

CAA Strategy for Bowtie Risk Models

A briefing from the Civil Aviation Authority

August 2015

Introduction

This strategy has been produced to identify how to maximise the use of bowtie risk models as an effective and proactive safety risk management tool, both by the CAA and industry, to inform decision making so that the right actions can be taken to achieve the best safety outcomes for the UK public.

Bowtie is a methodology to proactively identify and manage weaknesses in the aviation system so that resource can be focussed in the most efficient way. The use of bowtie models in the global aviation industry has gained significant traction in recent years with the CAA at the forefront. This strategy aims to maintain the CAA as a world leader in this field.

Overarching Principles and Key Drivers

This strategy will enhance and support current strategies either developed by the CAA or relevant to the CAA. The most significant strategies which have relevance to bowtie risk models are CAA Strategic Plan, CAA Transformation to Performance-Based Regulation (PBR) and Better Regulation Principles (Regulators Code).

CAA's Primary Strategic Objectives

The CAA strategy for using bowtie risk models comprises of the following primary objectives:

1. We want to be known as the world leader on aviation bowtie risk modelling expertise

From keeping up to date on bowtie methodology, its application worldwide and from collaborating with international bodies to promote CAA's best practice, we aim to improve our bowtie risk modelling knowledge by learning from others and understanding different uses. With enhancing CAA's centre of bowtie expertise within the Intelligence function - part of the CAA's Intelligence, Strategy and Policy (ISP) team of the Safety and Airspace Regulation Group (SARG) - and building upon the assistance from the identified capability area bowtie focal points we aim to retain and expand expertise within the organisation.

Capability areas are departments within SARG where technical field force inspectors and surveyors are based. There are three capability areas, Flight Operations, Airworthiness and AAA (Airspace, Air Traffic and Aerodromes).

2. We want to embed bowtie methodology and its output as a key element within CAA's internal Safety Management System (iSMS) to help drive safety improvement activity and safety planning

With having bowtie methodology and its output featured within our iSMS processes, we aim to improve our understanding and proactive management of risk ensuring internal safety groups such as the Safety Action Group (SAG) and Safety Review Board (SRB) are familiar with the bowtie output to help decision making. We aim to assure we have the right processes and procedures in place for our oversight of industry and aim to develop an internal control-based MOR risk grading system aligned with Europe's common risk classification framework.

3. We want to ensure the bowtie output is fundamental to Performance Based Oversight (PBO)

By using the bowtie output as a source of intelligence for performance based oversight (in connection with other intelligence) we wish to assist the CAA field force in asking control focussed questions and assist industry in identifying best practice safety mitigations.

4. We want to improve our intelligence capability through bowtie output identifying and driving data collection

We aim to work with industry, predominately through the Bowtie Users Group (BUG), UK Network of Analysts (UK NoA) and Flight Data Monitoring (FDM) working groups to identify common critical controls for effective Safety Performance Indicators (SPIs) and feed, where appropriate, into the UK State Safety Programme (SSP), Safety Plan and other industry action plans. From identifying critical controls, we are able to contribute towards European wide SPIs identifying common concerns to feed into the European Aviation Safety Plan (EASp) and working with EASA further to influence and enhance ECCAIRS taxonomy to ensure control relevant information can be coded effectively. We aspire to work with AAIB, the CAA investigation function and other UK aviation investigative functions to refer to bowties as a tool to help structure their investigations and ensure that control performance is captured completely in their reports.

5. We want to raise aviation safety management standards within CAA, UK and worldwide industry, other National Aviation Authorities (NAAs) and international bodies from using the bowtie methodology and its output

From collaborating with ICAO, SMICG and other aviation safety risk groups, we aim to demonstrate bowtie as an effective safety risk management tool for inclusion into relevant guidance material. From engaging with industry, we aim to assist organisations with the embedding of bowtie methodology to progress their Safety Management Systems (SMS) and we aim to improve training scenarios to be more realistic and evidence based from using bowtie information. We also strive to enhance current and new State Safety Partnerships by using bowtie methodology and its output to highlight key improvement areas and appropriate mitigations.

Measuring Success against CAA's Primary Strategic Objectives – Performance Measures

We aim to check the status of our aspirations and objectives periodically with potential positive indicators being:

- ICAO Doc 9859 (Safety Management Manual) contains examples of work or content influenced by the CAA's bowtie risk work
- The CAA/industry Bowtie User Group (BUG) reach their objectives and achievements and the group continues to be supported by a wide range of industry organisations
- The bowtie methodology and the use of output from bowties are embedded into CAA's Performance Based Oversight (PBO) processes and CAA's internal Safety Management System (iSMS)
- The bowtie methodology and the use of output from bowties are embedded into UK industries Safety Management Systems (SMS)
- An improvement of quality and confidence in the data and risk assessments provided by the CAA's Intelligence Function to internal and external stakeholders