ZOOMING in on Safety Culture – From Culture to Performance Indicators

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What Are Your Assumptions Related To Safety Culture?

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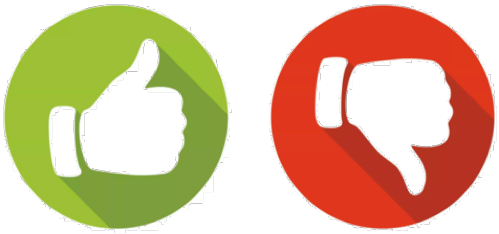
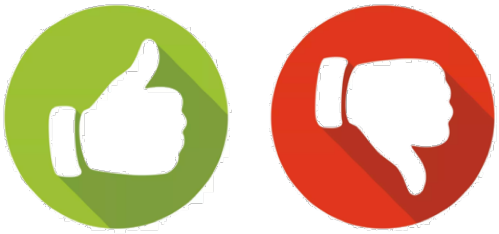
"Zero accidents/incidents indicates a safe operation"



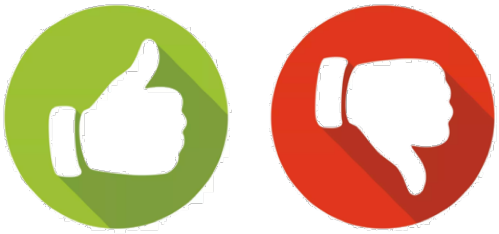
What Are Your Assumptions Related To Safety?

"Blaming is counter productive for a strong safety culture"



What Are Your Assumptions Related To Safety?

"People are afraid to speak up"



What is Safety Culture?

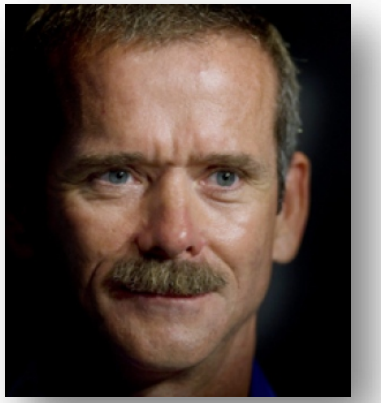
Let's Start by Defining Safety?

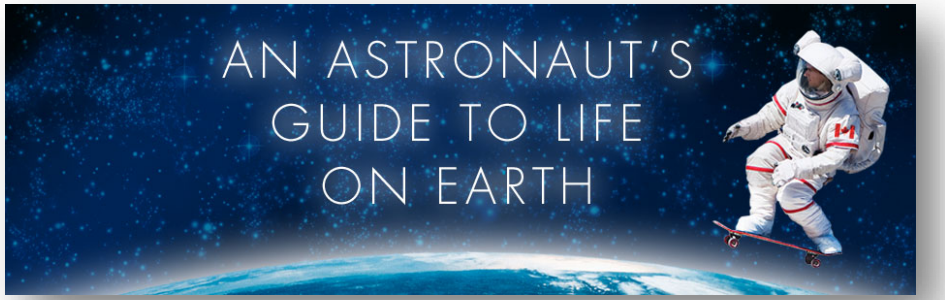
"Hope is not a method for success"

How Do You Define Safety?

"You don't walk around perpetually braced for disaster, convinced the sky is about to fall. But it sure is a good idea to have some kind of plan for dealing with unpleasant possibilities."

~ Chris Hadfield





Let's Start by Defining Safety?

The state in which the risk of harm to persons or damage to property is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and risk management.

Let's Start by Defining SMS?

ICAO

A systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures.

FAA

SMS is the formal, top-down, organization-wide approach to managing safety risk and assuring the effectiveness of safety risk controls. It includes systematic procedures, practices, and policies for the management of safety risk.

Let's Start by Defining SMS?

IS-BAO

The systematic and comprehensive process for the proactive management of safety-risks that integrates the management of operations and technical systems with financial and human resource management.

Transport Canada

A safety management system is a businesslike approach to safety… A safety management system is woven into the fabric of an organization. It becomes part of the culture, the way people do their jobs.

SMS - Systems Thinking

A system is an integrated networks of people and other resources performing activities that accomplish some mission or goal in a prescribed environment.

A system requires safety attributes such as:

- Responsibility and authority for accomplishment of required activities
- Procedures to provide clear instructions for the members of the organization to follow
- Controls which provide organizational and supervisory checks on the activities involved in processes to ensure they produce the correct outputs
- Measures of both the processes and their products
- Interrelationships between individuals and organizations within the company and contractors, vendors, customers, etc.

How Do You Define Safety Culture

Safety Culture is defined as a set of beliefs, values, customs, and behaviors that members of a group use to relate to their world and each other with regard to safety.

"It's the way we do things around here!"

*"Culture isn't just one aspect of the game; it is the **game**."*
~ Louis Gerstner, Former CEO IBM

Safety Culture

Culture will determine how the organization:

- Recognizes merit
- Promotes individual initiative
- Addresses risk-taking
- Take action for breaches of SOPs
- Fosters open communications

It will Influence employee <u>behavior</u>

Safety Culture

Do you have a safety culture in your organization?

"If you are convinced that your organization has a good safety culture, you are almost certainly mistaken - A safety culture is something that is strived for but rarely attained - The process is more important than the product."

~ Dr. James Reason

Safety Culture

The Accountable Executive must always foster a positive Safety Culture in order for the organization to thrive.

Management Commitment

Accountable Executive

- Inspires their employees to do their best
- Empowers employees to openly question abnormalities or nonconformities.
- Demonstrates their commitment to a successful SMS through established policy, effective communication, clear vision and modeled behavior.
- *"Good enough is simply NOT good enough"*

The Employee Accountability

- Act as stakeholder and steward
- Take the initiative
- Have an obligation and duty for safety performance
- Know what the risks are
- Be responsive when actions drive negative outcomes
- It's not just about me!
- *"…doing the right thing even when no one is watching."*

Organizational Safety Culture

- Safety Culture is shaped by
  - Management's actions and priorities
  - Policies and procedures
  - Supervisory practices
  - Safety planning and goals
  - Actions in response to unsafe behaviors
  - Employee training and motivation
  - Employee involvement or "buy-in"

What Influences our Behaviors?

- Mission
- Organizational norms
- Experience
- Past history
- Attitudes
- Willingness
- Age/Generation
- People we spend time with (modeling)
- Equipment
- Environment

What Influences our Behaviors?

When people view the benefit to be high, they judge the level of risk to be more acceptable.

Safety Culture "Iceberg"

Visible

The way we say we get things done

Formal "Actual" Behaviors

Informal Behaviors

Core Beliefs/Values

The way we really get things done

Invisible

Safety Culture "Iceberg" Case Study

Gulfstream G-IV corporate jet crashed during a rejected takeoff at Bedford-Hanscom Field, MA (BED). 31 May 2014.

- The airplane rolled through the paved overrun area and across a grassy area, collided with approach lights and a localizer antenna, passed through the airport's perimeter fence, and came to a stop in a ravine.
- The two pilots, a flight attendant, and four passengers died. The airplane was destroyed by impact forces and a postcrash fire.

Safety Culture "Iceberg" Case Study

Gulfstream G-IV corporate jet crashed during a rejected takeoff at Bedford-Hanscom Field, MA (BED). 31 May 2014.

- Pilot-in-command
  - More than 11,000 total flight hours
  - More than 1,600 hours on G-IV
- Second-in-command
  - More than 18,000 total flight hours
  - More than 3,000 hours on G-IV
- Had flown together for about 12 years

Safety Culture “Iceberg” Case Study

Probable Cause:

- The pilots neglected to perform a flight control check that would have alerted them of the locked flight controls.
- The pilots attempt to take off with the gust lock system engaged.
- The pilots delayed execution of a rejected takeoff after they became aware that the controls were locked.

Safety Culture "Iceberg" Case Study

- ✓ "The SMS of this operation is well developed"
- ✓ "Best practices are consistently employed in all facets of the program"
- ✓ "The FOM is remarkably well written and comprehensive"
- ✓ "Open reporting of hazards is consistently encouraged by management"
- ✓ Safety culture within the department is shared among all team members"

Safety Culture "Iceberg" Case Study

Robert Sumwalt discussion at a conference:

Could this happen to you?

53% believe this could happen to them

47% believe this could NOT happen to them

Safety Culture "Iceberg" Case Study

Robert Sumwalt discussion at a conference:

Is normalization of deviance pervasive in your organization?

Strongly Agree	17%
Agree	36%
Neutral	14%
Disagree	33%
Strongly Disagree	0%

- SOPs
- Duty time limits
- Cell phone use
- Sterile cockpit
- Checklist from memory
- Verbal MX issues
- Stabilized Approach criteria

Safety Culture "Iceberg" Case Study

NTSB comments…

"… the flight crew's omission of a flight control check before the accident indicates intentional, habitual noncompliance with standard operating procedures."

Safety Culture “Iceberg” Case Study

NTSB comments…

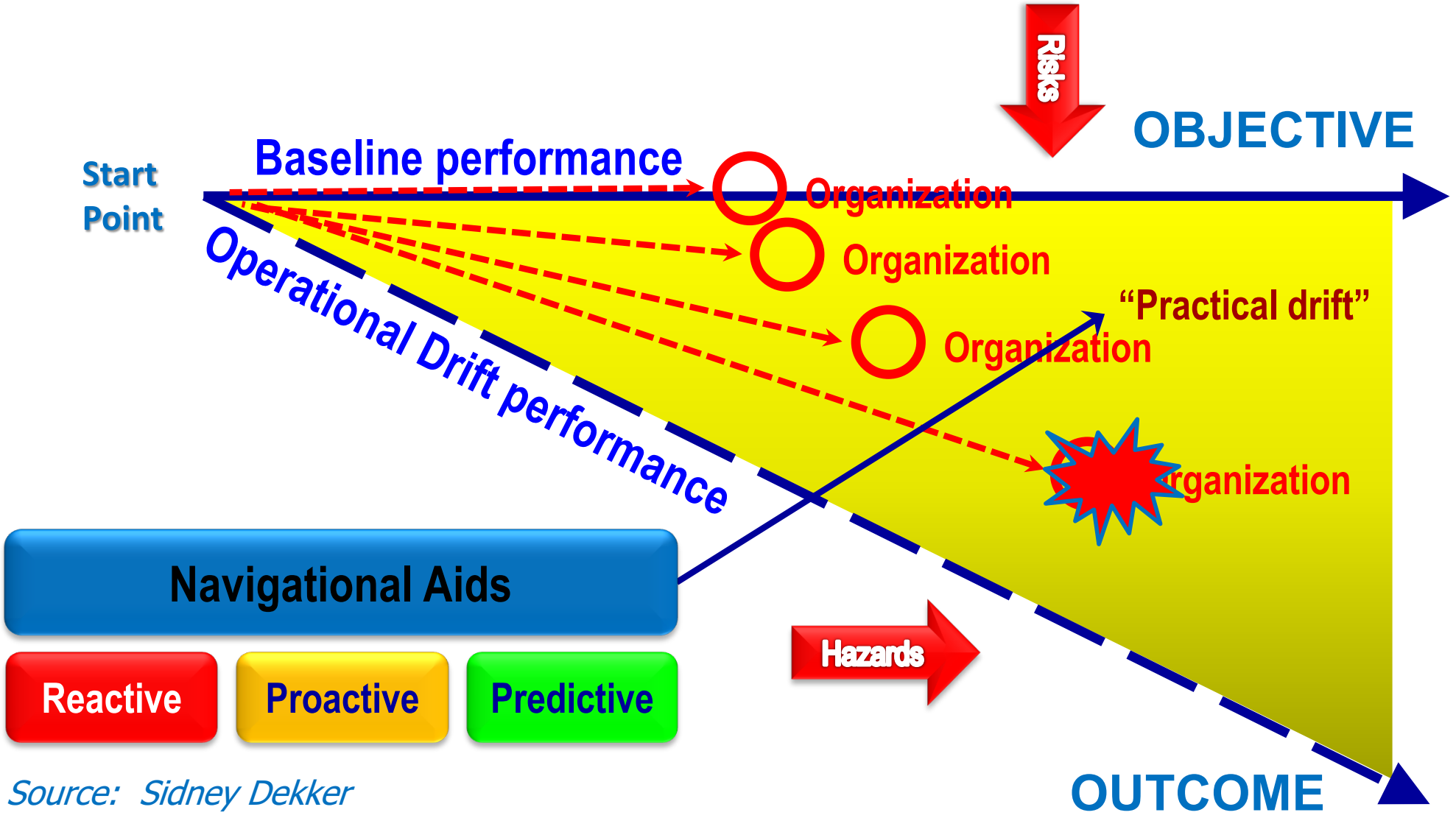
“If the actual rate of procedural compliance is much lower than assumed, aircraft designers, regulators, and operators may need to help boost compliance or reconsider their assumptions about the reliability of flight crew adherence to routine checks and the level of safety protection afforded by such SOPs.”

Safety Culture "Iceberg" Case Study

NTSB comments…

- Consistency of accident flight crew's noncompliance suggests development of shared attitudes:
  - When checks reveal no problems, crews may begin to regard them as less important
  - Over time, actual operating practices can diverge from published procedures
  - Small operators with consistent crew pairings and less oversight may have increased risk

Safety Culture – Deviation



Source: Sidney Dekker

Safety Culture Success

Just Culture

A culture in which employees are not punished for actions, omissions or decisions taken by them which are commensurate with their experience and training, but where gross negligence, willful violations and destructive acts are not tolerated.

Just Culture is shared responsibilities by the organization and the employees.

Just Culture

"The question that drives safety work in a just culture is not who is responsible for failure, rather, it asks what is responsible for things going wrong. What is the set of engineered and organized circumstances that is responsible for putting people in a position where they end up doing things that go wrong?"

~ Sidney Dekker

Just Culture

Balance Accountability With Learning

1. Make sure you have the right people with the necessary knowledge to establish that line of what is acceptable behavior.
2. Assess the way in which you deal with incidents – no shame.
3. Don't inhibit openness with your incident reports – submit anonymously or to independent safety staff.
4. See how you can protect your data from undue outside probing.
5. Make sure your people know their rights and duties after an incident – reduce the anxiety.

"This is not about escaping accountability – in fact it is about increasing accountability throughout the organization so that you can learn from the issues that exist."

Communication & Engagement

- Effective relationships build trust and open communication.
- Trust is fundamental because you're not going to tell me what's really on your mind or what's really going on unless you trust me.
- That SMS implementation is a change in "the way we do business"
- That the management team must be role models to line employees

Communication & Engagement

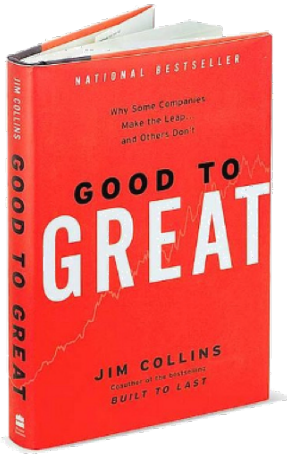
Engagement builds discretionary behavior – the behavior people could demonstrate if they wanted to, but above and beyond the minimum required.

- This is important because you really cannot be out making sure people are following procedure or reporting hazards.

Engagement

"If you have the wrong people, it doesn't matter whether you discover the right direction; you still won't have a great company. Great vision without great people is irrelevant."

~ Jim Collins



Safety Culture Success

Those organizations that best progress with their Safety cultures increasingly foster/stimulate greater:

- **Inspiration**
  - Raising both energy and hope - become excited and enthused
- **Involvement**
  - Workers and managers actively participate in Safety – get buy in
- **Internalization**
  - Each person–worker, supervisor, manager, executive–taking greater personal control and responsibility for him/herself

Safety Culture Success

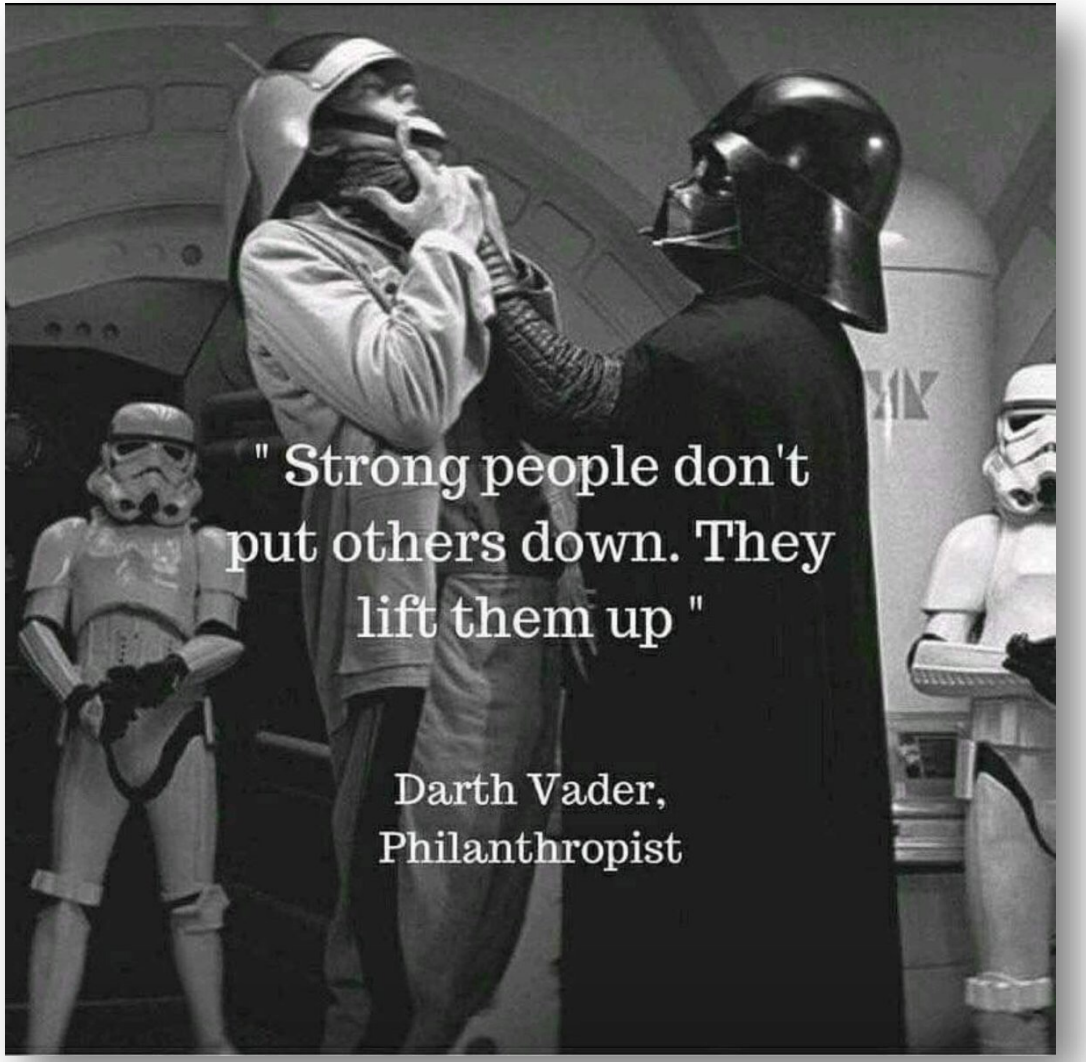
- Identifying and understanding why we do something is important, but core values are very hard to change

- Change the behavior, and you begin to change the culture

What Can You Do Today?

- Pick a critical few behaviors that exemplify the best of your safety culture, and that you want everyone to adopt
- Make the change sustainable by maintaining vigilance
- Promote everyone's involvement in reporting deviations, mistakes, & errors
- Learn from incidents in a non-punitive environment
- Let speaking up start with YOU

Safety Culture Success



How will you know if your efforts are working?

Safety Performance Indictors

Principles of SMS

An SMS defines measurable performance outcomes to determine whether the system is truly operating in accordance with design expectations and not simply meeting regulatory requirements.

Four Pillars of SMS…Safety

Management Commitment

Safety Accountabilities

Key Personnel

Emergency Response Planning

SMS Documentation

Hazard Identification

Risk Assessment & Mitigation

Safety Performance Monitoring, Measurement

Management of Change

Continuous Improvement Process

Training & Education

Safety Communication

Safety Information – What Do You Know?

4% Problems known to top management

9% Problems known to middle management

74% Problems known to supervisors

100% Problems known to workers

Source: Yoshida, Shuichi,. 2nd International Quality Symposium,1989

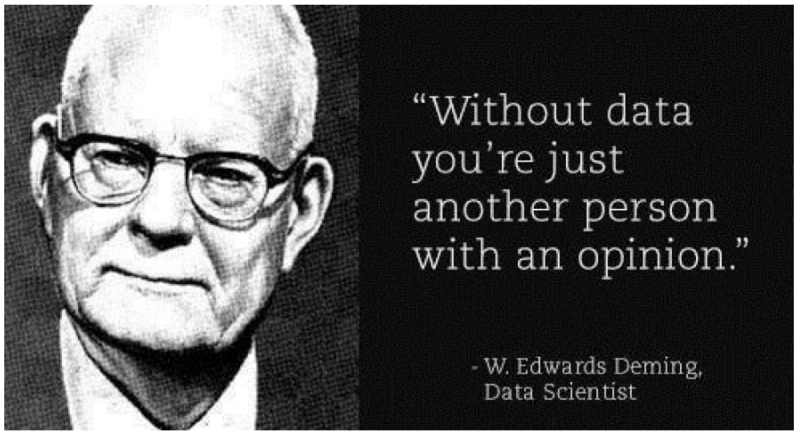
Monitoring

Monitoring & Measurement

- Viewed at a system level of process assessment (Perspective of Responsibility, Authority, Controls, Interfaces, Procedures and Metrics)
- Evidenced based decision making
- Compare the actual results of a process and compare them to the desired results

Data Analysis Approach

- Provide an organization with evidence to demonstrate the degree of effectiveness related to their safety management effects
- Identify what data to monitor
- Determine a target
- Must have a way to monitor progress



Key Performance Indicators

KPIs evaluate the success of a business

What are some KPI examples?

Principles of SMS

- The ICAO SMS definition implies continuing measurement and constant evaluation of an organization's safety performance and feedback into the management system.
- Safety and quality departments analyze data received from multiple sources, but perhaps even more importantly, each functional area is assessing its operational activities to identify opportunities for improvement.
- This culture and passion for continual improvement is an essential change.
- Cost of poor quality = cost of safety. In other words, **a "well-managed operation is a safe operation."**

Safety Performance Indicators (SPIs)

A data-based safety parameter used for monitoring and assessing safety performance.

SPIs evaluate the success of an organization's safety management efforts.

Safety Performance Indicators

The final output of a safety performance monitoring and measurement process is the development of safety performance indicators based on analysis of data collected through the sources such as:

- ✓ Incident reporting systems
- ✓ Risk assessments
- ✓ Safety studies
- ✓ Safety reviews
- ✓ Safety surveys
- ✓ Audits
- ✓ Internal investigations
- ✓ FOQA
- ✓ LOSA

Safety Performance Indicators

The monitoring and measurement process involves the use of:

- selected safety performance indicators
- corresponding safety performance targets
- alert levels

Safety Performance Indicators

Safety performance indicators are generally monitored using basic quantitative data trending tools that generate graphs or charts that incorporate alert/target levels commonly used in technical, quality or reliability control systems.

Safety Performance Indicators

What are you going to monitor?

- Known safety risks, detect emerging safety risks and to determine any necessary corrective actions.
- Effectiveness of your risk controls, at all levels of the organization.

Safety Performance Indicators

Safety performance indicator factors to be considered include:

- Organization's safety risk tolerance
- Cost benefits of implementing improvements to the system
- Regulatory requirements
- Public expectations

Safety Performance Indicators

Find Meaningful SPIs

- Look for trends (type of event, categories, shift)
- Look for high risk items
- Look for low risk, occurring often
- Compare (over time, related, other common dominator)
- Compare to other available internal data
- Reach out to others (operating in the same environment)

Types of Indicators

Lagging Indicators

- ✓ Also known as High Consequence
- ✓ Measures events that have already occurred, in particular those with negative outcomes
- ✓ Reactive
- ✓ Most organizations do not have enough data to be meaningful
- ✓ Lower level failures or events that did not manifest a serious outcome

Leading Indicators

- ✓ Also known as Low Consequence
- ✓ Measures things with the potential to create a negative outcome in the future (negative indicators)
- ✓ Measures things that contribute to safety in a positive way (positive indicators)
- ✓ Proactive or Predictive

Safety Performance Indicators

SPIs should be…

- ✓ Well defined & quantifiable
- ✓ Connected to accident probability
- ✓ Crucial to achieving your safety goal
- ✓ Across all areas of the operation (flight, maintenance, dispatch, management)

Safety Performance Indicators

Setting a target is essential:

- Use percentages, counts, and rates (i.e. per 1,000 flight hours) to normalize the data

- Some SPIs will require multiple ways of measurement (i.e. Fatigue)

Set alerts:

- Based on data points & standard deviations

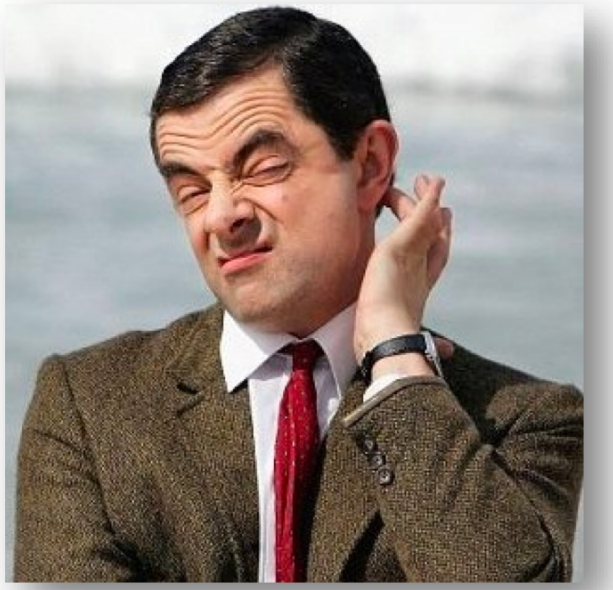
Safety Performance Indicators

Sample SPIs:

- Altitude deviations
- Runway incursions or excursions
- Audit findings
- Fatigue events (Maint. & Flight)
- Volume of incidents
- Employee engagement in the company's SMS
- Zero maintenance self-inspections

SPI - Avoid the Pitfalls

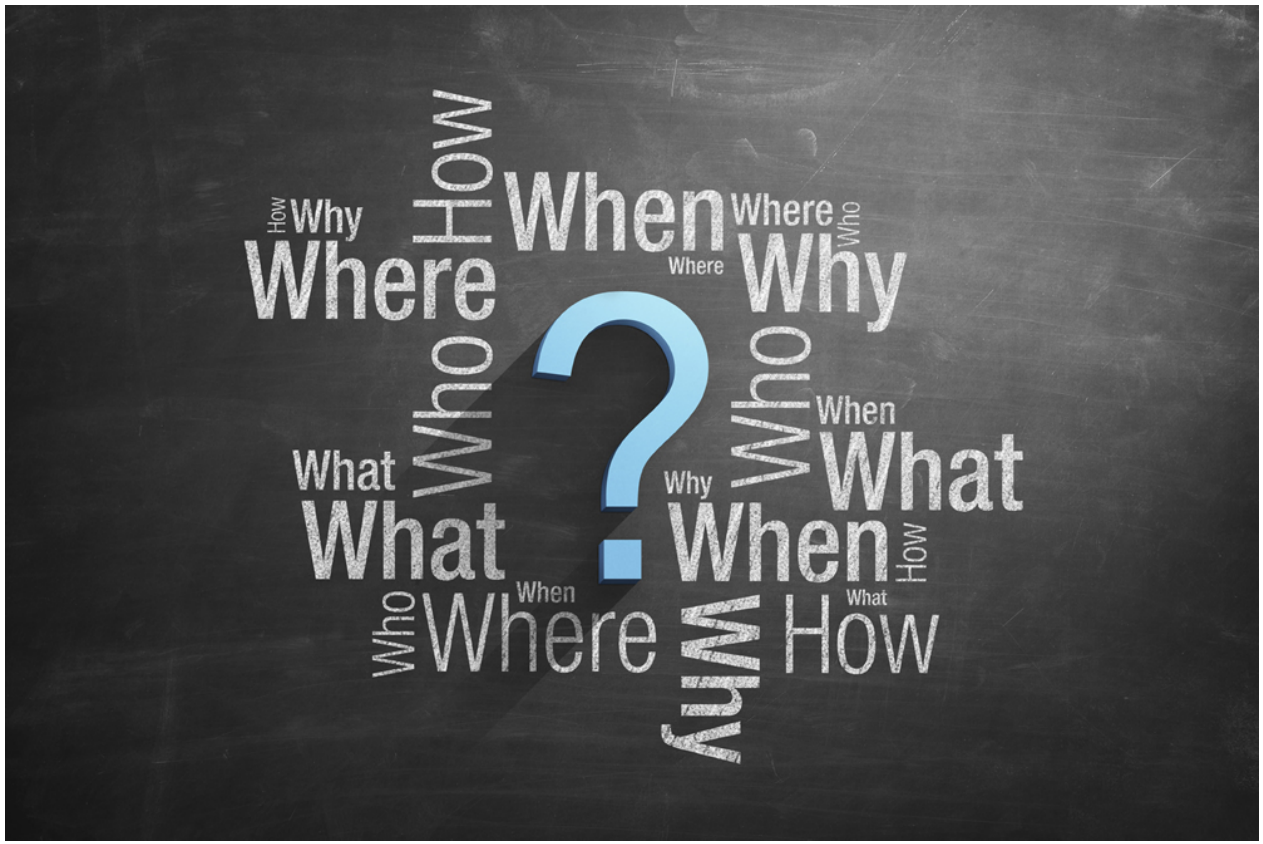
- Checking a box for an auditor or regulator
- Measuring the things that are easy to measure
- Measuring things that are unimportant
- Only focusing on one area of the operation, i.e. flight
- Not reviewing frequently enough
- Not updating on a regular basis
- Not communicating SPIs to organization



SPI - Nurturing

- Set alert – Based on data points & standard deviations
- Periodically review SPI measurements to determine if your safety efforts are trending in the right direction
- If not, correct with additional or different efforts
- After a reasonable time, you should be able to determine which SPIs are the most valuable

Questions?



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