
Improving Aviation Safety
through
Global Coordination
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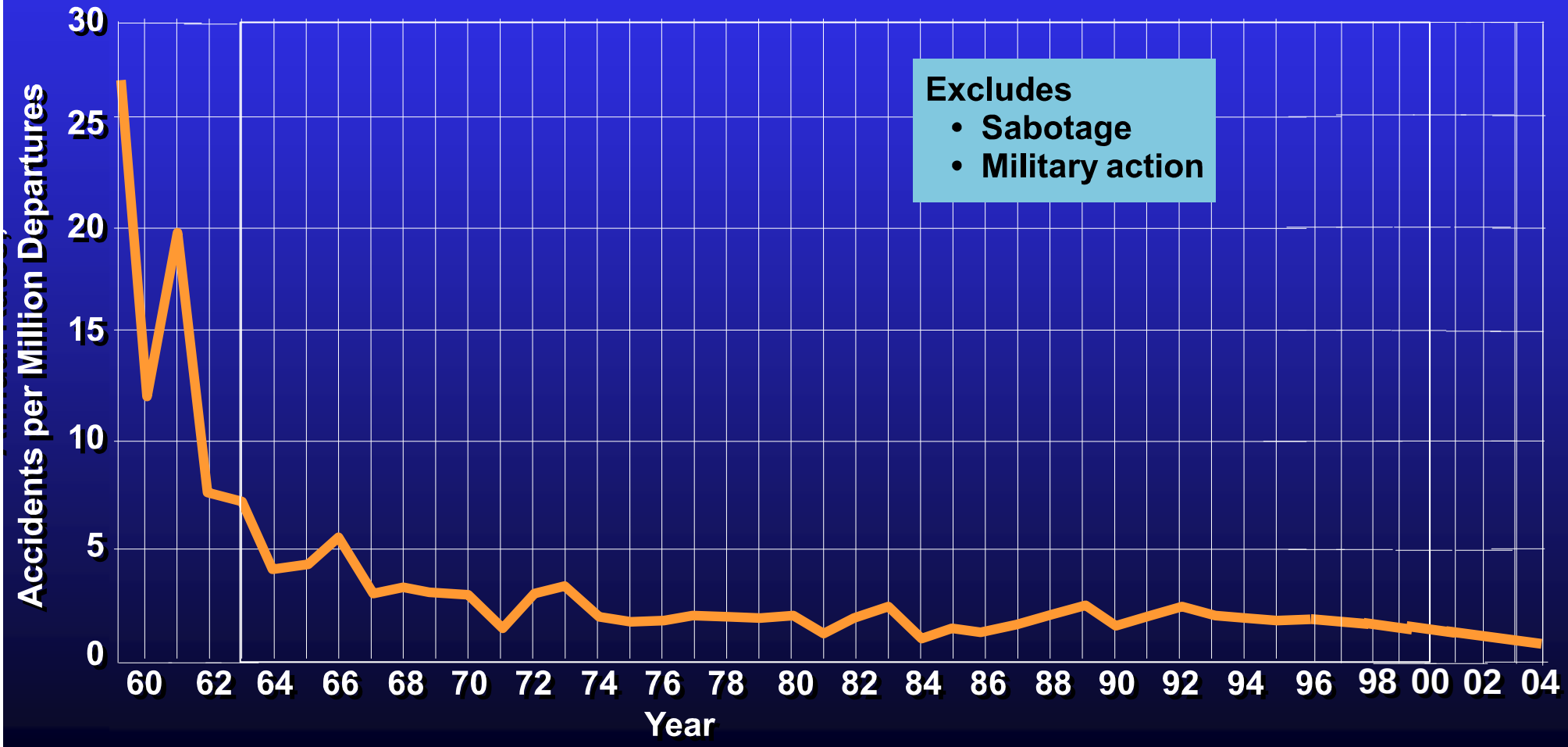
Flight Safety Foundation
15th Taiwan National Flight Safety Conference
Taipei
8th October 2007

Air Transport Is Very Safe

Worldwide Commercial Jet Fleet Accident Rate

Ten year rolling rate



The Risk of Commercial Flying

Worldwide Statistics

1.16 deaths per million airplane flights
=
1 death per 860 thousand flights

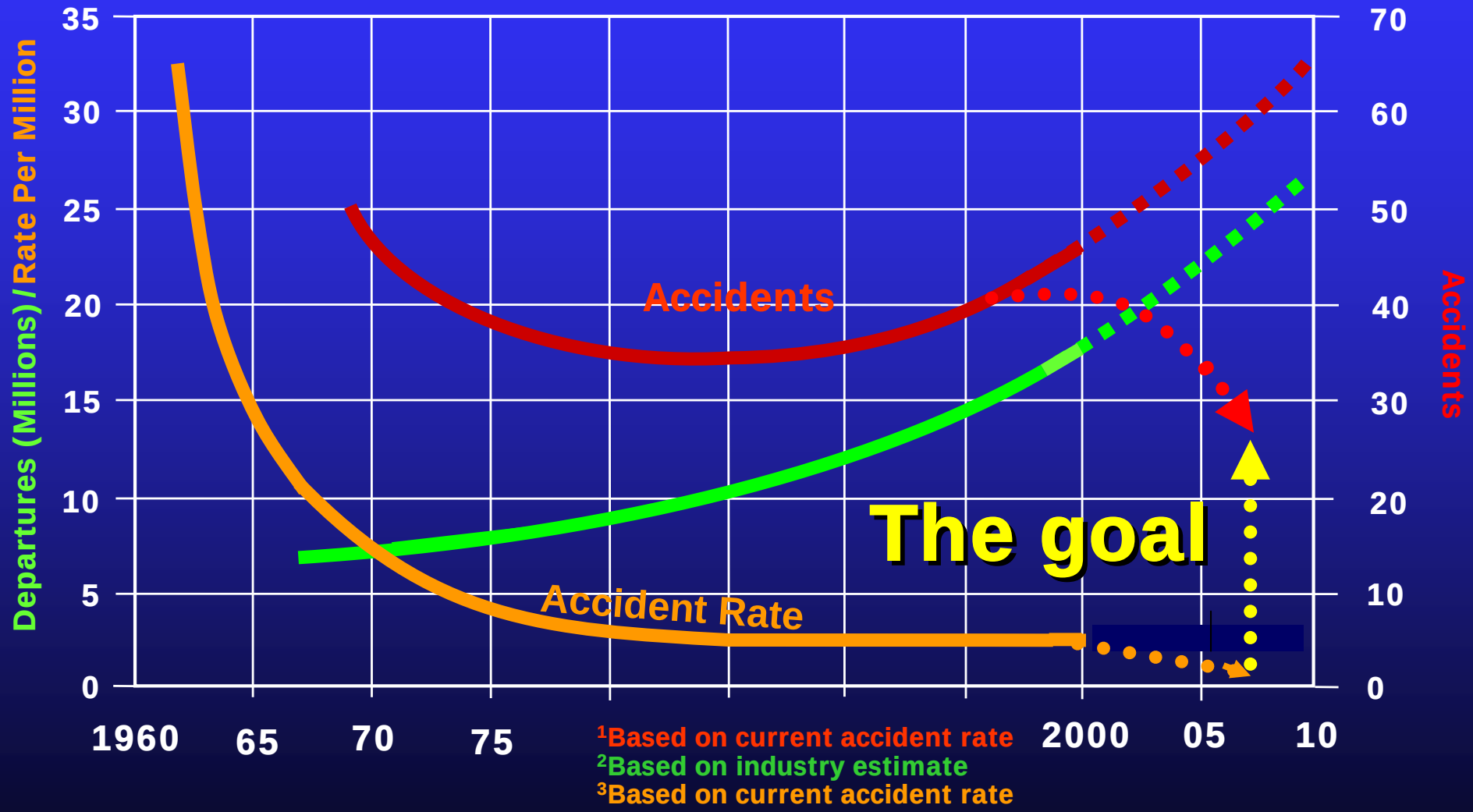
If you took a flight every single day, it would
2,300 years
before you were involved in a fatal accident

Air Transport Is Very Safe

US 2003 - 2006 fatal accident rate
= 0.18 per 1 million flights
≈ 1.00 per 6 million flights

In the USA, if you took one flight per day it would be over 15,000 years before you were involved in an accident !

Anticipated Safety Improvements



Accident Rates Vary

We know how to do safety!

But there are still many problems areas!

Hull loss accidents per Million Departures. Western Built Jets 1997 - 2006

Major Safety Improvement Teams

USA

- Commercial Aircraft Safety Team (CAST)

EUROPE

- Joint Safety Strategy Initiative (JSSI)
- European Safety Strategy Initiative (ESSI)
  - Future Aviation Safety Team (FAST)

ICAO

- Global Aviation Safety Program (GASP)

Safety Improvement Objectives

CAST

- Coordinate efforts of industry and government
- 80% reduction in fatal accident rate (1997 – 2007)
- Expand US aviation safety improvements worldwide

JSSI / ESSI

- Coordinate industry and government to develop a data driven strategy
- Continuous improvement of the safety system
- Reduce annual number of accidents and fatalities regardless of traffic growth
- Consistent level of European safety that is among world's highest

CAST and ESSI working closely together

ICAO Global Aviation Safety Plan (GASP)

Objectives

1. Reduce the number of fatal accidents and fatalities worldwide irrespective of the volumes of air traffic
2. Achieve a significant decrease in accident rates, particularly in regions where these remain high
3. No single ICAO Region shall have an accident rate more than twice the worldwide rate by the end of 2011 (Based on a five year sliding average)

CAST Results

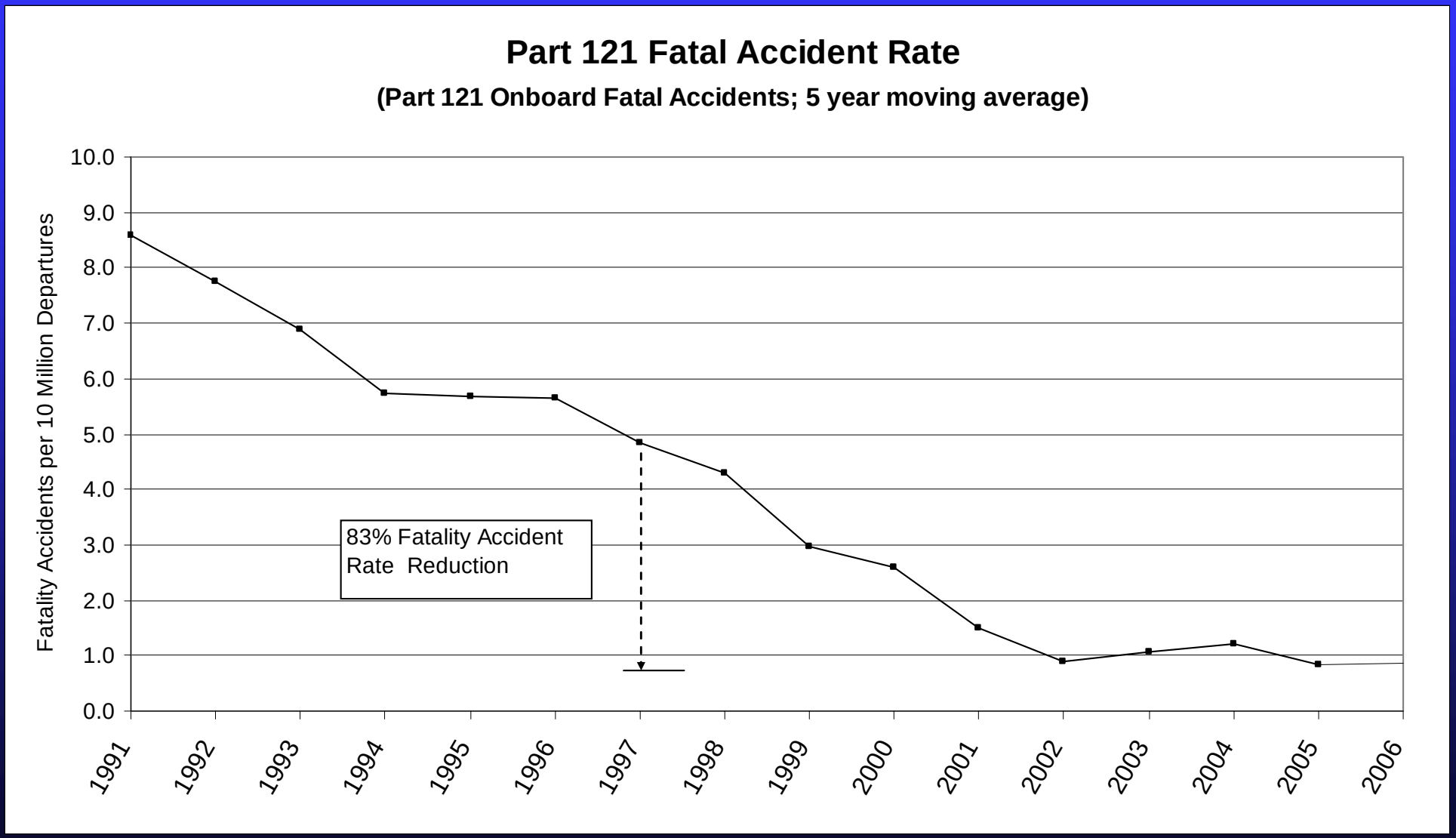
- 752 interventions proposed
- Packaged into 87 system enhancements
  - 47 Prioritized Safety Enhancements
  - 8 R&D projects and 2 studies
- 35 now enhancements implemented

CAST Safety Plan

35 Completed Safety Enhancements

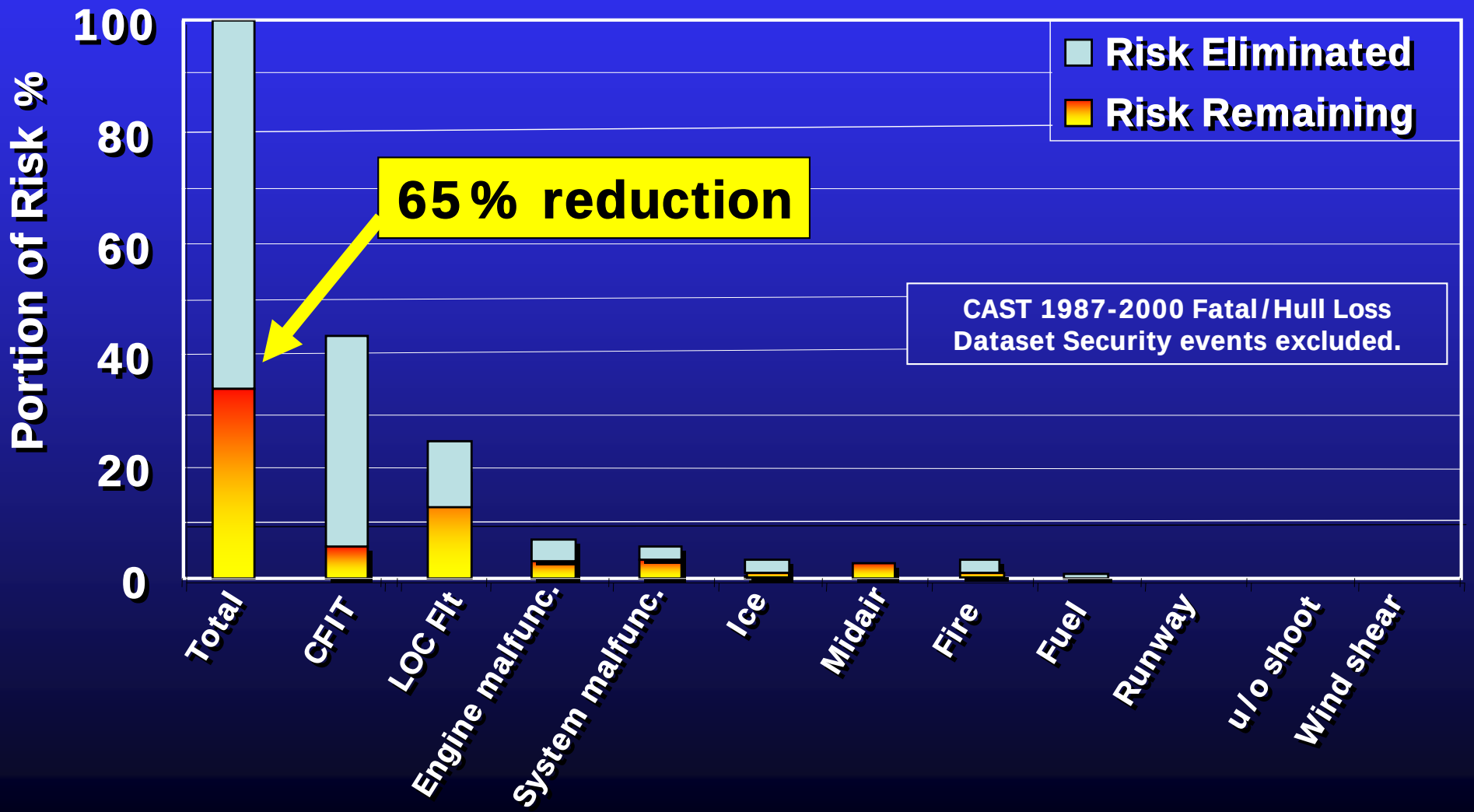
- Safety Culture
- Maintenance Procedures
- Flight Crew Training
- Air Traffic Controller Training
- Uncontained Engine Failures
- Terrain avoidance warning system (TAWS)
- Standard Operating Procedures
- Precision Approaches
- Minimum Safe Altitude Warning (MSAW) Systems
- Proactive Safety Programs (FOQA + ASAP)

Cooperative Efforts are Reducing the US Accident Rate



Worldwide Reduction in Fatality Risk

(2007 Implementation Values)



Worldwide Safety Implementation Activities

Europe

- European Air Safety Strategy Initiative (EASSI)
- Future Air Safety Team (FAST)

South America

- Pan American Aviation Safety Team (PAAST)

Other parts of the World

- Cooperative Operational Safety and Continuing Airworthiness Programs (COSCAP)
  (Within ICAO Technical Co-operation Program)

- ICAO Global Aviation Safety Plan (GASP)

Worldwide Safety Activities

COSCAP Project

- Implemented by ICAO
- Guided by a Programme Steering Committee, composed essentially of:
  - DGCAs of the participating States
  - ICAO representatives
  - Programme's Chief Technical Adviser
  - Representatives of the funding partners
  - Other participating organizations

COSCAP Objective

- Enhance the safety and efficiency of air transport through the establishment of a self-sustaining sub-regional entity providing technical services in safety oversight to the Member States

COSCAP North Asia Safety Plan

COSCAP NA has agreed to implement 27 CAST Safety Enhancements:

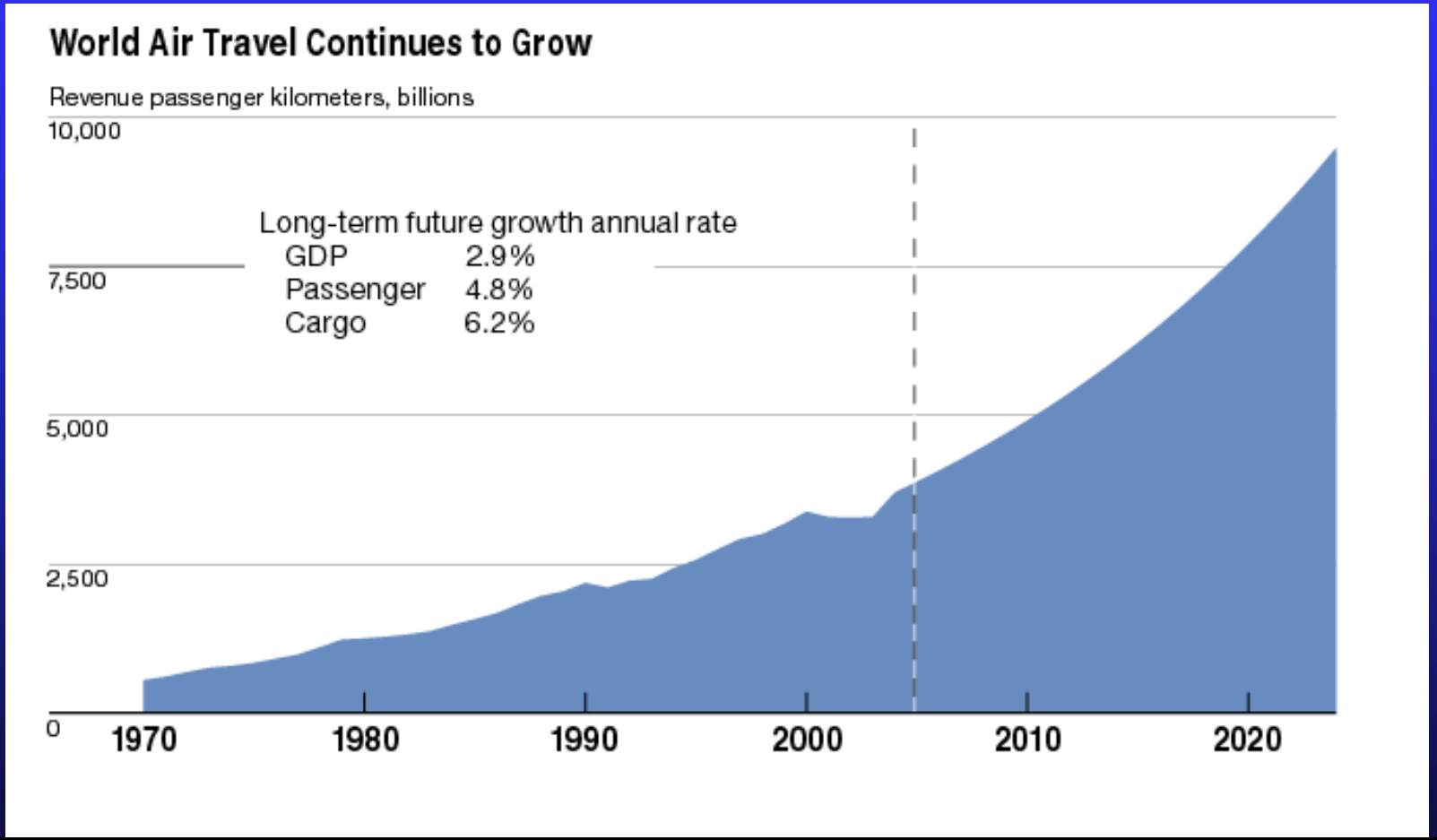
- Terrain avoidance warning system (TAWS)
- Safety Culture
- Standard Operating Procedures
- Maintenance Procedures
- Flight Crew Training
- Uncontained Engine Failures
- Precision Approaches
- Proactive Safety Programs (e.g., FOQA, ASAP)

Addressing the Regional Safety Risks

- Accident rates and numbers of fatalities differ dramatically in different regions of the world
- We know how to prevent many of the types of accidents occurring today
- Efforts to improve safety have been most successful when industry and government have worked together
- Better use and coordination of industry and government resources can dramatically reduce these kinds of accidents
- Current efforts are not efficient or well coordinated

Emerging Industry Risks

- **Unprecedented Growth**



Overloaded System

Leads to many problems

More Emerging Risks to the Aviation Industry

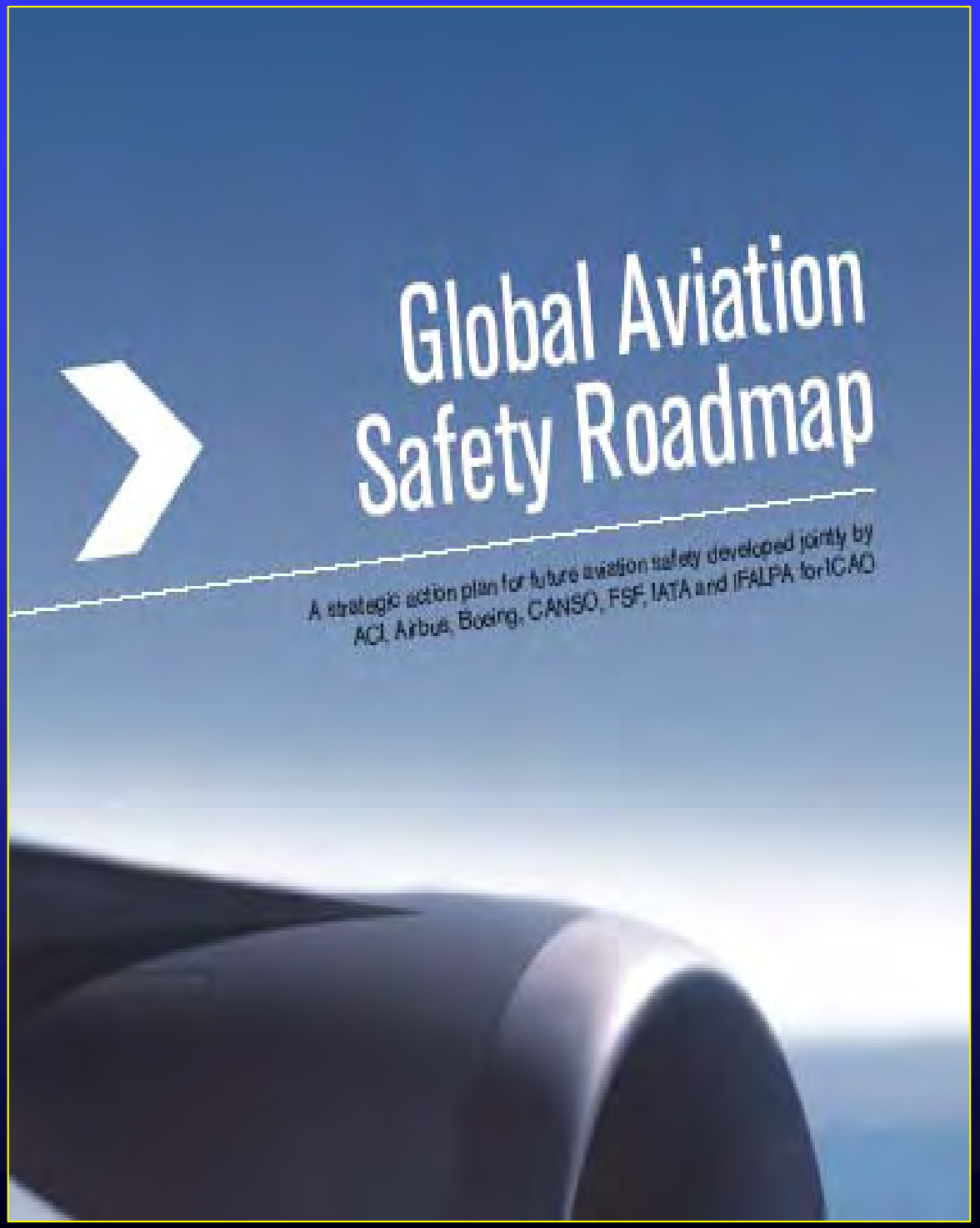
- Lack of Qualified Personnel
- Lack of Political Will
- Safety Management Challenges
- Rise of Criminalization
- ATC Risks
- Runway Safety

Fundamental Concerns

In many parts of the world:

- Regulatory oversight and infrastructure is lacking.
- Local authorities often have only limited expertise or resources
- Even if they have the will, they do not know what to do or how to do it
- They need guidance and assistance

A major new international safety initiative



Global Aviation Safety Roadmap

Background

- Inspired by 7th ICAO ANC Industry meeting May 2005.
- Produced by the Industry Safety Strategy Group (ISSG) with and for ICAO:
  - Airbus
  - Airports Council International (ACI)
  - Boeing
  - Council of Air Navigation Service Organizations (CANSO)
  - Flight Safety Foundation (FSF)
  - International Air Transport Association (IATA)
  - International Federation of Airline Pilot Associations (IFALPA

Global Aviation Safety Roadmap

Goals and Objectives

- Provide a common frame of reference for all stakeholders
- Coordinate and guide safety policies and initiatives worldwide to reduce the accident risk for commercial aviation
- Avoid duplication of effort and uncoordinated strategies
- Encourage close industry and government cooperation on common safety objectives

Timescale

- Near term 2006-10; Medium Term 2010-14

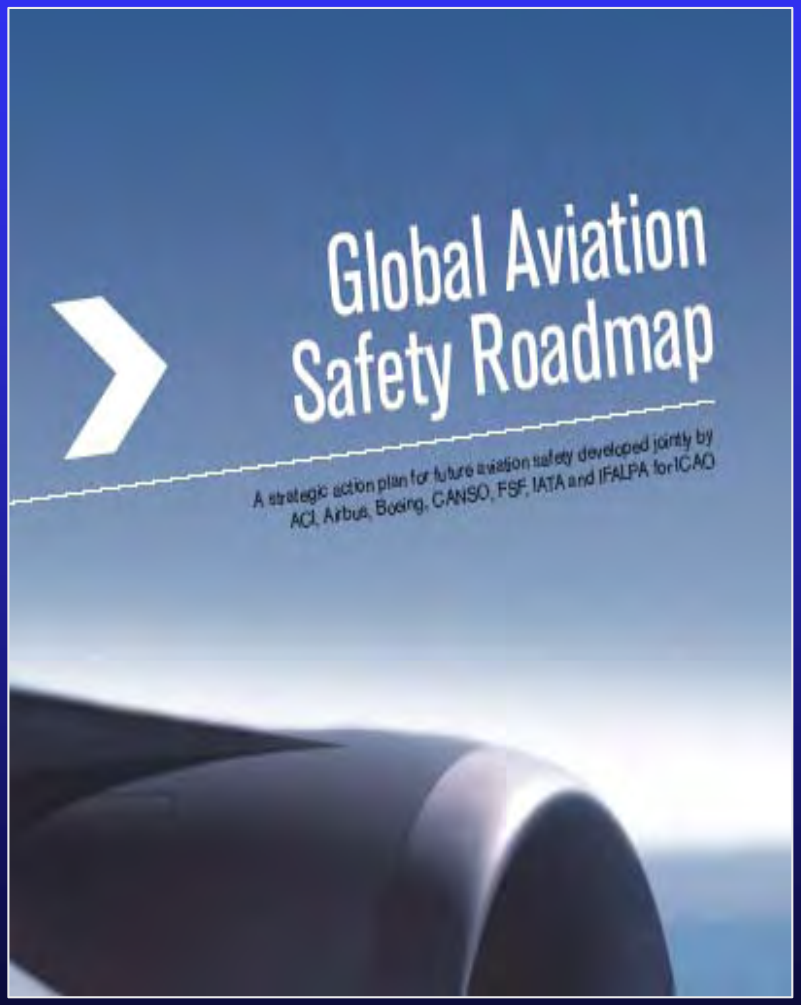
Global Aviation Safety Roadmap

Stakeholders

- States
- Regulatory authorities
- Airline operators
- Airport operators
- Aircraft manufacturers
- Pilot associations
- Safety organizations
- Air traffic service providers

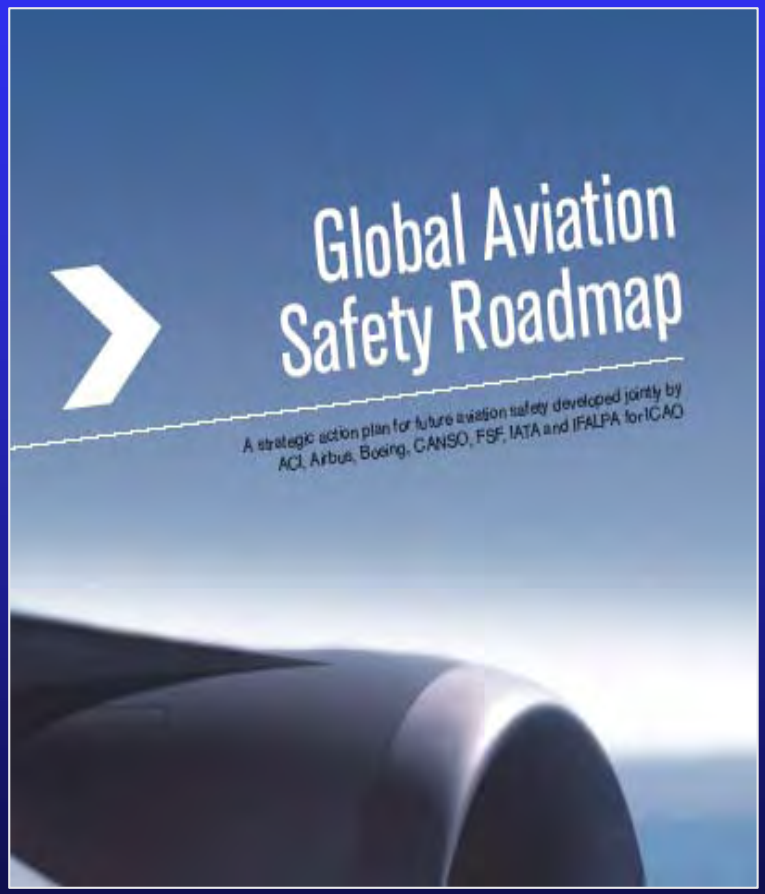
Global Aviation Safety Roadmap

Industry commits to unify plans through Roadmap



Part 1 was presented to ICAO and accepted June 2006

Global Roadmap's 12 Focus Areas "The Roads"



- **States**
  - Consistent implementation of int'l. standards
  - Consistent regulatory oversight
  - No impediments to reporting errors/ incidents
  - Effective incident and accident investigation
- **Industry**
  - No impediments to reporting and analyzing errors/ incidents
  - Consistent use of Safety Management Systems
  - Consistent compliance with regulatory rqmts
  - Consistent adoption of industry best practices
  - Alignment of global industry safety strategies
  - Sufficient number of qualified personnel
  - No gaps in use of technology to enhance safety
- **Regions**
  - Consistent coordination of regional programs

Global Aviation Safety Roadmap

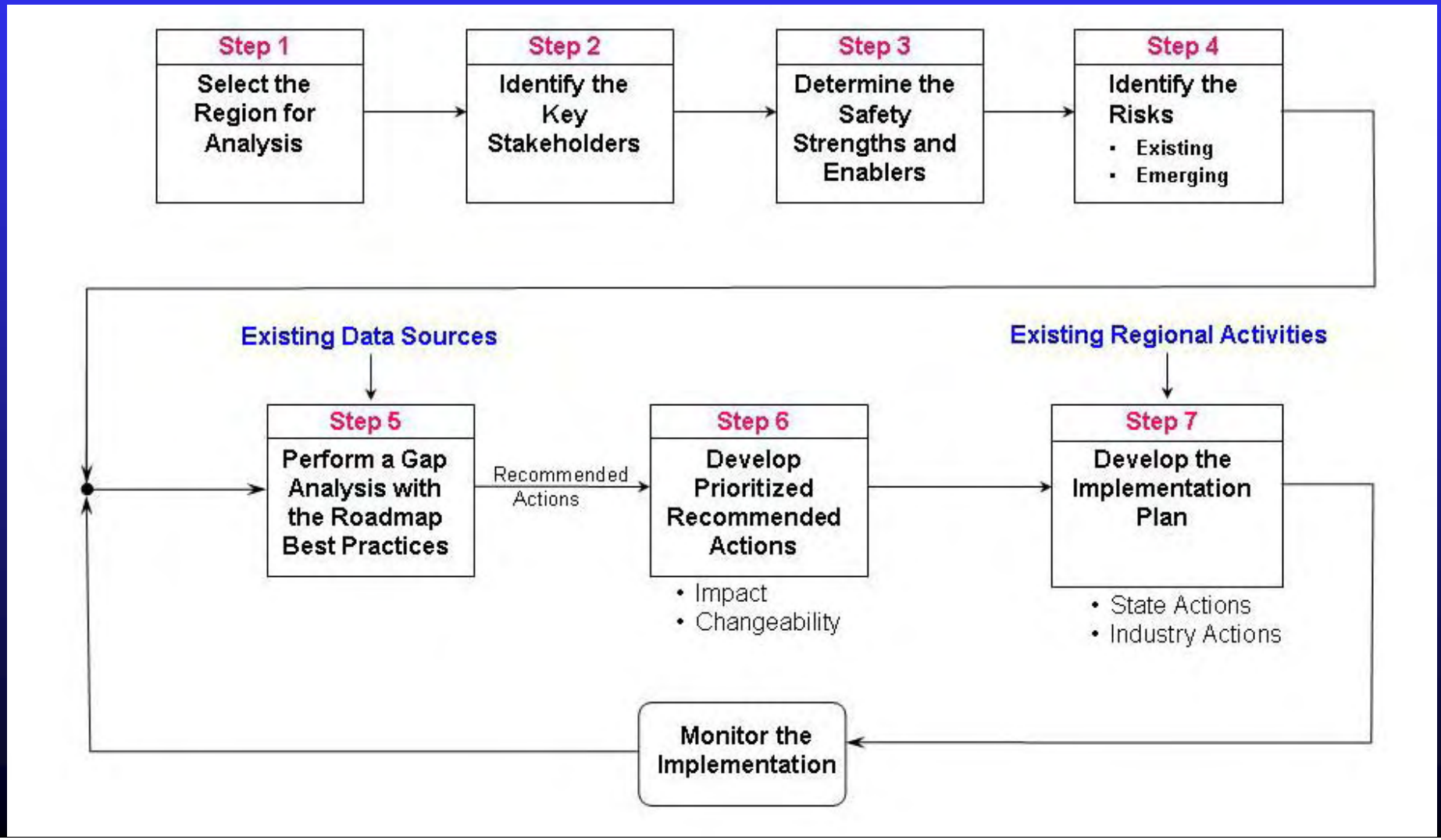
Part 2

- A detailed plan intended to guide Roadmap implementation plans by regional safety teams
- Best Practices described for each Objective
- Metrics provided for each Best Practice
- A four-level Maturity Model provided for each objective based on implementation of Best Practices
- Process described to assess current status and gaps that need to be addressed.

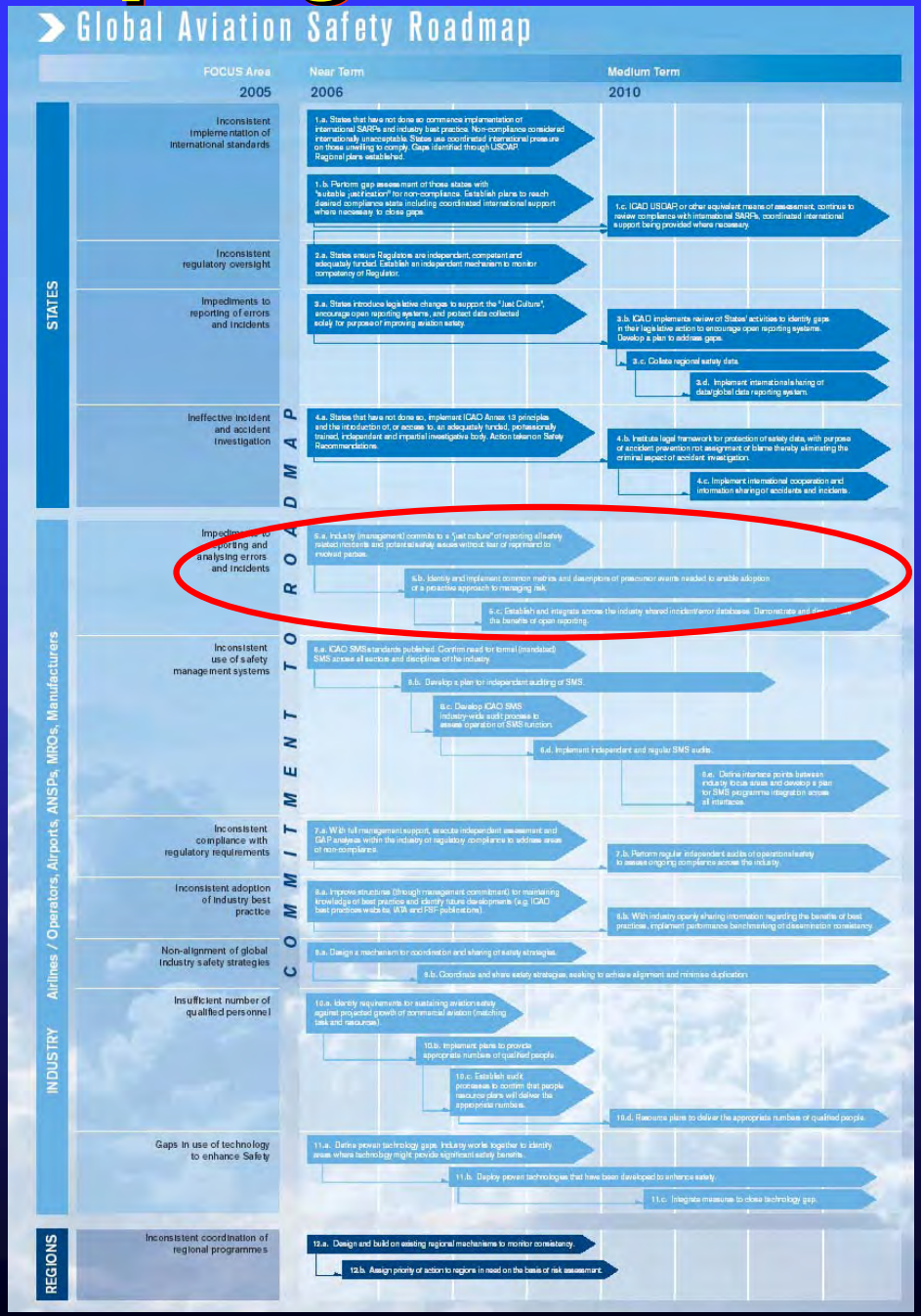
Accepted by the ICAO Air Navigation Commission, December, 2006.

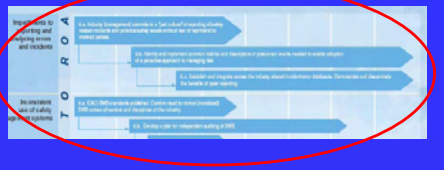
Implementing the Roadmap Within Regions

Safety Enhancement Plan Development Process



Developing A Best Practice

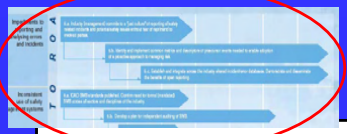




Focus Area 6 Objectives

Focus Area 6 – Impediments to Reporting and Analyzing Errors and Incidents

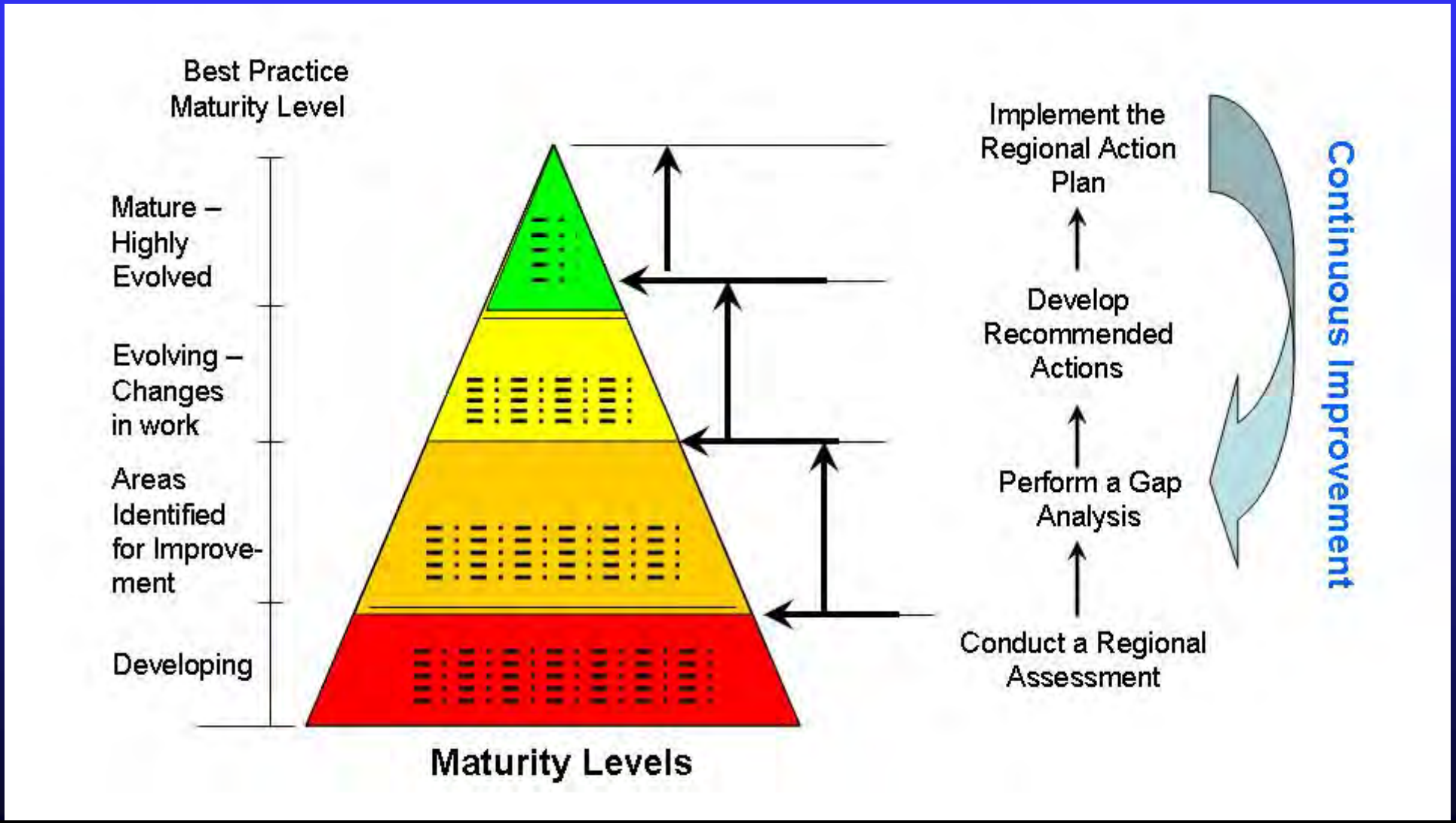
- Objective 6a – Industry (management) commits to a "Just Culture" of reporting all safety related and potential safety issues without fear of reprimand to involved parties.
- Objective 6b – Identify and implement common metrics and descriptors of precursor events needed to enable adoption of a proactive approach to managing risk.
- Objective 6c – Establish and integrate across the industry shared incident/error databases. Demonstrate and disseminate the benefits of open reporting.



Best Practices: Objective 6a

Table 6a –Best Practices	Metrics
BP 6a-1 – The State has empowered an open reporting system. **Empowerment of the system by the State is the cornerstone on which a "Just Culture" is built. The regulatory authority should, in close cooperation with the aviation stakeholders, develop and implement regulations which foster open reporting.**	• **Existence of regulatory framework upon which an open reporting system is based** • **Annex 13 – Attachment E** • **USOAP AIG 6.505**
BP 6a-2 – Aviation organizations have implemented "Just Culture" programs within their organizations. **At the same time that the regulatory authority is developing the empowerment regulations, all related aviation organizations should be developing implementation strategies for their own organizations. Following enactment of regulatory provisions for open reporting, corporate senior management should demonstrate investment in the program through personal and organizational commitment to a "Just Culture". This will be done by both spoken and written proclamations from top management.**	• **"Just Culture" programs operating in each aviation organization. (IOSA ORG 1.2.1) (IS-BAO AMC 3.2)**
BP 6a-3 – The chief executive has signed a written "Just Culture" policy for the organization. **Corporate guidance signed by the chief executive that implements a "Just Culture" within an organization and provides guidance on protections for those who report safety-related information. Changing the legal framework for reporting safety-related information may be required. Enacting regulations or legislation that establishes a "Just Culture" program and that clearly defines acceptable and non-acceptable behavior.**	• **A written "Just Culture" policy signed by the chief executive which defines acceptable and non-acceptable behavior. (IOSA ORG 1.2.1) (IS-BAO AMC 3.2 Attachment B)**

Maturity Model to Guide Gap Analysis



Maturity Table: Focus Area 6

Impediments to Reporting and Analyzing Errors and Incidents

Maturity Level	Capability
Level 1 – Developing	• Neither empowerment legislation nor a "Just Culture" program exists
Level 2 – Areas Identified for Improvement	• "Just Culture" empowerment legislation in place • An organizational just culture is established o A "Just Culture" policy statement signed by the chief executive o Acceptable/non-acceptable behavior within the just culture defined in organizational documentation o "Just Culture" education and training programs are operational
Level 3 – Evolving – Changes in work	• A confidential reporting system is operational within the organization • An ASAP program has been developed/adapted for the aviation organization • The organization vested in either regional or global IRM meetings. • Provisions are in place to protect aviation organization's proprietary information during data collection • Proactive trending of safety information is occurring • Systems are in place to provide feedback to the organization's work force • IOSA preparatory work completed and audit scheduled
Level 4 – Highly Evolved	• FDA system is operational o Current operating personnel are involved in data analysis • Common taxonomies have been developed and agreed upon o Sharing of data with other organizations within the region and/or alliance partners is occurring

Why is the Roadmap Unique?

- The Roadmap helps us focus on doing the most important things first.
- Does not impose specific standards or levels of safety
- Requires that a logical process is followed so each region is always investing their energy in the most critical actions
- Reassures donors that their contributions will yield the maximum results. Hence its strong industry backing
- Provides metrics and measurement that allow us to rigorously manage improvement in organizational capabilities
- The idea is to focus and optimize efforts through existing mechanisms if possible, not to create new bureaucracies.

Next Steps

- Coordination with ICAO ANC GASP Working Group and other programs (e.g., COSCAPs)
  - ANC has completed integration into GASP
  - ICAO Regional Directors briefed May 2007
  - Revised GASP to be presented to Assembly in September 2007 for approval
- Support to Regional Action Groups
- Coordinated support for Roadmap Implementation
- Updating of Focus Areas, Objectives, and Best Practice Information as needed

Industry is Committed to the Roadmap

- As the primary guide for industry and states to work together to improve global aviation safety.
- Most major gains in safety have come from:
  - Close cooperation between industry and government
  - Sharing best practices
- Regions and states can use its objectives and best practices to engage international stakeholders in developing regional safety plans.
- Future industry support of global and regional safety initiatives will be tied to the Roadmap.

Taiwan Should Be involved

- The Road Map was developed primarily to help ICAO
- Taiwan is not a member of ICAO
- ICAO does not “own” the Road Map
- No reason for Taiwan not to use the Road Map
- **WE INVITE TAIWAN TO EMBRACE THE ROAD MAP**
- FSF and individual ISSG members can advise and help implement it.


Together, we can develop an even safer worldwide aviation system!
Thank you!