ICAO UNITING AVIATION

NO COUNTRY LEFT BEHIND

Safety Information Monitoring System (SIMS)

Ruviana Zimmerman

Associate Analysis Officer – SIMS Focal Point
Integrated Aviation Analysis (IAA)

Mexico City, GTE/18

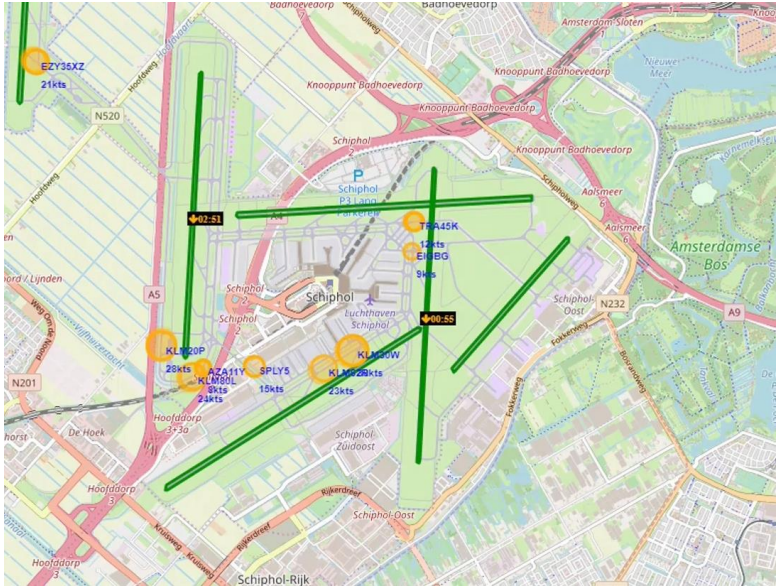
Introduction

- **Today's objective:**
  - Present how we are connecting data to build safety intelligence
  - Show examples/potentials of the Safety Information Monitoring System (SIMS)
  - Encourage you to join SIMS

Turning Data into Information

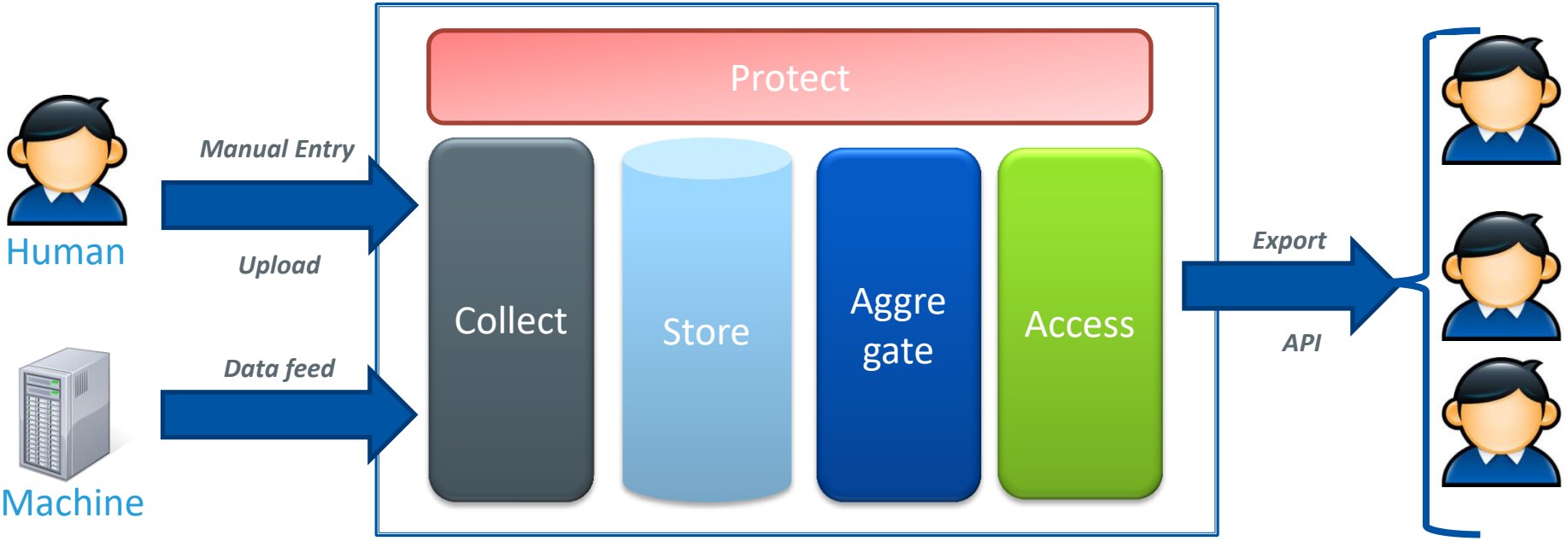
From raw data to information using automation

- **Aggregate** multiple sources (ADS-B ground)
- **Integrate** data into information
- **Visualize** the information for monitoring



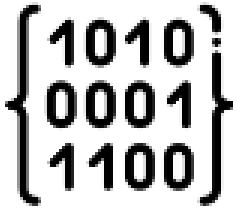
https://www.icao.int/safety/iStars/Pages/Real-time-Runway-Safety.aspx

Data Processing



Main Components

The main components of every data processing system are:



data

Indicator

system

Is Data a Problem?

- What is data
  - Numbers, characters, symbols images
  - Raw data is unprocessed data
- Having not enough or too much data
- What it means if air traffic **doubles** in the next 15 years

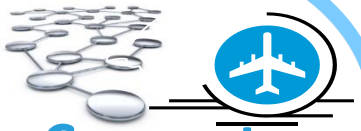
What about your data?

- Collected data
  - Audits and inspections
  - Mandatory reporting systems
  - Voluntary reporting systems
- Recorded data
  - Flight Data Analysis
  - Radar, ADS-B

ICAO UNITING AVIATION

NO COUNTRY LEFT BEHIND

SIMS
Safety Information Monitoring System



Connect
(data, States, service providers)

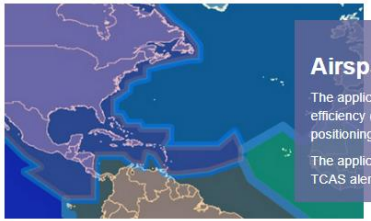
Monitor
(performance, indicator, improvement)

Identify
(hazards, risks)

Share
(safety information)

SIMS Applications

Monitor safety information



Airspace Monitoring

The application allows for the monitoring of performance through horizontal flight efficiency (HFE) indicators. Indicators are calculated by FIR, using ADS-B positioning data.

The application also contains indicators related to airspace occurrences such as TCAS alerts.

Approach Monitoring

The purpose of this application is to monitor vertical flight efficiency such as continous descent operations (CDO).

For each airport, the application also monitors approach related events such as missed approaches.

Occurrences

This application is using occurrences reported to States through their mandatory and voluntary reporting systems.

Indicators include number of severe occurrences as well as a reporting index.

Runway Safety

The application monitors landings with tailwind exceeding 5 knots as well as other runway safety related leading indicators.

Ramp Inspections

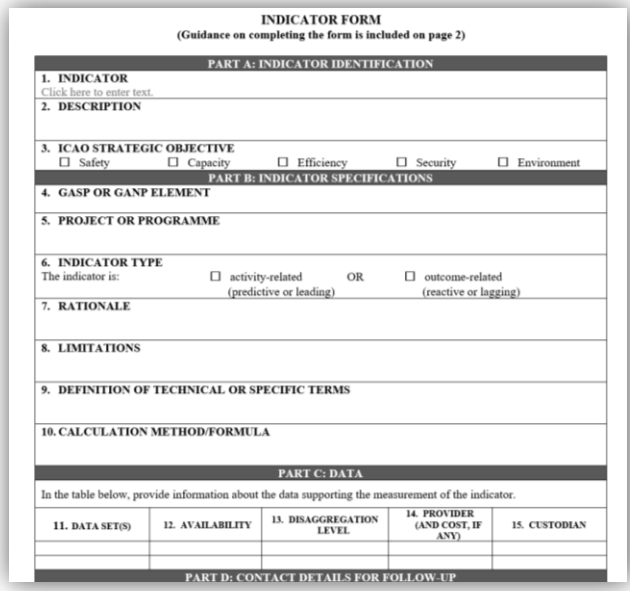
This application uses foreign ramp inspection data collected from inspecting States. The application allows for prioritization of ramp inspections and monitoring of air operator's compliance.

ADS-B Coverage

This application allows for selection of any airspace and airport and determines the current ADS-B coverage of that zone. It is used to evaluate if an airspace or airport is suitable to be monitored under SIMS.

Indicators

- An **indicator** is a measurement or value which helps decide whether a given **objective is met, or under control**.
- An indicator uses a **metric,** which is a specific **methodology** or algorithm, to calculate the value of the indicator.
- **Key Performance Indicators (KPIs)** are indicators which are used at senior levels of the organization to **track overall performance,** and define whether global targets are met.



INDICATOR FORM
(Guidance on completing the form is included on page 2)

PART A: INDICATOR IDENTIFICATION

1. **INDICATOR**
Click here to enter text.

2. **DESCRIPTION**

3. **ICAO STRATEGIC OBJECTIVE**
☐ Safety ☐ Capacity ☐ Efficiency ☐ Security ☐ Environment

PART B: INDICATOR SPECIFICATIONS

4. **GASP OR GANP ELEMENT**

5. **PROJECT OR PROGRAMME**

6. **INDICATOR TYPE**
The indicator is: ☐ activity-related (predictive or leading) OR ☐ outcome-related (reactive or lagging)

7. **RATIONALE**

8. **LIMITATIONS**

9. **DEFINITION OF TECHNICAL OR SPECIFIC TERMS**

10. **CALCULATION METHOD/FORMULA**

PART C: DATA

In the table below, provide information about the data supporting the measurement of the indicator.

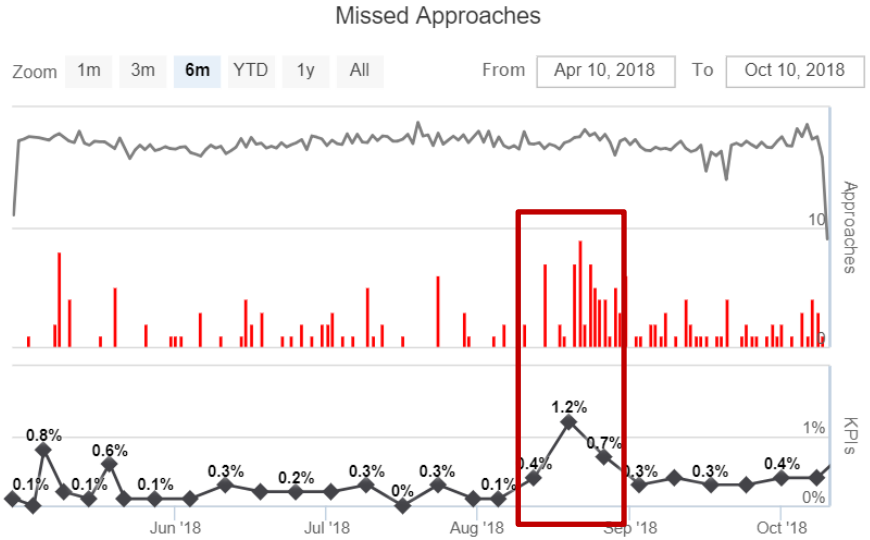
11. DATA SET(S)	12. AVAILABILITY	13. DISAGGREGATION LEVEL	14. PROVIDER (AND COST, IF ANY)	15. CUSTODIAN

PART D: CONTACT DETAILS FOR FOLLOW-UP

Indicator Catalogue

SIMS Example: Missed Approaches

- **What do you know?**
  - Indicator : % of missed approaches per day per landing
  - Avg. 0.3 % weekly in last 6 months
  - Sudden peak for 2 weeks
  - No reports received



What would you do?

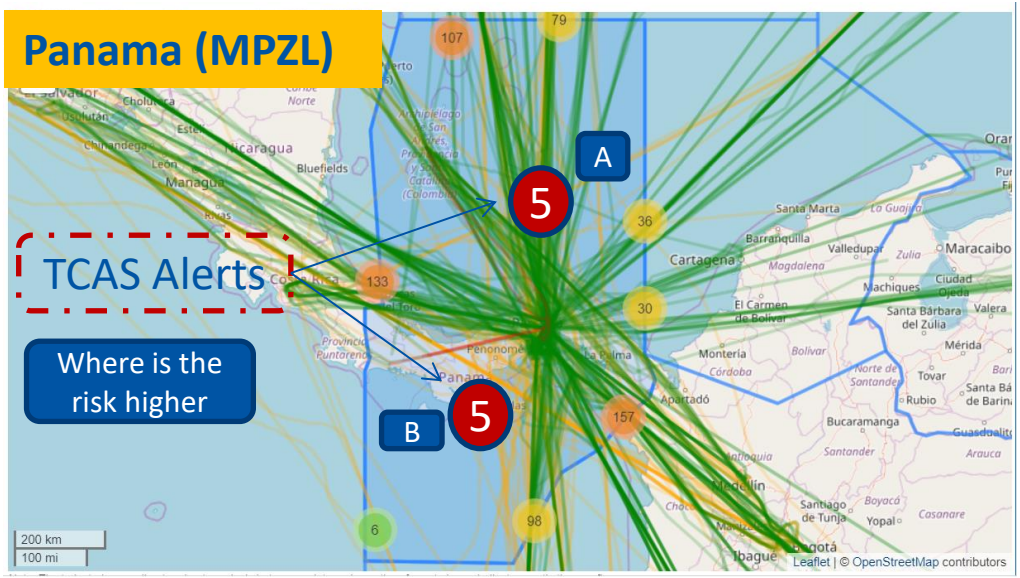
Case Study : TCAS

- **Data**
  - Received from States and airlines: date, time in UTC, flight number, longitude, latitude, (type)
- **Indicator**
  - Number of TCAS per month
- **System**
  - Map visualization

But we can do more!

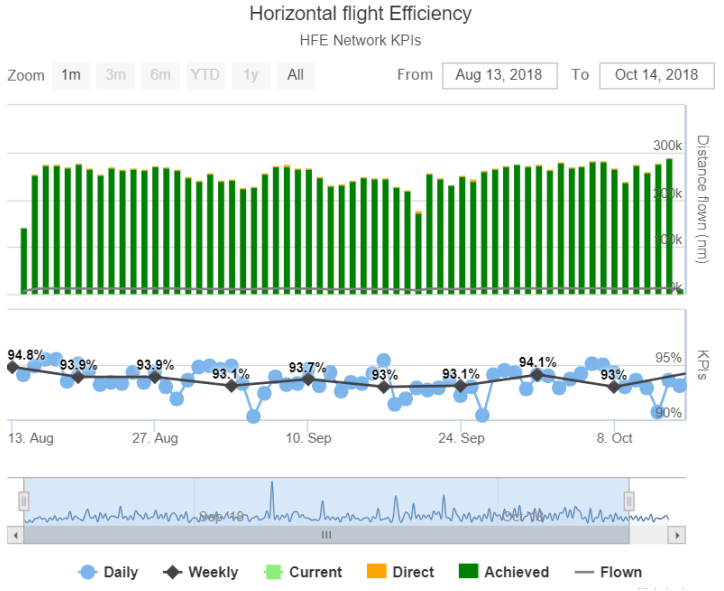
Case Study : TCAS (cont'd)

Panama (MPZL)



Overflights **133**

Total Flights **546**



New indicator for SIMS: LHD

- **Similar** situation as TCAS
- Connect **subset of data** to SIMS for airspace performance monitoring
- **Access** to safety information anytime
- Generate **more indicators** based on available data

The meeting is invited to:

Encourage the States/Territories/International Organizations responsible for the provision of ATS services in the CAR/SAM Regions, **to connect to SIMS**, of ICAO, **for the continuous monitoring of their safety performance.**

Thank you

sims@icao.int

for more information on how to join SIMS