Safety Management

Culture, Risk Management, and SMS

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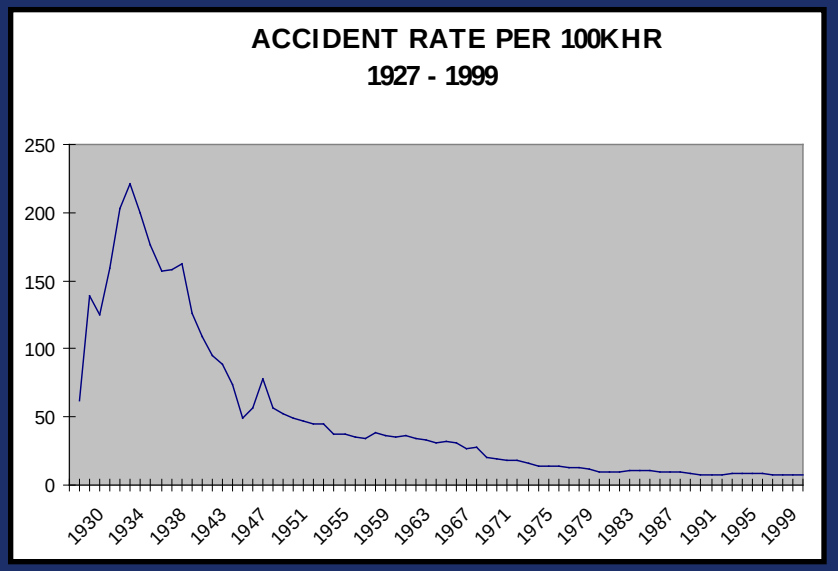
Safety: A different approach



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: ICAO SMM

"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

Safety: Operational Definition

"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

Operationally defined…

"Safety" is ***How well risk is managed***

Human Performance

- Most accidents result from human error
- Most errors are not due to lack of skill, poor attitudes or other personal deficiencies
- Errors are part of the same capabilities that make skilled performance possible
  - **Division of attention**
  - **Pattern recognition**
  - **Simplifying complexity**
  - **Making sense of uncertainty**

Attitudes

- *Unquestioning*
- *Anti-authority*

Critical Thinking

- *Resigned*
- *Impulsiveness*

Decisiveness

- *Fearful*
- *Invulnerability*

Confidence

- *Delicate*
- *Macho*

Competence

Adapted from Belanger, 2001

Error Management

- Error must be understood in the context of the operation, systems, and operational environment.
- Error (risk) management involves managing these resources.
- If you start with “human error” and end with “human error” your investigation has taken you nowhere.

Safety Risk Management: Something you *do…*

- **…not some *thing* you *have*.**
- **Managing:**
  - Training, qualification, and currency
  - Personnel fitness
  - Aircraft equipment
  - Aircraft airworthiness (condition)
  - Operation/Task
  - Operational environment

Culture: What the people do… how and why

Cultures

- National/Ethnic
- Professional/Group
- Organizational
- Subgroups/Subculture
- “Safety culture”

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?
- Why do we care about "culture" anyway?

Every Organization

Has

A Safety Culture

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

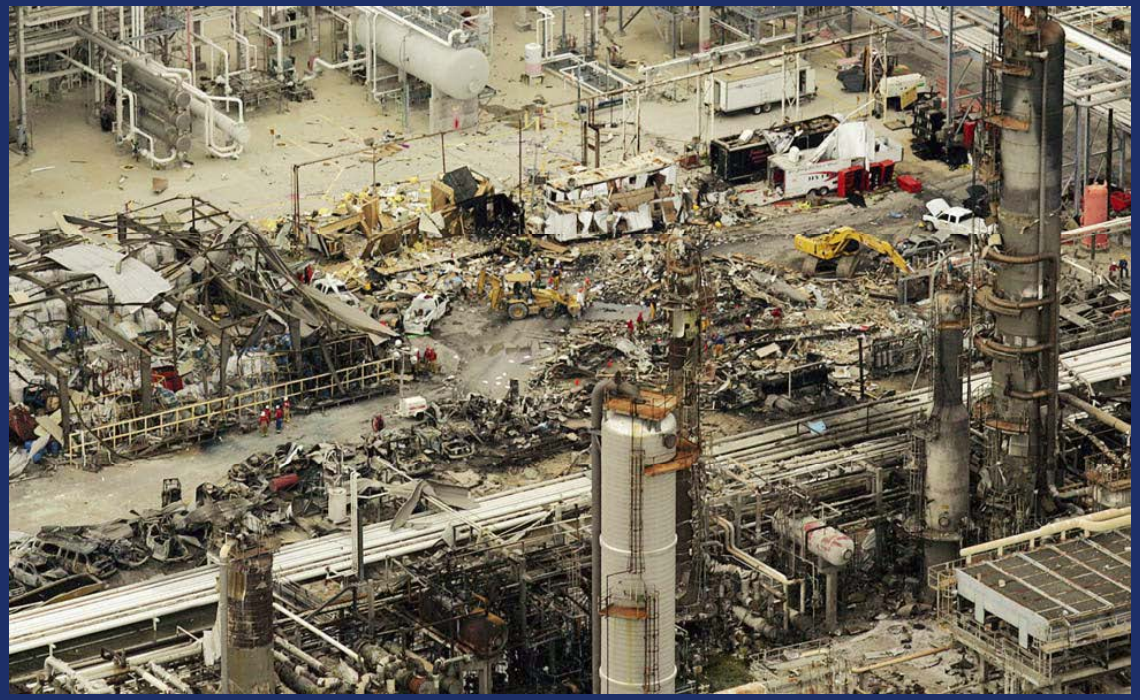
Continental Express Flight 2574, 1991

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.

BP Oil Refinery: Texas City, TX

March 23, 2005 Chemical Safety Board found that BP Texas city managers did not “create an effective reporting and learning culture…”



BP/Transocean Deepwater Horizon

Transocean's SMS had significant deficiencies that rendered it ineffective…

…a culture that could be described as:

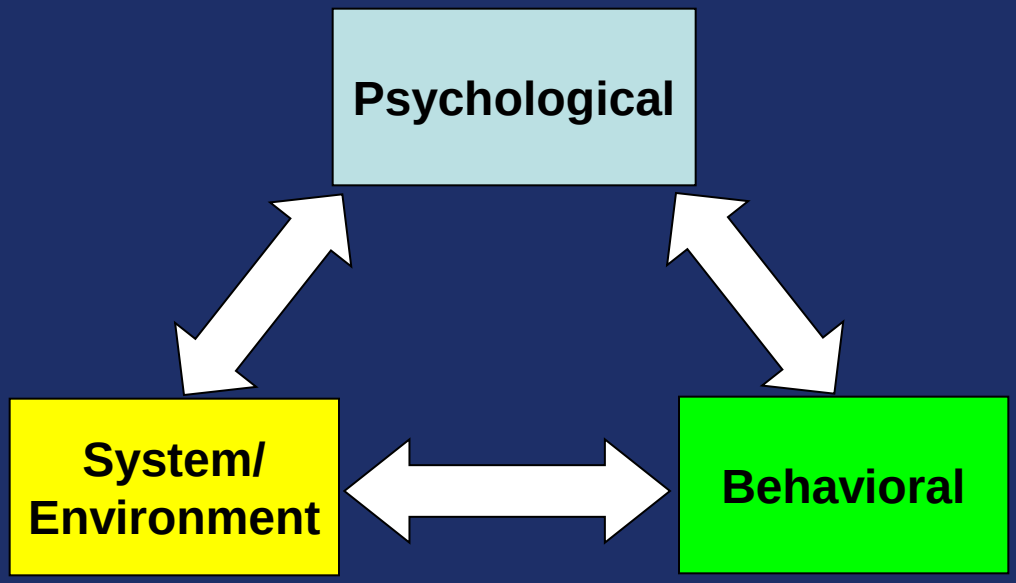
Running it until it breaks…

…going through the motions.

Levels of Culture

- Artifacts
  - Surface behaviors
  - Symbols
- Espoused values
  - What we say we do
  - Values that we want
- Deep Assumptions
  - Automatic, unconscious drivers of behavior

Organizational Culture



Informed Decision Making ("Collective Mindfulness")

- 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

Traits of a Healthy Culture: High Reliability Organizations (HROs)

- Preoccupation with failure (track small failures)
- Reluctance to (over)simplify
- Sensitivity to operations
- Commitment to resilience (ability to recover)
- Deference to expertise

Weick & Sutcliffe

So what do HROs do?

- **Process Auditing**
- **Vigilance for Quality Degradation**
- **Reward System**
- **Perception of Risk**
- **Command and Control**

Roberts and Libuser

How can we “create” or change a culture?

- Can we tell people how to think or feel?
- Can we tell people how to behave?
- Determine what ***performance*** needs change and…
- Shape the ***environment*** in which people work!

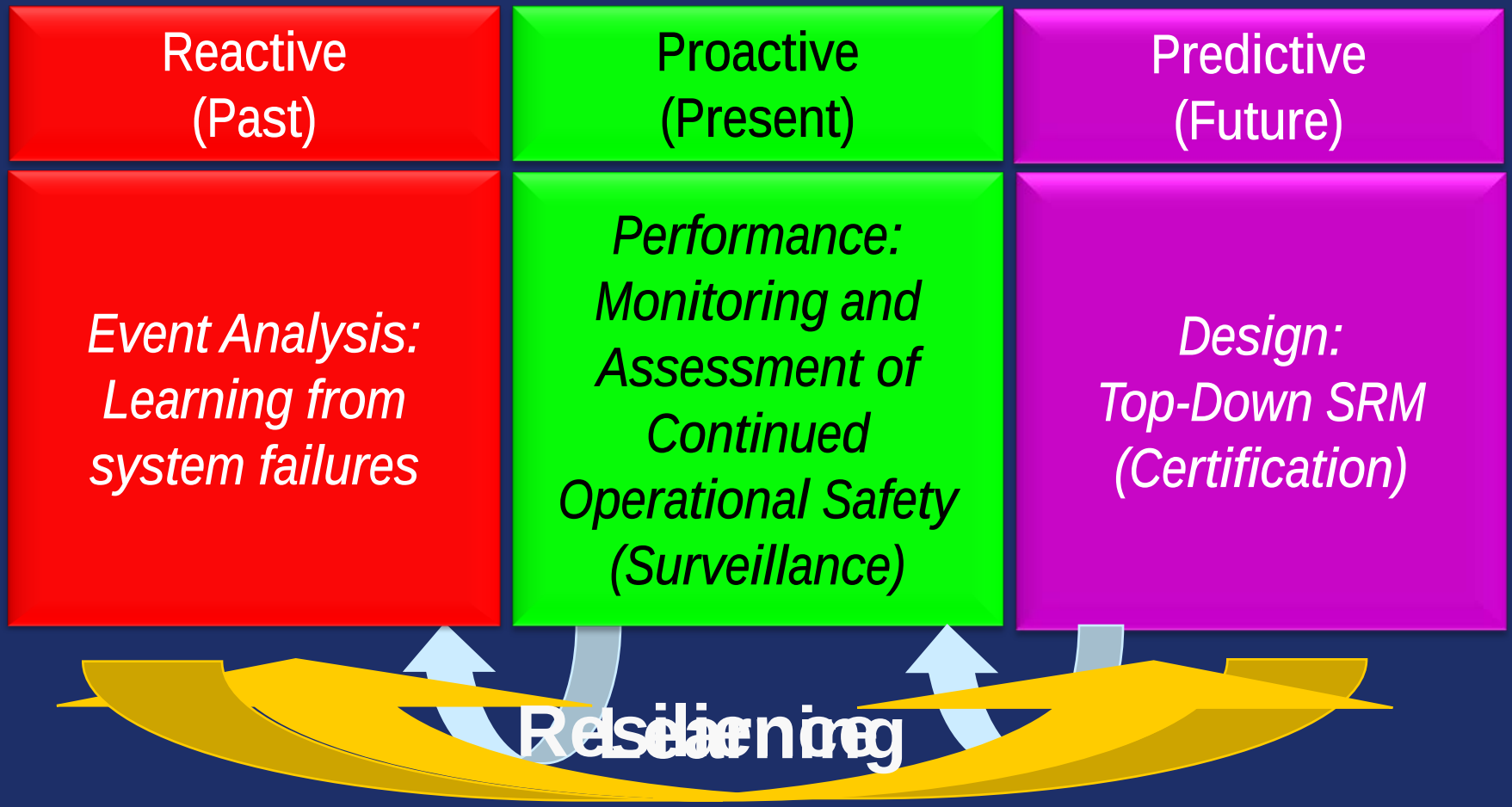
SMS:

Shaping the Environment to create safety

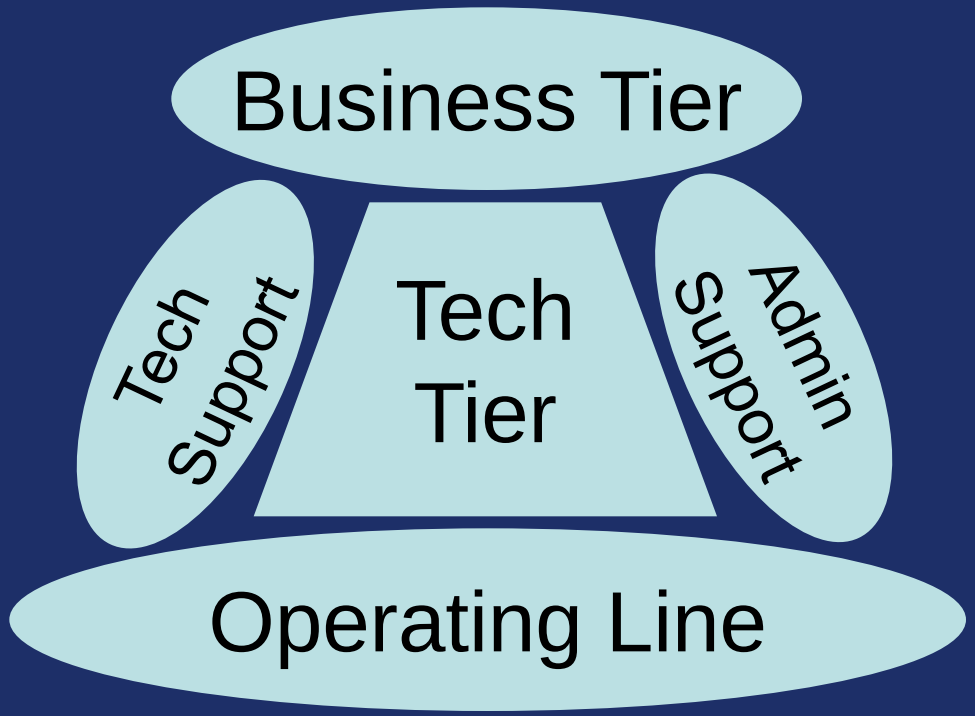
Safety Management Strategies

Reactive (Past)	Proactive (Present)	Predictive (Future)
Responds to events that have already happened, such as incidents and accidents	*Identifies hazards in the organization's current processes*	*Analyzes system processes and environment to identify potential future hazards*

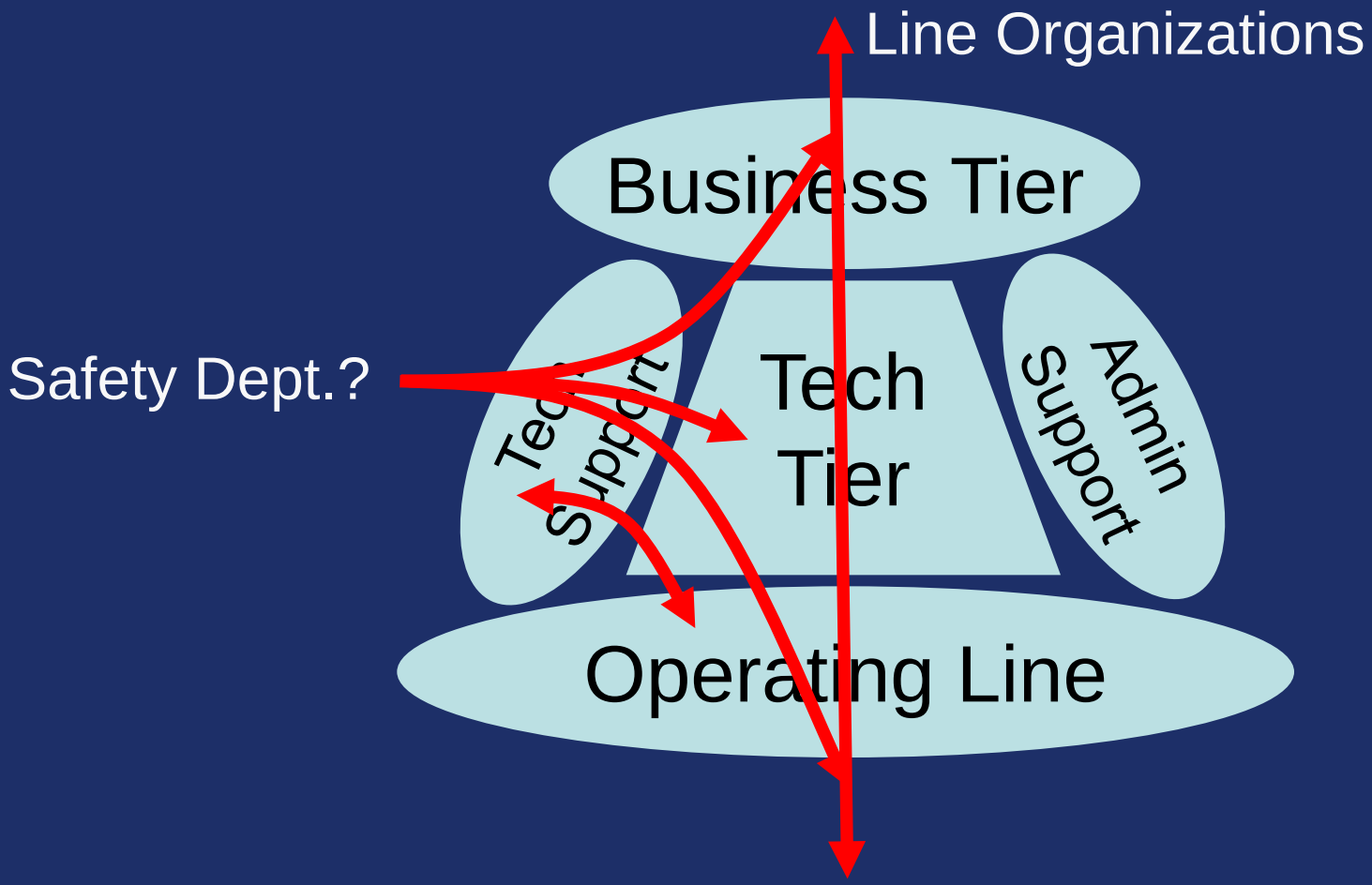
Safety Management Strategies



Who “owns” the SMS?



Responsibility for Safety



Accountability: What do we mean?

- Blame?
- A scapegoat?
- That's "backward accountability"
- We want "forward looking accountability"
- Taking responsibility for reporting
- Willingness to admit mistakes
- Taking responsibility for change

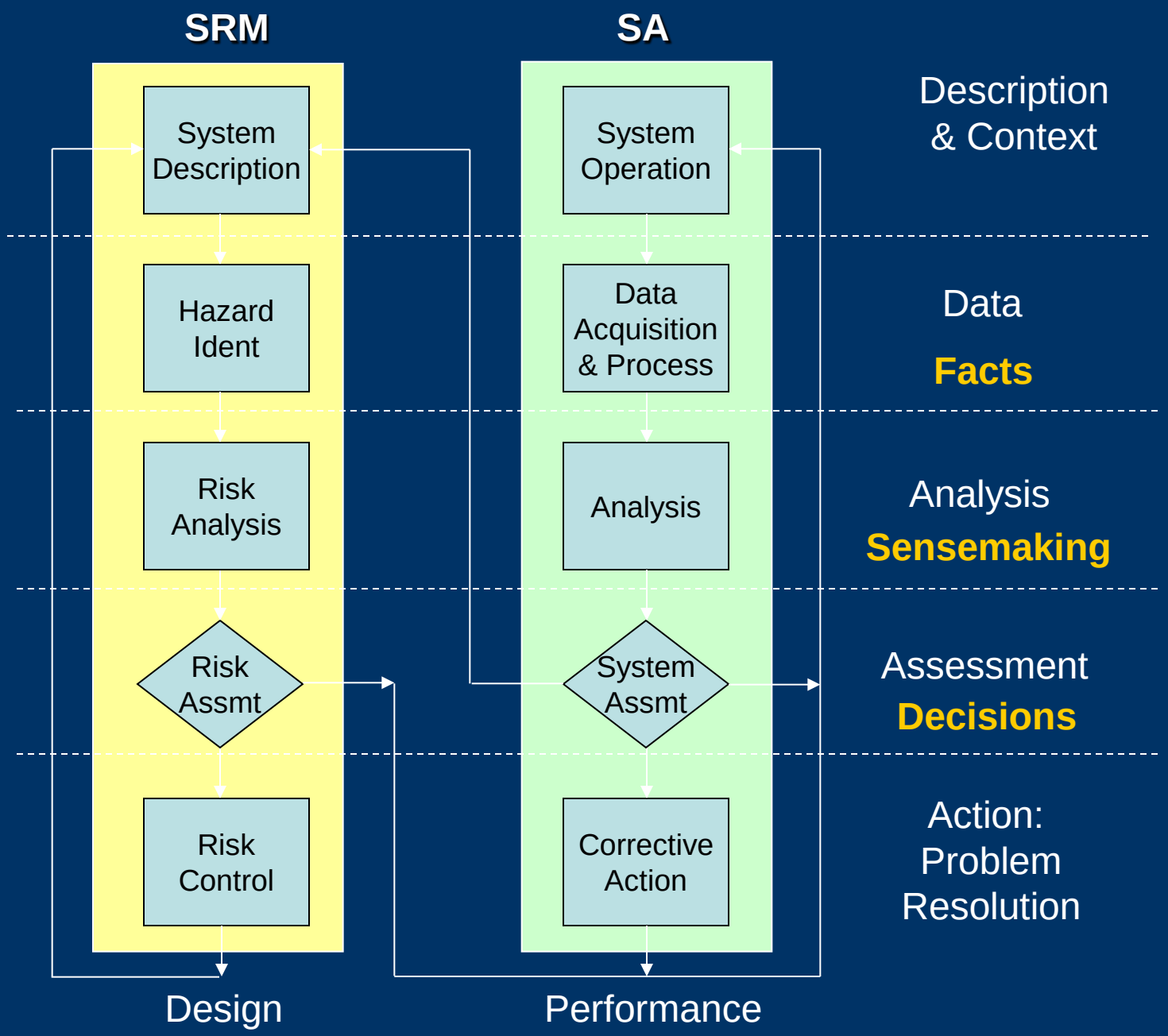
Duties of Technical Management

- **Hazard identification**
- **Safety risk assessment**
- **Assuring the effectiveness of safety risk controls**
- **Promoting Safety**
  - Training
  - Communication
- **Reporting to the Accountable Executive**

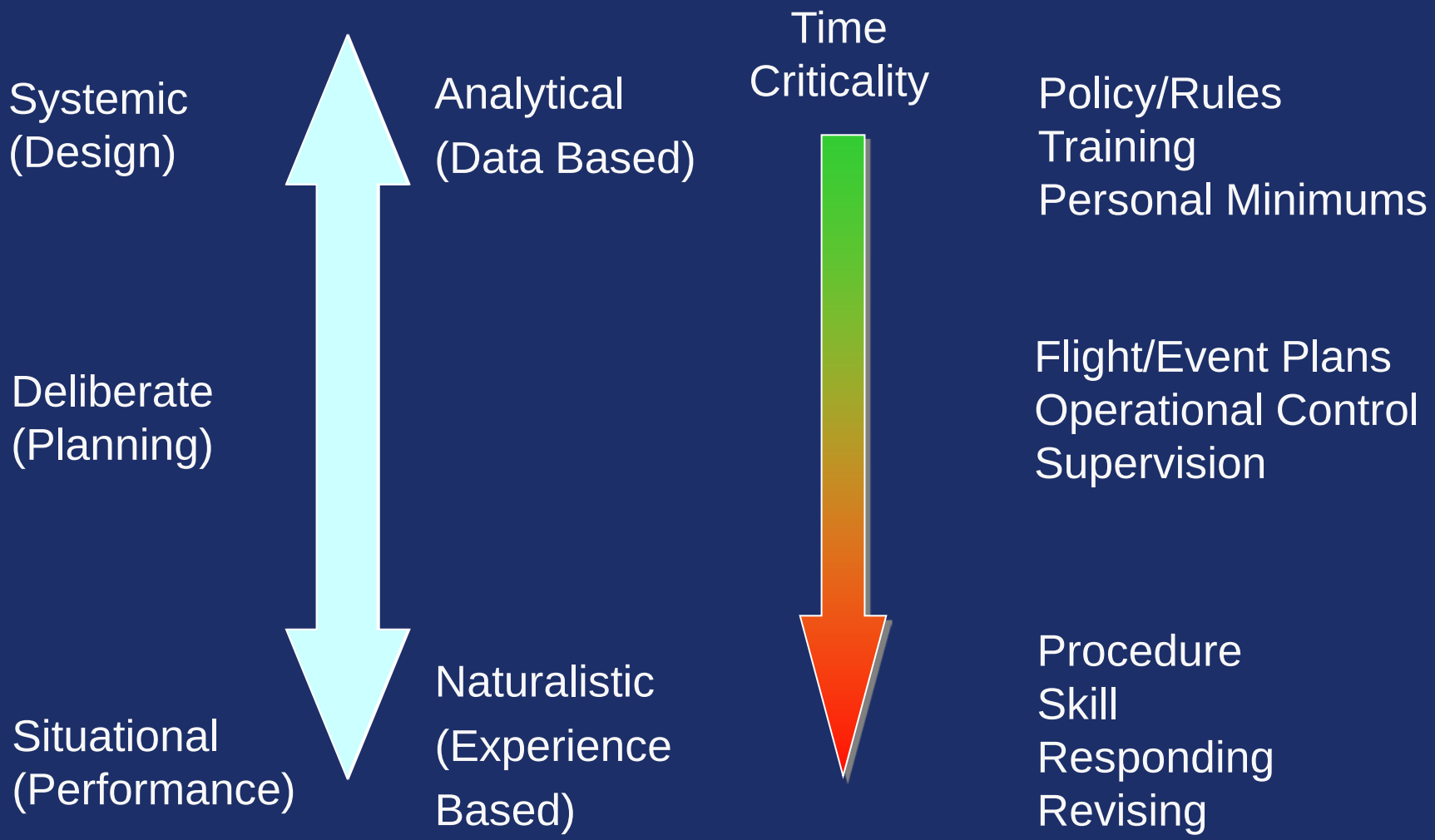
Risk Management Triggers

- Implementation of new systems
- Revision of existing systems
- Development of operational procedures
- Hazards or ineffective risk controls identified during safety assurance activities

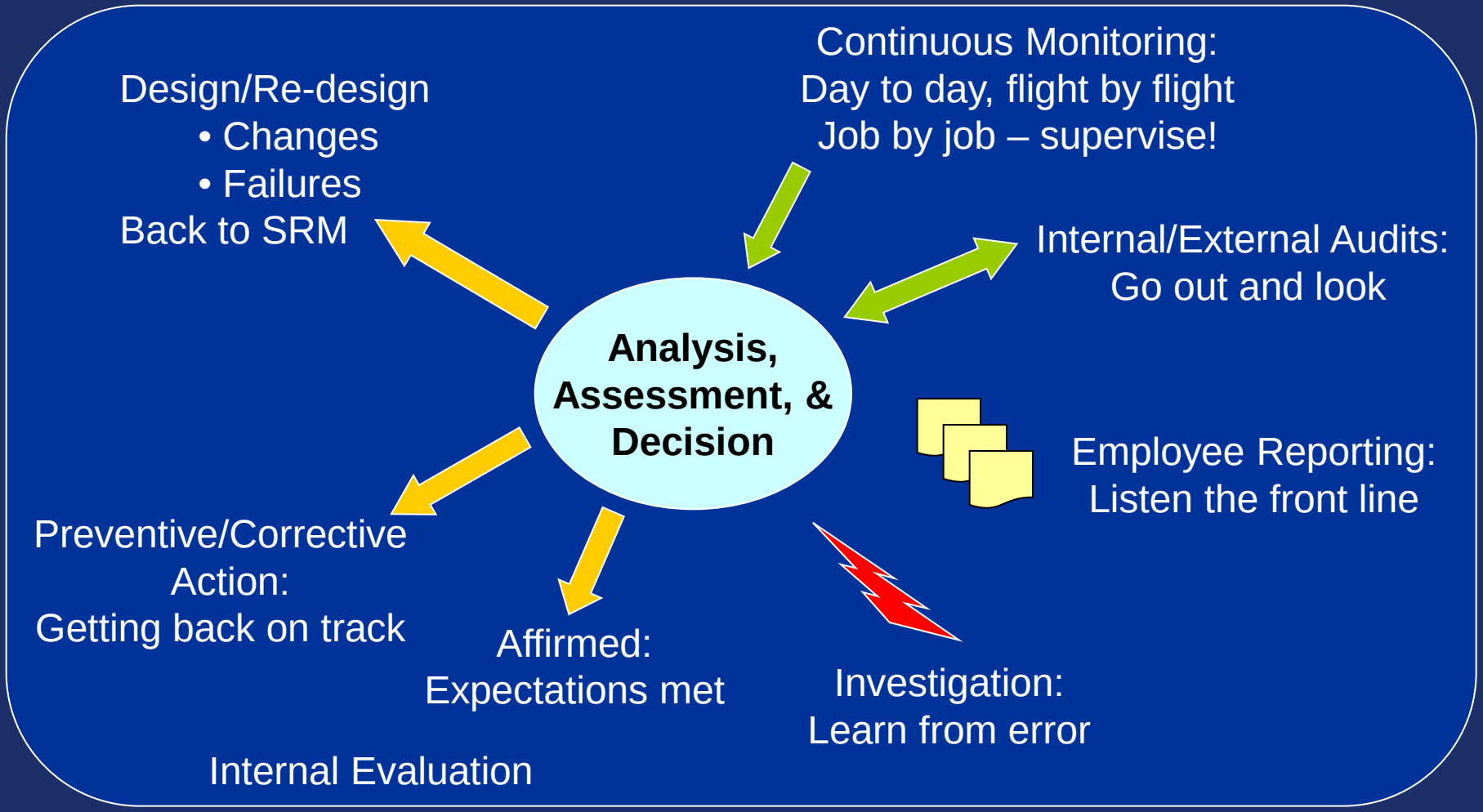
Safety Risk Management (SRM) and Safety Assurance (SA) Workflow



Risk Management Decision Making



Staying Informed: The SA Process



Culture and Safety Assurance

- **Audits and Evaluation**
  - Sensitivity to operations
  - Preoccupation with failure
- **Employee reporting**
  - Reporting Culture
  - Deference to expertise
- **Investigation**
  - Learning culture
  - Commitment to resilience

"Carelessness and overconfidence are more dangerous than deliberately accepted risk"
Wilbur Wright, 1901

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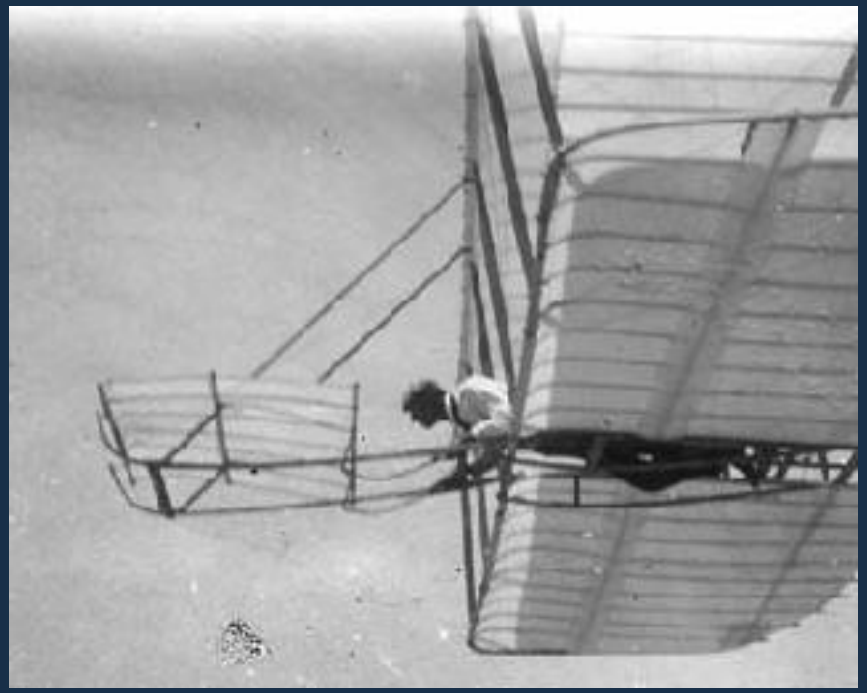
Wilbur Wright gliding, 1901
Photographs: Library of Congress