

# Safety Management and Organizational Reliability:

## The Performance Culture

Presented By: Flight Standards

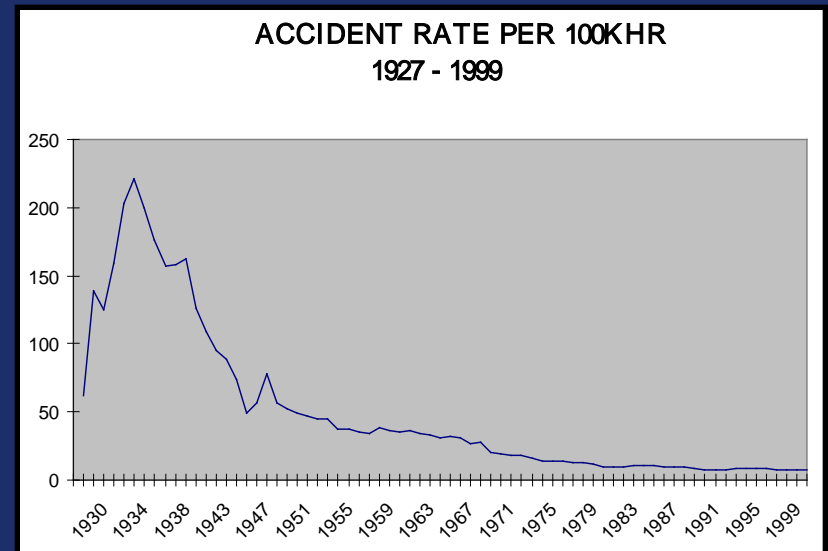
Date: March 6, 2011



Federal Aviation  
Administration



# Safety



# What is safety?

- Freedom from harm (Dictionary)
- Safety is not equivalent to risk free (U.S. Supreme Court, 1980)
- *“Risk management” is a more practical term than “safety.”* (Jerome Lederer ~1928)
- *“Carelessness and overconfidence are more dangerous than deliberately accepted risk”.* (Wilbur Wright, 1901)



# Definition of Safety

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

ICAO Doc 9859

# In practical terms:

Safety is Risk Management

Safety Management capability is Safety Performance

# Culture



# What's a culture?

- **Patterns of:**
  - Thinking
  - Feeling
  - Behaviors
- **Types of Culture**
  - National
  - Ethnic
  - Professional
  - Organizational



# Why do we care about culture?

- Isn't compliance with standards enough?
- Patterns of **behavior/performance**
- **Consistency** of outcomes
- **Understanding why** things happen the way they do
- We want **reliable safety performance**



# Safety Culture

- Is there really such a thing as a “*safety culture?*”
- If so, what does it look like?
- If I don't have one, how do I get it?



# Safety Culture: A Brief History

## Chernobyl, 1986

International Atomic Energy Agency noted a “**Poor Safety Culture**” as a factor in the accident.



# Safety Culture: A Brief History

## Continental Express Flight 2574, 1991

NTSB Board member John Lauber in dissenting opinion suggests probable cause of this accident due to: “**the failure of Continental Express management to establish a corporate culture** which encouraged and enforced adherence to approved maintenance and quality control procedures.”



47 screws removed from the horizontal stabilizer during maintenance the night before and, following a shift change, were not replaced.

# Organizational Cultures

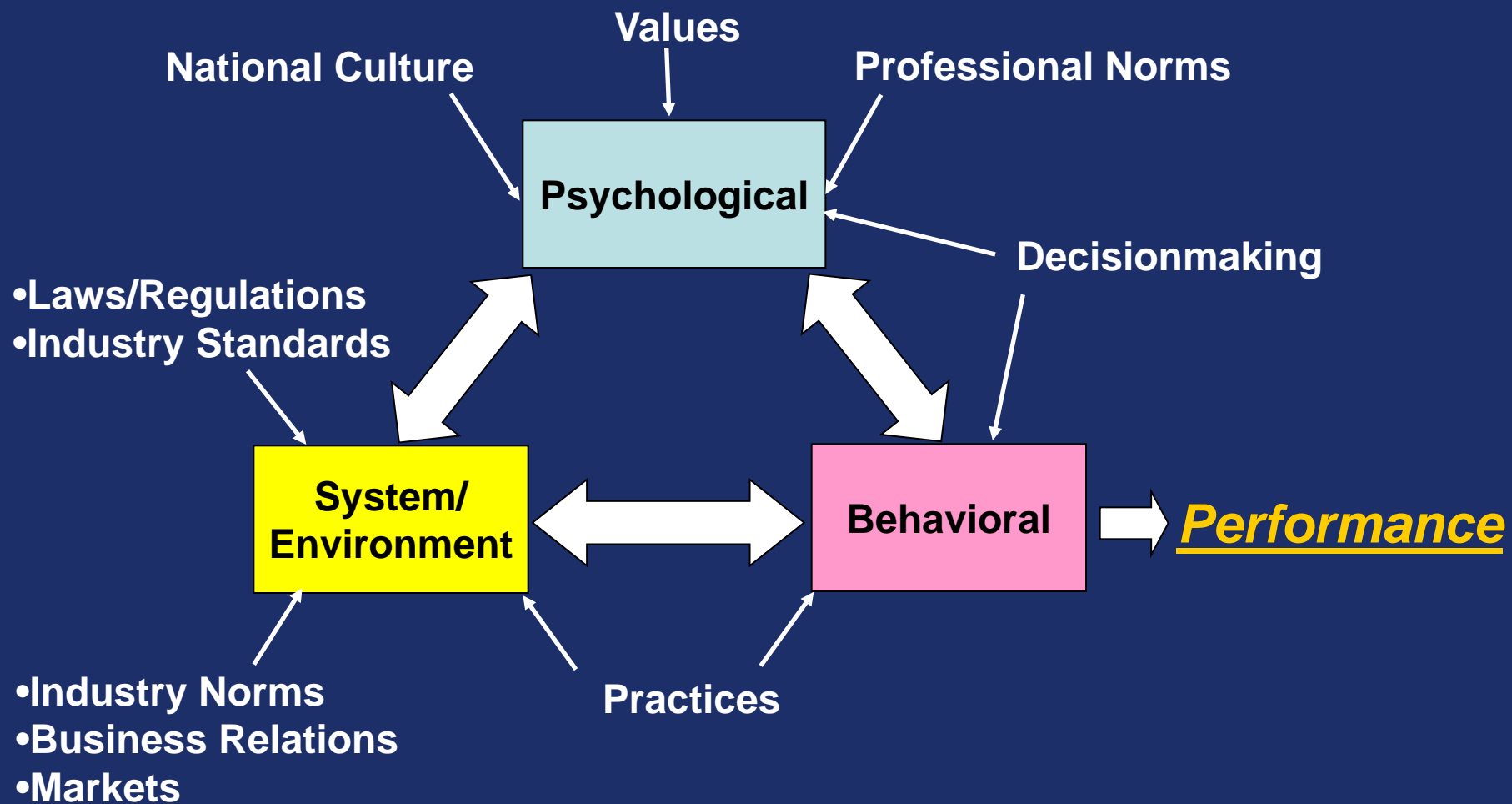
Culture is the values, beliefs, and behaviors that we share with other members of groups

- Culture binds us together as a group
- Culture provides cues and clues on how to behave in normal and novel situations

*Short definition of culture:*

*The way we do things here.*

# Organizational Culture



# Characteristics of High Reliability Organizations (HROs)

- Preoccupation with failure
- Reluctance to simplify
- Sensitivity to operations
- Commitment to resilience
- Deference to expertise

# Informed Decision Making

- **Reporting Culture**: Seek information (knowing the problems is better than punishing the victim)
- **Just Culture**: Don't shoot the messenger (the next mistake may be your own)
- **Flexible Culture**: Be willing to change
- **Learning Culture**: Learn from experience
  - Building Trust
  - Gaining Knowledge

# The Performance Culture

- Provide processes that support **informed decision making**
- Set up and practice policies that foster **free flow of information**
- Examine your **operations** critically
- Use **risk** as a basis for **decision making**
- Use all three safety management strategies

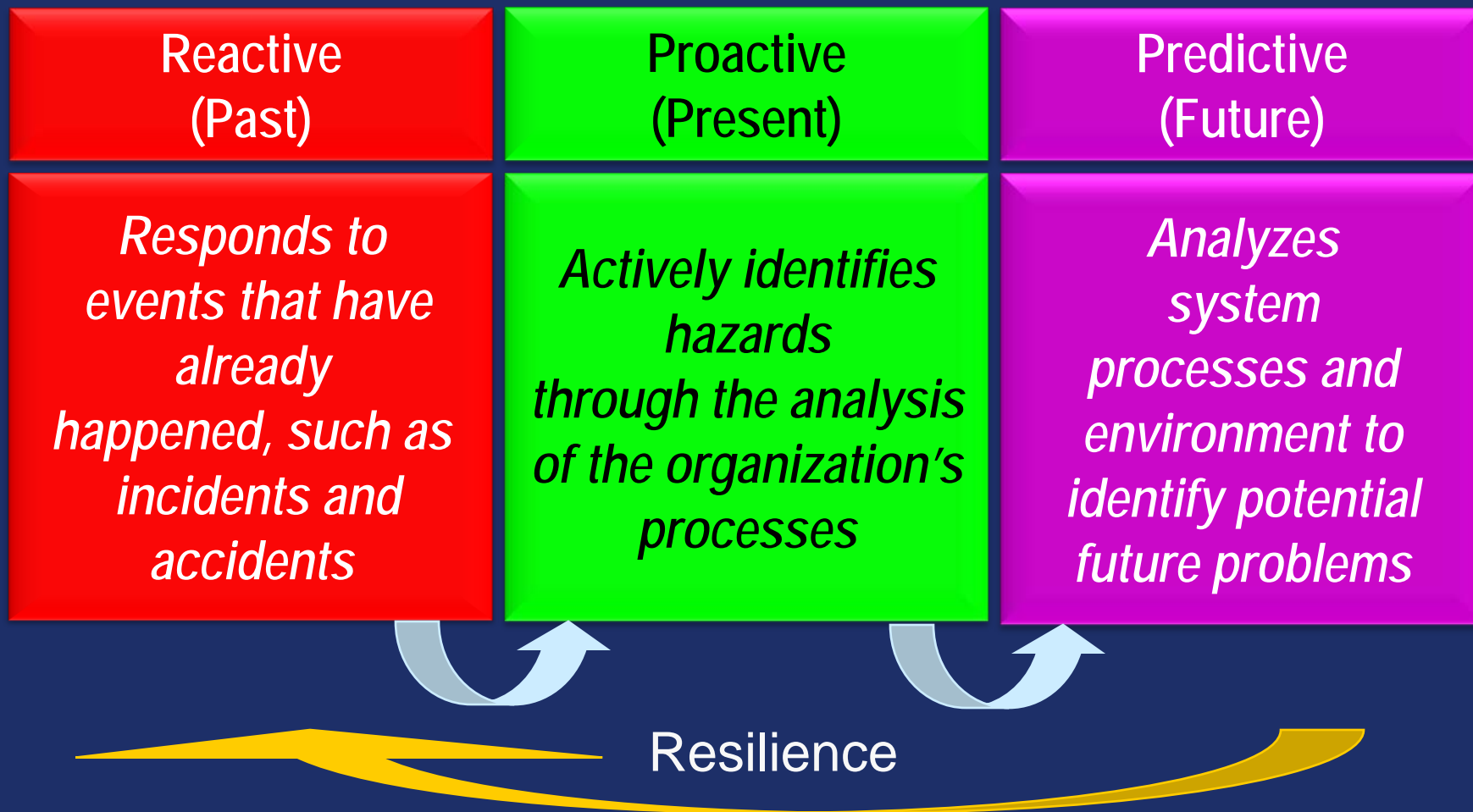
# How can we change a culture?

- Can we tell people how to think or feel?
- Can we tell people how to behave?
- Shape the environment in which people work!

# Safety Management Systems



# Safety Management Strategies



# Top Management Involvement

**Top management\*** stimulates a healthy safety environment

- Visible, personal **involvement** of top management
- Setting safety **goals** and **objectives** as policy
- Allocation of **resources** to meet safety goals
- Clear **communication**

(\*Top management includes accountable executive or accountable manager)

# What do we mean by “accountability?”

- Blame?
- A scapegoat?
- That’s “backward accountability”
- We want “forward looking accountability”
- Taking responsibility for **reporting**
- Willingness to **admit mistakes**
- Taking responsibility for **change**

# Technical Management Involvement

- (119.69(a)): “...sufficient qualified management and technical personnel to **ensure the highest degree of safety** in its operations.”
- 119.69(d)(3): [shall] “...discharge their duties to meet applicable legal requirements and to **maintain safe operations.**”
- The **SMS** provides a structured system of processes to meet these responsibilities

# Typical Duties of Technical / Line Management

- Hazard identification
- Safety risk assessment
- Assuring the effectiveness of safety risk controls

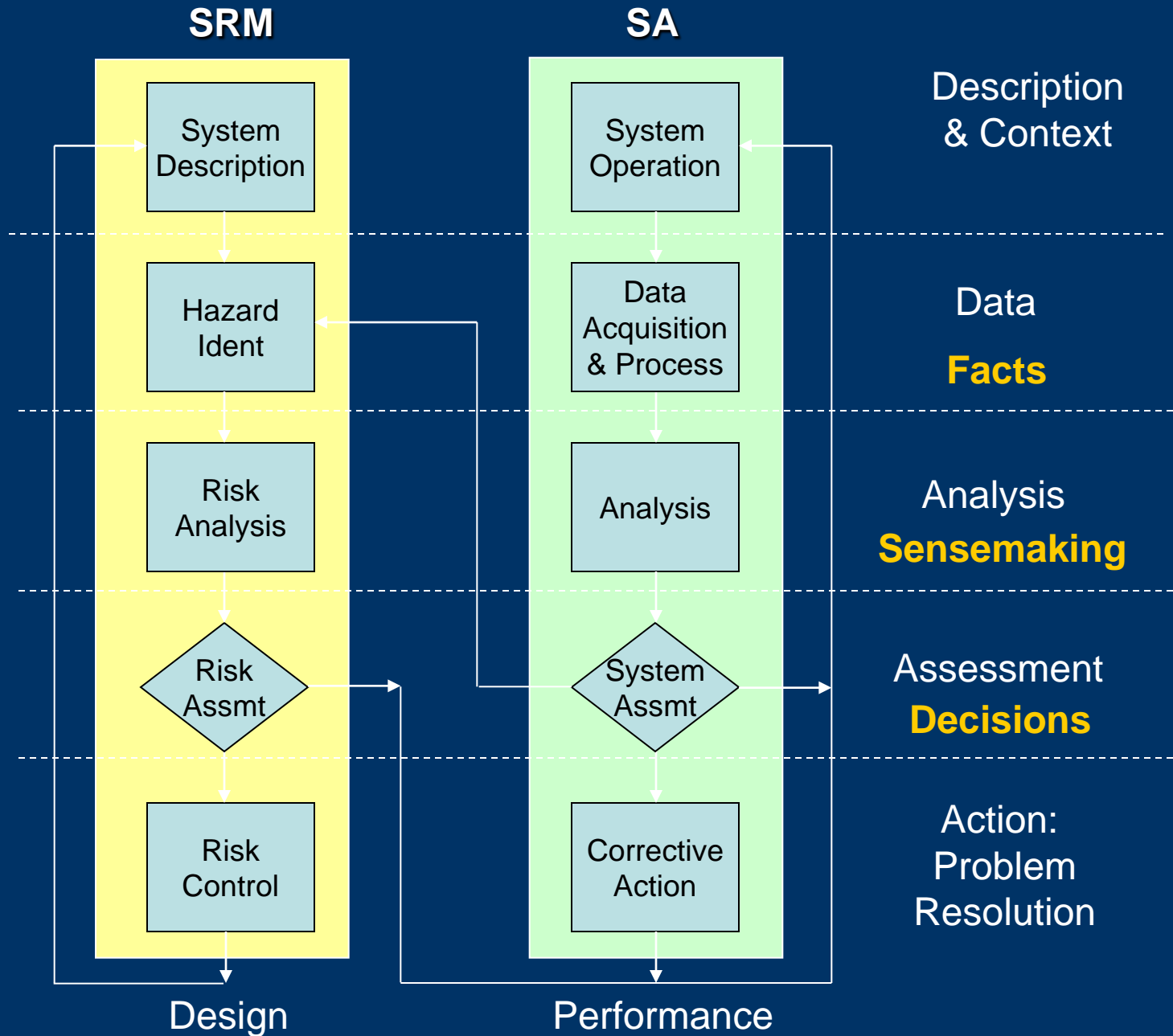
# Typical Duties of Management Representative (DOS)

- **Facilitating** hazard identification
- Safety risk **analysis**
- **Monitoring** the effectiveness of safety risk controls

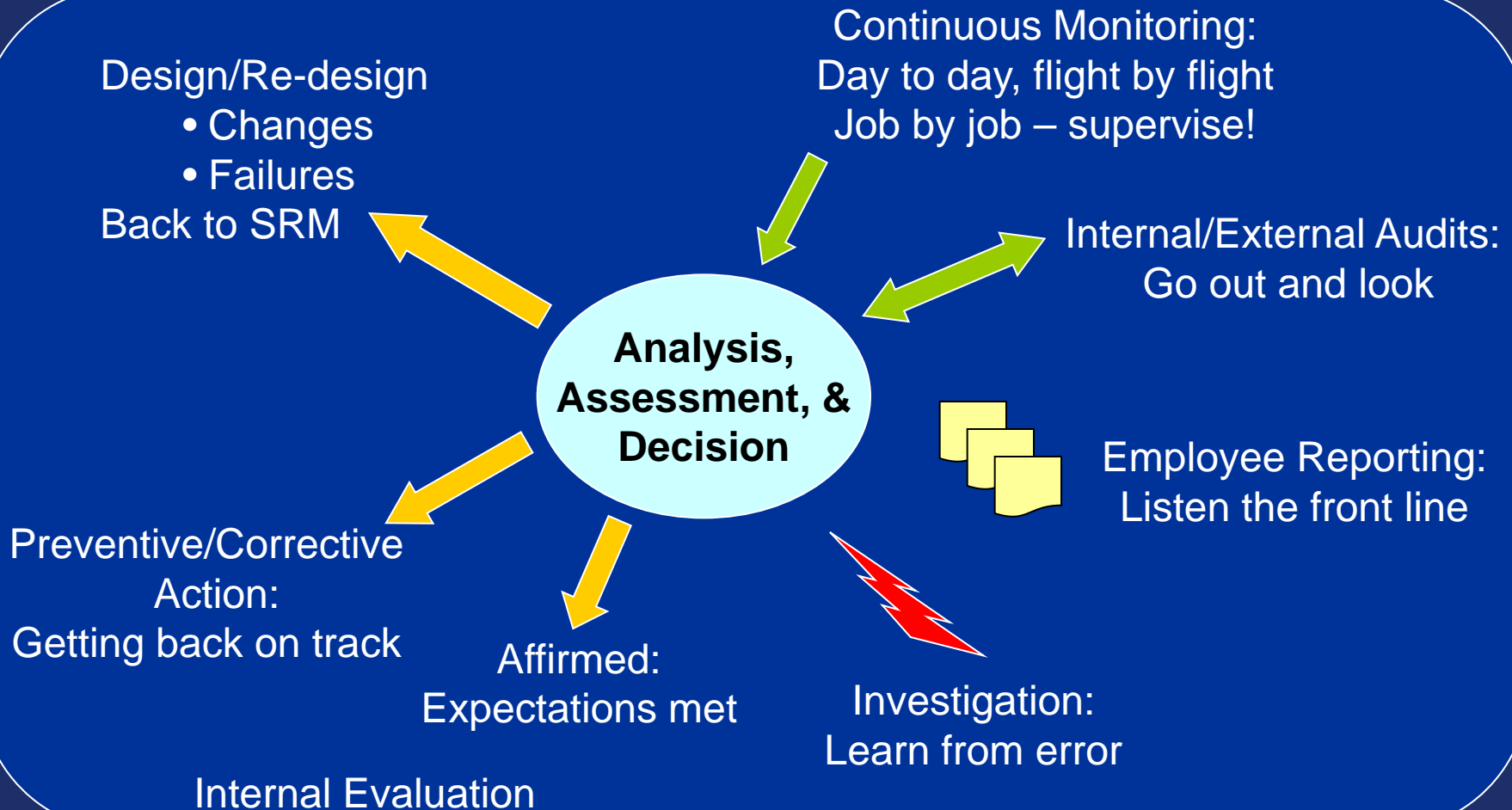
# SMS Components (“Pillars”)



# Safety Risk Management (SRM) and Safety Assurance (SA) Workflow



# Staying Informed: The SA Process



# ICAO Annex 6

- “From 1 January, 2009, **States shall require**, as part of their safety programme, that an **operator implement** a safety management system **acceptable** to the State of the Operator...”
- FAA filed a difference with ICAO
- Currently no FAA procedures to approve or accept an SMS



# ICAO Annex 6, Part II, International General Aviation

Section 3 – **Large & Turbojet** Aeroplanes (Over 5700kg [12566#] or jet)

- 3.3.2.1 “An operator shall establish and maintain a **safety management system** that is appropriate to the **size** and **complexity** of the operation.”
- 3.3.2.2 “Recommendation – ...SMS Minimum:”
  - ID Hazards, assess risk
  - Develop & imp remedial action [to] acceptable level of safety
  - Monitor & assess SM activities



# ICAO and FAA SMS Framework



## Elements:

### Elements:

1.1 Safety Policy

### Elements:

4.1 Competencies and Training

Process 4.1.1 Personnel requirements

Process 4.1.2 Training

4.2 Communication and Awareness

3.3 Continual Improvement

- Process 3.3.1 Preventive/corrective action
- Process 3.3.2 Management review

# Public Law 111-216

- Conduct rulemaking to require all part 121 air carriers to implement a safety management system (SMS)
- Issuance Deadlines:
  - Notice of Proposed Rulemaking (NPRM) within 90 days (10/29/10)
  - Final Rule within 24 months (7/30/12)
- Part 5 being considered as standard baseline

# Part 5 Outline

- **Subpart A - General**
  - Objective: Establish applicability and provide context
- **Subpart B - Safety Policy**
  - Objective: Establish objectives, commitment, and accountabilities
- **Subpart C - Safety Risk Management**
  - Objective: Identify hazards and analyze, assess, and control risk
- **Subpart D - Safety Assurance**
  - Objective: Monitor, measure, and evaluate safety performance and effectiveness of risk controls and take corrective actions
- **Subpart E - Safety Promotion**
  - Objective: Competent workforce and communication regarding safety
- **Subpart F - SMS Documentation and Recordkeeping**
  - Objective: Documented SMS and records of SMS outputs

# Industry Policy Issues

- **Data protection**
  - Not just FOIA, but discovery in litigation actions
- **International recognition**
  - Harmonized SMS requirements are necessary for international recognition
- **Considering subsequent NPRM(s) for certificate holders under parts 135, 145, and 21**
- **Organizations with multiple certificates want consistent requirements and oversight**

# SMS Implementation Process



# SMS Voluntary Implementation: **SMS Pilot Project**

- Pilot Project activities commenced in 2007
- Voluntary SMS development
- AFS combined effort
- Objectives are to Develop:
  - Implementation **strategies**,
  - Oversight **interfaces**, and
  - **Gain experience** for FAA and Service Providers

# SMSPP Participants

- **Part 121: 43**
- **Part 135: 60**
- **Part 141: 4**
- **Part 145: 10**



# Lessons Learned

- **General**

- ≈ 30% of part 121 population committed to SMS before Public Law 111-216.
- Concerns exist about standardization, scalability, and cost.
- Initial SMS planning takes longer than envisioned, however, significant benefits realized.
- Traditional safety programs become ‘support’ while management takes over ‘action’ component.
- System analysis process (SRM), least understood (SP & FAA) yet has greatest potential to ‘predicatively’ identify risk factors.

# Lessons Learned

- **General**

- Most have **assurance practices** (CASS, IEP, ASAP, FOQA), however **seldom applied comprehensively**.
- Some have processes that are **not documented**, some have systems that are process **collections**. No previous holistic, comprehensive approach.
- SMS provides **very useful forum** for interaction (SP & FAA).
- Practical **“how to”** information is lacking – **challenge**.
- **Knowledge base** on SRM not at the same level as SA – **challenge**.
- **Common understanding** of SMS concepts, practices and standards (across industry and FAA) is lacking – **challenge**.

# Full Circle: The Performance Culture

- What we want is **consistent safety performance**
- That means consistent **hazard identification** and risk control
- Managers must be safety **decision makers** as well as business decision makers
- **Information** is essential – complexity is not
- Managers must **shape the environment** to foster free exchange of information
- The **SMS is a decision tool**

# FAA SMS Web Site – “SMS” Link

Aviation Safety - Safety Management System (SMS) - Microsoft Internet Explorer

Address <http://www.faa.gov/about/initiatives/sms/>

Federal Aviation Administration

FAA Home About FAA Jobs News A-Z Index All Visitors

Aircraft Airports Air Traffic Data & Research Licenses

FAA Home » About FAA » Programs & Initiatives » Safety Management System

### Safety Management System

SMS Explained  
SMS Rulemaking Activities  
SMS International Collaboration  
Reference Library  
SMS Pilot Projects  
FAQs  
Specifics by Aviation Industry Type  
Contacts

## Aviation Safety Safety Management System (SMS)

Print Email | Updated: 12:26 pm ET February 5, 2010

### What is a Safety Management System

SMS is the formal, top-down business approach to managing safety risk, which includes the necessary organizational structures, accountabilities, policies and procedures.

Welcome to the Aviation Safety Organization's Safety Management System Website! This website was created as a public resource for those seeking to learn more about SMS within the aviation industry and the FAA. This website will also provide resources to individuals and aviation product/service provider organizations seeking to learn more about implementing a SMS within their organization.

SMS introduces an evolutionary process in system safety and safety management. SMS is a structured process that obligates organizations to manage safety with the same level of priority that other core business processes are managed. This applies to both internal (FAA) and external aviation industry organizations (Operator & Product Service Provider).

This website will evolve; please continue to visit this site periodically for enhancements, updates and the most current information about SMS, Aviation Safety and the interface with FAA.

<a href="#">SMS Explained</a>	Get quickly up to speed! What is SMS? Where did it come from? How does it work?
<a href="#">SMS Rulemaking Activities</a>	Information regarding our FAA Aviation Safety rulemaking activities.
<a href="#">SMS International</a>	Information about our SMS international collaboration efforts.

Local intranet

Now available:  
[www.faa.gov/about/initiatives/sms](http://www.faa.gov/about/initiatives/sms)



# FAA Web Site – Documents Page

The screenshot shows a Microsoft Internet Explorer browser window displaying the FAA website. The address bar shows the URL: [http://wwwtest.faa.gov/about/initiatives/sms/specifics\\_by\\_aviation\\_industry\\_type/air\\_operators/](http://wwwtest.faa.gov/about/initiatives/sms/specifics_by_aviation_industry_type/air_operators/). The page content is titled "The Regulator" and lists several documents and tools:

- **Read-Me-First (PDF)** — Provides Overview of Documents applicable to developing a voluntary SMS, in coordination with FAA and Flight Standards Guidance
- **AC 120-92** — Introduction to Safety Management Systems for Air Operators (PDF)
- **Voluntary SMS Implementation Guidance** (see also SMS Pilot Projects section)
  - **Voluntary Implementation Procedures Guide**
  - **SMS Framework (PDF)** — aka the "standard"; describes the requirements for a product/service provider's Safety Management System (SMS) in the air transportation system.
  - **SMS Assurance Guide (PDF)** — used for assessment of the design and performance of aviation product/service providers' SMS programs. The guide is laid out in terms of design expectations and performance objectives. These expectations are based on the SMS Framework and are considered to be essential expectations of a robust SMS.
  - **SMS Developmental Guidebook** — nuts and bolts of developing an SMS (coming summer 2009)
- **Info Bulletins; FAA Information for Operators, regarding SMS**
  - InFO 08022 (PDF)
  - InFO 08053 (PDF)
- **Tools specific to Air Operators, MROs, and Training Organizations developing an SMS**
  - **SMS Assurance Guide (PDF)** — used for assessment of the design and performance of aviation product/service providers' SMS programs. The guide is laid out in terms of design expectations and performance objectives. These expectations are based on the SMS Framework and are considered to be essential expectations of a robust SMS.
  - **Preliminary Gap Analysis Tool (Operator):** (MS Excel) Tool for initial assessment of the service provider's organization; to assess its existing programs, systems and activities with respect to the twelve individual elements' objectives found in the SMS Framework Functional Expectations.
  - **Preliminary Gap Analysis Tool (MRO):** (MS Excel) Tool for initial assessment of the service provider's organization; to assess its existing programs, systems and activities with respect to the twelve individual elements' objectives found in the SMS Framework Functional Expectations.
  - **Detailed Gap Analysis Tool (Operator):** (MS Excel) Excel tool for thorough assessment, that includes operational departments
  - **Detailed Gap Analysis Tool (MRO):** (MS Excel) Excel tool for thorough assessment, that includes operational departments



# Parting words...

- The quality of an SMS doesn't depend on how extensive, expensive, or sophisticated the data and analysis processes are...
- SMS isn't a manual on the shelf or an annual audit...
- SMS is about how well decisions are made.

Build trust

Gain knowledge

K.I.S.S. but don't M.I.S.S.

***“Carelessness and overconfidence are more dangerous than deliberately accepted risk”***

**Wilbur Wright, 1901**

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Wilbur Wright gliding, 1901  
Photographs: Library of Congress

