USE OF NEW DATA SOURCES FOR ECONOMIC STATISTICS

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Flightaware Firehose in JSON format

ICM Raw Data

Read ADS-B data (in Mongo DB), correlate, insert FIR, and re-organize into 5 work files: departure, arrival, position, cancellation, flight Plan

Write 5 work files to Cloud storage

HIVE Scripts to generate summary files

ICAO Azure Storage

Load to SQL for Visualization App.
## Work Data

<table>
<thead>
<tr>
<th><strong>Departures</strong></th>
<th>Departure scheduled time, actual time, and aircraft type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arrivals</strong></td>
<td>Arrival scheduled time and actual time</td>
</tr>
<tr>
<td><strong>Positions</strong></td>
<td>Radar track and positions data</td>
</tr>
<tr>
<td><strong>Cancellations</strong></td>
<td>Cancelled scheduled flights</td>
</tr>
<tr>
<td><strong>Flight Plan</strong></td>
<td>Flight plans filed prior to the flight and its amendments during the flight</td>
</tr>
</tbody>
</table>
All Cargo Operations

Identify and extract all cargo carriers and operations
• Pre-Defined reference table of all cargo carriers
• Identification of flight number convention and patterns of all cargo operations for carriers which operate passenger and all cargo under the same carrier code
• Identification of tail number of cargo aircraft

Air Cargo Insights
• Production of insights about air cargo operations
• Calculations of key metrics and parameters to calculate economic contributions of air cargo
• Create a link between cargo operations, ICAO reported data, and UN Comtrade data to map flow of goods by type and category (dangerous goods etc.)
• Assist in planning of infrastructure investments and planning (customs, safety etc.)
Fuel Consumption/Operation Types/Schedules

Calculation of Fuel Consumption and carbon emissions
• Fuel and carbon models are calculated using actual patch flown and other variables associated with each aircraft type

Operation Categories
• All operations are divided into categories such as general aviation, business (corporate), passenger, and cargo based on type of aircraft

Scheduled/non Scheduled Services
• ADSB operations are cross referenced with OAG schedules to determine scheduled portion of operations
Air Navigation Billing

Calculation of air navigation charges

• Calculation of air navigation charges based on the actual route flown within each FIR
• FIR charges from doc 7100 in conjunction with actual positions extracted from ADSB used to produce a state of the art billing application
• Charges available to access either by FIR or carrier
Visualization Application

FIR Visualization
- Visualization of all flights within 1 hour time bands for each FIR

Flight Route Visualization
- Visualization of patch flown by each flight
- Predictive analysis to determine optimal routes given FIR constraints