

The “Why” and “What” of Safety Management Systems



Federal Aviation
Administration



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By: Rick Clarke (AFS-220)

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The True and Straight Word

“Delegation is not Derogation.”

N. Sabatini, 2007



The Issue of *Safety*

What do we understand?

- The record is a good one
- Air transportation will continue to grow
- The Air Transportation System is outgrowing the capabilities of the current aviation safety system



The Issue of *Focus*

What does the FAA want for the Industry?

- A Safe and Efficient Air Transportation system
- Effective and Strong Aviation providers



Forecast Growth

- Total mainline air carrier and regional enplanements are forecast to increase from 738.6 million in 2005 to 1.07 billion in 2017, *an average annual rate of 3.1 percent.*

2007 FAA Inspectors = ~3,100

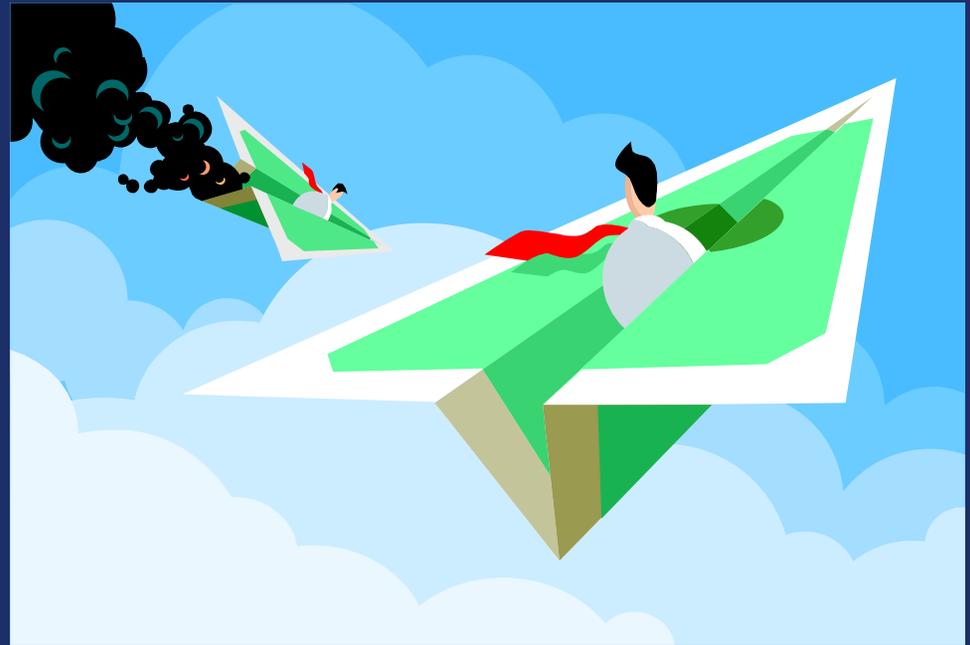
2017 FAA Inspectors = 4,300?



Safety Efforts are Changing

What is Driving this?

- Financial stress for Air Carriers, Aviation Providers and Regulators
- A Tangle of Regulations, Standards, Annexes, Policies and Procedures
- Lessons Learned



The International Picture

ICAO safety management requirements

- Annex 11 - Air Traffic Services
- Annex 14 - Aerodromes
- Annex 6 - Operation of Aircraft
- Annex 8 - Maintenance of Aircraft



An Industry Answer?

ICAO, FAA, overseas Regulators, Air Carriers, ALPA, IATA, IBAC



SMS

Launching a **common** idea and a
new approach:

Two Ways to Look at Safety



The Traditional Way – “Regulatory Safety”

A foundation of rules ...to improve standards of ... behavior, practice and of operating...the level of which is governed by societal, cultural, philosophical factors, legal systems, technological progress and experience.



Regulatory safety is *“Reactive”*



Regulatory Safety Has Limits

- e.g., Design, manufacture and operations of aircraft must comply with regulations...
- ...*BUT* you can't write a regulation to address every potential hazard...
- ...*SO*, the goal becomes compliance with existing rules ... ignoring other hazards



Safety ... the *Proactive* Way

Safety Management Systems



“SMS”

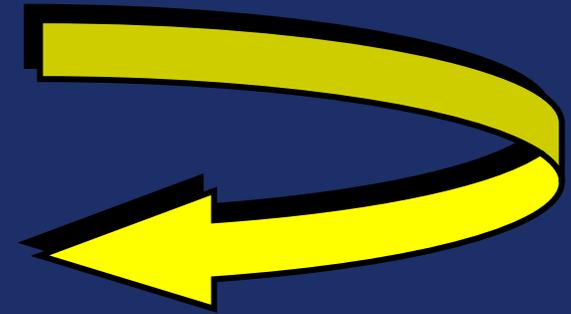


A systematic and continuous **Management** process based on proactive identification of **Hazards**, and analyses of their **Risk**.

SMS comes from *System Safety*



“Cradle to Grave” Concept



Adapted to Ongoing Organizations

SMS is about...

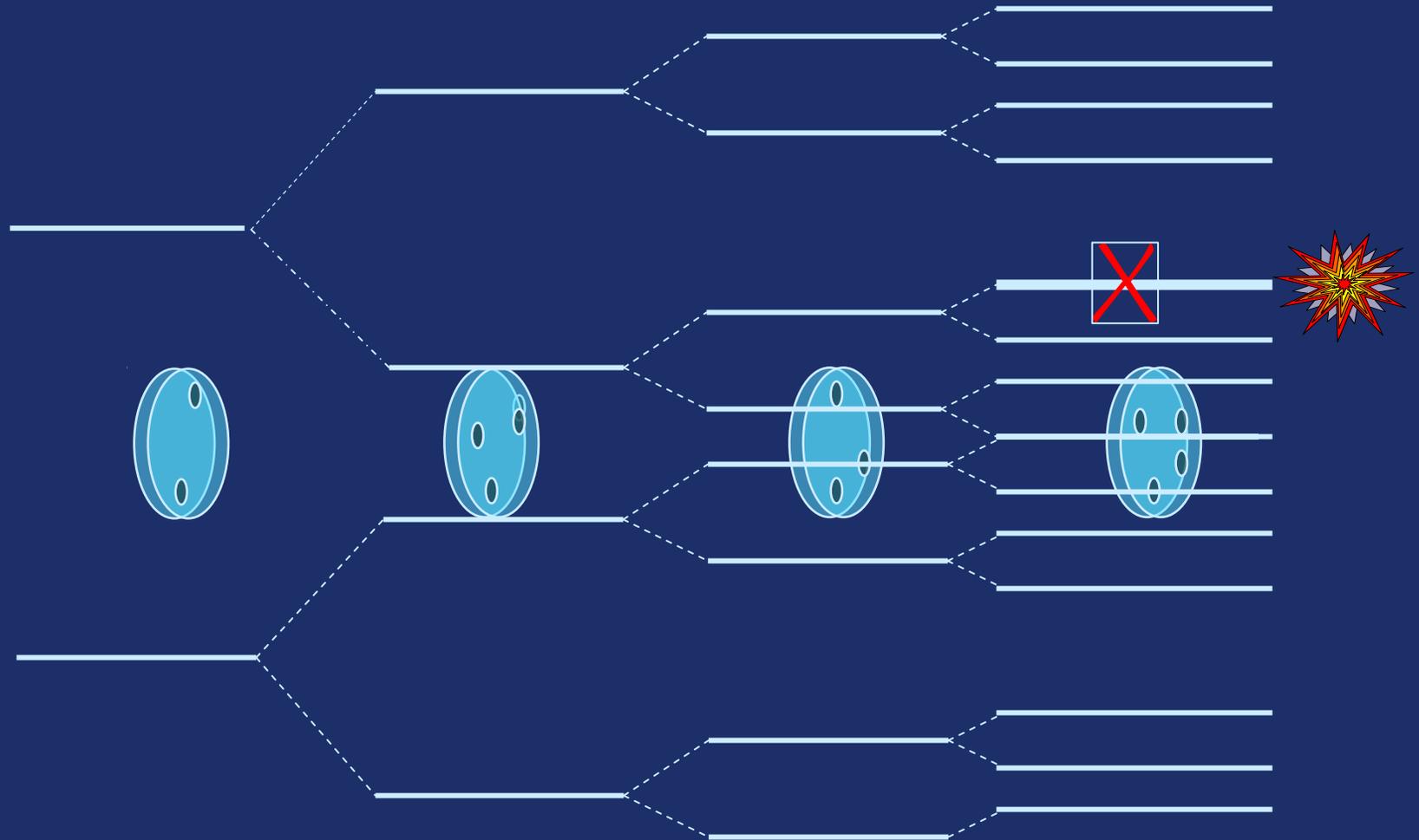
“Process”

instead of

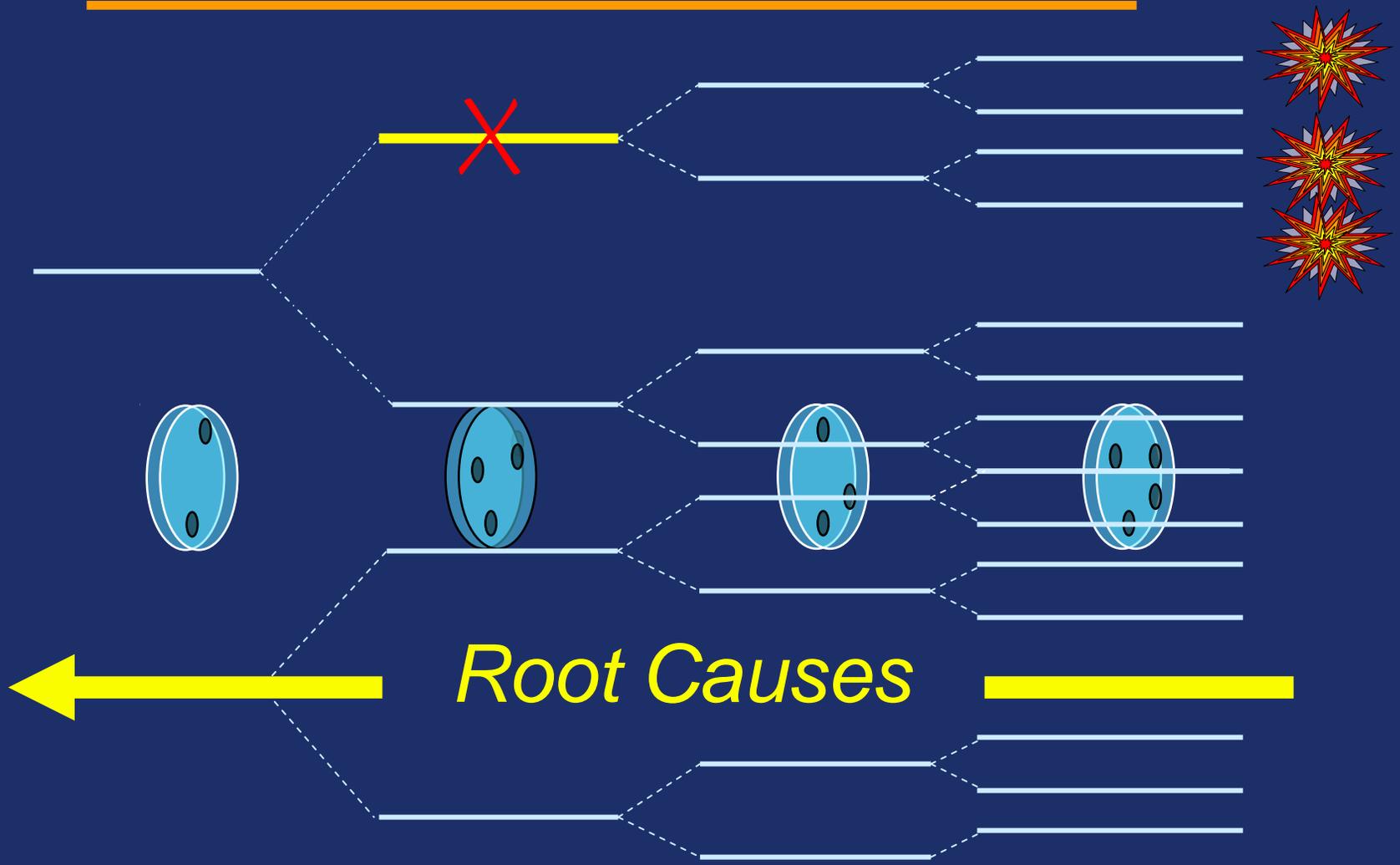
“Events”



The “Usual” Focus on Events

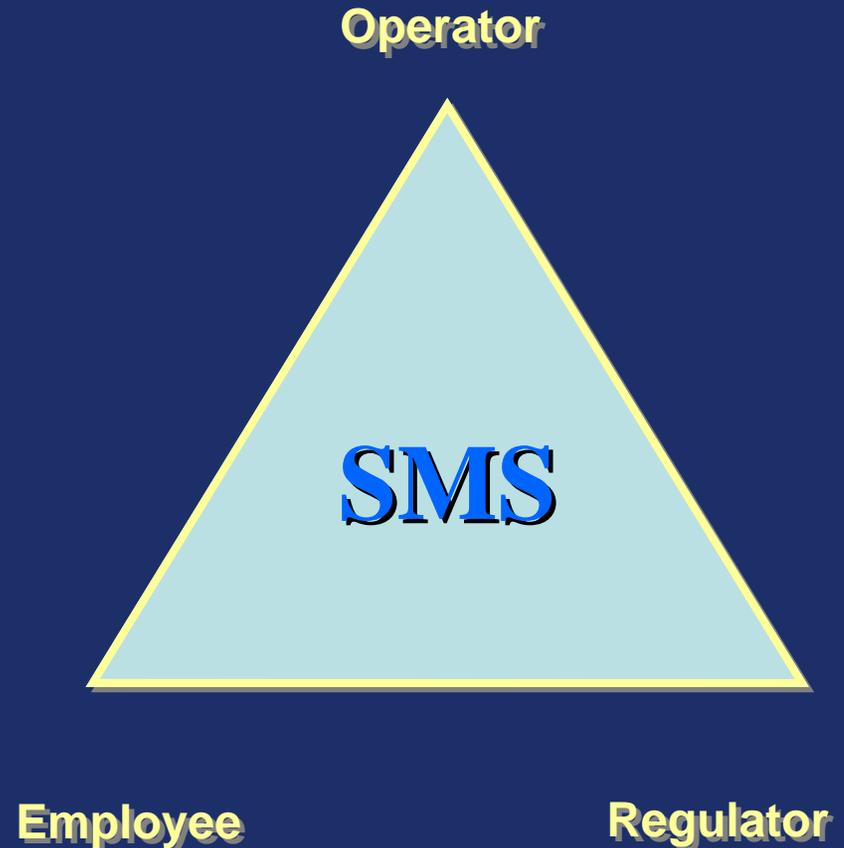


Changing Focus to Processes

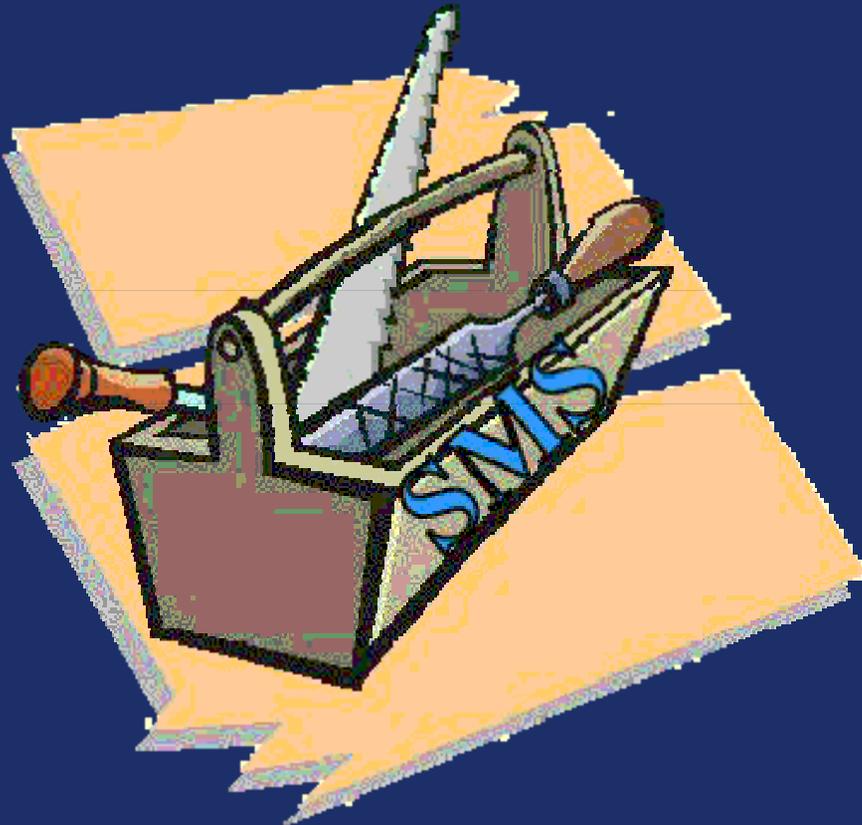


SMS

- Is an Operator based system
- Integrates *Employee* expertise
- Interfaces with *Regulators'* oversight systems



SMS is the toolbox for...



- Policies & Management Practices
- Risk Management processes
- Safety Assurance processes
- Safety promotion practices

What is the Regulator's Duty?

- It is *NOT* safety achievement ...or “management”
- It *IS* safety “oversight”



What is the Operator's Duty?

- *Safety achievement* is the responsibility of the “provider”



The FAA's resources are best applied in *assisting / enabling* safety management by the business or operation

Role of the Operator

- Operators must meet the regulatory requirements to obtain and hold a Certificate
- Operators must maintain the “highest level of safety in the public interest.”

A SMS gives the operator’s management a structured system to meet their legal and regulatory requirements...as part of managing the business.



SMS for “Operators” is...

... a top-down program *starting*
with “Top Management”

It is part of the Business



Parallel Approaches in Business and SMS

The Business Approach	<p>” SMS is the link between the two similar approaches to “business”</p> 	The Safety Approach
Mission -		Mission -
Vision -	Vision -	
Corporate Goals -	Safety Goals -	
Policies -	Policies -	
Requirements -	Requirements -	
Business Processes:	SRA Processes:	
<i>Identify Non-Compliance</i>	<i>Identify Hazards / Non-Compliance</i>	
<i>Implement Solutions</i>	<i>Implement Hazard Controls</i>	
<i>Measure Performance</i>	<i>Measure Performance</i>	
<i>Lessons Learned</i>	<i>Lessons Learned – Improve Process</i>	
<i>Repeat the Process</i>	<i>Repeat the Process</i>	



ICAO Annex 6 requirements

“An accepted safety management system shall clearly define lines of safety accountability throughout the operator’s organization, including a direct accountability for safety on the part of senior management.”

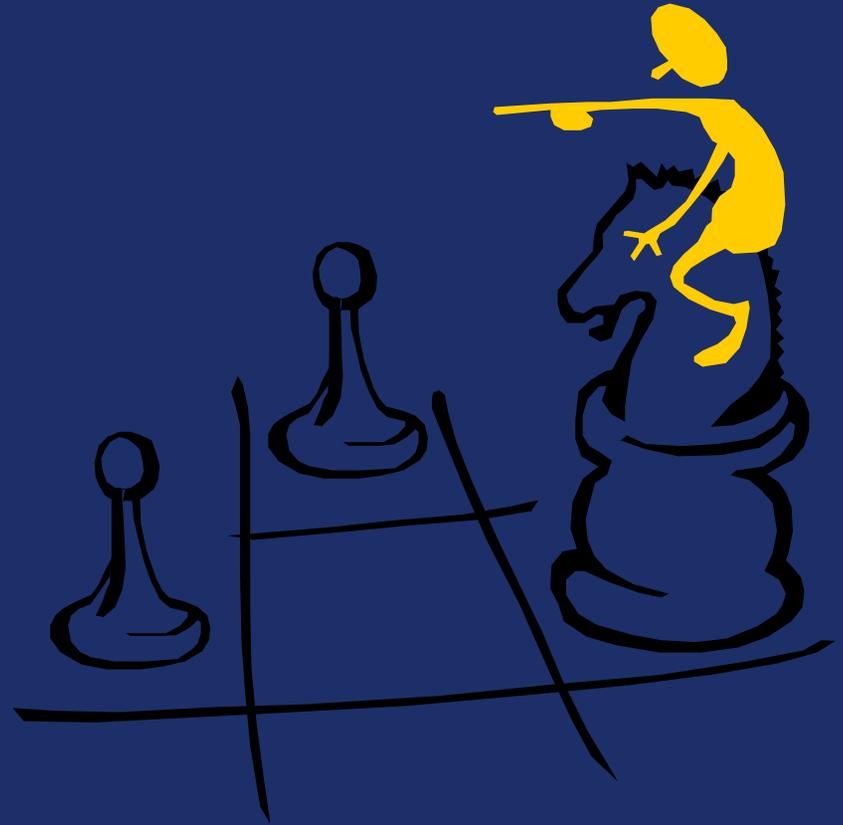


An Operator with a SMS...

Organizes:

Policy, Procedure, and
Practice

Management Systems and
Communications



A SMS Organization...



Develops a “Just Culture” or
“Safety Culture” to:

Capture the operational
knowledge and experience of
the employees

Involve the employees in
the safety achievement
process



SMS is a “System” that Integrates ...



SMS...emphasizes Risk Management

...It integrates safety
with *Line
Management*



In Business and SMS



**“Risk” is
manageable,
but what is
it?**

A SMS Organization...

Adopts Risk Management Practices to:

- Adapt to Change
- Manage Resource Application
- Understand the pitfalls of the operating environment



Some Necessary.....

.....*Definitions*



“Hazard”

“An event, condition or circumstance, which can lead to an unacceptable loss.”



“Risk”

The assessed *potential* for adverse consequences resulting from a *hazard*, measured in terms of *Probability* and *Severity*



A Risk Assessment Matrix

SEVERITY

5	5	10	15	20	25
4	4	8	12	16	20
3	3	6	9	12	15
2	2	4	6	8	10
1	1	2	3	4	5
	1	2	3	4	5

PROBABILITY



Risk Management is....

....a continuous
process

....a closed
loop process

....cross
discipline



Industry & FAA SMS Implementation

- Follows a *phased approach*
- The processes underlying the four pillars are modularized
- “Growth” or “increasing maturity” is emphasized for the system as a whole and its internal processes

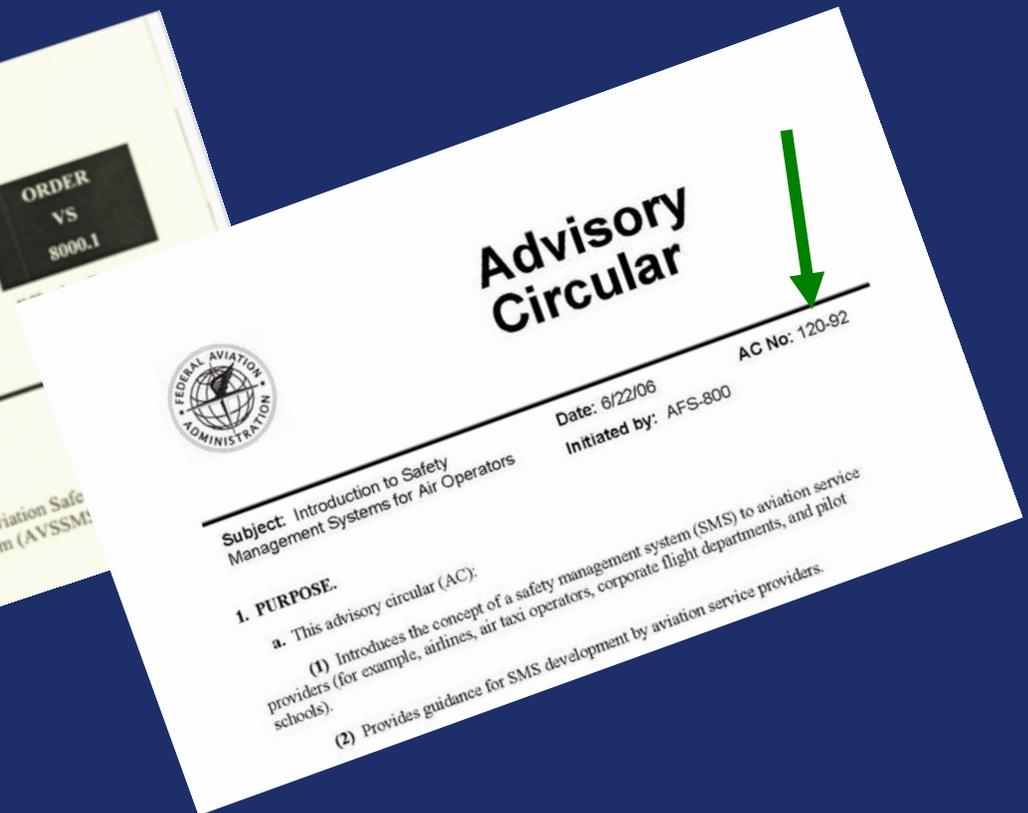
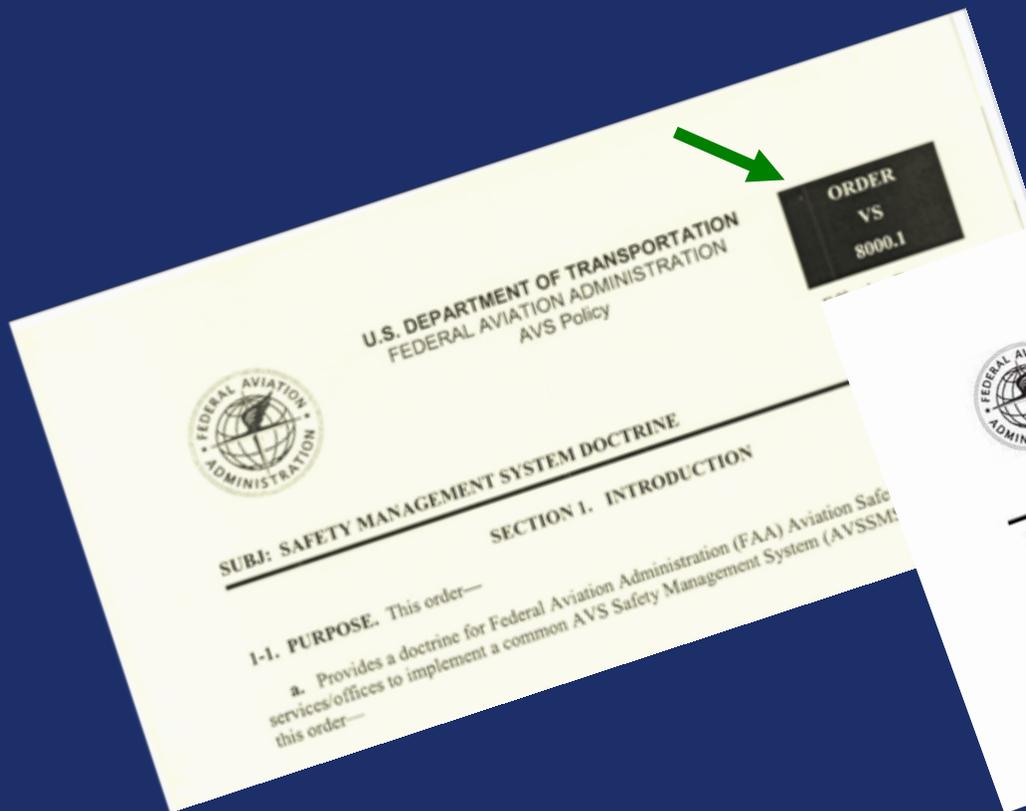


“Growing” SMS”

The SMS Maturity Steps

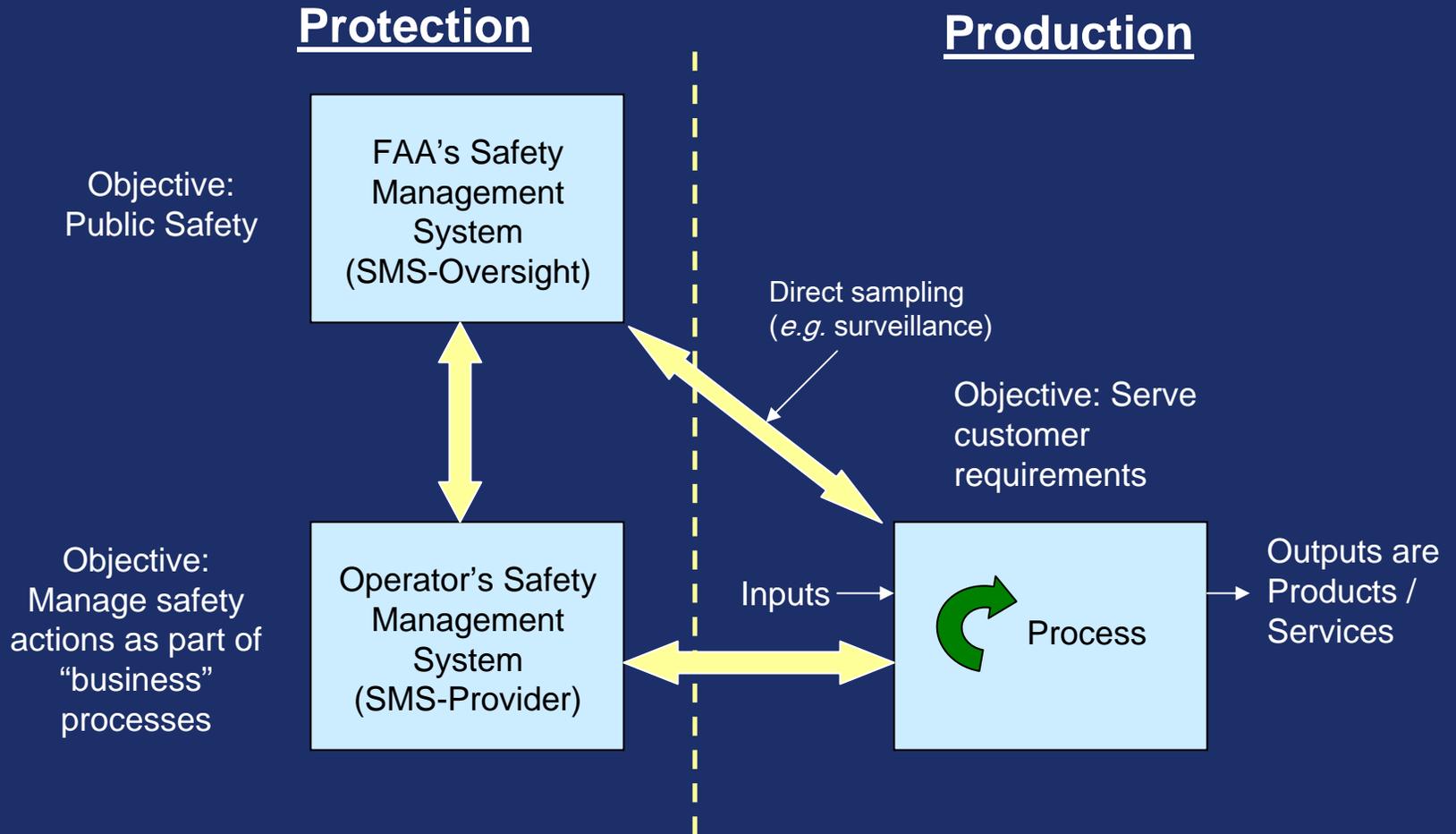


FAA (AVS) is applying safety management concepts to oversight activities



VS 8000.1 & AC 120-92

SMS & Oversight Relationships



SMS Rulemaking

- Rulemaking Project opened Oct 2006
- Rulemaking strategy:
 - Align regulations with ICAO SARP
 - Draft acceptance criteria (similar to present voluntary standard) in policy documents
 - Set implementation milestones in regulatory language



Problems and Solution

- **Current safety approaches can't keep up with aviation growth**
- **We need a new approach to our safety management and oversight problems**

SMS





SMS

The Beginning