LOSS OF CONTROL ROOT CAUSE MODELING

Meeting 9 – Report out to EAA

June 14th 2019

WELCOME

- Andy
- Bryan
- Charlie J
- Dave
- Jim
- Mike
- Robert P
- Tom
- Robert O

CHECK IN

Loss of Control Root Cause Modeling

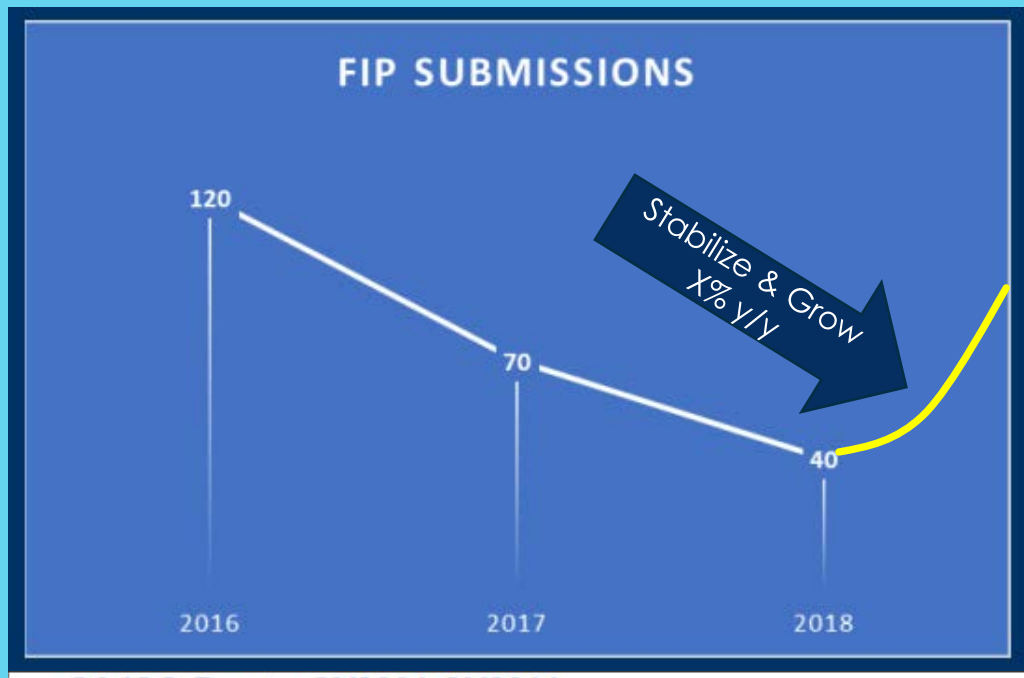
MEETING OBJECTIVES & AGENDA

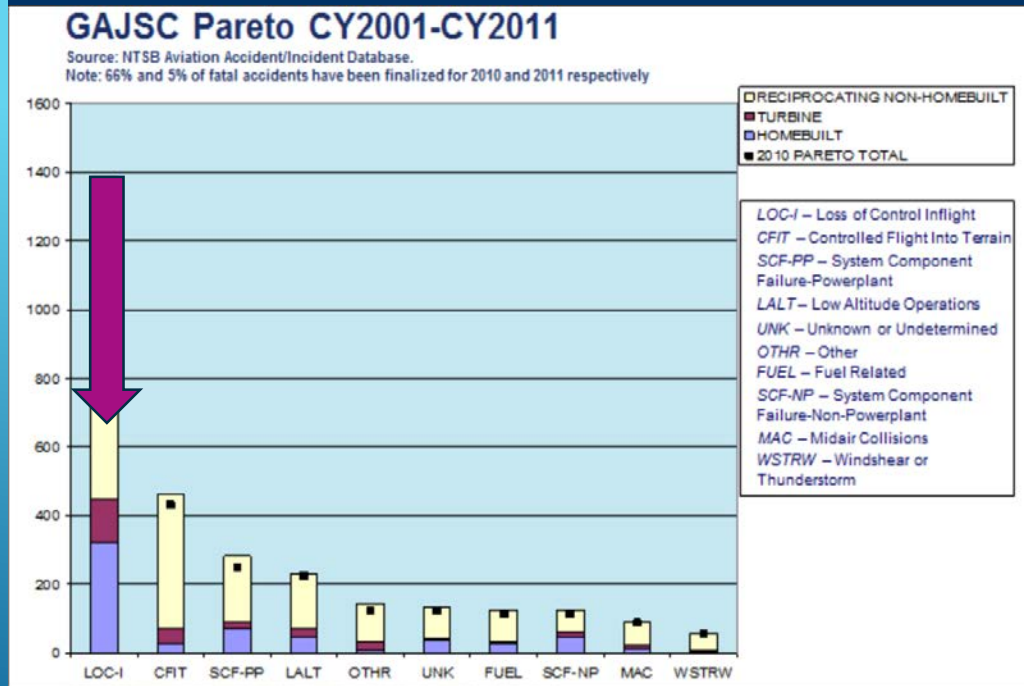
- **Meeting Objectives:**
  1. **Present our results to the EAA**
  2. **Get EAA guidance on next steps**
-
- **Discussion Topics**
  - **Introductions - EAA and our Team**
  - **Overview of the Root Cause Model development**
  - **High-level model architecture**
  - **Presentation of groupings details**
  - **Learnings**
  - **Innovation space, bow tie and swiss cheese models**
  - **Other uses for the model**
  - **Next Steps - how to communicate to the FIP community, other applications**

FIP PROGRAM GOALS

(PROPOSED TO EAA IN 2018)

- Dramatically Increase the FIP Program in Three Dimensions:
  - **1. Number of FIP submissions**
  - **2. Quality of Submissions**
  - **3. "Conversion Rate" to implemented solutions in the GA fleet**
- To achieve a measurable decrease in LOC fatalities





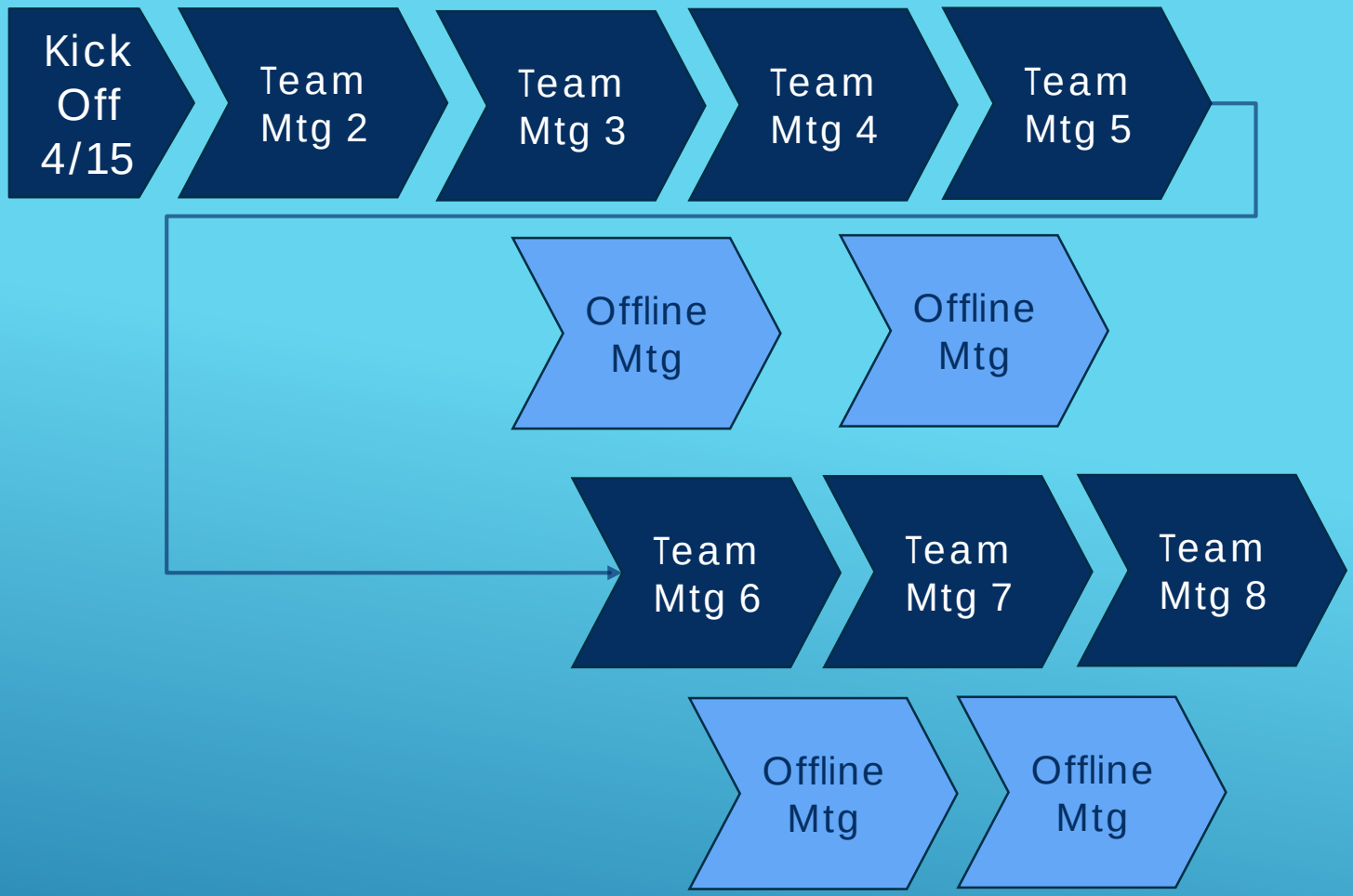
Our Efforts

- RCM ➔
- Narrative

FOUNDER'S INNOVATION PRIZE

END IN MIND

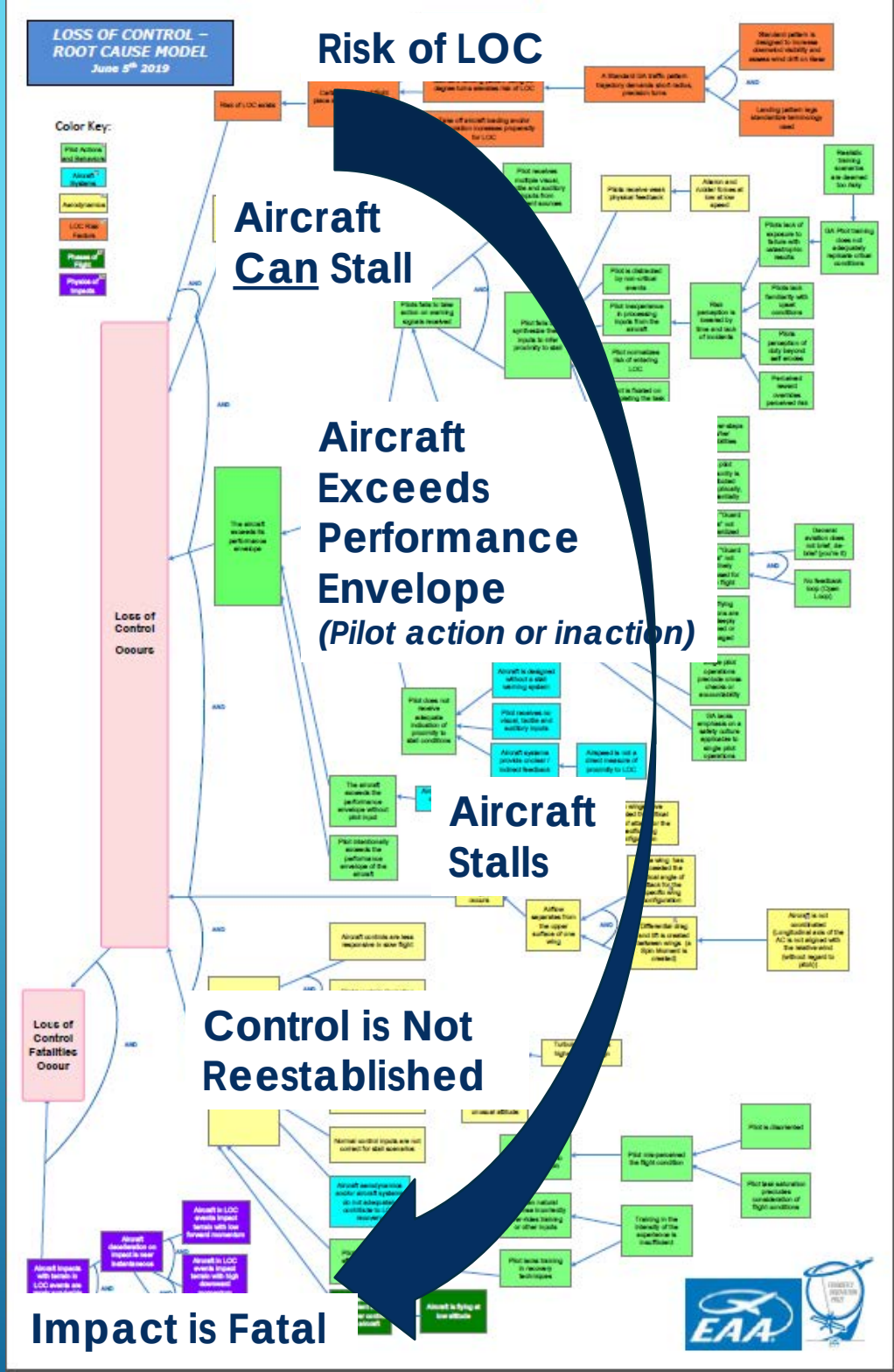
Loss of Control Root Cause Modeling

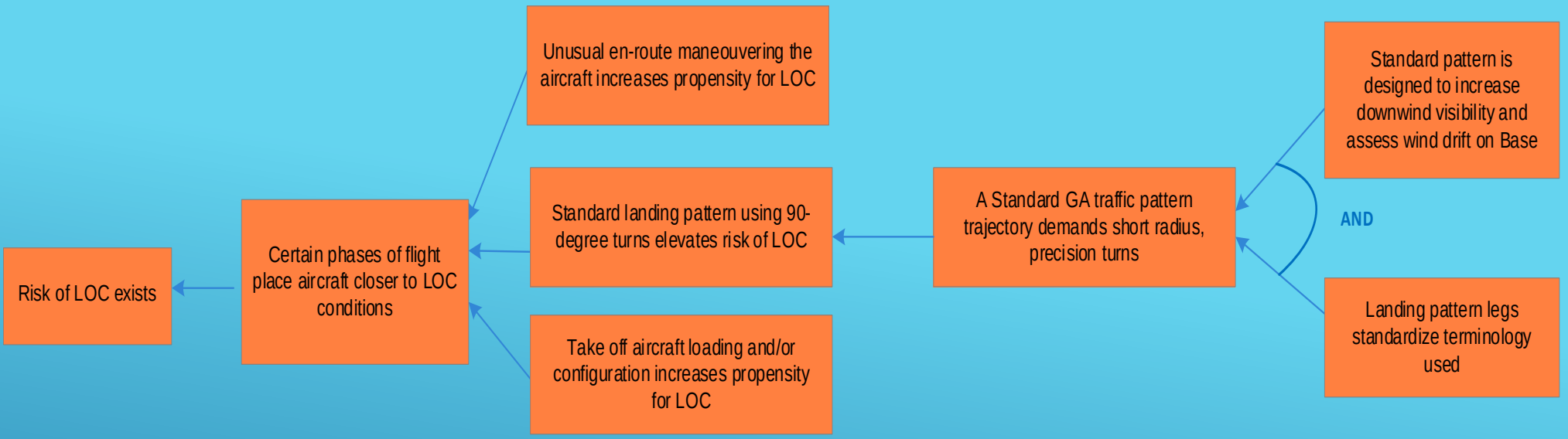


BRIEF OVERVIEW OF MODEL DEVELOPMENT

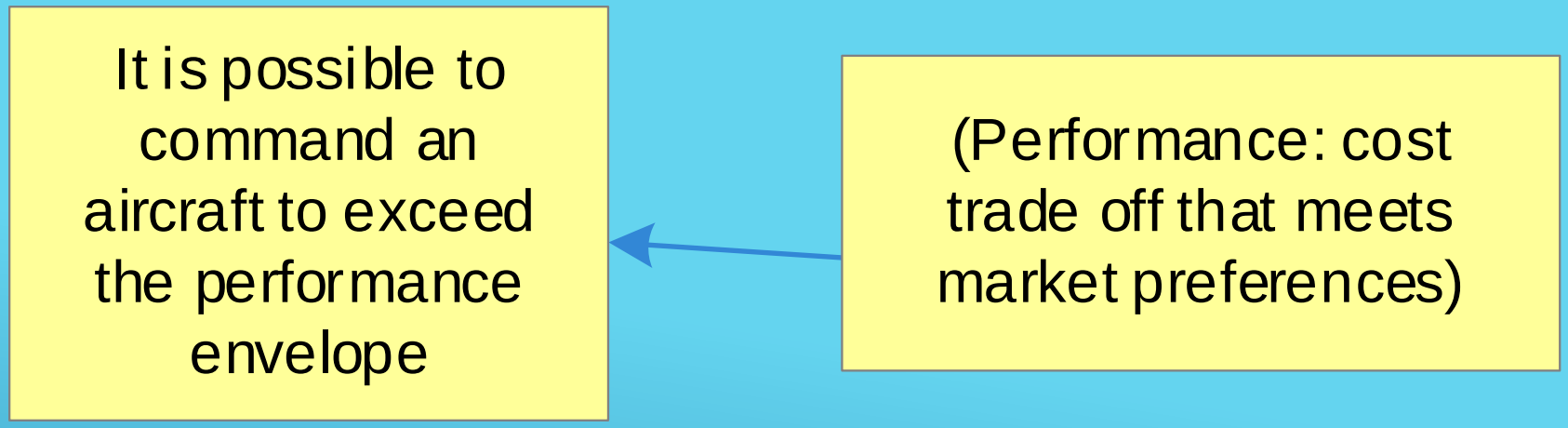
Model Themes & Architecture

- Pilot Actions and Behaviors
- Aircraft Systems
- Aerodynamics
- LOC Risk Factors
- Phases of Flight
- Physics of Impacts



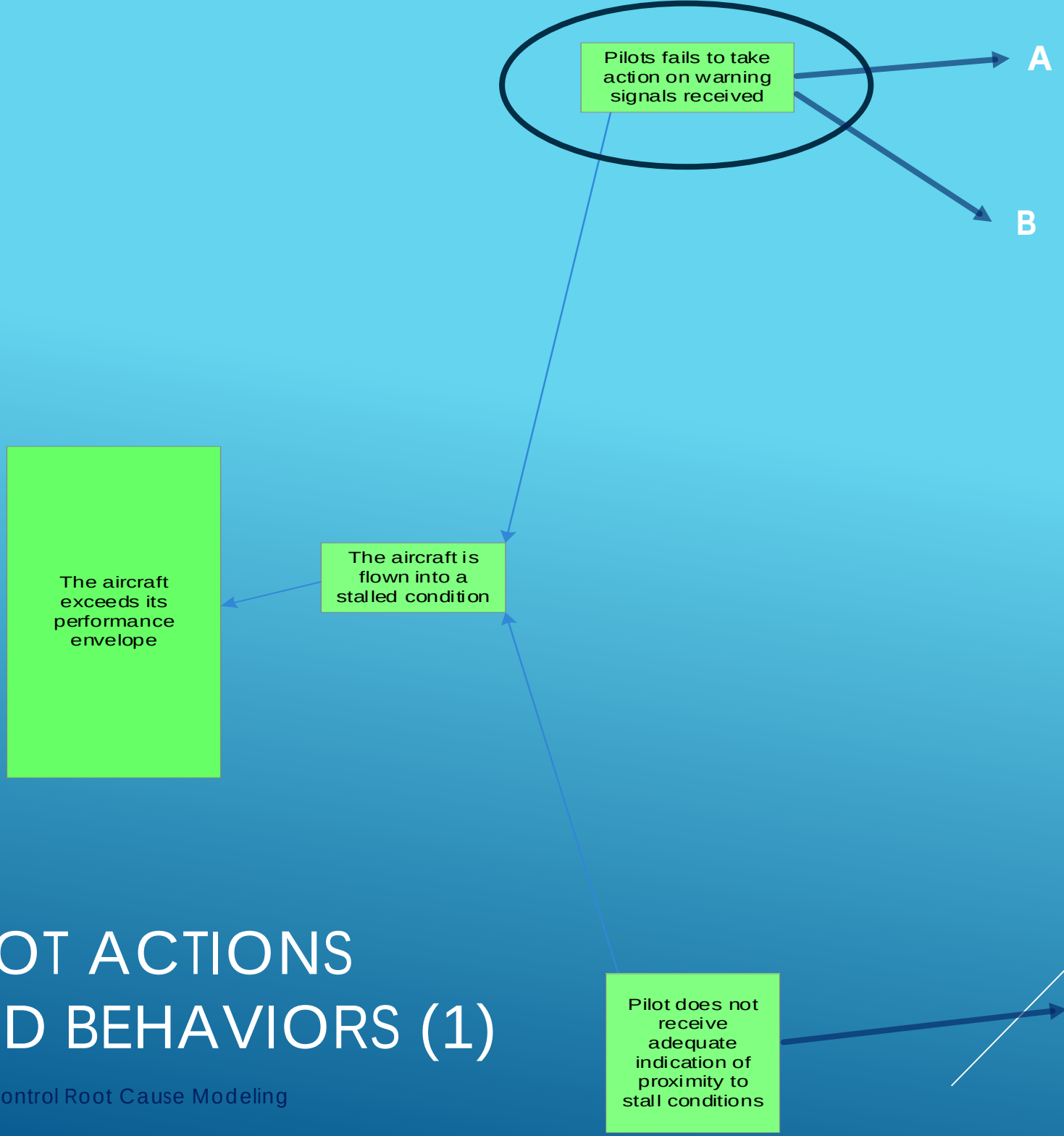


RISK OF LOC EXISTS - MIKE



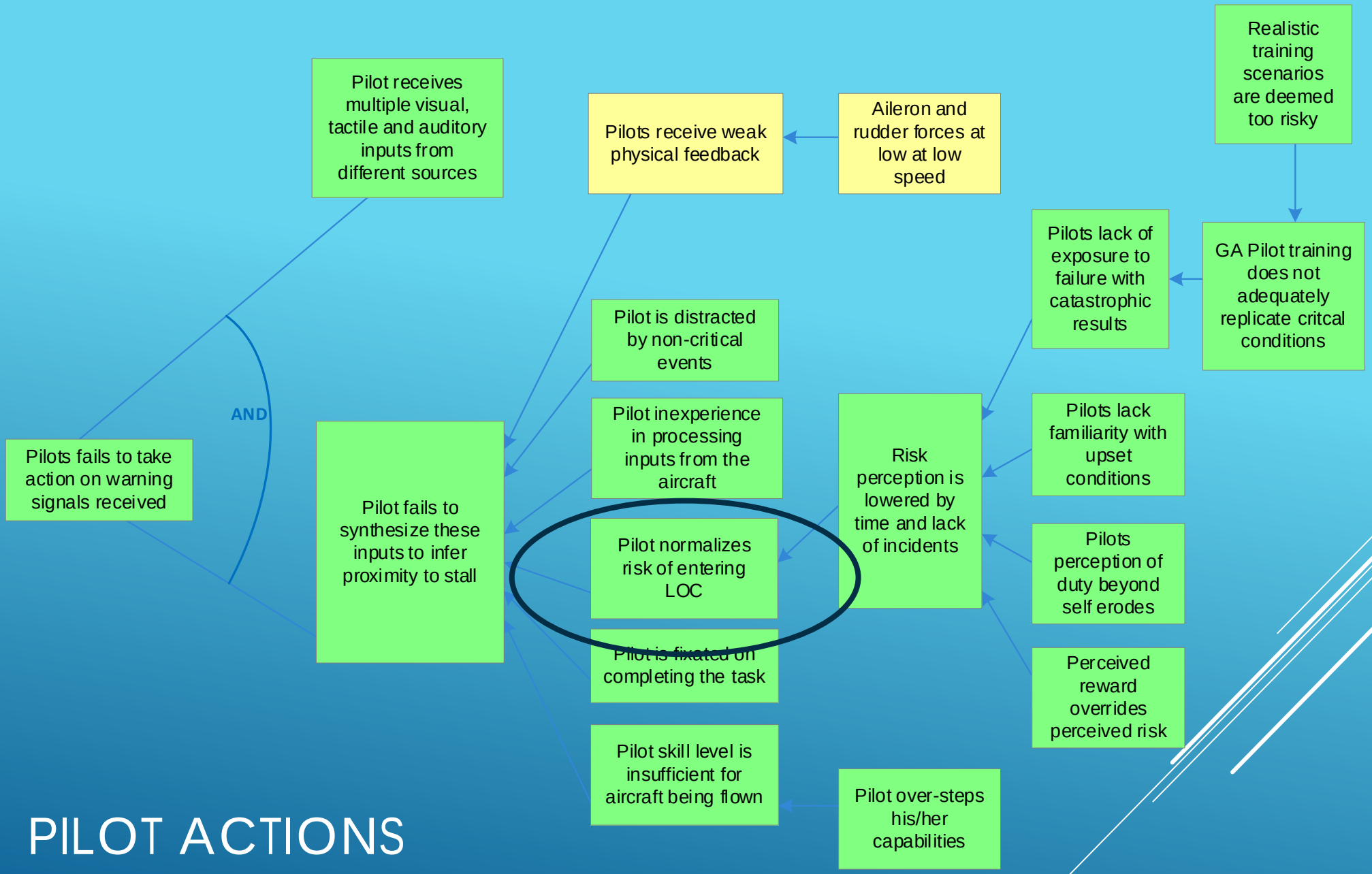
- Aircraft Design
  - Design trade-offs mean that aircraft are capable of exceeding their performance envelopes

AIRCRAFT DESIGN



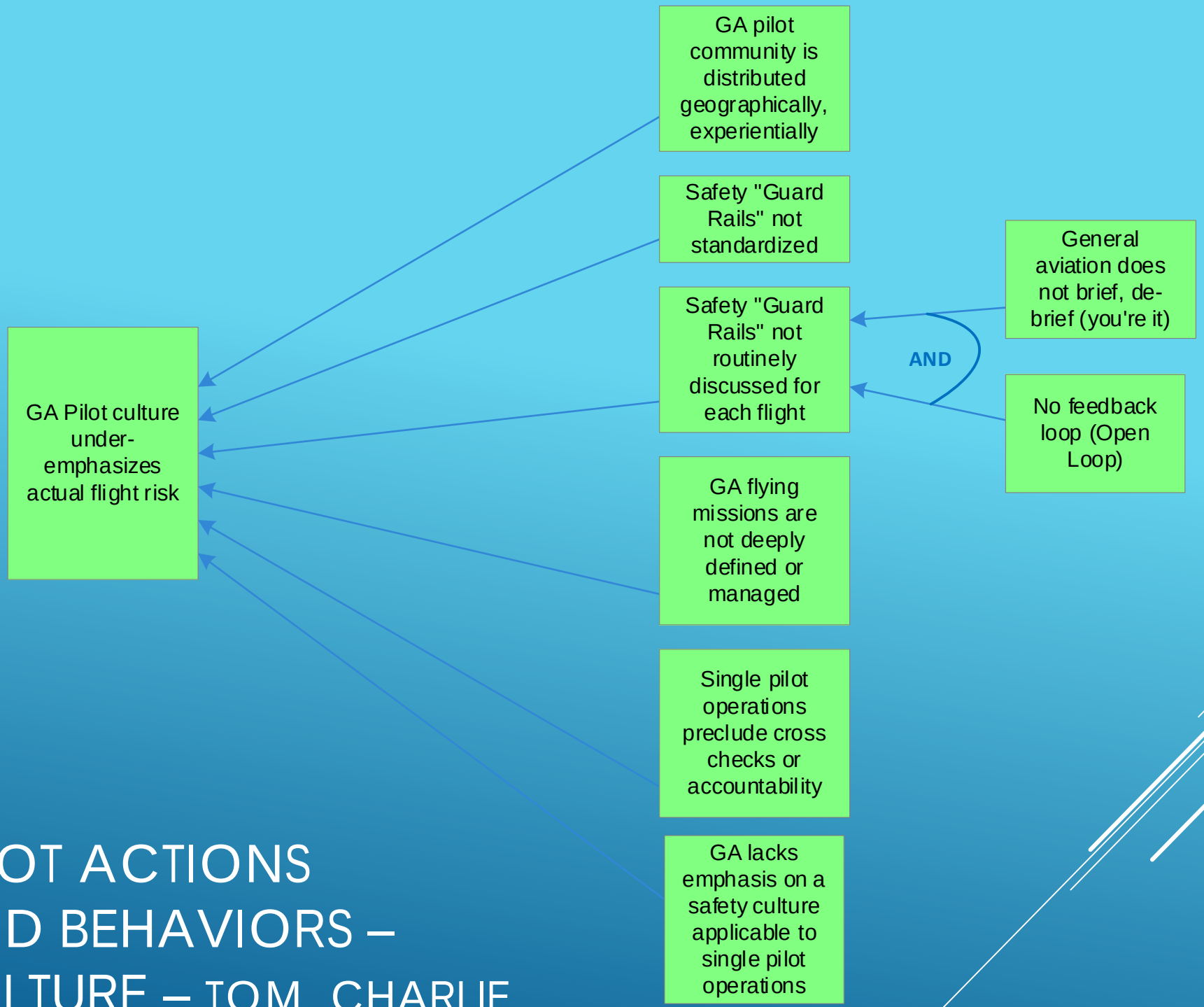
PILOT ACTIONS AND BEHAVIORS (1)

Loss of Control Root Cause Modeling

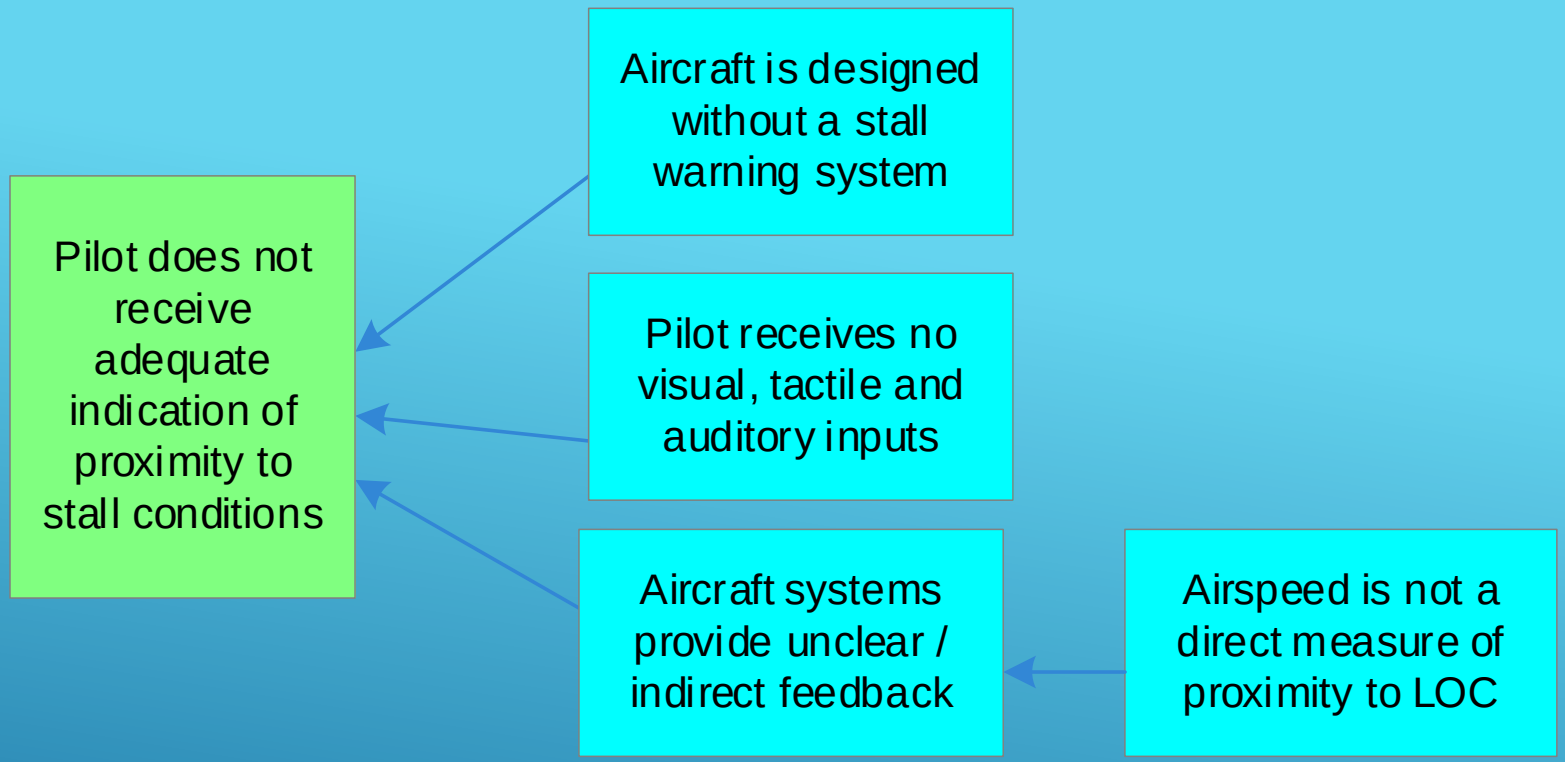


PILOT ACTIONS AND BEHAVIORS – JIM, DAVE

Loss of Control Root Cause Modeling

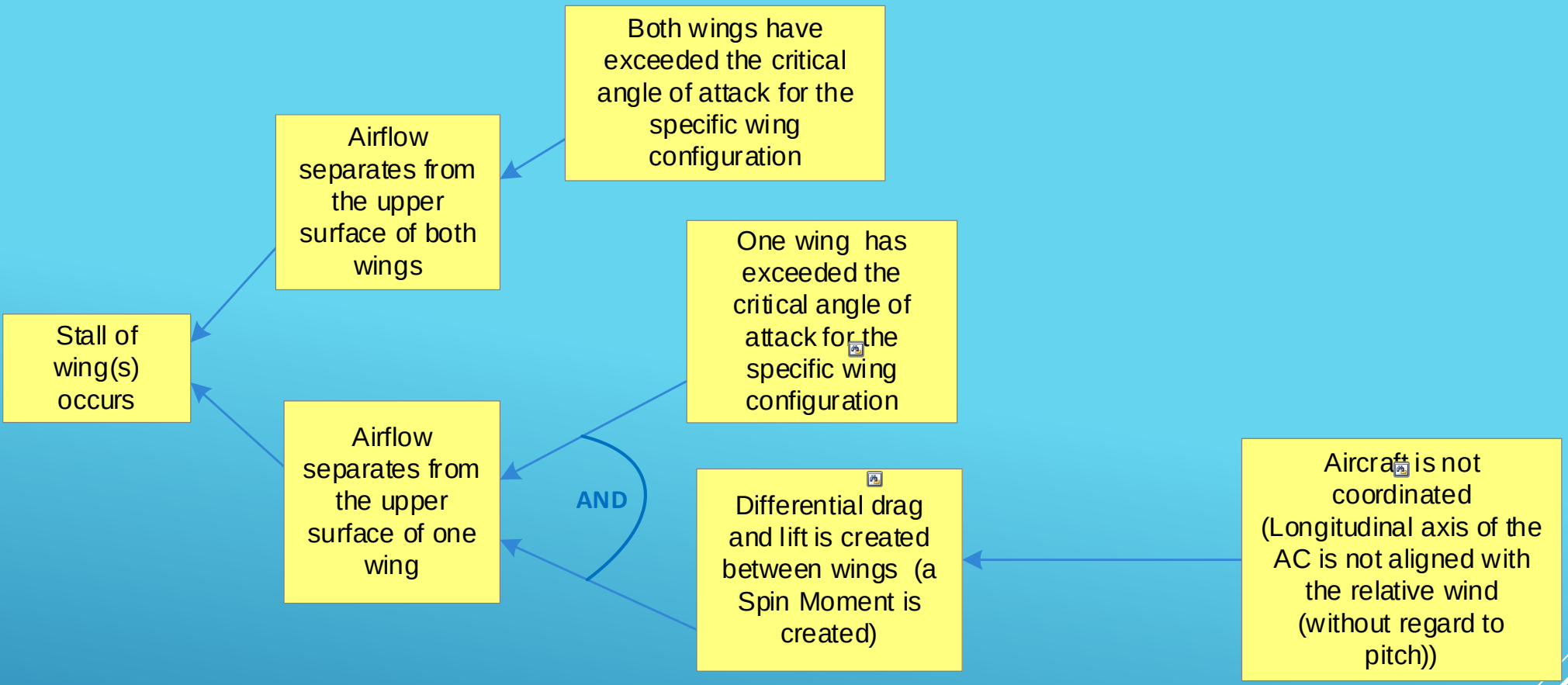


PILOT ACTIONS AND BEHAVIORS – CULTURE – TOM, CHARLIE

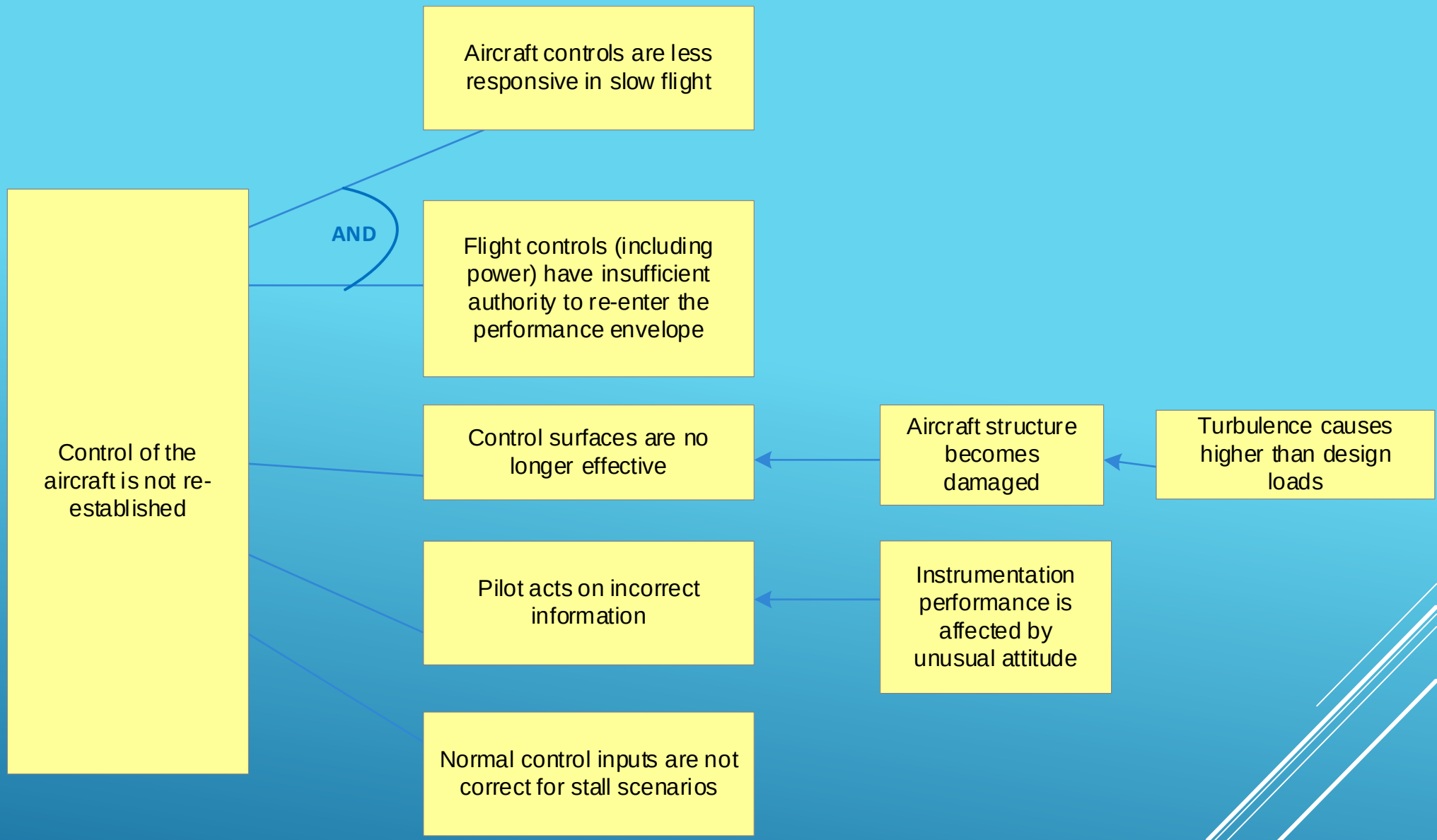


PILOT ACTIONS AND BEHAVIORS (C) – AIRCRAFT SYSTEMS SUFFICIENCY

BRYAN



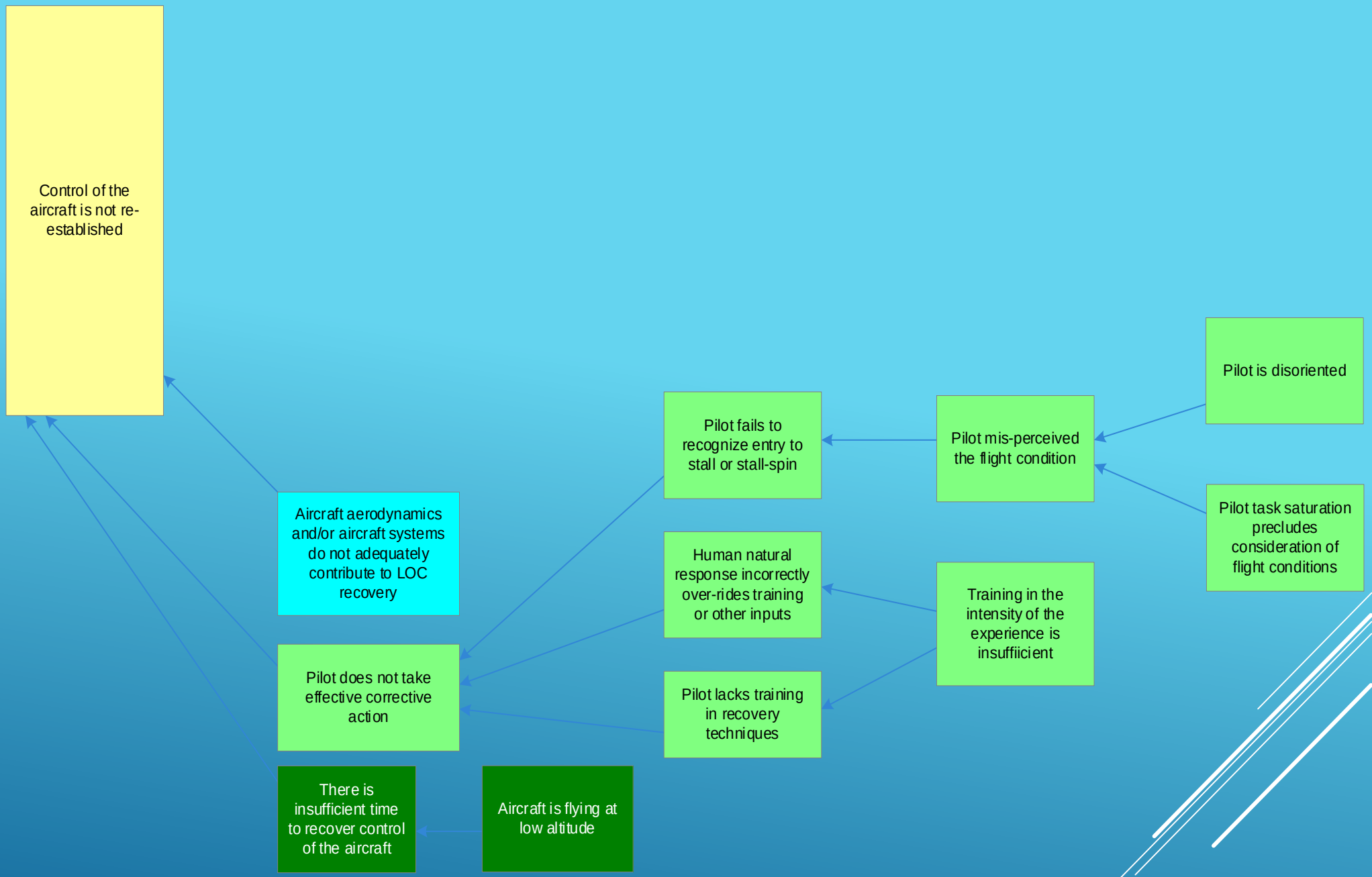
BASIC AERODYNAMICS



CONTROL IS NOT RE-ESTABLISHED (1)

DAVE

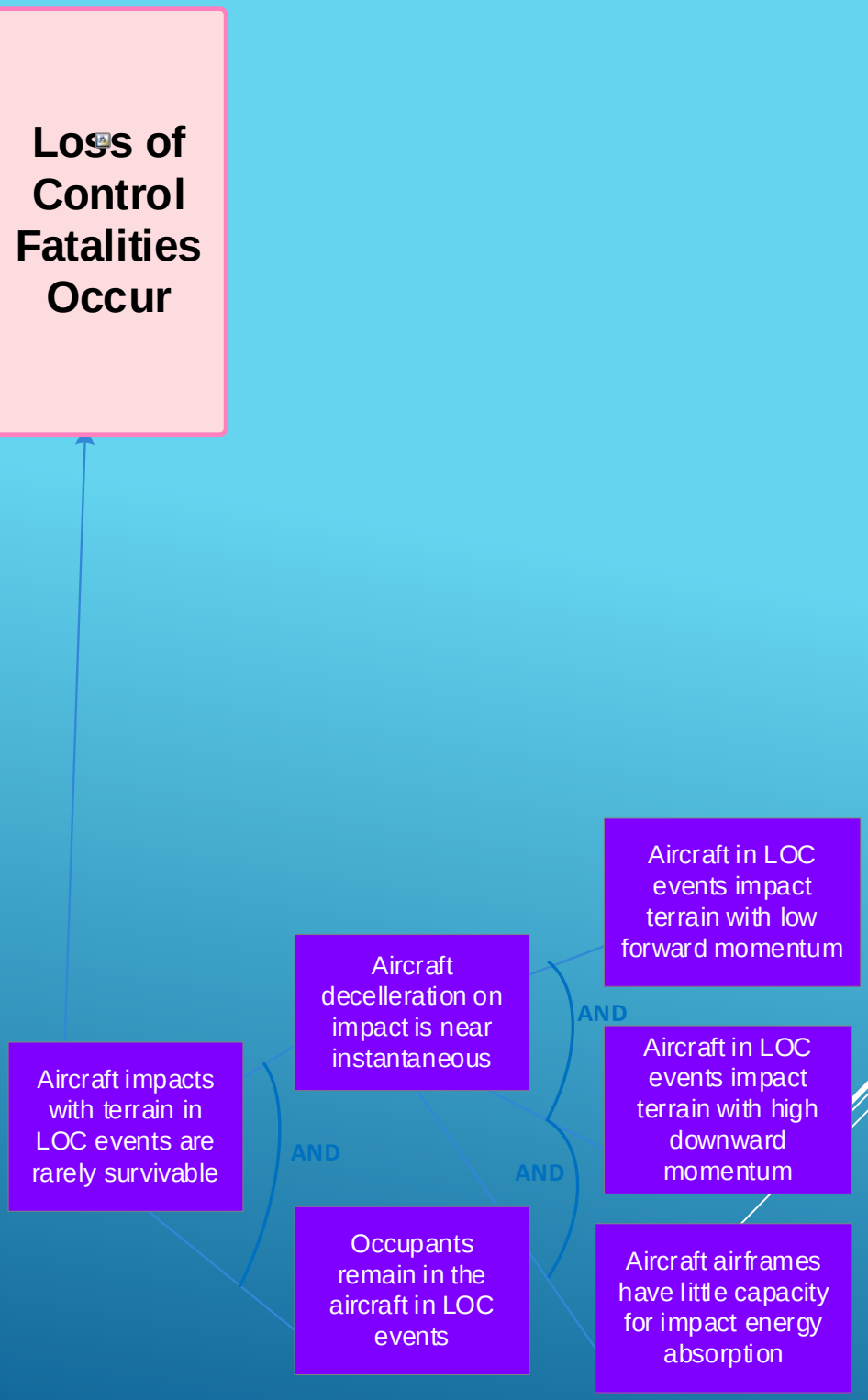
Loss of Control Root Cause Modeling



CONTROL IS NOT RE-ESTABLISHED (2) - MIKE

IMPACTS ARE FATAL

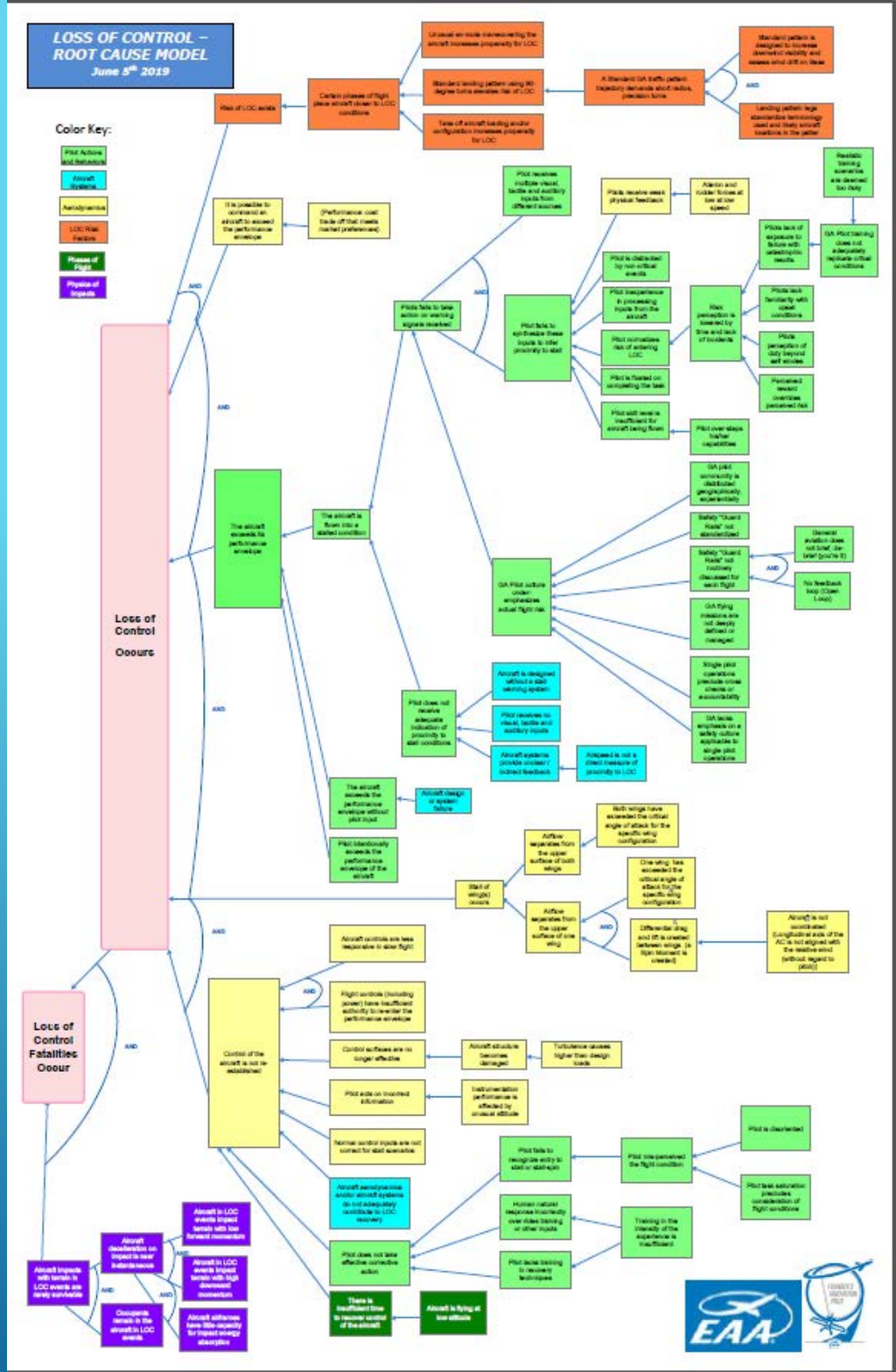
ROBERT

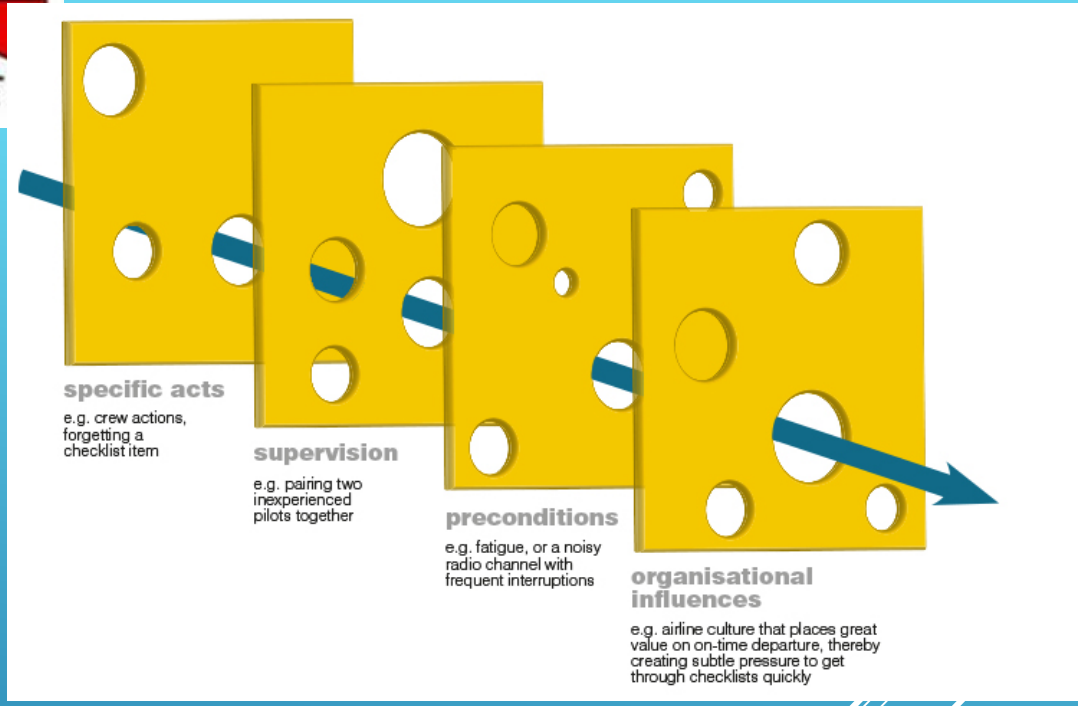


KEY LEARNINGS

- LOC fatalities have a multitude of causes
  - There is no one solution to this problem
- The preponderance of causes are “green” – Pilot Actions and Behaviors
- Single GA Pilot **risk normalization** and lack of a **cohesive safety culture** are likely major underlying causes
- There is little data on LOC accidents at the granularity of this model
- There is ample innovation space on specific causes in the model
- There is also innovation space in addressing the chain of events
  - Bow tie and Swiss Cheese models illustrate additional opportunities

Loss of Control Root Cause Modeling





SAFETY BOW TIE & SWISS CHEESE MODELS

OTHER USES FOR THE MODEL

- FIP Judging Criteria
- Pilot Training syllabi upgrades
- CFI Training syllabus upgrade
- Improved GA Accident Investigation Template (LOC only)
- Innovation around Better Accident Data Gathering
- ERAU Interest
  - Tom

DISCUSSION AND NEXT STEPS

LOSS OF CONTROL ROOT CAUSE MODELING

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