



Safety Performance Monitoring and Measurement

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The ICAO SMS Framework



The ICAO SMS Framework

3.1 Safety Performance Monitoring and Measurement

3.2 The Management of Change

3.3 Continuous Improvement of the SMS

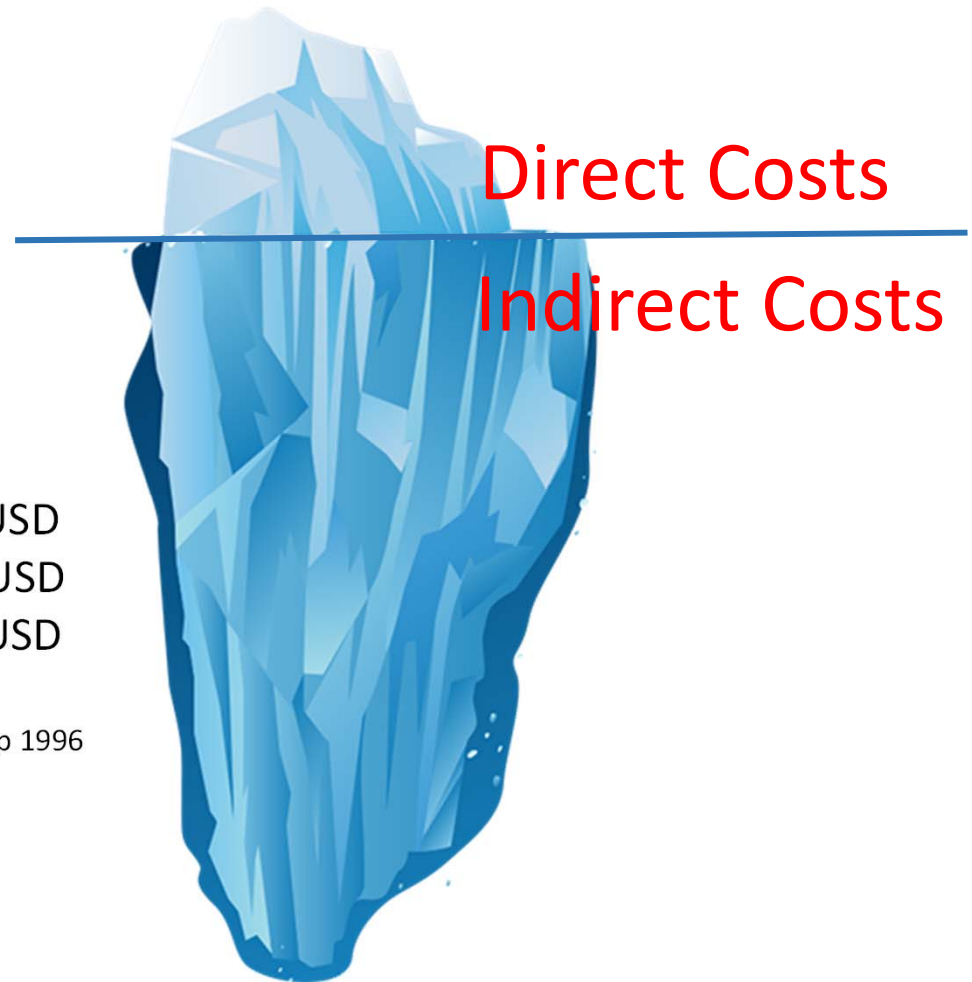
Safety Assurance

“Safety Makes Economic Sense”

The cost of implementing and maintaining an EFFECTIVE Safety Management System becomes less significant and well worth the investment when contrasted with the cost of doing nothing

In-Flight Shutdown (IFSD)	500,000 USD
Flight Cancellation	50,000 USD
Flight Delay Per Hour	10,000 USD

-Boeing Aircraft Corp 1996



NIL Accidents ≠ A Safe Organization

Obviously accident rates are not an effective measurement of safety. This is true in the sense that not all events become accidents, but events are precursors to accidents.

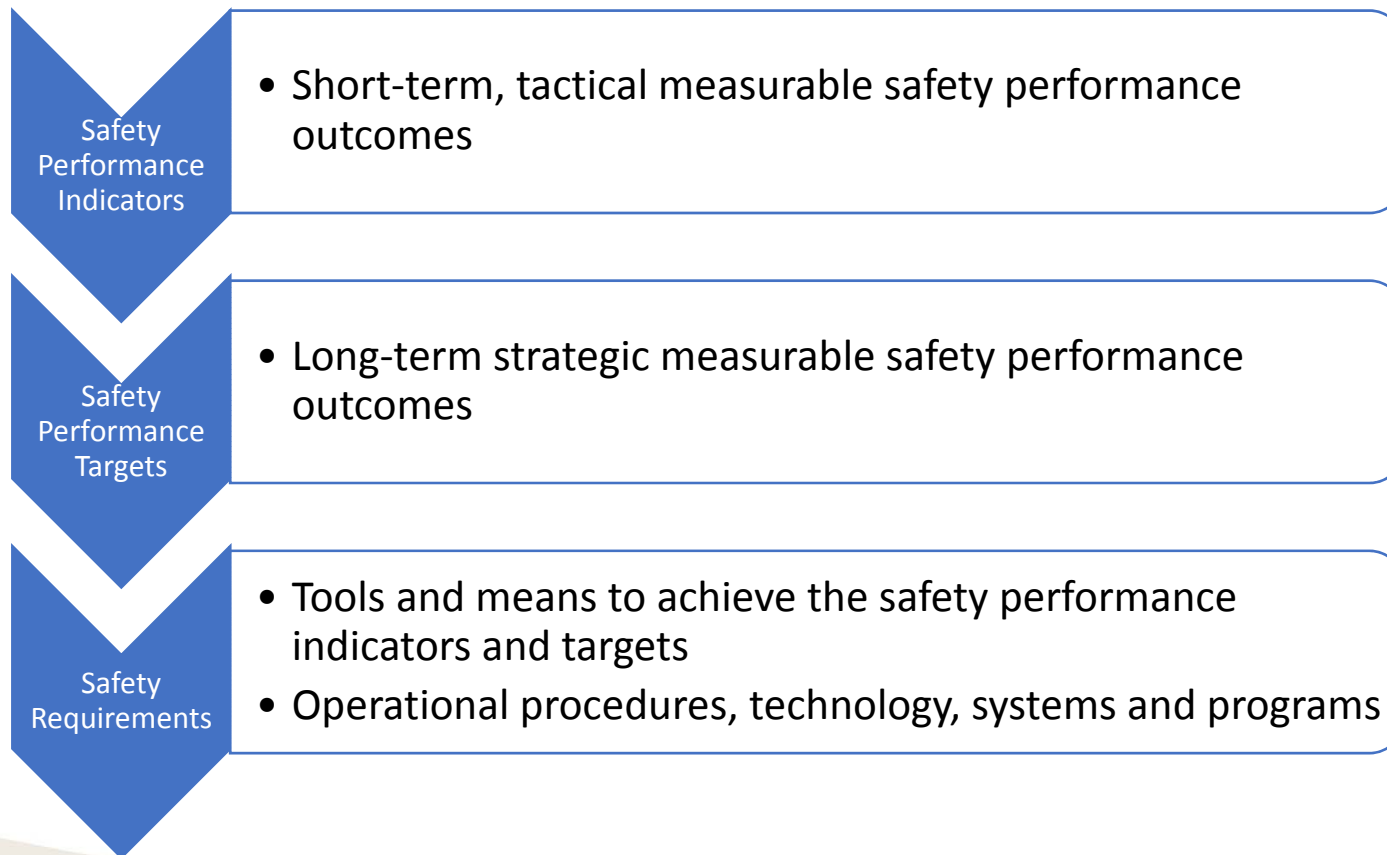
So, in order to ensure a continuing active commitment to safety we must have an active monitoring process and develop necessary controls to achieve and maintain acceptable level of safety.

The question that presents itself is how do we determine what is an Acceptable Level of Safety?

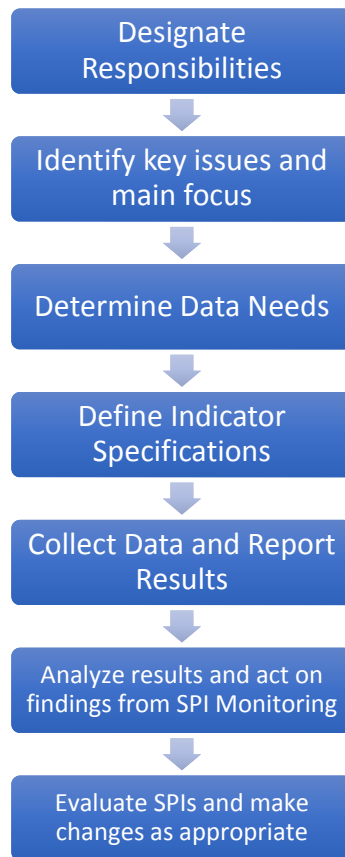
An incident is just the tip of the iceberg, a sign of a much larger problem below the surface.
-Don Brown

Acceptable Level of Safety

It is necessary to detail three key elements that define an acceptable level of Safety



Safety Performance Measurement Process



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?

SMART

Sources of data for SPIs

Reactive

analysis of **past** events and outcomes

Proactive

analysis of **present** and **real-time** events

Predictive

forecast **future** events or outcomes



SPI Dashboard



Examples of KSPI

KSPI	Definition (Source: IATA)	Data Source
Air Safety Reports	Total number of ASRs received	ASR
In-Flight Engine Shut Down	When one or more engines are shut down for any reason while in flight	ASR
Runway/Taxiway Incursion	Runway/taxiway incursion Taxiway Incursion by a ground vehicle Runway Incursion by a ground vehicle Other Aircraft – Runway/Taxiway Incursion	ASR and ATC Reports
Rejected Takeoff	High energy and low energy rejected takeoffs	ASR
Stall Warning	Stall warning device activated Stall/stick push activated Alpha protection system activated	ASR
Tail Strike	All events where the tail makes contact with the ground during takeoff or landing	ASR
Inadvertent Slide Deployment	When the slides inflated or partially inflated due to an error	ASR
Unstable Approach	The number of unstable approaches (measured against the policy at your airline) and the rate per 10,000 FDM/FOQA captured flights	FDM
TCAS RA	The number and rate per 10,000 FDM/FOQA captured flights of an improper response to a TCAS RA (measured against the policy at your airline)	FDM

Summary

