

FAA and Unmanned Aircraft & A Case for Human Factors

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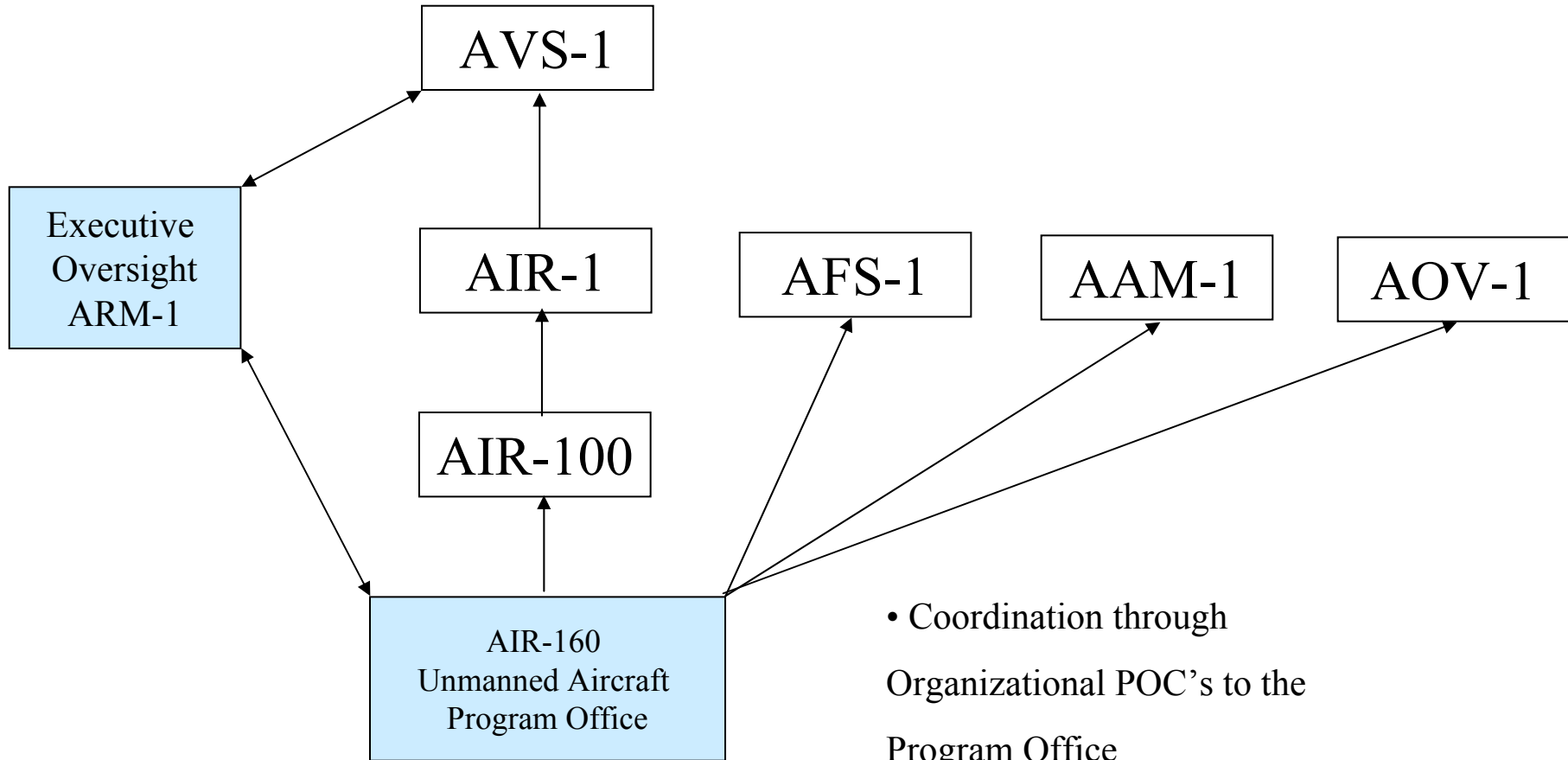


Overview

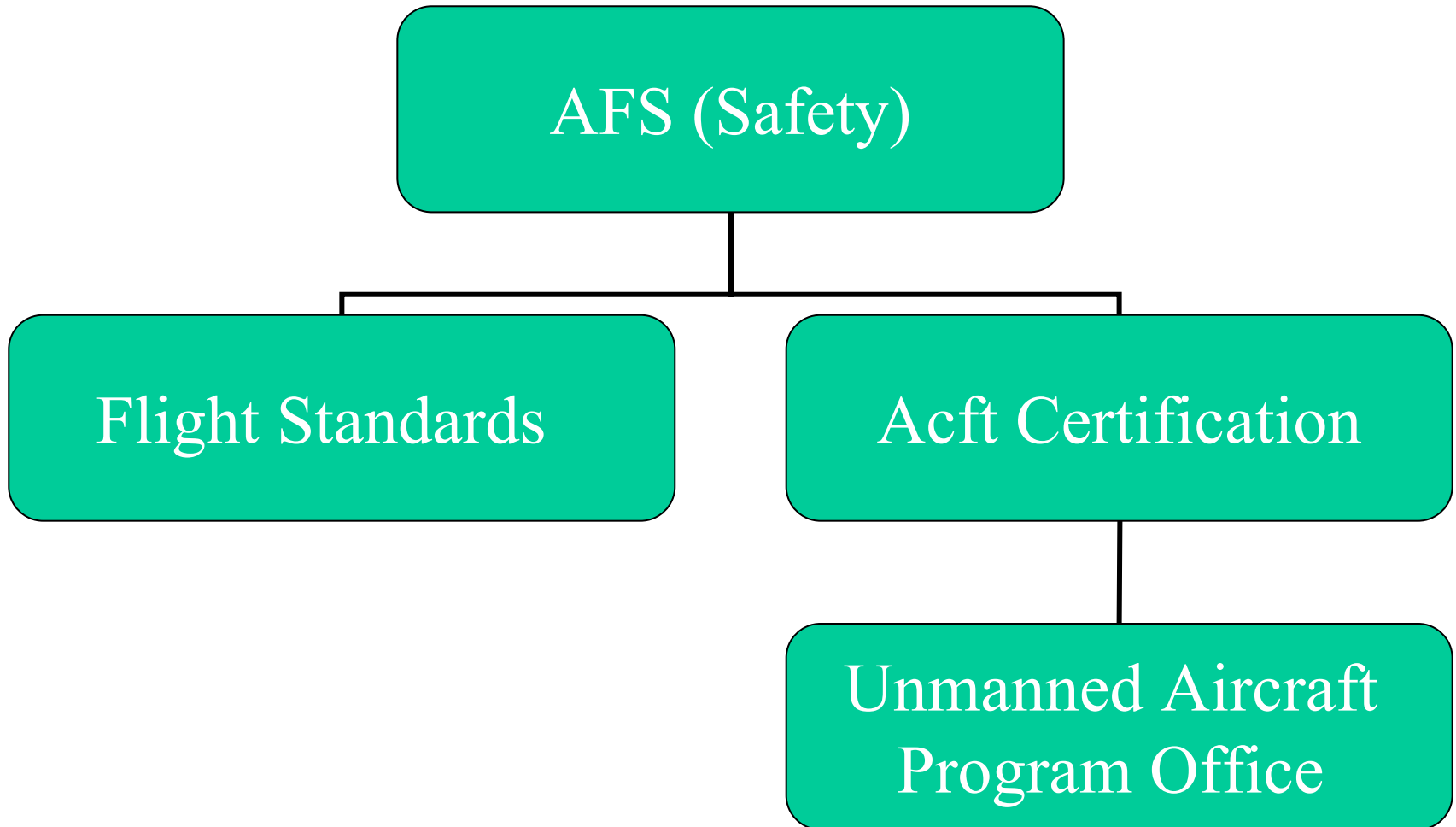
- The Program Office
- Classification of Unmanned Aircraft
- Comments on Human Factors
- HF help in creating the “remote cockpit”



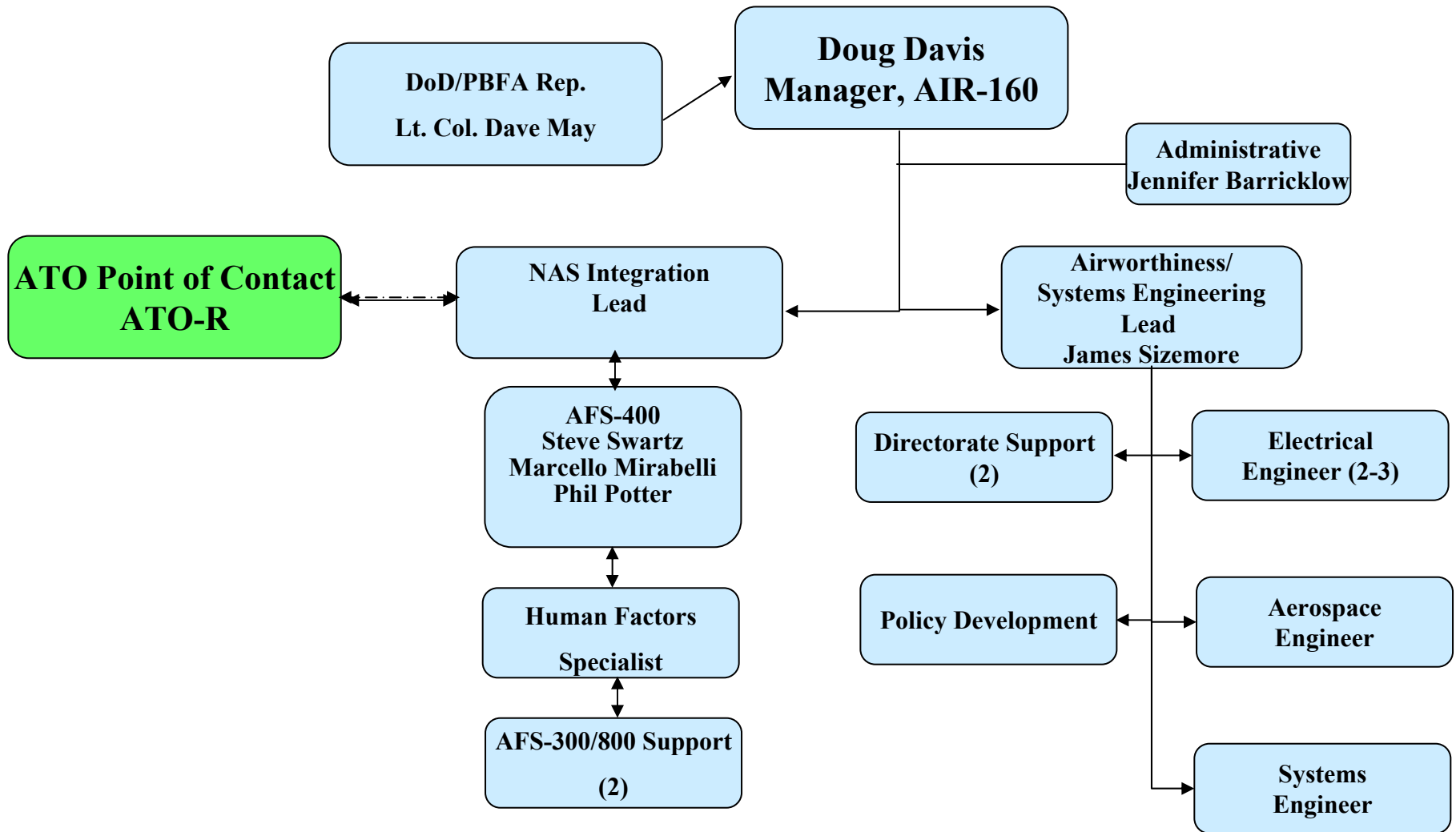
Program Office Structure



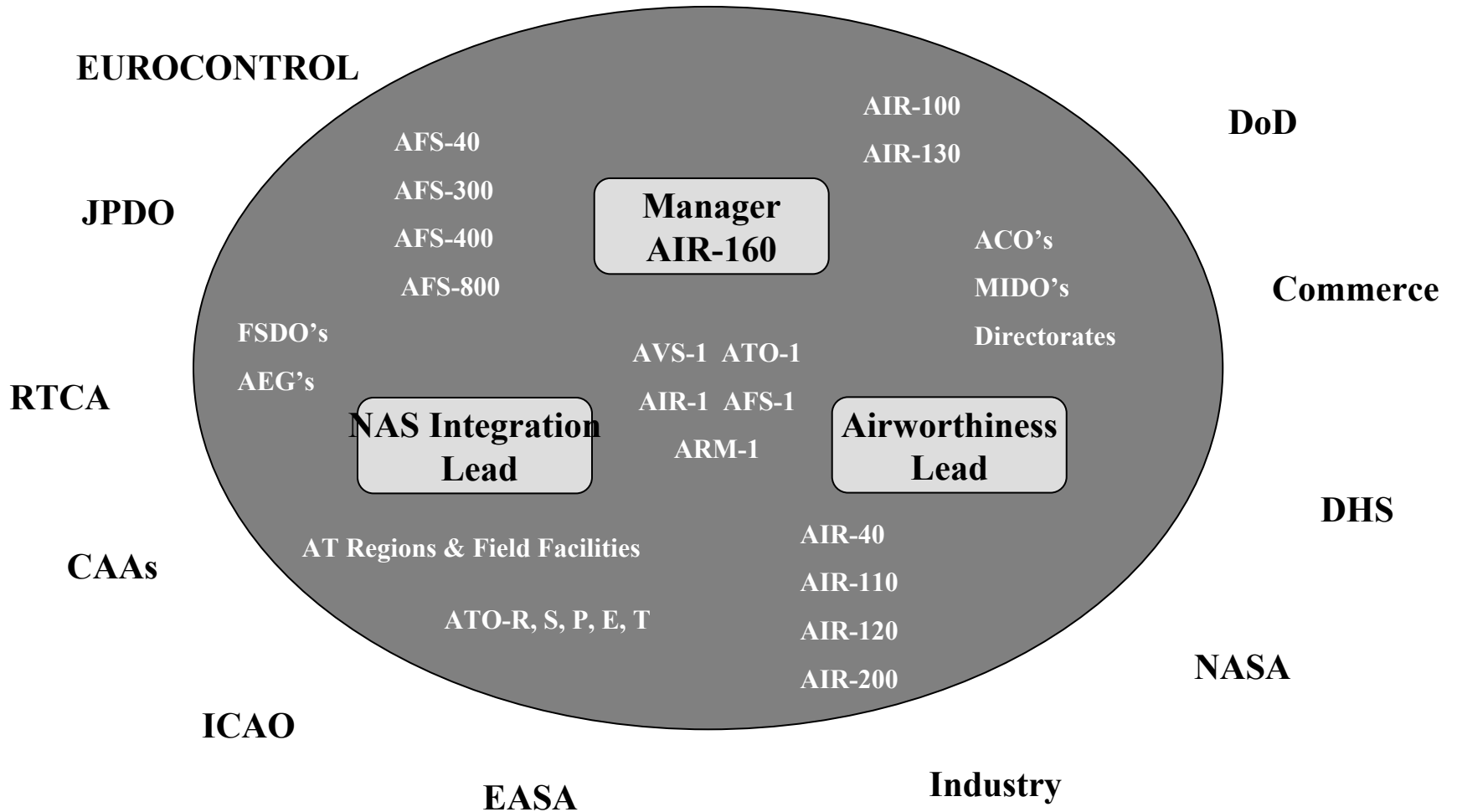
Organization of the UAPO



Unmanned Aircraft Program Office



Interfaces



Activities

- Roadmap
- Small UAs (LR)
- Safety Studies
- RTCA SC-203
- COA's
- Experimentals
- Human Factors R & D
- AC 91-57



Challenges

- Resources
 - Staffing -- Gaining momentum
 - Funding -- Still developing requirements
- Technology
 - Lots of Concepts being looked at
- Political Influences
 - Mixed bag



FAA – The Way Ahead

- Look to the roadmap
- Quarterback and Wide Receiver Analogy



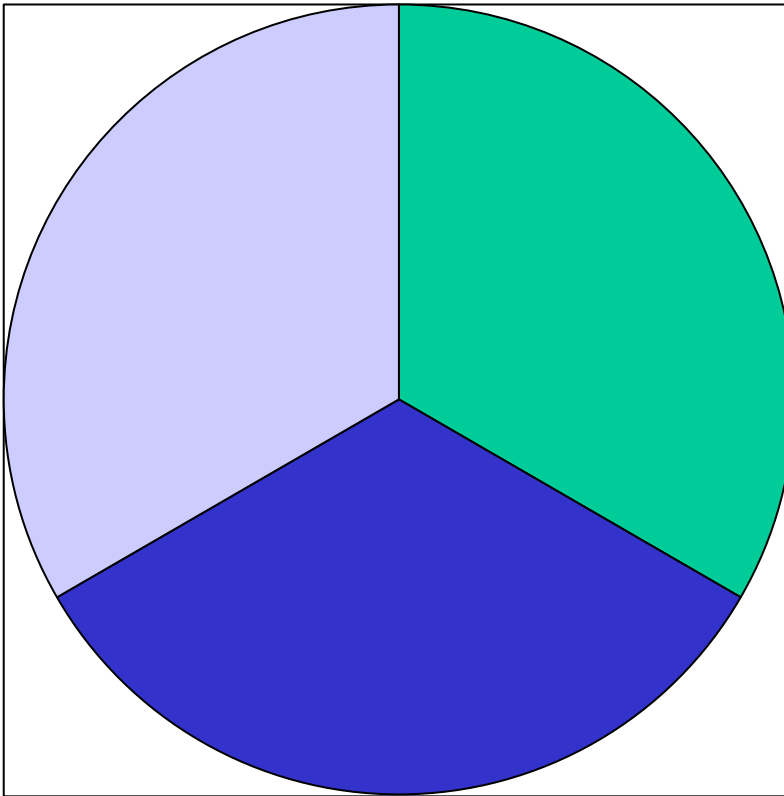
Terminology

➤ UAS

- Unmanned
- Aircraft – Congress charter to FAA.
- Systems – We must certify the system
 - Control links
 - Remote Cockpit



Classification of UAS



Unmanned Aircraft Classification

- Operations strictly limited (lightly regulated)
 - Exposure limited to acceptable level
 - Airworthiness requirements minimal

- Operations unlimited (Standard)
 - Exposure to risk is high
 - Airworthiness/Training standard high

- The middle case (Special)
 - A mixture of the two



“Special” Access to NAS Today

- The Certificate of Authorization (COA)
 - For public use
 - Waiver to Part 91
 - Airworthiness Certificate
- The Experimental Airworthiness Certificate
 - For civil use
 - Waiver to Part 91
 - Airworthiness Certificate
- Guidance in AFS 400 Policy Memo 05-01, September 2005

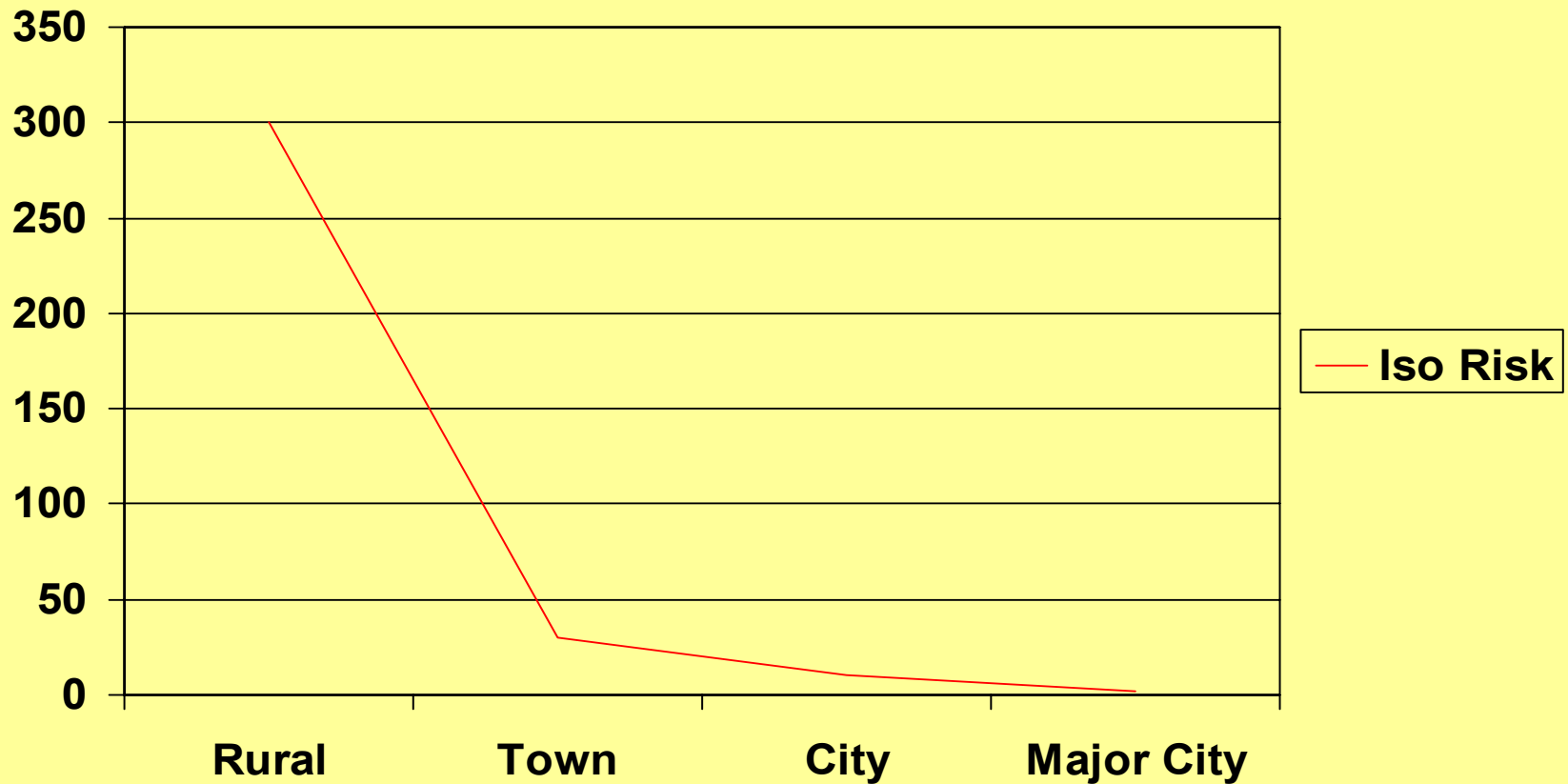


Managing Risk in Aircraft Operations, A Systems Safety Approach

- Identify the hazards
- Assess the associated risk
- Mitigate as necessary



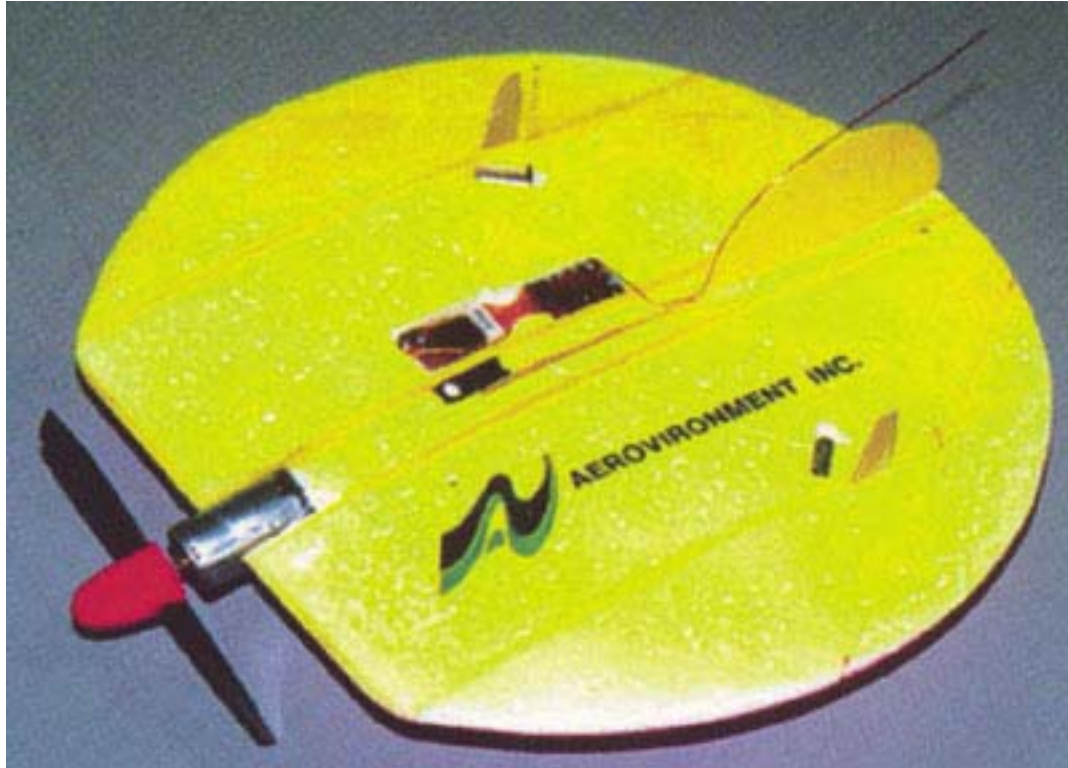
The ISO RISK CHART – WEIGHT VS POPULATION DENSITY – LIGHTLY REGULATED UA



An RC Model! Lightly Regulated UAS



Black Widow UAS – 50 Grams



The Shadow 600



General Atomics Predator B



A Case for Human Factors



Human Factors Elements of the Accident

- Pilot's lack of cognitive awareness
- This accident would not have happened in a manned aircraft
- Making a box a cockpit



Initial Solo T-37



Cockpit vs a Box

- A crew of many
- The concept of “sterile cockpit”



The Link, Got it or Not Got It

➤ Four kinds of links

- Uplink
- Down link
- Mission Link (video)
- Communication link (air traffic control)



The Human Factors Challenge

- Creating the “remote cockpit”
- Mitigating the risk through human factors
- Writing the rules for FAR 23/25

