

# **Commercial Aviation Safety Team (CAST)**

## **Regional Risks; Asia**



**APRAST  
February 20,  
2012**

**Glenn W. Michael**

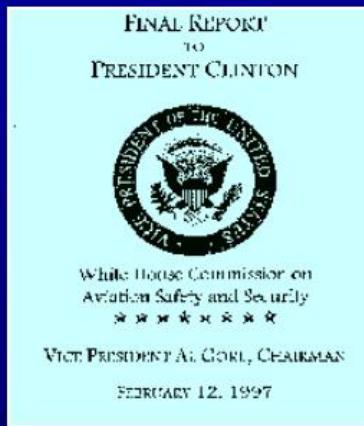
**Bangkok, Thailand**

# Commercial Aviation Safety Team (CAST) Overview

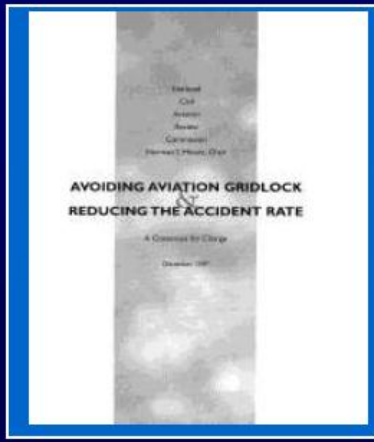




# In the U.S., our focus was set by the White House Commission on Aviation Safety, and The National Civil Aviation Review Commission (NCARC) (1997)



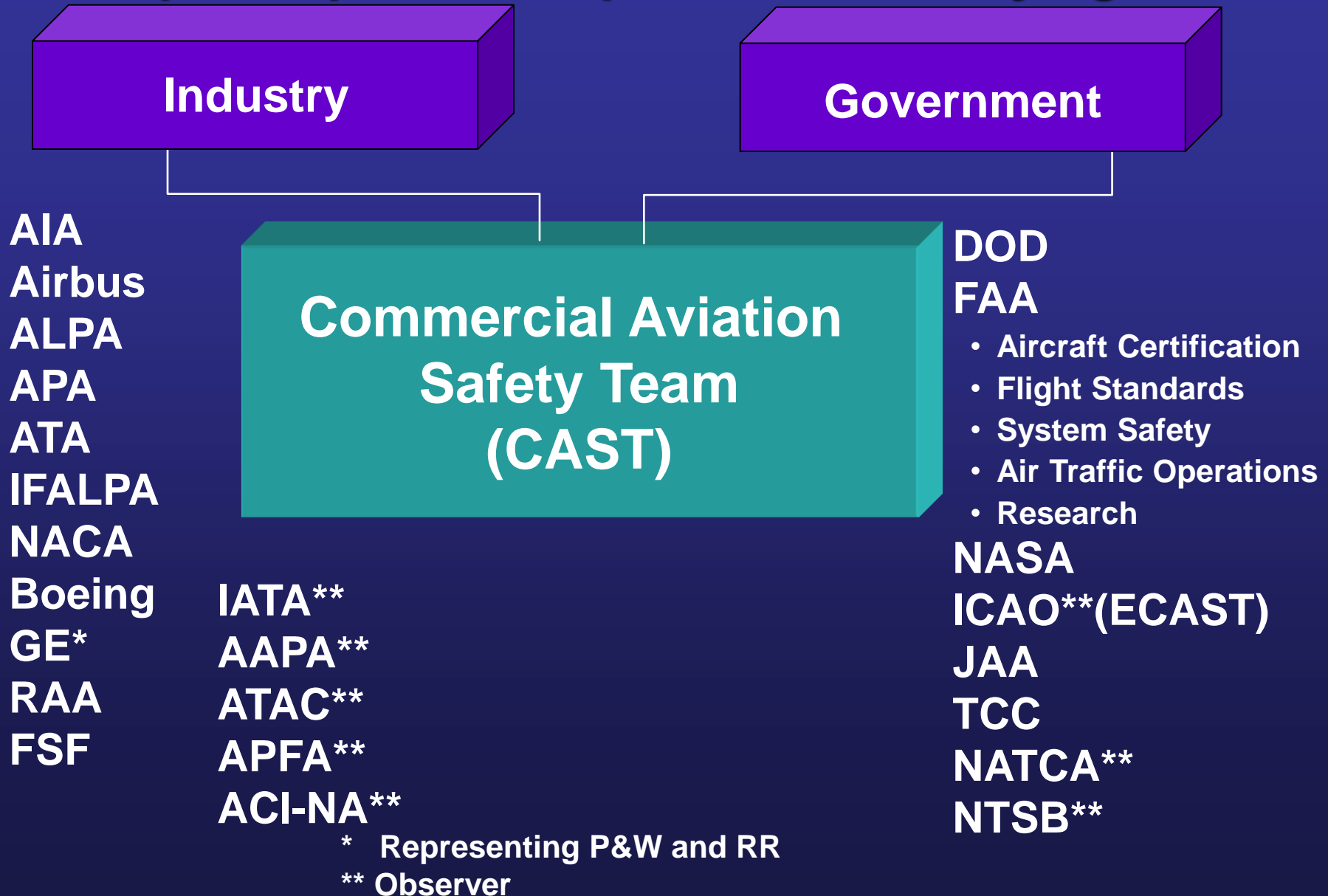
1) Reduce Fatal Accident Rate  
(80% reduction in 10 years)



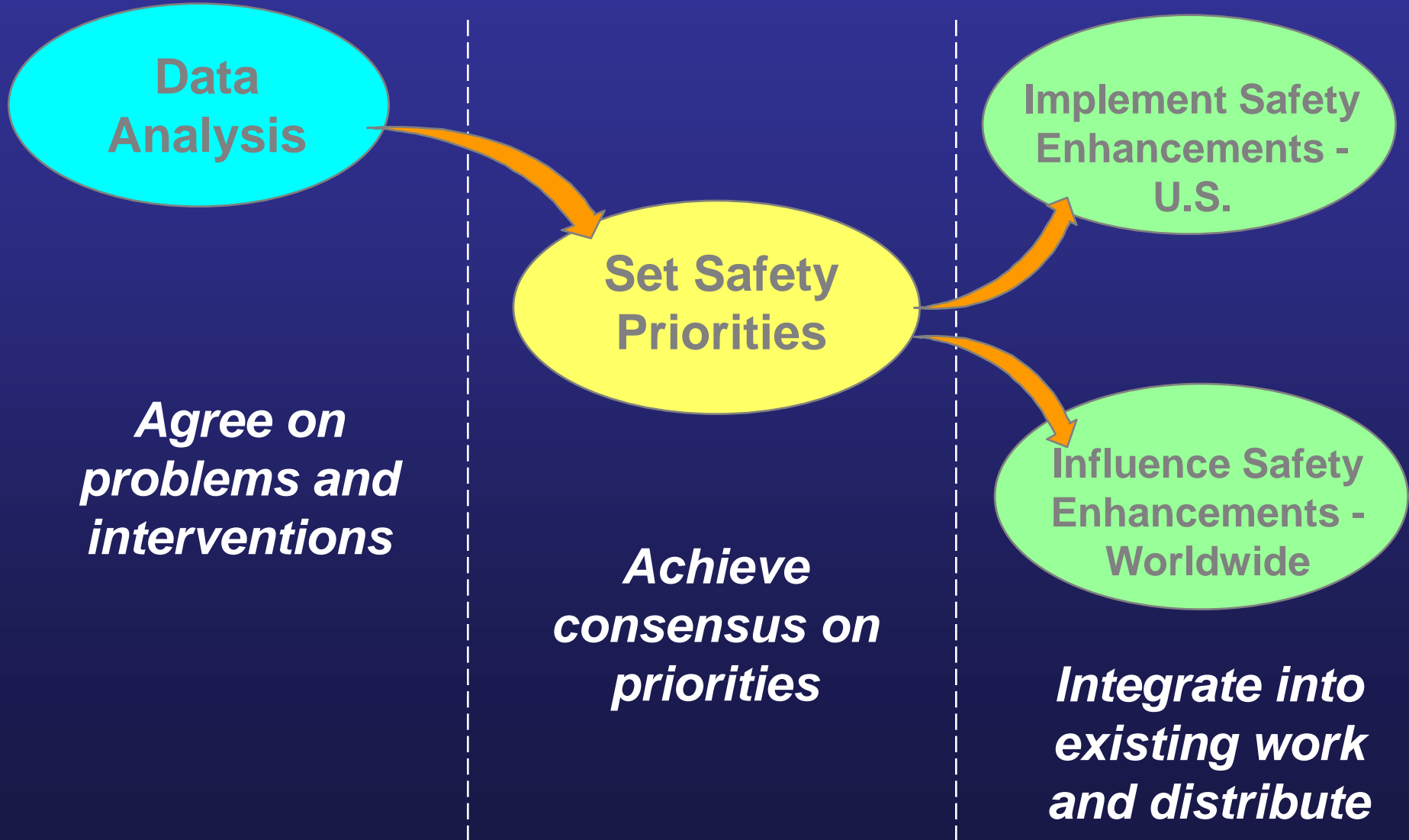
2) Strategic Plan to Improve Safety

3) Improve Safety Worldwide

# CAST brings key stakeholders to cooperatively develop & implement a prioritized safety agenda



# CAST Safety Strategy



# Commercial Aviation Safety Team (CAST)

## CAST

**Joint Safety  
Analysis Teams (JSAT)**

- Data analyses

**Joint Safety  
Implementation  
Teams (JSIT)**

- Safety enhancement development

**Joint Implementation  
Measurement Data  
Analysis Team (JIMDAT)**

- Master safety plan
- Enhancement effectiveness
- Future areas of study

# Robust CAST Methodology

- Detailed event sequence - problem identification from worldwide accidents and incidents
- Broad-based teams (45-50 specialists /team)
- Over 450 problem statements (contributing factors)
- Over 900 interventions proposed
- Analyzed for cost effectiveness

# CAST Safety Plan

## 63 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)

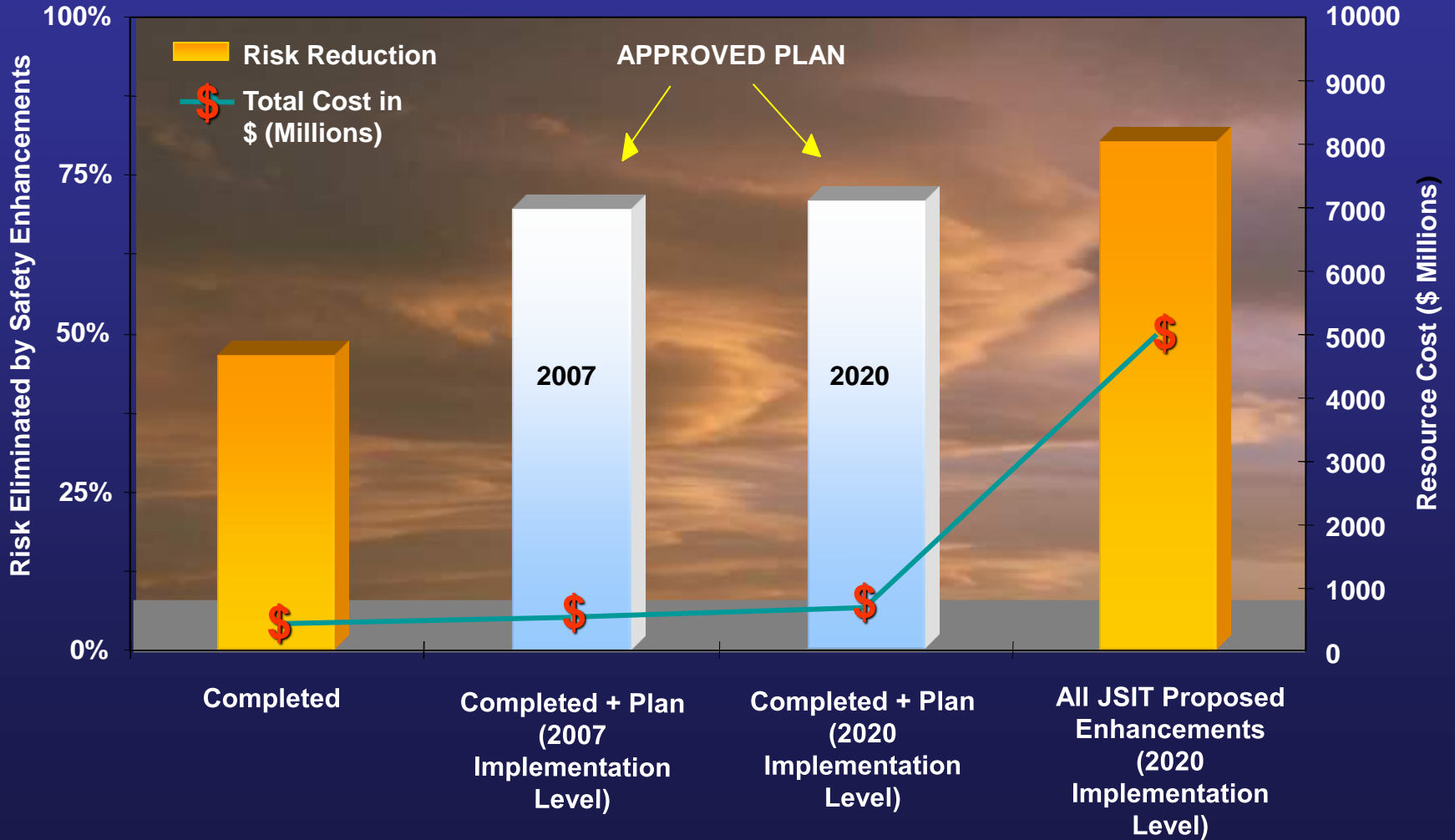


# CAST Safety Plan (cont.)

## 12 Committed Safety Enhancements

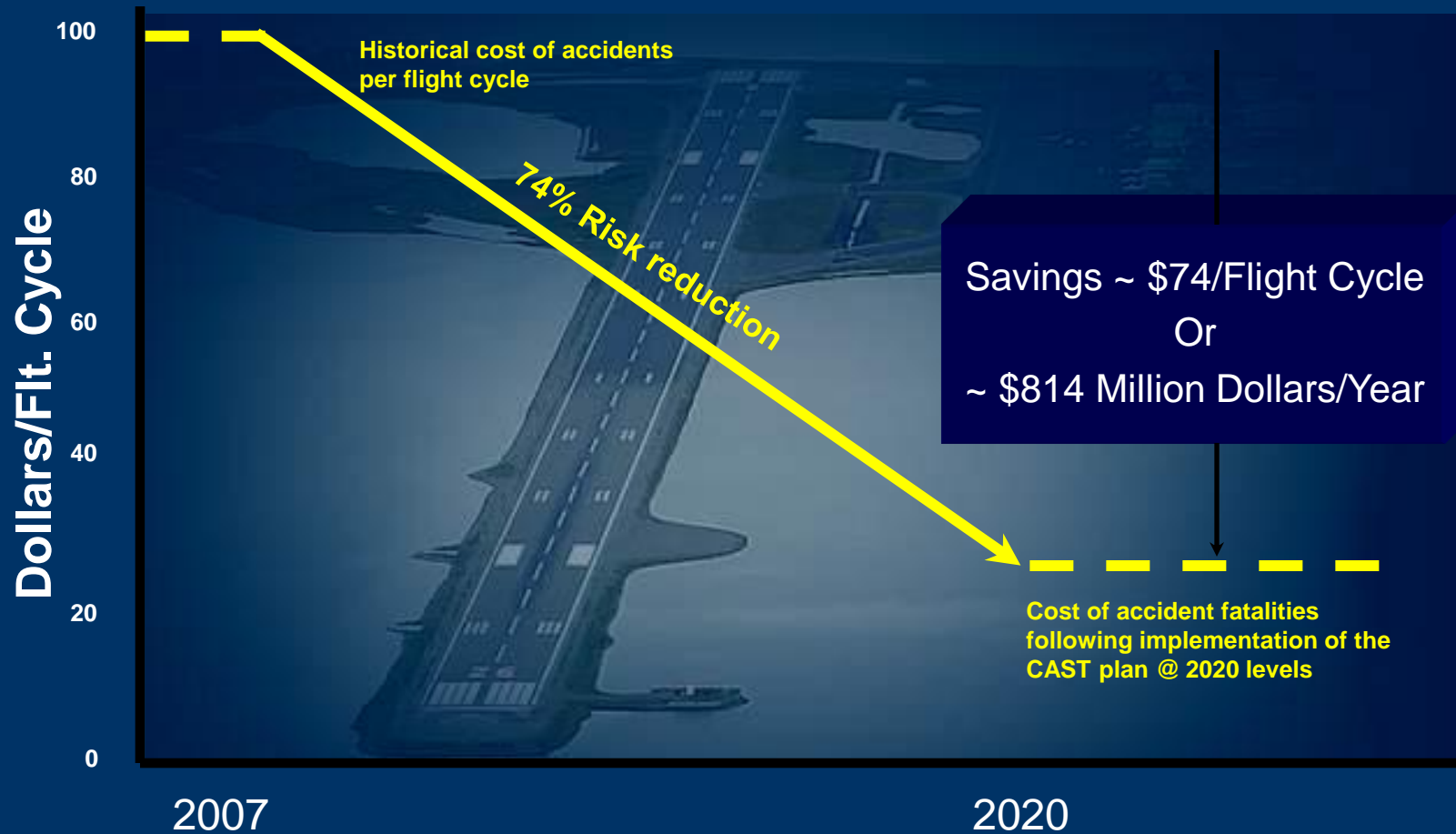
- Policies and Procedures
- Aircraft Design
- Flight Crew Training (additional aspects)
- Runway Incursion Prevention
- Precision Approaches (additional projects)
- Icing (additional turboprop projects)
- Midair
- Maintenance
- Runway Safety
- Safety culture, policies and procedures

# Resource Cost Vs. Risk Reduction



# Cost Savings

## Part 121 Aviation Industry Cost Due to Fatal/Hull Loss Accidents





# CAST

## Moving into the Future

# ASIAS

**Aviation Safety  
Information Analysis and  
Sharing System**



# What is ASIAs.....

- A **collaborative Government-Industry initiative on data sharing & analysis to proactively discover safety concerns before accidents or incidents occur, leading to timely mitigation and prevention**



# The Aviation Safety Information Analysis and Sharing (ASIAS) System Was Created in Order To:

- Develop tools to make data analysis more efficient
- Identify and access key data sources
- Discover potential aviation safety risks using the key data sources

# Data Sources Supporting ASIAs InfoSharing and Analysis

## De-Identified FOQA Data

## De-Identified ASAP Data

- Flight Operations
- **Maintenance**
- Dispatch
- **ATSAP**

## Safety Reports

- Aviation Safety Reporting System
- Runway Incursion
- Surface Incident
- Operational Error / Operational Deviation
- Pilot Deviation
- Vehicle or Pedestrian Deviation
- National Transportation Safety Board
- Accident/Incident Data System
- Service Difficulty Reports



## ATC Information



- Traffic Management Reroutes and Delays
- Airport Configuration and Operations
- Sector and Route Structure
- Procedures
- Surveillance Data for En Route, Terminal and Airport

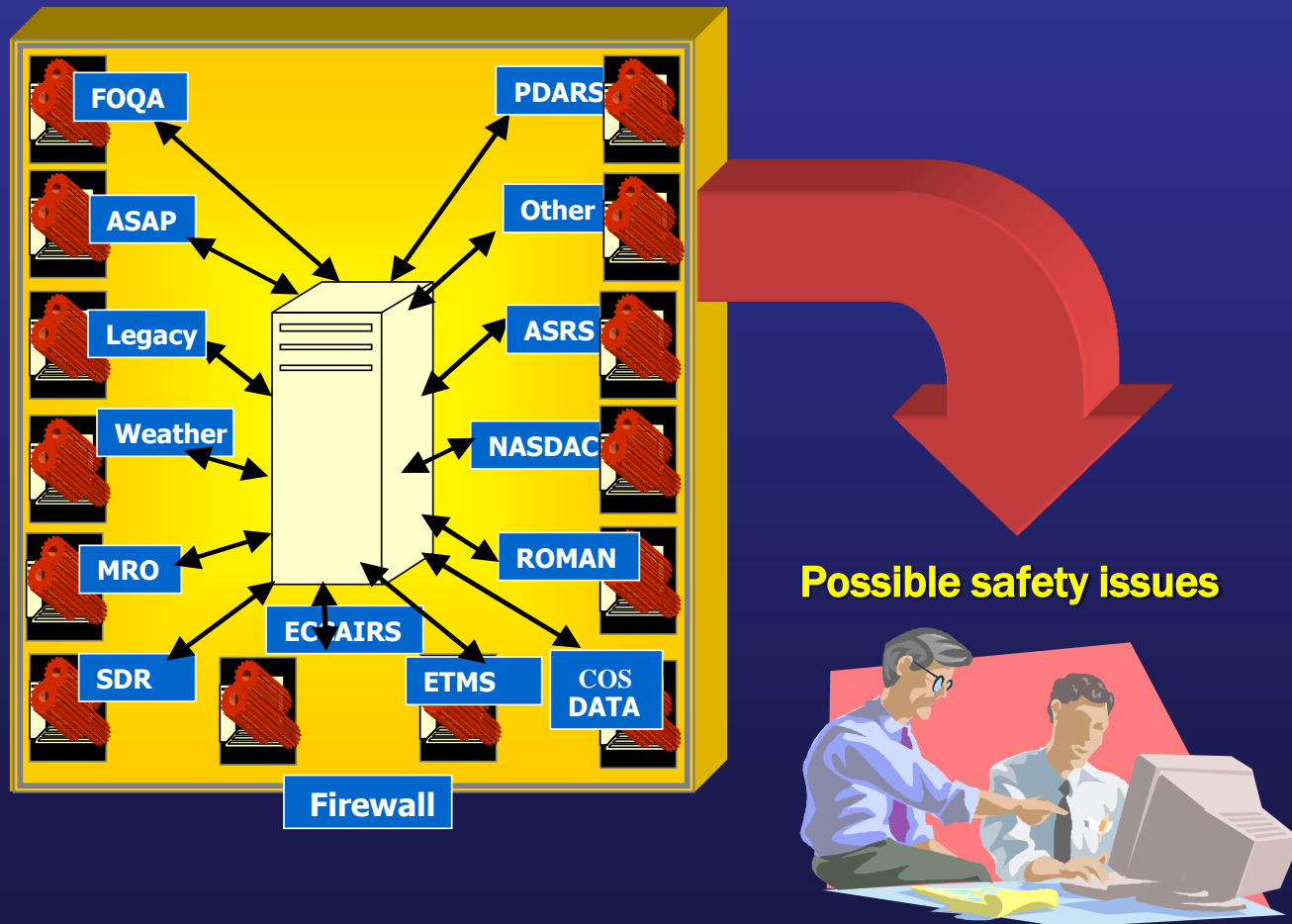
## Other Information



- Bureau of Transportation Statistics
- Weather / Winds
- Manufacturer Data
- Avionics Data
- Worldwide Accident Data

# The ASIAs Concept

Data sources can leverage the power of safety information data sharing



# Summary

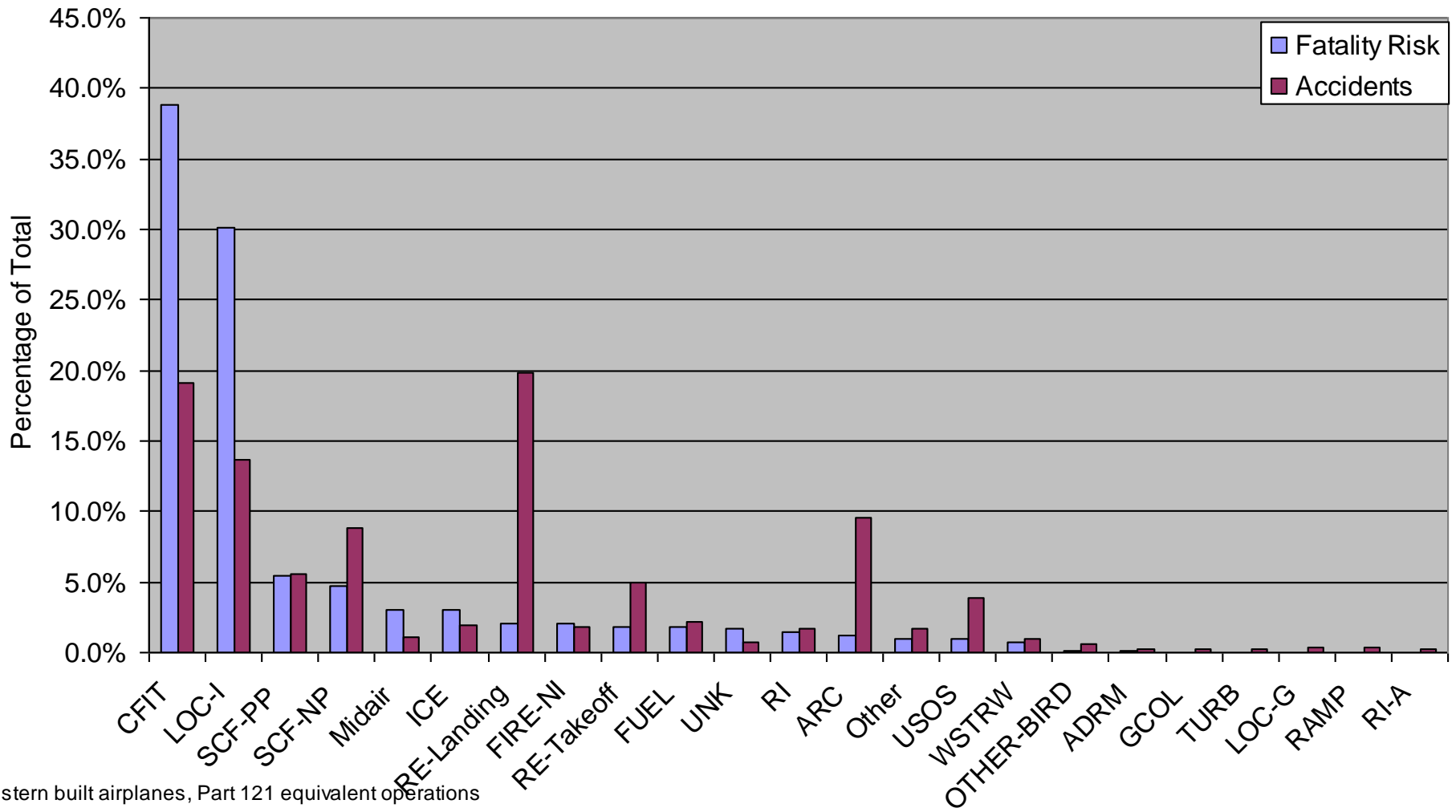
- History shows focused action and introduction of new capabilities have led to accident risk reductions
- Joint industry and government teams working together can further enhance the safety of our very safe aviation system
- Full implementation requires a coordinated effort between industry and government





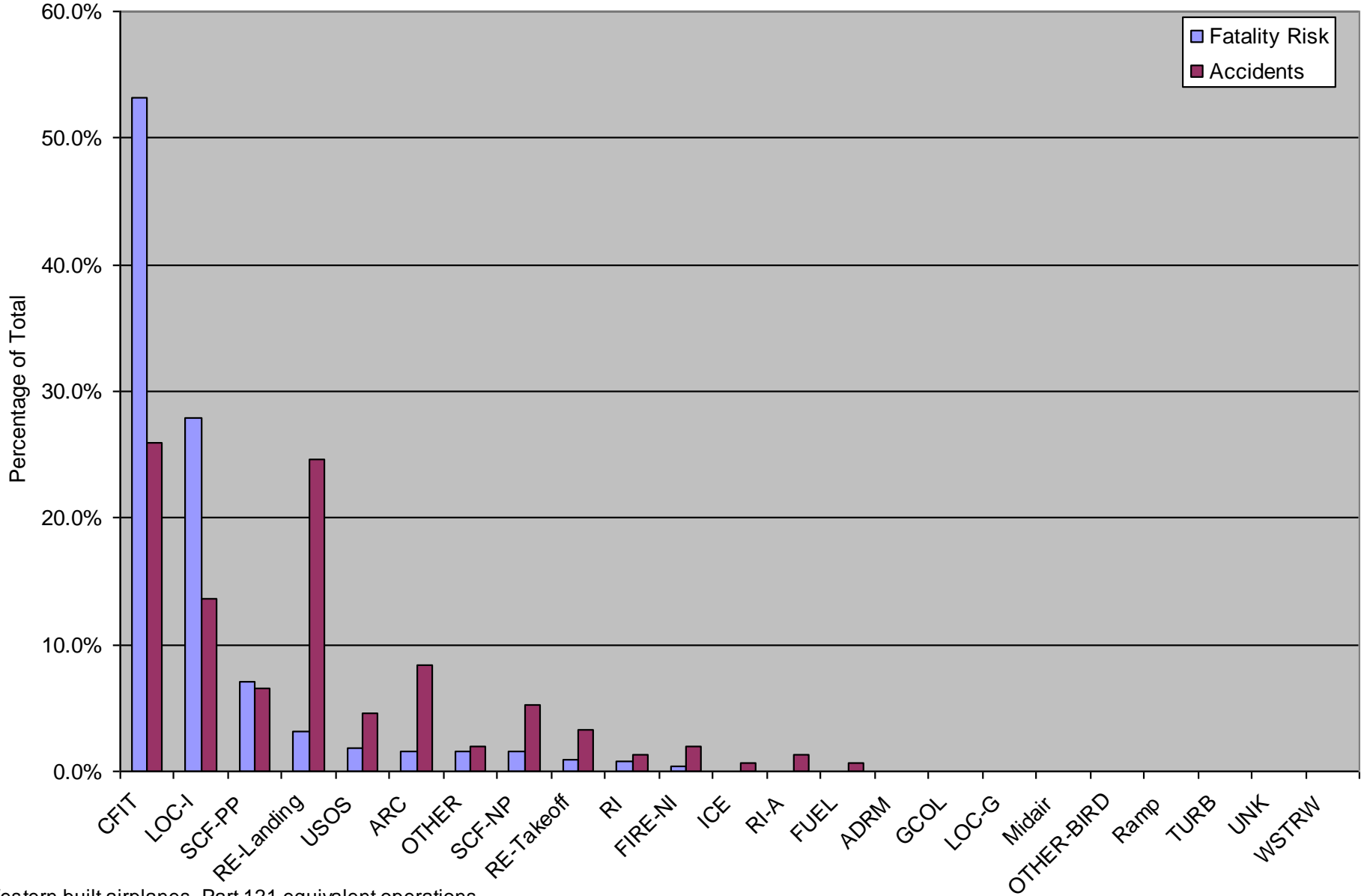
# Asia Regional Risk Data

### 1987-2010 World Wide Hull Loss and Fatal Accidents\*



\*Western built airplanes, Part 121 equivalent operations

1987-2010 Aisa Hull Loss and Fatal Accidents



\*Western built airplanes, Part 121 equivalent operations

# Hull Loss Accident Rates

## By World Regions - By Airline Domicile

Western-Built Transports – 1997 through 2006

Region	Departures <sup>1</sup> Millions	(% of total)	Accidents	(% of total)	Accident rates <sup>1</sup>
Africa	4.0	(2%)	48	(24%)	12.0
Asia (excluding China)	20.5	(12%)	39	(19%)	1.9
China	9.7	(6%)	3	(1%)	0.3
C.I.S	.8	(0%)	4	(2%)	4.9
Europe	46.2	(26%)	34	(17%)	0.7
Latin America and Caribbean	12.8	(7%)	31	(15%)	2.4
Middle East	4.0	(2%)	12	(6%)	3.0
Oceania <sup>2</sup>	4.2	(2%)	0	(0%)	0.0
USA and Canada	73.5	(42%)	34	(17%)	0.5
<b>Overall totals</b>	<b>176.7</b>	<b><sup>3</sup></b>	<b>205</b>		<b>1.16</b>

1 Accidents per million departures -- Departure data from FLIGHT/ACAS

2 Australia, New Zealand, Micronesia, Melanesia, Polynesia, etc.

3 Regional cycle totals not equal to overall cycle total due to unknown regional distribution for approx .9 million cycles.

# Hull Loss Accident Rates

## By World Regions - By Airline Domicile

Western-Built Transports – 2001 through 2010

Region	Departures <sup>1</sup> Millions	(% of total) <sup>3</sup>	Accidents	(% of total) <sup>3</sup>	Accident rates <sup>1</sup>
Africa	5.0	(23%)	38	(20%)	7.6
Asia (excluding China)	23.4	(12%)	38	(20%)	1.6
China	16.9	(9%)	3	(2%)	0.2
C.I.S	2.0	(1%)	5	(3%)	2.5
Europe	54.8	(28%)	31	(16%)	0.6
Latin America and Caribbean	15.2	(8%)	35	(18%)	2.3
Middle East	5.6	(3%)	11	(6%)	2.0
Oceania <sup>2</sup>	4.8	(2%)	0	(0%)	0.0
USA and Canada	70.9	(36%)	29	(15%)	0.4
<b>Overall totals</b>	<b>198.6</b>		<b>190</b>		<b>1.0</b>

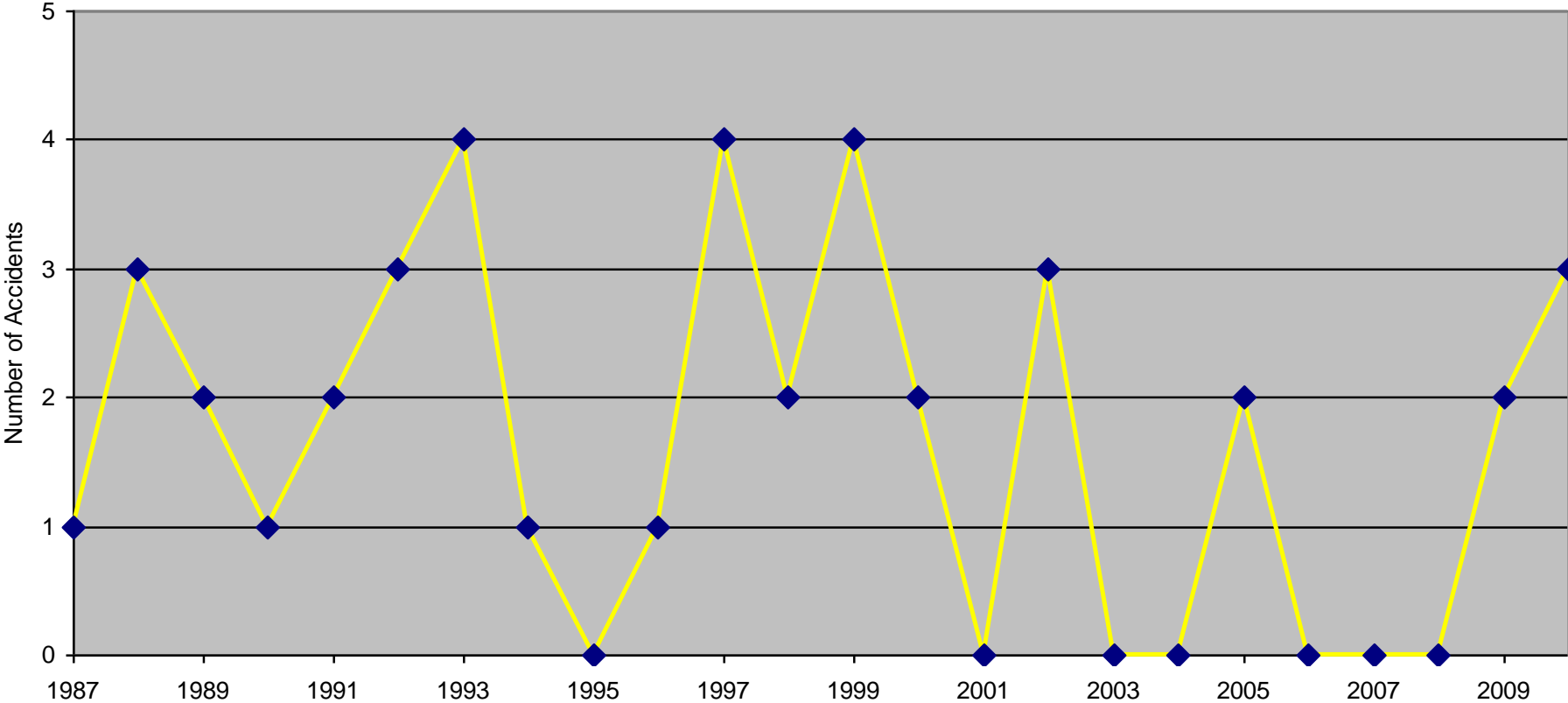
1 Accidents per million departures -- Departure data from Ascend and Boeing

2 Australia, New Zealand, Micronesia, Melanesia, Polynesia, etc.

3 Percentages may not sum to 100% due to numerical rounding.



CFIT - Operator Domicile: Asia

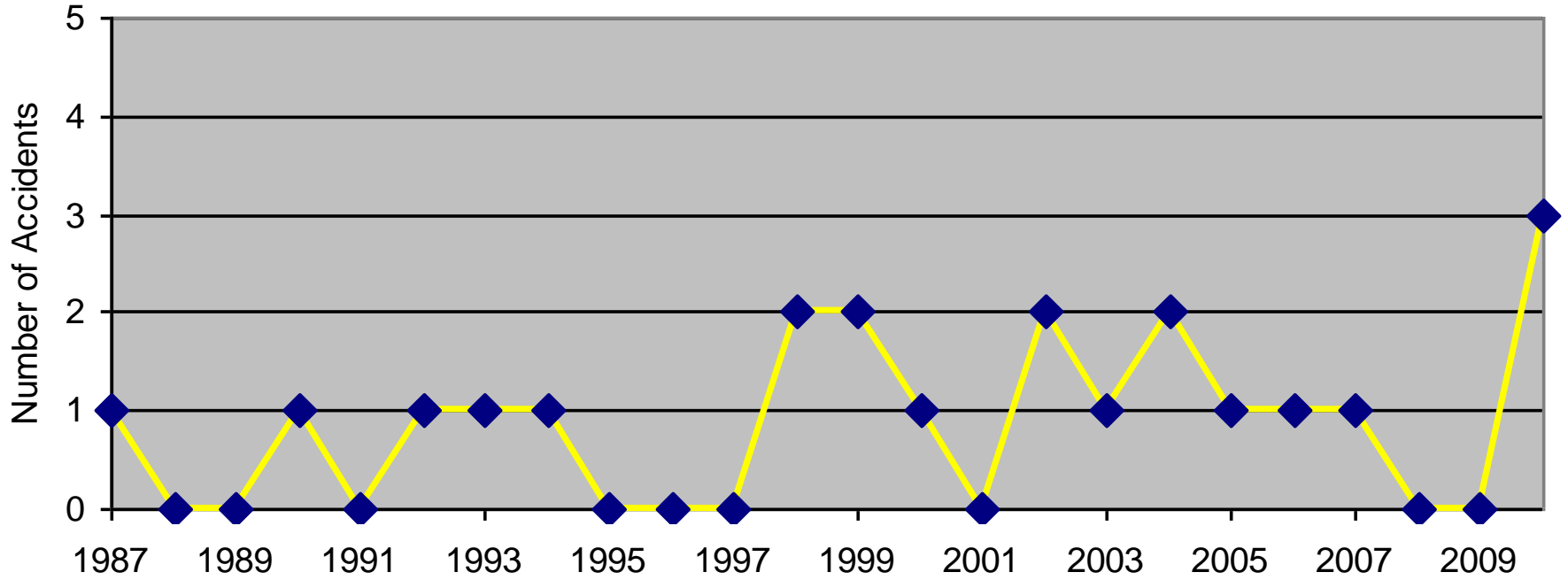


\*Western built airplanes, Part 121 equivalent operations

# CAST ACTION

- Developed SE-120 to augment SE-1, installation of EGPWS
- SE-120 urges operators to upgrade EGPWS software and to install GPS for accurate position determination (not mandatory in US)

### LOC-I - Operator Domicile: Asia



\*Western built airplanes, Part 121 equivalent operations

# CAST ACTION

- Completed a study of all CAST LOC-I Safety Enhancements; determination made that more work is needed
- Authorized a JSAT concerning Airplane State Awareness (ASA JSAT)
- Initial findings; Attitude and energy state awareness is a leading cause of LOC-I
- Findings will be shared internationally

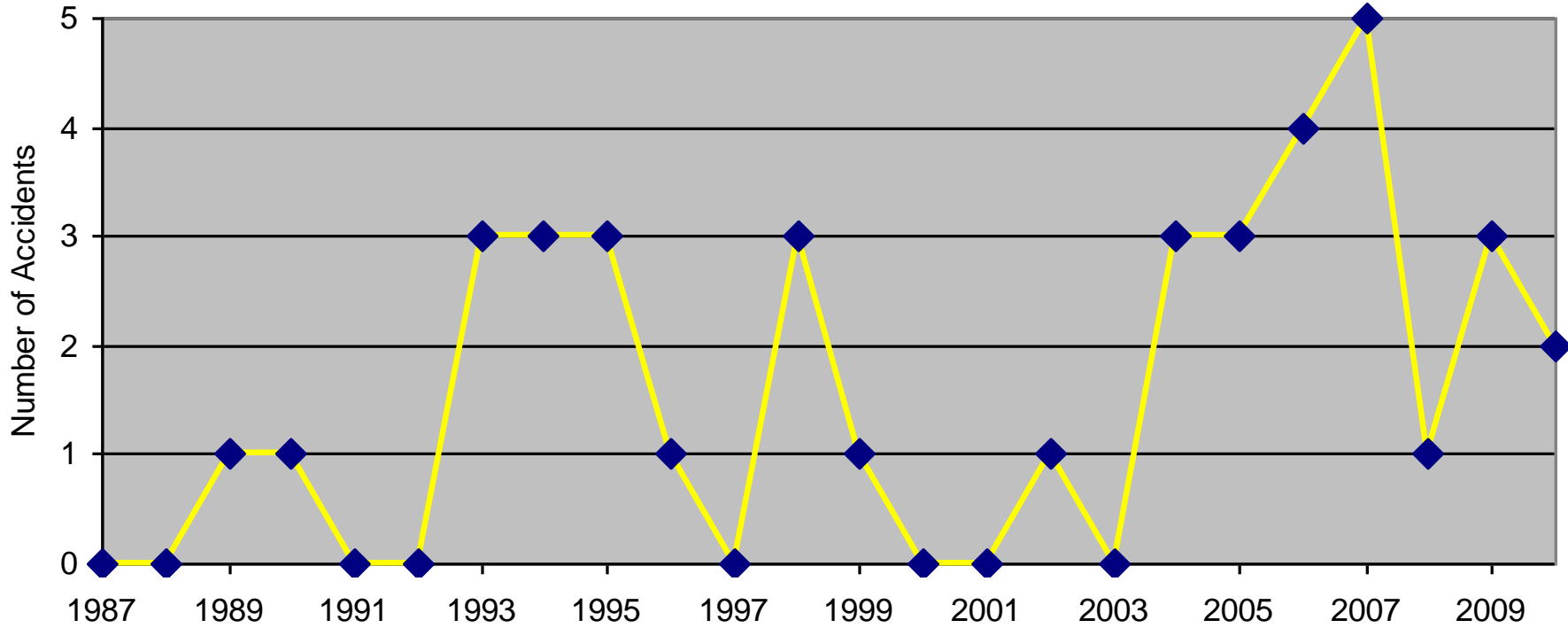
# RUNWAY EXCURSIONS

Runway Excursions are  
increasing worldwide

Leading causal factor is  
Unstabilized Approaches



### RE-Landing - Operator Domicile: Asia



\*Western built airplanes, Part 121 equivalent operations

# UNSTABILIZED APPROACHES

- Unstabilized approaches may result in runway overruns and veer-offs (Runway Excursions)



# Unstable Approach Effects

- Unstabilized approaches may likely lead to:
  - Hard Landings
  - Landing short
  - Missed approaches
  - Controlled flight into terrain
  - Runway Excursions





**BOEING**®

# CAST ACTION

- The CAST accomplished a comprehensive study of existing RE efforts
  - FSF, IATA, Eurocontrol, FAA
- RE JSAT has been started to complement these efforts using ASIAS data
- Findings will be shared internationally

# International Perspective CAST Safety Enhancements

Western-built transport hull loss accidents, by airline domicile, 2001 through 2010





# Resources

- <http://www.faa.gov/runwaysafety>
- <http://flash.aopa.org/asf/runwaySafety/>
- <http://www.iataonline.com>
- <http://www.flightsafety.org>
- <http://www.cast-safety.org>
- <http://www.icao.int>

# SKYbrary

1139 Articles 760 New

Safety knowledge contributed by [Log in](#)

**SKYbrary** The single point of reference in the network of aviation safety knowledge

Navigation

Join Skybrary and participate in the discussions about articles

Skybrary  ICAO

Google Search Search

Operational Issues Portal Enhancing Safety Portal Safety Regulations Portal

**Highlighted Article**

**Situational Awareness**

Put simply, situational awareness (SA) means knowing what is going on around you. More specifically, in the context of complex operational environments SA is concerned with the person's knowledge of particular task-related events and phenomena.

[read more](#)

**Skybrary Solutions** **Safety Alerts**

- [All clear? Toolkit](#)
- [Level Bust Toolkit](#)
- [Airspace Infringement Early Action Package](#)

[Privacy policy](#) [About SkybraryWiki](#) [Disclaimers](#)

ECAST and ARMS

products also published

in SKYbrary; Link to CAST

[www.skybrary.aero/index.php/Category:Safety\\_Management](http://www.skybrary.aero/index.php/Category:Safety_Management)

Safety knowledge contributed by

EUROCONTROL ICAO FLIGHT SAFETY FOUNDATION UKFSC essi European Strategic Safety Initiative



<http://www.cast-safety.org/>

**Thank You!**