



Safety/Just culture & Accident investigation MENA ARCM 4th - WS

The Prevention of Aircraft Accidents and Incidents through
the Collection & Analysis of Safety Data & Information

Session 1 - Setting the scene

**A Near Miss
Not Reported
Is The Next Accident**



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SMS Approach Accident causation & system



- **Phase 1:** common cause (Technology, Human & Organizational)
- **Phase 2:** via SMS addressing Tech, Process and Org issues
- **Phase 3:** it depends on the effectiveness of compliance & SMS success to identify unique cause.

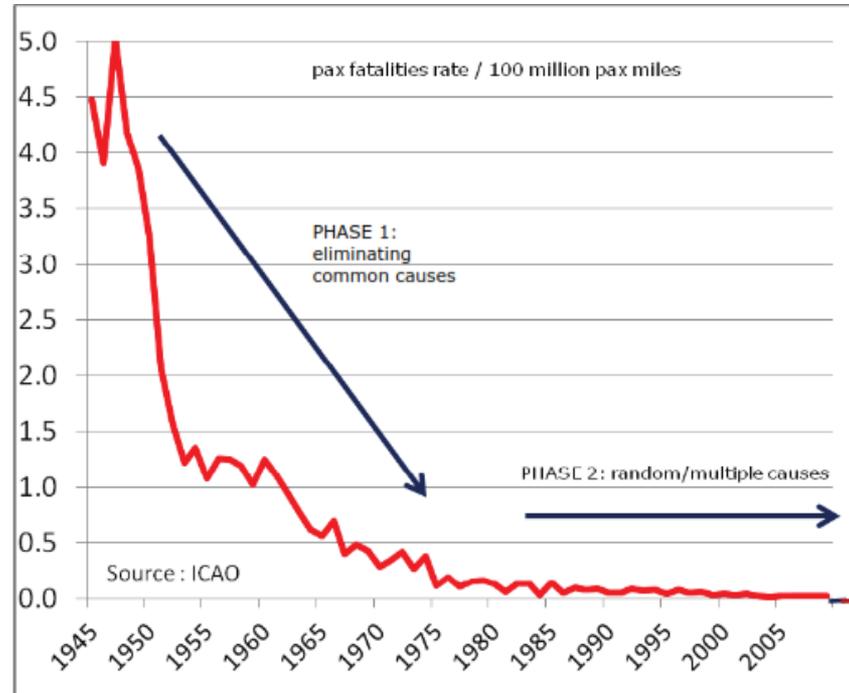
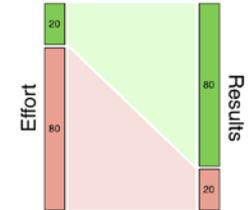


Figure 1. Accident Trends and Causes

The 80-20 Rule

"For many events, roughly 80% of the effects come from 20% of the causes." - Pareto



Therefore 20% of the effort produces 80% of the results but the last 20% of the results consumes 80% of the effort.

www.EndlesslyCurious.com

PHASE 3:
system failure or further improvement





SMS & Regulations (Dr. Sparrow)

Implementing SMS is it a matter to comply to SMS requirements?

- **SMS process is a subject of regulation** but **specific threats and hazards** addressed via the SMS process **are not themselves subject of regulations.**
- Need SMS to capture what ever possible non compliance to the established regulation; and
- A SMS to be tailored for **identification of unique causes** within the system that are **not subject** of prescriptive **regulations.**

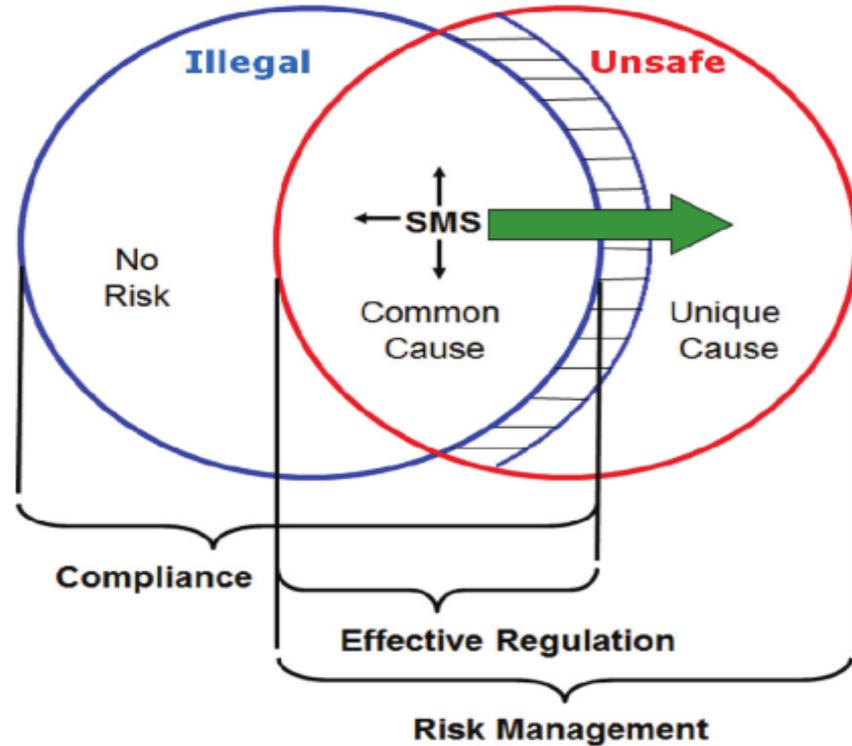


Figure 2. Relationship between Regulatory Requirements and Risk

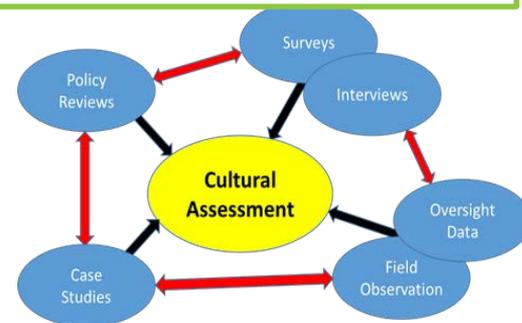


Several Models safety culture



➤ Safety culture definitions:

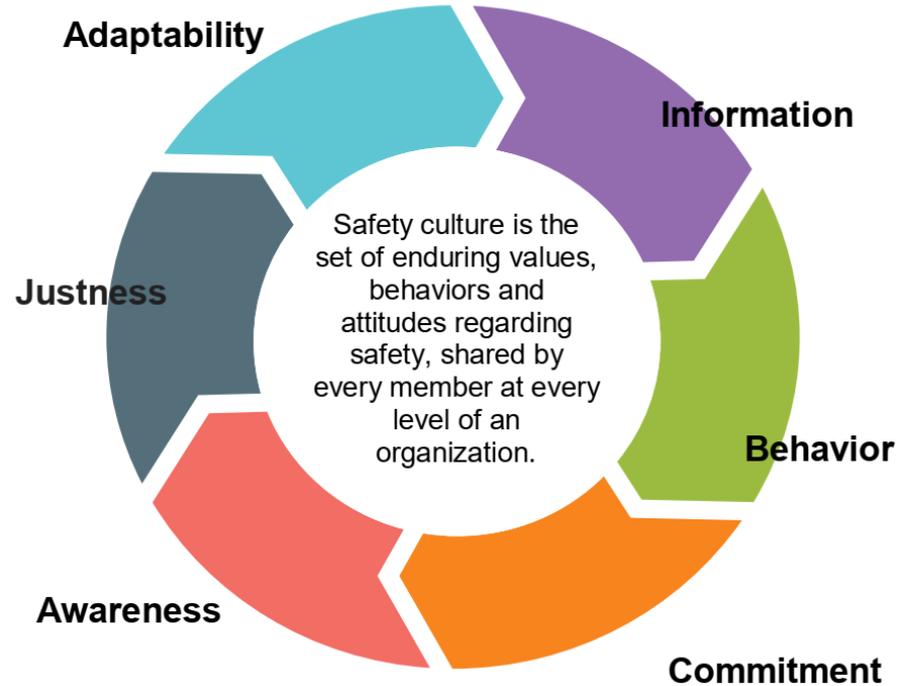
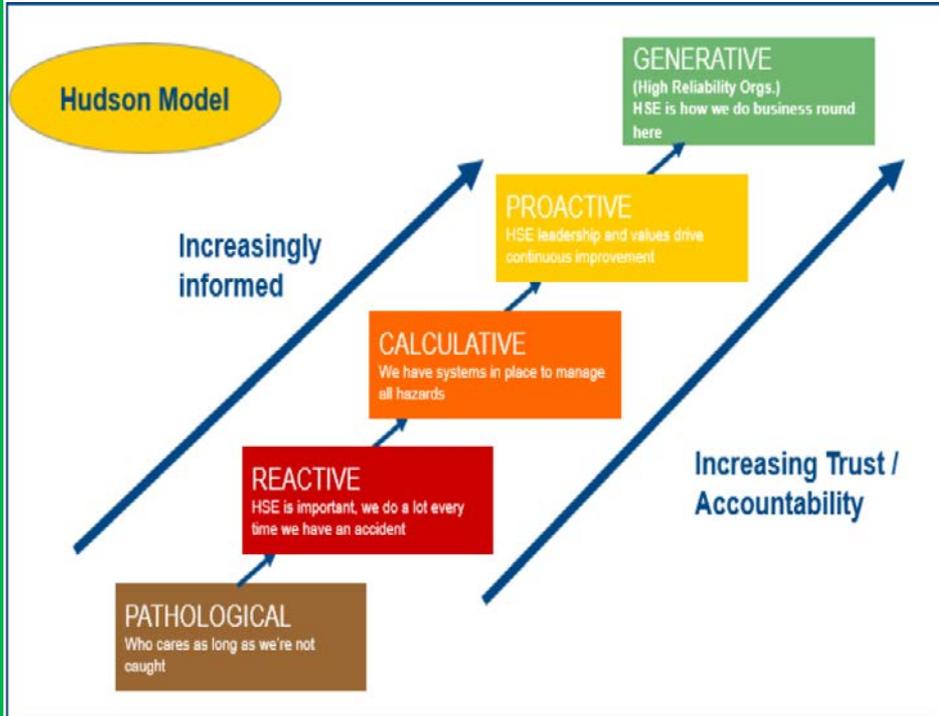
- ❑ as the set of enduring **values**, **behaviours** and **attitudes** regarding safety, **shared** by **every member** at **every level** of an organization
- ❑ is the product of the **individual** and **group values**, **attitudes**, **perceptions**, **competencies** and **patterns** of **behaviour** that determine the **commitment** to, and the style and proficiency of, an organisation's safety management
- ❑ how an organization **behaves** in relation to safety and risk when **no one is watching"**





Safety culture Model

Implementing SMS is it a matter to comply to SMS requirements?





Safety Culture Evaluation Tools Industry



SAMPLE SUMMARY SHEET

Organisation Assessed	Question	Management			Workforce		
		Reactive	Calculative	Proactive	Reactive	Calculative	Proactive
Commitment	CoM01/CoW01: Personal commitment to safety		X		X		
	CoM02/CoW02: Safety triggers			X	X		
	CoM03/CoW03: Management assurance of safety	X			X		
	CoM04/CoW04: Workforce attitude towards safety		X				X
	CoM05: Financing of safety			X			
	CoW05: Dealing with unsafe operations or activities						X
Overall assessment of commitment							
Justness	JuM01/JuW01: Recognition of safe behavior						
	JuM02/JuW02: Dealing with unsafe behavior						
	JuM03/JuW03: Safety investigations						
	JuM04/JuW04: Organizational contributing factors						
	Overall assessment of justness						
Behavior with Respect to Safety	BeM01/BeW01: Communication safety issues						
	BeM03/BeW03: Support from colleagues						
Overall assessment of behavior							
Overall safety culture estimate:							
Overall confidence level in the safety culture		V. Low	Low	Medium	High	V. High	
Summary comments:							
Signature and Date:							

Characteristic	Indicators
Commitment to Safety	<ul style="list-style-type: none"> Management commitment Personal commitment Investment in safety
Justness	<ul style="list-style-type: none"> Evaluation of (un)safe behavior Perception of evaluation Passing of responsibility
Information	<ul style="list-style-type: none"> Communication of safety-related information Safety reporting system Willingness to report Consequences of safety reports
Awareness	<ul style="list-style-type: none"> Awareness of job-induced risk Attitude towards unknown hazards Attention to safety
Adaptability	<ul style="list-style-type: none"> Actions after safety occurrences Proactiveness to prevent safety occurrences Employee input
Behavior with Respect to Safety	<ul style="list-style-type: none"> Working situation Employee behavior with regard to safety Mutual expectations and encouragement



Safety Culture Evaluation Tools

Self-Assessment Tool Regulator



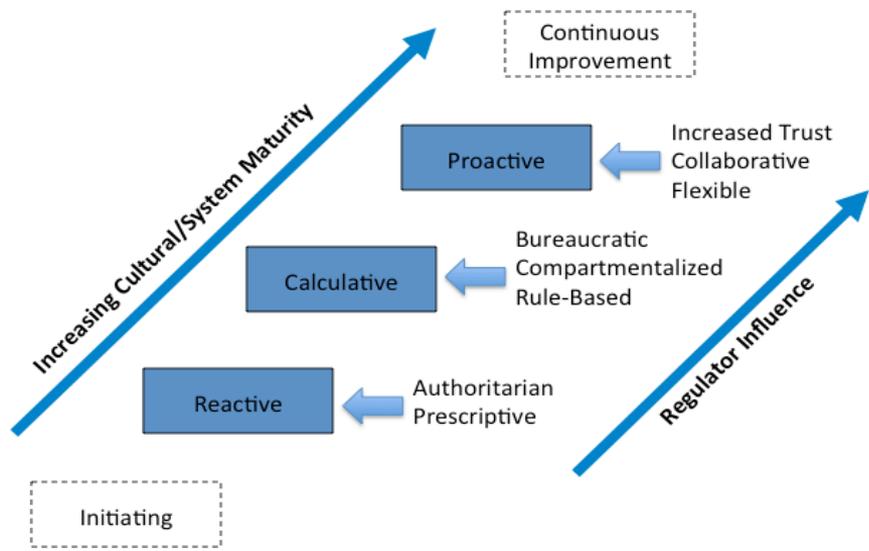
Evaluation of Regulator decision making process & Management

Adaptation to service providers maturity level

This survey can be used to provide a preliminary picture of the opinions and perceptions of an Authority's workforce. It should be used in combination with other assessment methods to validate the results and to clarify areas of interest. For further information, see Appendix 2 of this document.

1. The Authority considers the effects their decisions have on service providers' safety	Fully disagree	<input type="checkbox"/>	Fully agree					
2. Different Authority inspectors draw the same conclusions from the same facts	Fully disagree	<input type="checkbox"/>	Fully agree					
<hr/>								
34. The Authority's management is in close touch with its employees	Fully disagree	<input type="checkbox"/>	Fully agree					
35. The Authority's employees eagerly express safety concerns	Fully disagree	<input type="checkbox"/>	Fully agree					
36. The Authority's inspectors do not apply personal prejudice when performing oversight activities	Fully disagree	<input type="checkbox"/>	Fully agree					
37. The Authority's decisions are not driven by pressures of public opinion	Fully disagree	<input type="checkbox"/>	Fully agree					
38. The Authority does not blame its employees for honest mistakes	Fully disagree	<input type="checkbox"/>	Fully agree					
39. The Authority does consider individual and organizational factors when investigating internal problems	Fully disagree	<input type="checkbox"/>	Fully agree					
40. The Authority does not accept work arounds from its employees	Fully disagree	<input type="checkbox"/>	Fully agree					

Any additional thoughts/comments?





Interesting experience: Survey at National Level



MENA ARCM 4 WS - Rabat, 11-12 JUL 23

➤ Safety Culture & SMS in Ireland (Doc ASA/03/11 of 2011)

- Overview of the maturity of safety culture throughout the whole aviation sector.
- Measure and consequently manage the overall safety process
- Identify areas of strength and areas needing development

Expected analysis result:

Part 1:

Count of GD	SD	Overall Total
Function/Area	Female	Male
Administration	11	1
Aviation	2	1
Engineering	2	1
Flight	2	1
Other	11	2
Operations/Support	1	1
Training	1	1
General Total	111	104

Question 1: I am aware of my organisation's safety policy statement.

Count of GD	SD	Overall Total
QA_CombBusiness	Agree	NA
Aviation	2	2
Engineering	2	2
Flight	2	2
Other	11	11
Operations/Support	1	1
Training	1	1
General Total	20	20

Question 2: The safety policy statement is appropriate to all levels within the organisation.

Count of GD	SD	Overall Total
QA_CombBusiness	1	2
Aviation	1	2
Engineering	1	2
Flight	1	2
Other	11	11
Operations/Support	1	1
Training	1	1
General Total	20	20

Question 3: This safety policy statement is an accurate reflection of the company's commitment to safety. In total 70% of respondents agreed or strongly agreed with this statement. Maintenance part M subject G&F and ground handling were the categories who replied with the highest level of disagreement 3 out of 13 and 3 out of 14 respondents respectively.

Part 2:

Question 1: I am aware of my organisation's safety policy statement.

Count of GD	SD	Overall Total
QA_CombBusiness	Agree	NA
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Part 3:

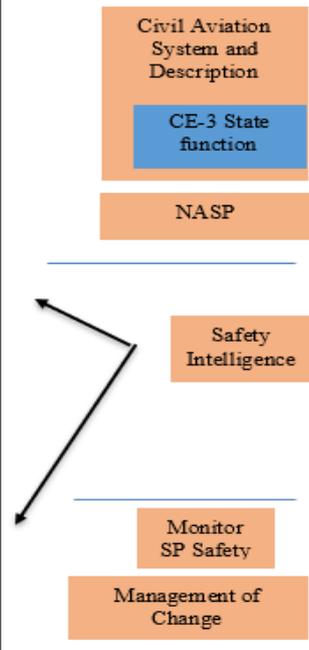
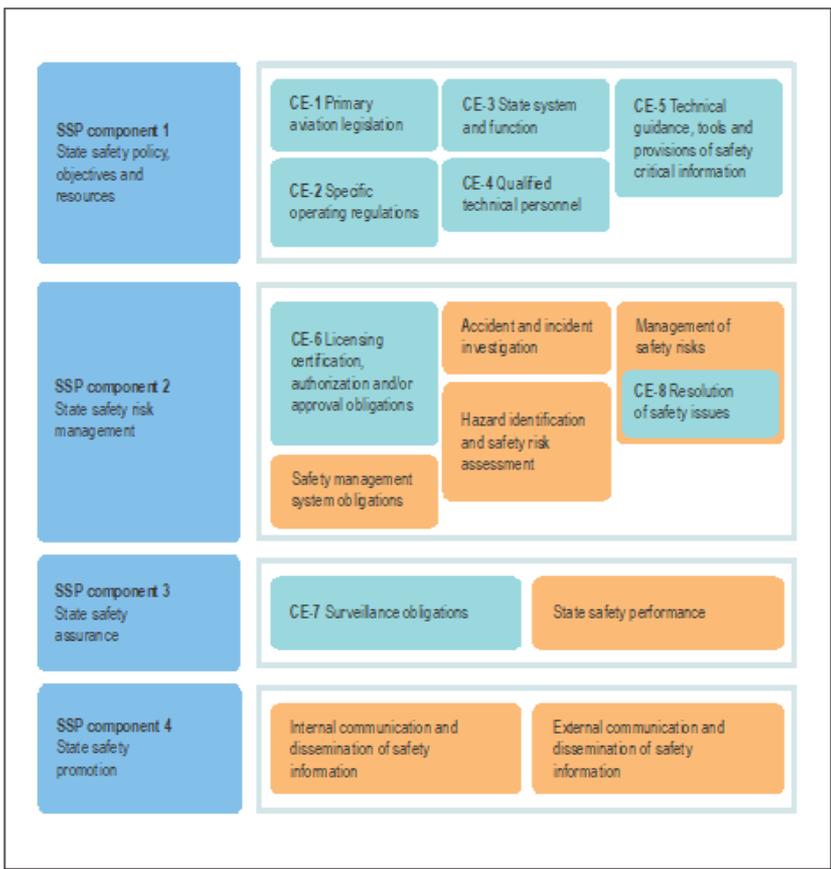
General (Free-Text) Comments
Many respondents expressed concern that their organisations are more focused on the.....

survey consists of 3 sections as following:

1. Collection of demographic information
2. key aspects of safety culture
3. open text box



SSP & Safety Culture





Safety Management & Safety culture



Safety Management components	Safety culture Characteristics
Safety Policy	Commitment to Safety
Safety Risk Management	Justness Information Awareness
Safety Assurance	Adaptability
Safety Policy	Behaviour with Respect to Safety

- **Correlation** between SMS (System) and Safety culture (concept):
 - ❑ Correlation: (Accident/incident rate) # Maturity level
(Neal and Griffin (2006), Grabowski et al. (2010), Morrow et al. (2014))
- But **absence of accidents** doesn't ensure **mature** safety management



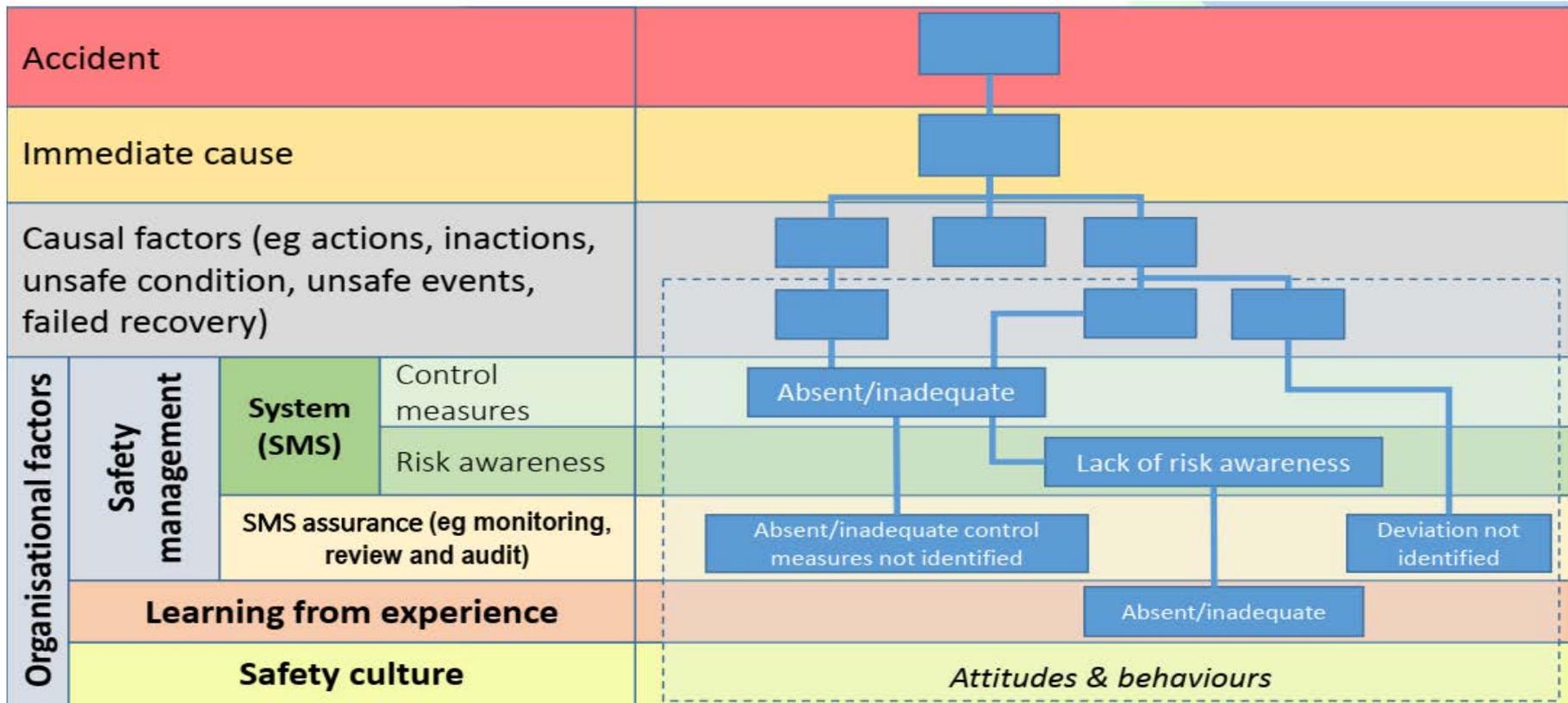
Safety culture and accident investigation



- Barry Strauch from NTSB US article – (Safety Science of 2015)
 - ❑ Shortcomings in measuring safety culture through questionnaires [[Nuclear Regulatory Commission \(2011\)](#)]
 - ❑ Ethnographic methods require more time to conduct a study than is reasonably available to investigators
 - ❑ **Big opportunity** to gather considerable data in **accident investigations on safety culture** than could be obtained prior to accident in direct assessments.
 - ❑ Via the following methodology.....



Understanding organizational factors





4 step process

to identify organizational factors in an accident investigation



1. ESTABLISH FACTORS THAT ARE

a. Identifiable

b. Assessable

2. DETERMINE IF THESE ARE ORGANIZATIONAL FACTORS

a. Unintended deviations from organizational expectations

b. Multiple individuals acting in their organizational roles

c. Created by organizational conditions

3. RELATE THESE FACTORS TO THE CAUSE OF THE ACCIDENT

a. Would the organizational errors have occurred if the company had responded differently

b. Would the accident have occurred in the absence of these errors

4. DETERMINE WHETHER THE ORGANIZATION IS RESPONSIBLE

a. Acting/deciding contrary to available information

b. Acting/deciding contrary to self-evident information

c. Failing to act/decide when warranted



Just Culture & Accident investigation



- Just Culture reinforce the reporting system and helps to identify of trends that allow addressing Latent factors
- Increase in reported event is not indicative of decrease of safety and vis versa → look to severity rather than Frequency
- Tool (distinguishing between error/ violation)

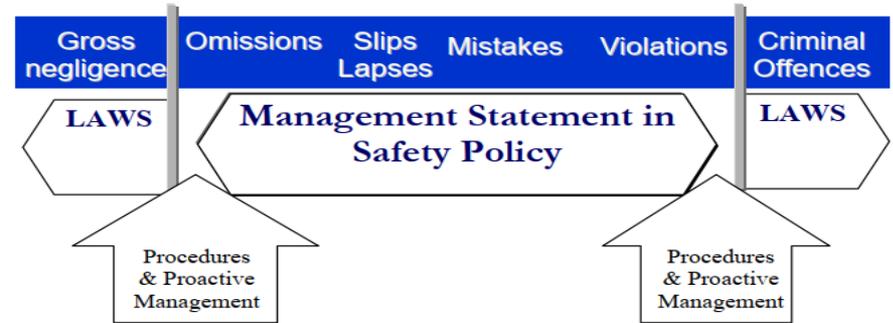


Figure 2. Defining the borders of “bad behaviours” (From P. Stastny Sixth GAIN World Conference, Rome, 18-19 June, 2002)

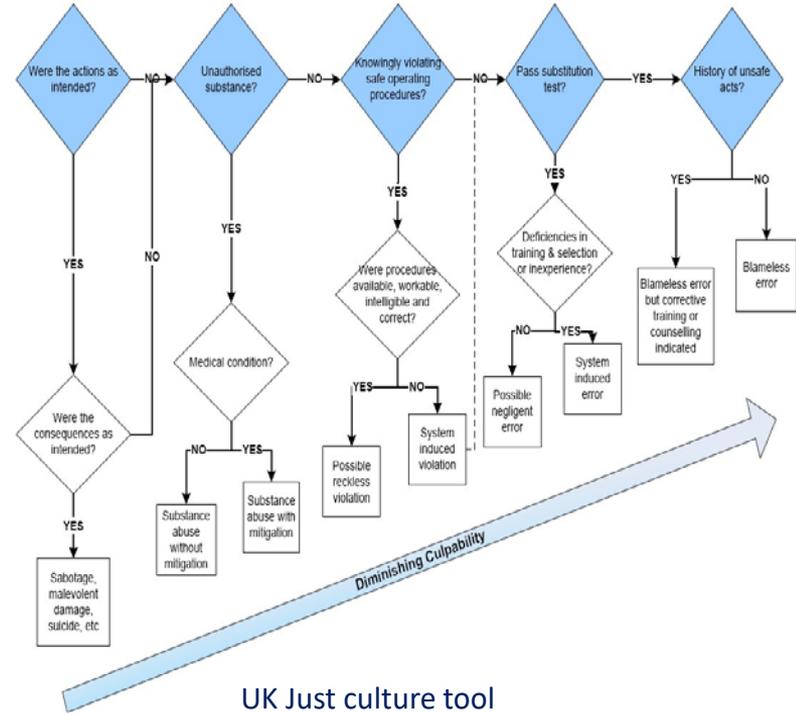


Just Culture Tools



Description	Did they follow all procedures & best practices?	Did they think they were following the procedures and practices?	Everyone does it this way round here. Don't you know?	We can't follow the procedure & get the job done	I thought it was better for the Company to do the job that way	I thought it was better for me personally to cut a corner	Screw you. I meant to do it my way	Oh dear Did we do that?
Violation type	Normal Compliance	Unintentional violation Awareness/Understanding	Routine violation	Situational violation	Optimizing violation	Personal optimizing violation	Reckless personal optimization	Exceptional violation
Management	Feel comfortable, But be aware, this may be unusual	Why didn't people realise this was a problem?	Take active steps to identify this sort of violation Use MRB	Get very active. How were poor procedures signed off?	Set standards. Examine procedures. This may be a real improvement	Set standards. Examine hiring & retention policies	How did we hire such a person?	Did we not expect such situations to arise? HSE-MS problem?
Supervision	Praise the worker	Investigate and apply MRB	Investigate and apply MRB	Investigate. Must listen to workforce	Why is this not being recognised? Use MRB Allow variances	Set standards. Recognise that such people are in workforce	How did we let him stay here? Didn't we know in advance?	Did we train people in how to react in unusual circumstances?
Workforce	Feel satisfied	Report if they discover they have violated a procedure	Get involved in finding out if the procedure is necessary	Must report all such impossible situations	Report possibility, Raise before work Acquire competence	Decide whether you wish to work here	Leave Company	Did I check with supervisor and colleagues?
Discipline	None	No blame for worker	Active coaching of all, at all levels for condoning routine violation	Blame everyone for not playing their part	Blame everyone for not playing their part	Warning letter to worker	Summary dismissal	Did they follow all procedures & best practices?
Coaching	Praise the worker Use as an example For others	Management need to examine the quality of procedure system	Everyone use MRB to see if rule necessary, or ensure compliance	Coach people to tell (workers) & listen (managers & supervisors)	Coach people to tell (workers) and listen (managers & supervisors)	Coach managers and supervisors on setting standards	Coach managers & supervisors to recognise & deal with such individuals	Did they follow all procedures and best practices?

Figure 4. Hudson's refined Just Culture Model (From the Shell "Hearts and Minds" Project, 2004)



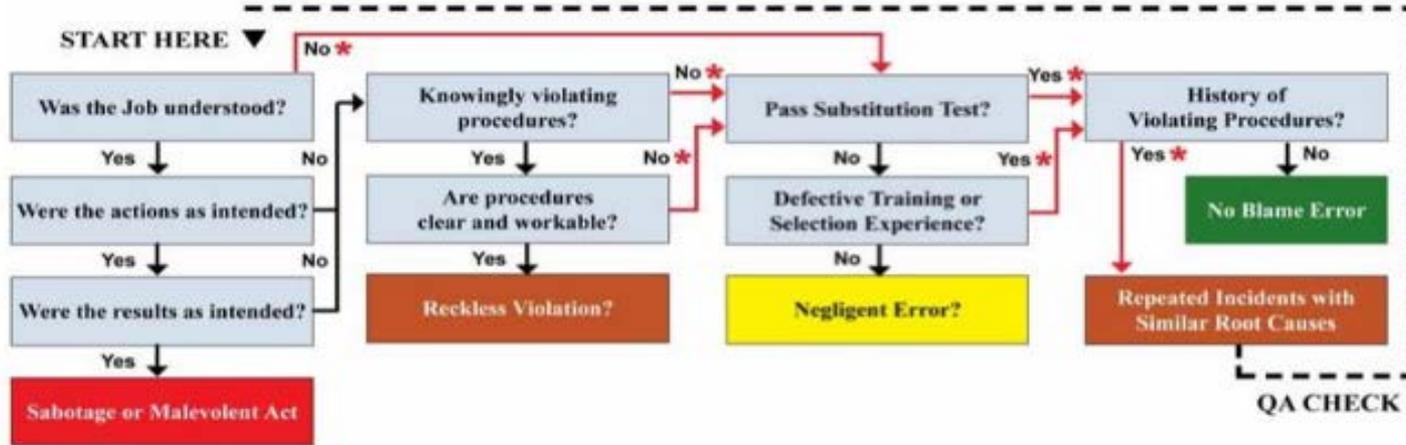
UK Just culture tool



Just Culture Tools



'Just Culture' Decision Tree



* Indicates a "System" induced error. Manager/Supervisor must evaluate what part of the system failed, and what Corrective and Preventative Action is required.



Summary



- We need to evolve to safety Management **effectiveness** to maintain/improve the accident trend.
- **Maturity** of Safety Culture might be taken as an evidence of an effective SMS
- Big opportunity to **gather considerable** data on safety culture in **accident investigations** than could be obtained during normal operations
- CAAs & especially AIBs are invited to actively use the available **safety culture evaluation tools** to identify their level, areas of weaknesses & strengths
- Using **Just culture (tool)** rather than blame culture would create thrust and Safe environment which will serve the safe and secure air transport.



Questions?