



Project: Improving Facility Data Management

Locations: Baltimore-Washington Int'l Thurgood Marshall Airport; Martin State Airport

Owner/Operator: Maryland Dept. of Transportation-Maryland Aviation Admin.

Technology Platform: ESRI ArcGIS & custom programming by Johnson, Mirmiran, & Thompson

Major AIRPortal Contributing Firms: AECOM/URS; Airport Design Consultants; All About Pavements; Arora Engineers; Axis Geospatial; E2CR; Inframap; J.A. Rice; Johnson, Mirmiran & Thompson; Maryland Environmental Service; Michael Baker Int'l; Morton Thomas; RK&K; Thomas L. Brown; WSP USA

Timeline: New system installed 2012/2013; data transfer/cultivation is ongoing

Documents Cataloged: 130,000+ (as of mid-July)

Geographic Info System Features Captured: 550,000+

Registered Users: 575 (airport personnel & outside contractors)

Future Deployments: Building Information Modeling & Enterprise Asset Management System

Primary Benefits: Increased efficiency for storing, retrieving, sharing facility documents & geographic information system data

Associated Benefit: Better knowledge management; better design & contractor bids, due to more accurate bid documents from airport

Baltimore-Washington Int'l Digitizes Facility Data on Web-based Portal

BY JENNIFER BRADLEY

The Maryland Aviation Administration is transforming the way it manages the volume of facility documents and geographic information system data generated and used at its two airports.

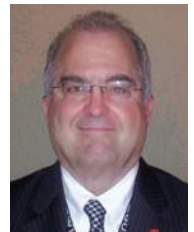
The vast majority of information that Baltimore-Washington Int'l Thurgood Marshall Airport (BWI) maintains for design/construction projects and outside utility systems has been converted to a new Web-based technology platform. Martin State Airport (MTN) will soon follow suit.

Administration personnel say the project demonstrates good financial stewardship—in the same vein as keeping costs per enplaned passenger below \$10.

The platform selected for the digital conversion is Airport Information Retrieval

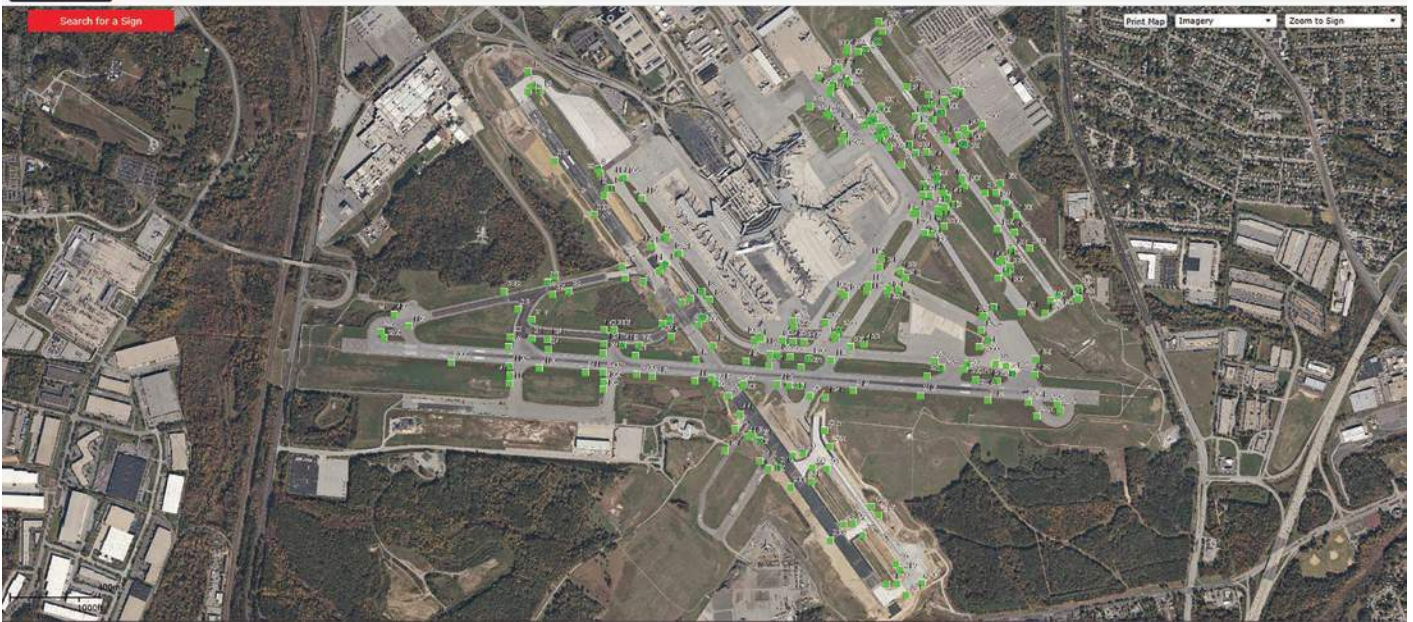
Portal (AIRPortal), a geographic information system and document management gateway designed to provide a better way to store, retrieve and share mass amounts of information.

Aviation Administration Chief Engineer Paul L. Shank, P.E., appreciates the system's core capabilities, but also acknowledges its associated benefits: "I would argue that we're getting better bids because the product we're putting out for bidding is now better referenced, and the contractor can do their takeoffs. Knowledge is power and power is efficiency. To me, this was an easy sell."



PAUL L. SHANK

To date, the administration's new system houses about 130,000 documents and



About 575 registered users access airport data through the new system.

550,000 geographic information system features. Approximately 575 registered users (half aviation administration personnel, half outside consultants) access airport data through more than 40 purpose-specific applications.

Before the Changeover

Shank has seen plenty of disorganized airport records throughout his 30+ years consulting in the private sector and 12 years with the Maryland Aviation Administration. Rummaging through boxes for important files was like breaking into King Tut's tomb, he laughs. "Contractors were taking our paper plans and then building the project electronically. That takes a lot of time, and efficiency is low. So that was our purpose and need for AIRPortal."

Cost was another important factor. It's very expensive to document existing conditions when it's difficult to find out anything about them, he explains. Cataloging BWI's 3,600-acre property and MTN's 800-acre property would have cost an estimated \$40 million—the airport's entire annual capital budget from the state. Instead, the airport opted to tackle the project incrementally with a new information management system. "It's good stewardship and sustainable,

too," explains Shank. "We decided that if we take on a project, we document what exists in that area and capture it electronically. But in the meantime, we scanned every document we ever had."

Ali Logmanni, the administration's manager of Geographic Information Systems and Engineering Technology, was similarly aware of the need to digitize airport facility data. For the last four years, Logmanni has lead Johnson, Mirmiran & Thompson in gathering mountains of documents at BWI and MTN.



ALI LOGMANNI

Julie Spangler, the firm's project manager, reports that the implementation of AIRPortal has been very thoughtful, with careful attention to funding and gathering information from project contractors. With various project contractors borrowing records for years at a time, access control was an important issue to prevent data loss,



JULIE SPANGLER

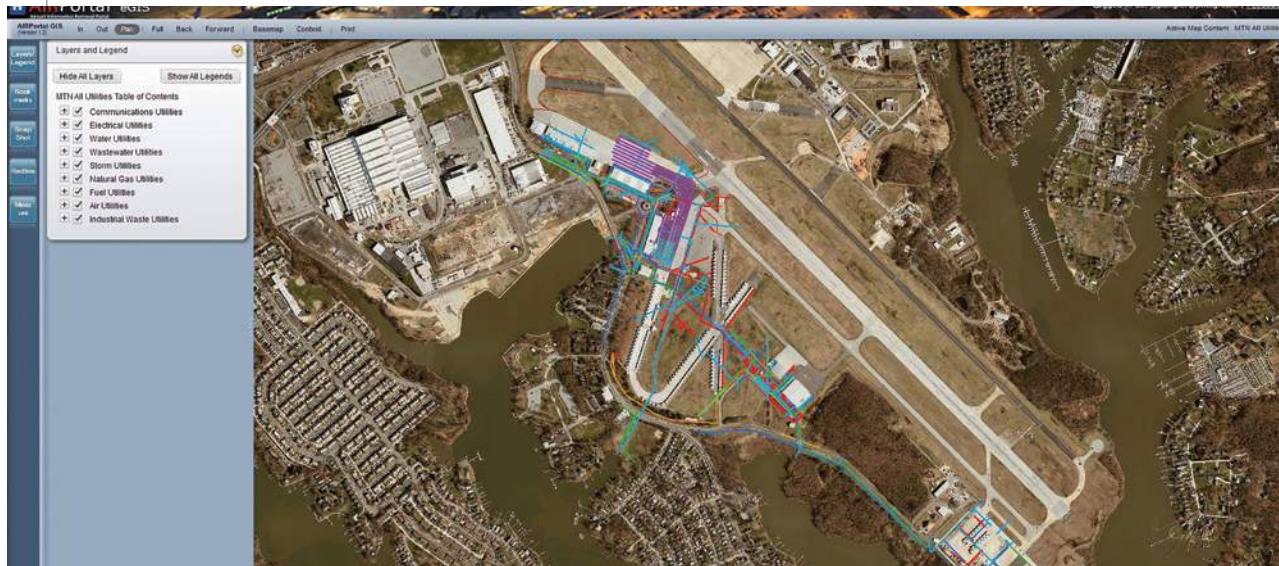


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she notes. The AIRPortal system helps ensure files are returned and project information is chronicled electronically, so institutional knowledge is not lost when key personnel leave or retire.

Previously, primary consultants began projects based on information from their own libraries versus the administration's data. "You can imagine what would occur without the comprehensive scope of all the work that had been going on," says Spangler. "Information was in inconsistent formats and inconsistently filed."

Eventually, it became a priority to ensure that Maryland Aviation Administration was receiving the appropriate deliverables in a manner that facilitated subsequent searches and retrievals. This is a challenge that permeates the industry, observes Spangler. It's inevitable for people to leave and papers to get lost; but BWI now has a system that protects its records—and saves time and money, she notes.

"It's an asset management tool," summarizes Larry Bauman, vice president of Aviation at Johnson, Mirmiran & Thompson. "As an airport operator, you have billions of dollars of physical assets and you need to manage them. You need to keep them functional; keep the public safe and secure. That's what this tool does."



LARRY BAUMAN

Better Access

For Shank, it all comes down to organization. "Not only has this process been the beauty of taking paper and making it digital, but then organizing the digital so you can find it," he explains.

AIRPortal is completely online, using an internet (rather than intranet) portal that requires login credentials for access. Despite some initial resistance to change, BWI has successfully moved to the new digital format, Shank reports. Moreover, he expects the new system to grow and sustain itself for years to come.

Shank links critical passenger satisfaction criteria such as restroom cleanliness and wait times at security checkpoints to the airport's digital data management system. "Those are the

takeaways," he explains, noting that such issues depend on geographic information system data. "The system we built had to be user-friendly, modular and scalable."

Although the AIRPortal system was installed at BWI between 2012 and 2013, officials consider it an ongoing project. "We're adding to it every day," says Logmanni. "We always have people taking documents and putting the geographic information system data into the applications."

When projects are completed, consultants and contractors are expected to provide data about affected areas for subsequent entry into the AIRPortal system. After years of individual entries, Logmanni estimates that BWI's geographic information system database is now 90% complete.

Setting Standards

Before information is entered, each piece of data goes through a quality assurance/quality control process guided by nearly 400 pages of standards for geographic information systems, computer aided design and building information modeling. "We have documented processes, standards and guidelines that consultants have to follow, but people here within our shop check every document we receive through uploads," says Logmanni. "Then, if it passes, we roll it into AIRPortal and make it visible."

It was initially labor intensive to standardize BWI's existing documents, but now the airport instructs consultants regarding how to submit deliverables so they can be loaded into the system.

Spangler considers the format specifications a reasonable request. "This is mission-critical, how we do business," she explains. "We're pretty fair in what we require. It's not a long list, but it's a really important list; so we don't bend on it too frequently." The standards are also in the portal, in a searchable form, and no longer need to be printed.

"This becomes a very living document," notes Spangler.



Maryland Aviation Administration personnel are already reaping the benefits of ongoing efforts to digitize facility documents and geographic information system data at BWI and MTN.



DIANNE DAVIS

Dianne Davis, design technology leader at Johnson, Mirmiran & Thompson, agrees about the importance of maintaining standards, noting that common data environments

support the overarching lifecycle needs of the airport.

Shank echoes this sentiment, adding the old adage of “garbage in, garbage out” and emphasizing the need to be able to find data and documents easily.

In retrospect, Spangler feels that the work spent establishing AIRPortal was not in vain. “It’s worth every penny and comes back tenfold every time you find something you’re looking for,” she says. “You just can’t put a price on that, really and truly.”

Today’s Needs

It was critical for the aviation administration’s system to allow select users access to specific areas of information, says Logmanni. Rather than taking an all-inclusive approach, AIRPortal provides individual applications for individual systems such as water, gas, hydrant, fuel, stormwater, electrical communications, etc. “Instead of searching through all utilities, a person can get all the electrical information through that specific application,” he explains. “We didn’t build the GIS [geographic information system] in a way many others do.”

AIRPortal also needed to be interoperable, so it can “talk to” and work with other systems. In that sense, it is much like the travel reservation website Expedia, notes Davis. “You’re going in and you have a goal—you need information to make a decision,” she explains. “Expedia accesses databases all over, and at the end, you have your information. AIRPortal is an IWMS, an integrated workplace management system, that accesses a lot of information so people can get their work done.”

Spangler considers the built-in PDF viewer a particularly useful tool, and notes that current design standards are being written to facilitate the addition of 3-D models. Given Davis’ experience writing standards, the team started work on AIRPortal with that end in mind.

“We knew that eventually we’d want to pull building information modeling data into these various packages,” says Davis. “What’s interesting about the aviation administration is that early on, they developed a way to take all these pieces of information and begin to integrate them around the existing workflows. A lot of airports are doing building information modeling or geographic information systems, but the aviation administration started with the notion of integration.”

Tomorrow’s Potential

Personnel from Johnson, Mirmiran & Thompson note that AIRPortal was the

result of collaboration among airport departments, consultants and frugal minds. In that spirit, the company plans to assist the aviation authority in evolving the system into the next generation. Items on BWI team’s to-do list include:

- deploying mobile applications;
- updating all geographic information system data and refining processes for that to be delivered as part of projects;
- expanding beyond the engineering core to integrate information from other offices and departments;
- training key personnel to be “data stewards”;
- integrating building information modeling system and Maximo;
- developing capabilities to map interior spaces;
- exploring support options for first responders; and
- developing smart analysis for estimating repair and maintenance costs.

Future improvements notwithstanding, the team agrees that BWI’s current system already provides a vital element: trust. Logmanni characterizes AIRPortal as an outstanding platform that is attracting interest from other airports. That said, he notes that security and keeping end users top-of-mind will continue to be important aspects of the program.

“We want to be supporting everybody from the maintenance person changing a lightbulb to the executives making strategic decisions,” concludes Spangler. ✈️