ICAO Accident Data Analysis

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Data Analysis Process

Sources → Collect → Map → Process → Indicators

- Sources: ADREP, ECCAIRS
- Collect: Manually annually, Daily Automatically
- Map: On Request
- Process: DB
- Indicators: Online Stats

ADREP ECCAIRS → DB → Online Stats
Data sources

• Official
  – States/ADREP

• Commercial providers
  – Ascend/Flightglobal

• Media sources
  – Aviation Safety Network
  – Aviation Herald

• Why do we use multiple sources?
Accident Databases

- Accident data stored in 2 databases:
  - ECCAIRS database (used as the “official” accident database)
  - Mongo/ISTARS Cloud (used for up-to-date accident information and for querying)
About the use of ECCAIRS

- ECCAIRS is primarily a tool to support accident INVESTIGATION not ANALYSIS.
- ECCAIRS responds fully to the database requirements of SSP, but only partially to safety information production requirements.

Use the Exporter to export CSV files into an analysis system.
Data Source Minimal Fact Fields

- Date
- State of Occurrence
- Operator
- Aircraft Registration
- Aircraft Model
ADREP Core Taxonomy (29)

- Filing Information (3)
- When (2)
- Where (5)
- Classification (2)
- Severity (3)
- Narrative (1)
- Aircraft identification (6)
- Operator (3)
- Operation type (1)
- History of flight (3)
Filing Information and Narrative

• Basic information about who submitted the report and description
  – Reporting Organization
  – File Number
  – Date received
  – Narrative
When and Where

• Information about when and where the event happened
  – UTC Date and Time
  – State of Occurrence
  – Location of occurrence
  – FIR
  – Latitude
  – Longitude
Classification and Severity

- Classifications of the event
  - Occurrence class
    Accident, Serious Incident, Incident, Occurrence without safety effect, Not Determined
  - Occurrence Category
    CICTT Taxonomy
  - Damage Aircraft
    Destroyed, Substantial, Minor, None, Unknown
  - Injury Level
    Fatal, Serious, Minor, None, Unknown
  - Fatalities
Aircraft Information

- Information about the aircraft
  - Registration
  - Serial Number
  - Aircraft Category
    - Airplane, Helicopter, Other
  - Manufacturer / model
  - State of registry
  - Mass group
    - MG1: 0-2250 kg
    - MG2: 2251 - 5700 kg
    - MG3: 5701 - 27000 kg
    - MG4: 27001 - 272000 kg
    - MG5: >272000 kg
    - UNK: Unknown
Operation

• Information about the operator and its operation
  – Operator Name
  – Operator Code
  – State of Operator
  – Operation Type
    • Scheduled Commercial Air Transport
    • Non-scheduled commercial Air Transport
    • Non commercial operation
History of Flight

• Information about the flight
  – Last departure point
  – Planned destination
  – Flight Phase
    • CICTT FlightPhase taxonomy
Data Validation

• Safety Indicator Study Group (SISG) meets annually to review
  – Accident/incident classification
  – State of Occurrence
  – Occurrence category
  – Flight phases
  – Operator and aircraft information
AIA Considerations

• Collection
  – Collect data nationally in ECMAIRS and export in CSV for regional analysis, OR
  – Enter data directly into the analysis system
**ADREP App Prototype Concept**

The existing ADREP app would contain a new Edit button for ICAO users.

**Table: ADREP Entries**

<table>
<thead>
<tr>
<th>Year-Month</th>
<th>Location</th>
<th>Aircraft</th>
<th>Type</th>
<th>Status</th>
<th>Occurrence Categories</th>
<th>Narrative</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-03-04</td>
<td>Ethiopia</td>
<td>Boeing 737</td>
<td>ET-ASH</td>
<td>Ethiopian Airlines</td>
<td>Standing Accident</td>
<td>The aircraft's nose undercarriage collapsed while it was preparing for push back. The accident happened in darkness (001SL). The aircraft was operating a flight to Rome.</td>
</tr>
<tr>
<td>2016-03-03</td>
<td>India</td>
<td>Boeing 737 (N3)</td>
<td>VT-JID</td>
<td>Jet Airways India</td>
<td>Taxi Accident</td>
<td></td>
</tr>
<tr>
<td>2016-02-14</td>
<td>Brazil</td>
<td>Boeing 737 (N3)</td>
<td>PR-GOA</td>
<td>Gol</td>
<td>Standing Accident</td>
<td></td>
</tr>
<tr>
<td>2016-02-02</td>
<td>Somalia</td>
<td>Airbus A321</td>
<td>SU-DHS</td>
<td>Daallo Airlines Djibouti</td>
<td>En route Accident</td>
<td>LOC-1</td>
</tr>
</tbody>
</table>
ADREP App Prototype Concept

Opens a simple modal window to allow changes to basic fields.

Also allows ROs to upload files with additional info (e.g. notifications, etc...)
AIA Considerations

• Mapping
  – Review accident records in a group at least yearly
  – Agree on classification taxonomies
  – Use iSTARS to keep track of those reviews
AIA Considerations

• Processing
  – Agree on indicator aggregation levels
  – Agree on time periods