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

HICHAM BENNANI
ACAO Safety & Air Navigation Expert
Email: h.bennani@acao.org.ma

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.

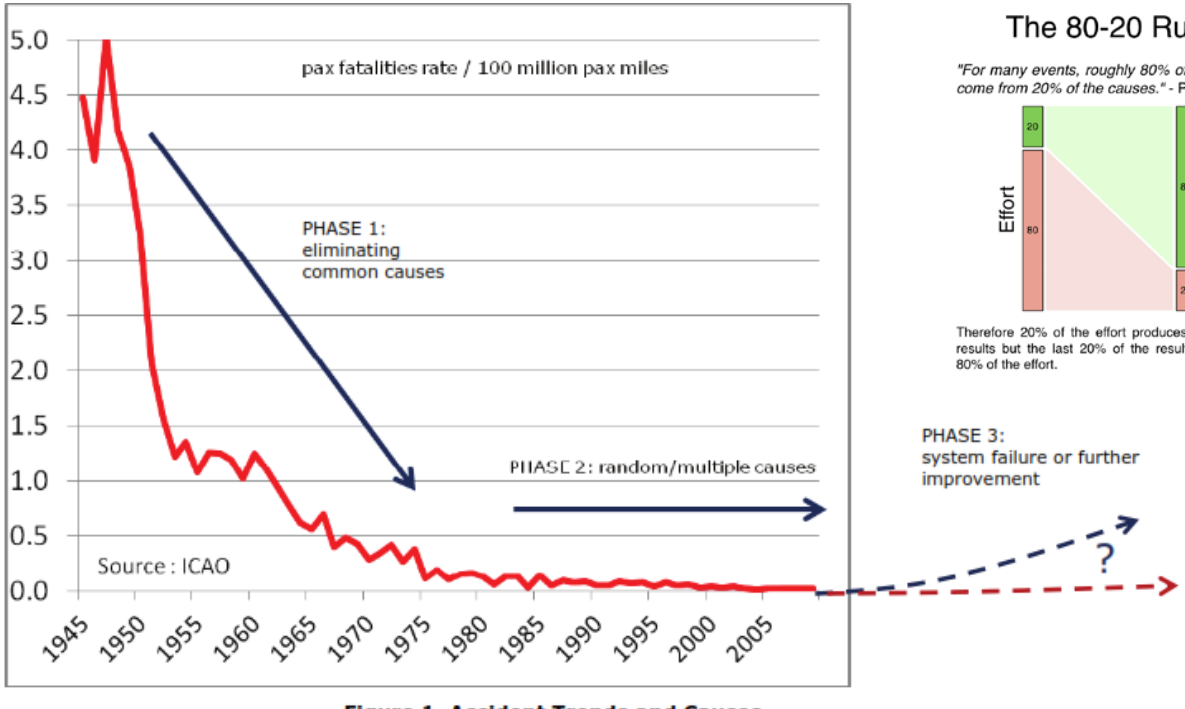
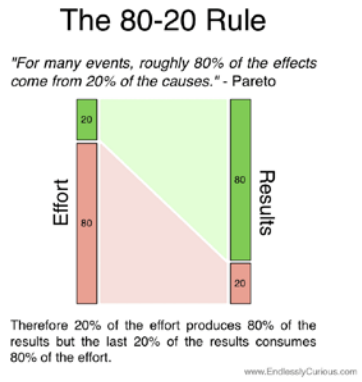


Figure 1. Accident Trends and Causes



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**.

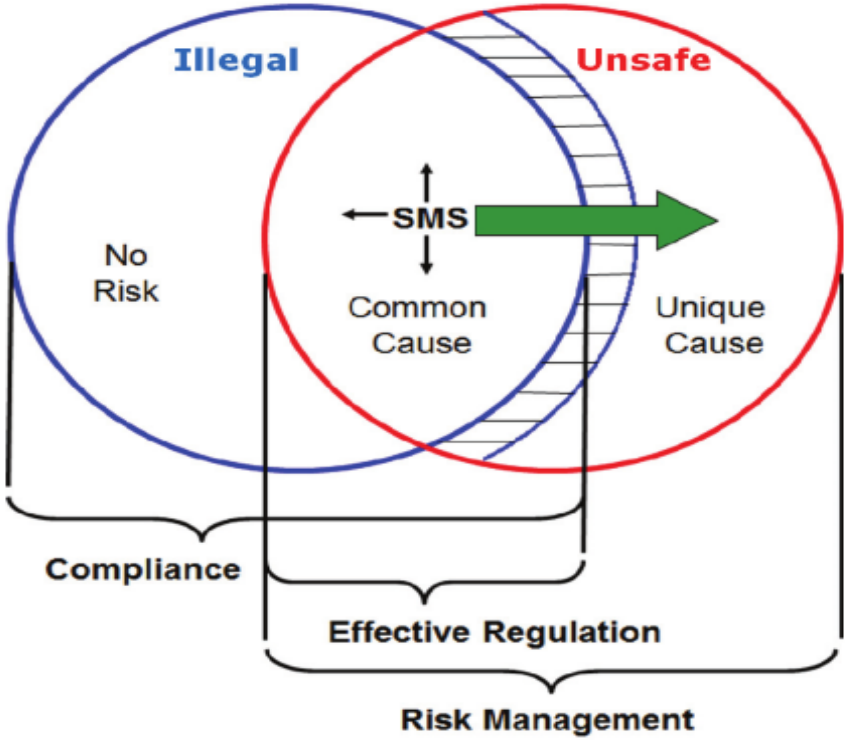
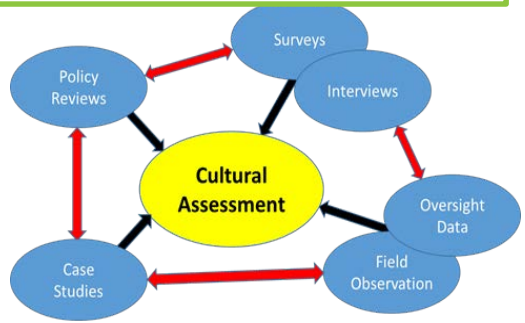


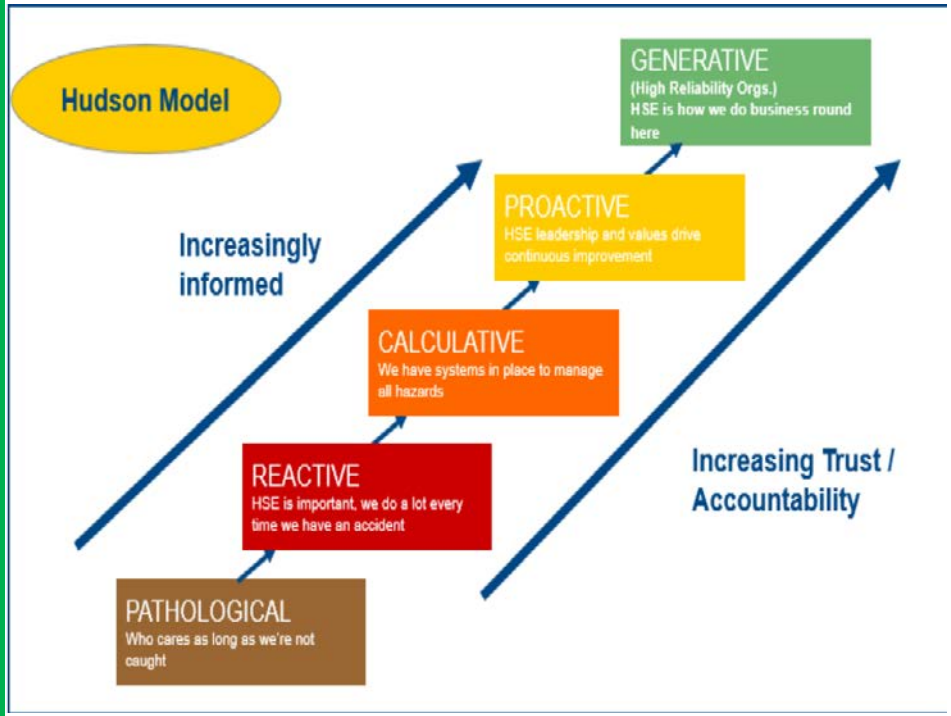
Figure 2. Relationship between Regulatory Requirements and Risk

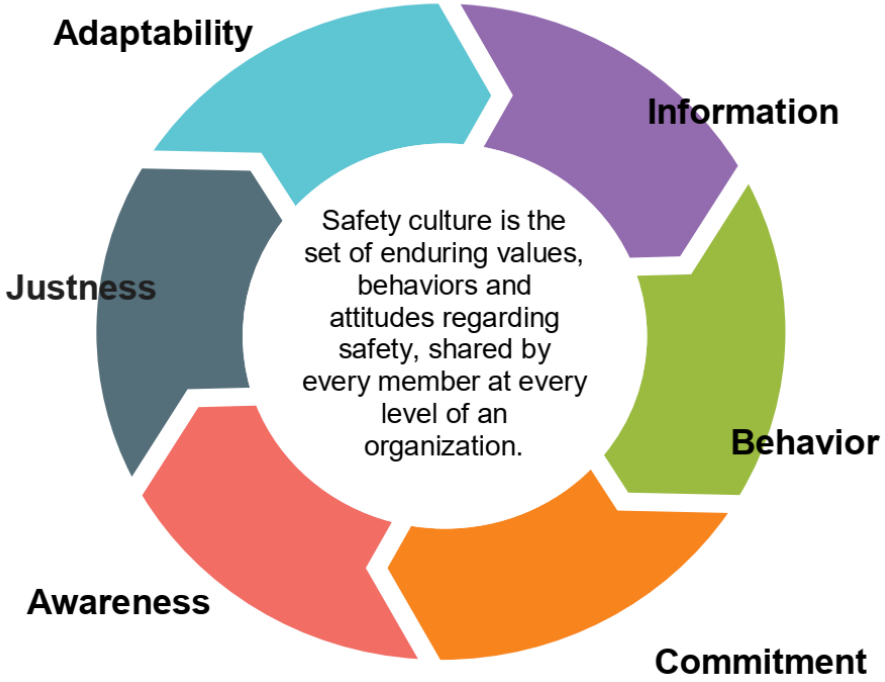
Several Models safety culture

- 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		Reactive	Calculative	Proactive		Reactive	Calculative	Proactive
Characteristic	**Question**	**Management**				**Workforce**		
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							
	JuM01/JuW01: Communicating 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	• Management commitment • Personal commitment • Investment in safety
Justness	• Evaluation of (un)safe behavior • Perception of evaluation • Passing of responsibility
Information	• Communication of safety-related information • Safety reporting system • Willingness to report • Consequences of safety reports
Awareness	• Awareness of job-induced risk • Attitude towards unknown hazards • Attention to safety
Adaptability	• Actions after safety occurrences • Proactiveness to prevent safety occurrences • Employee input
Behavior with Respect to Safety	• Working situation • Employee behavior with regard to safety • Mutual expectations and encouragement

Safety Culture Evaluation Tools
Self-Assessment Tool Regulator

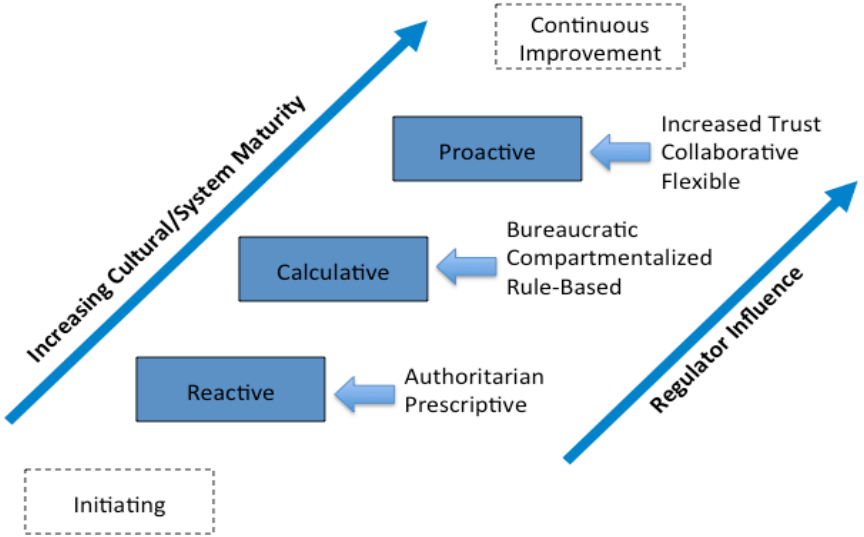
Evaluation of Regulator decision making process & Management

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.

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

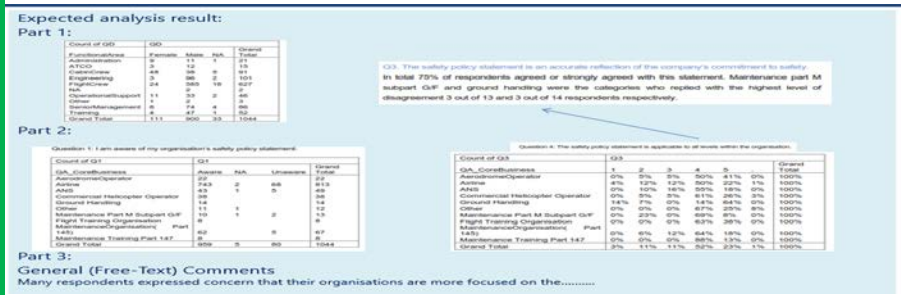
Any additional thoughts/comments?

Adaptation to service providers maturity level



Interesting experience: Survey at National Level

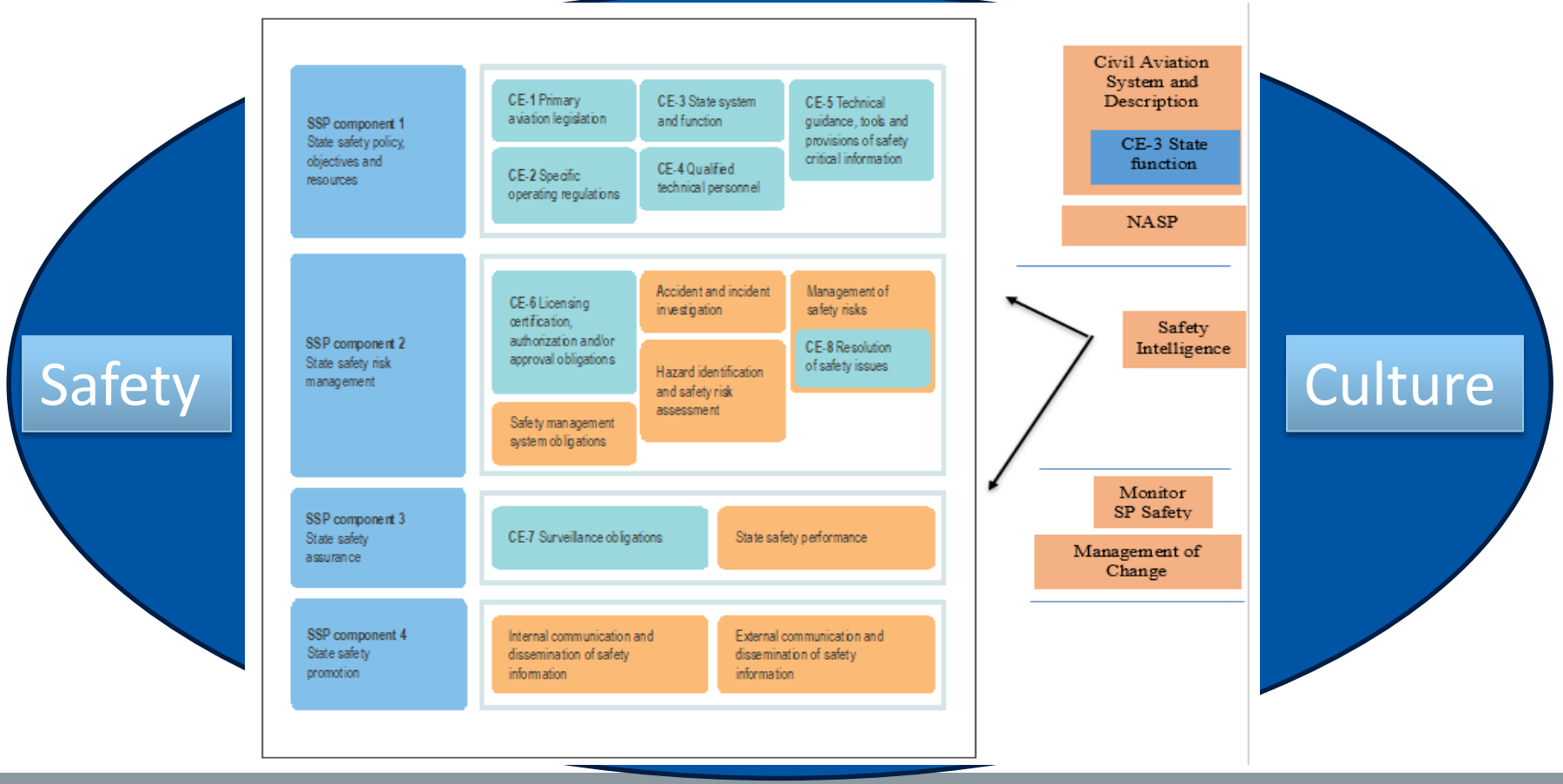
- Safety Culture & SMS in Ireland (Doc ASA/03/11 of 2011)
  - Overview of the maturity of safety culture throughout the whole aviation sector.
  - Measure and consequently manage the overall safety process
  - Identify areas of strength and areas needing development



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

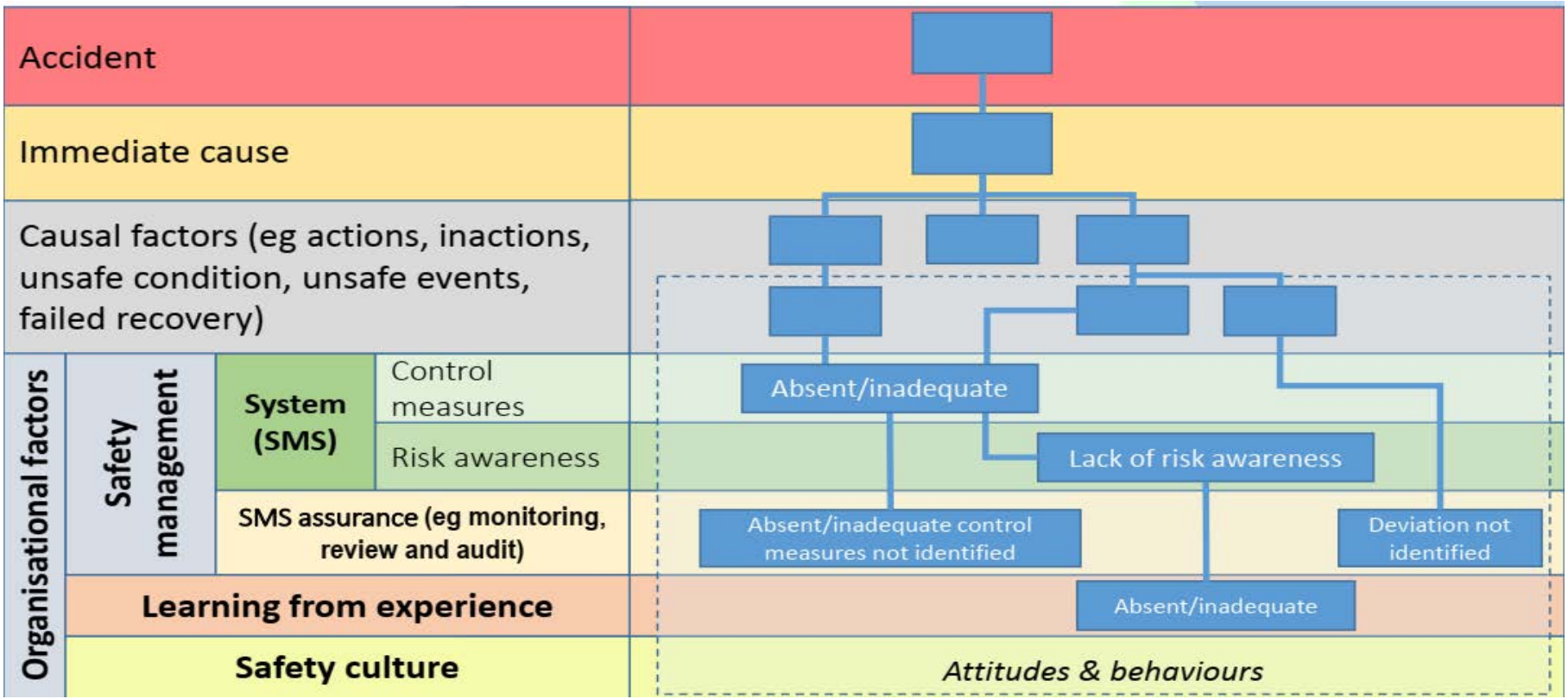
- **Correlation** between SMS (System) and Safety culture (concept):
  - Correlation: (Accident/incident rate) # Maturity level

  (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

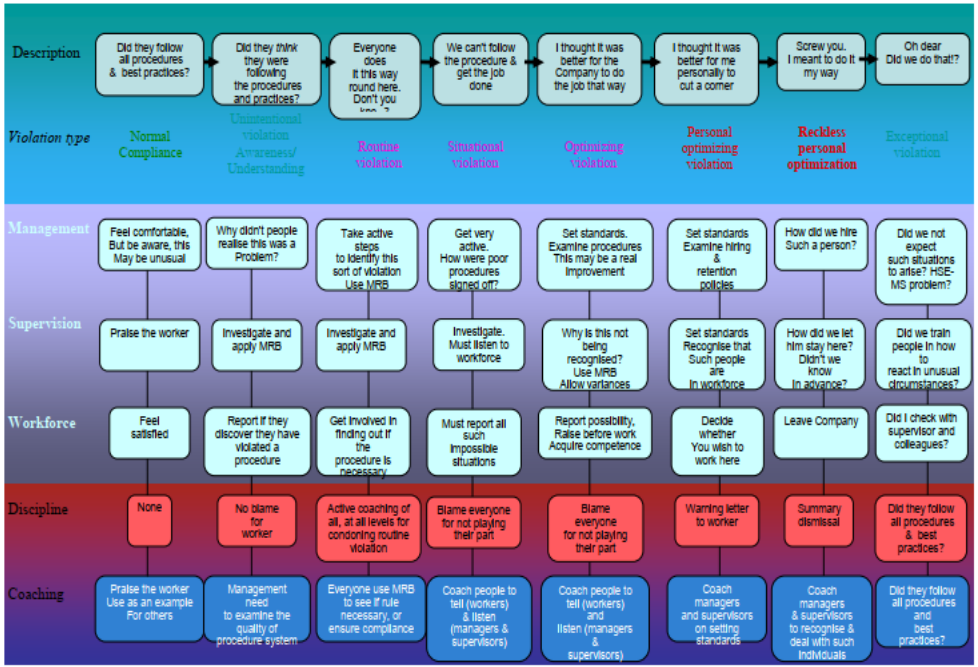
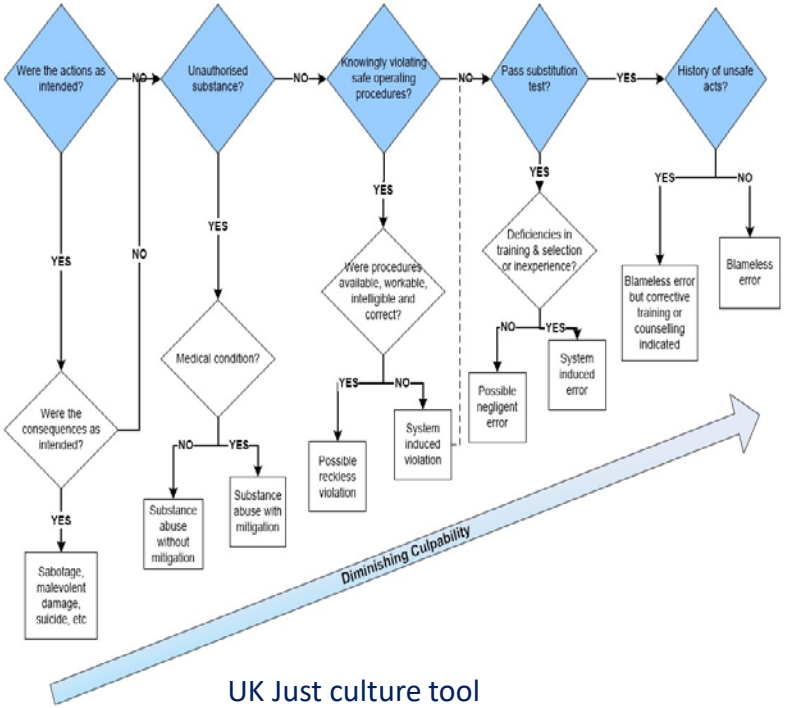
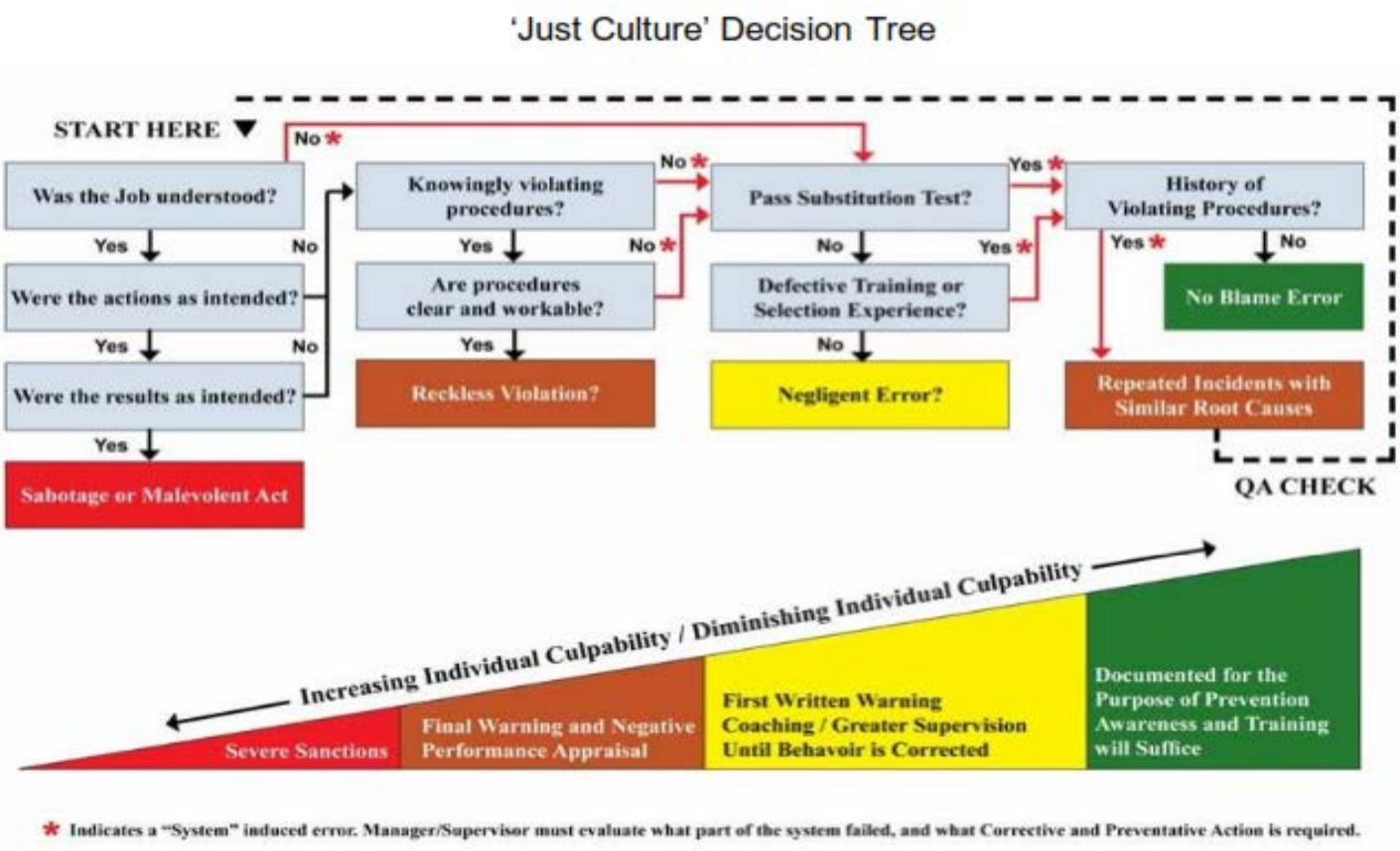


Figure 4. Hudson's refined Just Culture Model (From the Shell "Hearts and Minds" Project, 2004)



UK Just culture tool

Just Culture Tools



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?