SMS Roadmaps and Safety Indicators
Can we build them without Safety Culture?

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“Few” challenges and paradigms

• Where are we with the today safety challenges
  • Three ages of Industrial Safety;
• Two views of Safety Management
  • From negative to positive safety;
• Reflections on Safety Indicators
  • Is there hope?
• FABs, Multi-culturalism and CEOs.
THINGS CAN GO WRONG

BECAUSE TECHNOLOGY CAN FAILs

Hale & Hovden (1998)

Three ages of Industrial Safety

Age of Technology

1769 Industrial Revolution

1850

1893 Railroad Safety Appliance Act

1900

1931 Industrial Accident Prevention

1950

1961 Fault tree Analysis

1961 IT Revolution

1900

1950

2000
Three ages of Industrial Safety

THINGS CAN GO WRONG BECAUSE THE HUMAN FACTOR FAILS

Age of Human Factors

Age of Technology

1769 Industrial Revolution
1850
1893 Railroad Safety Appliance Act
1900
1931 Industrial Accident Prevention
1950
1961 Fault tree Analysis
2000
1979 Three Mile Island

What, Me Worry?
Three ages of Industrial Safety

THINGS CAN GO WRONG BECAUSE ORGANISATIONS FAIL

Age of Safety Management

Age of Human Factors

Age of Technology

1850 1900 1950 2000

Industrial Revolution

1893 Railroad Safety Appliance Act

1900

1931 Industrial Accident Prevention

1950 Fault tree Analysis

1961 IT Revolution

1979 Three Mile Island

2000

2003 Columbia

2009 AF447

1769 Industrial Revolution
Two views of Safety Management

- Classical safety management uses a structural (component) view. The aim is to reduce the number of things that go wrong (safe productivity).
- Efforts focus on avoiding that something happens again (“fixing weaknesses,” prevention, protection).

- The more modern approach uses a functional view. The aim is to improve the number of things that go right (productive safety).
- Efforts focus on enhancing the organisation’s ability to respond, monitor, anticipate, and learn.
The views on Safety! Is it enough to look at negative aspects?

Safety = Reduced number of adverse events.
Focus is on what goes wrong. Look for failures and malfunctions. Try to eliminate causes and improve barriers.

Safety and core business compete for resources. Learning only uses a fraction of the data available.

Safety = Ability to succeed under varying conditions.
Focus is on what goes right. Use that to understand normal performance, to do better and to be safer.

Safety and core business help each other. Learning uses most of the data available.

10^-4 := 1 failure in 10,000 events

1 - 10^-4 := 9.999 nonfailures in 10,000 events
From Negative to the Positive

Negative outcomes are caused by failures and malfunctions.

All outcomes (positive and negative) are due to performance variability.

Safety = Reduced number of adverse events.

Safety = Ability to respond when something fails.

Safety = Ability to succeed under varying conditions.

Eliminate failures and malfunctions as far as possible.

Improve ability to respond to adverse events.

Improve resilience.
Some reflections on Safety Performance Indicators

- SPIs needs a Benefit
  - Changing Behaviour -> Changing Performance
  - Risk Management Effectiveness
  - (Safety and Cost)

- SPI Reporting?
  - Observation versus Influence
  - Available versus Alive

- Purpose Driven?
  - Reassurance versus Direction
  - Oversight versus Risk Management
  - Driving the right behaviours?

- Part of a Bigger Picture?
  - Industry wide / Cross Industry
  - Nationally / Internationally

- Data Sources?
  - Convenience versus Reliability
  - Available versus Aspirational

- Measurement?
  - Measurement versus counting
  - Safety versus Risk
  - Measuring to outcomes?.
Degrees of indicators leading vs. lagging/process vs. outcome

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<tr>
<th>Safety surveys</th>
<th>STCAs</th>
<th>Losses of sep.</th>
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<td>Competency checks</td>
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<td>Communication/Lessons learned</td>
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- STCAs
- Unsafe clearances
- Losses of sep.
- RWY incursions
- Airspace Infringements
- Collisions
- Fatalities
What is the role of Safety Indicators?

The key to identifying SPIs is to home in on the areas of “vulnerability” or of our “resilience”

- Accidents/Outcome
- Precursors/Outcome/Activity
- Results/Outcome
- Activity

- What are the issues of concern?
- What are the critical and vulnerable barriers of defence?
- What does success look like?
- What do you need to do to ensure success?
Is there any good news?

• We have and we are improving Taxonomies (both negative and positive);
• We have tools and methods;
• We are studying vary type of signals (weak & strong, tangible & intangible);
• We are developing (Leading/Lagging or Process/Outcome) Indicators;
• And we work together at local, FAB and Network level;
• We have SMS Roadmaps and Performance Plans covering SPIs and KPIs for ANSPs and FABs
  • Soon NM will have its own Perf Plan;
• SPIs and KPIs is a sensitive area of interface with NSAs and Public.
Safety Culture
FABs, Multiculturalism & CEOs

FABs will bring together different ways of doing things. Different ANSPs must become one team. This requires understanding, and leadership from the top as well as understanding of the culture of Organizations.
What is safety culture?

The safety culture of an organisation is the product of individual and group values, attitudes, competencies and patterns of behaviour that determine commitment to, and the style and proficiency of, an organisation's health and safety management. (Advisory Committee for Safety on Nuclear Installations (HSC, 1993, p. 23))}

What is believed

What is said

What is done

Safety performance
Dimensions of National Cultures that affect the Culture of Organizations

- [1] Power Distance
  - More equal than others;
- [2] Individualism vs. Collectivism
  - I, We and They;
  - He, She and (S)he;
- [4] Uncertainty Avoidance
  - What is different is dangerous;
- [5] Long and Short Term Oriented
  - Yesterday, Now or Later.
Masculinity Versus Individualism

The diagram illustrates the relationship between masculinity and individualism across various countries. The x-axis represents masculinity (MAS) and the y-axis represents individualism (IDV). The countries are plotted on the graph according to their cultural dimensions. The legend explains the coding for different categories such as slanted, regular, italics, and quadrant partition lines.

Countries are categorized based on their cultural characteristics, with some countries represented by red circles and others by green circles. The graph provides a visual representation of how different cultures are positioned on the spectrum of masculinity versus individualism.
Power Distance Versus Masculinity

Legend:
- slanted: Asia and Muslim countries
- regular: Europe and Anglo countries
- italics: Latin America
- ↓↓: quadrant partition lines
The Challenge of Leadership for Multicultural FABs

Key Leadership Skills

- Using **empathy** to understand the business context and get ‘hearts and minds’;
- Avoiding quick judgements, understanding the values and **historical reasons** for them;
- **Balancing** different perspectives;
- Treating fundamental values as **non-negotiable**, but using cultural intelligence;
- Assuming an attitude of **questioning** rather than asserting;
- Don’t get stuck on positions – dig into why it is important to people and find the **shared values**.
Working Together

- We need to deploy the mechanics i.e. the FAB SMS Roadmaps that were developed in the past 2 years, but;

- We need to keep the pace to complete all the Safety Culture measurements by end of 2013;

- Will need to start looking at multi-culturalism in FABs and try first FAB Safety Culture measurements at the end of RP1 beginning of RP2.
Intercultural Cooperation is the solution for Survival – we need to work with the Software of the Mind

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