ITEA Cyber Security Workshop

Workforce Development Panel

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FAA

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NOT your typical IT networks

Location: William J. Hughes Technical Center, ACY New Jersey

Aviation Research Division
Cyber R&D Overview

- **Aviation Research Division** Cyber R&D Programs

  Two Broad categories of FAA Cyber research:

  - **Aviation Safety**
    - Support development of policy, regulation, guidance
    - *Collaborate with the aviation community*
    - **Promote the safety culture to include information security**
  - **Innovative Cyber Capability Development**
    - Mature innovative technologies/concepts for application into the aviation ecosystem
    - Transition into NAS & MSD systems

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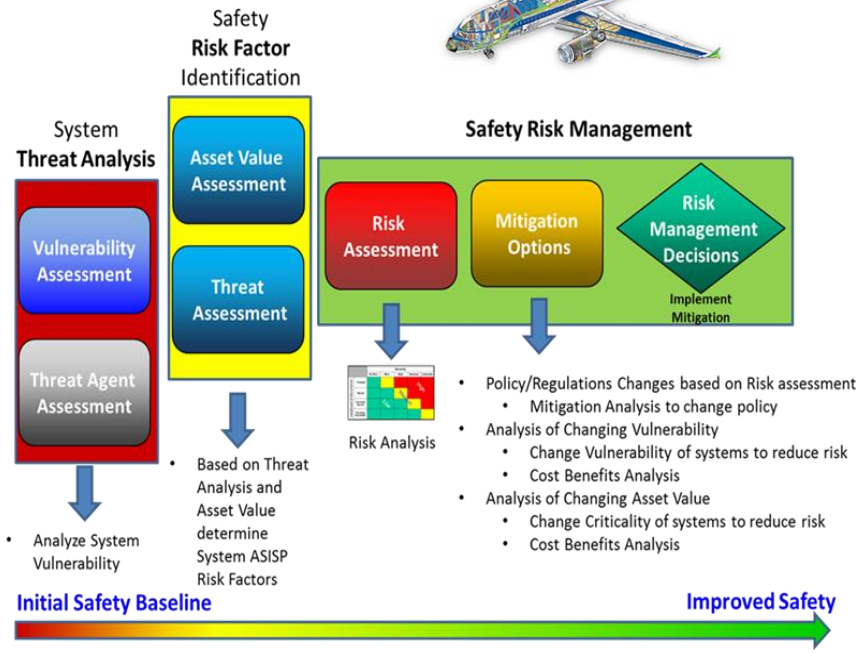
Aircraft Systems Information Security Protection (ASISP)

Goal: A Risk Based Decision Making Process for assessing the risks associated with cyber attacks on aircraft

- ✓ Allows consistent standard outputs
- ✓ Structured methodology
- ✓ Repeatable and Validated processes
- ✓ Removes assessment bias
- ✓ Consistent with the Safety Management Systems (SMS)- Safety Risk Management (SRM) and Risk Based Decision Making (RBDM) principles FAA strategic initiative



RBDM process can be applied to other systems beyond Aircraft to the Aviation Ecosystem

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Safety Environment: Today

Safety

- Safety culture is very strong
  - Safety is a priority, well understood problem set of risks and solutions, proactive approach with solution sets
  - Well structured safety processes & procedures support the culture
- Outstanding historical performance record
- Commercial Aviation Safety Team (CAST)
  - Solutions based; NOT regulatory based
  - Industry coordinated solutions
- Predictable product assurance based approach
  - Likelihood is very quantitative with well documented occurrences to include outliers

Cyber Security

- Security culture is in development
  - Cyber Security is not often prioritized, not a well understood set of risks and solutions with ad-hoc approach and patch solution sets
  - Processes & Procedures being developed independently
- Sparse documented historical record
- No CAST equivalent community solution
  - Often checklist compliance based
  - Independent solution sets
- Unpredictable Cyber-based environment
  - Likelihood is not easily quantifiable since cyber security is based on vulnerabilities, actor capabilities and actor motivation

Safety Environment: Tomorrow

Safety

- Safety culture is very strong
  - Safety is a priority, well understood problem set of risks and solutions, proactive approach with solution sets
  - Well structured safety processes & procedures support the culture
- Outstanding historical performance record
- Commercial Aviation Safety Team (CAST)
  - Solutions based; NOT Regulatory based
  - Industry coordinated solutions
- Predictable product assurance based approach
  - Likelihood is very quantitative with well documented occurrences to include outliers

Cyber Security

- Security culture is strong
  - Cyber Security risks prioritized, well understood set of risks and solutions with industry wide approach
  - Well structured Processes & Procedures in place
- Historical record of threat/risks/mitigations
- CAST equivalent community solution
  - Solutions based; NOT Regulatory based
  - Consensus-based solution sets
- Managed Cyber-based environment
  - Understanding of vulnerabilities, actor capabilities and actor motivation
  - **Risk-Based Management Approach**

Industry and Government Partnership is imperative for a Strong Safety + Security Culture

ITEA Workforce Development Challenges Summary

- Aviation goes beyond standard IT systems
  - ✓ Cyber IT expertise does not equate to Cyber Aviation expertise
  - ✓ Proprietary black boxes
- Safety Culture needs to be integrated with the Cyber Security culture
  - ✓ Mature Integrated Aviation Safety/Cyber security processes and methods are imperative
- Industry and Government Expertise must be leveraged through partnerships
  - ✓ Test and Evaluation is dependent on understanding Risks and in the FAA Safety Risk is Top Priority (DOD – Mission is Top Priority)