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Identifying, Creating and Presenting Meaningful Safety Performance Indicators (SPIs)

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Who are we?

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What is GADM
The IATA’s Global Aviation Data Management (GADM) is a data management platform to improve aviation safety.

What does GADM do
GADM portfolio integrates all source of global operational data from various channels and provide the industry with comprehensive and cross-database analysis.
GADM Databases and Analysis

Databases
Data captured in GADM databases comprises accident & incident reports, ground damage occurrences and flight data from over 470 different industry participants.

Safety Analysis
GADM provides safety analyses from its databases to derive insights to members.

GADM data contributors have access to benchmark dashboards and query tools to proactively identify safety risks.
GADM Data Quiz – An Icebreaker Activity
1 - The current accident rate is?

A - Increasing
B - Decreasing
C - Stable
2 - Which three countries had the most accidents in the last 5 years?

A  USA, Indonesia, Canada;

B  Brazil, Indonesia, Sudan;

C  Russia, Indonesia, Congo;
3 - In the last five years aircraft ground damage rate is?

A. Decreasing
B. Fairly stable
C. Increasing
Workshop Objectives

1. Understand the differences between Safety Performance Objectives, Indicators and Targets
2. Describe the difference between leading and lagging Safety Performance Indicators
3. Understand the six steps for SPI development and implementation
4. Recognize the benefits of data sharing across industry
5. Share ideas and suggestions for IATA’s GADM ground related SPIs and dashboard
Objectives, Indicators and Targets
<table>
<thead>
<tr>
<th>Objective</th>
<th>Indicator</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>• <strong>Why</strong> you are monitoring this activity?</td>
<td>• Data based &lt;br&gt; • <strong>How</strong> are you doing?</td>
<td>• Data based &lt;br&gt; • <strong>What</strong> are you aiming for and by <strong>when</strong>?</td>
</tr>
</tbody>
</table>
ICAO Annex 19

Safety Performance Indicator (SPI)
A data-based parameter used for monitoring and assessing safety performance

Safety Performance Target (SPT)
The planned or intended objective for safety performance indicator(s) over a given period of time
Safety objectives, SPIs and SPTs

Safety objectives must be lined to SPIs and SPTs to facilitate monitoring and verify achievement

• **Safety Objective:**
  [Airline/GSP] will minimize foreign object damage (FOD) incidents during ramp operations

• **SPI:**
  0.90 foreign object damage (FOD) incidents per 1,000 departures

• **SPT:**
  Reduce to 0.65 foreign object damage incidents per 1,000 departures within 1 year
Six steps to SPI management
The six steps at a glance

1. Identify key safety concerns
2. Define lagging SPIs
3. Define leading SPIs
4. Manage results
5. Act on results
6. Evaluate and refine SPIs
Identify key safety concerns

- In your group table, you will be given a safety concern related to Ground Operations.

  - Identify and state a safety objective(s) for it

Time allocated for this exercise: 2-3 min
Lagging SPIs
Lagging SPIs – Concept

Monitor safety events that have already taken place

<table>
<thead>
<tr>
<th>High severity</th>
<th>Low severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low probability</td>
<td>High probability</td>
</tr>
</tbody>
</table>

- Accidents
- Serious incidents

- Safety events
- Did not become accidents or incidents
Lagging SPIs – example 1

High severity/Low probability negative outcomes
Number of engine damages due to the ingestion of foreign object debris, per 1,000 departures.

Low frequency of these events at airline / GSP level – meaning that aggregation is needed for meaningful analyses
  • At industry level
  • At regional level
  • At national level
Lagging SPIs – example 2

Low severity/high probability negative outcomes

Number of damaged aircraft tires caused by foreign objects debris, per 1,000 departures

Monitor

• Specific safety concerns
• Effectiveness of safety interventions (*e.g.* arrival and pre–departure apron / stand checks, etc.)
Leading SPIs
Leading SPIs – Concept

Monitor information on prevailing situations and/or conditions that may affect safety performance

<table>
<thead>
<tr>
<th>They may be Negative</th>
<th>Or Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Monitor conditions with potential to contribute to a negative outcome</td>
<td>• Monitor conditions which contribute to safety</td>
</tr>
</tbody>
</table>
Leading SPIs – Examples

Negative leading SPIs

Number of reports received relating to ground staff discovery of foreign object debris in the ramp, per 1,000 departures.

Positive leading SPIs

Number of inspections performed with no findings for pre – departure briefings and FOD walks, per 1,000 departures.
Defining targets
Targets

- What is realistic?
- Can it be clearly measured?
- Over what timescale?
- What is the acceptable level of risk?
Gathering data
What could be your sources of data?

- **Internal safety data collection programs**
  - Flight Data Analysis (FDA) and Quick Access Recorder (QAR)
  - Line Operations Safety Audit (LOSA)
- **Airline/GSP safety reporting program**
- **Internal airline/GSP safety investigations**
- **State safety reporting program**
  - Mandatory
  - Voluntary
- **Information generated by the CAA**
- **Industry exchange of safety information**
Create a set of SPIs

• In your groups, create a set of SPIs relating to your safety concern and objective.
  • State your **indicator and target**
    • Include one lagging and leading SPI

Time allocated: 5 min
Managing results
Managing results

Gather data
• From where?
• How often?
• In what format?

Analyze data
• How often?
• By whom?

Report results
• To whom?
• How often?
• In what format?
Acting on results
### Lagging SPIs
- Targets not achieved
- Identify reasons
- Do not wait for poor results

### Leading SPIs
- Indicate good result, but lagging SPI does not
- Reconsider leading SPI
- There may be a disconnect between the two
Evaluate and refine
Evaluating and refining SPIs and SPTs

- **Check**
  - Ongoing relevance to operation
  - Ongoing reliability of data
  - Are they precise enough to identify and recognize changes?

- **Update**
  - To address changing conditions such as new services, product, procedures etc.

- **Delete**
  - When SPIs are no longer relevant
  - When improvements result in stable conditions and performance
Summary quiz
Lagging Safety performance indicators relate to safety incidents or accidents which have already happened? Is this:

A  True?

B  False?
How many Safety performance Indicators should be assigned to each safety objective.

A  Only one

B  Always two or more

C  As many as are useful to help support the objective
The very first step in SPI management is:

A  Define leading SPIs
B  Evaluate and refine
C  Identify key safety concerns
Leading safety performance indicators must always relate to a positive situation. Is this:

A  True?

B  False?
Where next?

- IATA’s Safety Performance Indicators Training course (Classroom, 3 days)
  - [https://www.iata.org/training/courses/Pages/safety-performance-indicators-tals50.aspx](https://www.iata.org/training/courses/Pages/safety-performance-indicators-tals50.aspx)
- IATA Safety Management Systems (SMS) for Airlines (Classroom, 5 days)
  - [https://www.iata.org/training/courses/Pages/sms-airlines-tals01.aspx](https://www.iata.org/training/courses/Pages/sms-airlines-tals01.aspx)
- IATA Integrated Risk Management Diploma
  - [https://www.iata.org/training/diploma_program/Pages/integrated-risk-management-(irm)-diploma.aspx](https://www.iata.org/training/diploma_program/Pages/integrated-risk-management-(irm)-diploma.aspx)
Thank you

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