Overview

- Background
- Challenges
- Way-ahead
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.
In the mid-90’s, prior to GPS FOC, it was discovered that the dissemination and coordination of GPS information and events required improvement.
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 Airmen
- Aviation Advisories
- RAIM Predictions
- WAAS & LAAS

FAA
NOCC
USCG
NAVCEN
Are there similar international organizations or processes?

Need to establish GNSS operator to operator coordination.

Global Challenge
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

FAA NOCC

SBAS

GBAS
GPS Interference Reporting

Maritime and All Other Reports

DGPS

USCG NAVCEN
GPS Interference Reporting

Standardized Outage Report used by NAVCEN, NOCC and GPSOC

Interference reports and status shared in real time

Report logged into the PNT Incident Portal

Standardized event priority code assigned

Maritime Outage Report
GPS Interference Reporting

Identification of Service Disruption
GPS Interference Reporting

Identification of Service Disruption

Constellation
Health & Status

PDOP  Analysis

Space Weather

Data Analysis

AFSPC
GPSOC
GPS Interference Reporting

Identification of Service Disruption
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

Purposeful Interference Response Team

Department of Homeland Security

AFSPC

GPSOC

FAA

NOCC

USCG

NAVCEN

Portal

P N T

Incident
GPS Interference Reporting

Identification of Service Disruption

Purposeful Interference Response Team

Department of Homeland Security

Federal Communication Commission

AFSPC

GPSOC

FAA

NOCC

USCG

NAVCEN
Identification and Mitigation of Service Disruption

GPS Interference Reporting

Purposeful Interference Response Team

Department of Homeland Security

Department of Justice

AFSPC

GPSOC

FAA

NOCC

USCG

NAVCEN

Federal Communication Commission

PNT Incident Portal
GPS Interference Reporting

How will interference events that cross international boundaries be handled?

Need to develop standardized reporting procedures.

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

Need to develop Real-time reporting system.

Global Challenge
GPS Interference Reporting

Identification and Mitigation of Service Disruption

FAA

NOCC

26 Aircraft

Mobile Units

Airport Interference Detection System

200+ hand held devices
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