

**Current and Future Information
Sharing, Dissemination,
Collaboration and Standardization**



**International Cooperation
“The Challenge”**

**ICG Workshop on GNSS Spectrum Protection
and
Interference Detection and Mitigation**

June 8, 2012

Hank Skalski

U.S. Department of Transportation



Overview

- **Background**
- **Challenges**
- **Way-ahead**

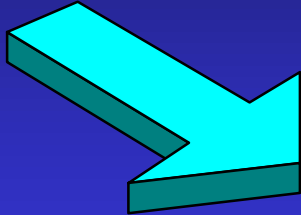
Background

The characteristics of GNSS signals create unique challenges,
Our role should make those challenges transparent to the user by providing the best IDM support possible.

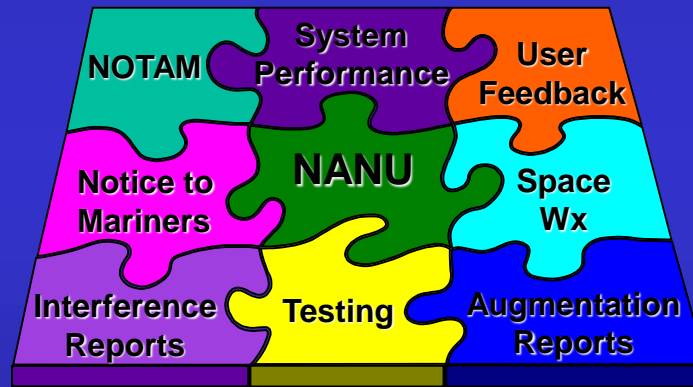
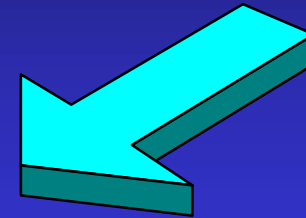


Background

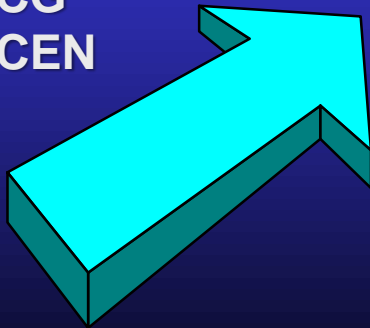
AFSPC
GPSOC



FAA
NOCC

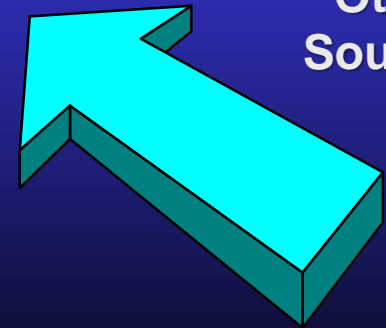


USCG
NAVCEN



In the mid-90's, prior to GPS FOC, it was discovered that the dissemination and coordination of GPS information and events required improvement

Other
Sources

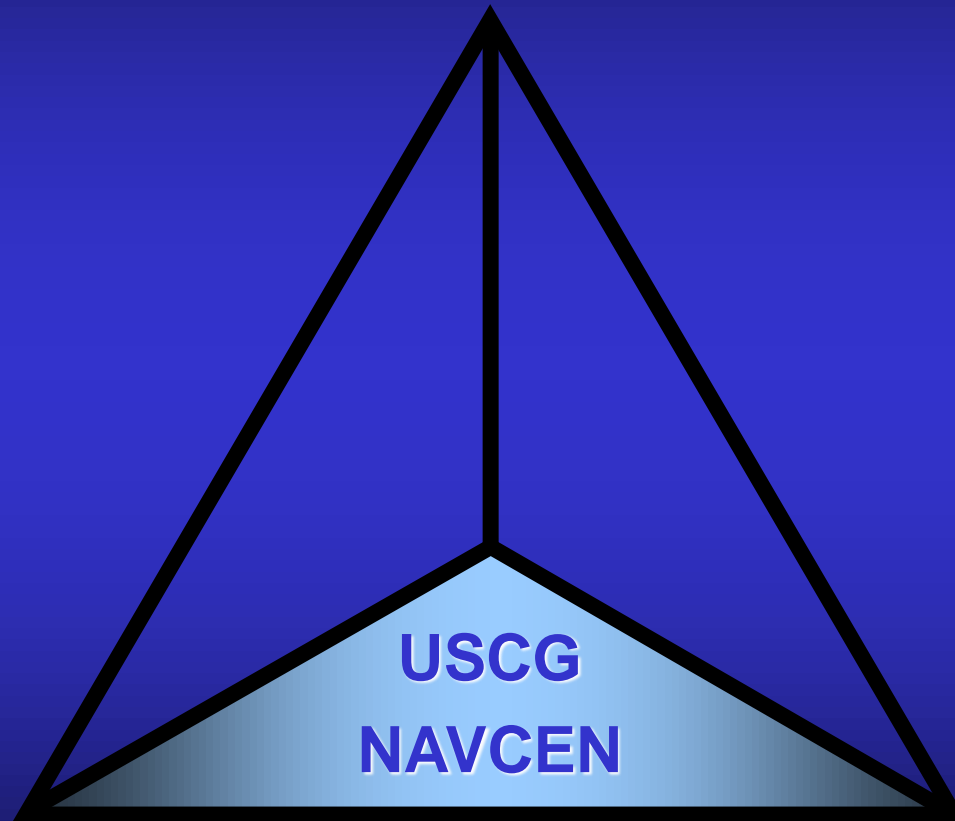


Background

Interagency Dissemination Coordination Team (IDCT)

- Established in 1995
- Coordination and Dissemination of GPS Operational Information
- **Anomaly / Interference Reporting**
- Coordination of GPS In-Band Testing, Exercise, and Training Events

User Support Service



Notice to Mariners

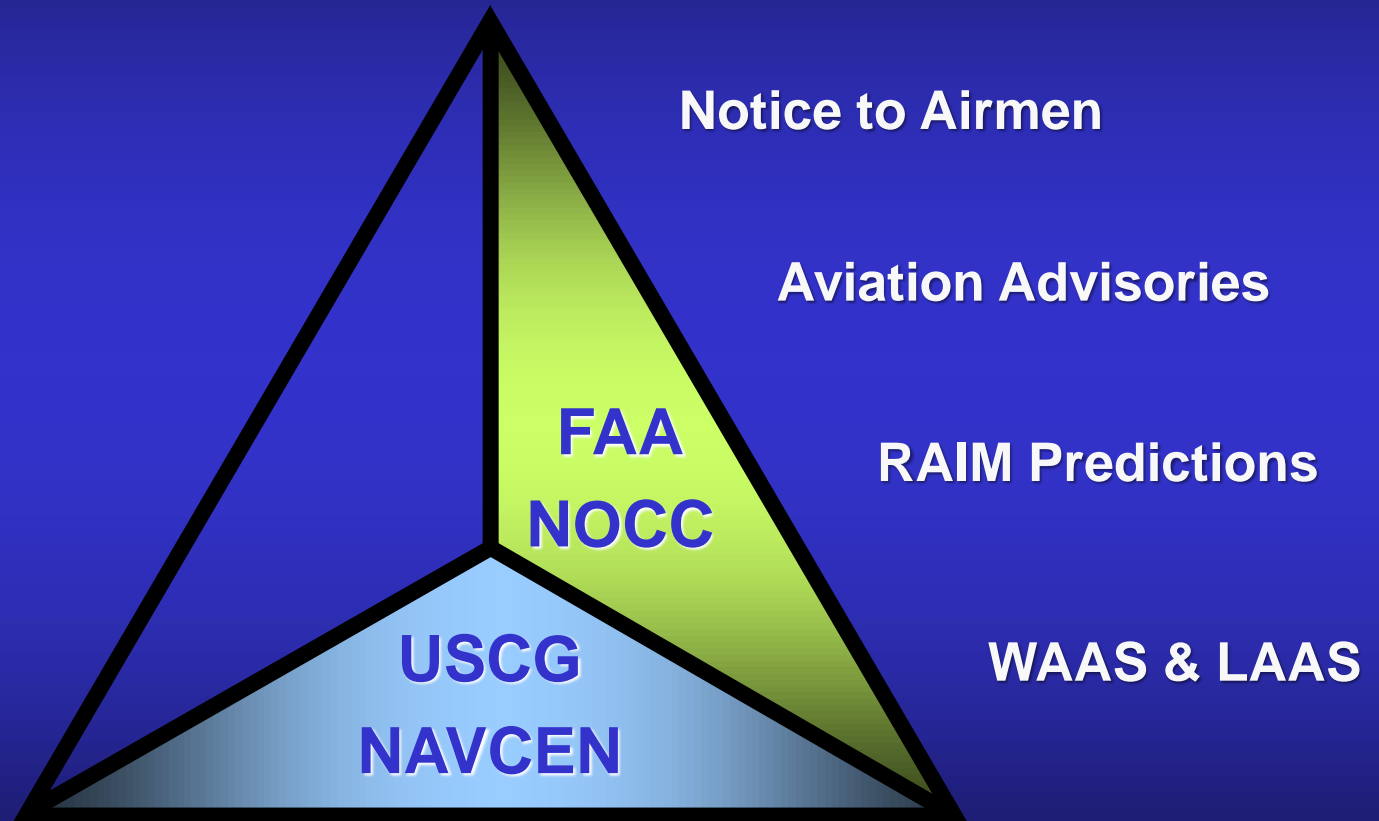
NANU's

DGPS & NDGPS

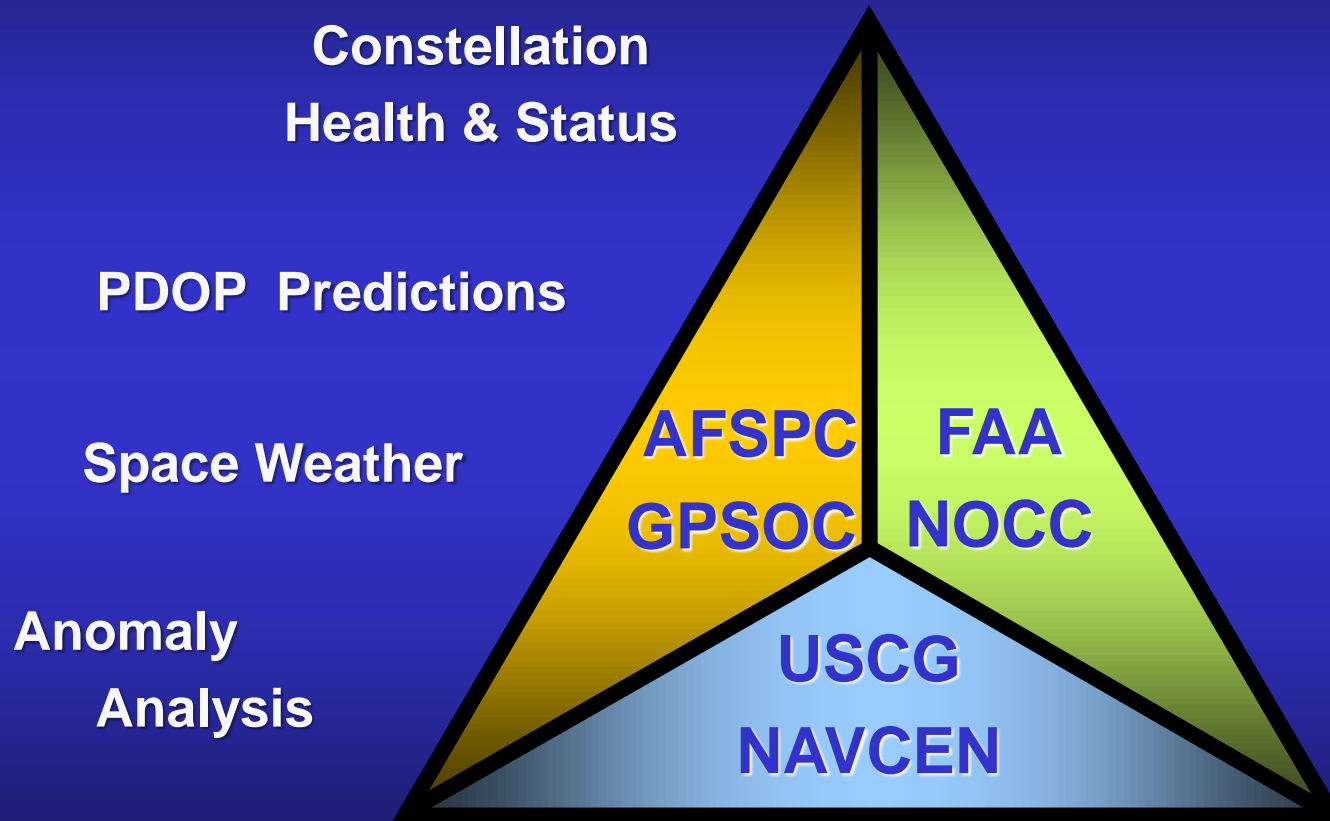
List Server Distribution

General User Information

User Support Service



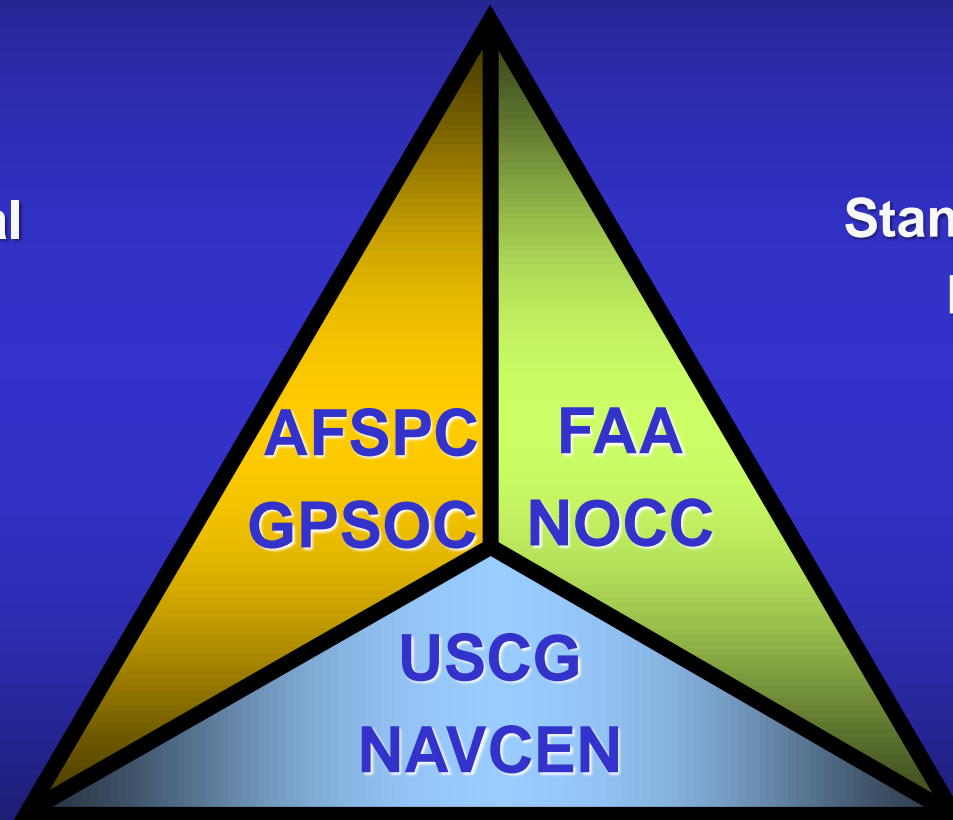
User Support Service



User Support Service

Tri-lateral
MOA

Standard Operating
Procedures



National Policy

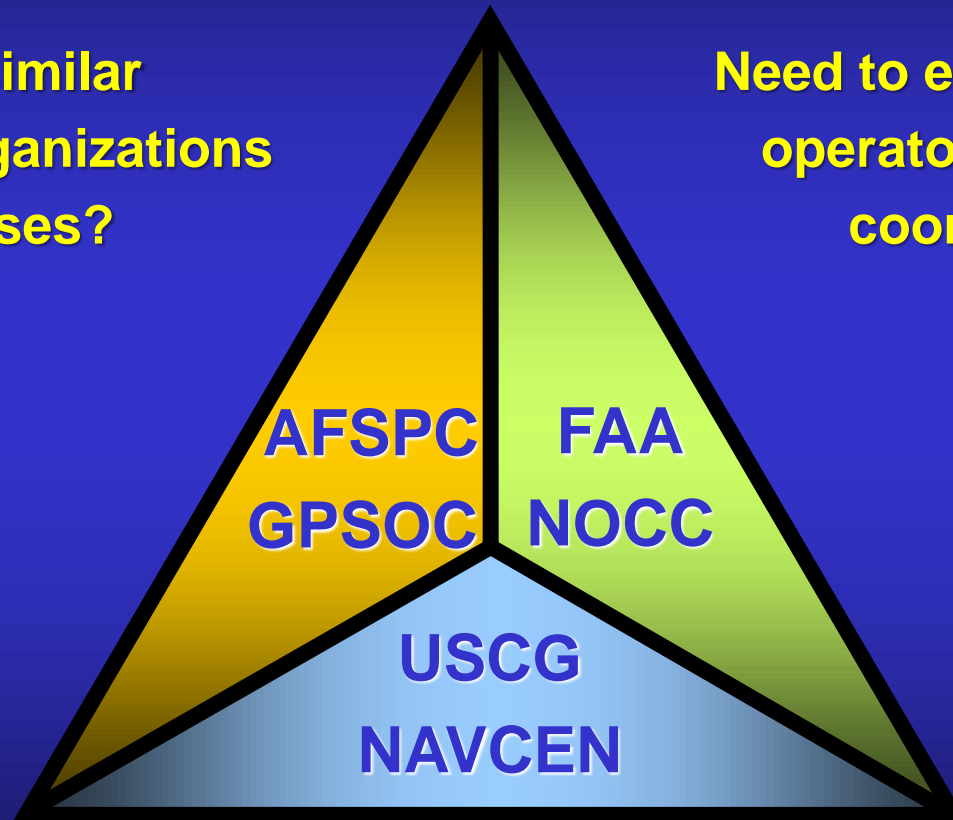
FRP

SPS PS

User Support Service

Are there similar international organizations or processes?

Need to establish GNSS operator to operator coordination.

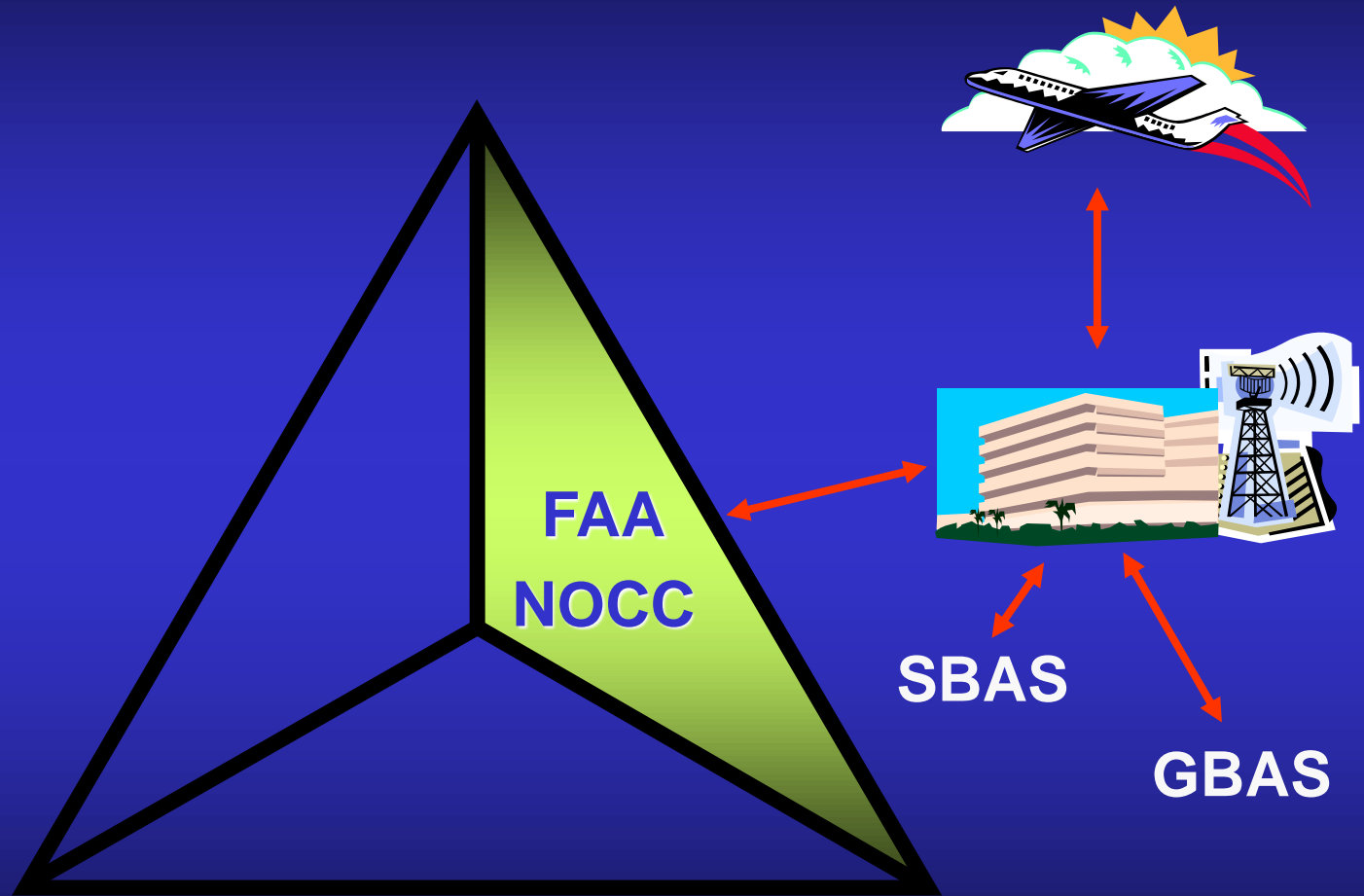


Global Challenge

GPS Interference Reporting

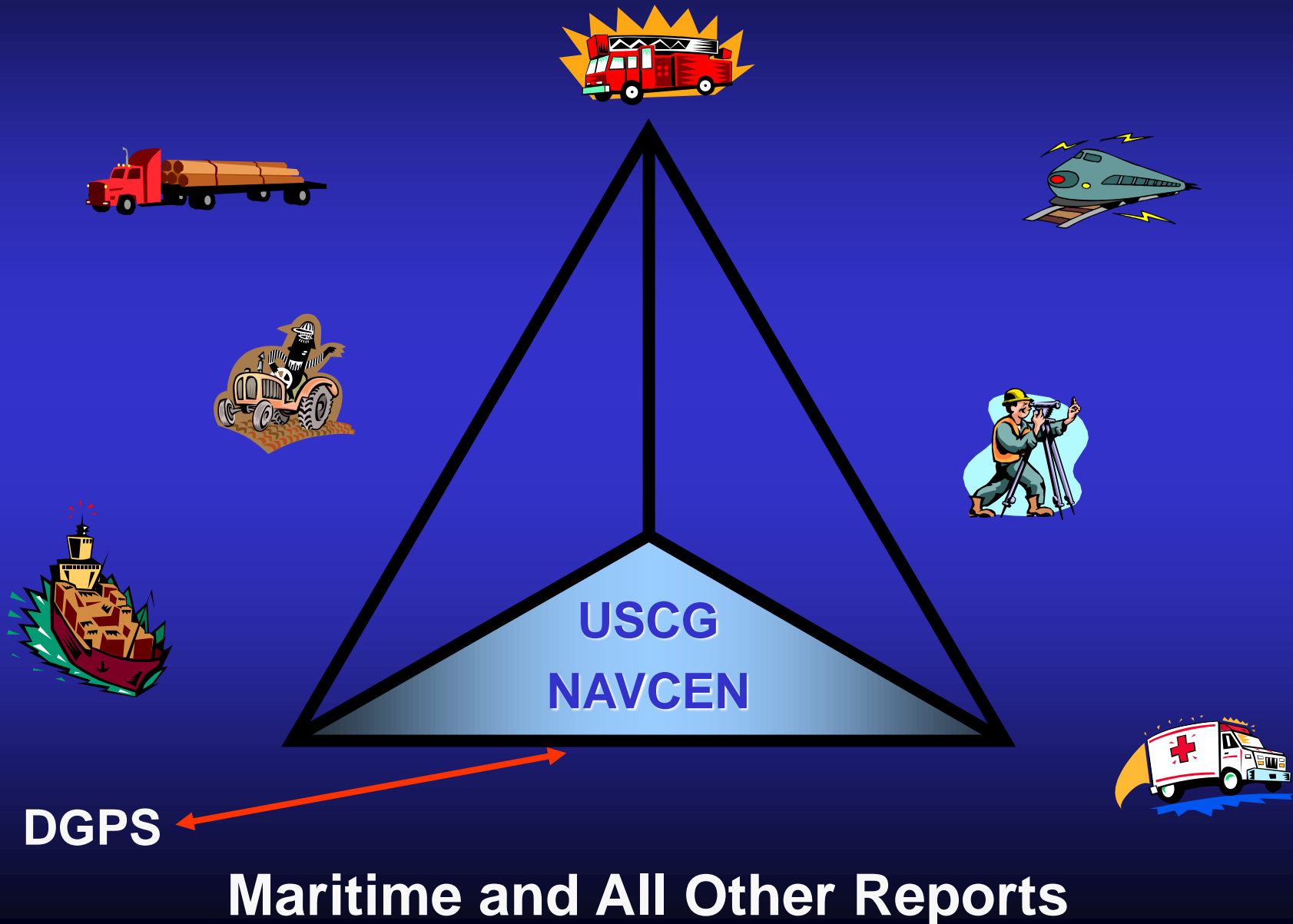
The Tri-lateral relationship of the
GPSOC, NOCC & NAVCEN
user support services
provides the ideal entry point for
GPS interference event reporting.

GPS Interference Reporting



Aviation Reports

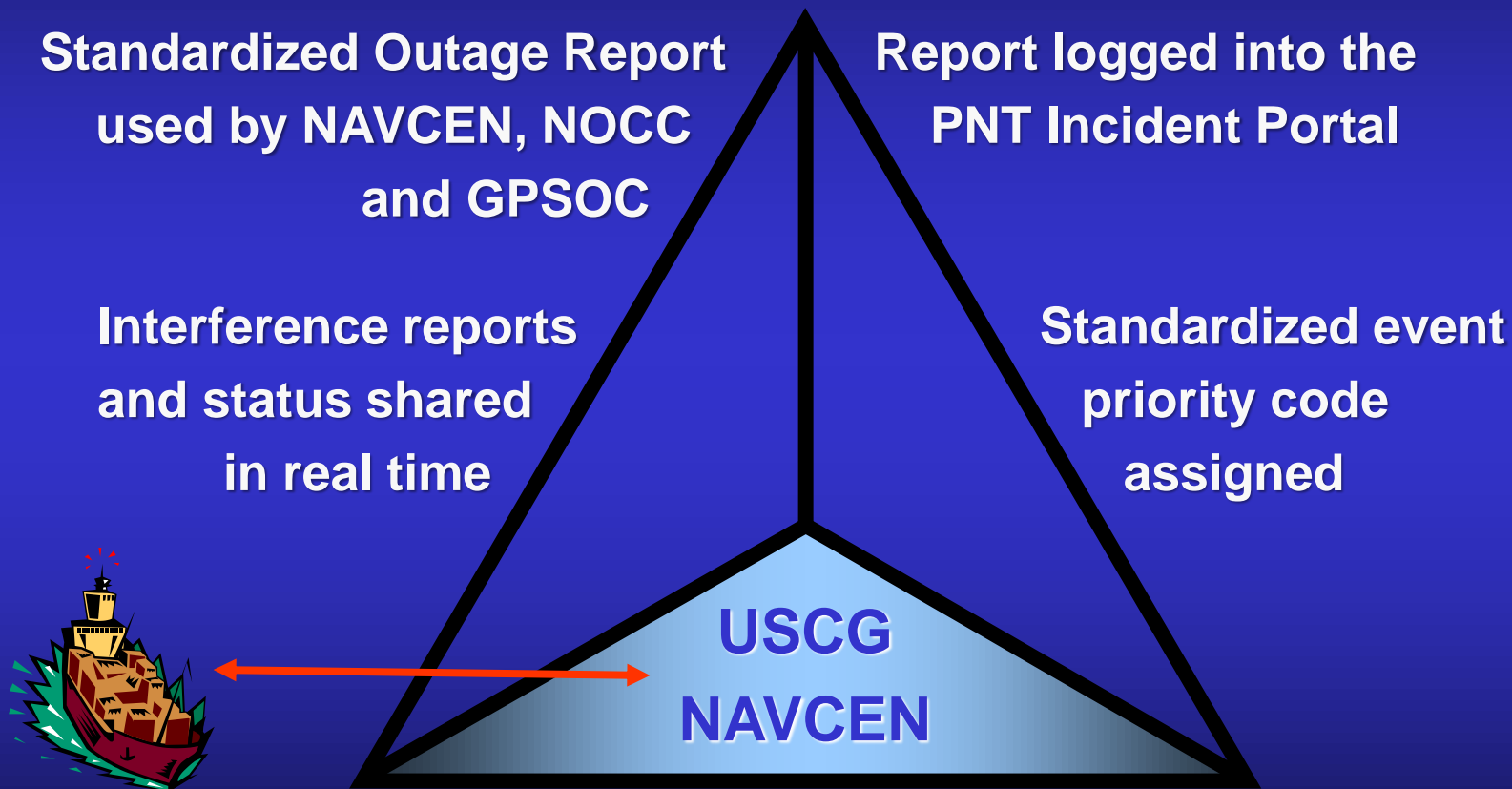
GPS Interference Reporting



DGPS

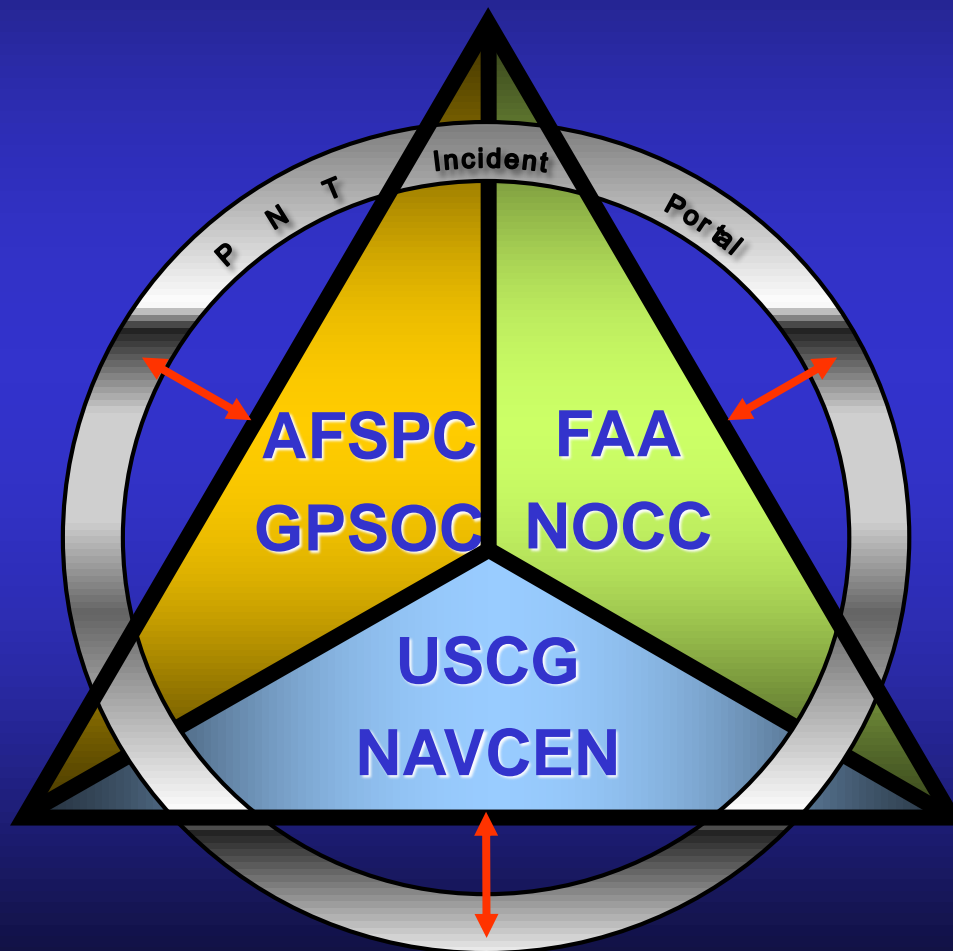
Maritime and All Other Reports

GPS Interference Reporting



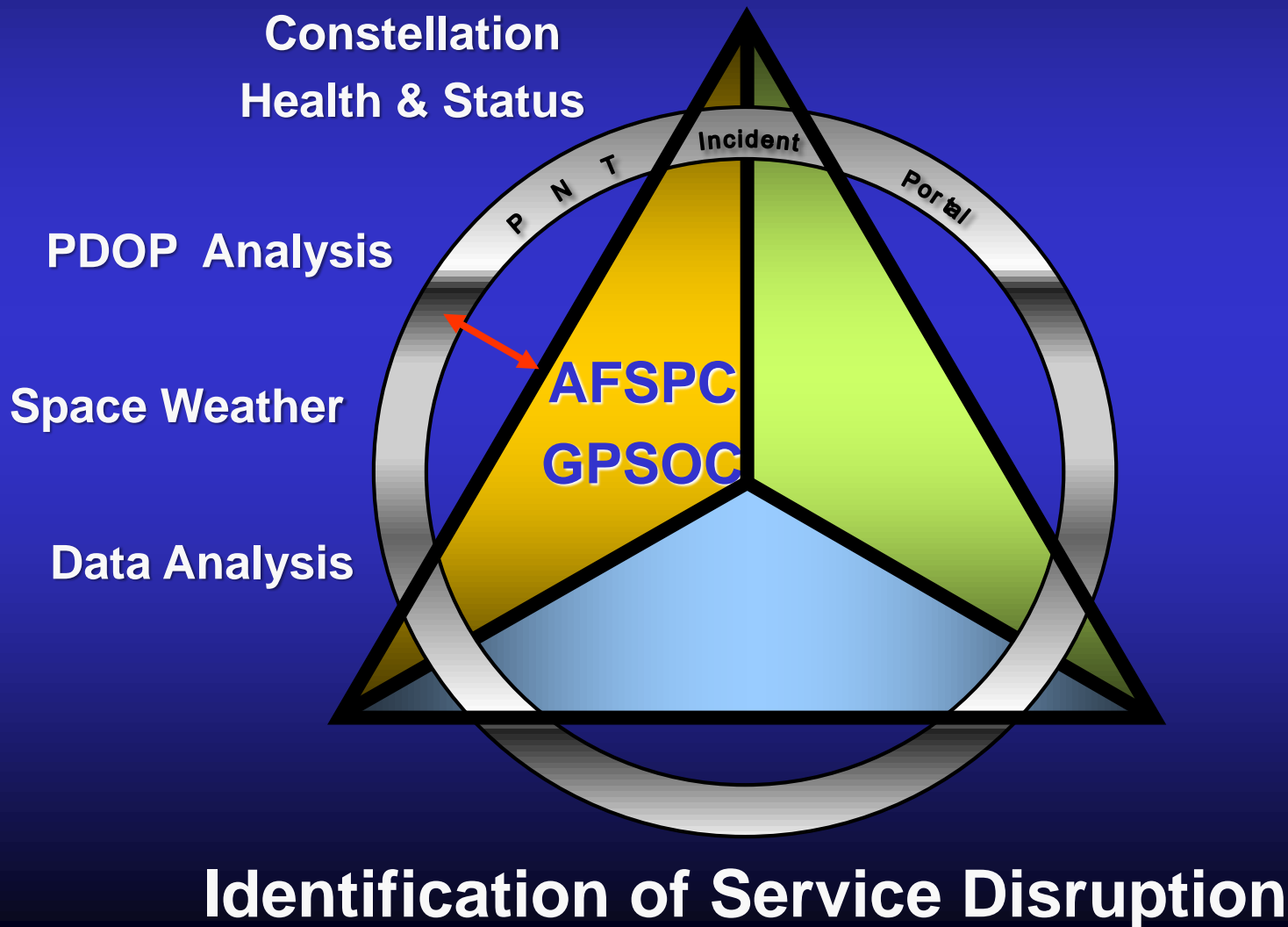
Maritime Outage Report

GPS Interference Reporting

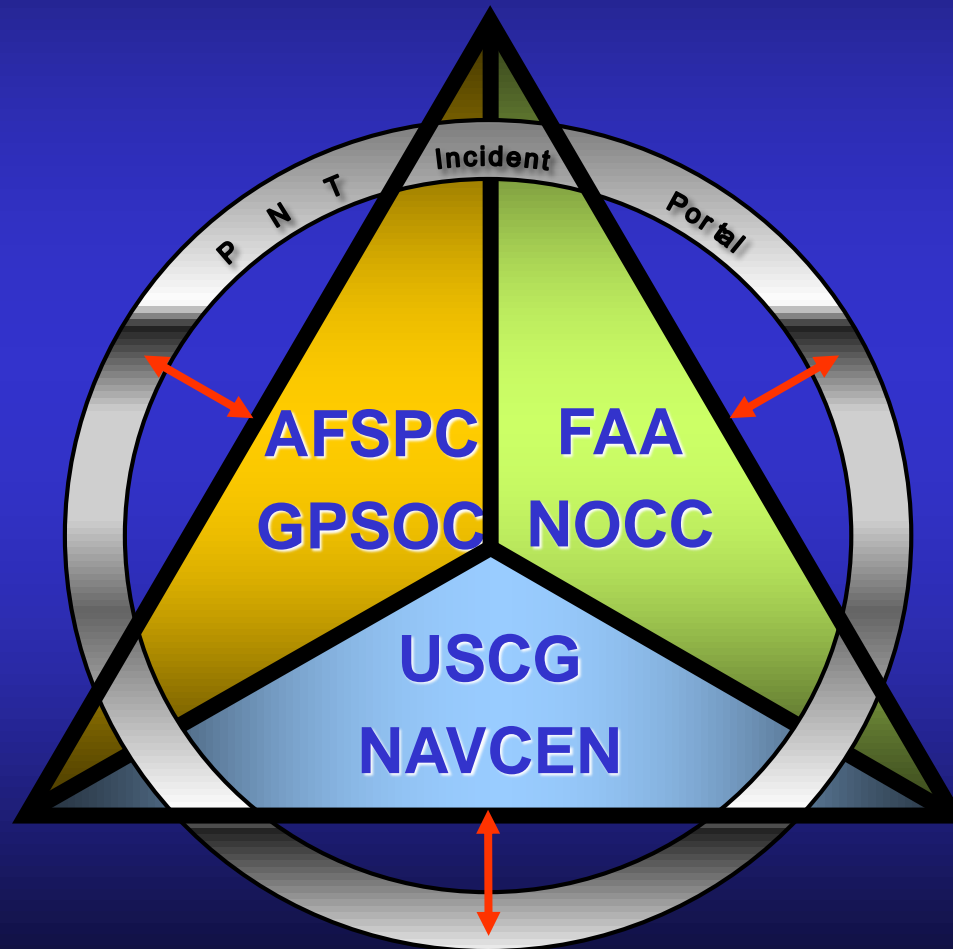


Identification of Service Disruption

GPS Interference Reporting



GPS Interference Reporting



Identification of Service Disruption

GPS Interference Reporting

GPS Service Outage/Interference Reporting Priorities

Priority 1 (P1) Incident

Service outage/interference is ongoing

Service outage/interference affecting multiple independent sites/users

One or more critical infrastructure sectors SEVERELY impacted

Poses a risk to safety-of-life

Priority 2 (P2) Incident

Service outage/interference has ceased or is intermittent

Service outage/interference affected multiple independent sites/users

One or more critical infrastructure sectors SEVERELY impacted

Posed a risk to safety-of-life

Priority 3 (P3) Incident

Service outage/interference is on-going

Service outage/interference affecting multiple independent sites/users

One or more critical infrastructure sectors MODERATELY impacted

Priority 4 (P4) Incident

Service outage/interference has ceased or is intermittent

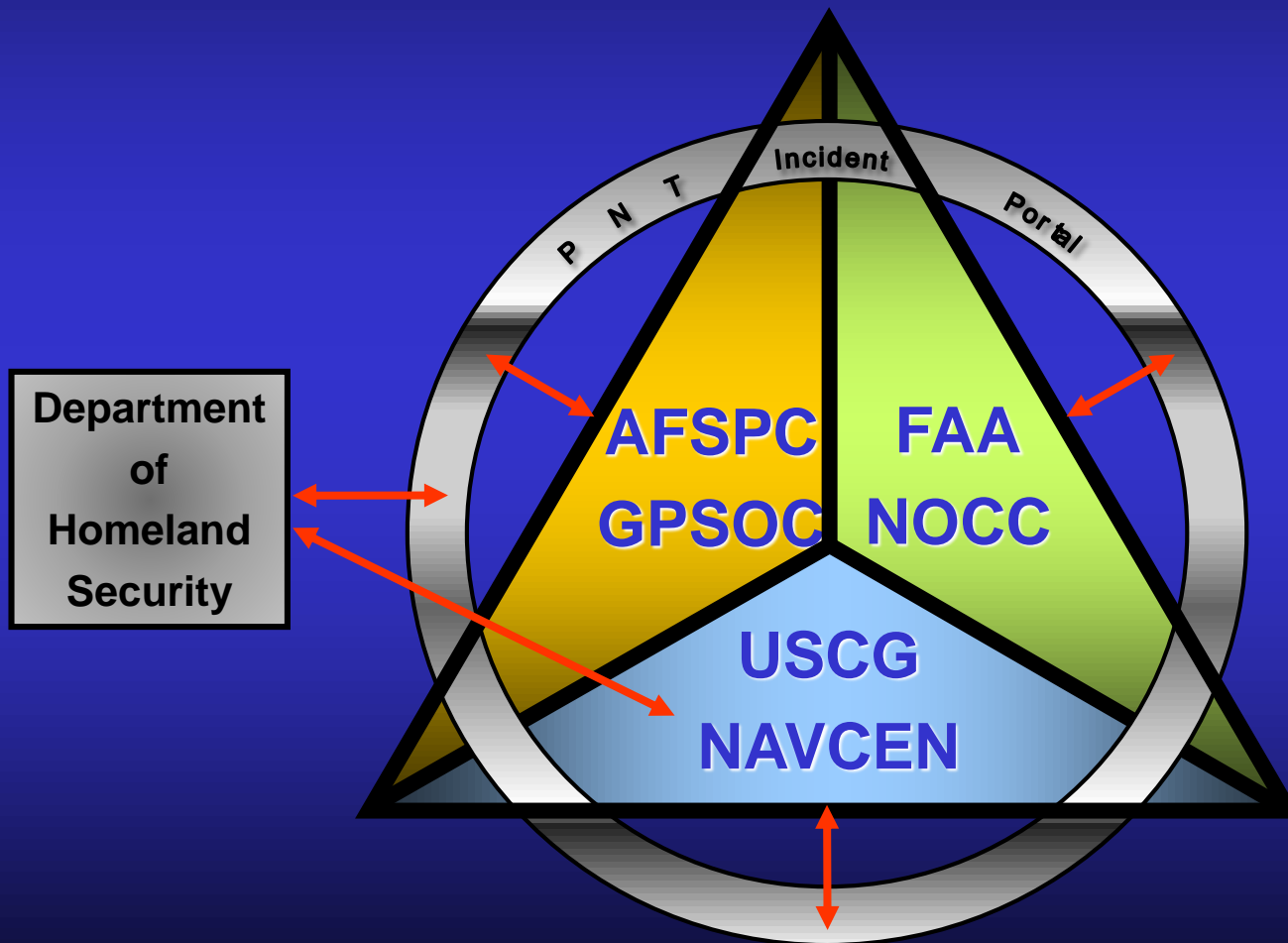
Service outage/interference affected multiple independent sites/users

One or more critical infrastructure sectors MODERATELY impacted

Priority 5 (P5) Incident (All other service outages, reports, requests)

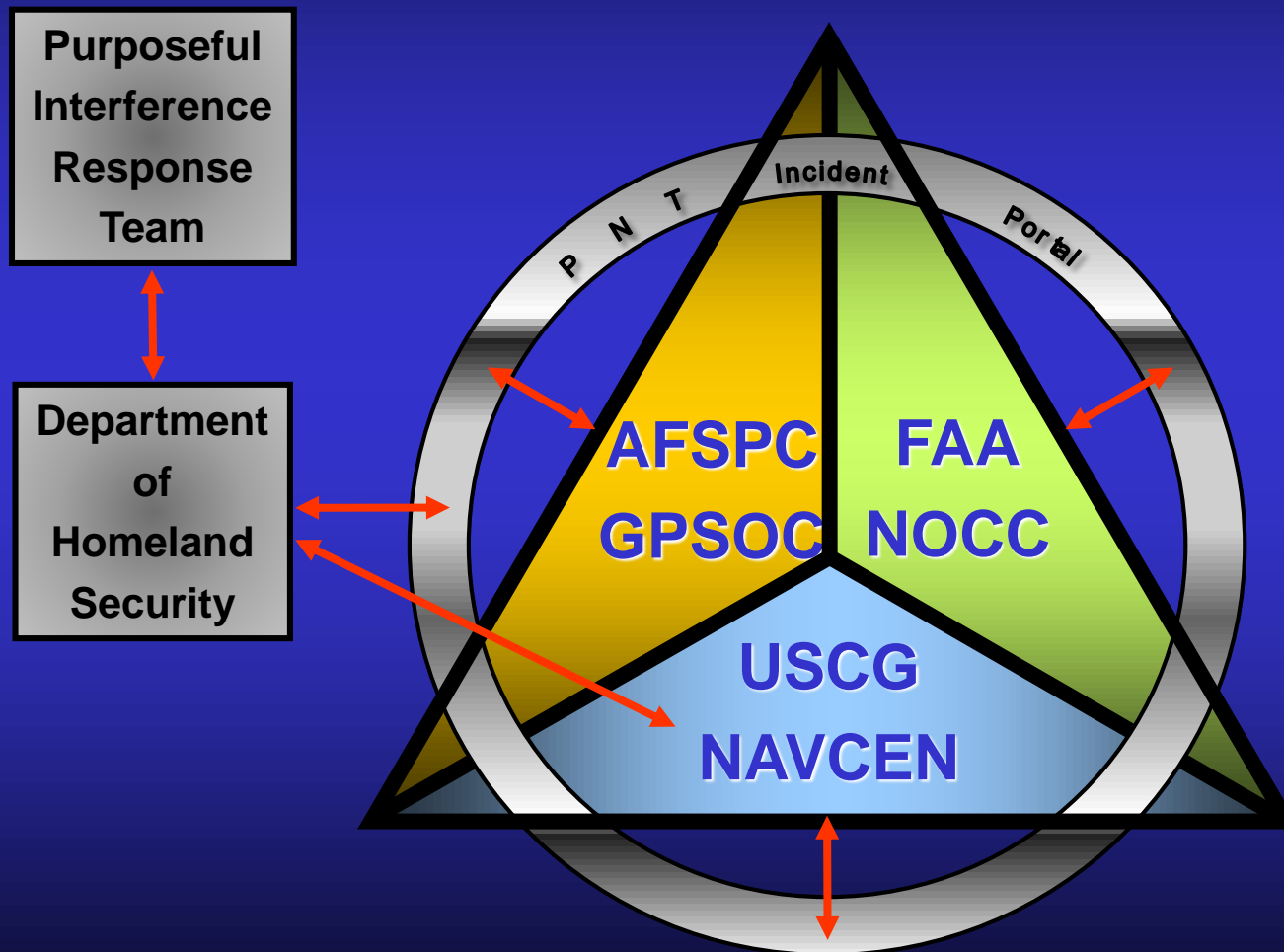
Minimal impact

GPS Interference Reporting



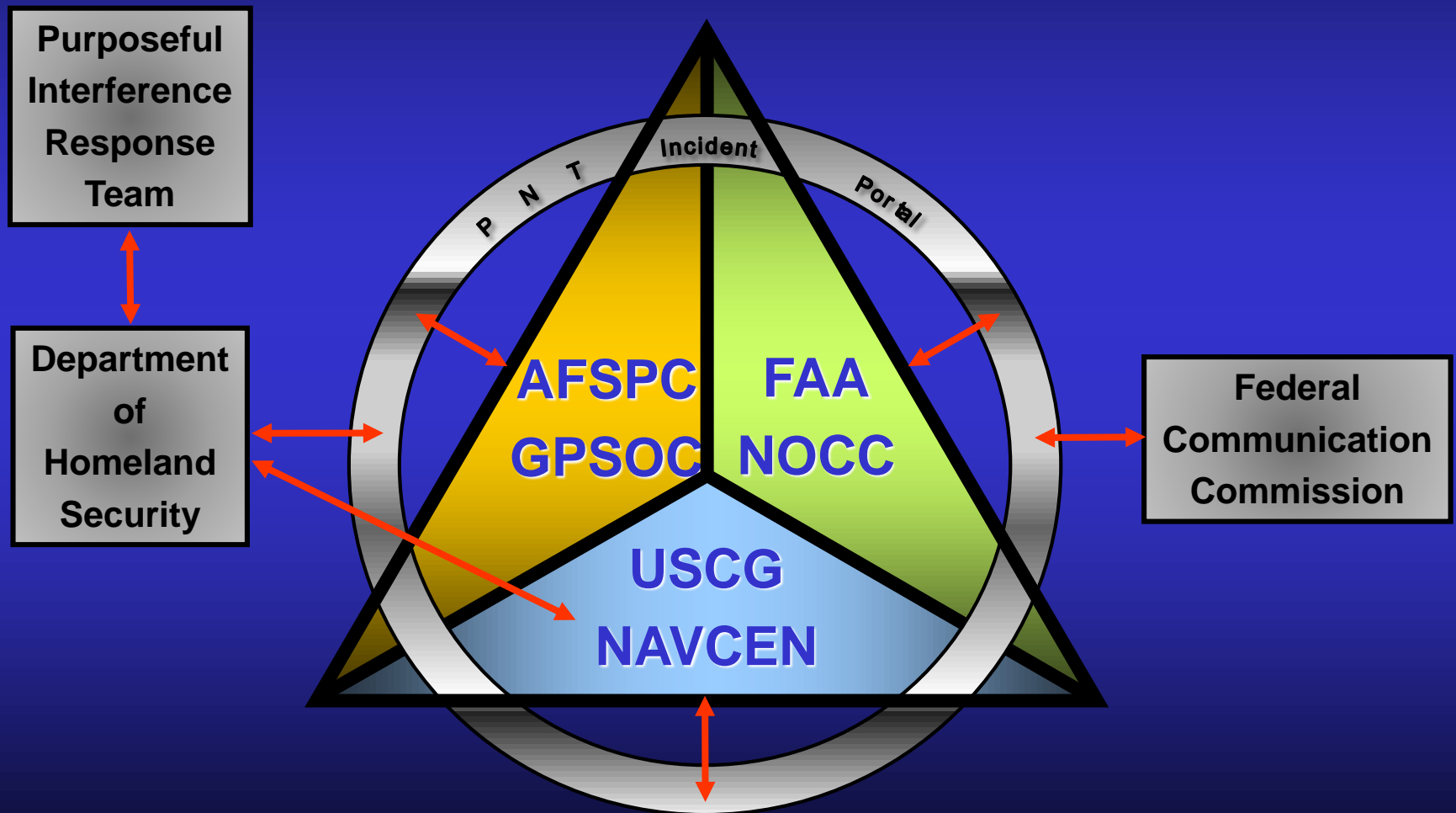
Identification of Service Disruption

GPS Interference Reporting



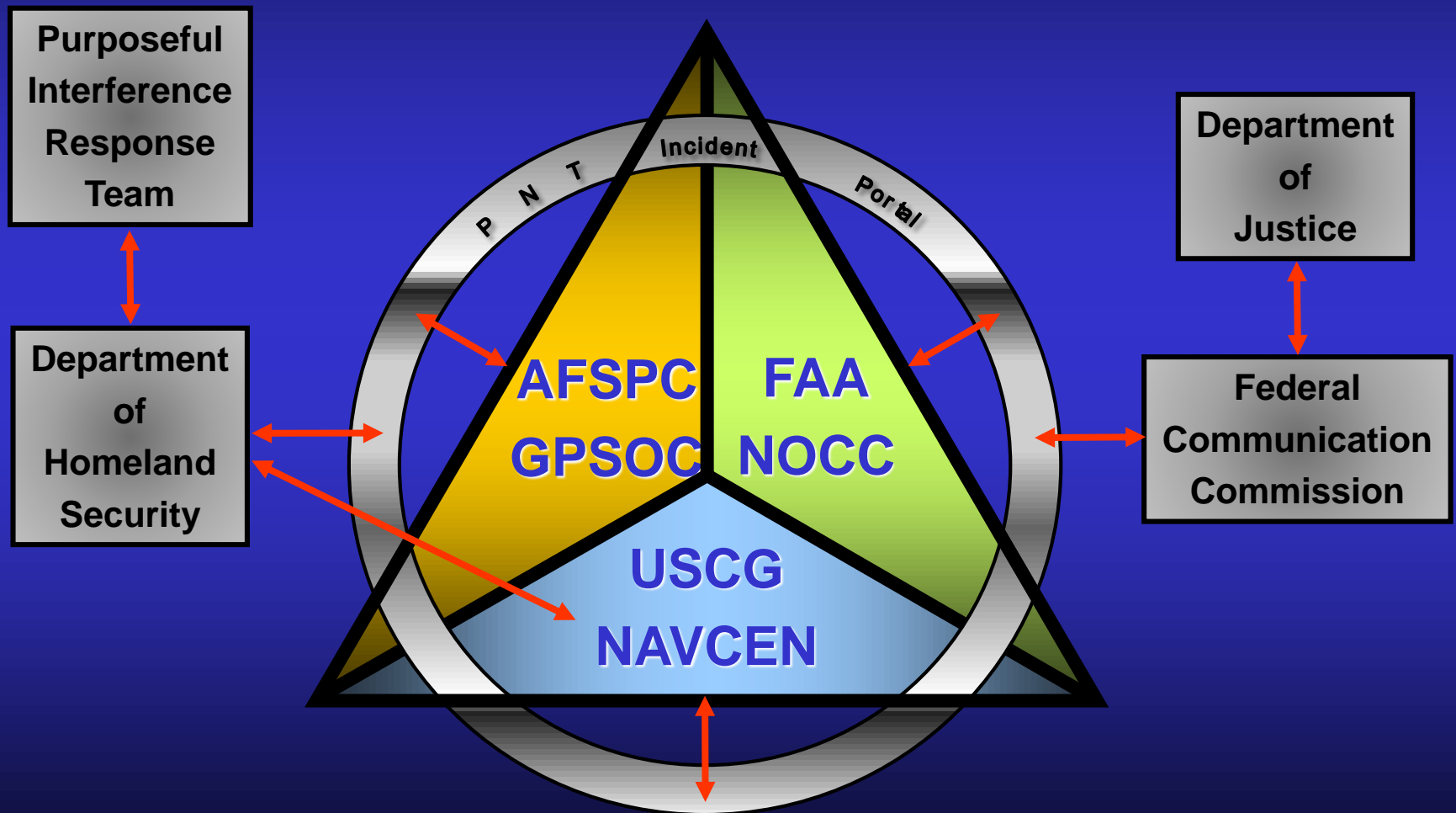
Identification of Service Disruption

GPS Interference Reporting



Identification of Service Disruption

GPS Interference Reporting



Identification and Mitigation of Service Disruption

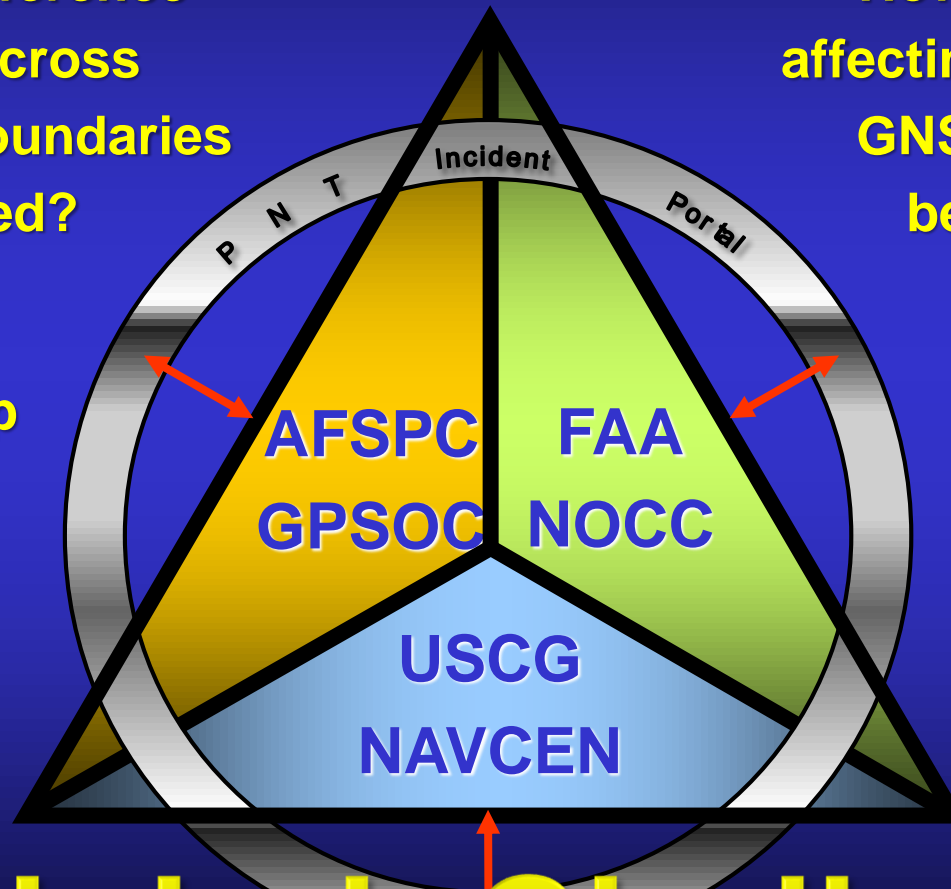
GPS Interference Reporting

How will interference events that cross international boundaries be handled?

How will events affecting multi-system GNSS receivers be handled?

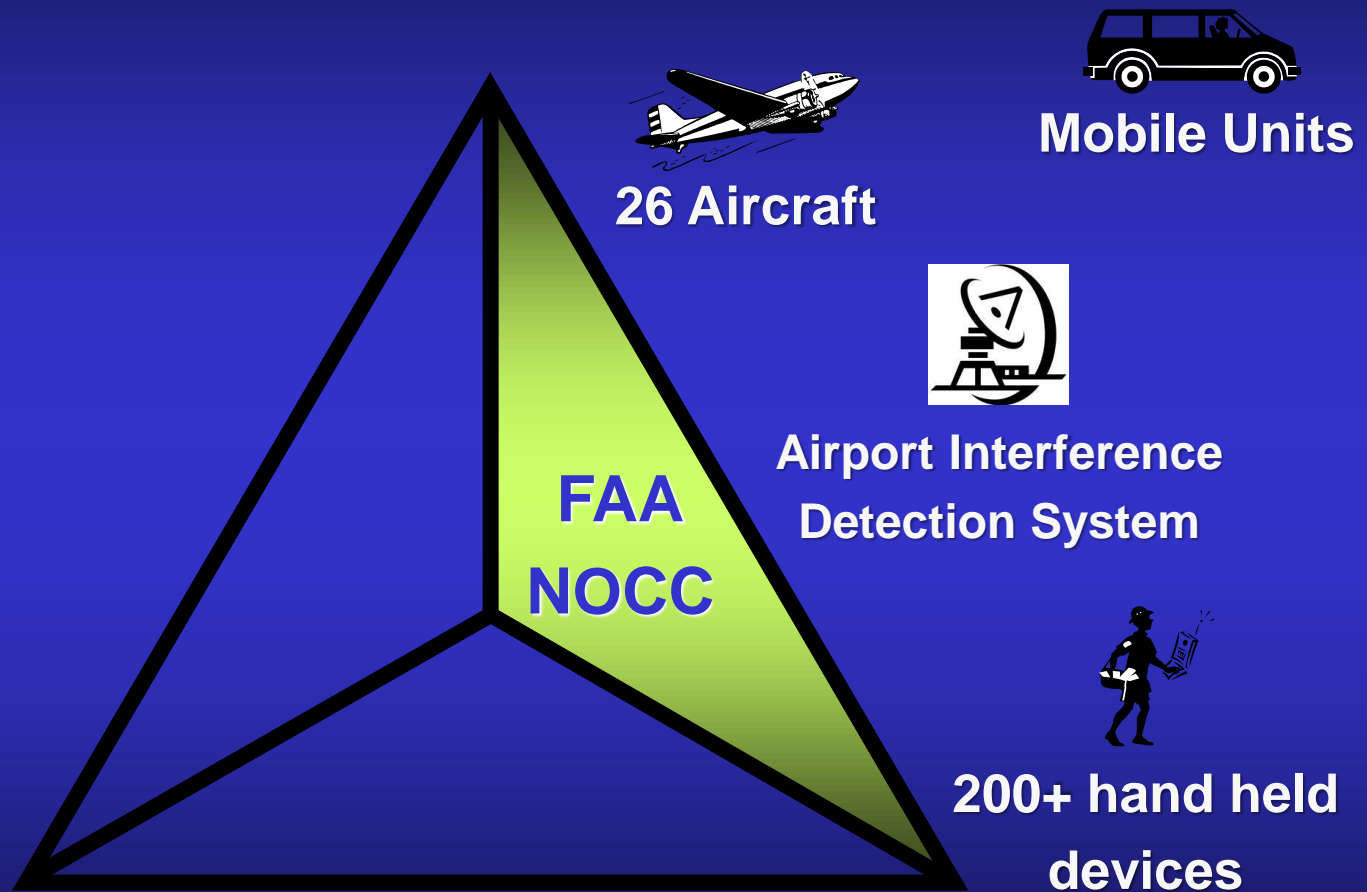
Need to develop standardized reporting procedures.

Need to develop Real-time reporting system.



Global Challenge

GPS Interference Reporting



Identification and Mitigation of Service Disruption

Way-Ahead

- **Continue to look ahead and adapt**
 - Adapt to new GNSS applications and threats
 - Improve and automate IDM processes
 - Continuously monitor and evaluate user support
- **Encourage ICG to promote international cooperation:**
 - Between Service Provider Operations
 - Between Regulatory Organizations
 - Between Enforcement Organizations
 - With the ITU

