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NextGen for Airports, Volume 4: Leveraging NextGen Spatial Data to Benefit Airports: Guidebook

DETAILS

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Guidance for Airport Sponsors and the Aviation Community

This chapter builds upon the findings and conclusions of the previous chapter to offer guidance that will help airports submit and use spatial data that is required by the FAA specifically for NextGen.

Fundamental Resources

- Airports interested in or impacted by NextGen can become familiar with the FAA's NextGen website (<http://www.faa.gov/nextgen>). The site offers an abundance of material, ranging from summary documentation to technical descriptions of many of the critical components of NextGen. Given the speed at which NextGen programs evolve and new capabilities are implemented throughout the country, it is advisable to check this important site regularly.
- Airport sponsors, consultants working on AGIS-related programs, and other aviation organizations can become familiar with the FAA's AGIS website (<https://airports-gis.faa.gov/public/index.html>). This site is where new AGIS projects are set up and authorized users can access data and tools relevant to a specific airport. The site also offers a lot of information that is helpful to those who are new to AGIS.
- FAA ACs 150/5300-16A, 17C, and 18B are the three main required ACs that must be followed when implementing FAA-funded AGIS projects. In 2012, the FAA published an official policy document reinforcing the requirements of AGIS, called the AGIS Transition Policy for Non-Safety-Critical Projects (see https://www.faa.gov/airports/planning_capacity/airports_gis_electronic_alp/media/airportsGISTransitionPolicy.pdf).
- The FAA also offers formal and informal AGIS training online (see <http://www.faa.gov/airports/engineering/training/agis/>). The Independent Distance Learning Environment (IDLE) resource offers Level 1 for those who wish to become familiar with the requirements of AGIS and Level 3 for those who want to dive deeper into the requirements. Level 2 focuses on the needs of FAA managers.

Spatial Data Considerations

Airports perceive that they are bearing more cost and not receiving an adequate return benefit from the creation of new spatial data mandated by the FAA or in support of NextGen. To help alleviate this perception and realize tangible benefits, airports are encouraged to:

- Clearly define spatial data requirements, data maintenance procedures, and policy requirements. Reference these as binding terms and conditions within consultant contracts. Data that is created

through an AGIS project—or any GIS project—but that is not maintained over time is a wasted investment.

- Record and store metadata sufficient to determine the source, quality, and methods used to create spatial data. Users need to understand the source, the currency, and the quality of the data before it is used in any analysis or design, or to support any decision making.
- Although airports are encouraged to maintain their spatial data and its supporting documentation (i.e., metadata) in a manner that is sufficient to meet FAA requirements, using and storing this data in the FAA-required format does not always meet an airport’s needs. If an alternative format will be used by the airport, a process for converting it to an FAA-compatible format should be developed.

Spatial Data Related to Airspace

The design of the airspace around an airport is critical to safety, efficient arrival and departure procedures, and airport community/surrounding community impacts. NextGen programs such as PBN and MRO can have a tremendous positive impact on the traffic flow within the airspace. High quality spatial data is one of the requirements for these programs to be successful. To help in providing this data, airports are encouraged to:

- Provide new safety-critical data to the FAA in a timely manner. This data includes changes to surveyed runway ends, runway profiles, thresholds, newly identified obstacles, as well as newly mitigated obstacles that may still be in an FAA database.
- Monitor airport and community projects that could impact obstacles and other safety-critical data. Actively monitoring such projects helps anticipate issues and protect the airport’s instrument and visual operations, and ensures timely reporting of new obstacles to the FAA.
- Work with local communities to implement zoning restrictions and permitting requirements for new development around the airport.
- Establish an ongoing program to manage obstacle mitigation activities. Such a program can help satisfy an airport’s obligation to develop, submit, and annually update an Obstacle Action Plan (OAP) to the FAA.
- Airports that are interested in the improved capacity offered by NextGen-enabled MRO can coordinate with the FAA Flight Procedures Team in their service area. For more details on this process, see FAA Order 8260.43B, Flight Procedures Management Program, available online at <http://www.faa.gov/documentLibrary/media/Order/8260.43B.pdf>.

Spatial Data Related to Surface Operations

Whether developed as part of a NextGen initiative or by third-party vendors or consultants, surface operations applications will continue to evolve. These applications include applications for situational awareness; maps in the cockpit that depict airfield locations; moving maps with heads-up displays; applications utilized by TRACON, ATC, and gate agents that indicate the locations of aircraft and other vehicles on an active airfield; digital flight bags; digital NOTAMs with a map interface; and mobile Part 139 inspection applications, among others. All of these applications require airfield base maps with current and accurate spatial data. To better take advantage of these applications, airports, airlines, and third-party vendors will need to:

- Maintain current data as airfield configuration changes are made, as opposed to conducting periodic updates when specific data is needed. Effective maintenance requires an ongoing dialogue between airport project managers, who are responsible for physical changes, and GIS technicians, who are responsible for depicting those changes on a map.

- Avoid redundant and repetitive data collection efforts that do not consider or trust existing data. Airports and airport sponsors can encourage consultants and contractors that are concerned about the liability of using data collected by others to review and attempt to validate existing data to determine if it can meet their needs.

Spatial Data of Benefit to Airports Available from the FAA

Airports also stand to benefit from spatial data that is produced by the FAA. Although the FAA is beginning to take steps to provide the spatial data it collects to airports, it is suggested that airports actively seek data that may be of benefit to them. Airports and airport sponsors can take the following steps:

- Request a direct connection to the FAA's ASDI data or subscribe to the services of commercial vendors who offer such data. Airports can also request a direct connection to the FAA's ASDE-X data where available. For more details, see the FAA memo "Requests for Release of FAA Real-time NAS Data to Airports for Surface Situational Awareness and Noise Monitoring Programs" (available online at https://www.faa.gov/airports/planning_capacity/media/Real-Time-NAS-Data-Release-to-Airports.pdf).
- Obtain current and upcoming instrument flight procedure information via the FAA's IFP Information Gateway (available online at https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/).
- Contact representatives in the ATO Service Center to request and obtain copies of as-built drawings of facilities and utilities installed by the FAA and its contractors. Service center points of contact are available online at https://www.faa.gov/foia/foia_coordinators/ato_service_centers/?section=service_center_contact.
- Incorporate data received from the FAA into the airport's internal geospatial data resources, which are kept current and published to airport staff and consultants who require this information.

Suggested Guidance Related to Monetization and Liability of Data

- Following existing government or professional GIS standards is one way to minimize liability of spatial data provided to a third party.
- Data distributed to other agencies outside the airport or to consultants or contractors should always be provided with a disclaimer as to its reliability, currency, and accuracy. An example of such a disclaimer is:

All data, information, and maps are provided "as is," without warranty or any representation of accuracy, timeliness, or completeness. The burden for determining accuracy, completeness, timeliness, merchantability, and fitness for or appropriateness for use rests solely on the requester.

Communication and Input Are Essential

Airports constitute a very complex environment that must deal with a multitude of laws, regulations, and protocols in the name of safety and security. These requirements are ever changing and both the FAA and the airport have responsibility to ensure that they are followed and implemented. To ensure

that this happens, it is important that all entities at the local, district, regional, and national level stay in constant communication. Such communication can happen through one-on-one meetings, international conferences and workshops, or other mechanisms. Related directly to the spatial data and NextGen requirements, it is important that:

- A continuous flow of information keeps the aviation industry apprised of any significant changes to NextGen programs, AC requirements, standards, new technologies, and so forth. This flow of information happens through many modes, ranging from one-on-one meetings to international conferences and workshops. The FAA is doing its part by educating ADO and FAA regional staff about any new changes that may impact airports.
- Airports and their consultants also provide input to the ongoing evolution of the FAA's programs by participating in public reviews of draft ACs, communicating back up the chain through the ADO and the region.

Volume 2 in the ACRP Report 150 series focuses on engaging airport stakeholders regarding NextGen. This guidebook provides additional information on how to establish and maintain the communication required between airports, the FAA, airlines, community representatives, and others.

Suggestions for Further Study

Spatial data and NextGen will both continue to grow, change, and evolve over time, as will the discovery and documentation on this subject matter. This section summarizes suggestions that the ACRP Project 09-12 research team believes warrant further research, but which fell outside the scope of this project. These suggestions exemplify some, but not all, of the possibilities of NextGen and its growing use of spatial data.

- Integration of UAS into the national airspace is a high priority for the FAA and related agencies. Spatial data and GIS applications supporting planning and flight operations of UAS are only now beginning to be studied. An in-depth study of the spatial data needs for UAS planning and operations, and ways in which GIS can support UAS, is suggested.
- RTCA DO-272 and FAA AC 150/5300-18 are two data standards that cover airport spatial data development. An independent review of these two standards and an assessment of the potential for merging them into one industry standard is suggested.
- A clear need exists to develop methods and content for further educating the aviation community on the benefits and requirements of NextGen and AGIS. A suggested abstract and presentation file are available for download from the webpage for this guidebook. These documents, which have been provided as examples of content to be presented on this subject matter, can be used to help meet this need.