



ARE YOUR LEADERS SUFFICIENTLY RISK INTELLIGENT TO SUPPORT SAFETY?

Stephen Watson

CEng, CSci, FIChemE

Arthur D. Little

SUMMARY

The importance of effective safety management systems supported by an effective safety culture is well understood by railway organisations internationally. However there are few (if any) quantified methods to measure the critical characteristics of leaders to support safety.

'Risk intelligence' is a concept developed from the emerging body of research on mindfulness and High Reliability Organisations – the 'risk intelligence of leaders' tool measures the risk intelligence for individual leaders, and the risk intelligence for a leadership team. The tool (and the questions it asks of leaders) has been shown to provide guidance to leaders on how they can improve safety by challenging their perception and attitudes which has led to changed behaviours. The tool has had most impact on leaders in non-operational/engineering functions where historically they have not fully understood their personal impact on the safety culture of their organisation.

Using the tool in an operating company identified there was usually strong agreement on areas of safety concern but too often individually held concerns were not pulled together to drive future safety improvement plans. The tool was effective in challenging leaders at a personal level, and identifying organisational gaps that weakened the implementation of safety management systems and safety culture.

INTRODUCTION

The importance of both effective design and implementation of safety management systems supported by an effective safety culture is well understood by railway organisations internationally. During the 2012 International Railway Safety Conference in London there was substantial discussion on the important role of leaders in enabling, supporting and actively leading safety. However there are few (if any) quantified methods to measure the critical characteristics of leaders to support safety.

'Risk Intelligence' is a measure of the 'mindfulness' required for leaders to successfully deliver safety strategy. It is recognised that leaders are critical to this delivery as they set the direction, tone and style for the culture of safety across the organisation. It has been said that "leaders create cultures" while "managers work in cultures".

International research on both organisations involved in major accidents and on High Reliability Organisations (HROs) has highlighted the importance of 'mindful' leadership, which involves being conscious of the risk issues within the organisation. Therefore leaders can, and must, influence the culture of safety through their attitudes and behaviours. Collectively their actions and focus cast a 'leadership shadow', and the safety of an organisation can be changed by enhancing and focussing this 'leadership shadow'.

The 'leadership shadow' comes from four sets of behaviour (*Figure*):

- What leaders say
 - How they frame issues
 - The context setting
 - What they repeat

- What they emphasis
- How leaders act
 - What their behaviours are
 - What symbols they use/display
 - Who their (visible) relationships are with
- What leaders measure
 - How they define and implement accountability
 - What they reward
 - What they recognise
- What leaders prioritise
 - What their standing meetings are
 - Who they interact with
 - What their regular disciplines and routines are

Figure 1: The leadership shadow



There is overlap between these four sets of behaviours, so that they can either reinforce or undermine each other to create a 'leadership shadow' that influences the safety in the organisation.

What leaders say can set the messages that are repeated and emphasised in an organisation. However, there is also an element of leading by example, as what they say can be reinforced or contradicted by how they act. These actions can communicate the importance of safety through an organisation, as can what the leaders prioritise through means such as disciplines, routines, interactions and meetings. This is reinforced by what is measured in an organisation in terms of what merits rewards and recognition, as well as accountability. For example the Key Performance Indicators are focused on health and safety this will motivate a greater focus on health and safety throughout the company and show that health and safety is a higher priority.

HIGH RELIABILITY ORGANISATIONS

High Reliability Organisations (HROs) are defined by Professor Andrew Hopkins of the Australian National University as "an organisation where a single error, if not contained, could cause not one fatality but hundreds" [1]. Examples cited in literature include air traffic control organisations (such as Airservices Australia) and nuclear powered United States Navy aircraft carriers. They provide a good opportunity to learn how organisations (and their cultures) have developed and therefore can help organisations in other sectors to improve and develop their own health and safety culture and management. This is particularly

valuable for organisations that are already world class and who can find it difficult to find others in their sector that they can learn from.

High Reliability Organisation is a concept which organisations can aim to achieve, but it can be difficult to define in terms of outcomes, such as an accident or incident rate. Therefore it is more useful to think of an HRO as a 'mindful' organisation [2]. Research into HROs has identified five common key characteristics independent of industry sector, organisation size or operational geography:

1. Preoccupation with failures rather than successes
 - A lack of focus on success prevents the organisation becoming complacent.
2. Reluctance to simplify interpretations
 - Although every organisation must simplify data to some extent in order to make decisions, a reluctance to discard information allows the HRO to create a more complete and thorough picture of operations.
3. Sensitivity to operations
 - The frontline operators not only maintain a high level of awareness of current operations but will understand the implications for the future.
4. Commitment to resilience
 - Rather than being disabled by errors or crises the organisation reacts to deal with them.
5. Deference to expertise
 - When operations are undertaken at high speed decision making falls to the person with the most expertise and knowledge about the events in question, regardless of their rank in the organisational hierarchy, and the hierarchy for decision making only applies when the speed of decision making returns to normal.
 - This is the characteristic that has been most debated by critics of the concept, as the advantages and disadvantages of different decision-making structures are unclear and both bottom-up and top-down decision-making structures have been identified as a cause of incidents

Research has identified a number of methods which organisations can use to implement these key characteristics of HROs. One is having well-developed systems for reporting near misses, process upsets and small, localised failures which may be indicators of encroaching larger problems. Prompt action can then be taken based on these warning signals thus averting future problems. Care must be taken to distinguish significant weak signals from background noise as weak signals are often ambiguous so must be thoroughly investigated to determine whether they have an innocent explanation or whether they are a warning of danger. However, a distinguishing characteristic of HROs is that they meet a weak signal with a strong response at the early stages. To help with this, HROs characteristically employ people to exclusively explore the complexity of operations, double check claims of competency and success, and collect and analyse information that will lead to the identification of weak warning signals. They recognise that this organisational redundancy is necessary for the thorough collection and interpretation of information rather than a lack of efficiency.

Education is a key factor for HROs. Educating the workforce to notice more of the small irregularities in day-to-day operations can help to distinguish the weak signals. Educating frontline operators regarding operations as a whole is also important. This includes how operations can fail and the strategies for recovery thus avoiding 'silo' thinking in the organisation, which is where employees operate solely within their small sphere of influence with little awareness of the impact that their activity has on other areas. Employees are also given guidance on the likely precursors to accidents in their area which they should report.

To gain the full benefits of this education, frontline operators must be able to report to their managers without fear of speaking up to ensure that sensitivity to operations is inherent throughout the organisation and a more coherent overall picture can be developed. This is coupled with a capacity for both individuals and the organisation as a whole to learn from reports and errors using a fast negative feedback system, and 'put-back' systems to catch and correct errors without disabling the organisation. This means that HROs are more attentive to the front line of operations than other organisations. Effectiveness at implementing this characteristic can be gauged using 'willingness to report' surveys.

The overall picture in an HRO tends to be more situational, and less strategic than other organisations.

WHAT IS RISK INTELLIGENCE?

Risk intelligence is an element of mindfulness, which is necessary but not sufficient for being a 'mindful' leader. Through projects for clients we have identified nine key attributes of a 'risk intelligent' leader.

A 'risk intelligent' leader:

1. Understands and revisits the risk profile as it evolves and changes
 - They always know the risk scores, ask for leading indicators, and ask both themselves and others challenging questions about how risk is being tackled
2. Remains open-minded and sceptical about good news
 - They do not just accept good news, but ask "what don't I know?" They are aware of their own habitual responses to reports and question those conveying information. They challenge good reported performance and encourage people to convey bad news as well as good.
3. Is concerned by the rare, high consequence events
 - They are aware of the rare, high consequence events and of how these might change. They are mindful about these potential events and understand the importance of addressing them.
4. Sets the agenda for risk for his/her organisation
 - They ensure a balanced priority of attention across the dominant activities, including remote corners of the business and people in offices. They provide direction for others.
5. Listens, watches and learns to ensure that all concerns are in the open
 - They listen to all concerns and encourage open feedback from all parts of the organisation. They probe to understand other people are thinking and challenge silence. They ask 'what are you worried about?' and listen to the responses without blame.
6. Ensures appropriate action is taken to eliminate risk
 - They ensure swift and appropriate action is taken to eliminate risk across the whole village (which includes the organisation as well as their partners, subcontractors, and suppliers). They ensure that weak signals are addressed by strong actions and that concerns are followed through, as well as encouraging others do the same.
7. Connects with and influences others to encourage 'risk intelligence' in them
 - They are role models of 'risk intelligence' and demand the highest standards of safety awareness in people at all levels. They praise good practice, and can be either direct and forceful or tactful and diplomatic as the situation requires.
8. Has the right people around them who are willing and able to raise concerns
 - They make sure that they have the right people around them acting as close advisers, who are prepared to speak openly and honestly about the risk in any part of the business.

RISK INTELLIGENCE OF LEADERS TOOL

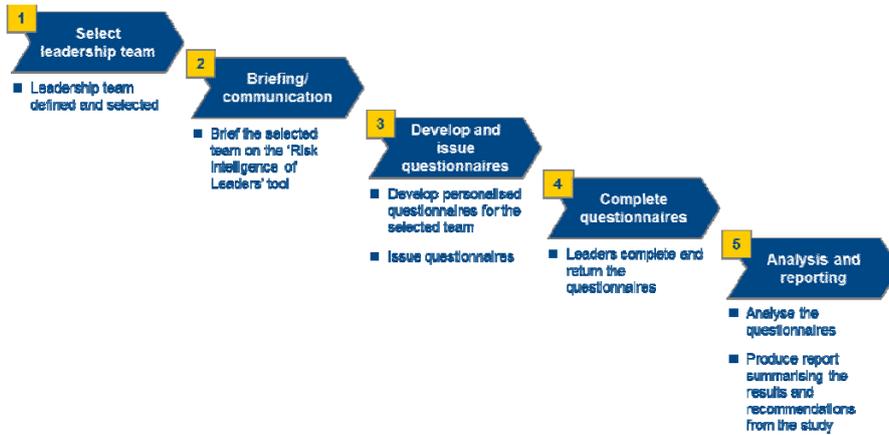
The 'Risk Intelligence of Leaders' tool tackles the challenge of measuring 'mindfulness' to examine the current levels of 'risk intelligence' in a leadership team through their attitudes and behaviours. It also provides guidance on how leaders can improve health and safety throughout an organisation by changing their behaviour, based on the concept of the 'leadership shadow', and a focus for future intervention.

The 'Risk Intelligence of Leaders' tool engages the leadership team through a set of searching questions based around the key attributes of a 'risk intelligent' leader. The process is designed to be minimally disruptive, while encouraging thoughtful answers and honest evaluation from the leadership team. The data collected is analysed to provide an overview of current leadership awareness, focus areas of concern and targeted actions to improve safety leadership.

The 'Risk Intelligence of Leaders' tool is both an assessment of how consistently leaders in an organisation exhibit the attributes of 'risk intelligence', and an intervention through identifying development needs. The tool achieves these objectives by looking at what 'risk intelligence' is and encouraging the individuals involved to articulate what it specifically means for them in their role, structured around the nine attributes. The tool engages with the leadership team of an organisation through a questionnaire based around these nine attributes, and can be tailored to fit within each organisation by reflecting the language of existing health and safety programmes to give a sense of cohesion. Once completed, the questionnaires are collated, analysed and compared, both within the leadership team and with other leadership teams if requested. This analysis gives a summary of the current risk intelligence level over the nine attributes and is the basis for driving improvement by showing the areas of strength and weakness and highlighting the main safety concerns and goals. Targeted areas for development are identified, both for the leaders' behaviour and for wider areas of health and safety concern within the organisation.

In order to cause minimal disruption to the leadership team, the tool is designed to be distributed and analysed remotely and can be done at any time convenient to the individual over a period of several weeks: the questionnaire is Excel based so can be distributed and collected by email, and it is simple to fill in. The process for deploying the tool is shown in Figure II.

Figure II: The 'Risk Intelligence of Leaders' tool is deployed using a five step process

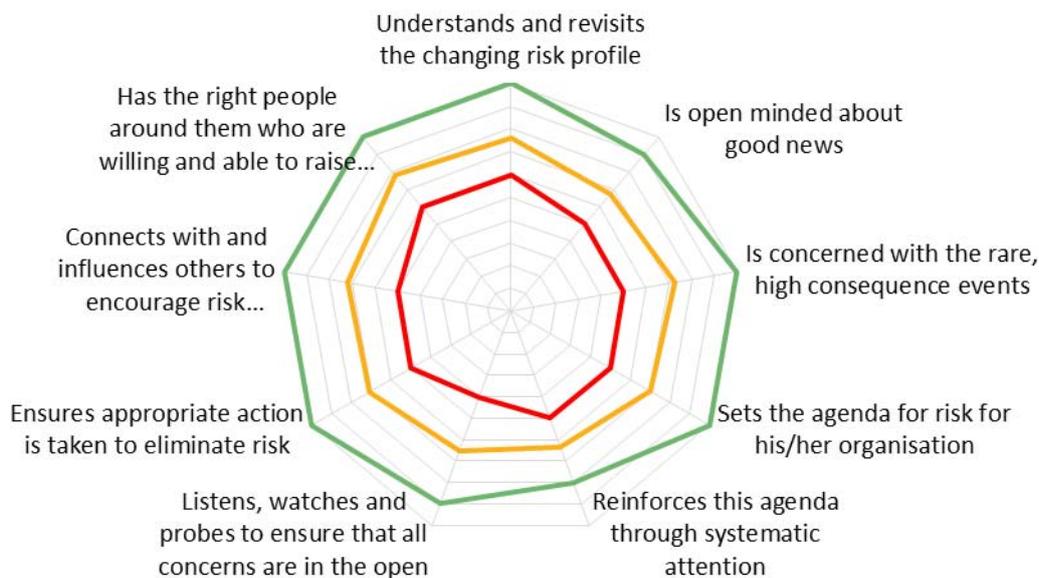


TOOL OUTOUTS

The outputs of the 'Risk Intelligence of Leaders' tool are presented in a report summarising the results and recommendations from the study. The data is presented visually where possible to increase clarity and ease of communication. The scores against the nine attributes are displayed in radar chart (*Figure*) showing the highest scores achieved in the leadership group for each of the nine attributes (green), the average score for that attribute (yellow) and the minimum score (red).

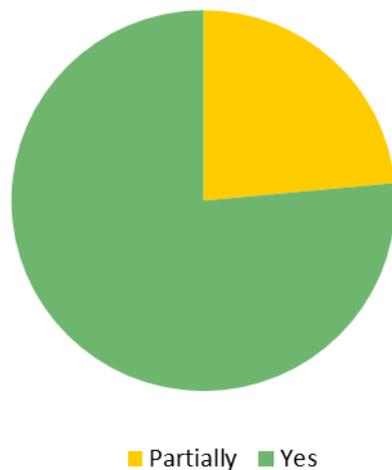
The attributes on the left side of the chart are related to influencing others and the attributes on the right side are around the role of self, therefore the example in Figure III would show that this leadership team are stronger in the attributes related to influencing others.

Figure III: Example radar chart showing the maximum, average and minimum scores achieved in a leadership group across the nine attributes



The tool also examines the commitment of the leaders to safety through analysis of the content and quality of their answers and the response rate to the tool from the selected leadership group. This is presented as a summary of the key conclusions and supporting evidence. The leaders' answers to what the nine attributes mean to their role, evidence for their rating and their personal goals are used to evaluate how thoughtful and passionate they are about safety and to answer the question 'are the leaders taking safety seriously?' with 'yes', 'partially' or 'no' which is displayed on a pie chart (Figure IV). This is accompanied by conclusions and observations, including: the percentage of responses that demonstrated thought and commitment to safety; the proportion of responses that were brief, left questions blank or only filled out the scores and not the textual answers; the level of understanding of the concepts and questions; the focus of responses e.g. day-to-day risks vs. strategic safety; the rate of response in a given timeframe.

Figure IV: Example of pie chart to answer 'are leaders taking safety seriously?'



The outputs also recommend ways in which leaders can raise their risk intelligence, drawn from trends in their personal goals.

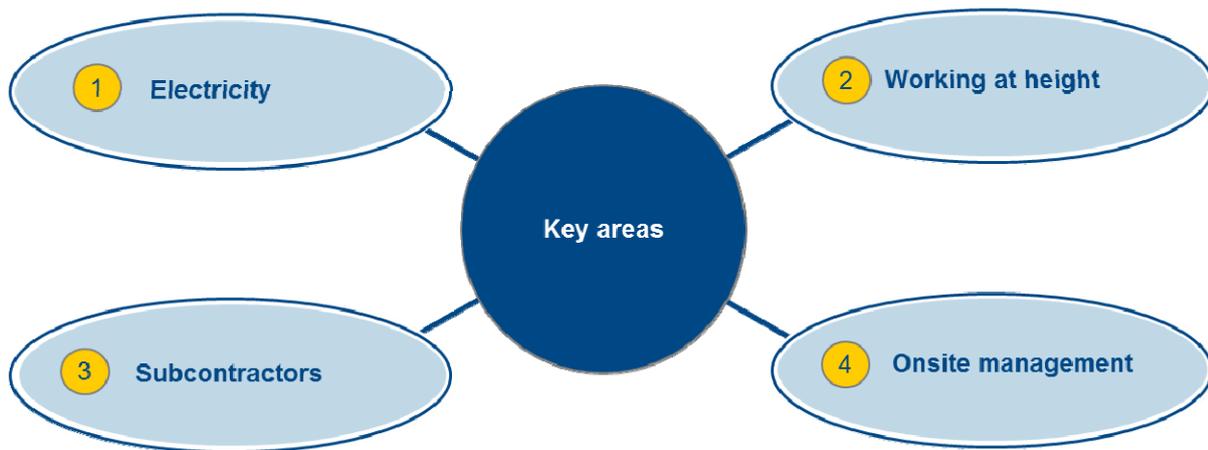
These recommendations are presented as focus areas, supported by quotes from the leaders themselves, for example:

- 'Communication and learning'
 - "I have to re-enforce and ensure commitment of my 1-2-1 process with my team"
 - "I need to be more proactive in getting to know and work with senior management"
 - "Looking closer at our lessons learned and communicating this to all"
 - "Spend more time on site with Engineers/Operatives to listen and learn more from the workforce"
 - "Ask for and ensure conditions are right for more 'bad news' to be communicated and discussed"
- Challenge and review
 - "Challenge the greens"
 - "Ask more searching questions on site and in regional offices as to what could go wrong"
- Personal involvement and commitment to safety
 - "Improve safety pre-commencement meetings by ensuring personal involvement"
 - "Free up the time to do more Safety visits/audits, contact with the operatives"
- Elimination of risks
 - "I need to focus more on the elimination of risks"

The tool outputs also identify the key areas of health and safety risk within the organisation beyond the leadership team to focus actions for health and safety improvement (Figure V). This is done through the question "What do we do (or not do) that could seriously harm or kill someone, however unlikely?"

We have found that within a leadership team there is usually strong agreement on areas of safety concern, but too often individually held concerns were not pulled together to drive future safety improvement plans. In the report, each of these areas is expanded using the leaders' own words to support each area and summarising the percentage of leaders who identified it as a concern.

Figure V: Example of key areas of health and safety risk identified within an organisation



The report recommends the next steps for the CEO to improve performance. This will include:

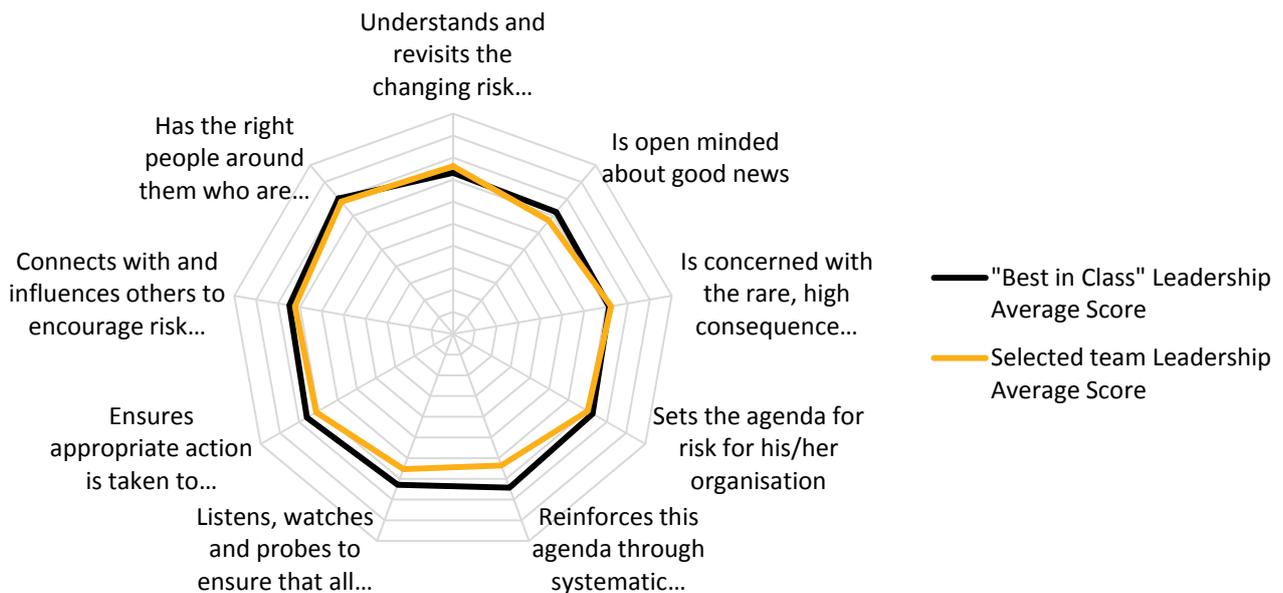
- identification of the challenges which should be addressed, which could include issues such as a low response rate and low prioritisation of safety from the leadership team;
- how the organisation should tackle the key areas of safety concern identified
- how to improve the areas of 'risk intelligence' which are weakest
- areas of focus for improving the leadership engagement with health and safety.

The report, including the recommendations and the Excel workbook of completed questionnaires are provided to the organisation to help support these next steps.

The tool has been used within different operating companies within the same group and this has allowed comparisons to be made between the 'risk intelligence' of leadership teams in both rail infrastructure construction and rail infrastructure maintenance, as well as across three different European countries. Through the comparison of leadership teams in different operating companies (using identical safety management systems) it was possible to give recommendations for intervention based on methods and techniques that had worked within the same overall group.

This comparison could also be made with other organisations in their industry to help benchmark their health and safety performance against the industry standards. Within a group of leadership teams a 'best in class' performance can be identified as the standard for other teams to aim for or a 'typical' performance can be used as a useful comparison. The average scores across the nine attributes can then be compared between the selected leadership team and the 'best in class' or 'typical' scores (Figure VI). The example in VI shows that the selected leadership team has lower average scores across seven of the nine attributes compared to the 'best in class' leadership team. However, it achieved higher average scores for 'understands and revisits the changing risk profile' and 'is open minded about good news', and was close to the 'best in class' score in a further three attributes.

Figure VI: Example of a comparison between a selected leadership team and 'best in class' scores across the nine attributes



IMPACT OF USING THE TOOL

The tool produces data and information on the critical characteristics of leaders to support safety, which can be used by CEO and leadership teams to develop their individual and collective 'risk intelligence'. But what is the real impact in an organisation?

Our experience showed that the process, as well as the results produced by the tool created an impact.

Using the tool

We found that very soon after the tool was issued to each member of the leadership team, we quite quickly received questions from leaders asking if they were really supposed to have received it, usually associated with a phrase like "as I do not go out on site very often" and "who gave you my name?" The polite answer (!) was that their CEO has indicated that they were leaders, and they expected the tool to be completed.

The next impact was for leaders to 'drop in' on the Safety & Assurance Director to get some pointers on how to complete the tool. Since the tool tests how each of the nine attributes applies to a particular job role, these questions rarely produced useful answers, but again it was getting leaders to think safety!

'Mindful organisations' then returned 100% of the questionnaires within the allocated time frame, without any need for chasing by ourselves. In one case the CEO's PA personally visited each leader to ensure a timely response! Less 'mindful organisations' often needed prompting several times by ourselves with e-mails and telephone calls to leaders to get leaders to respond – this was in itself an indication of their culture of safety and leadership commitment. Most organisations achieved response rates over 80% (having chosen to take the top three or four layers of their organisation to be 'leaders') but some struggled to achieve 60% response rates. With one organisation, the CEO personally asked each leader who failed to complete the tool why. These interventions demonstrated leadership commitment, and allowed the CEO to re-set their personal expectations of leadership behaviour towards safety.

The results

For some CEOs and their executive team, the results "told us what we already knew" prompting the Global Safety Director to ask the CEO "why they had not done something about this before?". In reality CEOs might have guessed at the results, but the tool delivered both the data and information that allowed them to act. Since the tool had involved these people it was difficult to ignore, especially when sometimes it showed the executive directors were less 'risk intelligent' than their direct reports. The safety issues that the leaders identified very quickly became the heart of the next Annual Safety Plan, with the Safety & Assurance Director marvelling at how little they needed to do to generate the plan.

And the tool got leaders thinking and openly talking with the peers and their direct reports about their 'risk intelligence' and their impact on the organisation (the 'leadership shadow').

CONCLUSION

The tool (and the questions it asks of leaders) has been shown to provide guidance to leaders on how they can improve safety by challenging their perception and attitudes which has led to changed behaviours.

This tool used the concept of a 'leadership shadow' and research into High Reliability Organisations to assess 'risk intelligence'. It has had most impact on leaders in non-operational/engineering functions where historically they have not fully understood their personal impact on the safety culture of their organisation.

The tool has been effective in challenging leaders at a personal level, and identifying organisational gaps that weakened the implementation of safety management systems and safety culture. It provides guidance to leaders for improving their engagement with health and safety, and identifies particular health and safety concerns, both for individuals and the wider organisation, for future focus.

REFERENCES

- [1] A. Hopkins Learning from High reliability Organisations
- [2] K.E. Weick and K.M. Sutcliffe Managing the unexpected – resilient performance in an age of uncertainty