BEST PRACTICES FOR

AIRPORT GPS DISRUPTION RESILIENCY

A guide to best practices for developing and implementing GPS disruption response plans for airport operators

ACI

Aviation Cyber Initiative

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INTRODUCTION

The Global Positioning System (GPS) provides critical information for position, navigation, and timing (PNT) to the entire aviation industry and ecosystem. Airport operators play a key role in the aviation ecosystem and should routinely consider cybersecurity resiliency best practices to minimize the impacts from GPS-related disruptions to their operations. GPS disruptions of PNT can affect airport-operated systems, airport tenant systems, critical infrastructure systems, and near airport entity systems. The consequences of GPS disruptions may impact safety, efficiency, security, and regulatory compliance.

This document summarizes the best practices for Airport GPS disruption resiliency. It is intended for use by airport operators to minimize operational impacts from GPS disruptions and resultant airport cyber, system, and network affects. This Best Practices Guide is expected to assist an airport operator in implementing GPS cybersecurity resilient processes and procedures that will reduce the impact of GPS disruption. These best practices should leverage and be incorporated into existing plans (e.g., the Airport Emergency Plan (AEP); Business Continuity Plans (BCP) for the airport authority, air carriers, and airport tenants; information technology (IT) system-specific Incident Response Plans (IRPs); IT Disaster Recovery Plans (DRPs); and IT Contingency Plans).

It is important to recognize that GPS disruptions can threaten communications, multiple modes of transportation, emergency response for police and fire, delivery of utility services (power, water, natural gas), inventory and warehousing systems, and financial transactions. Airports are both critical infrastructure and dependent on the services of other critical infrastructure, so making them more resilient in the face of GPS disruptions is in the best interests of private industry and State/Local/Tribal/Territorial (SLTT) and Federal entities involved in responding to and recovering from a GPS disruption.

These GPS best practices are recommended to be performed by a designated team, e.g., an Airport GPS Disruption Resiliency Core Implementation Team. This team should be, at a minimum, composed of a broad set of internal stakeholders. These internal stakeholders should represent airport operations and other key activities, such as airside and ground-side management, IT and cybersecurity, physical security, emergency responders (e.g., Airport Rescue and Firefighting [ARFF] and local mutual aid partners), the local air traffic control tower and Terminal Radar Approach Control, federal, state, local, tribal, and territorial public safety agencies, and other major technology systems operators, such as automated baggage inspection and handling systems or inter-terminal transportation systems.

If this guidance document describes or recommends specific conduct or actions by regulated entities that go beyond what is set forth in the text of relevant statutes and regulations, (i) it is not legally binding, and the FAA will not rely on it as a separate basis for affirmative enforcement action or other administrative penalty. (ii) Conformity with this guidance document (as distinct from existing statutes and regulations) is voluntary only, and nonconformity will not affect rights and obligations under existing statutes and regulations.

If you need to report an aircraft or related GPS disruption or anomaly, the Federal Aviation Administration's (FAA's) website for reporting GPS anomalies is: https://www.faa.gov/air_traffic/nas/GPS_reports. For -other users (e.g., airport authority), GPS disruption and anomalies are reported to the U.S. Coast Guard at: https://www.navcen.uscg.gov/contact/gps-problem-report.

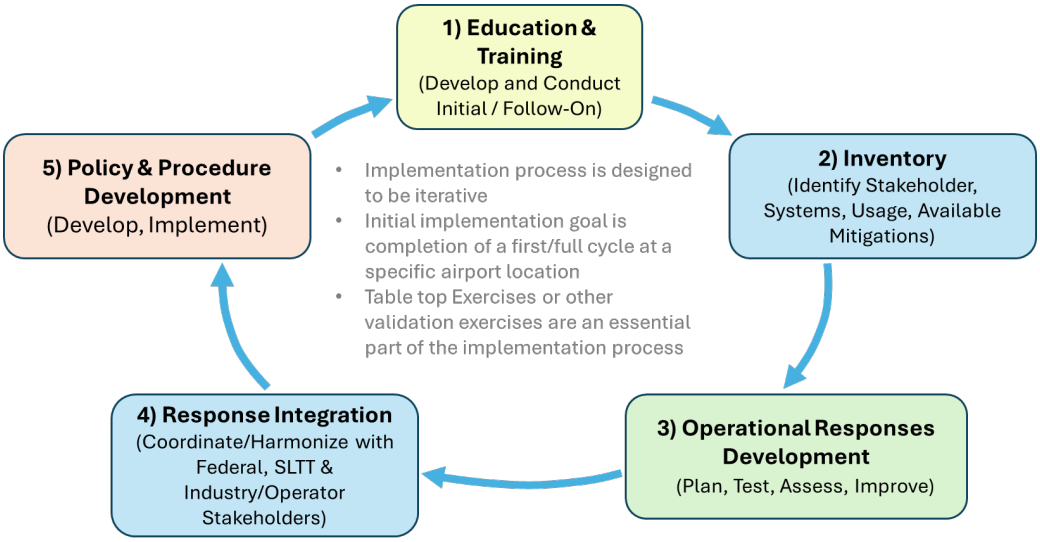
DEFINITIONS

GPS disruptions can be categorized as radio frequency interference, cyber-attacks, or PNT disruptions, and how the event is categorized often depends on the set of stakeholders addressing the issues. As a result, a common lexicon does not exist. For purposes of this document, a summary of terms is provided below to assist the reader in interpreting and understanding the key terminology used.

Key Terms Used	Definition
Global Positioning System (GPS)	A satellite-based radio navigation system operated by the Department of Defense to provide all military, civil, and commercial users with positioning, velocity, and timing (PVT) data. Position, navigation, and timing (PNT) is a common use of the GPS-provided PVT by a given system. Although GPS does not provide navigation, it is one of the most common capabilities of systems that use GPS.
Global Navigation Satellite System (GNSS)	System of satellites transmitting signals with global coverage that allows satellite navigation receivers to determine PVT. Examples of GNSS are the United States' GPS, Russia's GLONASS, the People's Republic of China's BeiDou, and the European Union's Galileo.
Jamming	Interference that blocks or obscures the processing of PVT sources by PNT user equipment, resulting in the degradation or denial of the calculation of a PVT measurement and/or its resulting solution. Jamming can be intentional or unintentional and may originate from man-made sources or occur naturally from space weather (e.g., solar flares).
Spoofing	Involves broadcasting counterfeit satellite signals to deceive GNSS receivers, causing them to compute incorrect PNT.
GPS Disruption	A generalized term that encompasses jamming and spoofing regardless of source, type, or system impacts.
Essential System	A system determined, at the discretion of the airport, to require a full-capability backup through additional systems, procedures, or other means.
Routine System	A system that is not an Essential System.

BEST PRACTICES FOR AIRPORT GPS DISRUPTION RESILIENCY PROCESS

To support airport GPS disruption response, an Airport GPS Resiliency Implementation Process (referred to as the 5-Step Implementation Process in this document) and methodology were developed. The 5-Step Implementation Process is shown below. Initial implementation should focus on one full cycle through the process. Through the process of initial implementation, further enhancements, adaptations, and refinement in education and familiarization, more mature programs can be achieved through additional iterations through the 5-Step Implementation Process, which will further improve airport and stakeholder responses to GPS disruptions.



Steps	Summary
1) Education and Familiarization	Cover the foundational elements that allow stakeholders (airport personnel, tenants, government, etc.) to understand the nature of GPS disruptions, the relative ease of accomplishment and potential frequency of disruptions, the types of systems and technologies that can be impacted by GPS disruptions, and the identification of airport, SLTT, and federal stakeholders.
2) Inventory and Assessment	Inventory of GPS use in airport stakeholder systems, the type of applications for which GPS is used (e.g., positioning, navigation, and/or timing), the importance of any system identified as using GPS, and available or implemented mitigations for GPS uses deemed essential or critical.
3) Operational Response Development	Operational response development includes the necessary tasks of planning, testing, assessment, and improvement, iterating in much the same manner as the overall implementation process. A major part of operational response development is initial testing of those responses to identify gaps and necessary external coordination, as well as to validate the response procedures themselves.
4) Response Integration	Includes already identified relationships, as well as new linkages where coordinated efforts may have synergistic effects on response efficiency and timeliness. Response integration across a specific airport stakeholder community should include relevant SLTT and federal entities, airport authorities, and stakeholders external to the airport enterprise (e.g., local telecommunications and utilities providers).
5) Policy and Procedure Development	The development and implementation of local airport operator policy and procedures to provide a planning and execution framework for GPS disruptions. This generally includes (e.g., the Airport Emergency Plan (AEP); Business Continuity Plans (BCP) for the airport authority, air carriers, and airport tenants; information technology (IT) system-specific Incident Response Plans (IRPs); IT Disaster Recovery Plans (DRPs); and IT Contingency Plans).

Airport Best Practices Implementation Guide Checklist

The following checklist consolidates and summarizes the Best Practices-based checklists presented in more detail in the following sections. It is recommended that this checklist be used for task and progress tracking, as well as top-level summaries of the implementation process for those supporting enterprise implementation and stakeholder coordination.

Implementation Guide Consolidated Checklist	
Step-1	**Education and Familiarization**
1	Identify Initial Airport Stakeholders
2	Conduct Initial Airport Stakeholder Outreach/Initial Meetings
3	Develop or Adapt Appropriate Material to Support Education and Familiarization
4	Conduct Key Internal Airport Stakeholder Education and Training
5	Conduct Focused Education and Training with Other Airport Internal Stakeholders
6	Conduct Outreach Education and Training for Key External Airport Stakeholders
Step-2	**Inventory and Assessment**
1	Identify Airport Systems that Use GPS for P,N, or T
2	Assess Identified Systems for Type of Use (Essential/Routine)
3	Identify Backup Systems or Procedures for Systems that Use GPS
4	Document and Share Inventory and Assessment Results Across Appropriate Stakeholders
Step-3	**Operational Response Development**
1	Develop Initial Response Plan
2	Conduct Focused Tabletop Exercises (TTX)/Other Structured Trials of Initial Response Plan
3	Identify Integration & Coordination Requirements
4	Identify Policy and Procedure Requirements
5	Revise and Document Initial Response Plan
Step-4	**Response Integration**
1	Develop and Execute the Integration and Coordination Plan
2	Document Internal and External Contacts and Response Coordination Communications Channel Information
Step-5	**Policy and Procedure Development**
1	Align GPS Disruption Policy and Procedure with other similar Airport Operator Policies and Procedures
2	Consider Technology-Driven Emerging Capabilities and National Airspace System (NAS) New Entrants When Developing Policy and Procedure
3	Support Policy with Sufficient Procedural Guidance
4	Use Subsequent Cycles of the 5-Step Implementation Process to Refine and Revise Policy and Procedure

STEP-1: EDUCATION AND FAMILIARIZATION

This step of the implementation process establishes a basis for those conducting implementation to understand the background, rationale for action, and how airport operators may manage GPS disruption events to minimize impacts to operations. There are six tasks associated with the Response Planning step of the GPS disruption best practices implementation, as summarized below.

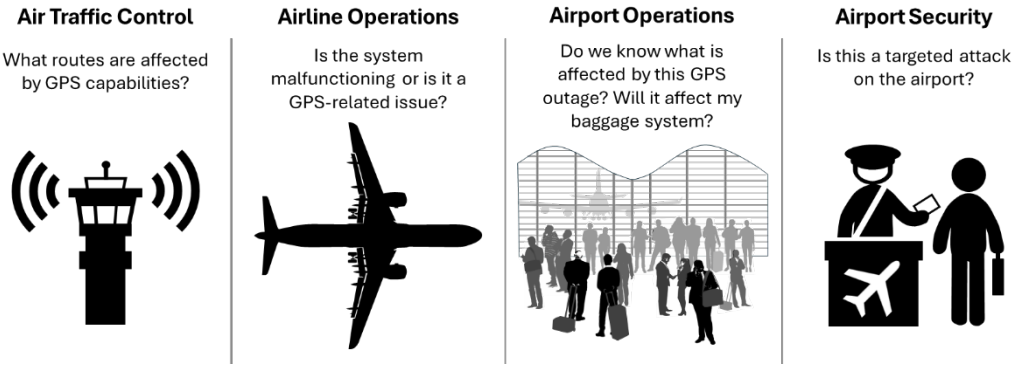
Task	Description
1	**Identify Initial Airport Stakeholders**
2	**Conduct Initial Airport Stakeholder Outreach/Initial Meetings**
3	**Develop or Adapt Appropriate Material to Support Education and Familiarization**
4	**Conduct Key Internal Stakeholder Education and Training**
5	**Conduct Focused Education and Familiarization with Other Internal Stakeholders**
6	**Conduct Outreach Education and Familiarization for Key External Stakeholders**

For effective airport implementation, it is critical to identify the wide range of airport stakeholders (on airport, airport-adjacent, off-airport, SLTT, and federal). The figure below shows how different groups may have different questions, information needs, and response plans when it comes to a GPS disruption.

Task 1: Conduct Initial Stakeholder Identification

Task Recommendations:

- Identify the list of airport stakeholders (use the initial stakeholder list on Page 6 as a starting point for this task). In general, ensure that the following nine groups are considered for key stakeholder invitations:



Suggested Initial Implementation Stakeholders	
Group	Stakeholder(s)
1	All Airport Operations Center positions/functional areas
2	All Emergency Operations Center positions/functional areas*
3	Current emergency response and business continuity stakeholders*
4	Major airport tenants (Airlines, Cargo Handlers, Fueling Companies, FBO's, catering etc.)
5	Active or planned construction or other contractors
6	Existing emergency responders (i.e., Police and Fire Mutual Aid Partners)
7	Relevant SLTT
8	Relevant local/regional Federal Government (DOT/DHS/DOD/DOJ and subordinate agencies such as FAA,TSA, FBI, US Coast Guard)
9	Additional Interested Parties – Internal and external stakeholders that may have interest, concern, or commitments to response planning (e.g., local colleges and universities with cyber/GPS, aviation, transportation, systems engineering interests that may provide interns/subject matter expertise to your implementation effort)
*Where they are not already included in a previous group	

Task 2: Conduct Initial Stakeholder Outreach/Initial Meetings

Task Recommendations:

- Ensure your initial contact plan is well-coordinated within your project team (relevant/coordinated messaging, single point of contact, clarity in goals and schedule, etc.).
- Provide airport stakeholders with sufficient information about your initial effort to allow them to make their attendance decision.
- Identify airport stakeholder roles and the value of participation in implementation of the Airport GPS best practices with linkage to their own GPS disruption response planning (e.g., nearby military and port facilities; management of key infrastructure supporting airport operations, such as fuel storage and pipeline companies; nearby federal agency offices with key capabilities, such as Federal Communications Commission-operated radio frequency monitoring equipment; and federal and SLTT law enforcement agencies with jurisdiction at or near the airport).

Task Considerations:

- Emphasize to airport stakeholders that their existing emergency or business continuity plans and procedures are easily adapted to support GPS resiliency.

Task 3: Develop or Adapt Appropriate Material to Support Education and Familiarization

Task Recommendations:

- Cover the following general areas:
    - Overview of recent GPS jamming and spoofing events
    - Relative cost and complexity of jamming versus spoofing events (e.g., jamming capability costs less than $100; spoofing capability costs less than $1,000; both capabilities can be easily purchased on the internet or built by high school students, electronics enthusiasts, or nefarious actors)

- Categorization and characteristics of disruption events
- GPS disruption scenarios discussion
- Examples of systems and services impacts discussion
- Essential versus routine systems characteristics
- Federal, SLTT processes for identifying disruption events and informing stakeholders
- Overview of near-term airport GPS disruption best practices implementation and initial implementation process

Task 4: Conduct Airport Stakeholder Education and Familiarization

Task Recommendations:

- Based on the airport stakeholder list, conduct initial education and familiarization with key internal stakeholders.
- Use feedback/discussions to further develop education and familiarization materials.

Task 5: Conduct Focused Education and Familiarization with Other Internal Stakeholders

Task Recommendations:

- Expand airport stakeholder knowledge base to better support follow-on efforts.
- Provide tailored presentations to stakeholders, as well as specific departments or functional areas

Task 6: Conduct Outreach Education and Familiarization for External Stakeholders

Task Recommendations:

- Expand external stakeholder knowledge base to better support follow-on efforts.
- Inform external stakeholder GPS disruption response.

Task Considerations:

- Start with a manageable group of external stakeholders with demonstrated operational impacts from airport GPS disruptions (e.g., nearby cruise line terminals).
- Leverage initial external stakeholder comment and feedback to build out the broader external stakeholder outreach effort and identify areas of further cooperation and harmonization of resource use.

STEP-2: INVENTORY AND ASSESSMENT

This step of the implementation process is likely the most resource-intensive process step in terms of both key staff time and calendar days. There are four tasks associated with the Inventory and Assessment step of airport GPS disruption best practices implementation, as summarized below.

Task	Description
1	**Identify Airport Systems that Use GPS for P, N, or T**
2	**Assess Identified Systems for Determination of Essential or Routine**
3	**Identify Backup Systems or Procedures for Systems that Use GPS**
4	**Document and Share Inventory and Assessment Results Across Appropriate Stakeholders**

These tasks offer recommendations and considerations, with additional material to support the Inventory and Assessment step included below.

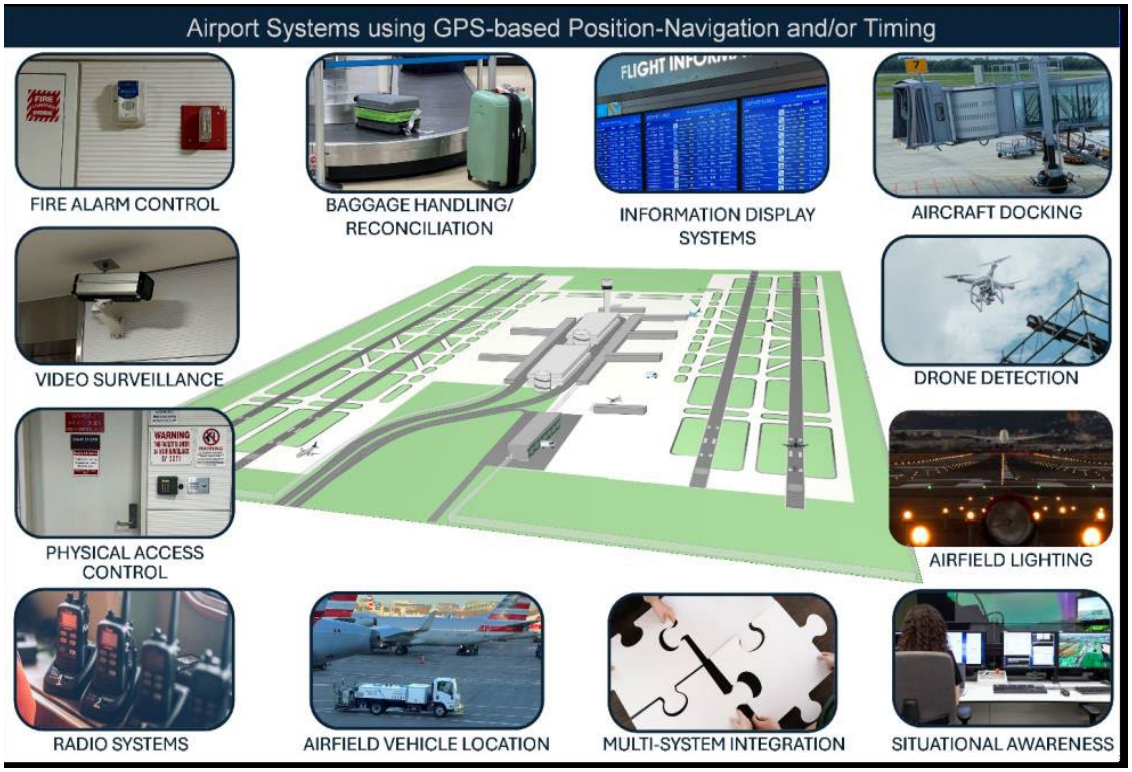
Task 1: Identify Airport Systems that Use GPS for P, N, or T

Task Recommendations:

- Assume that any modern computer-interfaced system has as, at minimum, a time dependency until proven otherwise. Examples of time dependencies are time-coded remote gate access limited to specific hours of the day; date/time stamp of financial transactions on wireless devices, such as baggage kiosks; timer/time-driven applications in baggage screening systems; and scheduling of automated airport tram system operation including both movement between stations and load/unload time at terminals.
- For each system, verify the system's specific use of GPS with knowledgeable sources, such as system design engineers or highly experienced
- system technicians.
- Where possible, verify for each system the system's specific GPS use with a second independent knowledgeable source.

Task Considerations:

- System event logging may use GPS for local time services, such as access door timing.
- Mobile systems may use P, N, and T, and are more likely to use a GPS Signal to determine time.
- Example systems that may be used by airport authorities are shown in the following figure.



Task 2: Assess Identified Systems for Type of Use

Task Recommendations:

- Systems should be categorized by the airport operator as either essential or routine.
    - Essential systems require a full-capability backup through additional systems, procedures, or other means. For the purpose of this document, essential airport systems may include but are not limited to, airfield lighting, passenger and baggage handling such as check-in, security, and baggage systems, and airport operations management systems that handle data, resource allocation, and communication. Additionally, mechanical systems like HVAC and plumbing, security systems, and information systems like public address (PA) and data portals are crucial for functioning airports.
    - Routine systems are all other systems not categorized as essential systems.
- Systems that provide services for multiple users should be assessed by the airport operator taking into consideration each user's particular use case(s) (a system rated as essential for one user may be rated routine for another user).

Task 3: Identify Backup Systems or Procedures for Systems Using GPS

Task Recommendations:

- For essential systems, identify a full-capability backup system.
- For routine systems, identify whether that system capability may be supported with other system or procedural backups, or would be shut down for the duration of the GPS disruption.

Task Considerations:

- Existing IROP and ERP documents may provide some insight into both systems with a) multiple users and b) existing backup capabilities for systems that use GPS.
- Systems identified as part of the airport operator's ongoing cybersecurity and resiliency efforts will likely have existing GPS-focused essential/routine use.
- Airport systems may have existing backup capability; system design and support engineers, as well as sales engineers, should have information on available options or system extension capability to provide alternative PNT when that is available from that vendor.

Task 4: Document and Share Inventory and Assessment Results Across Appropriate Internal Airport Stakeholders

Task Recommendations:

- Coordinate across airport cybersecurity and resiliency efforts to ensure agreement on system criticality to the airport's mission.

STEP-3: OPERATIONAL RESPONSE DEVELOPMENT

This step of the implementation process produces a response plan that supports Steps 4 and 5 of the implementation process. There are four tasks associated with the response planning step of irport GPS disruption best practices implementation, as summarized below.

Task	Description
1	**Develop Initial Response Plan**
2	**Conduct Focused TTX/Other Structured Trials of Initial Response Plan**
3	**Identify Integration & Coordination Requirements**
4	**Identify Policy and Procedure Requirements**
5	**Revise and Document Initial Response Plan**

Task 1: Develop Initial Response Plan

Task Recommendations:

- As a minimum, a response plan defines roles, responsibilities, and actions to be taken by operational/other phasing of the GPS disruption, phase triggers, and both internal and external coordination taskings.
- Leveraging existing planning reduces required initial and recurrent education and familiarization tasks.

Task Considerations:

- Subsequent steps in the response planning process will develop the prerequisite information to support both response plans coordination and full development of the Policy and Procedure documentation.
- Reuse of elements of existing applicable IROPs, ERPs and BCPs reduces the timeline for response planning and supports harmonization of GPS disruption planning with other existing IROP/ERP plans regarding airport systems use and available resources.

Task 2: Conduct Focused TTX/Other Structured Trials of Initial Response Plan

Task Recommendations:

- Initial response plans should be exercised in TTX or other airport stakeholder input-based, scenario-driven exercises.

Task Considerations:

- Initial TTX/other exercise should be small-scale and tightly focused on likely scenarios.
- Subsequent large group/external airport stakeholder exercises may add complexity in terms of additional scenarios, more challenging event categorization, and more challenging characteristics (e.g., GPS disruption occurring at night or during adverse weather).
- Final policy and procedures can only be developed after initial responses have been developed, tested, tweaked, and then retested for effectiveness.

Task 3: Identify Initial Integration & Coordination Requirements

Task Recommendations:

- Use the TTX and related airport stakeholder outreach to identify outstanding integration and coordination tasks.

Task 4: Identify Policy and Procedure Requirements

Task Recommendations:

- Use the TTX results to identify policy and procedure products.

Task 5: Revise Initial Plan with Results of TTX

Task Recommendations:

- Revise and document response plan, to include initial integration and coordination, as well as initial policy and procedure requirements to support plan execution.

Task Considerations:

- The revised response plan should be used as the basis for follow-on integration/coordination and policy and procedure development. It may also serve as a working draft for further refinement of the plan.

STEP-4: RESPONSE INTEGRATION

This step of the implementation process integrates airport stakeholder responses through close coordination with the Airport GPS Disruption Resiliency Core Implementation Team and external airport stakeholders. There are two tasks associated with the Response Integration step of airport GPS disruption best practices implementation, as summarized below.

Item	Description
1	**Develop and Execute the Integration and Coordination Plan**
2	**Document Internal and External Airport Stakeholder Response Coordination Communications Channel Information**

Task 1: Develop and Execute the Integration and Coordination Plan

Task Recommendations:

- Initiate contacts/communications with external airport stakeholders to determine mutually beneficial actions in the event of GPS disruption.
- Prepare and deliver brief background and planned actions briefing, with a clear statement of the coordination ask (e.g., earlier notification of disruption events; information sharing about related federal/SLTT activities).
- Gain and maintain regular contact through establishment of coordination plans.

Task Considerations:

- Integration and coordination efforts should generate routine, formal, habitual relationships between external stakeholders and the airport operator.
    - Routine coordination (Business as usual or steady state) versus exceptional efforts (e.g. special events).
    - Formal, durable coordination between enterprises, offices, staff and leadership positions versus informal, more frangible personal relationships, which may degrade due to personnel changes.
    - Habitual coordination results in the formation of response patterns focused on effective behaviors at staff and leadership levels

Task 2: Document Internal and External Airport Stakeholder Response Coordination Communications Channel Information

Task Recommendations:

- Establish and maintain communications channels to enable continued coordination before, during, and after GPS disruptions.

Task Considerations:

- Coordination channels require regular exercise; this may be built into the policies and procedures developed in the next step of the implementation process.

STEP-5: POLICY AND PROCEDURE DEVELOPMENT

This final step produces the airport operator policy and procedures to implement ongoing education and familiarization, inventory, procedure development, and coordination activities described in the process. There are four tasks associated with the Policy and Procedure Development step, as summarized below.

Item	Description
1	**Align GPS Disruption Policy and Procedure with Other Similar Airport Operator Policies and Procedures**
2	**Consider Technology-Driven Emerging Capabilities and NAS New Entrants When Developing Policy and Procedure**
3	**Support Policy with Sufficient Procedural Guidance**
4	**Use Subsequent Cycles of 5-Step Implementation Process to Refine and Revise Airport Operator Policy and Procedure**

Task 1: Align GPS Disruption Policy and Procedure with Other Similar Airport Operator Policies and Procedures

Task Recommendations:

- Use standing, irregular, and emergency response-related policy and procedure as templates for airport operator GPS disruption policy and procedure.

Task Considerations:

- Procedures with similar structure and focus simplify Education and Familiarization tasks associated with GPS disruption events.

Task 2: Consider Technology-Driven Emerging Capabilities and NAS New Entrants When Developing Airport Operator Policy and Procedure

Task Recommendations:

- Provision of airport operator policy and procedure for new technology or new users by structuring periodic reviews and exercises (TTX or preparedness drills).
- Include user community subject matter experts in airport operator policy and procedure development and reviews (e.g., technology development activities and new entrant user communities).

Task Considerations:

- Airport operator policy should support periodic reassessment of technologies likely to play a role in or challenge existing GPS response planning.

Task 3: Support Policy with Sufficient Procedural Guidance

Task Recommendations:

- Detailed airport operator procedures and supporting materials (e.g., playbooks, job aids) should support those tasked with elements of the operational response to GPS disruptions to understand and exercise that response.

Task 4: Use Subsequent Cycles of 5-Step Implementation Process to Refine and Revise Airport Operator Policy and Procedure

Task Recommendations:

- Use the 5-Step Implementation Process to provide a structured, recurring cycle during which all elements discussed here are reviewed and updated based on:
    - Actual GPS disruptions
    - Small- and large-scale exercises
    - Changes in technology or operational posture of the airport

BEST PRACTICES: SUMMARY/GENERAL COMMENTS

The following comments are broadly applicable across all implementation steps:

- The 5-Step Implementation Process should be used for initial implementation with a focus on the near term.
- Once an initial implementation has been completed, the 5-Step Implementation Process should be applied iteratively with a focus on the mid- and far-terms to assist in updating or adjusting airport procurement, infrastructure, and other longer-range plans.
- When considering response plans, procedure development, and policies that support GPS disruption resiliency, assessments of that planning should be conducted regarding safety, efficiency, security, and compliance with applicable federal and SLTT law, regulation, and policy. Assessing operational responses through these four lenses balances all those elements appropriately and helps meet acceptable levels for each element.
- Consideration should be given to the evolving operational environments of the aviation ecosystem and of the airport involved, including space operations, unmanned aircraft systems integration, and expansion of advanced air mobility operations.
- GPS disruptions are always evolving, as are the tools, techniques, and procedures for improving resiliency to these disruptions. Periodic review and updates of airport operator response plans should be accomplished to keep pace with these developments.

Additional Resources

Official U.S. Government information about the Global Positioning System:

Home page:

https://www.gps.gov/support/user/

Frequently asked questions (problems, concerns, and GPS 101):

https://www.gps.gov/support/faq/

Resilience through responsible use of PNT:

https://www.gps.gov/resilience/

Reporting GPS service disruptions, degradation, or position/time anomalies:

Civil non-aviation users (e.g., surface, maritime, etc.):

https://www.navcen.uscg.gov/contact/gps-problem-report

Civil aviation users:

https://www.faa.gov/air_traffic/nas/gps_reports

U.S. Department of Transportation Positioning, Navigation, and Timing Strategic Plan (Dec 2024)

https://www.transportation.gov/pnt/dot-positioning-navigation-timing-pnt-strategic-plan

ACRONYMS

Term	Definition
ACI	Aviation Cyber Initiative
Airport Opns Ctr	Airport Operations Center
BCP	Business Continuity Plan
DHS	Department of Homeland Security
DOD	Department of Defense
DOJ	Department of Justice
DOT	Department of Transportation
ERP	Emergency Response Plan
FAA	Federal Aviation Administration
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
IROP	Irregular Operations Plan
NAS	National Airspace System
NIST	National Institute of Standards and Technology
PNT	Positioning, Navigation, and Timing
PVT	Positioning, Velocity, and Timing
SLTT	State, Local, Tribal, and Territorial
TTX	Tabletop Exercises
U.S./USA	United States/United States of America