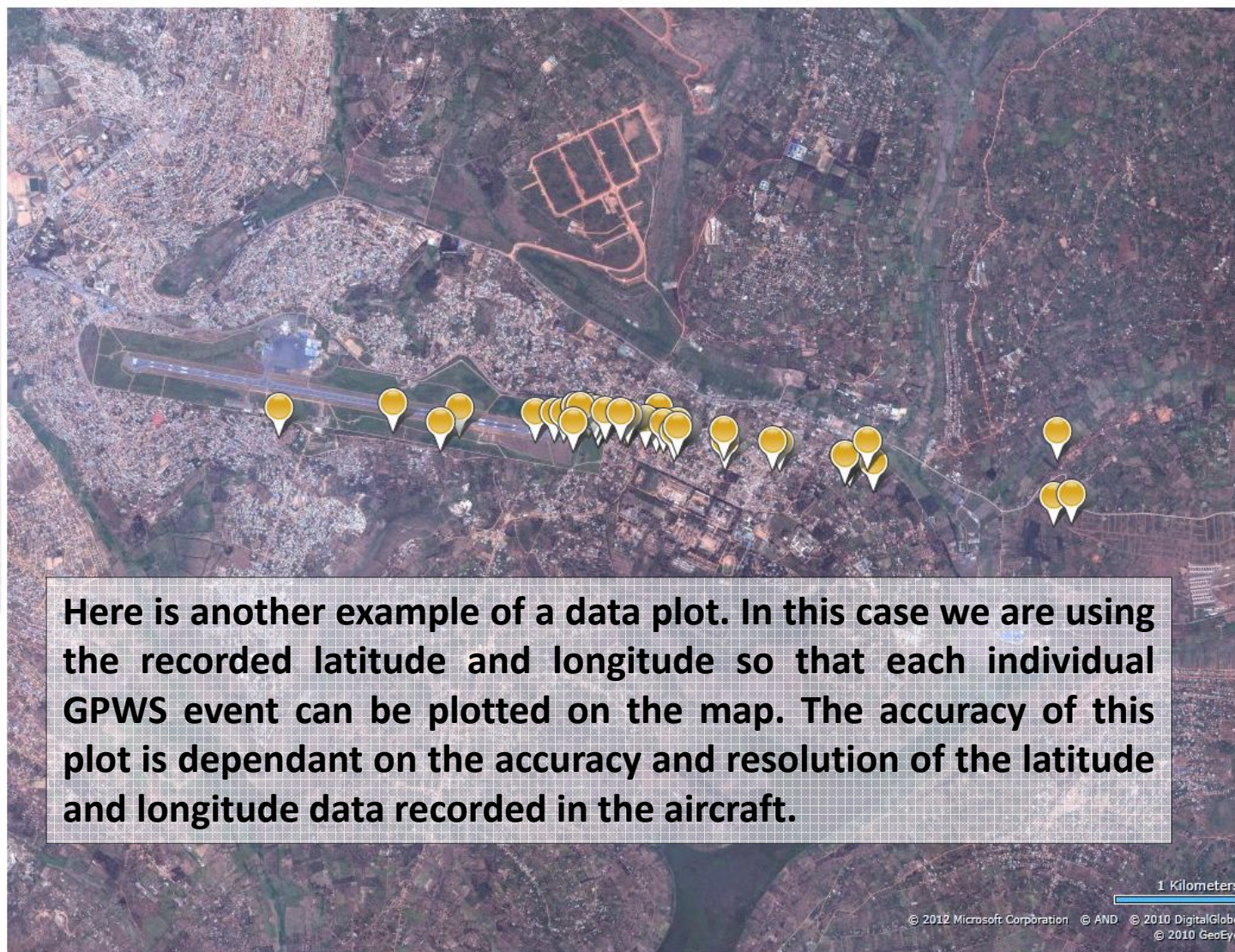


Road

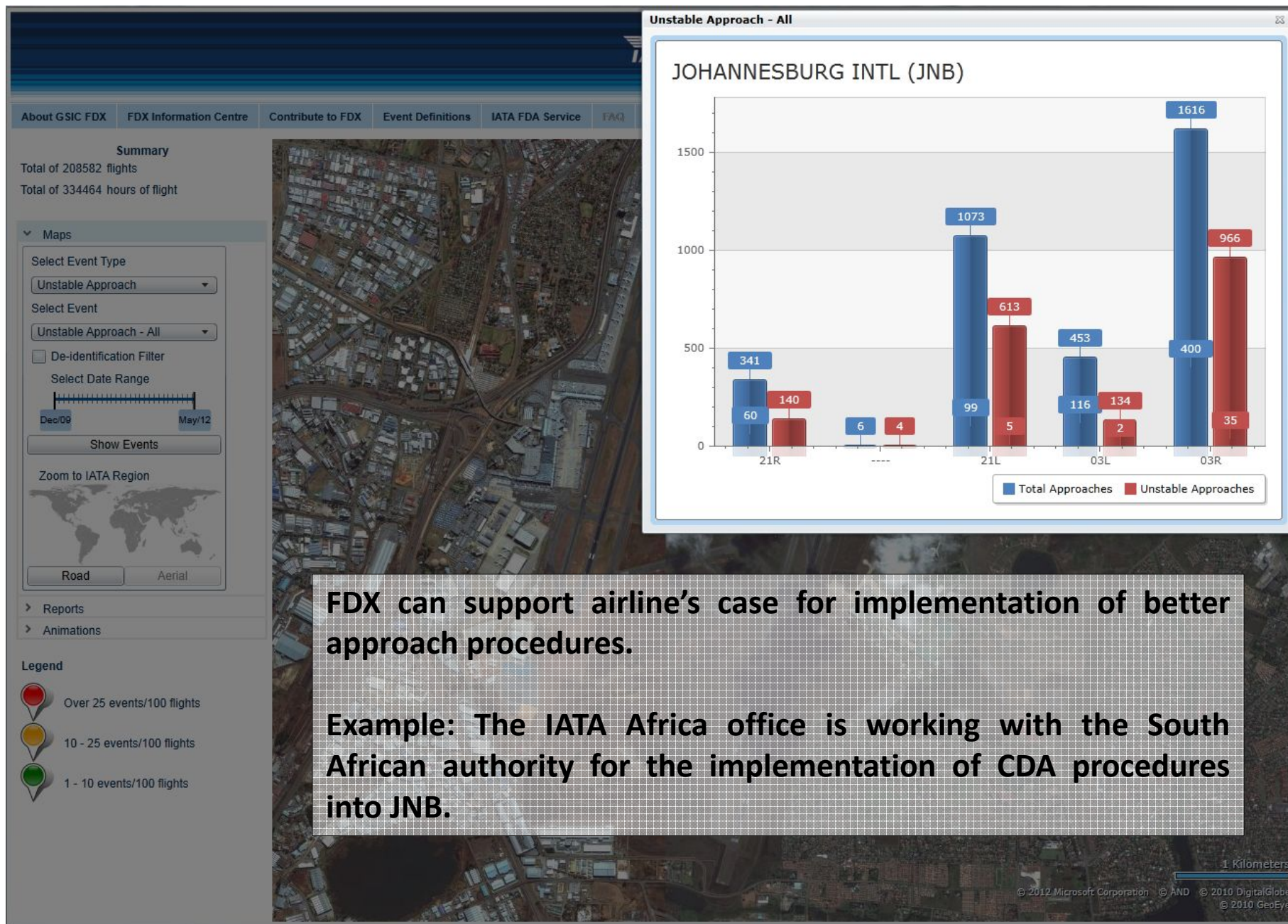
Aerial

> Reports

> Animations



Here is another example of a data plot. In this case we are using the recorded latitude and longitude so that each individual GPWS event can be plotted on the map. The accuracy of this plot is dependant on the accuracy and resolution of the latitude and longitude data recorded in the aircraft.






FDX can support airline's case for implementation of better approach procedures.

Example: The IATA Africa office is working with the South African authority for the implementation of CDA procedures into JNB.




https://www.flightscape.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.

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

Included in FDX is 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.

Legend
 Over 25
 10 - 25 e
 1 - 10 ev

1 Kilometers
 © 2010 DigitalGlobe
 © 2010 GeoEye

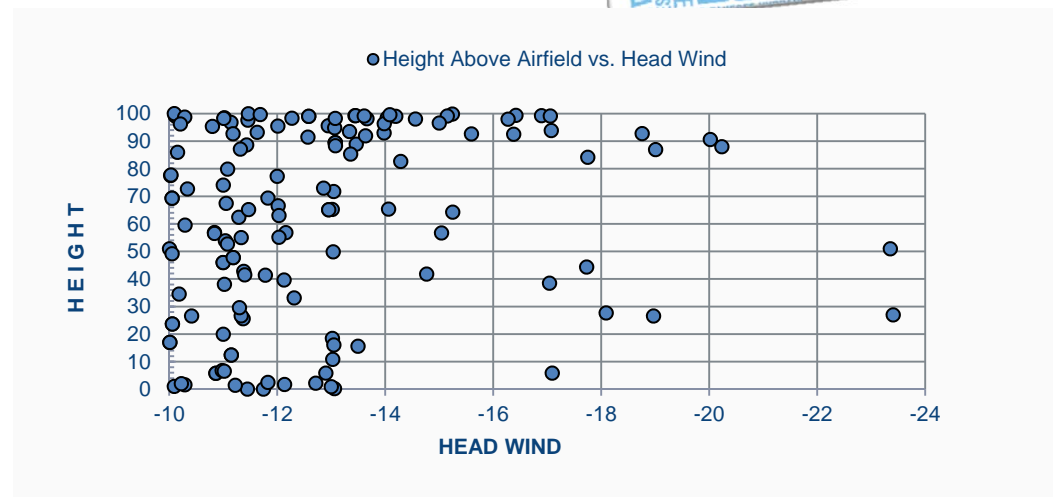
Safety Management Workshop 26 Kuwait, 25-27 May 2015



safety reports

With the implementation of BI tools, FDX will output routine reports that could cover areas such as:

- Global and Regional benchmarks
- Airport analysis (Airport Safety Index)
- Analysis on specific events, such as tailwind on landing, on a global, regional and local level
- Common issues in the region
- ...



What's Next?



- **Increase Statistical Relevance** by having more airlines contributing and committed
- **Integrated BI Tools** for automated generation of trend and risk analysis reports
- **New events** to be monitored (member's feedback)
- **Airport/RWY Risk Index** (method need to be defined)
- **Expand Global Animation Archive**
- **Integration** with STEADES and other safety programs



to represent, lead and serve the airline industry

