

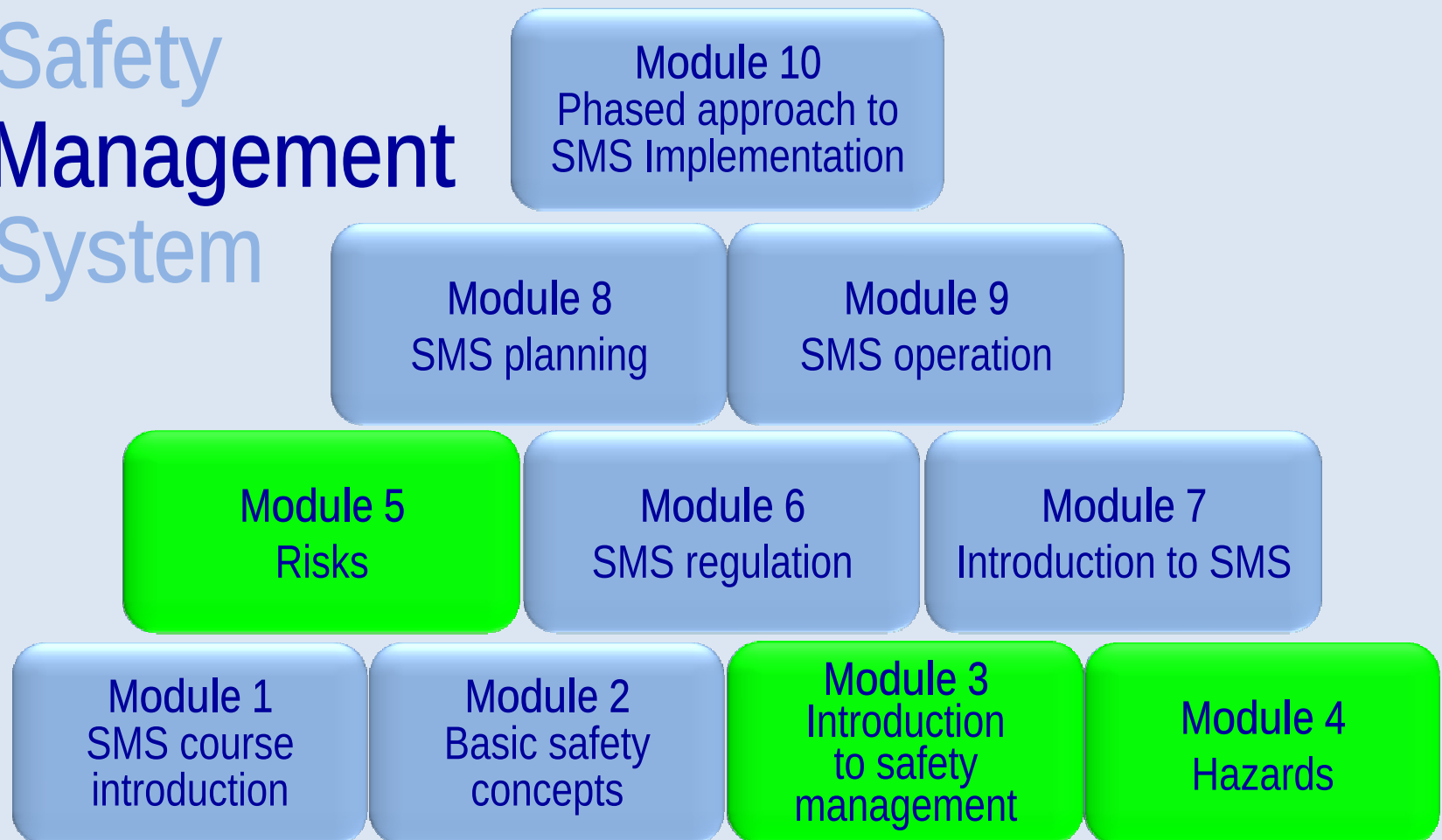
Safety Management Systems (SMS) Course



Module N° 3 – Introduction to safety management

Building an SMS

Safety Management System



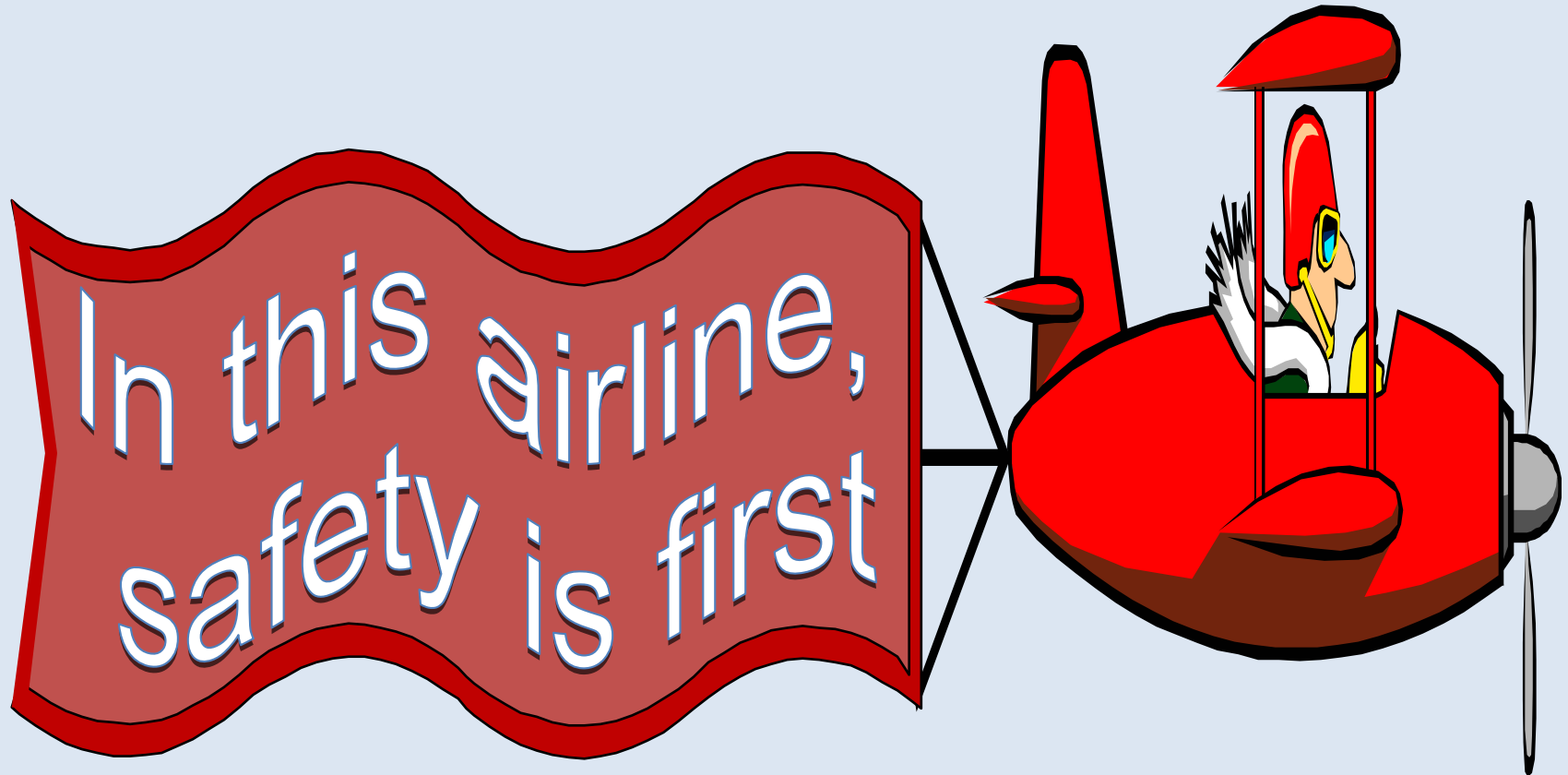
Objective

❖ *At the end of this module, participants will be able to explain the need for, the strategies and the key features of safety management.*

Outline

- ❖ The safety stereotype
- ❖ The management dilemma
- ❖ Need for safety management
- ❖ Strategies for safety management
- ❖ The imperative of change
- ❖ Safety management – Eight building blocks
- ❖ Four responsibilities for managing safety
- ❖ Questions and answers
- ❖ Points to remember
- ❖ Exercise N° 03/01 – *The Anyfield Airport accident (See Handout N° 2)*

The safety stereotype



Is it?

**In this
ATC Unit
safety is
first**



Really?

In this
airport
safety
is first



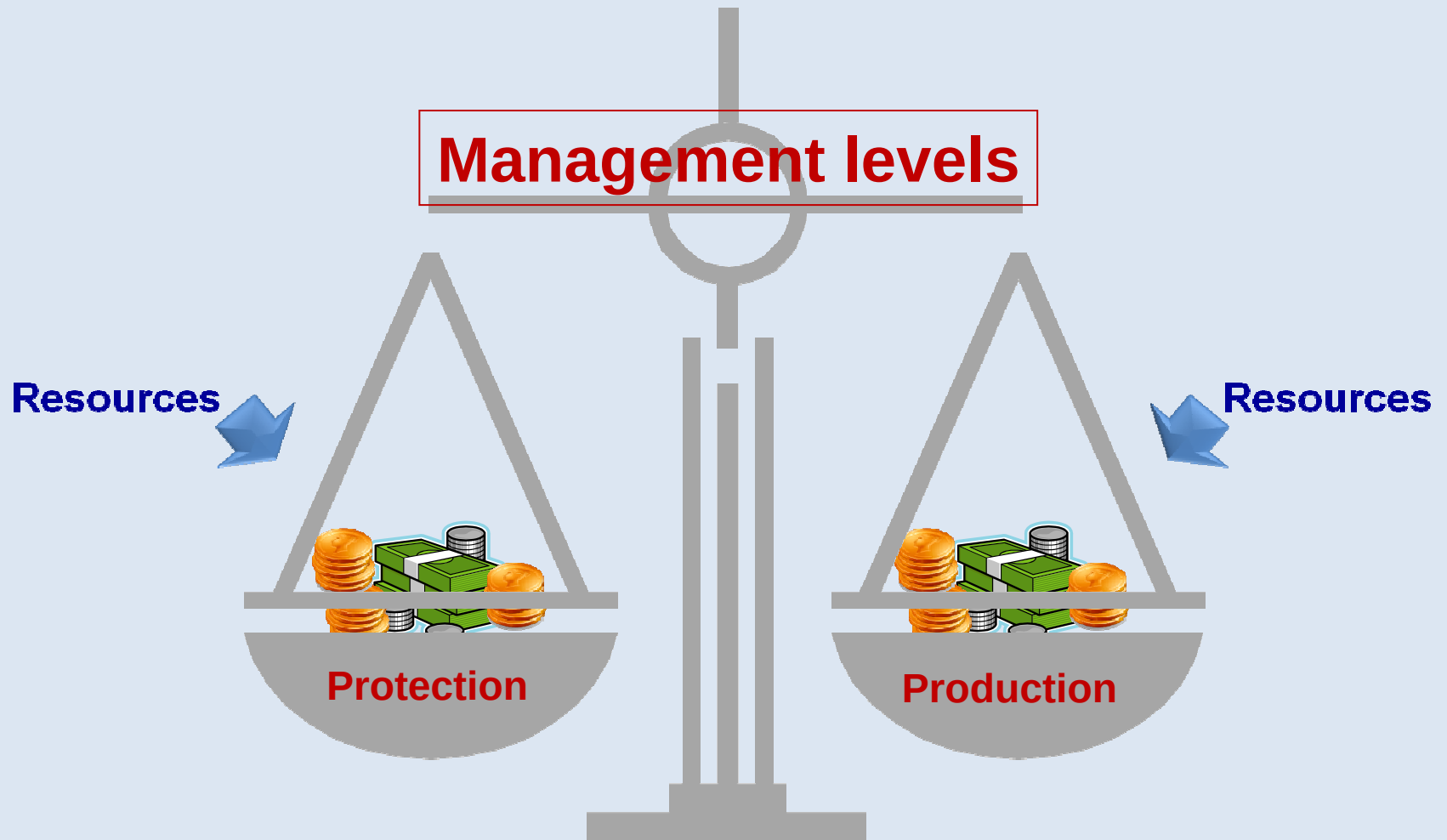
What is the fundamental objective of a business organization?



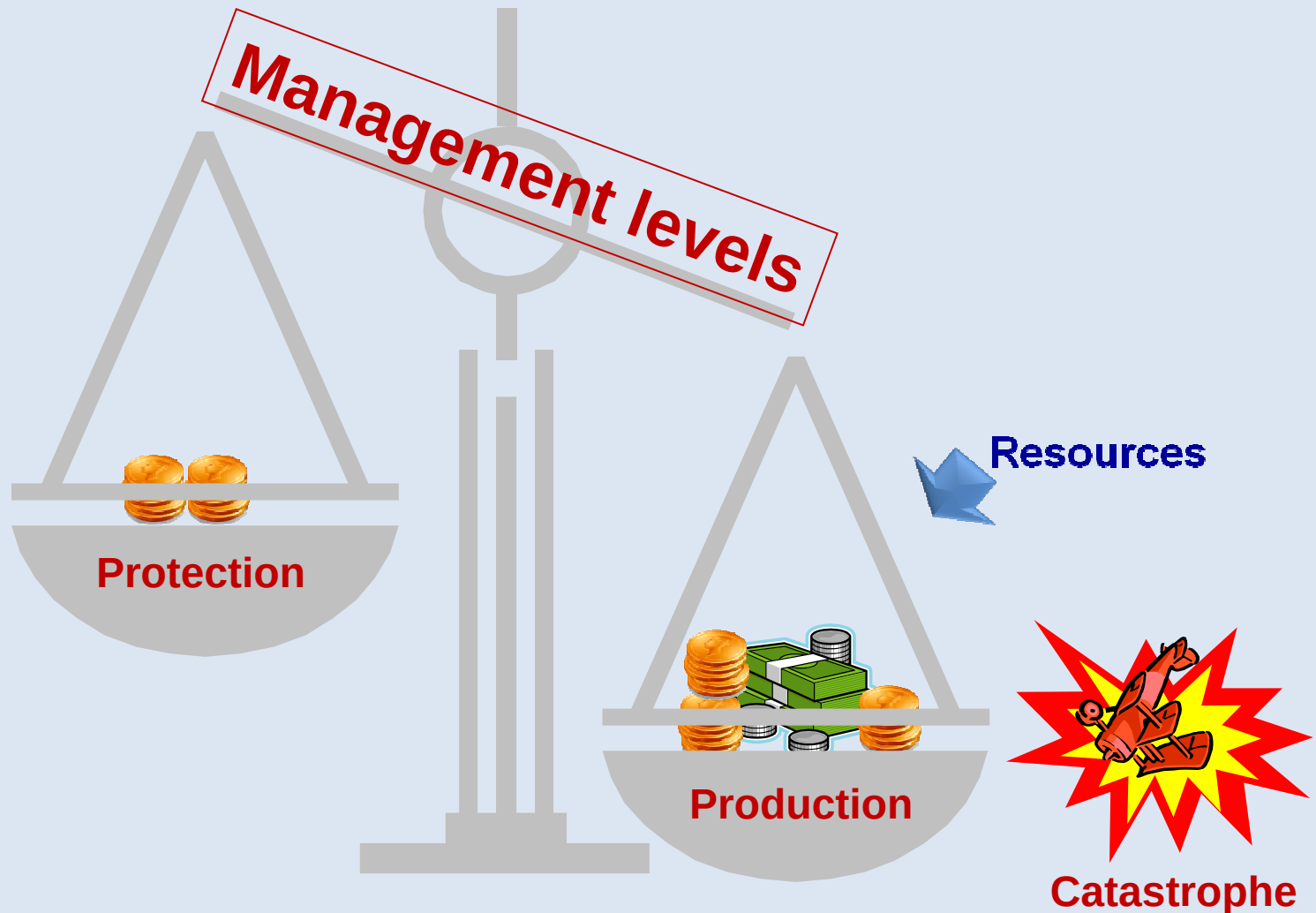
Safety management – Rationale

- ❖ In order to achieve its production objectives, the management of any aviation organization requires the management of many business processes.
- ❖ Managing safety is one such business process.
- ❖ Safety management is a core business function just as financial management, HR management, etc.
- ❖ This brings about a **potential** dilemma for management.

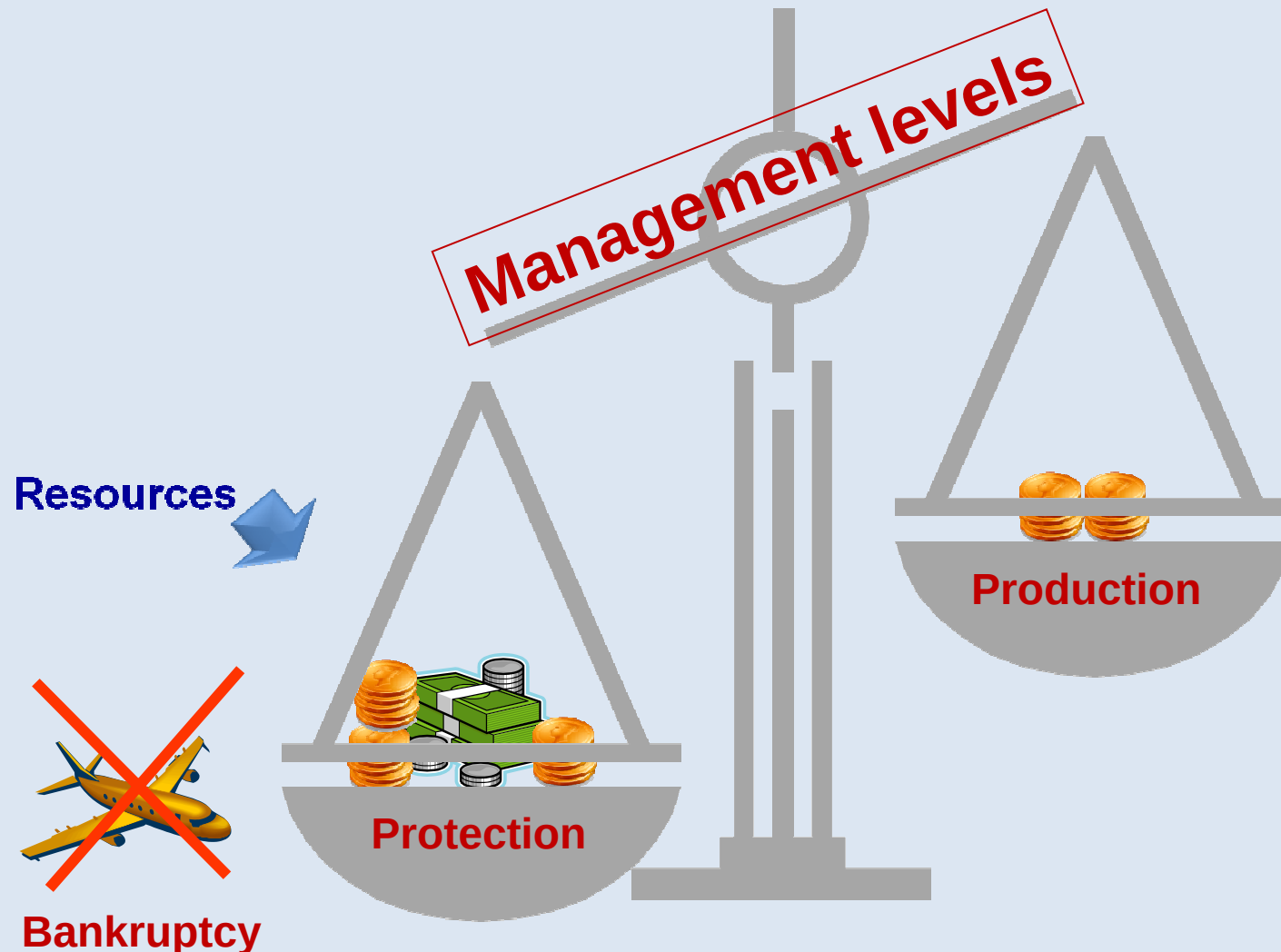
The management dilemma



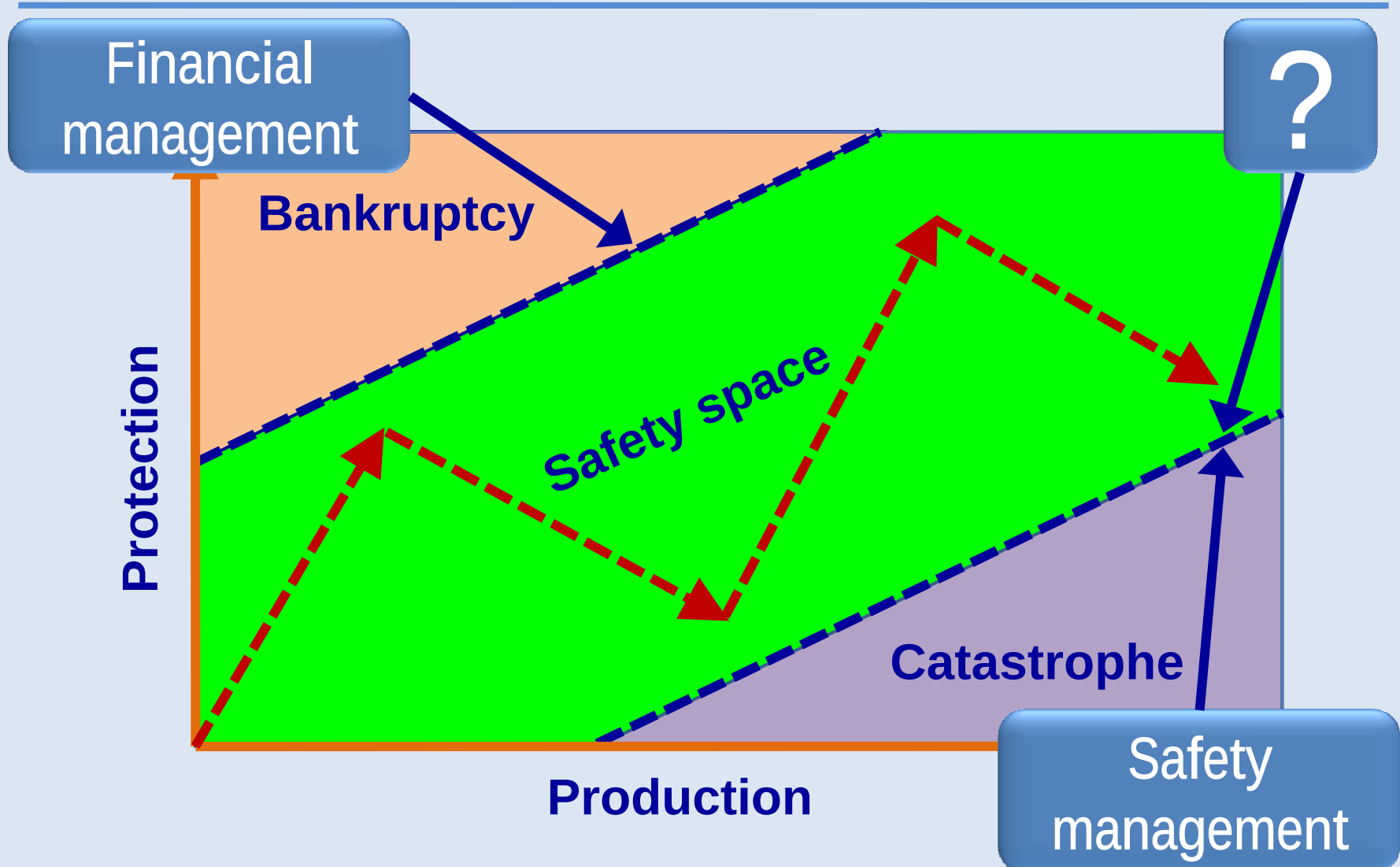
The management dilemma



The management dilemma



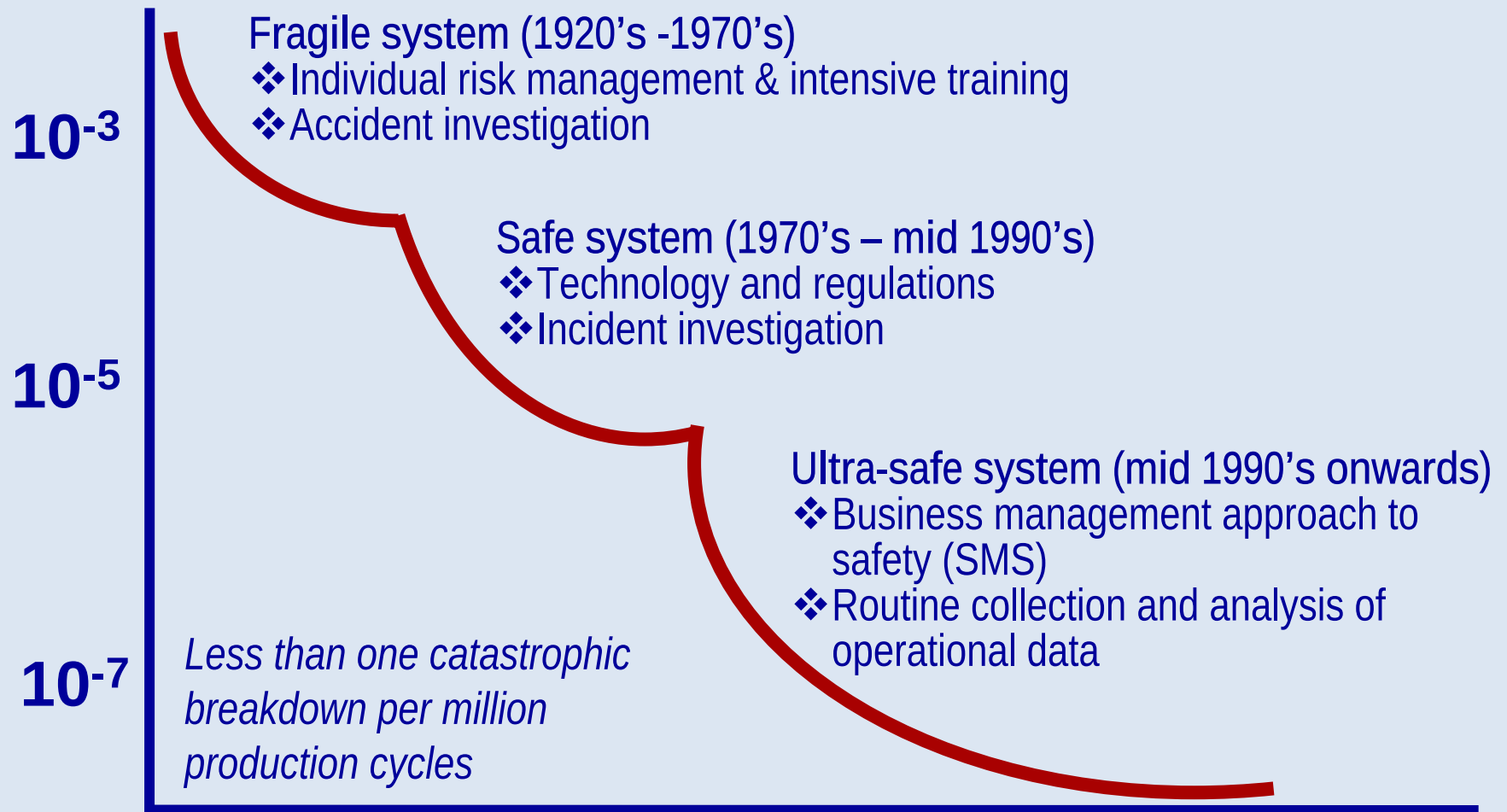
Safety space



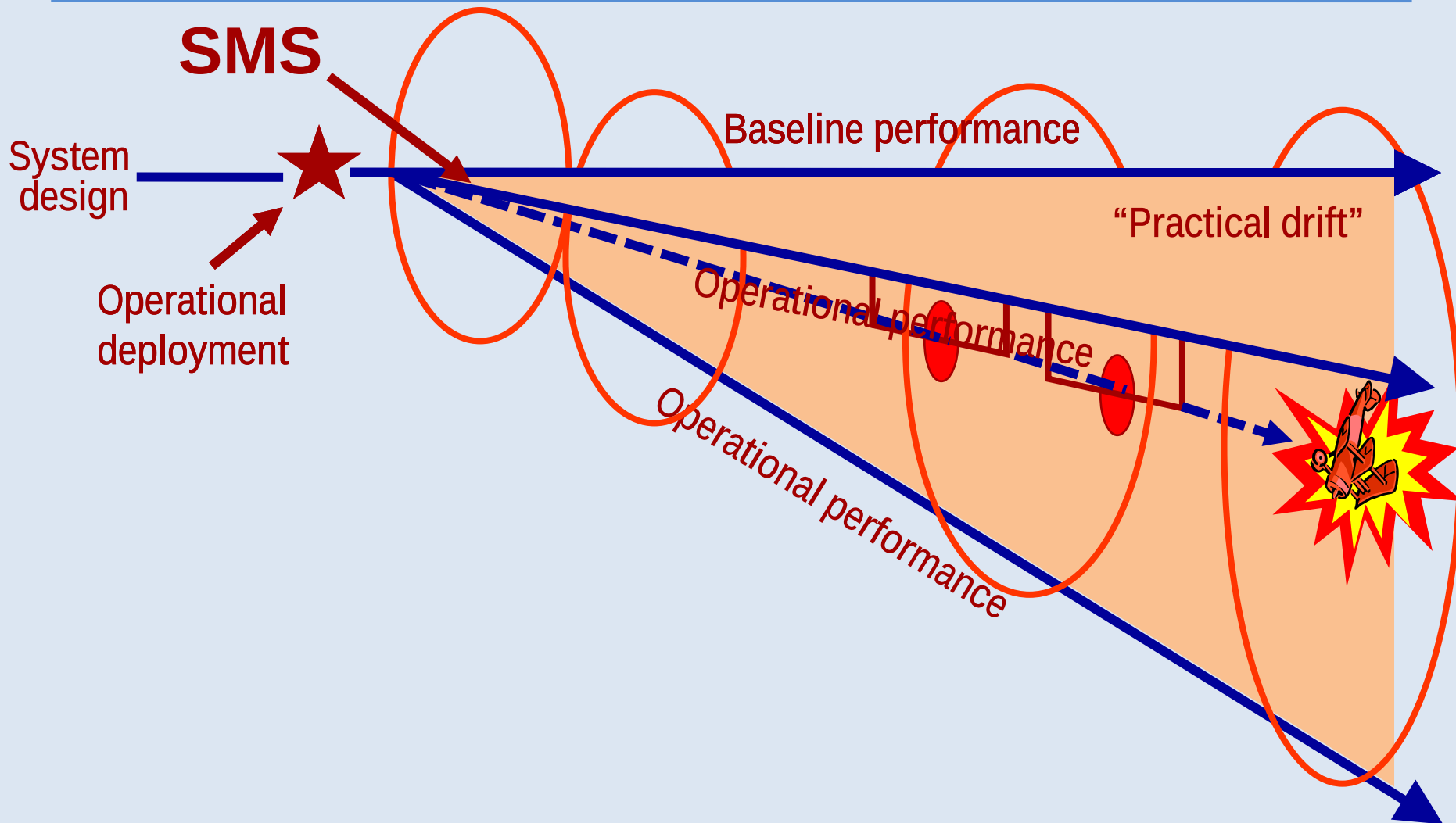
Safety management – The response to the dilemma

- ❖ Safety issues are a by-product of activities related to **production/services delivery**.
- ❖ An analysis of an organization's resources and goals allows for a balanced and realistic allocation of resources between **protection and production goals**, which supports the needs of the organization.
- ❖ The product/service provided by any aviation organization must be delivered safely (i.e. protecting users and stakeholders).

Why SM ? – The first ultra-safe industrial system



Why SM? An imperfect system



The essential is invisible to the eyes

Number of occurrences

1 – 5

Accidents

30 – 100

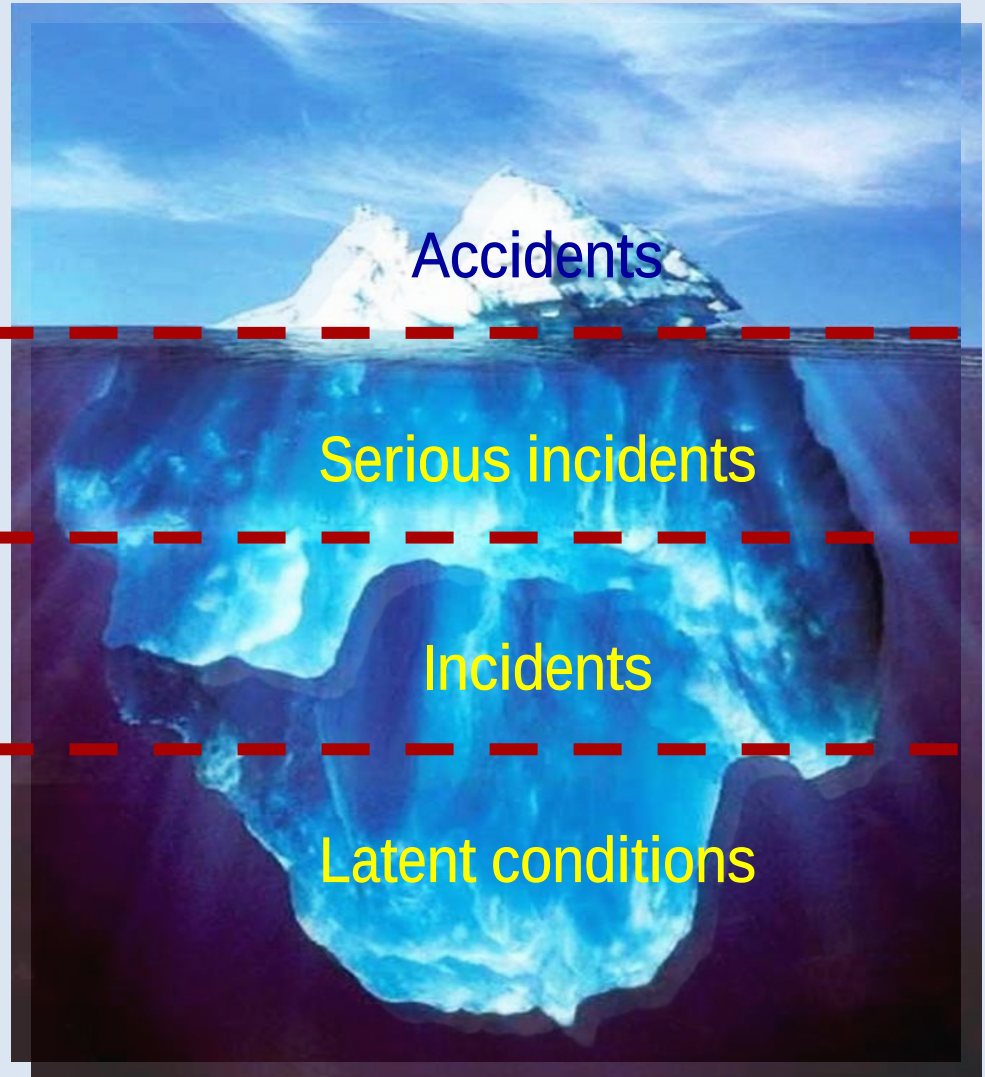
Serious incidents

100 – 1000

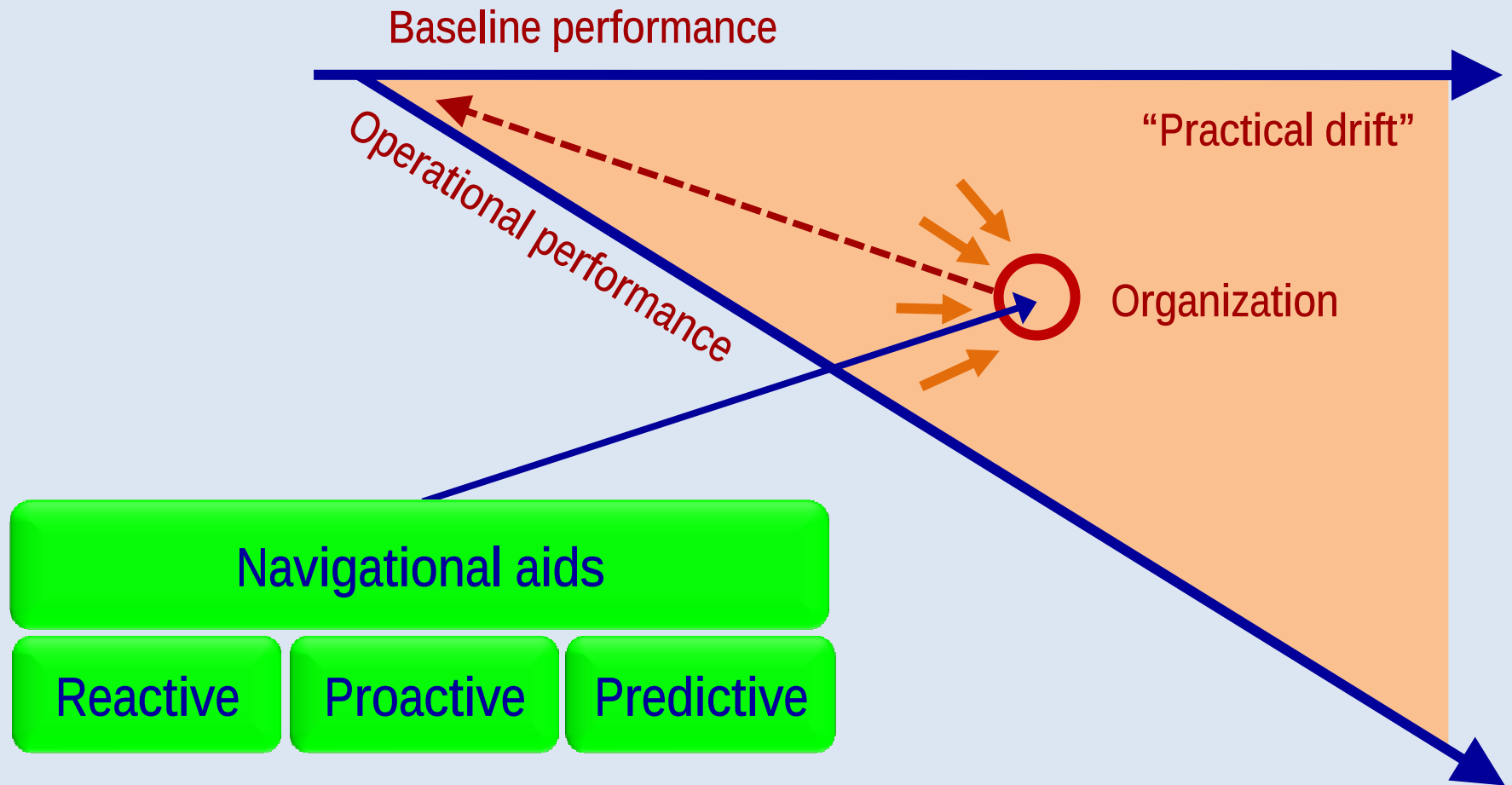
Incidents

1000 – 4000

Latent conditions



Navigating the drift



Reactive safety management

❖ Investigation of accidents and serious incidents

- Based upon the notion of waiting until something breaks to fix it.
- Most appropriate for:
 - situations involving failures in technology.
 - unusual events.
- The contribution of reactive approaches to safety management depends on the extent to which the investigation goes beyond the triggering cause(s), and includes contributory factors and findings as to risks.

Proactive safety management

❖ Mandatory and voluntary reporting systems, safety audits and surveys.

➤ Based upon the notion that system failures can be minimized by:

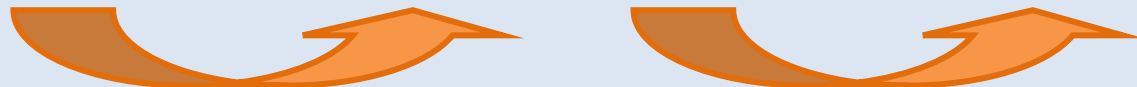
- identifying safety risks within the system before it fails; and
- taking the necessary actions to reduce such safety risks.

Predictive safety management

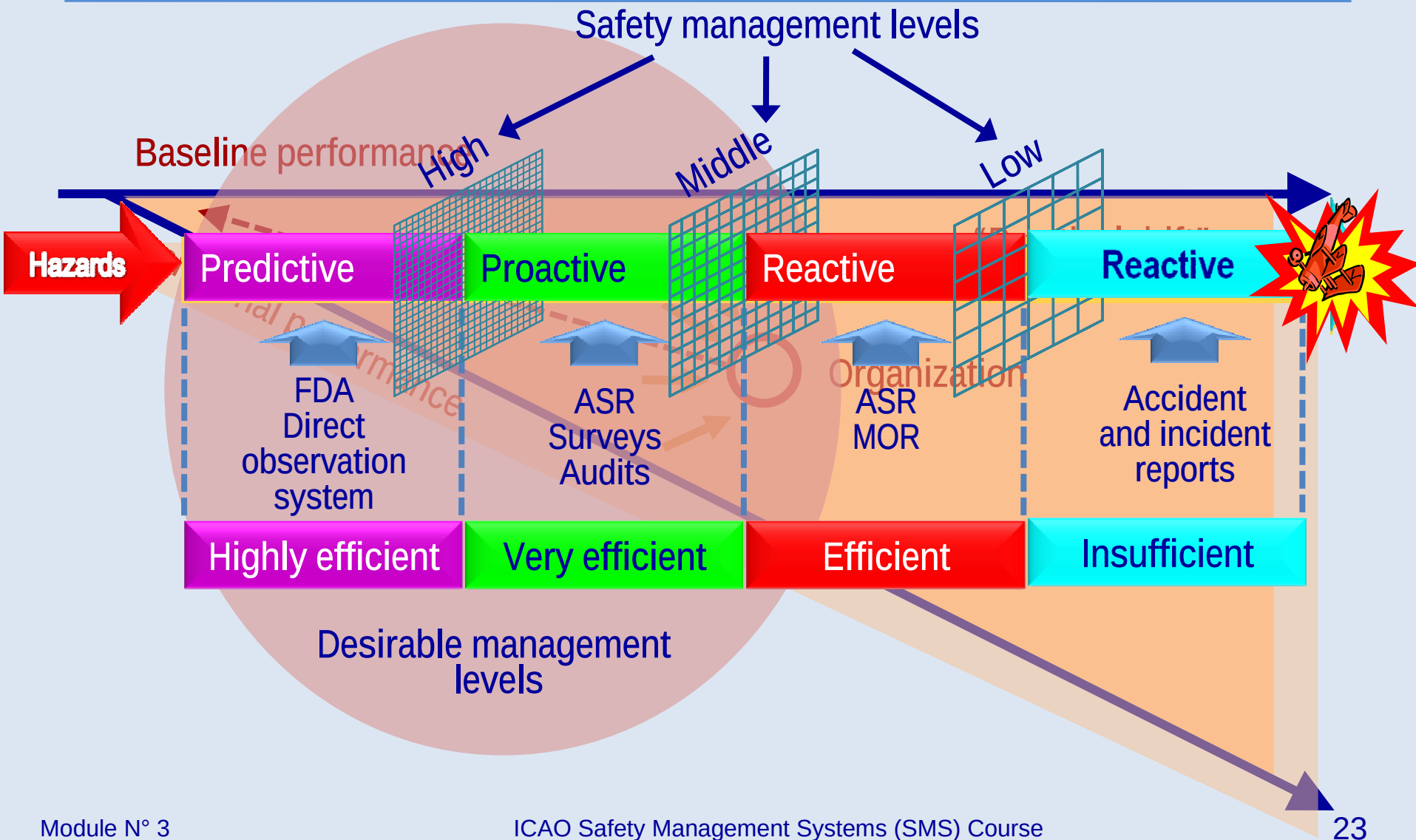
- ❖ Confidential reporting systems, flight data analysis, normal operations monitoring.
 - Based upon the notion that safety management is best accomplished by looking for trouble, not waiting for it.
 - Aggressively seek information from a variety of sources which may be indicative of emerging safety risks.

Strategies – Summary

Reactive method	Proactive method	Predictive method
<i>The reactive method responds to the events that already happened, such as incidents and accidents</i>	<i>The proactive method looks actively for the identification of safety risks through the analysis of the organization's activities</i>	<i>The predictive method captures system performance as it happens in real-time normal operations</i>



Strategies – Levels of intervention and tools



The imperative of change

- ❖ As global aviation activity and complexity continues to grow, traditional methods for managing safety risks to an acceptable level become less effective and efficient.
- ❖ Evolving methods for understanding and managing safety risks are necessary.

The changing of the guard

❖ **Traditional** – Accident/serious incident investigation

- Aviation system performs most of the time as per design specifications (base line performance).
- Compliance based.
- Outcome oriented.

❖ **Evolving** – Safety management

- Aviation system does not perform most of the time as per design specifications (practical drift).
- Performance based.
- Process oriented.

Safety management – Eight building blocks

- ① Senior management's **commitment** to the management of safety.
- ② **Effective safety reporting.**
- ③ Continuous monitoring through systems to **collect, analyse, and share** safety-related data arising from normal operations.

Safety management – Eight building blocks

- ④ **Investigation** of safety occurrences with the objective of identifying systemic safety deficiencies rather than assigning blame.
- ⑤ **Sharing** safety lessons learned and best practices through the active exchange of safety information.
- ⑥ **Integration** of safety training for operational personnel.

Safety management – Eight building blocks

- ⑦ Effective **implementation** of Standard Operating Procedures (SOPs), including the use of checklists and briefings.
- ⑧ **Continuous improvement** of the overall level of safety.

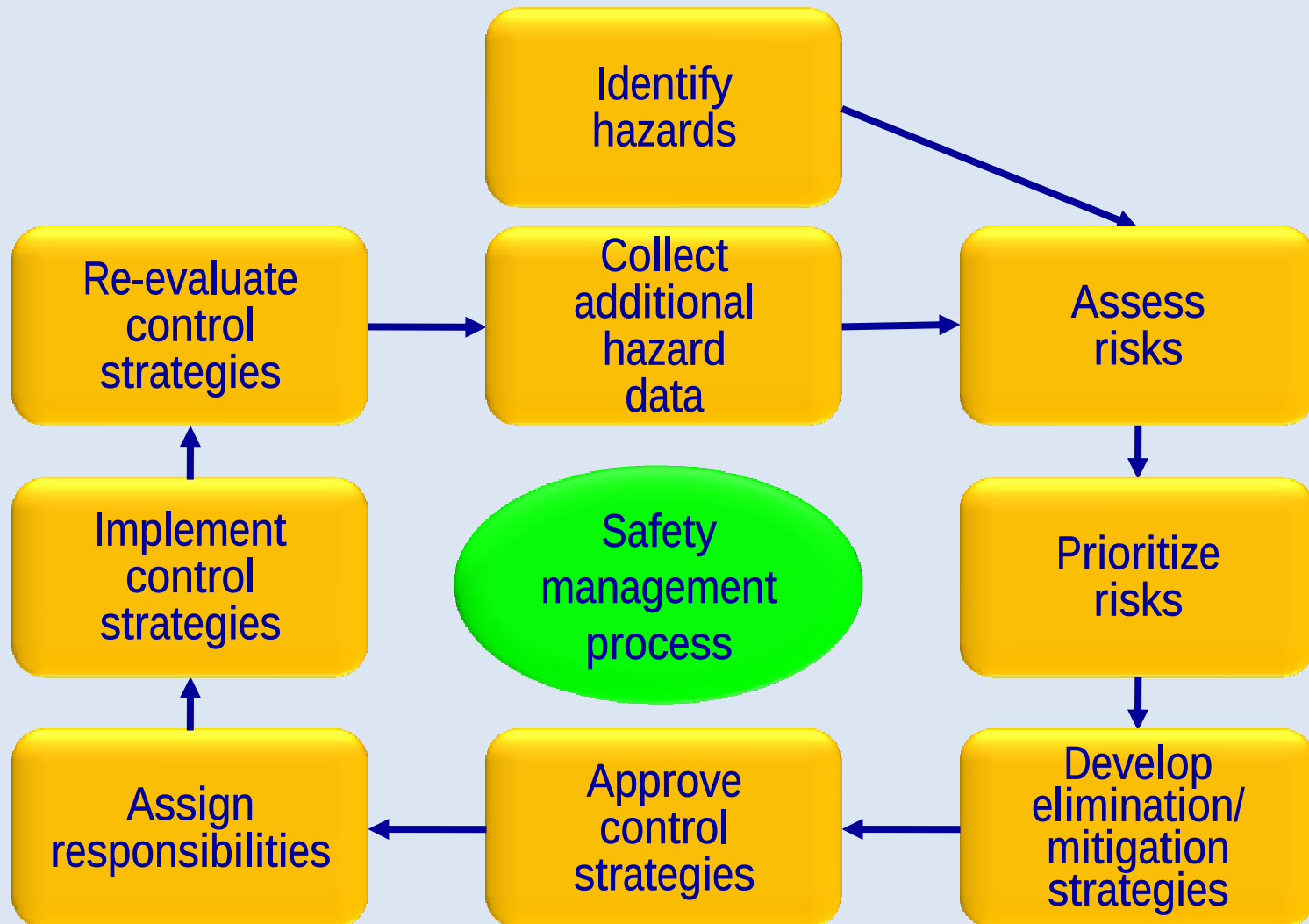
The result of implementing the eight building blocks:
An organizational culture that fosters safe practices, encourages effective safety communication, and actively manages safety with the same attention to results as financial management.

Responsibilities for managing safety

❖ These responsibilities fall into four basic areas:

- ➊ Definition of policies and procedures regarding safety.
- ➋ Allocation of resources for safety management activities.
- ➌ Adoption of best industry practices.
- ➍ Incorporating regulations governing civil aviation safety.

The safety management process at a glance



In summary

- ❖ Managing safety requires resources.
- ❖ Allocation of resources is a managerial function.
- ❖ Management has the authority and the responsibility to manage safety risks in the organization.

In summary

❖ Safety management

- Includes the entire operation
- Focus on processes (Clear difference between processes and outcomes)
- Data-driven (constant monitoring)
- Strictly documented
- Gradual improvement as opposed to dramatic change
- Strategic planning as opposed to piecemeal initiatives

A balanced perspective

❖ *...The pilot-in-command must bear responsibility for the decision to land and take-off in Dryden... However, it is equally clear that **the air transportation system failed him** by allowing him to be placed in a situation where he did not have all the necessary tools that should have supported him in making the proper decision ...*



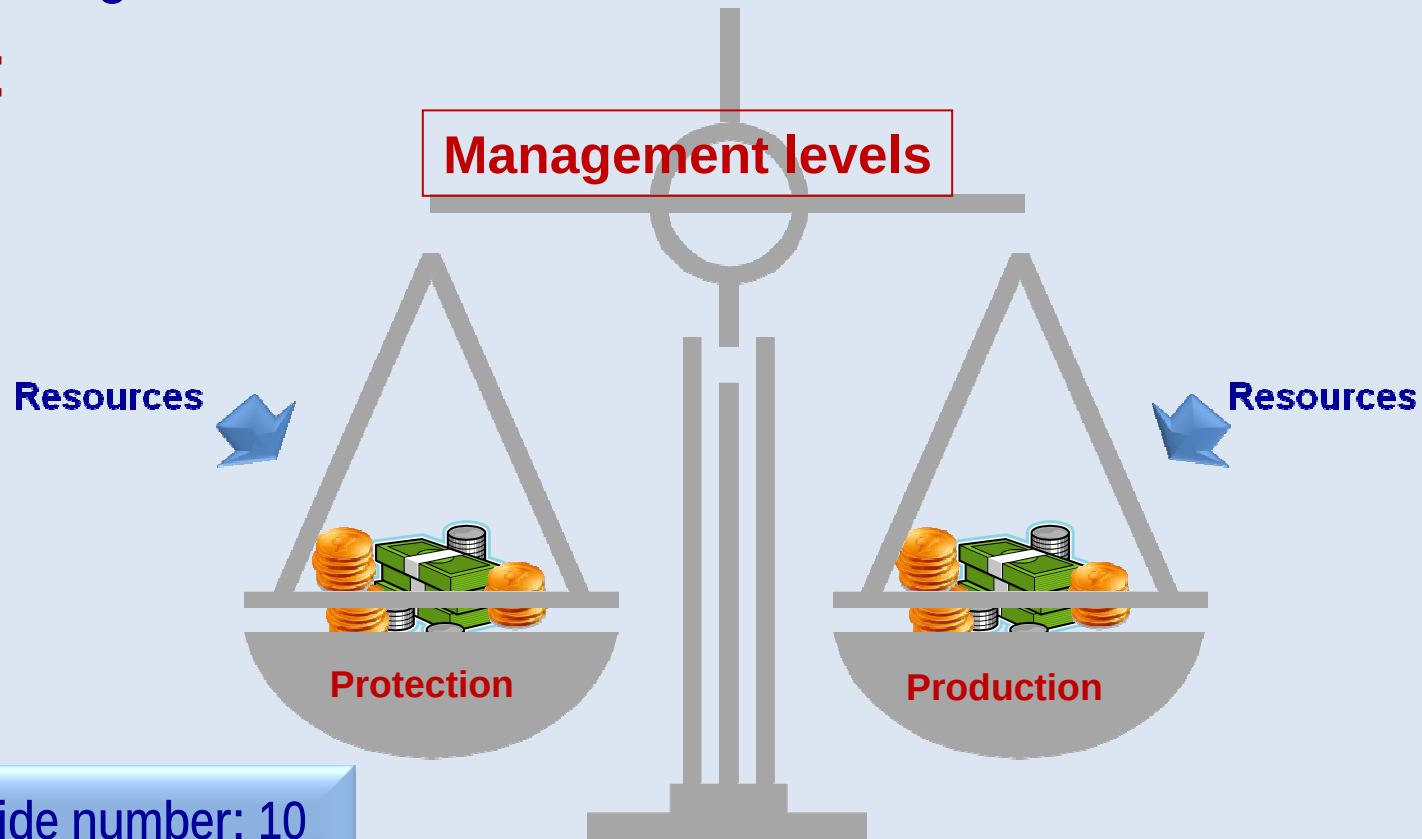
Introduction to safety management

Question and answers

Questions and answers

❖ Q: Explain the management dilemma regarding safety management.

❖ A:



Slide number: 10

Questions and answers

❖ Q: Explain the difference between reactive, proactive and predictive safety strategies.

❖ A:

Reactive method	Proactive method	Predictive method
<i>The reactive method responds to the events that already happened, such as incidents and accidents</i>	<i>The proactive method looks actively for the identification of safety risks through the analysis of the organization's activities</i>	<i>The predictive method captures system performance as it happens in real-time normal operations</i>

Slide number: 22

Questions and answers

- ❖ Q: Explain the difference between the traditional and the evolving approach to safety management.
- ❖ A:
 - Traditional – Accident/serious incident investigation
 - Aviation system performs most of the time as per design specifications (base line performance).
 - Compliance based.
 - Outcome oriented.
 - Evolving – Safety management
 - Aviation system does not perform most of the time as per design specifications (practical drift).
 - Performance based.
 - Process oriented.

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Questions and answers

❖ Q: Enumerate at least four building blocks of safety management.

❖ A:

1. Senior management's commitment to the management of safety.
2. Effective safety reporting.
3. Continuous monitoring through systems to collect, analyse, and share safety-related data arising from normal operations.
4. Investigation of safety occurrences with the objective of identifying systemic safety deficiencies rather than assigning blame.

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Questions and answers

❖ **Q:** Enumerate the four basic responsibilities for managing safety.

❖ **A:**

1. Definition of policies and procedures regarding safety.
2. Allocation of resources for safety management activities.
3. Adoption of best industry practices.
4. Incorporating regulations governing civil aviation safety.

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Points to remember

1. *The dilemma of the two P's.*
2. *The safety space*
3. *Why SM? An ultra-safe, yet imperfect system.*
4. *Safety management methods and their effectiveness.*
5. *The changing of the guard.*
6. *The eight building blocks and the four basic responsibilities for the management of safety.*



Introduction to safety management

Exercise 03/01 – The Anyfield Airport accident (*Handout N° 2*)

The Anyfield Airport accident

- ❖ In the early hours of a Monday-morning, a twin-engined jet transport with 5 crew-members and 63 passengers on board while in its take-off run at Anyfield Airport collided with a small twin-engined propeller-driven aircraft, with only a single crew-member that had intruded the departure-runway.
- ❖ Both aircraft were severely damaged as a result of the collision.
- ❖ Most passengers and all crew members were killed.

The Anytown City Airport accident

❖ Group activity:

- A facilitator will be appointed, who will coordinate the discussion.
- A summary of the discussion will be written on flip charts, and a member of the group will brief on their findings in a plenary session.

❖ Required task:

- Read the text related to the accident of the twin-engined jet transport at Anyfield Airport.
- ...

The Anytown City Airport accident

❖ ... required task:

- From the investigation report of the above accident, you should identify:
 1. **Organizational processes** that influenced the operation and which fell under the responsibility of senior management (i.e. those accountable for the allocation of resources);
 2. **Latent conditions** in the system safety which became precursors of active failures;
 3. **Defences** which failed to perform due to weaknesses, inadequacies or plain absence; ...

The Anytown City Airport accident

❖ ... required task:

4. **Workplace conditions**, which may have influenced operational personnel actions; and
5. **Active failures**, including errors and violations

❖ When you have concluded the above, your task is to complete the Table 03/01 – Analysis (*Handout N° 2*) classifying your findings in accordance with the organizational accident model.

The organizational accident



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