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# FDM / FOQA IN TIMES OF CHANGE
# - CASE STUDIES

## - Abstract -


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## Résume

Abstract by Christopher Jesse
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A Computing Graduate with expertise in Programming, Data Structures and Artificial Intelligence, Chris has been working closely with a local industrial partner involved with Flight Data Analysis and the UK's Civil Aviation Authority.

Chris has experience with the SAGEM AGS flight data analysis system and multiple Statistics tools. He is managing a Research and Development project into the creation of an intelligent search engine which will combine expert knowledge and artificial intelligence to automate processes in Flight Data analysis.

## Institute of Industrial Research

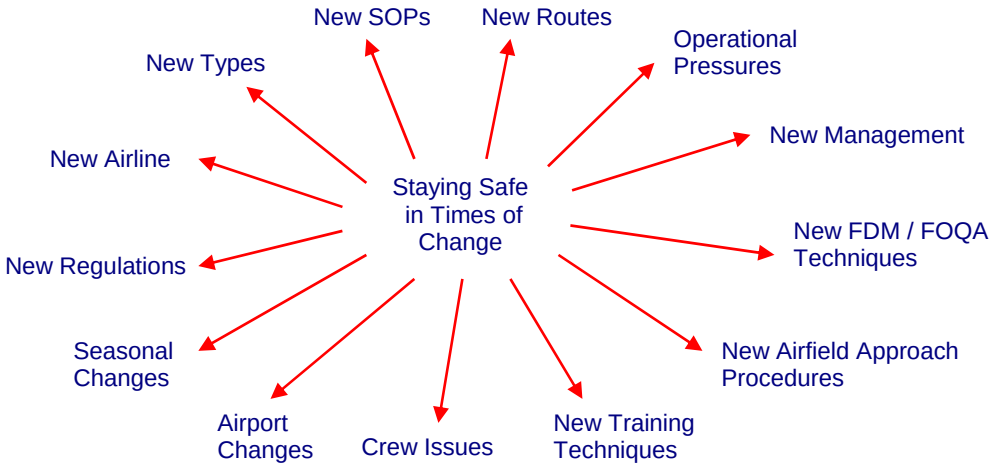
The Institute of Industrial Research has been established to enable industry and businesses to become more globally competitive through the application of Artificial Intelligence (AI) techniques. This is achieved through capitalising on research and expertise across the University of Portsmouth and developing this knowledge into bespoke solutions for our industry and business partners.

# FOQA / FDM IN TIMES OF CHANGE – CASE STUDIES

With a 6% increase of aircraft traffic in 2006 [1], the pressure of meeting increased demand places added pressure on maintaining the highest levels of flight operations safety.

Every airline needs to adapt in times of change with safety being the number one priority. This paper will examine and discuss many of the changes airlines face and use real FOQA / FDM examples to demonstrate how flight data analysis has assisted airlines to detect threats to operational safety.

The paper will briefly address these topics before examining some case studies.




## Operational Pressures

Flight data analysis found that the pilots of one operator were flying the first 15 minutes of flight with the gear down. When investigated further, it was found that the aircraft did not have brake cooling fans and the short turn around times imposed by their operating schedule weren't allowing the brakes to cool enough between flights. The practical solution was to use an alternative aircraft with cooling fans installed.

## New Airlines

Startup airlines inherently face many of the changes listed above. The early implementation of a flight data analysis program has been proven to assist in detecting irregularities in flight operations with new crews flying new aircraft types.

One FOQA / FDM program highlighted that aircraft were slowing to V2 after takeoff. The flight data showed that pilots were pitching the aircraft too high in the initial climb, allowing the speed to fall. An engine failure could have turned this into a serious incident.

## Future Safety Issues

The paper will also address future safety issues. FOQA / FDM programs have improved considerably during the past few years, but global acceptance of FOQA / FDM has been hesitant and is still relatively immature.

In order to be proactive in flight safety, FOQA / FDM programs need to detect the unforeseen, unpredictable information that lies deep within the flight data. The author is currently conducting research and development into a new automated artificial intelligence engine which will incorporate the knowledge and expertise of industry leaders in order to uncover this information. The automated tool will sift through hundreds of flight data hours identifying and highlighting any potential threats to operational safety.

Flight data analysis will then achieve its goal of being truly proactive.

# References

1. Average traffic increase Jan-Jul 2006 over Jan-Jul 2006 taken from Passenger and Freight measured kilometres. "*Passenger and Freight Traffic Growth Continues on Pace with Forecast – Promising Start to 2006*" Retrieved September 11, 2006 from: http://www.iata.org/pressroom/economics_facts/stats/2006-30-08-01.htm