Safety Performance Indicators (SPI)
Safety Performance Targets (SPT) and Measuring Criteria

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It’s great to have reliable Indicators when we are concerned about Safety
Safety Management System

1. What is most likely to be the cause of your next accident or serious incident?

2. How do you know that?

3. What are you doing about it?

4. Is it working?
Safety Risk Management

- The SMS is supposed to do one simple thing:

  ...to allocate resources against risk
1. We need to manage Safety, *but*…

2. …we cannot manage what we cannot measure, *so*…

3. …we need indicators to measure the system’s performance.
3.1.1 The service provider shall develop and maintain the means to verify the safety performance of the organization and to validate the effectiveness of safety risk controls.

3.1.2 The service provider’s safety performance shall be verified in reference to the safety performance indicators and safety performance targets of the SMS.
Definitions

ICAO Annex 19 – Safety Management
Chapter 1. Definitions

Safety performance

- **Safety achievement** as defined by the safety performance targets and safety performance indicators

Safety performance indicator

- Data-based **parameter** used for monitoring and assessing safety performance

Safety performance target

- Planned or intended **objective** for safety performance indicator(s) over a given **period**
Deming Cycle

- Hazard Identification
- Safety Improvement
- Safety Performance
- Risk Management

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Choosing an SPI

SPIs are data-based parameters that measure certain characteristics about occurrences, events, incidents, accidents, etc.

- Identified by the organization’s SMS
  - Obvious
  - Linked to safety concerns
  - Tracking significant issues

- Aligned with the safety targets
  - Short-term (tactical)
  - Medium-term (strategic)

- That (really) assess safety performance
  - Measurable
  - Numerical whenever possible
Validating a useful SPI

- **Valid**: It measures what we want to measure, well correlated
- **Cost-effective**: It costs not more than it gives back
- **Reliable**: It is not dependent on conditions, situations, individuals
- **Resistant to bias**: It is not possible to manipulate
- **Sensitive**: It is responsive to changes, statistically significant, short timed
- **Representative**: It covers all aspects that are relevant

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SPIs used at TAP M&E are classified in the following 3 categories, depending on their tactical vs. strategic scope:

Organizational SPIs

- Monitor safety objectives and safety targets
- Monitor risk level
- Control impact on sustainability, competitiveness and image
- Control impact on ratings and insurance costs
- Assess contingency preparedness and MoC
- Control suppliers and providers
Types of SPI (cont.)

SSP-connected SPIs

- Assure compliance
- Satisfy State safety goals
- Meet public expectations and EU vision

Customer related SPIs

- Assure contractual safety compliance
- Satisfy customer’s safety goals
- Enable continuous contract monitoring
- Provide competitive edge and differentiation
Launching an SPI

In relation to each SPI chosen, the following check-list should be answered when launching an SPI:

1. Which risk control is **weaker** and needs to be **reinforced**?
2. What is the specific **issue**? What does that weakness **relate** to?
3. What is the most appropriate **metric** for the SPI?
4. How will data be **collected** and **who** will do it?
5. How will the **results** be monitored and the **corrective** actions identified?
6. What **target** should we aim for?
7. What **alert level** should we set up?
Sources of data for SPIs

**Reactive**
- Analysis of past events and outcomes
  - ASR, VOR, MOR, SAFA
  - Hazard identification
  - Incident and accident reports
  - Safety investigations

**Proactive**
- Analysis of present and real-time events
  - ASR, VOR
  - Surveys, audits
  - Compliance monitoring
  - Improvement plans

**Predictive**
- Forecast future events or outcomes
  - FDM, reliability analysis
  - Processes monitoring
  - Trend following
  - Statistical analysis
# Example SPIs: Part M (CAMO)

<table>
<thead>
<tr>
<th>Nr.</th>
<th>ID</th>
<th>Category</th>
<th>SPI</th>
<th>Description</th>
<th>Acceptable (target)</th>
<th>Tolerable (alert level)</th>
<th>Not Acceptable</th>
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<tbody>
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<td>Minimal</td>
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Hard facts about SPIs

- There is no single SPI appropriate to all organizations
- Chosen SPIs should correlate to relevant safety objectives
- It is difficult to choose good (and few) SPIs
- It’s easy to end up with a lot of indicators
- In reality, they may fail to give accurate trend information
- Registered in the safety library with relevant information
Thank you!

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