



CAAS Safety Risk Assessment Management of Change

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Introduction – What is SCAR?

- SCAR → Safety Change Assessment Report
- A 4-step (or less) systematic process for CAAS ANSG (Singapore ANS Provider) to provide justification for the level of safety assessment required when an introduction or change is proposed
- To be performed during the initiation stage of the change
- As part of CAAS ANSG Management of Change process, SCAR was introduced since 2014.

Safety Change Management: **BEFORE**

Introduction or Change Proposal



SAFETY
ASSESSMENT
REPORT

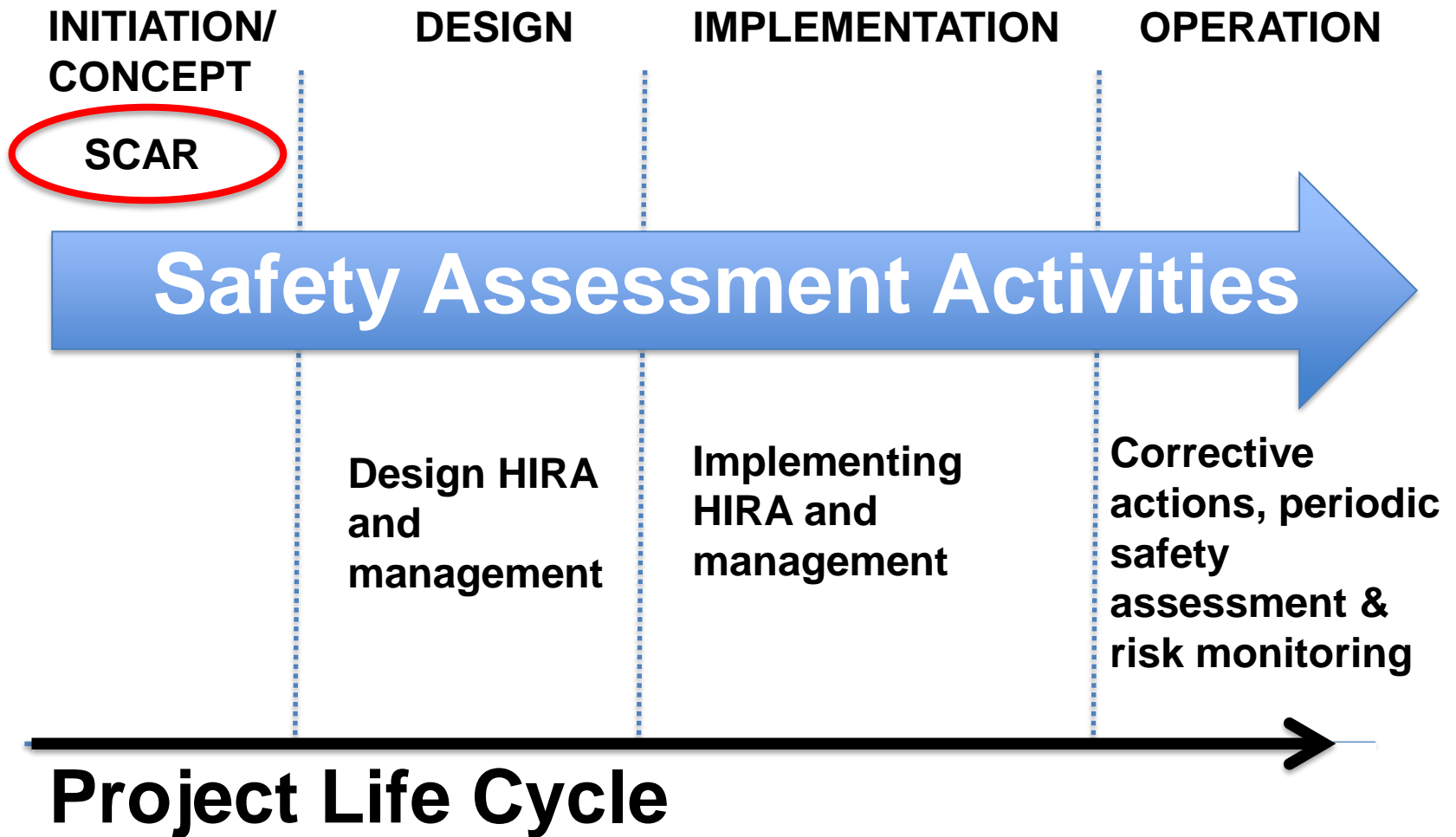
Criteria?

SAFETY CASE
REPORT

Why SCAR?

- Previously, every project and/ or every change requires a Safety Assessment, this might result in:
 - Time consuming
 - Over or under engineering
- The SCAR Framework is a stepping stone towards an improved change management process within the organisation
- The systematic approach provides justification for the level of safety assessment required
- A robust approach to managing safety while change takes place
- To satisfy regulatory concerns

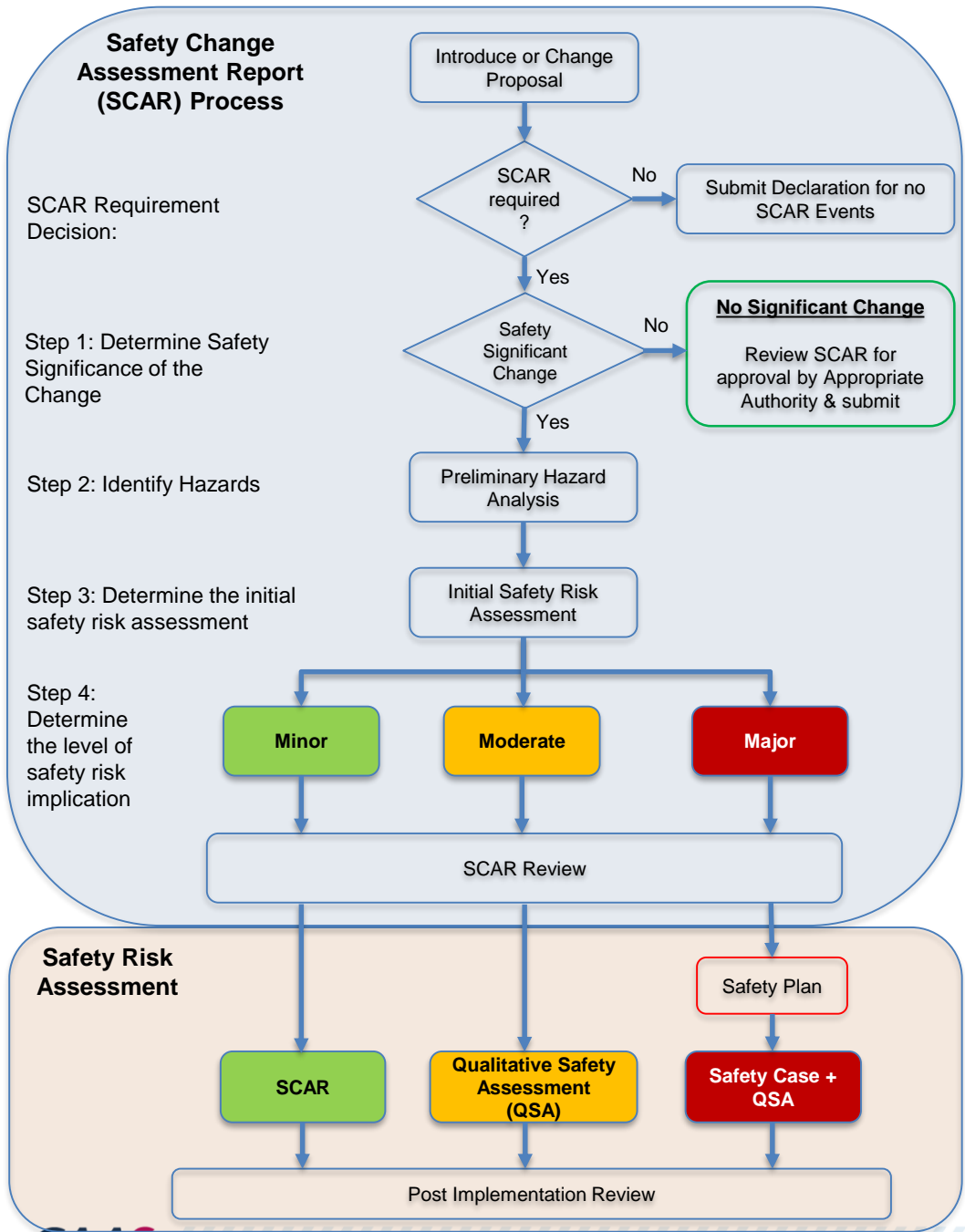
When is SCAR used?



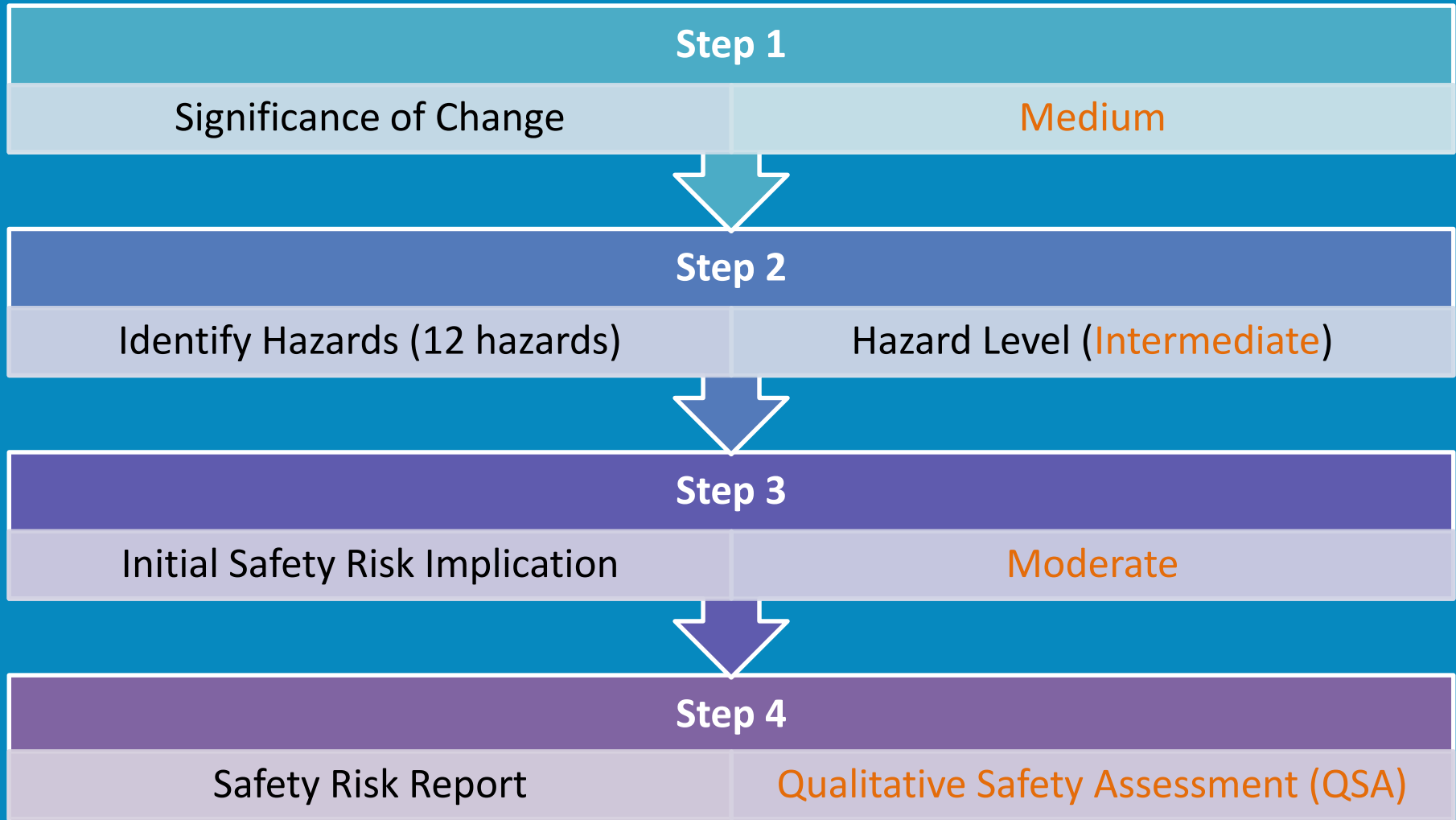
What constitute a change?

- **The SCAR applies for all introduction or Change(s) relating to projects, operational procedure, ATM system, hardware/ software or training which will affect the performance, functional or technical specification of a system or service in ANSG**

Safety Change Management Framework



Case Study - Smart Tower Prototype (STP)



SCAR Form

Step 1: Determine Safety Significance

ANSG-SMS-04

Step 1: Determining the Safety Significance of the Change

(Step 1 provides an indication of the safety significance of the change. It is assessed through ten questions that identify the main safety components associated with the project/ change)

1	2	3	4	5
No impact	Minimal impact	Minor impact	Moderate impact	High impact

The scoring guidelines for the above categories are available below. Refer to Safety Significance of Change guidelines

Q1 Assess the significance of the change within ANS Group	
<i>(i.e. assess the change and its impact on direct and indirect user groups, equipment and/ or procedures. This assessment should also take into account the overall impact on the delivery of service by the ANS Group due to the change.)</i>	
Remarks/Justification:	



For each question, Scoring of 1 to 5

Justification required

Step 1: Determine Safety Significance

Q2 - Assess the significance of change outside of ANS Group

Q3 - Assess the significance of the proposed change on the operational system(s)

Q4 - Assess the level of functionality and performance due to the proposed change and the significance of system procedural/process change

Q5 - How complex is the transition , taking consideration of the process and organisational management to manage the change from the existing system or process?

Step 1: Determine Safety Significance

Q6 - How substantial is the training component associated with the change?

Example from Smart Tower Prototype (STP)

Score: 4

Justification: As this is a new concept, training on the functionalities of the STP and to allow the aerodrome rated ATCOs to be acquainted with the views will be required. All aerodrome rated ATCOs had undergone theory and hands-on training during the passive shadow mode. There will be new STP functionalities upcoming to further enhance operations. The ATCOs will undergo the theory and practical tests on the new functionalities and be certified prior to advanced shadow mode. There is minimal change in aerodrome control operational procedures. Briefings will be conducted prior to the commencement of advanced shadow operations.

The training component associated with the change is thus assessed as moderate.

Case Study - Smart Tower Prototype

After the SCAR, the follow-on safety risk assessment is QSA

- 17 hazards were identified and additional mitigations introduced to reduce the risks to as low as reasonably practicable (ALARP)

Risk Probability	Risk Severity				
	Catastrophic	Hazardous	Major	Minor	Negligible
Frequent (more than once in a 30-day period)	5A	5B	5C	5D	5E
Occasional (more than once in a 3-month period)	4A	4B	4C	4D	4E
Remote (more than once in a year period)	3A	3B	3C	3D	3E
Improbable (more than once in a 3-year period)	2A	2B	2C	2D	2E
Extremely improbable (more than once in a 10-year period)	1A	1B	1C	1D	1E

Classification and description of Risk Severity	
Catastrophic:	Equipment destroyed and multiple deaths
Hazardous:	A large reduction in safety margins, physical distress or a workload such that the operators cannot be relied upon to perform their tasks accurately or completely. Serious injury or death to a number of people, and major equipment damage
Major	A significant reduction in safety margins, a reduction in the ability of the operators to cope with adverse operating conditions as a result of conditions impairing their efficiency; serious incident and injury to persons
Minor	Nuisance, operating limitations, use of alternate procedure, minor incident
Negligible	Little consequences

Sample of an Hazard and its Mitigations on STP

Hazard

- ATCOs are not familiar with the functionalities of the STP and the environment and slow to adapt to new technology. ATCOs experienced difficulties in adjusting back to out-of-window view at CT.

Mitigation

- A STP leader will be present during the live session.
- ATCOs must undergo passive shadow mode and assessed by the consultant
- Live sessions will not commence till ATCOs at STP are confident and ready to take over control from the main Tower.
- Perform a self-readiness on their competencies to operate the STP System.
- ATCO's readiness will also be assessed by the STP leader



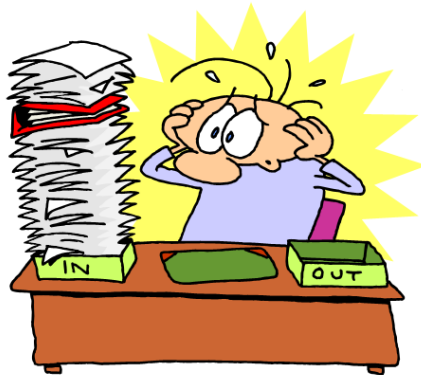
Does not consider multiple changes



Initially perceived as additional work

Challenges

Criteria of SCAR may be misinterpreted



Does not consider human performance





Easy to follow,
step by step
guide



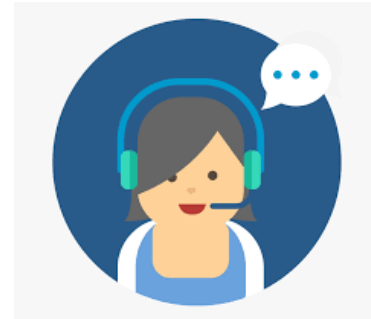
Communication,
Cross division
collaboration
required

Strength

Learning Culture -
Training provided
for staff



Safety Branch
supports the smooth
implementation



Continual Enhancement to Management of Change

