FAA ATO's Safety Management System (SMS)

Friends and Partners in Aviation Weather

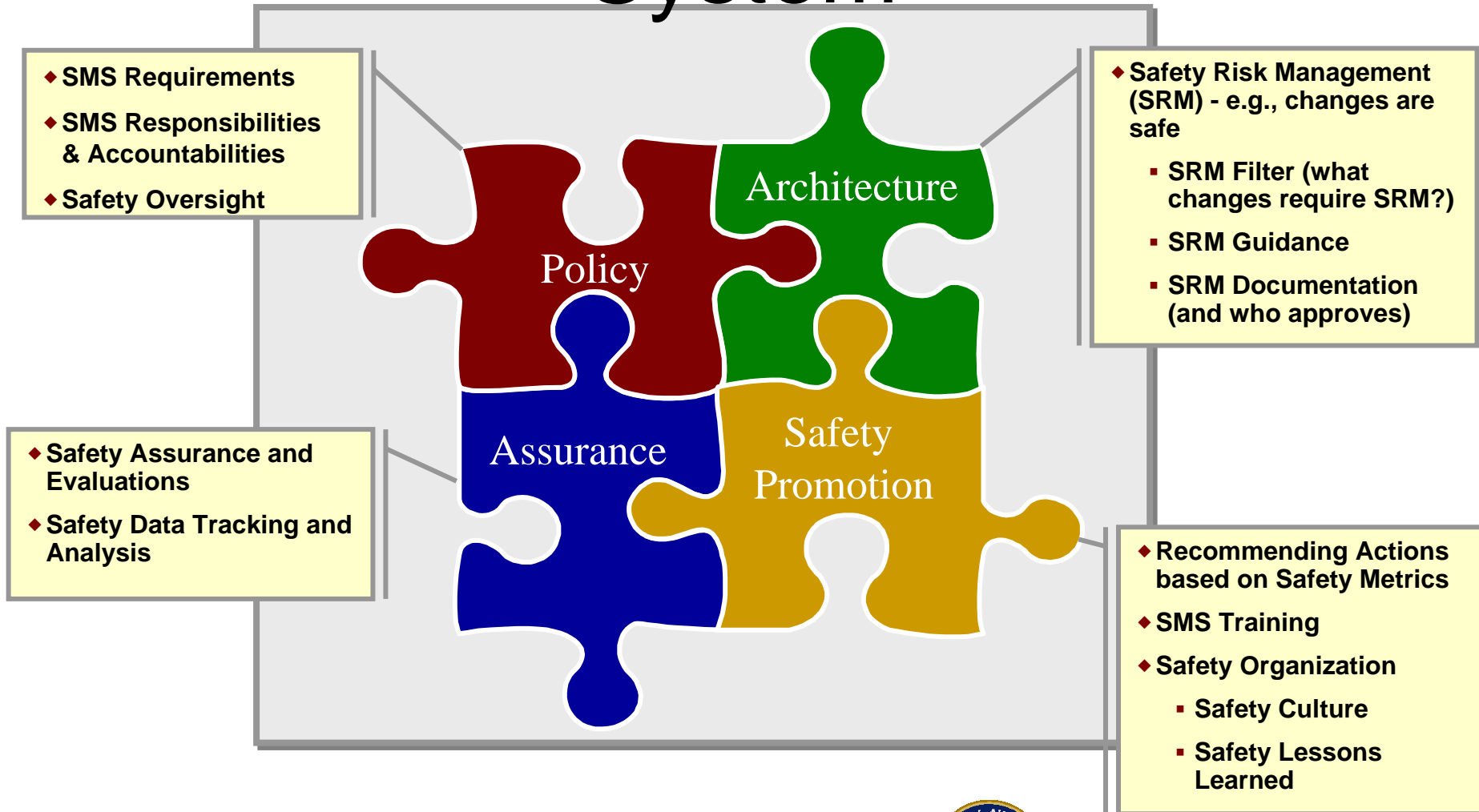Joan Devine, ATO Safety Service

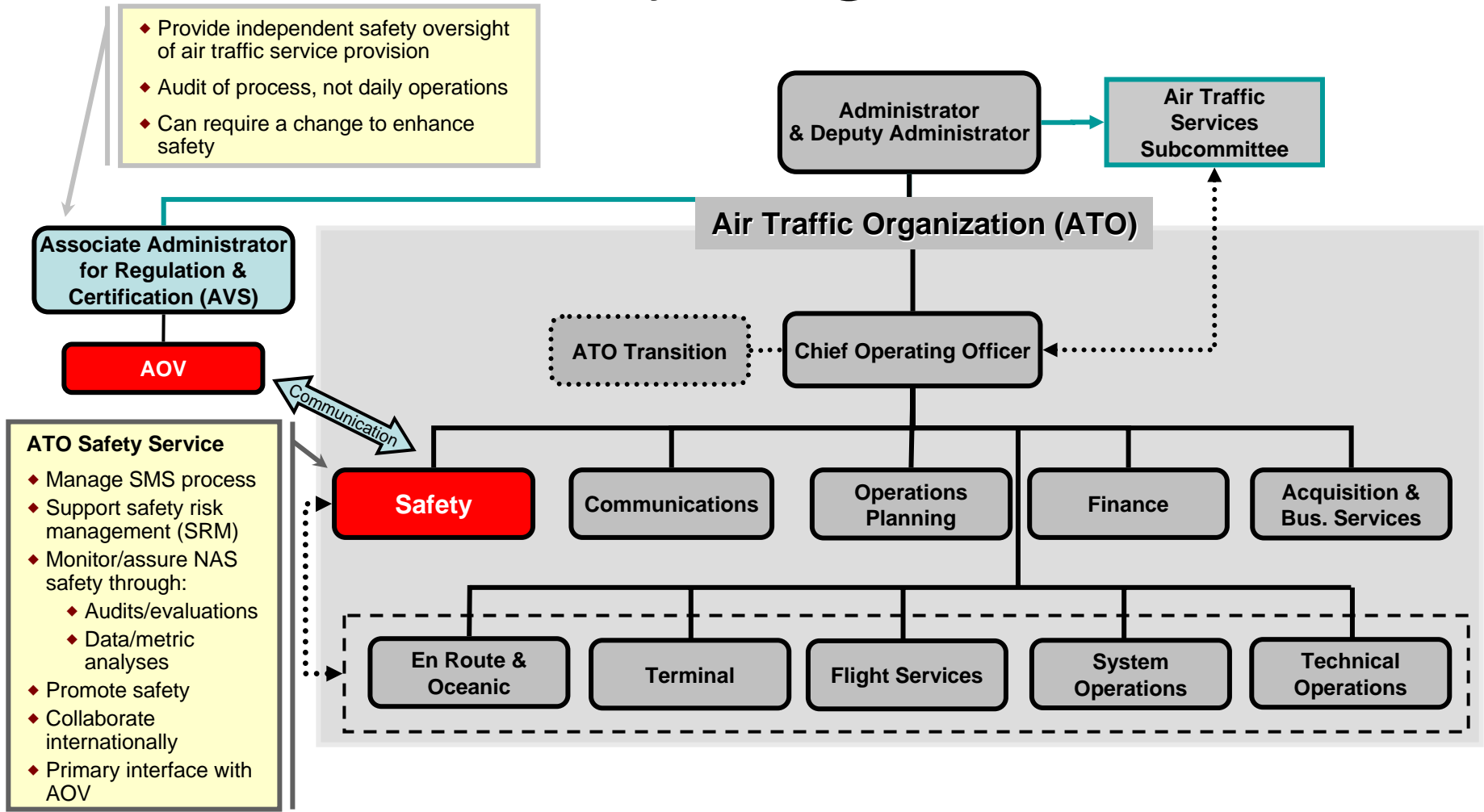November 11, 2005

Background

- FAA's ATO is implementing a Safety Management System (SMS)
  - ICAO requirement − Section 2.26, Annex 11, Nov. 1, 2001.
  - uses lessons learned from international Air Navigation Service Providers.

- Safety − a condition in which the risk of harm or damage is limited to an acceptable leve

- The SMS provides a proactive approach to safety.

FAA Safety Management System

- ◆ **SMS Requirements**
- ◆ **SMS Responsibilities & Accountabilities**
- ◆ **Safety Oversight**

- ◆ **Safety Assurance and Evaluations**
- ◆ **Safety Data Tracking and Analysis**

Policy

Architecture

Assurance

Safety Promotion

- ◆ **Safety Risk Management (SRM) - e.g., changes are safe**
  - ▪ **SRM Filter (what changes require SRM?)**
  - ▪ **SRM Guidance**
  - ▪ **SRM Documentation (and who approves)**

- ◆ **Recommending Actions based on Safety Metrics**
- ◆ **SMS Training**
- ◆ **Safety Organization**
  - ▪ **Safety Culture**
  - ▪ **Safety Lessons Learned**

FAA Safety Organizations

- ◆ Provide independent safety oversight of air traffic service provision
- ◆ Audit of process, not daily operations
- ◆ Can require a change to enhance safety

Administrator & Deputy Administrator

Air Traffic Services Subcommittee

Air Traffic Organization (ATO)

Associate Administrator for Regulation & Certification (AVS)

AOV

ATO Transition

Chief Operating Officer

Communication

ATO Safety Service
- ◆ Manage SMS process
- ◆ Support safety risk management (SRM)
- ◆ Monitor/assure NAS safety through:
  - ◆ Audits/evaluations
  - ◆ Data/metric analyses
- ◆ Promote safety
- ◆ Collaborate internationally
- ◆ Primary interface with AOV

Safety

Communications

Operations Planning

Finance

Acquisition & Bus. Services

En Route & Oceanic

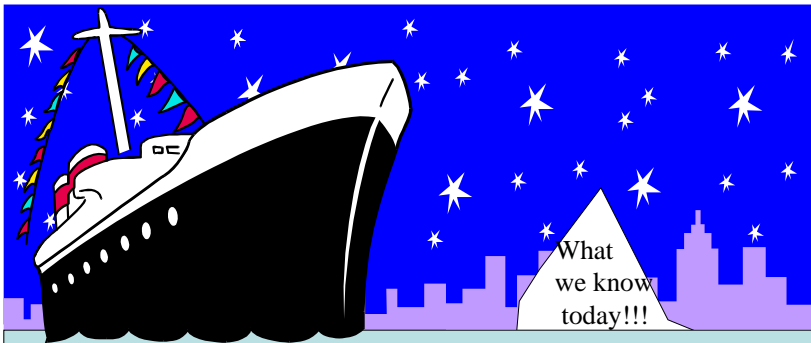**Terminal**

Flight Services

System Operations

Technical Operations

Value of Safety Management

The devil is in the details.

What we know today!!!
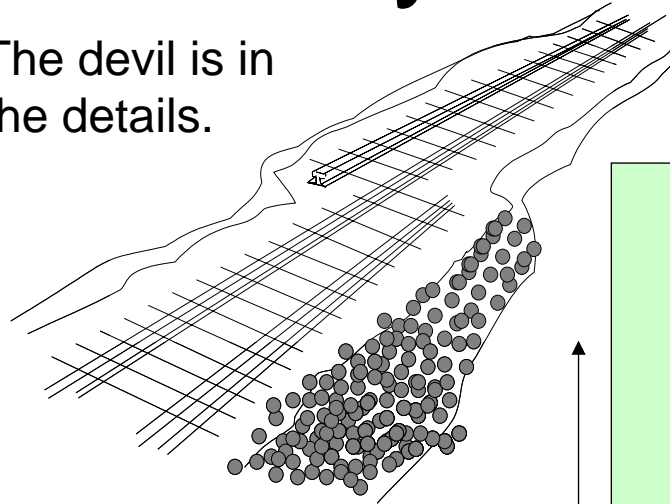
There are many hidden risks.

Cost due to changes

SRM's function is to find and control risk here
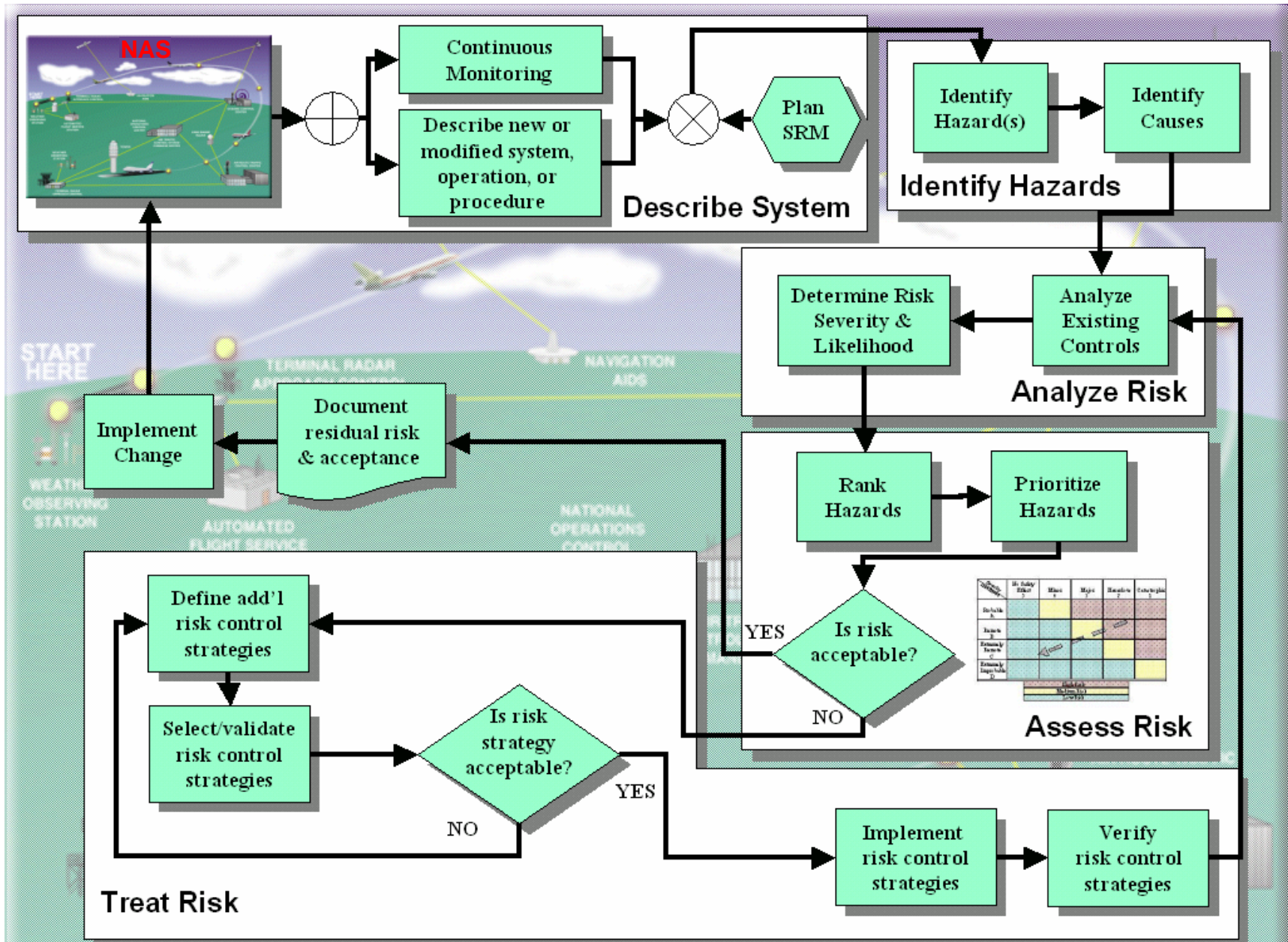
$
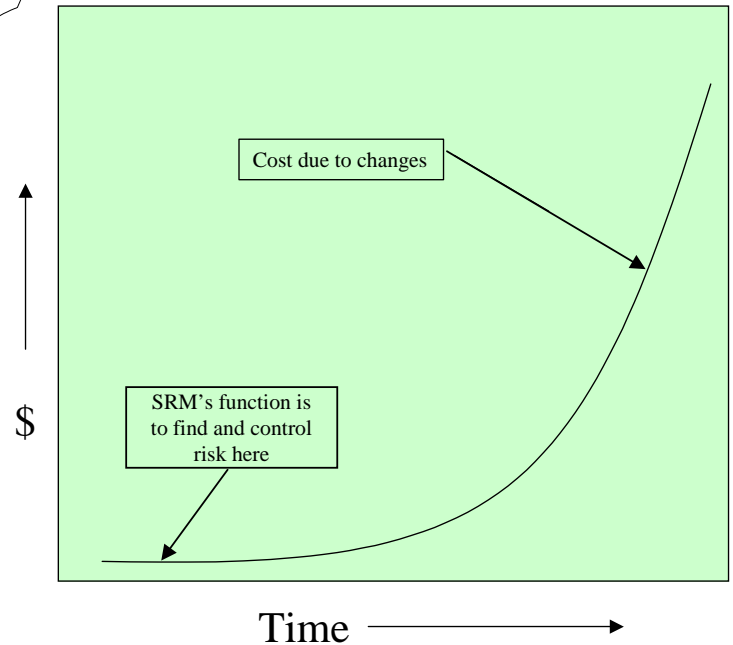
Time ⟶

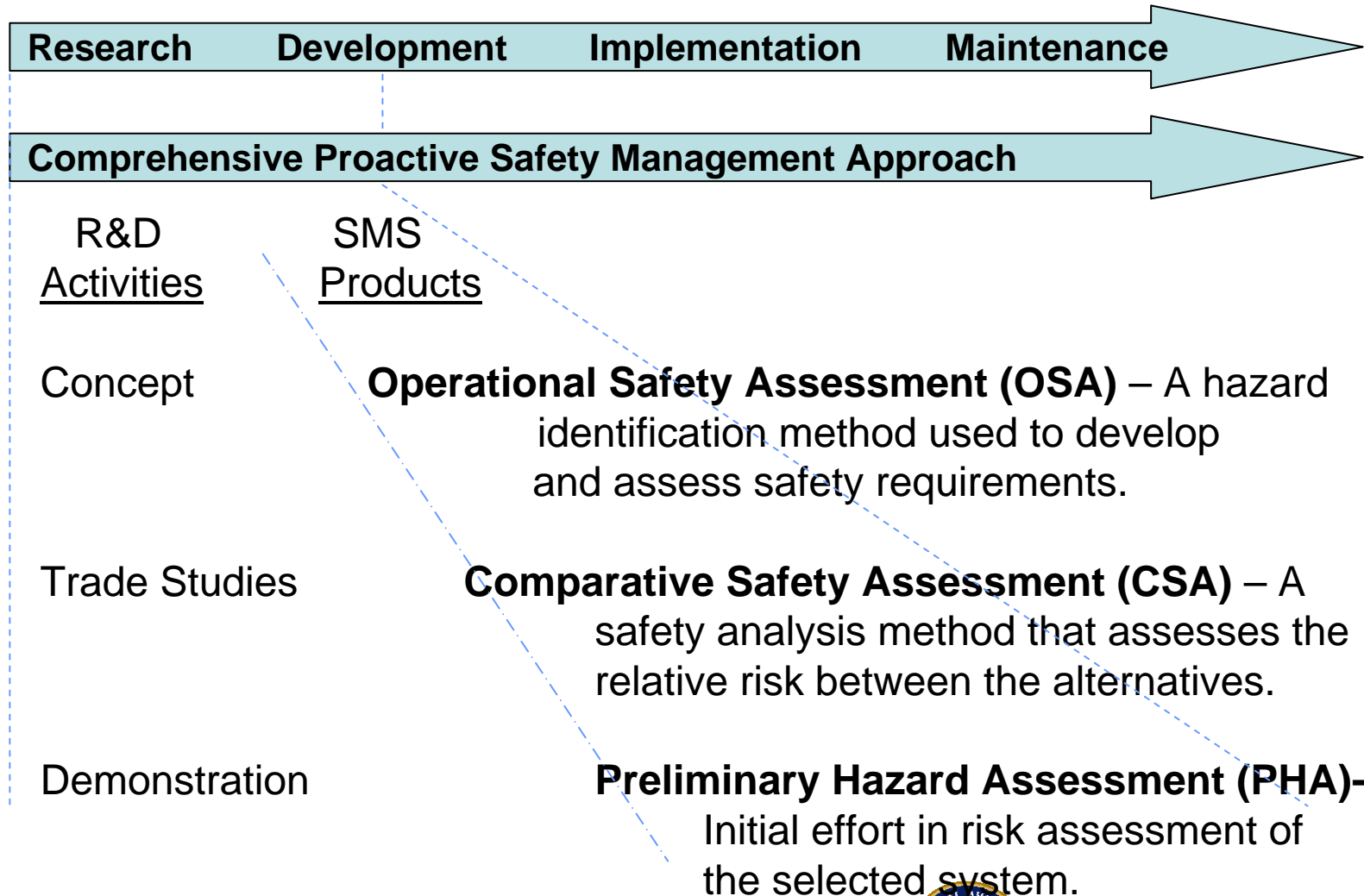**It costs less and can shorten deployment time to find and fix problems early.**

SMS Decision Process

SMS Activities for R&D

Research	Development	Implementation	Maintenance

Comprehensive Proactive Safety Management Approach

R&D Activities	SMS Products	
Concept	**Operational Safety Assessment (OSA)** – A hazard identification method used to develop and assess safety requirements.
Trade Studies	**Comparative Safety Assessment (CSA)** – A safety analysis method that assesses the relative risk between the alternatives.
Demonstration	**Preliminary Hazard Assessment (PHA)-** Initial effort in risk assessment of the selected system.

Describe the System

New or Modified System, Operation, or Procedure

Continuous Monitoring
- How are things going?
- Communicate hazards and their risk to all stakeholders
- Review mitigation actions for compliance to plan regularly
- Assess effectiveness of mitigation strategies
- Watch for new hazards through safety data

Identify Hazards

What Can Go Wrong?
- System failures
- Procedural failures
- Adverse ambient environment
  - Lightning
  - Thunderstorms
  - Electro-magnetic effects
  - Icing
- Adverse operational environment
  - Traffic density
  - Communications
- Human failures

Analyze and Assess Risk

How Big Is the Risk?
- Severity
  - Worst credible
- Likelihood of outcome
- Identify the risk from the risk matrix
- Determine risk resolution date

Verify Strategy and Track Hazards with High or Medium Risk

Treat the Risk

How Can You Reduce the Risk?
- *Avoid* by eliminating the risk cause and/or consequence
- *Control* the causes or system states
- *Transfer* the risk
- *Assume* the risk level and continue on current plan
- *Research and Knowledge* of items that impact the risk
- Write mitigation plan

Implement Risk Management Strategy

Does the Program include Mitigation?
- Change requirements to include mitigations
- Change budget to include mitigation activity
- Change planning to include mitigation events
- Communicate changes to stakeholders

Severity / Likelihood	No Safety Effect 5	Minor 4	Major 3	Hazardous 2	Catastrophic 1
Probable A	Low	Medium	High	High	High
Frequent B	Low	Medium	High	High	High
Remote C	Low	Low	Medium	High	High
Extremely Remote D	Low	Low	Low	Medium	High
Extremely Improbable E	Low	Low	Low	Low	High *

* Unacceptable with Single Point and Common Cause Failures

| High Risk |
| Medium Risk |
| Low Risk |

15-D November

8

Transition to Oversight & Next Steps

- The ATO Safety Service Unit is leading the implementation of the SMS in ATO, as documented in the *FAA SMS Manual Version 1.1*
  - Version 2.0 Planned for release in early FY-06

- Application of Safety Risk Management (SRM) process has begun on target programs and will expand over time.

- ICAO safety audit of FAA ATO scheduled for FY-07

www.ato.faa.gov

http://intranet.faa.gov/ats/atq/