Safety Culture Definition and Enhancement Process

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Background

The detailed work plan for Year One for the CANSO Safety Culture Workgroup (CSCWG) identified a number of activities. Two key deliverables for the year are:

1. CANSO Safety Culture Definition
2. Safety Culture Enhancement Process Model

This document was prepared by the CANSO Safety Culture Workgroup. It presents a proposal for the above deliverables for review, comment and acceptance by the CANSO Safety Standing Committee (SSC).

2
Safety Culture Definition and Elements

2.1_Proposed Safety Culture Definition

A review of a number of definitions of safety culture was conducted by the CSCWG. This review included identifying the strengths and weaknesses of each definition.

The review identified a number of elements necessary for a good safety culture definition. First and foremost the definition should recognise that a safety culture reflects individual, group and organisational attitudes, norms and behaviours. Safety culture is not just a reflection of the individuals that make up an organisation; an organisation's safety culture is more than the sum of its parts.

Secondly, a safety culture definition must recognise that safety culture is reflected in the value of, priority of and commitment to safety. An organisation with a strong safety culture values the importance of safety; it recognises that safety is a business imperative. Safety is also afforded the highest priority over commercial, operating, environmental and social pressures. And finally, there is a commitment to safety; safety issues receive the attention warranted by their significance.

A safety culture definition should also address the fact that a safety culture is demonstrated through attitudes, accepted norms and behaviours. It is about how things work and "the way things are done around here."

Finally, the safety culture definition should be related directly to the safe provision of air navigation. On the other hand, it should not include worker safety which comes under the purview of occupational health and safety, which is not in the scope of the CSCWG. However, it can be assumed, that a good safety culture focused on service provision also has a positive effect on occupational health and safety.

Based on the review, further discussion and the elements presented above, a safety culture definition for use by CANSO was developed. The proposed definition is:

"Safety culture refers to the enduring value, priority and commitment placed on safety by every individual and every group at every level of the organisation. Safety culture reflects the individual, group and organisational attitudes, norms and behaviours related to the safe provision of air navigation services."

2.2_Safety Culture versus Safety Climate

One of the issues highlighted in the literature is the lack of universal consensus regarding the terms safety culture and safety climate. Much debate still continues over the definition and application of the terms and they are often used interchangeably. For the purpose of CANSO and its related safety culture work, there will be a distinction between the two terms.

Safety Culture has been defined above and is seen as representing the more enduring, underlying culture surrounding safety in an organisation whereas safety climate represents what people feel and their perceptions about safety at a given point in time. There safety climate measurement provides a snap-shot of

the state of an organisation's safety. Typically the safety climate is measured using quantitative questionnaires while assessing safety culture requires more qualitative methods.

As presented by Cox and Cox (1996), safety culture can be likened to personality, whereas climate is likened to mood. Both can change within an organisation. However, like one's personality, safety culture takes time to grow and change; you can not "implement" a safety culture but it can be re-directed through concerted effort and action by an organisation. Safety climate, as with one's mood, can change more quickly and dramatically given the circumstances and current conditions being faced by an organisation and the resulting actions taken. You try to shape the culture over time by changing the climate.

2.3_Proposed Safety Culture Elements

As well as a definition, the CSCWG is proposing that safety culture may be further defined by eight key elements: Informed Culture, Reporting Culture, Just Culture, Learning Culture, Flexible Culture, Risk Perception, Attitudes to Safety and Safety-Related Behaviour. These elements were chosen as they reflect work by James Reason and add three elements that were identified previously by the CANSO safety culture working group (see Figure 1). Table 1 (see page 5) presents the definition and an explanation of each element. It is important to note that there are interrelationships between the elements. For example, an informed culture must relay on a good reporting culture, which it turn depends upon a just culture. Not only must the interrelationship between the elements be considered but the role of management in establishing the policies, procedures and tools to foster those elements and committing to their success. With these, an organisation can achieve a strong, positive safety culture.

Figure 1 Elements of a Safety Culture

A Safety Culture

- Learning Culture
- Informed Culture
- Just Culture
- Flexible Culture
- Reporting Culture

Element	Description	Explanation
Just Culture	An atmosphere of trust in which people are encouraged for providing essential safety-related information, but in which they are also clear about where the line must be drawn between acceptable and unacceptable behaviour.	An informed culture relies on a reporting culture which in turn relies on a Just Culture. All employees must clearly understand and recognise that it is unacceptable to punish all errors and unsafe acts regardless of their origins and circumstances while it is equally unacceptable to give blanket immunity from sanctions to all actions that could, or did, contribute to organisational accidents. A prerequisite for engineering a just culture is an agreed set of principles for drawing the line between acceptable and unacceptable actions.
Reporting Culture	Managers and operational personnel freely share critical safety information without the threat of punitive action.	The issue is not whether the organisation has a reporting system; it is whether, as a matter of practice, errors, near misses, hazards and risks are reported. A reporting culture depends, in turn, on how the organisation handles blame and punishment. If blame is the routine response to error, then reports will not be forthcoming. If, on the other hand, blame is reserved for truly egregious behaviour, involving recklessness or malice, reporting in general will not be discouraged. Rather than a blanket no-blame approach, what is required, Reason argues, is a just culture.
Informed Culture	Those who manage and operate the system have current knowledge about the human, technical, organisational and environmental factors that determine the safety of the system as a whole.	Management fosters a culture where people understand the hazards and risks inherent in their areas of operation. Personnel are provided with the necessary knowledge, skills and job experience to work safely, and they are encouraged to identify the threats to safety and to seek the changes necessary to overcome them. An informed culture relies on having a strong reporting culture.
Learning Culture	An organisation must possess the willingness and the competence to draw the right conclusions from its safety information system and the will to implement major reforms.	Reports are only effective if an organisation learns from them. Learning will occur from both reactive and proactive safety assessments and is promoted by an inherent organisational willingness to adapt and improve.
Flexible Culture	A culture in which an organisation is able to reconfigure themselves in the face of high tempo operations or certain kinds of danger – often shifting from the conventional hierarchical mode to a flatter mode.	A culture of safety is flexible, in the sense that decision-making processes vary, depending on the urgency of the decision and the expertise of the people involved.
Risk Perception	Individuals at all organisational levels need to have the same perceptions and judgments of the seriousness of risks, as these perceptions affect risk behaviour and appropriate decisions with regard to safety issues.	It has been found that misperceptions of the seriousness of risks occur frequently at all levels in an organisation (HSC, 1993). The perception of risk or people's judgments of riskiness is influenced by different attributes of hazards, e.g. controllable-uncontrollable. Misjudgements of risks may cause risk behaviour and inappropriate decisions with regard to safety measures and ordinary occupational accidents as well as large-scale accidents (Rundmo, T., 1997. Associations between risk perception and safety. Safety Science 24 (3), 197-209).
Attitudes to Safety	Attitudes (especially management's) in relation to safety, risk and production.	Research has shown that attitudes to safety can be associated with risk perception and safety-related behaviours.
Safety-related behaviour	Safety-related behaviour has to do with directly complying with procedures, rules and regulations, but also to aspects such as coaching, recognising, communicating, demonstrating, and actively caring.	Having accurate risk perceptions does not necessarily result in correct risk and safety related behaviours. Ignorance or deliberate violations to safety rules and procedures are often due to employee attitudes towards risk and safety (HSC, 1993). Hale (2003) advances the shared purpose in safety performance, i.e. the involvement felt by all parties in the organisation, especially the workforce, in the process of defining, prioritising and controlling risk.

3
Systematic Safety Culture Enhancement Process

Once it has been decided to enhance an organisation's safety culture, a systematic, closed-loop process for doing so must be selected. A typical enhancement process is presented in Figure 2. First and foremost, what is meant by safety culture in your organisation must be understood. How will safety culture be defined? What will be the sub-components? What will be the characteristics? Before something can be measured, you must first define and describe what it is that you want to measure.

The next step involves identifying the drivers of safety culture. If you know who or what drives culture then you are in a better position to know who or what you can elicit to help change or maintain it.

The third step involves measuring the safety culture. Tools and process must be selected that best meet the organisation's requirements.

What was going to be measured was defined in the first step; next, how, who, and when must be determined.

Once the measurement activities have been completed, the results must be evaluated. Interpreting the results can be challenging and the results need to have credibility both internally and externally.

After the evaluation has been completed and interpreted, an action plan needs to be developed to address any identified weaknesses. The enhancement process then repeats itself in due time, in order to check the new level of safety culture reached and to confirm if the actions taken have been effective providing measures over time. It is important to note that safety culture measures are but one metric that can be used to evaluate the "safety state" of an organisation and in order to obtain a full picture other safety performance measures should be established.

Figure 2 Systematic Safety Culture Enhancement Process

3.1_Define the Safety Culture

In order to determine what you are going to assess and to select the appropriate measurement tools, it is first necessary to determine what approach you will use to model your safety culture. A useful framework based on the work by M.D. Cooper is to distinguish between three interrelated aspects of safety culture (see Figure 3).

The psychological aspects of safety culture refers to 'how people feel' about safety and safety management systems. This encompasses the individual and group values, attitudes and perceptions regarding safety, which is often referred to as the safety climate of the organisation.
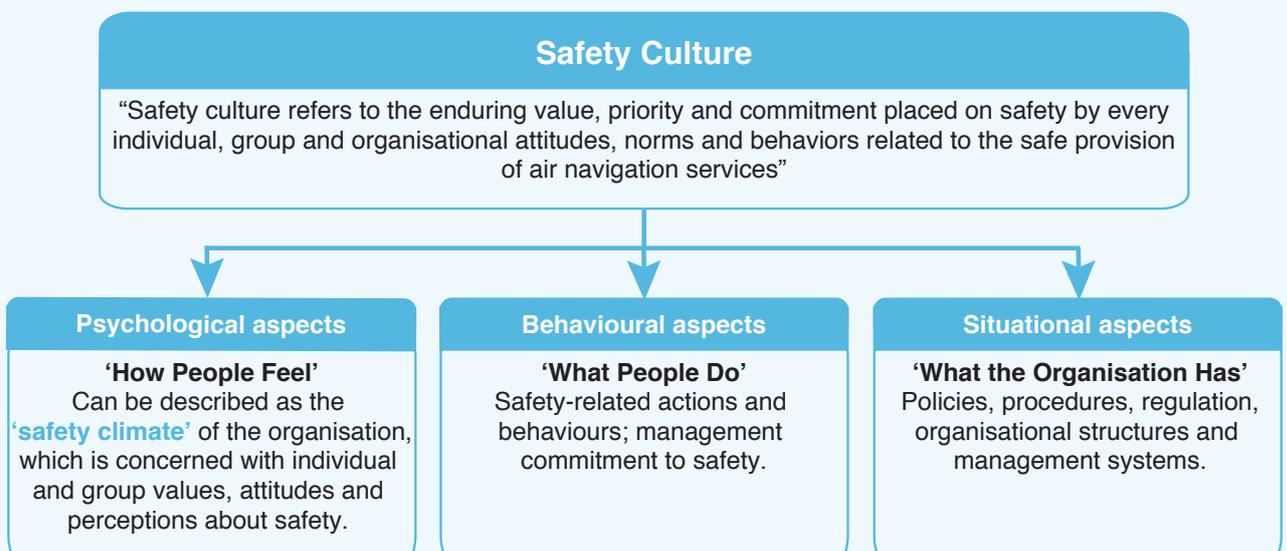
Behavioural aspects are concerned with 'what people do' within the organisation, which includes the safety-related activities, actions and behaviours exhibited by employees. A critical aspect here is management's commitment to safety – Is there an understanding and acceptance of the current safety state? Is safety afforded the right priority? Are the appropriate resources assigned to safety?

The situational aspects of safety culture describe 'what the organisation has'. This is reflected in the organisation's policies, operating procedures, management systems, control systems, communication flows and workflow systems. These aspects can also be described as "organisational factors".

The connecting arrows between the boxes reflect the view that the three aspects of safety culture are interrelated and are therefore not mutually exclusive. It is important to note that when looking at the different aspects one must not only look at the "what or how" but also the "why". Without understanding why people

Figure 3 Safety Culture Framework

Safety Culture

"Safety culture refers to the enduring value, priority and commitment placed on safety by every individual, group and organisational attitudes, norms and behaviors related to the safe provision of air navigation services"

Psychological aspects	Behavioural aspects	Situational aspects
'How People Feel' Can be described as the **'safety climate'** of the organisation, which is concerned with individual and group values, attitudes and perceptions about safety.	**'What People Do'** Safety-related actions and behaviours; management commitment to safety.	**'What the Organisation Has'** Policies, procedures, regulation, organisational structures and management systems.

feel they way they do or why they do what they do or why the organisation has what it does, changes implemented to improve culture may not address the underlying issues and therefore will likely be inappropriate and/or ineffective.

A model such as the illustrated in Figure 3 will prove useful when the time comes to select the safety culture assessment tool you will use.
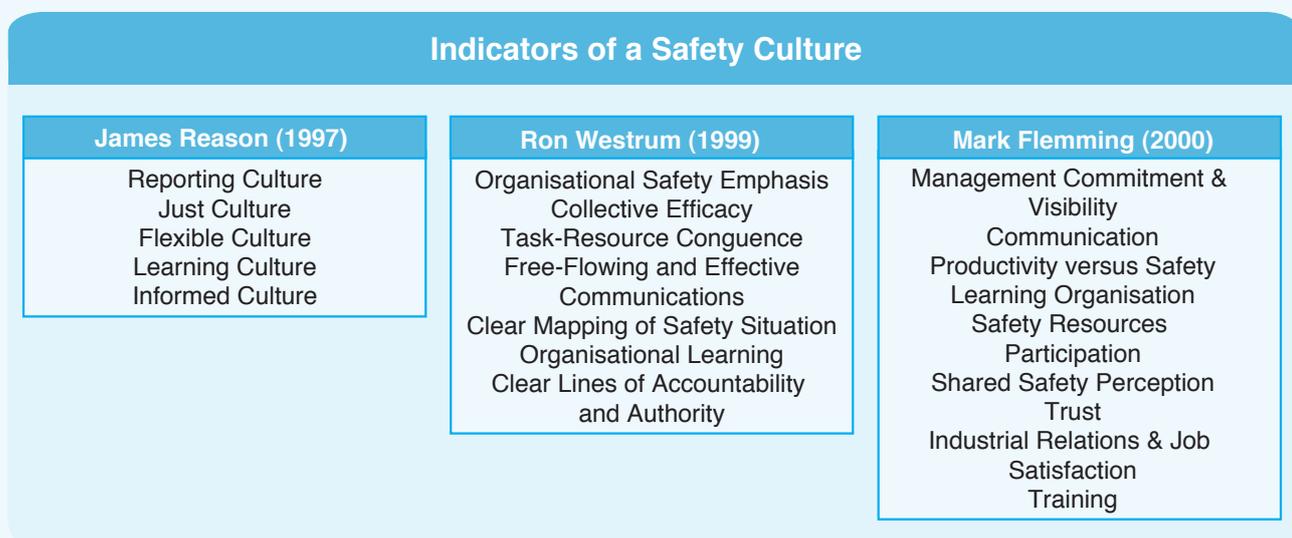
One can find in literature many suggestions as to how best to define safety culture along with the key characteristics or indicators as illustrated in Figure 4. Reason breaks safety culture down into five elements – Reporting, Just, Flexible, Learning and Informed. Ron Westrum and Mark Flemming have identified lower level indicators which can be, in some instances, mapped directly into Reason's elements. It is necessary to select and define the indicators that will be used to measure safety culture before selecting the methods and tools that will be employed.

3.2_Identify Drivers of a Safety Culture

Cultural drivers focus on two main areas – organisational and those which relate to 'key individuals'. Organisational drivers may be characterised by management systems and procedures in a variety of areas of organisational activity. These drivers include both internal and external influences. Examples include: corporate business plan, corporate safety plan, organisational systems, procedures and standards. External examples include: regulatory and legal requirements as well as industry standards.

Key groups and individuals within an organisation can influence and drive culture both directly and indirectly through their actions, words and commitment. There can be a strong relationship and influence between group behaviours and individual drivers. Groups within an organisation can be professional groups,

Figure 4 Indicators of a Safety Culture

Indicators of a Safety Culture

James Reason (1997)	Ron Westrum (1999)	Mark Flemming (2000)
Reporting Culture Just Culture Flexible Culture Learning Culture Informed Culture	Organisational Safety Emphasis Collective Efficacy Task-Resource Conguence Free-Flowing and Effective Communications Clear Mapping of Safety Situation Organisational Learning Clear Lines of Accountability and Authority	Management Commitment & Visibility Communication Productivity versus Safety Learning Organisation Safety Resources Participation Shared Safety Perception Trust Industrial Relations & Job Satisfaction Training

labour groups. Just some of the many possible individual drivers include the CEO, Senior management, safety personnel, "champions" and of course the employees themselves.

Knowing the key drivers will be important when it comes to evaluating any measurement results and planning safety culture enhancement strategies. An organisation can use these drivers to develop and implement strategies for improving its safety culture.

3.3_Measuring the Safety Culture

There are many tools that have been developed to measure the various aspects of safety culture. Some focus only on operational safety (keeping the public safe from accidents and incidents), others looks primarily at Occupational Health and Safety (keeping workers safe), while others look at both. This is why it is so important for an organisation to determine how it wants to

define safety culture and its key indicators.

These tools and frameworks allow organisations to determine the extent to which the indicators of a strong safety culture exist in an organisation and/or have been instilled in the behaviours of managers and employees.

The selection of the tool or tools that will be used depends upon a number of factors, including what will be measured, resources and schedule. Going back to our model of a safety culture (See Figure 5), you can see that different tools are used depending upon which aspects of a safety culture you want to assess. For example, questionnaires can be used to assess the psychological or behavioural aspects. It is important to realise, when using them to assess what people do, they will collect data about what people believe or perceive that they do and not what they actually do. On the other hand, audits and observations are tools that when applied properly will more

Figure 5 Possible Measurement Tools

Safety Culture		
Psychological aspects	**Behavioural aspects**	**Situational aspects**
'How People Feel'	'What People Do'	'What the Organisation Has'
Methods	**Methods**	**Methods**
Questionnaires Interviews	Observations Audits Questionnaires	Observations Audits

accurately reflect what is happening in the workplace as well as what the organisation has. When determining which tools to use, there are a number of factors that must be considered.

First and foremost, you must determine what it is that you are planning on measuring. It is important for those planning to measure safety culture to take into consideration the level of trust of employees towards those managing the assessment. For example if interviews or focus groups are held and there is a low level of trust, then the results may be biased. Or for a survey, if employees do not believe that confidentiality will be maintained, then the response rate may be low.

With regards to the utility of results you need to consider the amount of data that will be produced, how difficult it will be to analyse the data and, in turn, to interpret the results. Will the tool allow comparability between assessments as well as across groups? Will a link be seen between the data collection efforts and the identified actions? For example, Interviews can limit comparability particularly between assessments. Surveys can offer comparability between assessments as well as groups.

Cost is important and is affected by a number of factors. Is there an inexpensive tool available that you can purchase, can one be easily modified or do you have to undertake expensive development? How much time will be spent in applying the tool and analysing the results?

What are the logistical costs – communications, survey administration and travel are just some that need to be considered.

Lastly but just as importantly you need to consider what is the timeframe for completion of the activity and how quickly does the assessment need to be completed?

3.4_Evaluating the Measures

Interpreting the results produced by the various safety culture measurement tools can be daunting. Each tool can have its own unique challenges.

For surveys, did the respondents understand the question? Why did they answer the way they did? For interviews, were the participants open and honest? If they do not trust the process or those conducting the interviews, the data collected may be incomplete and inaccurate. For audits, are you actually capturing the day-to-day activities or are those being audited on their best behaviour? Or perhaps they spent the week prior to the audit, catching up on things.

By using different measurement tools, you can address weaknesses in one by the strengths in another. For example, you can follow-up a safety culture survey with focus groups in order to explore respondents' understanding of key questions and to obtain a better and deeper understanding of the findings.

There are many different ways to measure, and in turn present, the results of a safety culture assessment. It is important to understand what it is you are measuring and what are the best means for presenting the results. Examples include frequency charts, radar plots and comparison's against normed databases.

3.5_Improving the Safety Culture

The final step of the safety culture enhancement process is "closing the safety loop". It is important that assessments of safety culture be followed by change where weaknesses have been identified. Employees will disengage from the enhancement process if they see no real benefits from participating.

By using the appropriate tools and accurately evaluating the results, you will be able

to develop enhancement strategies and formulate action plans. Enhancement strategies will focus on weaknesses identified by your safety indicators. Do you have weaknesses in the area of trust, communications, learning or perhaps perceptions on consistency between words and actions?

Action plans must be realistic and employees must be able to see the links between the action plans and the identified weaknesses in safety culture. Don't forget to consider your organisation's vision or mission. Make sure that the actions tie into the business plan if you hope to have senior management support and the necessary resources to undertake the planned actions. Here is where you look back to those safety culture drivers. Look to see how you can best use them to drive your action plans.

Finally remember that timely feed-back and follow-up is critical - do this as soon as possible after completion of the assessment so that staff sees that momentum is being maintained. If your are providing feedback following the introduction of enhancement actions or other changes, make clear how the changes relate to the findings of the safety culture assessment, what the changes are and what employees can expect to see. Do this at the beginning of the feedback process.

4
Conclusion

The achievement of an effective safety culture is recognised to be a vital element of achieving and maintaining satisfactory levels of safety performance. A Systematic Safety Culture Enhancement Process is a managerial tool allowing organisations to identify areas where safety culture may be enhanced. The process of enhancement begins with a model of an effective safety culture – in other words a safety culture definition and its elements as presented previously in Section 2.

The enhancement process moves onto measuring and evaluating the safety culture. There are many available tools for measuring and evaluating safety culture. The selection of the appropriate measurement tools begins with the model and takes many factors into effect including but not limited to cost, time, confidentiality requirements, ease of data analysis and usefulness of output for planning of enhancement actions. The CSCWG will begin to look at developing such tools in future years.

It is important to recognise that the Systematic Safety Culture Enhancement Process is a closed loop system. Following implementation of enhancement actions, an organisation must begin again by measuring the safety culture to determine the impact of those actions. Did they have the intended effect? Are there areas that require further enhancement or fine tuning? As Mao Tse Tung once said, "Peoples attitudes and opinions have been formed over the decades of life and cannot be changed by having a few meetings or giving a few lectures".

And finally, a last thought from James Reason:

If you are convinced that your organisation has a good safety culture, you are almost certainly mistaken ... a safety culture is something that is striven for but rarely attained. The virtue – and the reward – lies in the struggle rather than the outcome.

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