IATA GLOBAL MEDIA DAY

Harnessing the Power of Data

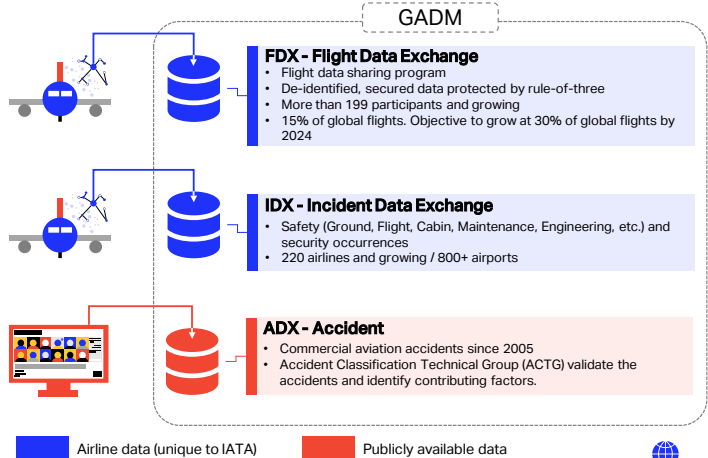**Nick Careen**

SVP Operations, Safety & Security

Aviation's data age is upon us, and the potential to transform the industry is tremendous

The Global Aviation Data Management (GADM) program is a data management platform which integrates all sources of operational data received from various channels. These include IATA-unique programs, which all feed into a common, interlinked database structure.

Our Value Proposition | We champion data with our premier global aviation safety and operational data exchange program

GADM

FDX - Flight Data Exchange
- Flight data sharing program
- De-identified, secured data protected by rule-of-three
- More than 199 participants and growing
- 15% of global flights. Objective to grow at 30% of global flights by 2024

IDX - Incident Data Exchange
- Safety (Ground, Flight, Cabin, Maintenance, Engineering, etc.) and security occurrences
- 220 airlines and growing / 800+ airports

ADX - Accident
- Commercial aviation accidents since 2005
- Accident Classification Technical Group (ACTG) validate the accidents and identify contributing factors.

Airline data (unique to IATA)   Publicly available data

- IATA is the leading source of aviation safety and operational data
- The Global Aviation Data Management (GADM) program is a data management platform which integrates all sources of operational data received from various channels. These include IATA-unique programs, which all feed into a common, interlinked database structure.
- Three main pillars:
    - FDX – Flight Data Exchange
    - IDX – Incident Data Exchange
    - ADX – Accident data

IATA's Flight Data eXchange program comprises data from 15 million flights from over 7,500 aircraft and capturing hundreds of parameters every second

- [IATA's Flight Data eXchange (FDX)](#) program comprises data from 15 million flights performed by 7,500 aircraft.
- The FDX data captured from each flight monitors hundreds of parameters per second, thus making GADM the most authoritative and comprehensive collection of global aviation operational data in the world.

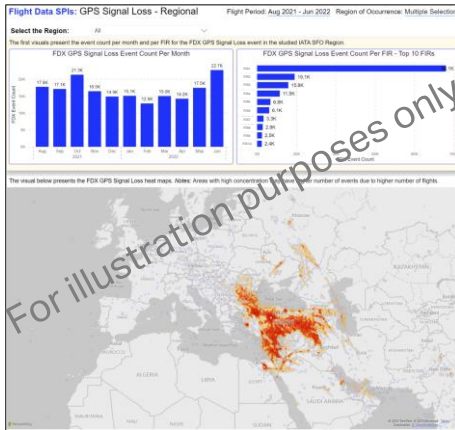Data Insights | Designed to bring added-value to the airlines and industry

Use-Case #1	Safety	Identify emerging safety risks
Use-Case #2	Fuel	Measure fuel efficiency
Use-Case #3	Emissions	Calculate aircraft emissions
Use-Case #4	Performance	Predict airplane performance

- Examples of insights gained through GADMs enhanced capabilities include:
    - Identifying emerging safety risks
    - Fuel Efficiency Measurement
    - Aircraft Emissions Calculations
    - Predicting Aircraft Performance

Insights #1 | Identify emerging safety risk

Flight Data SPIs: GPS Signal Loss - Regional   Flight Period: Aug 2021 - Jun 2022   Region of Occurrence: Multiple Selection

For illustration purposes only

References: IATA analytics. GNSS signal loss events count per FIR Month and FIR between August 2021 and June 2022.

Insights

Well position

IATA is well positioned to identify emerging safety risks for a specific airport, a region or an aircraft type by collecting and aggregating data on a large scale.

Expanding network

Such use-cases have proven to be particularly useful for airlines that want to operate to new destinations for which they have no insights.

Aggregated and detailed operational view of safety issues

Most States do not have an aggregated and detailed cockpit view of safety issues occurring in their airspaces. As such, insights and analytics also provide valuable information for a State that is looking at establishing relevant actions to improve aviation safety.
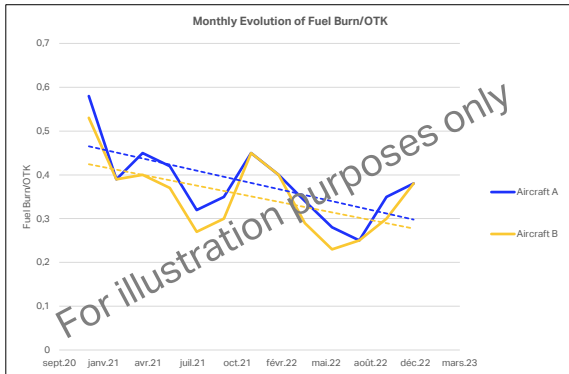
Valuable feedback to an aircraft manufacturer

Finally, when aggregated at the aircraft type/product level, insights can provide valuable feedback to an aircraft manufacturer on how airplanes are being operated.

- Through extensive aggregation of GADM's data, IATA is able to identify emerging safety trends, whether at specific airports, regions, or for certain types of operation.
- Such analysis is especially beneficial for airlines exploring new destinations, and for regulators formulating aviation safety strategies.
- Using GADM data, IATA recently identified GPS signal loss in specific geographies as an emerging safety risk, for example.

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Insights #2 | Measure fuel efficiency

Monthly Evolution of Fuel Burn/OTK

For illustration purposes only

Aircraft A
Aircraft B

References: IATA analytics. The graph provides an overview of the evolution of fuel burn / OTK over a period of time. Efforts undertaken by the airline are showing a significant improvement over time. Operations Ton Kilometer (OTK) is a unit of measurement used in transportation statistics, planning, and related fields to measure the quantity and traffic of transportation. It is defined as the transportation of one ton over one kilometer

Insights

Airlines cost structure

Fuel represents on average between 25% to 28% of operational expense of airlines.

IATA Fuel Efficiency Program

IATA Fuel Efficiency Program was established in 2005, with the objective of supporting airlines in increasing fuel efficiency. On average, IATA Fuel Efficiency Program has identified fuel savings of 4.4% of the fuel budget (ranging from approx. 1% to 14%)

Overarching KPI

IATA uses several data sources to calculate fuel burn / OTK as well as other fuel consumption indicators allowing airlines to benchmark their performance.
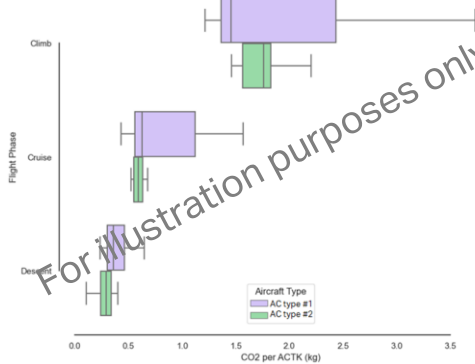
Opportunities to improve fuel efficiency

This provides the airlines a unique opportunity to identify underperformance and possibly reach out to IATA for assistance to improve fuel efficiency.

- Fuel currently represents nearly a third of the operational expense of an airline.
- Since 2005, IATA has worked with airlines to identify fuel saving opportunities and identified average potential fuels savings of 4.4% across flight dispatch, ground operations, and flight operations.
- IATA uses GADM operational data to enhance the analysis done by its fuel experts and provide industry benchmarks related to fuel efficiency.

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- Analyzing GADM data is leading to more granular measurement of aircraft fuel burn and, consequently, tracking of CO2 emissions.
- With analysis of hundreds of data parameters at every second of flight, it is also possible to identify the precise impact of fuel saving operational measures.
- All of these will help the industry as it moves towards net zero carbon emissions by 2050.

Insights #4 | Predict airplane performance

Actual vs. Predicted Fuel Burn

— Real Fuel Burn
— Predicted Fuel Burn

For illustration purposes only

References: IATA analytics. The graph provides a comparison of the fuel burned during a flight vs fuel predicted by the deep learning model developed by IATA.

Insights

Fundamental to achieve profitability

Predicting the performance of an airplane is fundamental to achieve profitability.

Predicting parameters using IATA's deep learning model

IATA's research and development work intends to build deep learning models to predict block fuel with a high level of accuracy.

Data-driving critical decision

Such information is of interest when considering buying new airplanes or when strategic network planning decisions are to be made.

To support its increased focus on data, IATA is staffing-up a newly established a division responsible for data management, strengthening the Global Aviation Data Management (GADM) team and expanding its team of data scientist XX%

IATA Consulting has also geared-up to help clients achieve their business goals using GADM and other IATA data collections and expertise.

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Questions?