



ICAO

SAFETY

Risk Based Surveillance
NACC & SAM

The Role of Safety Data in Informed Decision Making

Marco Merens

*Chief Integrated Aviation Analysis (IAA)
Air Navigation Bureau (ANB)*

Risk Based Surveillance Workshop
Lima, March 2018





Data-driven Decision Making

- Effective and informed decisions are based on the analysis of data and information.
- Using valid and relevant data helps place the “problem” in the right context.
- It allows us to identify risks and opportunities.



Data-driven Decision Making

- It mitigates human error.
- Relying on data also helps us determine a best-fit solution.
- Data-driven decision making provides credible evidence to stakeholders and management regarding strengths, weaknesses, opportunities, limitations and risks.



ICAO

SAFETY

Risk Based Surveillance NACC & SAM

Trust



Time and money



Challenges

Expertise



Analysis
paralysis



Problem Types

- A Problem is always related to a decision which needs to be taken
 - Choice
 - Which of A or B
 - Prioritization
 - Which X out of a list of $Y > X$

Data vs Expert

Undefendable
Unrepeatable



Expert A

$$0.5 \cdot \textit{Expertise} + 0.3 \cdot \textit{GutFeeling} + 0.1 \cdot \textit{Data}$$

Solution A



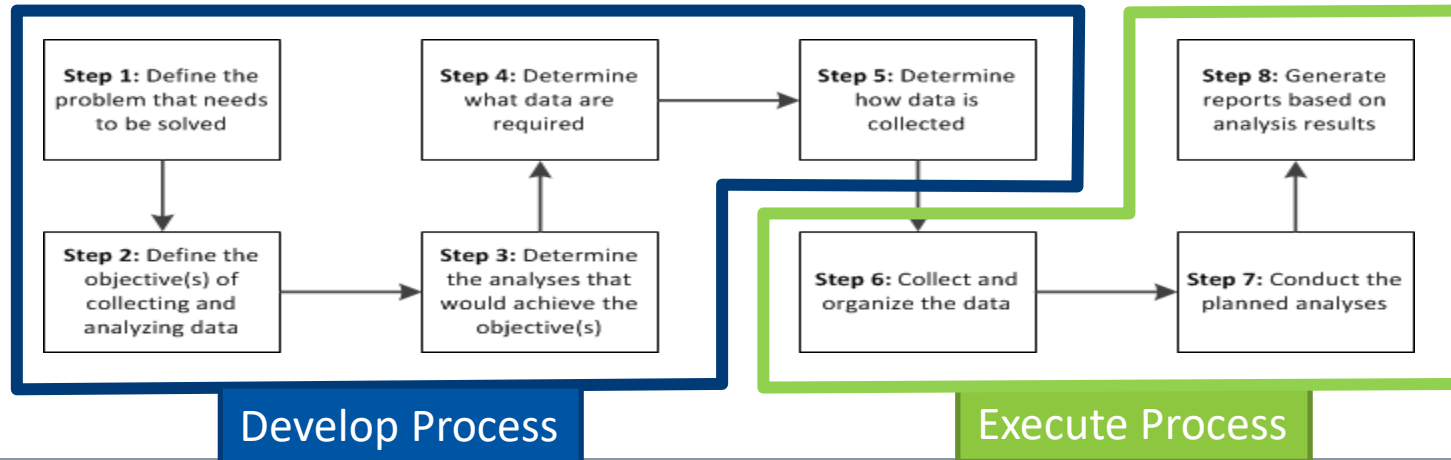
Expert B

$$0.3 \cdot \textit{Expertise} + 0.5 \cdot \textit{GutFeeling} + 0.2 \cdot \textit{Data}$$

Solution B

The D3M Process

- The diagram below shows the process for collecting and analyzing data.





Case Study: President Award

1. **Problem:** What States should get a President Award for Excellent Safety Performance in 2017
2. **Objective:** Select States based on a set measurable safety indicators for 2017, paying attention to reward States from each region



Case Study: President Award

3. Methodology: Select States which received a USOAP mission in 2017 and which

- improved their overall score by more than x% vs their last audit
- do not have an SSC and
- have an overall score over 60% (global target)

4. Data Required: List of 2017 activities, last audit dates and results, 2017 results, list of SSCs



Case Study: President Award

- 5. Data source:** Retrieve data from iSTARS and USOAP Online Framework for preliminary results.
- 6. Collect:** Build an EXCEL sheet with all States having received a USOAP activity in 2017 and columns for Latest Score, Initial Score, Progress, # of SSCs

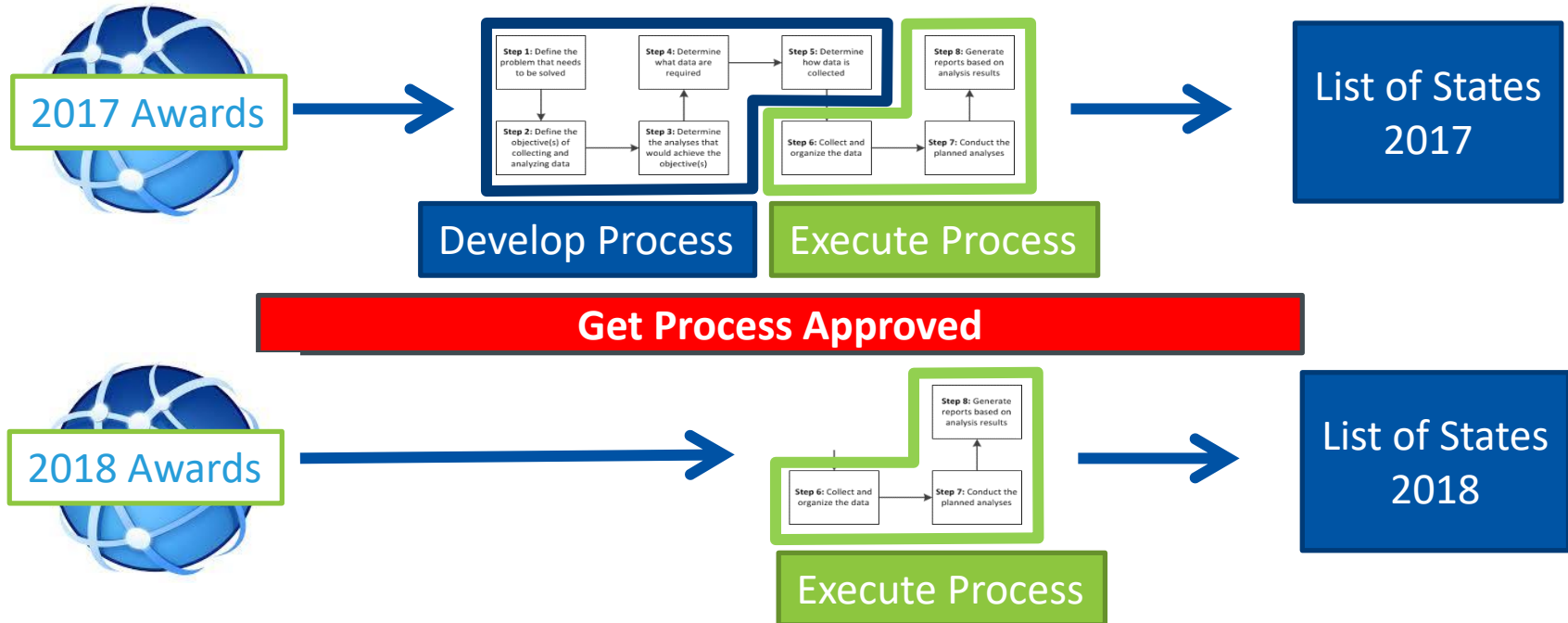


Case Study: President Award

7. Analyse: Try various values for progress thresholds. Choose positive threshold which selects at least one State in each region. Highlight the States which fulfill all 3 selection criteria (CAT-A), also highlight those who fulfill only 2 or 1 (CAT-B).

8. Report: Generate a document containing the number of 2017 missions and States, explains the methodology and provide the list of proposed States (CAT-A) as well as the list of rejected States (CAT-B)

Case Study : President Awards





Final Considerations

- D3M allows to build repeatable, defensible and traceable decisions
- By using data and facts, we can determine the effectiveness of our past decisions. We can do so by referencing factual records.
- We also become more able to review, evaluate, challenge and change opinions and decisions.



ICAO

SAFETY

Risk Based Surveillance NACC & SAM



ICAO

North American
Central American
and Caribbean
(NACC) Office
Mexico City

South American
(SAM) Office
Lima

ICAO
Headquarters
Montréal

Western and
Central African
(WACAF) Office
Dakar

European and
North Atlantic
(EUR/NAT) Office
Paris

Middle East
(MID) Office
Cairo

Eastern and
Southern African
(ESAF) Office
Nairobi

Asia and Pacific
(APAC) Sub-office
Beijing

Asia and Pacific
(APAC) Office
Bangkok



THANK YOU