

# Testing Quick Reference Handbooks in Simulators

Anthony Berg

February 8, 2024

# 1 Context

## 1.1 Introduction

### Context

- Designing Emergency Checklists is difficult
- Checklists are usually carried out in high workload environments, especially emergency ones

### Problem

- There are some checklists that may not be fit for certain scenarios
- Some checklists may make pilots “stuck”
- Checklists may take too long to carry out - Swissair 111

### Rationale

- Test checklists in a simulated environment
- Results in being able to see where to improve checklists

## 1.2 Key Background Sources

Resource	Info
US Airways 1549 NTSB Investigation [1]	<b>Description:</b> An investigation on an aircraft that suffered from a dual engine failure from a bird strike forcing the pilots to land on the Hudson River. <b>Reason:</b> The investigation found that the QRH was too lengthy and the pilots’ used their experience to prioritize essential actions outside the QRH to keep the aircraft in control.

# 2 Aims and Objectives

### Aims

1. Test Checklists
2. Test multiple conditions for that checklist
3. Find problems in the checklist
4. Find how reproducible the checklist is

## **Objectives**

1. Checklist Manager
  - (a) Input a checklist
  - (b) Add conditions to test
2. Checklist Testing Logic
  - (a) Capture state of aircraft
  - (b) Simulate a pilot's actions
  - (c) Simulate delay in actions
3. Simulator connector
  - (a) Connect to the flight simulator
  - (b) Set up conditions of flight
  - (c) Monitor and take Logic's actions

## **3 Planning**

### **3.1 Diagrammatic Work Plan**

### **3.2 Brief Explanation**

### **3.3 Risks**

## 4 Ethics

### 4.1 Ethics Checklist

My project:

1. Will *not* involve working with **animals** or users/staff/premises of the **NHS**
2. Will be carried out **within the UK or European Economic Area**
3. Will *not* have any impact on the **environment**
4. Will *not* work with populations who do *not* have **capacity to consent**
5. Will *not* involve work with **human tissues**
6. Will *not* involve work with **vulnerable groups** (Children/Learning disabled/Mental health issues, etc.)
7. Will *not* involve any *potentially* **sensitive topics** (Examples include but are not exclusive to body image; relationships; protected characteristics; sexual behaviours; substance use; political views; distressing images, etc.)
8. Will *not* involve the collection of any identifiable personal data

### 4.2 Ethical Considerations

## 5 References

- [1] National Transportation Safety Board. *Loss of Thrust in Both Engines After Encountering a Flock of Birds and Subsequent Ditching on the Hudson River*. Technical Report PB2010-910403. May 2010. URL: <https://www.nts.gov/investigations/Pages/DCA09MA026.aspx>.