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.
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

USCG NAVCEN

Notice to Mariners  NANU’s  DGPS & NDGPS

List Server Distribution  General User Information
User Support Service

Constellation Health & Status

PDOP Predictions

Space Weather

Anomaly Analysis

AFSPC GPSOC

FAA NOCC

USCG NAVCEN
Need to establish GNSS operator to operator coordination.

Are there similar international organizations or processes?
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
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

USCG
NAVcen

Maritime Outage Report
GPS Interference Reporting

Identification of Service Disruption
GPS Interference Reporting

Constellation Health & Status

PDOP Analysis

Space Weather

Data Analysis

Identification of Service Disruption
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

Purposeful Interference Response Team

Department of Homeland Security

AFSPC
GPSOC
USCG
NAVCEN

FAA
NOCC
GPS Interference Reporting

Identification of Service Disruption
GPS Interference Reporting

Identification and Mitigation of Service Disruption

- AFSPC
- GPSOC
- FAA
- NOCC
- USCG
- NAVCEN

Purposeful Interference Response Team

Department of Homeland Security

Federal Communication Commission

Department of Justice
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

Airport Interference Detection System

26 Aircraft

Mobile Units

FAA NOCC

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