# Problem Solving and Effective Root Cause Identification: How Well Are We Doing?

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CAA Pt21 Seminar, Gatwick 21st May 2019

# Current Regulatory Requirements

| | |
|---|---|
| **M.A.905(c)** | …appropriate corrective action to prevent reoccurrence of the finding and its **root cause** |
| **AMC M.A.403(b)** | …analysis necessary to identify the **root cause** of the defect |
| **M.A.619(c), M.A.716(c), M.A.905(c), 145.A.95(c), 147.A.160(c), 21.A.125B(c), 21.A.158(c)** | …**corrective action** to the satisfaction of the competent authority |
| **M.A.712(a)** | …ensure **corrective action** as necessary |
| **145.A.60(b)** | …**corrective actions** taken or to be taken by the organisation |
| **145.A.65(c)** | …ensures proper and timely **corrective action** is taken in response to reports |

1. Corrective action
2. Preventive action – unless stated below, this should include root cause identification and root cause correction.
3. Follow up action taken or proposed action to be taken with associated timescales.

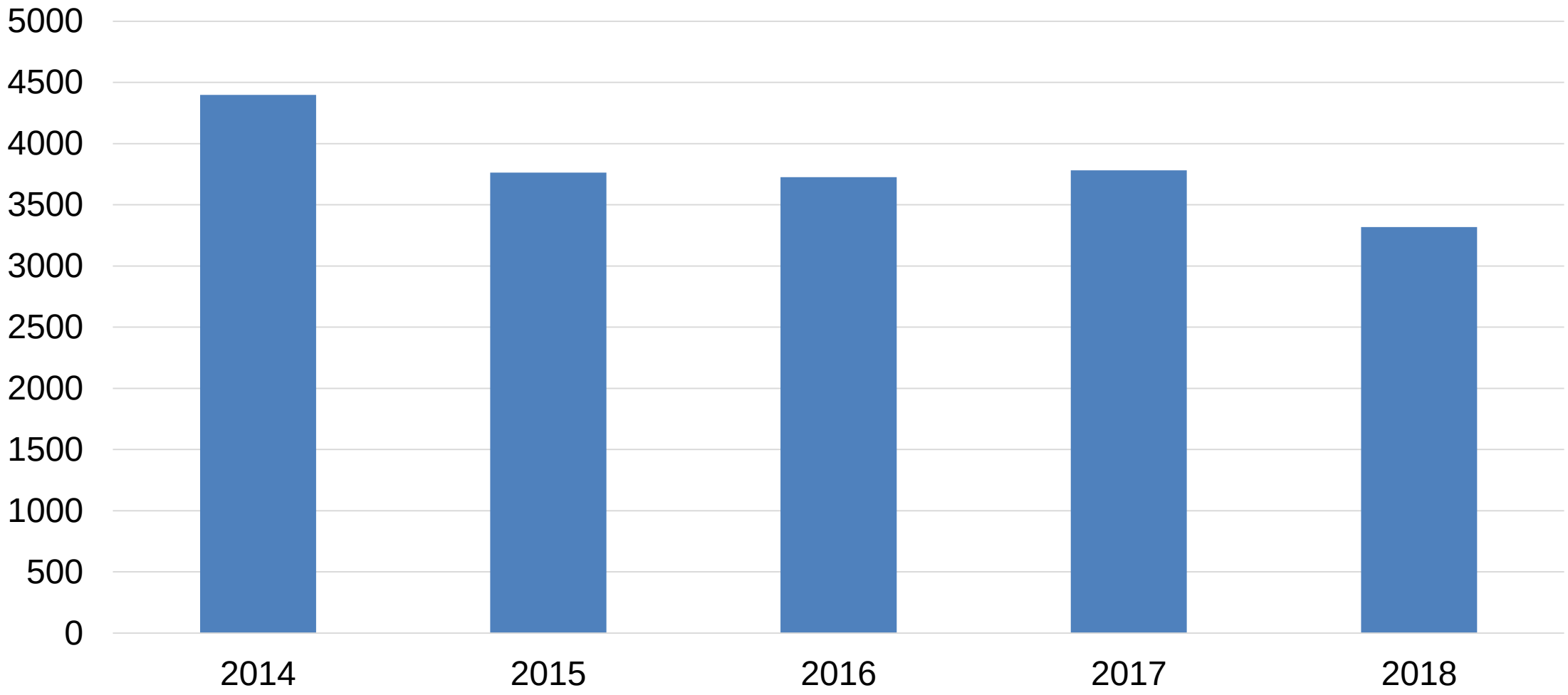
# Future EASA Regulation

**RMT.0251 SMS embodiment in Pt 145 and Pt 21 via NPA 2019-05**

Corrective Action is the action to eliminate or mitigate the root cause(s) and prevent recurrence of an existing detected non-compliance, or other undesirable condition or situation. Proper determination of the root cause is crucial for defining effective corrective actions to prevent reoccurrence.

It is important that the analysis does not primarily focus on establishing who or what caused the non-compliance but why it was caused. Establishing the root-cause or causes of a non-compliance often requires an overarching view of the events and circumstances that lead to it, to identify all possible systemic and contributing factors (regulatory, human factors, organisational factors, technical, etc.) in addition to the direct factors.

# CAA Airworthiness Findings 2014-2018

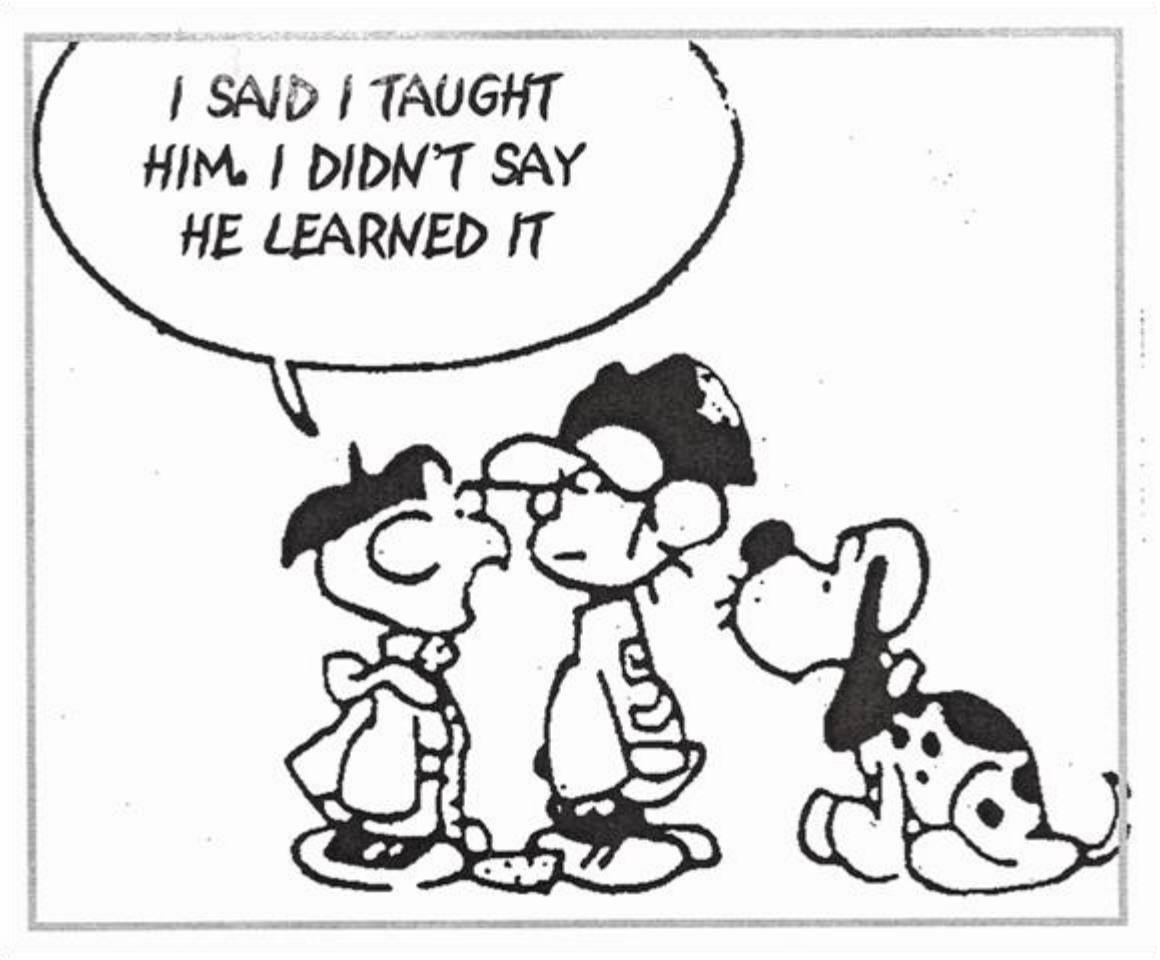


# So Are We Learning?

Many organisations monitor repeat findings/events

**BUT**

Very few organisations know/review if their previous actions to address findings/events were effective!

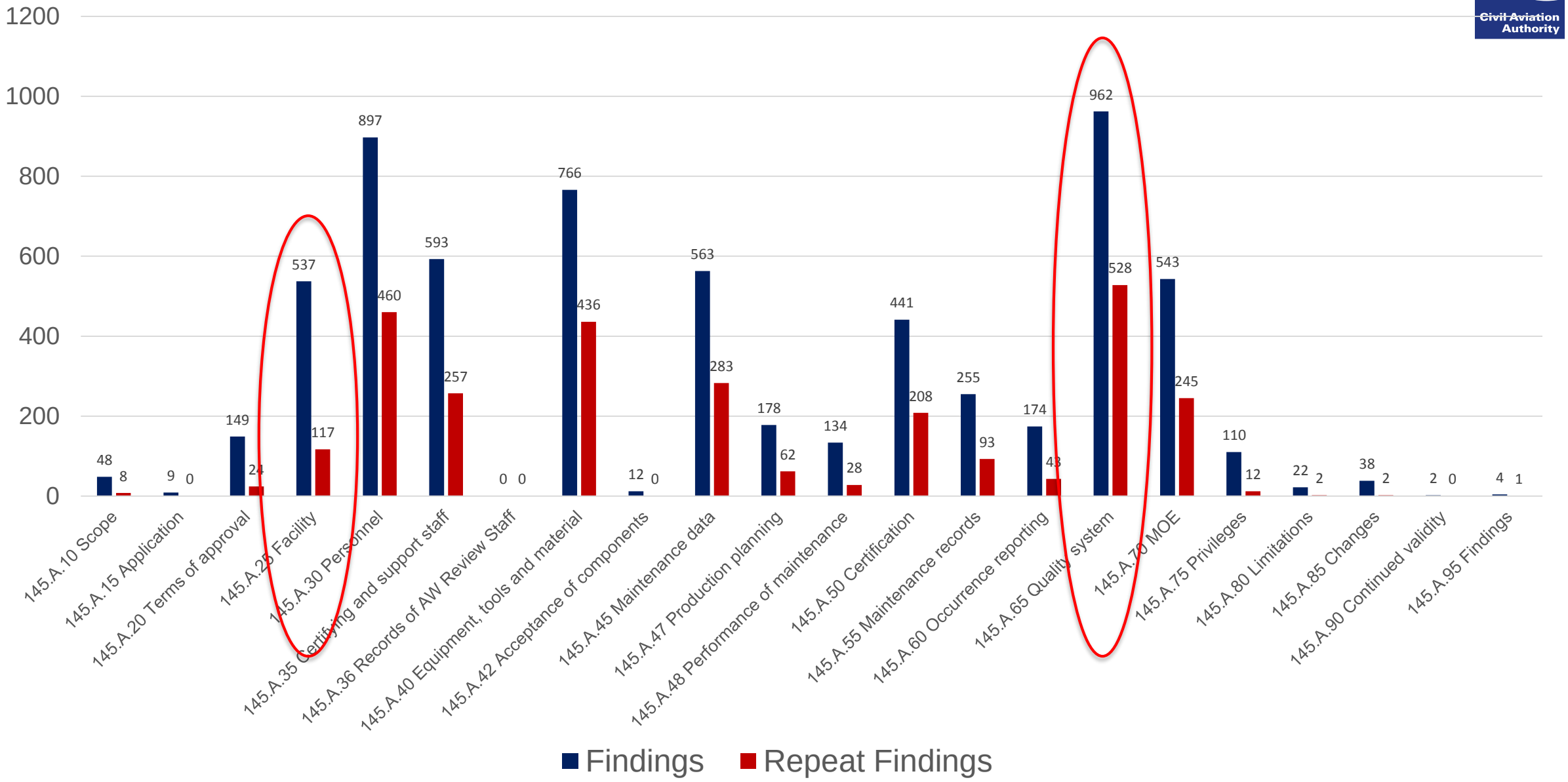


# Repeat Findings

- Approx. 44% of all CAA AW findings raised in the past 5 years are repeat findings
- Getting to the true root cause can lead to cost savings via

- Reduction of repeat findings
- Better use of manpower resources
- Operational efficiencies

# Airworthiness Pt 145 Findings 2018

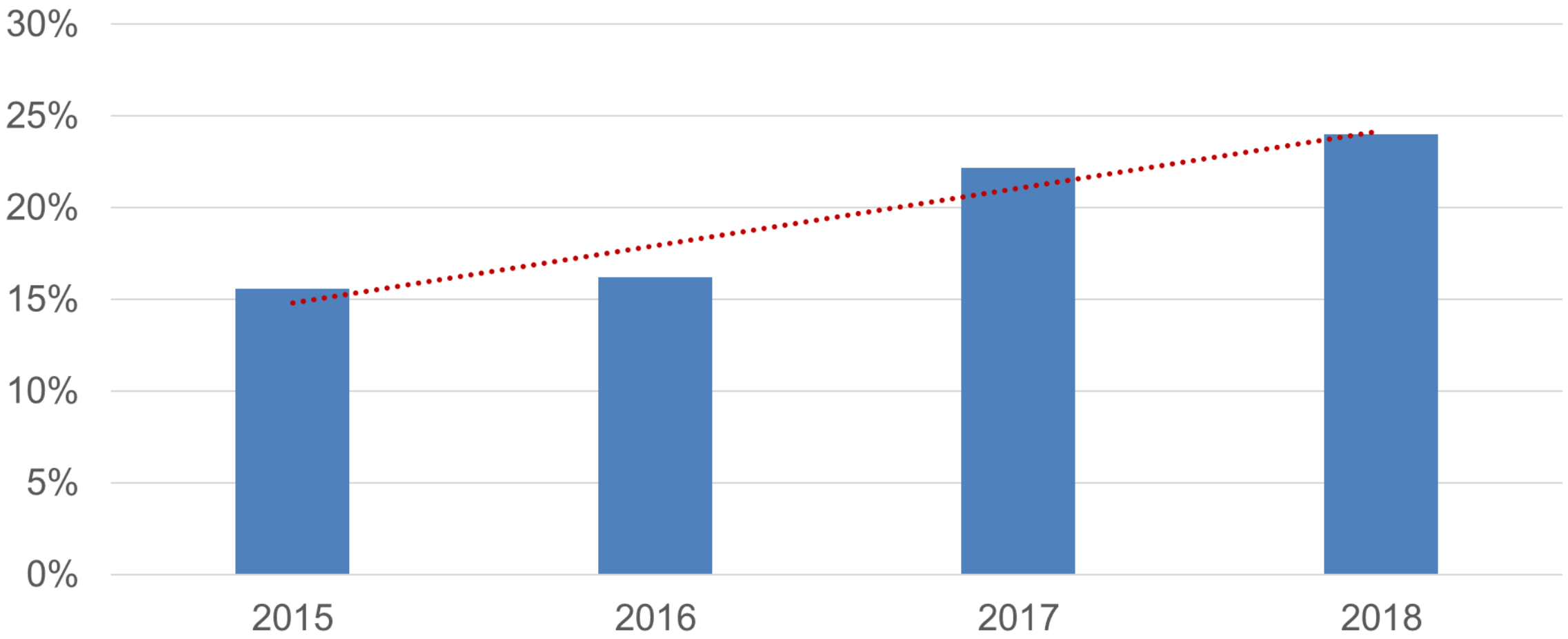



# ICAO Safety Management Manual (4th eds) 9859

**Promoting a positive safety culture (Table 6)**

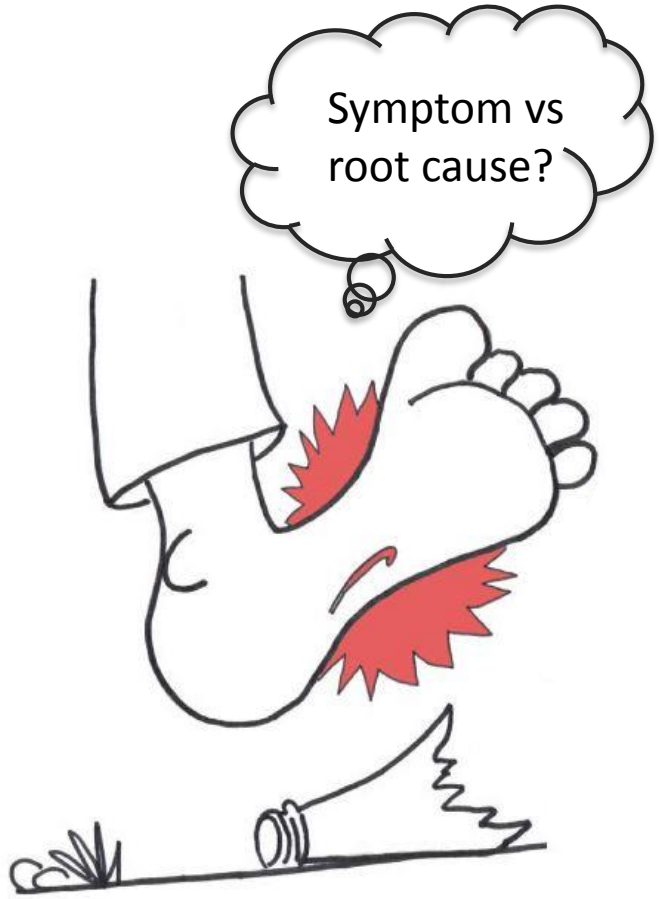
| Key Element | Enablers | Disablers |
|---|---|---|
| Awareness | Investigations seek to establish the root cause | Investigations stop at the first viable cause rather than seek the root cause |

# Percentage of Rejected Responses to CAA Findings



# Common Issues

- No root cause identified
- Focus on event/finding (symptom) rather than root cause
- Inadequate root cause - did not consider the wider system
- Corrective and/or preventive actions not defined
- No process/procedure for root cause analysis
- Action owners not trained in root cause analysis



# Inadequate Root Cause

**CAA Finding 21.A.139(b)**

The organisation was unable to demonstrate that they were fully compliant with 21.A.139(b) with regard to “the quality system shall contain: 1. as applicable within the scope of approval, control procedures for: (iii) verification that incoming products, parts, material – are as specified in the applicable design data”.

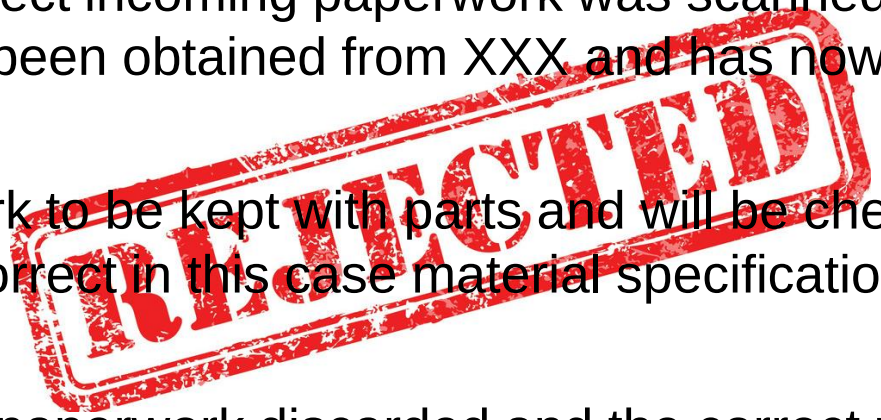
Evidenced by:

The incoming Certificate of Conformity (CofC) form XXX ref. 15668 and supplied material CofC (Batch no. xxx004523) did not correspond to the specification under drawing no: XXX Issue 1.

**Root cause:** Error in documentation scanning/handling with incorrect release paperwork supplied by the sub-contractor.

# Inadequate or Inappropriate Actions

**Corrective action:** the incorrect incoming paperwork was scanned into the stores system. The correct paperwork has since been obtained from XXX and has now been scanned correctly.




**Preventive action:** paperwork to be kept with parts and will be checked before scanning to confirm the release documents are correct in this case material specification.

**Follow up:** verified incorrect paperwork discarded and the correct paperwork relating to material specification XXX scanned onto the stores system.

# Myth-busting! Frequent but Ineffective Actions

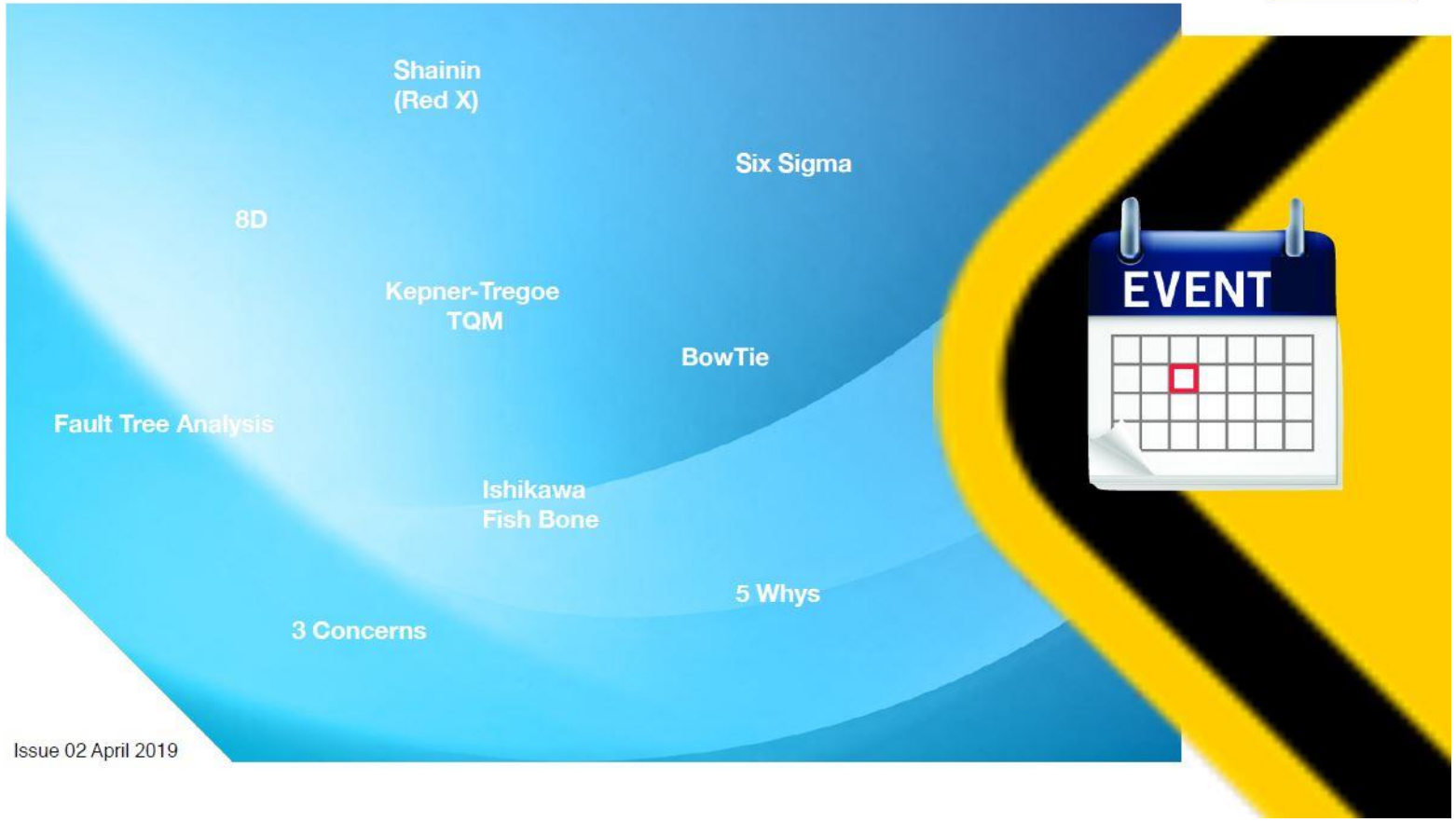
- The XXX personnel were spoken to regarding this audit finding. They are now aware of full requirements of XXX procedure.
- The users of tool boxes have been communicated to on the importance of using the correct issue of documentation.
- Internal discussion to remind all staff of the possible safety implications associated with this type of event.

# CAP 1760

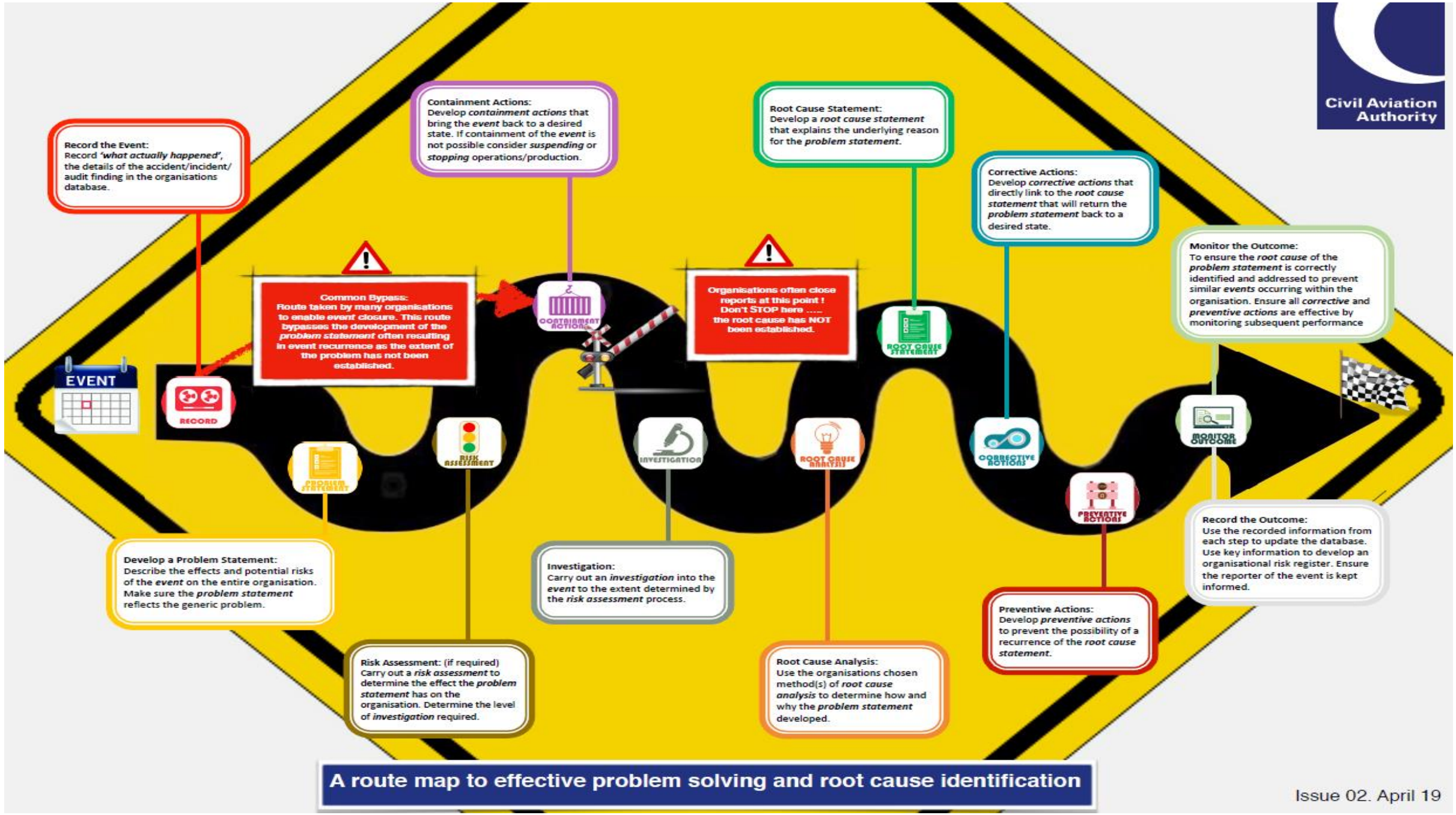
Safety and Airspace Regulation Group

## Effective Problem Solving and Root Cause Identification

CAP 1760




Issue 02 April 2019




# A route map to effective problem solving and root cause identification

Issue 02. April 19

# Finding Responses Are Improving!

**CAA Finding 145.A.25(d)**

The organisation was unable to demonstrate that they were fully compliant with 145.A.25(d) with regard to the conditions of storage in accordance with the manufacturer's instructions to prevent deterioration and damage of stored items.

Evidenced by:

Batteries stored in the bonded stores are subject to daily temperature and weekly checks. There was no evidence that weekly checks were being carried out IAW XXX.

**Organisation's Response: Root Cause**

Why? Store staff not aware of new procedure XXX

Why? The XXX procedure was not added to the read and sign file

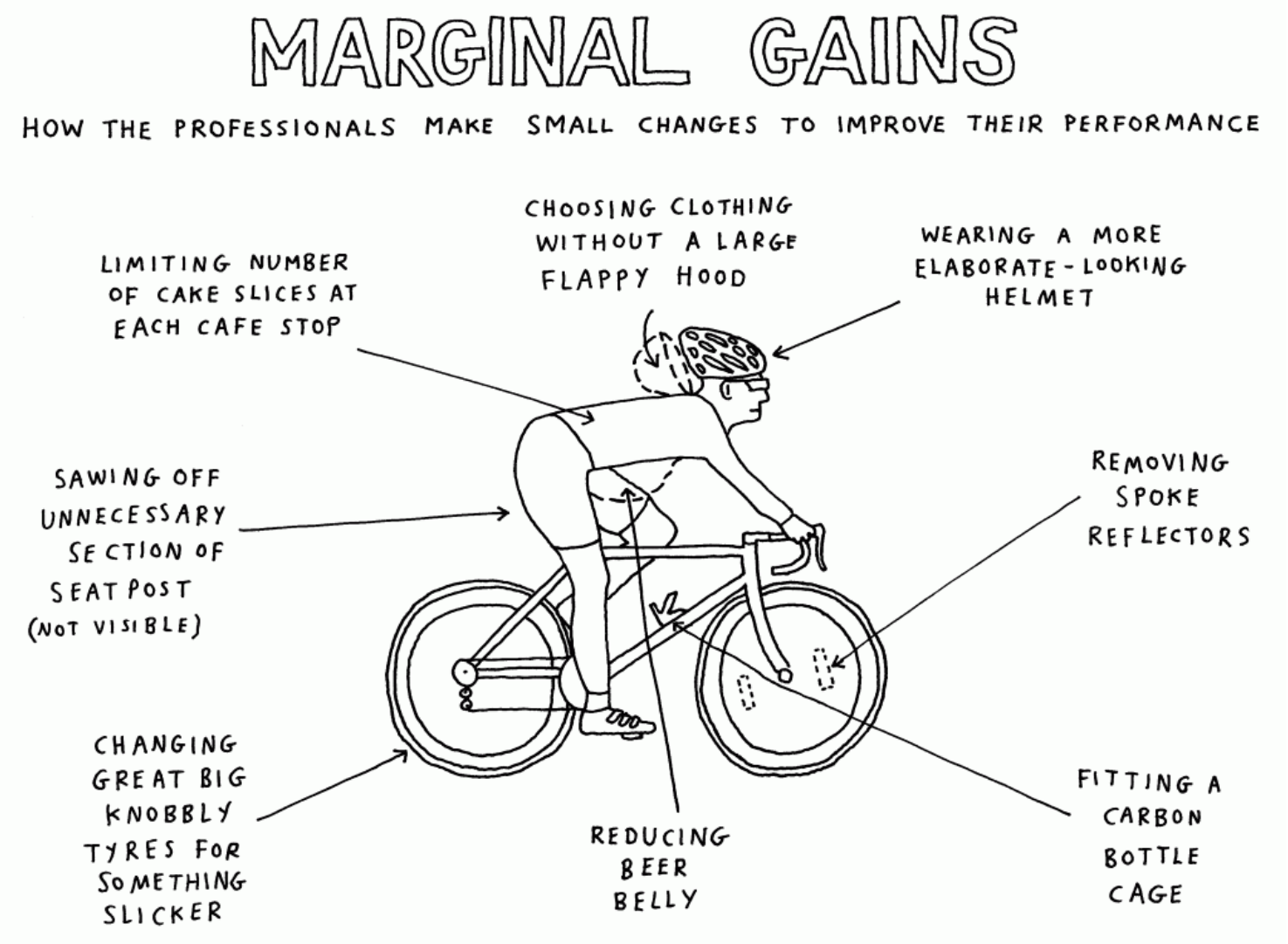
Why? No evidence that Maintenance Manager requested to include the new procedure in the read and sign file

Why? No formal procedure for amendment, review and distribution of procedures

# A Long-term Goal

- Limitations
- Complex Systems
- Incompatible taxonomies (MEDA, ECCAIRS, etc.)
- Resources
- Cultural change

**It will take time!**



# WEBSITE


https://www.caa.co.uk/Commercial-industry/Aircraft/Airworthiness/Approval-infomation-and-guidance/Root-cause-analysis/

# Roll Out Plan

- Guidance material April 2019

  CAP 1760

- Root Cause Seminars 2019
  - ~~Gatwick (CAA) ~ 14th Feb~~
  - ~~Derby (Rolls Royce) ~ 26th Feb~~
  - Derby (Rolls Royce) ~ 14th Oct
- CAAi Training on methodology
  - June 25 – 26th 2019
  - Sept 3rd – 4th 2019

Civil Aviation Authority

ANY QUESTIONS ...