

Aviation Safety Information Analysis and Sharing (ASIAS)



Voluntary Information-Sharing System Working Group
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FAA Aviation Safety Analytical Services Division, AVP-200

ASIAS Overview

- **What is ASIAS?**
- **History**
- **Governance**
- **Safety Information Protections**
- **Data, Architecture & Analytics**

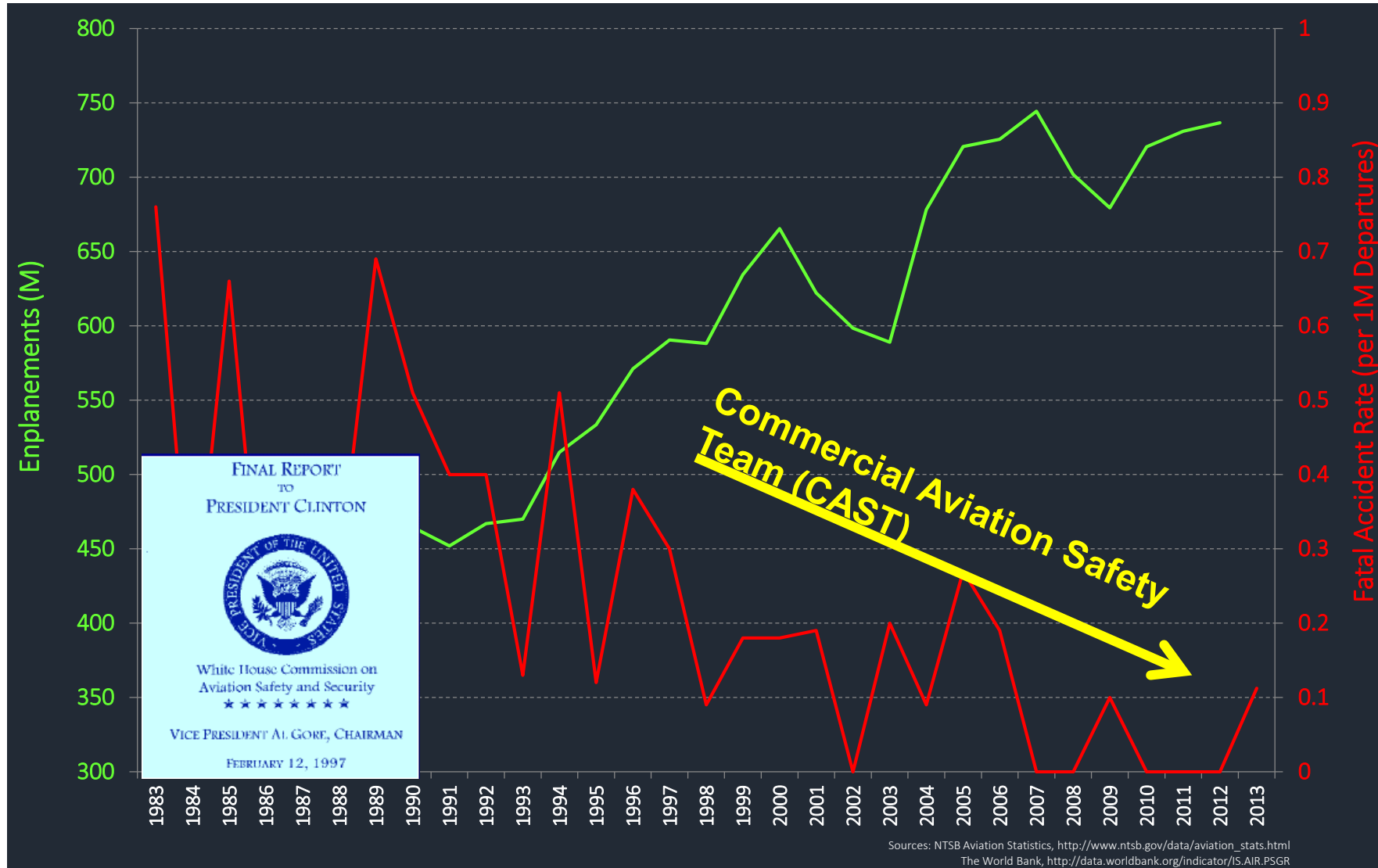


What is ASIAs?

- A *collaborative* Government-Industry initiative on *safety data analysis & sharing*
- A *risk-based* approach to aviation safety, *identifying & understanding risks before accidents or incidents occur*
- *Timely mitigation & prevention*



Aviation Has Faced Safety Challenges



Sources: NTSB Aviation Statistics, http://www.ntsb.gov/data/aviation_stats.html
The World Bank, <http://data.worldbank.org/indicator/IS.AIR.PSGR>



History & Timeline

- **1995** – U.S. Transportation Secretary Federico Peña Called for “Zero Accidents”
- **1996 & 1997**
 - White House Commission on Aviation Safety and Security Report
 - National Civil Aviation Review Commission (NCARC) Report
 - Both reports recommended the FAA work with Airline Industry to Reduce Aviation Accidents
- **1996** – Integrated Safety Strategy Team (ISST) Established by Aviation Community



History and Timeline (cont.)

- **1997** – Federal Aviation Administration (FAA), National Aeronautics and Space Administration (NASA), and Department of Defense (DoD) joined with ISST to form the Commercial Aviation Strategy Safety Team (CASST)
 - CASST then brought officials from FAA and NASA to form the Commercial Aviation Safety Team (CAST)
- **2007** - FAA Implemented ASIAS – to collect and analyze data from multiple databases to proactively identify and address risks that may lead to accidents



Safety Information and Data Protections

Public Law

- 49 U.S. Code § 40123—Protection of Voluntarily Submitted Information

FAA Regulations

- 14 CFR Part 193—Protection of Voluntarily Submitted Information
- 14 CFR Part 91.25 – Aviation Safety Reporting Program; Prohibition against use of reports for enforcement purposes

International Standards

- International Civil Aviation Organization (ICAO) - Annex 19 to the Convention on International Civil Aviation - Safety Management, Chapter 5. Safety Data Collection, Analysis and Exchange



ASIAS is Governed by Formal Principles

data used solely for
advancement of safety

voluntary submission
of safety-sensitive data

operator/OEM/MRO
data are de-identified

transparency for how data are
managed and utilized

procedures & policies based on
collaborative governance

analyses approved by an
ASIAS Executive Board



ASIAS Privacy & Governance

- **Hierarchical bodies govern the program**
 - The ASIAS Executive Board (AEB) is co-chaired by senior executives from both government and industry
- **Strong governance closely controls who can see data and how the data is used**
 - Executed Cooperative Agreement required to participate
 - Specific circumstances require NDAs
 - Can only be used for safety programs
 - Cannot be used for enforcement
- **FAA cannot see any operator specific data—only authorized de-identified aggregate information**



Data, Architecture & Analysis



Protected Airline Safety Data in ASIAs

*ASAP: Aviation Safety Action Program

QUERY TOOL

Investigations | New Search | Saved Searches | Help

Event Type: GPWS warning [details >>](#) [print >>](#)
[Event Notes >>](#) [search results >>](#)

Event: 27 | Aircraft: B737 | Origin: KJAH | Date: September, 2007 | Phase: Landing
 Destination: KDEN | Time: 7 PM | Altitude: 500 MSL
 Meteorological Conditions: VNC | Lighting: Dusk | Risk Assessment:
 Duties: CA: Pilot Flying FO: Pilot Monitoring | Familiarity: More than one day

SAMPLE ASIAs ASAP REPORT

Summary:
 CA: Too low warning came on when we were actually too high, continued the approach when we should have gone around FO: Unstabilized Approach.
 Description: CA: The approach controller asked to maintain 210 knots until further advised. I lowered the landing gear and extended the flaps to 5 degrees, when the speed restriction was lifted, we were high and fast but correcting the wind at 1500agl was around when we continued the approach due to the situation at hand (long and dry runway, VNC, calm wind, and the PDI was centered) was not able to get at the hole raised but made the rest of the approach from there. Controller said to taxi slow the noise is accepted by the engines but the aircraft will not move and trying to taxi aft.
 FO: CA was PF, Desc: er the fence, target CA was then high on speed was 151.

Recommended changes:

Location:
 ATC Facility: Type: ATC Control:

Event Type:
 Operation in noncompliance - FARs, policy/procedures
 • Non-compliance with other company policy / procedures/SOPs/NOTAMS

Speed Deviation:
 • Higher than 10 knots above Vref

Terrain Proximity Event:
 • GPWS warning

Internal Issues:
 Aircraft handling/configurations/performance control
 • Power settings/speed control - thrust reversers, auto-throttle

Navigation / position control:
 • Airborne navigation

External Issues:
 ATC Complications/Errors
 • Challenging clearance or request (complex, confusing, late or freq. change by ATC)

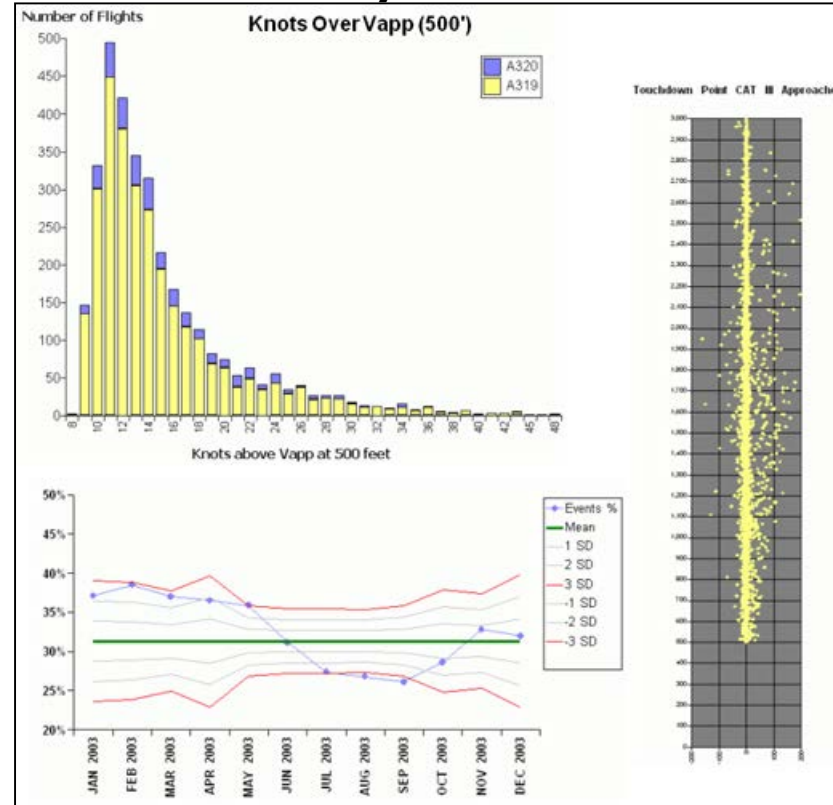
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(Over 185,000 ASAP Reports)

*Refer to FAA Advisory Circular [120-66](#) for more information

**FOQA: Flight Operations Quality Assurance



(Over 16 Million FOQA Flights)

**Refer to FAA Advisory Circular [120-66](#) for more information



data

key challenges

working with big data requires a methodical approach that comprehensively addresses data management



data quality issues require multiple processes to make narrative data meaningful & useable



wide variety of data types and sources requires complex processes for effective integration



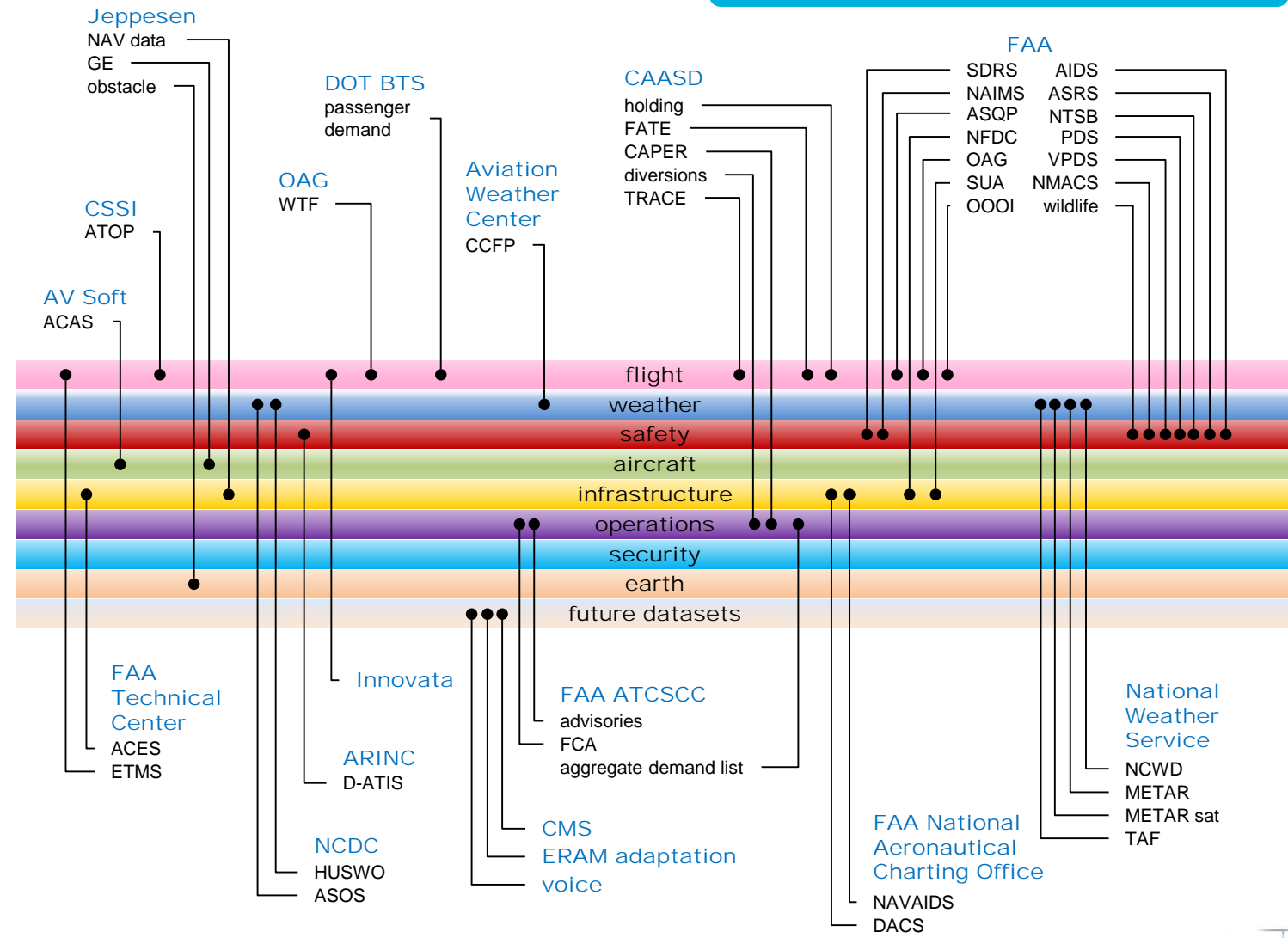
data

types

Proprietary Data



sources

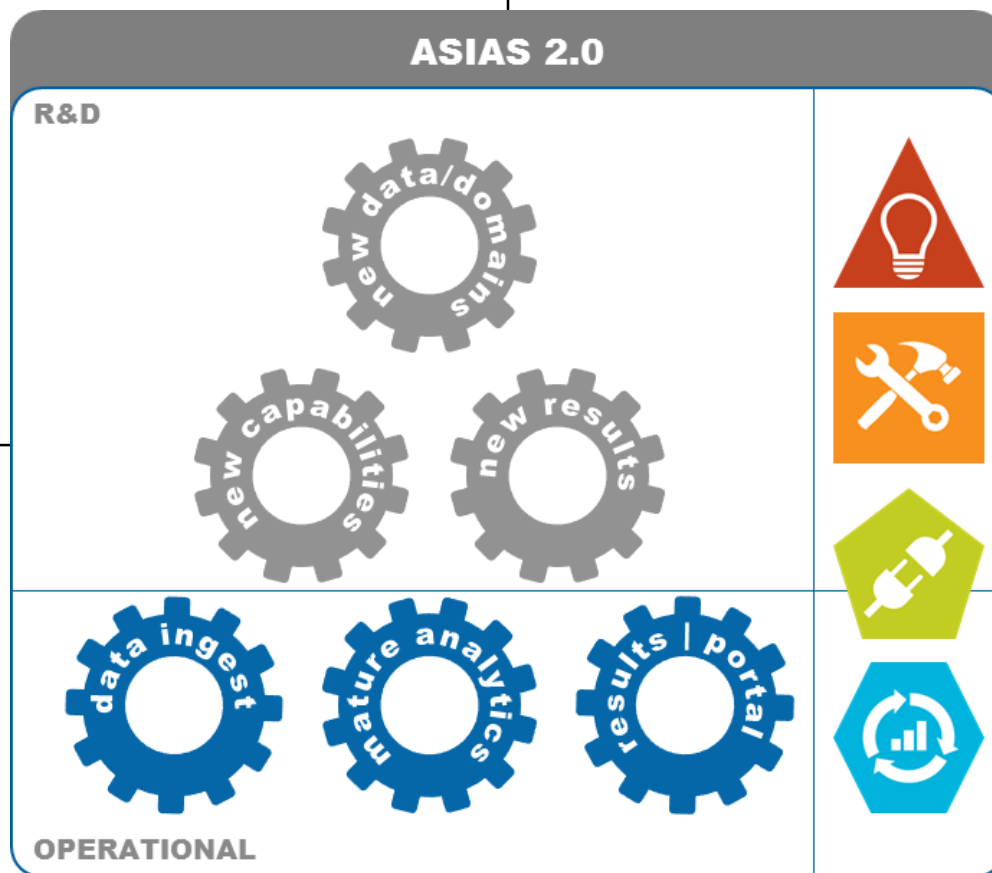


architecture

key challenges

centralized security and access control to align with governance

continuous validation and verification to address data quality issues, inconsistent data feeds and new algorithms with limited verification



data-analytics software and tools integration with computing environment (in situ | in cloud)

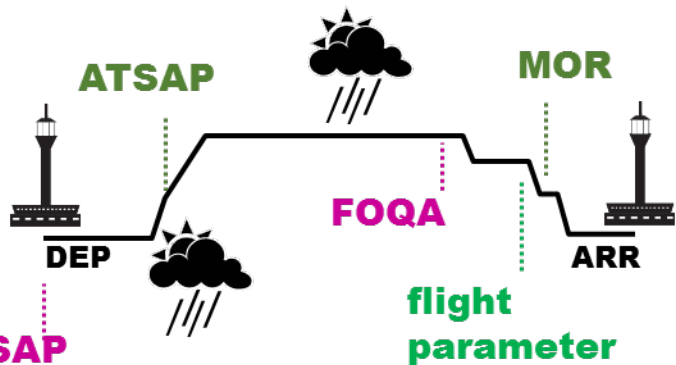
data management practices that can handle the volume, velocity and diversity of data



analysis

key challenges

fusion of information from NAS-wide data sources to individual flights is required to enable more complete safety analyses



LEVERAGING DATA FROM ACROSS THE INDUSTRY PROVIDES VALUABLE INSIGHTS

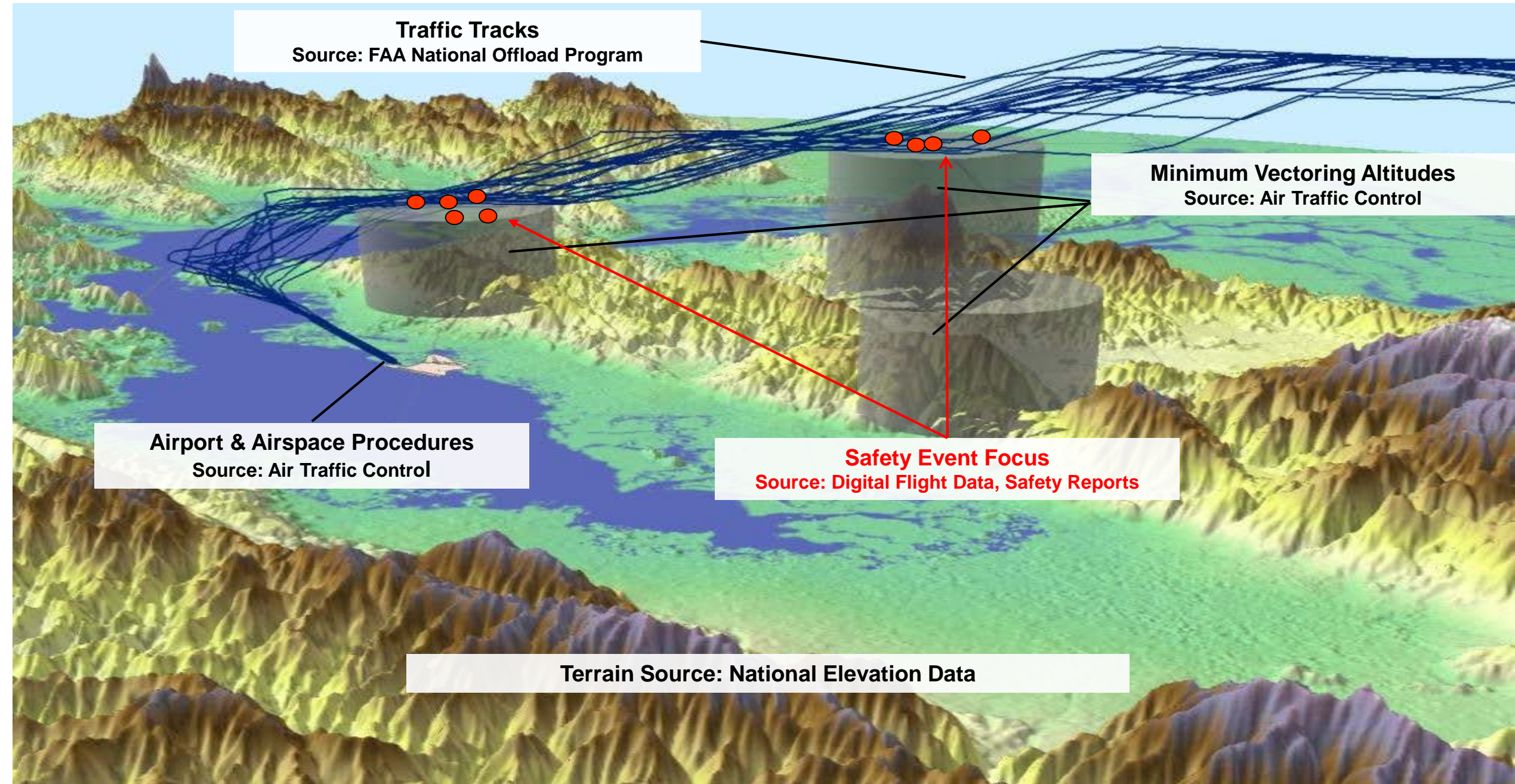
Traffic Tracks
Source: FAA National Offload Program

Minimum Vectoring Altitudes
Source: Air Traffic Control

Airport & Airspace Procedures
Source: Air Traffic Control

Safety Event Focus
Source: Digital Flight Data, Safety Reports

Terrain Source: National Elevation Data



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