

# ICAO RSG-PA

## 4<sup>th</sup> Pan-American Aviation Safety Conference



la construcción de puentes

UK CAA – Captain Mark Chesney & Wg Cdr Ian Shaw



“the globe, will be linked by flight,  
and nations so knit together that  
they will grow to be next-door  
neighbours. . . . What railways  
have done for nations, airways will  
do for the world.”

— *Claude Grahame-White, 1914*

# Data Driven

## Global air traffic trends



New analysis by Amadeus reveals that:

- Asia still leads air travel growth with 9% increase in 2012 followed by Latin America with 6% increase.
- The Middle East is a rapidly growing hub. Dubai, Abu Dhabi and Doha have a collective growth rate of 20% when serving Europe and Asia traffic.

Approximate full year passenger volume

Annual growth in 2012 compared to 2011

NEW Emerging Markets



### LOW COST CARRIER PENETRATION IN EACH REGION

Regions	Share of all traffic	
	2011	2012
Asia	16.5%	18.6%
Europe	36.5%	38.0%
North America	29.5%	30.2%
Latin America	26.6%	24.9%
Middle East	11.7%	13.5%
South West Pacific	35.5%	36.6%
Africa	9.4%	9.9%

Among the fastest growing countries in passenger traffic we find:

Peru **28%** Indonesia **22%** Philippines **14%** Colombia **11%** China **10%**

amadeus  
Your technology partner

# Scope

- The United Kingdom CAA
- What is SSP?
- Public Safety - the centre of everything we do
- Total Aviation System
- Residual Risk Wheel Model
- What are we doing about the risks?
- The Significant 7
- Case Study
- Changing business models
- Questions



# Civil Aviation Authority (UK)

- Established by Parliament in 1972, independent specialist aviation regulator.
- Unlike many countries, no direct Government funding CAA's regulatory work.
- Active professional & private pilots (50,000)
- Licensed aircraft engineers (12,400)
- Air traffic controllers (2,350)
- ANSPs (61)
- AOC Holders (206)
- Licensed aerodromes (141)
- Aircraft registered in UK (19,000)
- Airlines that routinely visit the UK (1800+)



# What is the State Safety Programme?

- Programmes such as SMS are pivotal to *how* we intend to do business. The State Safety Programme is primarily concerned with *why* we do business
- It is a combination of:
  - State Safety Plan
  - The Portfolio of Projects and work we do
  - The mindset of ‘Working in Partnership’



# Total Aviation System Approach



# Where the Significant 7 came from?



LOSS OF CONTROL  
 RUNWAY EXCURSION  
 CONTROLLED FLIGHT INTO TERRAIN  
 FIRE

RUNWAY INCURSION  
 AIRBORNE CONFLICT  
 GROUND HANDLING



Loss of Control



Runway Excursion



CFIT



Runway Incursion



Airborne Conflict



Ground Handling

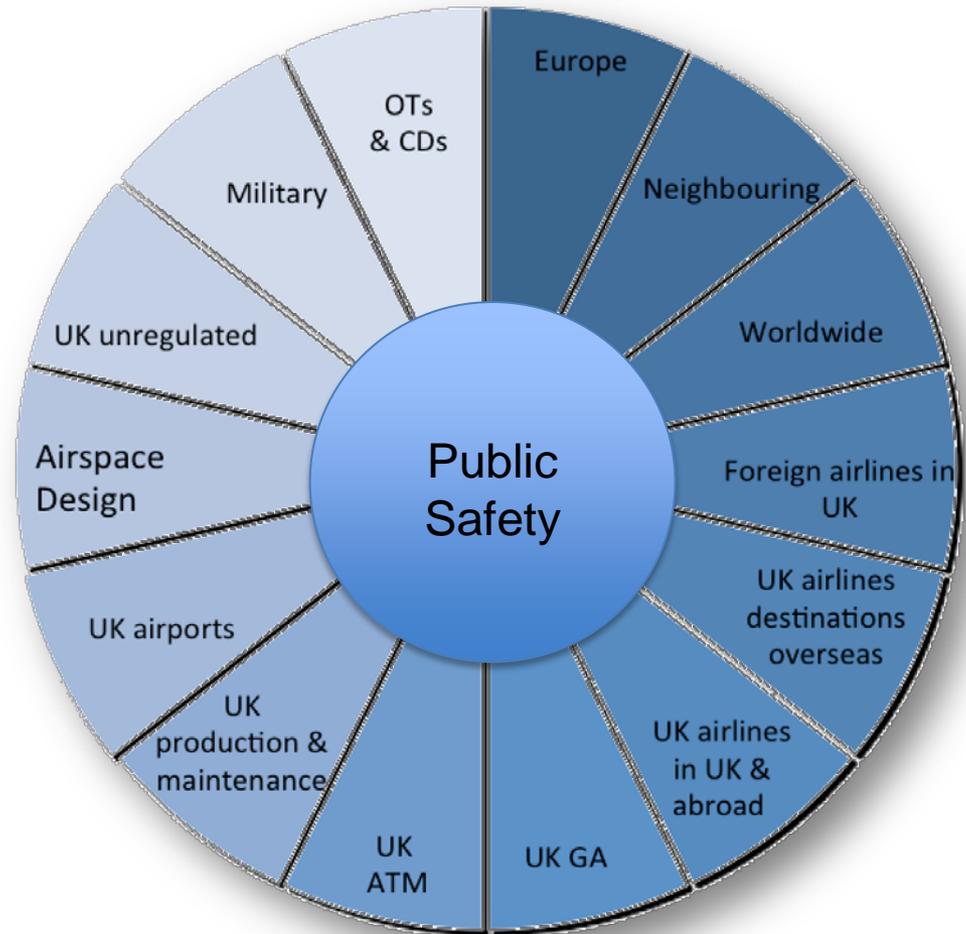


Fire

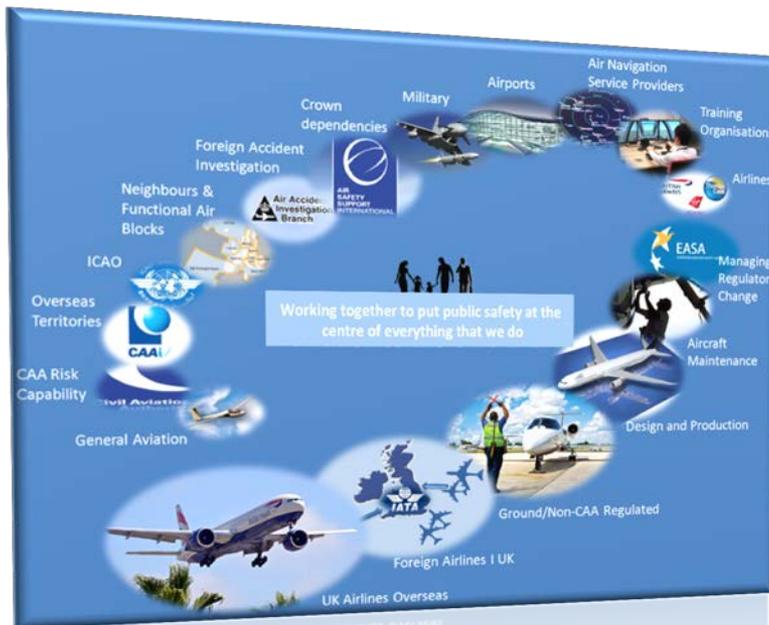
TURNED INTO SCENARIOS  
 WITH REAL WORLD  
 APPLICATIONS

# Changing Direction

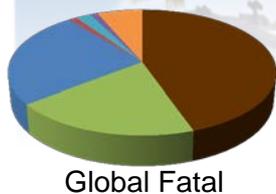
- Total Aviation System
- Risk Based Oversight
- Putting public safety at the centre of everything we do
- Collaborative working



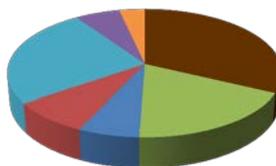
# Aviation Risk to the UK?



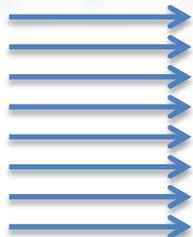
- Considering the whole aviation system in the UK.
- What is the risk?
- Who can help address the risk ?
- And where should we focus our efforts?
- The way we translate the system into relative risks is the Residual Risk Wheel



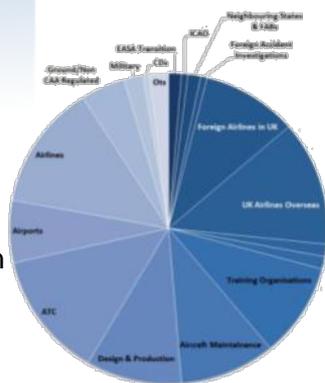
Global Fatal



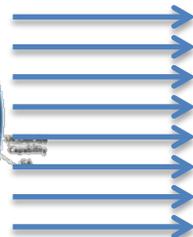
Near Misses



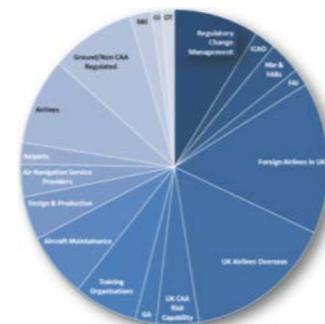
Combined and then translated into where the risk manifests in aviation system



Inherent Risk Wheel



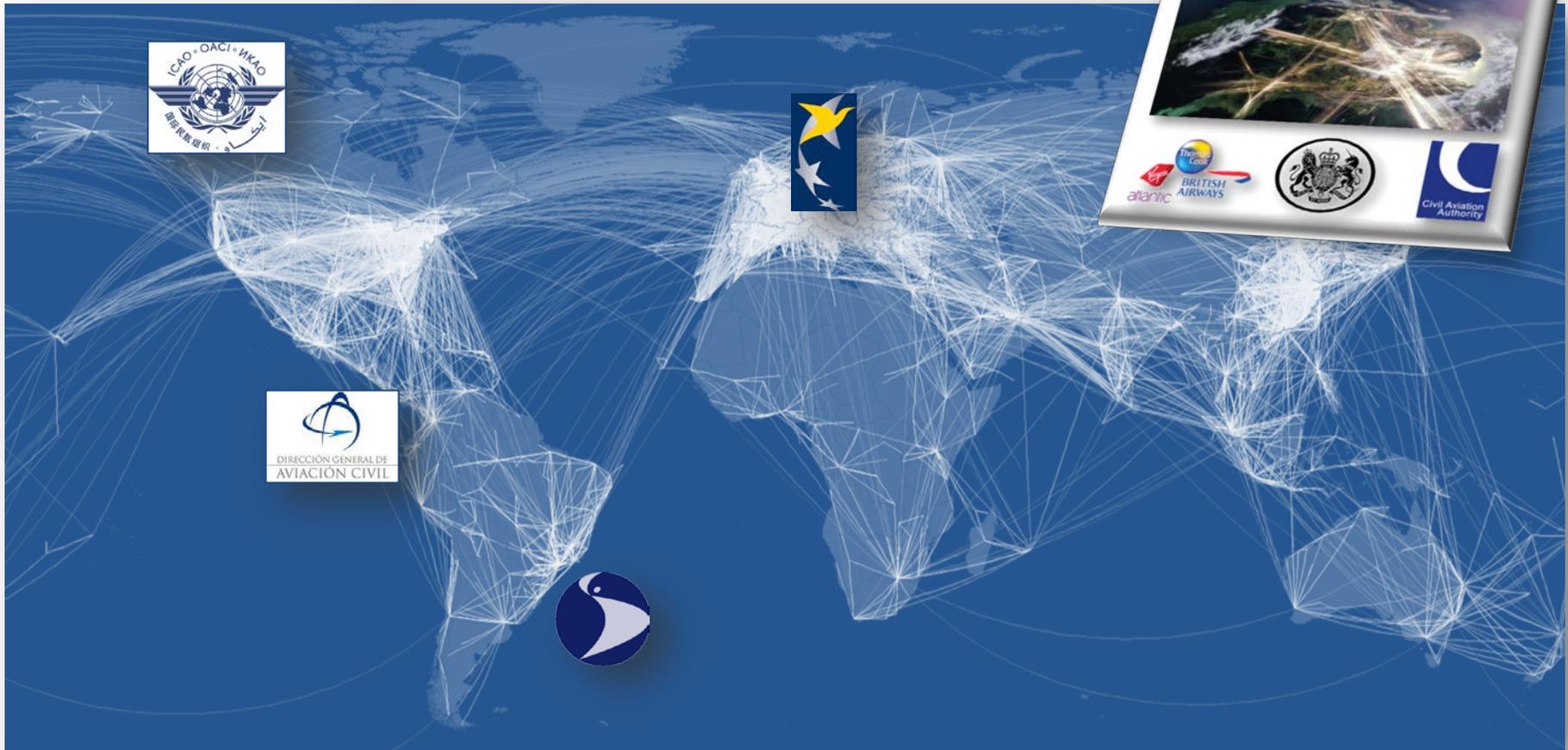
Corrected for system mitigation



Residual Risk Wheel



# The Collaborative Approach



# What are we doing about the risk?



	Ground Handling
	Runway Incursion
	Airborne Conflict
	Runway Excursion
	Loss of Control
	Fire
	CFIT

- Research into Space Weather, RPAS, Space-planes, Language Competency, Bizjet QARs, ADS-B, Approach Design and more
- State Safety partnerships to look at the Foreign Aircraft in the UK and UK aircraft abroad
- GHOST – regulator and industry ground handling group
- ICAO & EASA actively participate and chair working groups and have secondees working with these organisations to better understand our role and opportunities

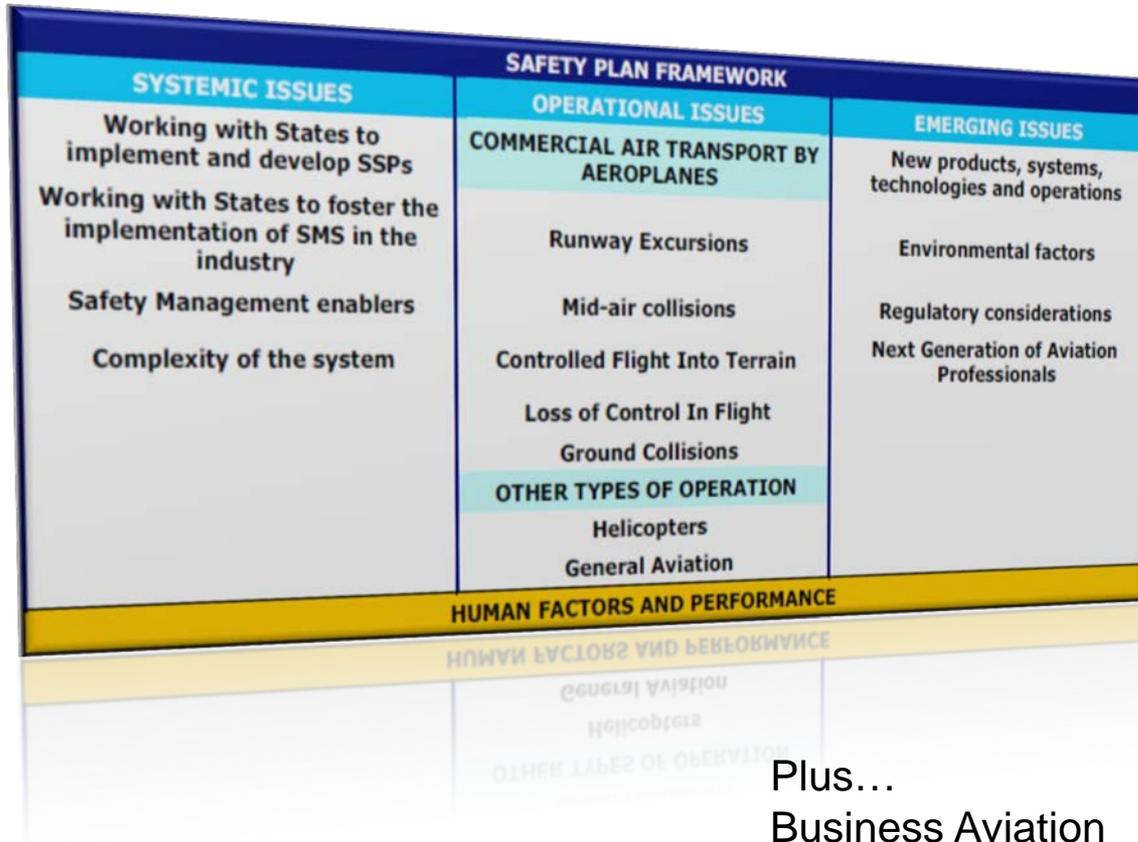
# State Safety Partnerships



- WHAT
- Bilateral Partnerships
- Regular Multidisciplinary Meetings & Actions
- Various Reasons
  - Safety Issues
  - Multiple Commercial Ties
  - Proximity / Borders / Volume
- WHY
- Knowing people
- Information exchange
- Alignment and standardisation
- Ability to fix problems



# Implementation of EASp in UK



## UK CAA Safety Plan Framework

**'Significant Seven' Safety Issues (in priority order)**

1. Loss of Control
2. Runway Excursion
3. Controlled Flight into Terrain
4. Runway Incursion
5. Airborne Conflict
6. Ground Handling
7. Airborne and Post-Crash Fire

**Key Capabilities Required for the Total Aviation System**

- Integrated Safety Risk Management Process
- Continuing Airworthiness
- SMS
- Just Culture
- Human Factors
- Performance-Based Oversight
- Fatigue Risk Management Systems
- Total System Threats

Plus...  
 Business Aviation  
 Helicopters  
 General Aviation

# Pilot performance.....3 days ago....

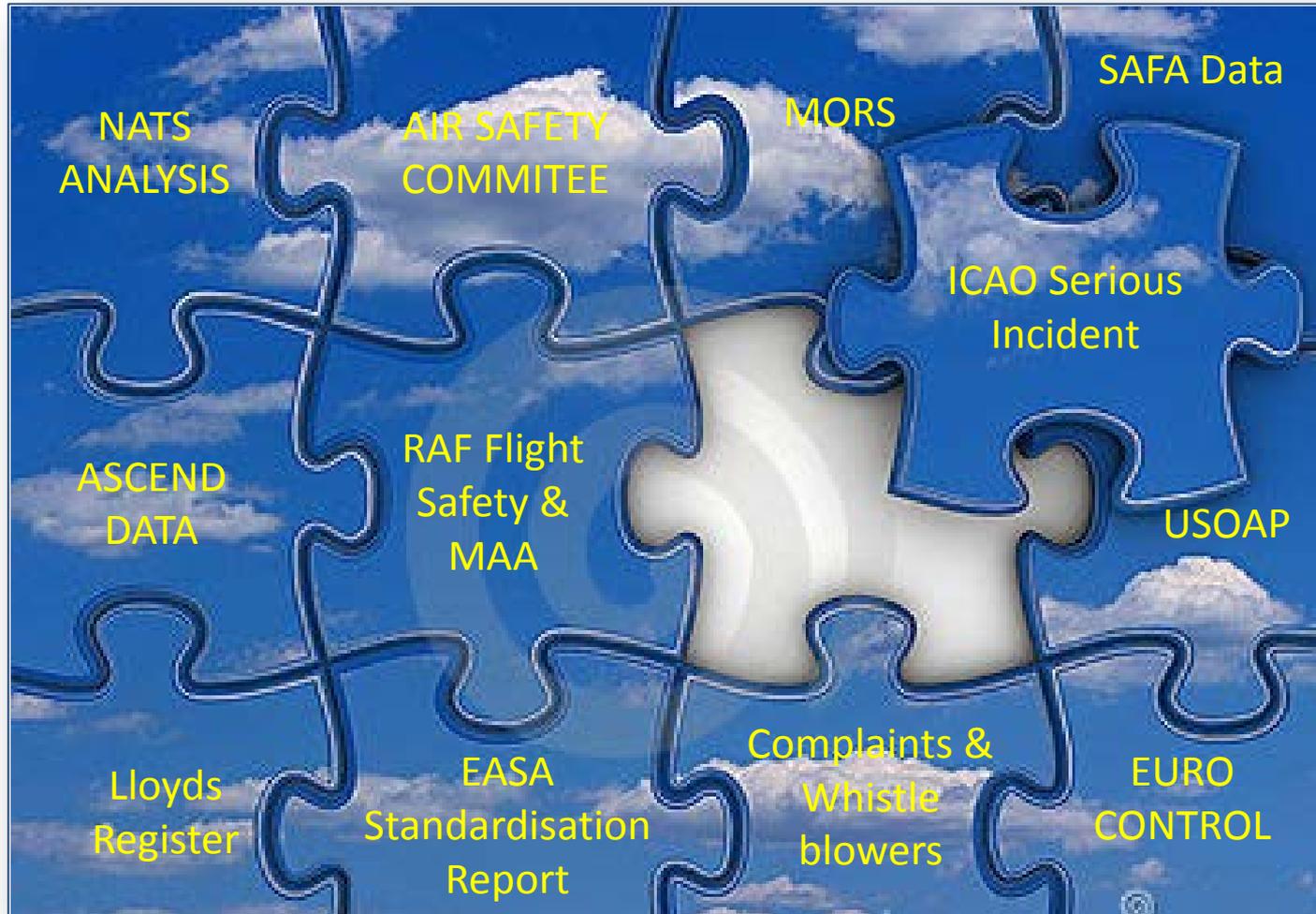


# Partnership Case Study

- Aim –to improve operational performance
- What data sources did we review?
- Before and After



# What data sources are available?



# Operational Safety Performance Data

Country	Aircraft Involved in an occurrence	Aircraft making an error	Ratio
	1571	528	34%
	596	352	59%
	368	178	48%
	363	200	55%
	277	139	50%
	240	132	55%
	185	131	71%
	166	117	70%
Turkey	128	103	80%
	127	56	44%
	124	66	53%
	111	51	46%
	102	50	49%
	69	35	51%
	60	3	5%
	53	34	64%
	52	36	69%

# NATS Safety Performance Independent Data for 2011

- NATS Airspace 2011
  - 2.1 million flights
  - 4,000 reports all causes including ATC
  - Turkish Operators in UK Airspace
    - 11,400 flights
    - 56 reports (**491**/100,000 flights)
  - Major UK Operator (133/100,000 flights)
  - UK Charter Operator (230/100,000 flights)



# UK – Turkey Partnership

- First contact June 2011
- First dialogue August 2011
- Data exchange since September 2011
- First Industry Workshop January 2012
- Second Industry Workshop June 2012
- Third UK and Turkish Industry Workshop December 2012



# Strengths and Development Areas

- Respond well to MORs
- Low SAFA ratio
- Participate well in Safety Partnership Agreement
- Level Busts Inbound
- Level Busts Outbound
- Navigation Errors (including TCAS responses)
- Ground Movement



# NATS Safety Performance

## Independent Data: February – May 2012

- NATS Airspace last 4 months
  - 826,446 flights
  - 2,337 reports all causes including ATC
  - Turkish Operators in UK Airspace
    - 8,565 flights
    - 6 reports (**70**/100,000 flights)
  - Major UK Operator (225/100,000 flights)
  - UK Charter Operator (260/100,000 flights)

# Data Exchange

- Data exchange ongoing
  - CAA - DGAC
  - NATS – Operators
  - UK Operators - Turkish Operators
- This aims to sustain the performance improvement in the UK
- Address the issues in Turkey Plans for
  - Dalaman
  - Istanbul



# How our industry is evolving

- Growth of EU Operators based in UK
- Growth of Wet Lease In
- Government Policy
- Large Organisations moving to Single AOC
- Growth of Virtual Airlines
- Change of Airline Business Model



What does this mean for the UK Public Safety?

# Safety Paradox & Cost/Benefit Analysis



Hull Values ranging from £20M to £300M, pax from 125 – 800

# Investing in Safety: US Airways 1549

- US Airways Flight 1549 suffers double engine failure due to multiple bird-strike
- 3 mins after take off from LaGuardia Flight 1549 ditches into the Hudson
- 150 pax, 5 crew – 3 injuries
- GAPAN awards for flight crew
- NTSB board member described this as "the most successful ditching in aviation history."



# Cost of an Accident?

Loss of crew

Loss of passengers

Loss of aircraft



**THE WALL STREET JOURNAL**  
Friday, January 15, 2008 at 11:44 AM EST

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Business January 16, 2008 1:32 pm ET

## Successful Outcome of US Airways Crash Gives Shares a Lift

Article Stock Quotes Comments MORE IN BUSINESS

By **BARBARA GARET**

The dramatic survival of all 155 passengers and crew on a doomed US Airways jetliner helped give the airline's stock a bump Friday.

US Airways Group Inc. **(DOW:UAL)** shares rose 12% to \$8.53 Friday in New York Stock Exchange trading Friday, outpacing gains in other carriers' stocks.

Accidents with fatalities can dent airline's reputations in the short term. But an outcome like the one with Flight 1549, which is being praised as an example of superior airmanship and crew training, appears to have prompted a rally.

Flight emergencies get lots of attention but usually have only fleeting effects on **airline** businesses. Paradoxically, airlines often see an increase in passenger traffic

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Stock went up 8.3% on 16 Jan, contrary to Chance/Ferris research on stock markets from 1982

Critical staff reassignment

Care team can number in the 100s

Public relations challenge

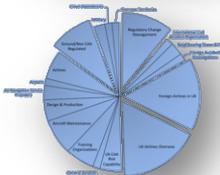
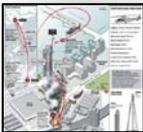
Consider Safety as an Investment and not a cost

# The Future

- More aircraft in finite airspace
- Better use of emerging technologies
- More collaboration
- More data exchange
- More working in partnership with other states to improve operational safety performance



# Questions?



# References

- *“Updating the VPF and VPIs: Phase 1: Final Report DfT”* dated 18 Mar 2011
- *“Adapting Costing Methods to Aviation Safety: Using Financial Tools to Show Value in Aviation Safety Processes”* Cox & Flouris
- *“The Economics and Morality of Safety”* Seminar at The Royal Academy of Engineering dated 16 February 2006
- *“The effect of Aviation Disasters on the Air Transport Industry- A financial markets perspective”* Chance & Ferris
- *“Freighter Airplane Cargo Fire Risk, Benefit and Cost Model (Model Version 5)”* FAA Report dated April 2013
- *“Return on Investment in HF”* CAT Magazine 2006 - Dr Bill Johnson





# Qantas A380 Flight

- Nov 4 2010
- Engine fire spotted by off duty pilot
- In-flight over Indonesia
- 3 fragments perforate the wing and engine cowling



Cost of Repair and Brand Equity = £100M (Qantas have never lost a hull –they have repaired the wings off this one though)

