

Managing Cybersecurity Threats

"In 2016, data generated = 1.6mb/person/second. However, half the world's data generated in last two years! Threat landscape continues to evolve."
FAA runs 340+ systems (including mission critical systems). FAA gives out 1TB of data per day (to both authenticated and unauthenticated users). PNT Denver GPS outage. ADS-B spoofing.

EASA put 4 pillars based on ICAO mandate.

1. Aircraft cert standards (SCs)
2. Part-IS
3. Information sharing
4. Collaboration

Luc believes avionics is more vulnerable when on test stand. EU will pass regulatory framework to centralize cybersecurity reporting under EASA; in effect end of 2023. Luc stated that the upcoming EU Part-IS (ISMS) will require EU operators to manage infosec risks for all their ops including for EFBs.

Commented that there are multiple reporting requirements which is hard to manage, and raises risk bad actors are informed: SDRs, SMS reporting, CISA reporting, etc...

Moderator:

Peter Hearing, FAA Deputy Assistant Administrator for Policy, International Affairs & Environment

Panelists:

Larry Grossman, Senior Advisor, Cybersecurity & Privacy Services, FAA

Luc Tytgat, Strategy & Safety Management Director, EASA

Stefan Schwindt, Principal Product Security Leader for GE Aviation

Hank Wynsma, Managing Director Secure Product Solutions & Aircraft Cybersecurity Operations, United Airlines





The Aviation Ecosystem: Phases of Flight

O FAA Oversight
R FAA Responsibility
SR FAA Shared Responsibility
O FAA No Involvement

	Plan the Flight	Before the Flight		During the Flight		
		At the Terminal	On the Tarmac	Take Off	Enroute	
Aircraft	<ul style="list-style-type: none"> Engineering Design Manufacturing Flight Test Electronic Flight Bags 	<ul style="list-style-type: none"> Electronic Flight Bags 	<ul style="list-style-type: none"> Avionics 			
Airlines	<ul style="list-style-type: none"> Modifications (WiFi, USB Ports, etc) Reservation Systems Financial Systems Scheduling/Planning Airlift/Air Freight Systems Airline Websites 	<ul style="list-style-type: none"> Reservation Systems Check-In Counters Baggage Systems Boarding Systems 	<ul style="list-style-type: none"> Airline Operations Center (AOC) Comms Flight Plans Ground Support Systems 	<ul style="list-style-type: none"> Avionics Cabin Systems Cabin Crew Automation (POS devices, in-flight manual, etc.) Passenger Devices Continued Operation Safety (FAA, TSA) 	<ul style="list-style-type: none"> Modifications Airlift/Air Freight Systems 	
Airports	<ul style="list-style-type: none"> Scheduling/Planning 	<ul style="list-style-type: none"> Passenger Screening (TSA, CBP) Physical Security (Inside & Outside Terminal) Infrastructure: Buildings, Lighting, Signage, Comms Baggage Systems 	<ul style="list-style-type: none"> Infrastructure: Lighting, Radar Ground Control Ground Support Systems 	<ul style="list-style-type: none"> Airline Operations Area (AOA) Access 	<ul style="list-style-type: none"> Baggage Systems Ground Support Systems Ground Control Infrastructure: Buildings, Lighting, Signage, Comms 	
Aviation Operators	<ul style="list-style-type: none"> Scheduling/Planning & Flight Plans Certification Inspection 		<ul style="list-style-type: none"> Ground Control Certification Inspection 	<ul style="list-style-type: none"> Terminal Control 	<ul style="list-style-type: none"> Enroute/Oceanic Control Terminal Control 	<ul style="list-style-type: none"> Ground Control Certification Inspection
Actors	<ul style="list-style-type: none"> Passengers Airline Staff Original Equipment Manufacturer (OEM) Staff TSA, CBP Airlift/Air Freight Staff 	<ul style="list-style-type: none"> Airport Staff 	<ul style="list-style-type: none"> Airport Staff Air Crew (FAA, TSA) Inspectors (FAA, TSA) 	<ul style="list-style-type: none"> Airline Staff (Non-Rev) Air Crew (FAA, TSA) Controllers Airlift/Air Freight 	<ul style="list-style-type: none"> Airline Staff / CTRs Airport Staff / CTRs Inspectors (FAA, TSA) Technicians / Mechanics 	
Dependencies			<ul style="list-style-type: none"> Telecommunications (FCC) GPS (DoD) NavAids (FAA, Airports, DoD) Passenger Devices (FAA, TSA, PHMSA) 			

Larry Grossman (Senior Advisor, Cybersecurity & Privacy Services, FAA) presented this interesting slide. It shows FAA is aware of its involvement and responsibilities in aviation ecosystem, as well as areas of no involvement: shows that EFBs are the only critical aspect of the aircraft where FAA performs little to no oversight/certification activity.

FAA Cyber Community and Information Sharing

U.S. Government

Aviation Cyber Initiative (ACI)
Aviation Government Coordinating Council (AGCC)
Department of Homeland Security (DHS)

- Cybersecurity & Infrastructure Security Agency (CISA)
- Transportation Security Administration (TSA)
- United States Computer Emergency Readiness Team (US-CERT)

Intelligence Community

Private Sector

Aviation Sector Coordinating Council (ASCC)
Aviation Information Sharing & Analysis Center (A-ISAC)
Aerospace Industries Association (AIA)
Airlines for America (A4A)
Airports Council International North America (ACI-NA)
Standards Development Organizations

International

International Civil Aviation Organization (ICAO)

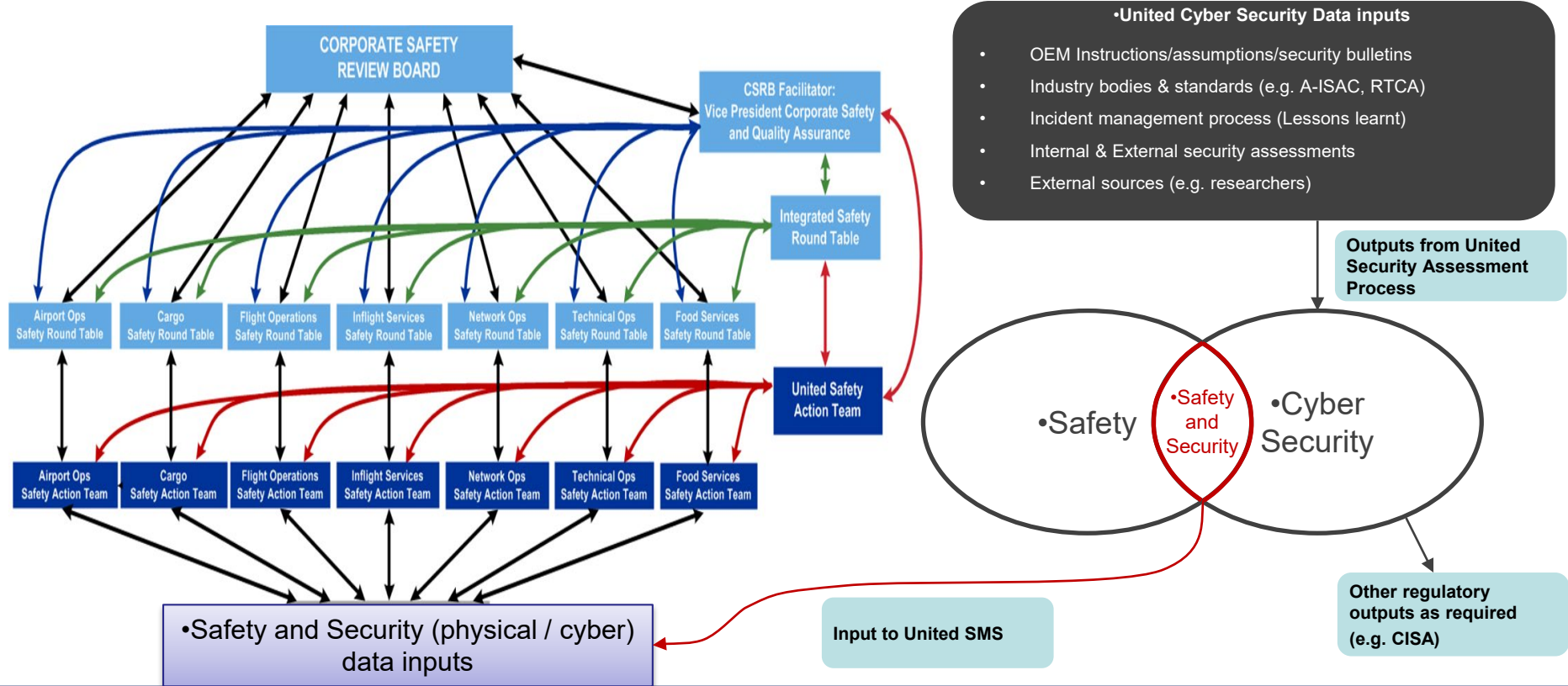
- Cybersecurity Panel and Trust Framework Study Group

Civil Air Navigation Services Organization (CANSO)
International Air Transport Association (IATA)
European Aviation Safety Agency (EASA)



* Organizations listed above are examples and is not exhaustive.

United Draft Organization Structure SMS/ISMS



Hank showed this slide and explained that United integrated cybersecurity risks into their existing SMS risk management framework.