



# **Aviation ISAC – The Value of Information Sharing**

*2016 Transportation Research Board (TRB)  
Panel 2: Cyber Security and Resilience Strategies*

**Faye Francy, Executive Director  
The Aviation Information Sharing  
and Analysis Center (A-ISAC)**

January 14, 2016



# Safe, Efficient, Secure & Resilient Global Air Transportation System

## ■ Vision

- ✓ A world confident in the strength, vigilance, efficiency, and resiliency of the aviation system



## ■ Mission

- ✓ Advocate for a security system that ensures aviation growth and people's freedom to fly



## ■ Goal

- ✓ Public and Private Sector working together to enhance a resilient global commercial aviation system

***Safe & Secure Global Air Transportation System***

# Government Actions - Information Sharing

*Executive Order (EO 13691) 2/13/15 & Cybersecurity ACT of 2015 Dec*



- **EO: Encourages information sharing across regions, sectors and industries, and rapid response to emerging threats.**
- **EO: Establishes Information Sharing and Analysis Organizations (ISAOs), includes ISACs.**
  - Open and collaborative approach
  - Omni-directional communication
  - Bridges gap between public/private sector
  - Voluntary standards for sharing.
  - Efficient means for granting clearances

- **CISA: Increases cybersecurity information sharing between private sector & federal government.**

- Limited liability protection for private sector
- Privacy Protection
- DHS to develop info sharing portal

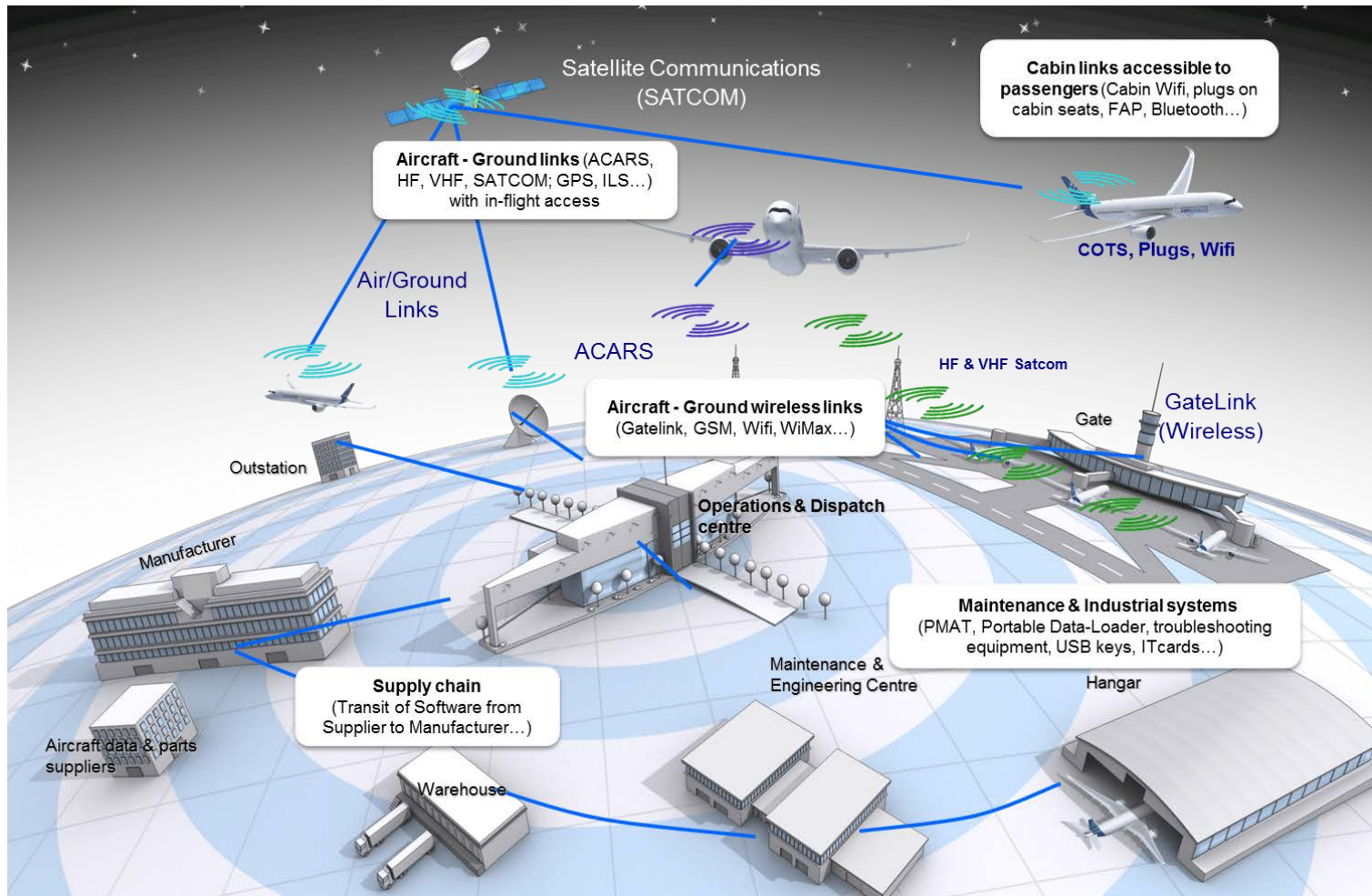




# Situation Analysis

## Threat Outlook

The aviation sector is vast and complex; protecting this system of systems will require significant collaboration from the government and sector partners across the globe.



# E-Enabled Aircraft: The Hackers' Playing Field



An evolution of capabilities...but technology can pose a risk

Flight Operations	Maintenance	Cabin Crew	Passengers
<ul style="list-style-type: none"> <li>• Navigation Charts</li> <li>• Airport Maps</li> <li>• Weather Maps</li> <li>• Performance Calculations</li> <li>• Electronic Manuals</li> <li>• Technical Logbook</li> <li>• ...</li> </ul>	<ul style="list-style-type: none"> <li>• Maintenance Tools</li> <li>• Performance Analysis</li> <li>• Monitoring</li> <li>• Troubleshooting</li> <li>• Maintenance Manuals</li> <li>• Technical Logbook</li> <li>• ...</li> </ul>	<ul style="list-style-type: none"> <li>• Cabin Logbook</li> <li>• Cabin Management</li> <li>• Cabin Systems Control</li> <li>• Passenger Lists</li> <li>• Electronic Manuals</li> <li>• ...</li> </ul>	<ul style="list-style-type: none"> <li>• IFE Systems</li> <li>• Internet Connectivity</li> <li>• Phone Services</li> <li>• OnBoard Intranet Service</li> <li>• ...</li> </ul>

- ~100,000 unique malware files published every 24 hours (in 2014)  
→ **New Malware every 1 second**
- ~6500 new vulnerabilities, 30% highly critical (in 2014)  
→ **New Vulnerability every 1.5 hours**

# Aviation Industry Call-to-Action

## *Drivers & Challenges*



## External Drivers Influencing Aviation

- ✓ Economic considerations drive increased connectivity
- ✓ The speed at which cyber threats continue to evolve
- ✓ Maintaining security in complex & dynamic environment
- ✓ Integration of physical and cyber threats is critical
- ✓ Continued growth in information sharing and analysis

## Key Challenges for the Aviation Community

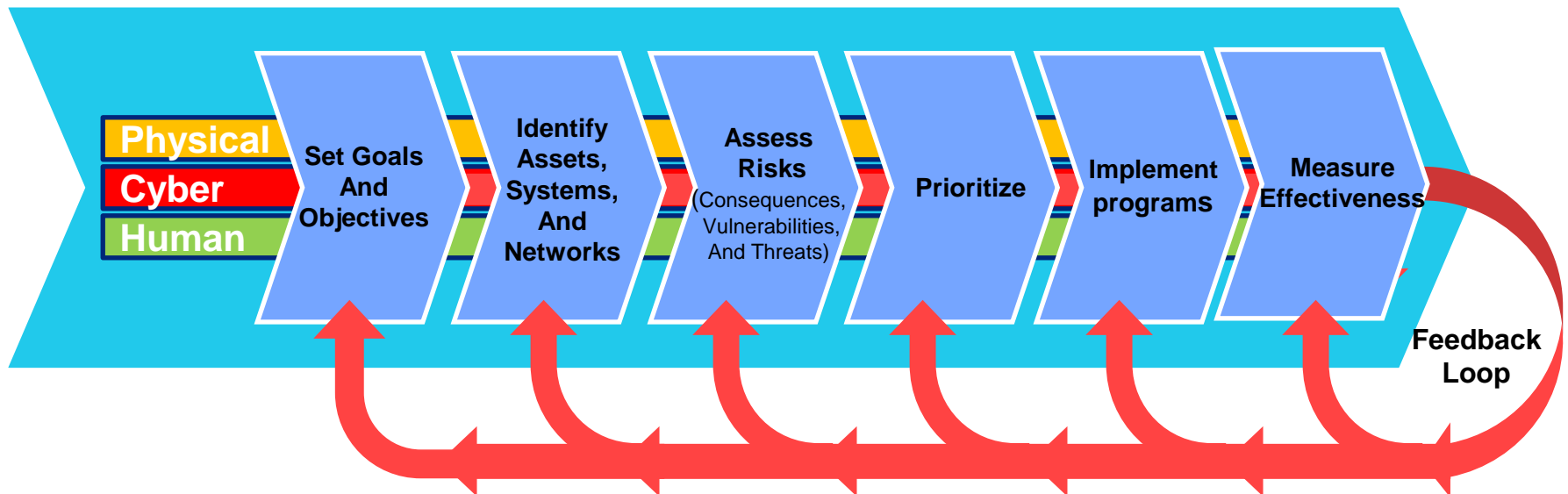
- ✓ Aviation's cyber security honeymoon has ended
- ✓ Success depends on alignment of many stakeholders
- ✓ Broad spectrum of technology deployment throughout fleet
- ✓ Regulatory environment constrains the pace of the change



# Aviation Cybersecurity Framework

## ➤ Strategy: Managing Risk

- **Risk** = threat + vulnerabilities and resultant consequences
- **Framework** focuses on risk-informed decision-making
- **Operational goal** = mitigate the threat by using prevent, detect and respond techniques



Continuous Improvement to enhance protection



# Key Strategic Elements

## Building a Roadmap to Protect Aviation



### ➤ Culture of Security

- ✓ Embedded Network Security Requirements
- ✓ Training/Education
- ✓ Shift from **safety** to **safety, security and resiliency**

### ➤ Design-in Cyber Requirements

- ✓ Value Chain Visibility/Traceability
- ✓ Lifecycle Cyber Management
- ✓ Regulatory Shift to Risk Management

### ➤ Institutionalize Incident Responses

- ✓ Threat Response and Recovery
- ✓ Public – Private Information Sharing and Analysis
- ✓ Forensics Analysis Capabilities



# Aviation Sector Protection

*The Airplane is a Global, Mobile, Industrial Control System*

## Purpose

- Reduce risks and costs
- Maintain public trust in aviation
- Timely, actionable intelligence
- Shared situational awareness
- Resiliency



## Requirements

- Access to threat intelligence & analysis
- Sector-wide / cross-sector view
- Detailed threat monitoring
- Non-attribution information sharing
- Best practices / mitigation strategies / ttx

***Reduction of Risk / Build-in Resiliency***

# What is an ISAC?

## *Critical Infrastructure Protection*

### ➤ Information Sharing & Analysis Centers (ISACs)

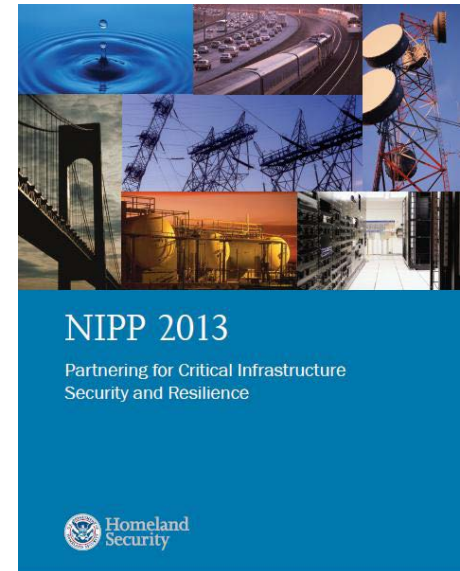
- Operational concept for sharing information within private sector
- Established by PPD-63 (1998), HSPD-7 (2003), PPD-21 (2013)
- DHS National Infrastructure Protection Plan (NIPP)

### ➤ Protection of Critical Infrastructure / Key Resources

- 16 CIKR sectors defined by PPD-21
- Elevates “security and resilience” across mission
- “Integrates cyber-physical-resilience risk management”
- Affirms need for “international collaboration”

### ➤ Unique information sharing capabilities

- Member-to-member sharing
- Company proprietary / PII / SSI
- Global multi-national companies / foreign OEMs
- USG classified / LE / Foreign Gov



***ISACs sit at the nexus of public-private information sharing***

# A-ISAC: Overview

## Overview & Value Proposition



*The A-ISAC's purpose is to reduce the risks and costs associated with disruption to aviation operations due to security events*

### Goal

- Share timely, relevant and actionable information and analysis of threats vulnerabilities and incidents

### Needs

- Mitigation of business risks
- Maintaining public trust

### Offering

- Comprehensive, across the sector
- Provision of Indications and Warning
- Preparedness, response, and recovery planning
- Strategic coordination with USG

### What we don't do

- Law enforcement activities
- Security infrastructure design
- Lobbying

### Benefits

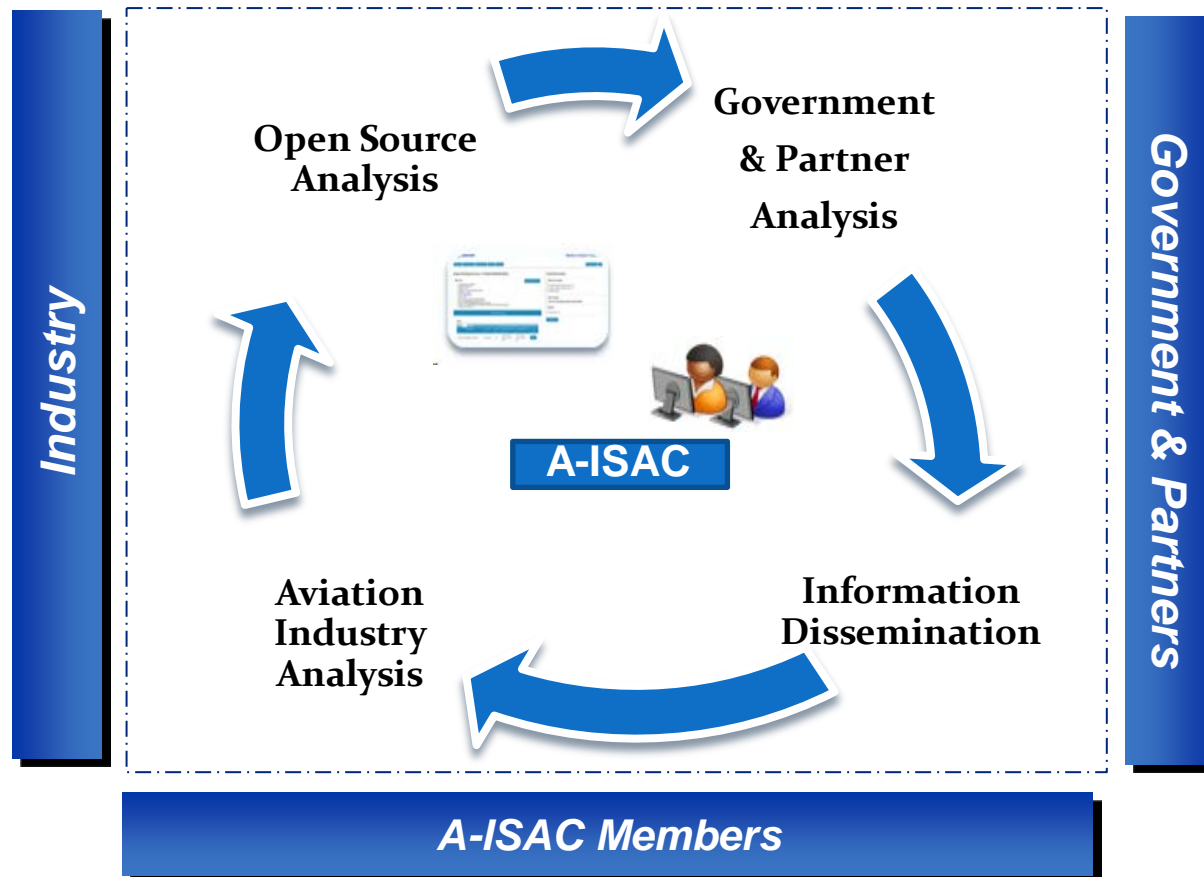
- Government intelligence and industry shared intelligence
- Timely and actionable threat information sharing
- Common view of threats
- Fusion and analysis of threat-based, aviation-specific info
- Sharing of security & resiliency best practices
- Focused Intelligence Information/ Briefings
- Member-to-member sharing, with non-attribution and anonymity
- Distributed information gathering costs
- Risk mitigation for aviation sector

# A-ISAC: Overview

*Operational Model: Shared Situational Analysis*



**A-ISAC information sharing relationships provide voluntarily timely, anonymized, and actionable intelligence**



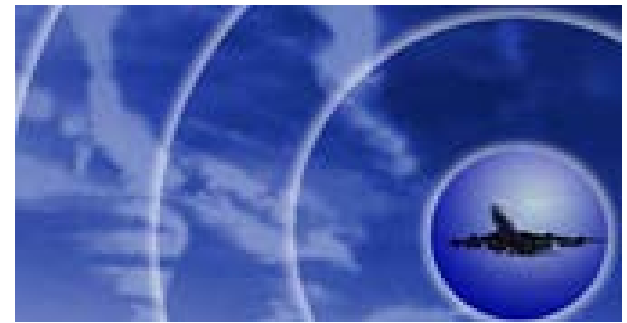




# A-ISAC Snapshot

*Progress To Date*

- **Established September 10, 2014**
  - Non-profit organization
  - 7 Founding Members - Major Air Carriers, Aviation Suppliers, Aviation Manufacturers
- **Current Members: 18** ( 7 International Partners)
- **A-ISAC Analysts Working Together**
  - Bi-weekly calls / Quarterly in person workshops
  - Two analysts (20-40%) of time
- **A-ISAC Meeting & Community Outreach**
  - Includes Daily Aviation Memos (DAMs)
  - Private and Public Sector Sharing Current Events
  - Promotes education and awareness
- **FS-ISAC / MS-ISAC are our mentors, NCI**



*Unprecedented Collaboration and Sharing*

# Aviation's Trajectory

## *The Path Forward*



- **Focused, actionable intelligence**
- **Trusted environment for anonymized information sharing and collaboration**
- **Shared situational awareness**
- **Global engagement**
- **Greater responsiveness and resilience**



***Working Together Across the Aviation System  
For A Resilient Global Aviation Transportation System***



**Thank you!**



# Key Contacts

**John Craig, Chairman**

[john.craig@boeing.com](mailto:john.craig@boeing.com)

425-266-6486

**Faye Francy, Executive Director**

[ffrancy@a-isac.com](mailto:ffrancy@a-isac.com)

703-861-5417

**Terrance Kirk, Operations Manager**

[tkirk@a-isac.com](mailto:tkirk@a-isac.com)

301-346-0715

**Douglas Blough, Senior Analyst**

[dblough@a-isac.com](mailto:dblough@a-isac.com)

609-775-8355

**Lori Pierelli, Membership and Communications Manager**

[lpierelli@a-isac.com](mailto:lpierelli@a-isac.com)

(443) 226-8093



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