



# U.S. Army Corps of Engineers

Using GIS for Space Allocation Saves Time and Makes Personnel Moves More Efficient

## CASE STUDY



### CHALLENGE

The U.S. Army Corps of Engineers needed an efficient and accurate way to track and update facility information for space allocation.

### GOALS

- Allocate space efficiently.
- Validate assets.
- Verify location of organizations and personnel in buildings.

### RESULTS

- More than 10,000 man-hours were saved by calculating building space with AMMO-FM.
- Standard DoD forms are generated directly from data, increasing efficiency.
- Necessary paperwork now takes minutes instead of half an hour to complete.
- Data accuracy and integrity increased by using geodatabase.

*"ArcGIS will save each installation hundreds of hours in data processing, surveying, and reporting."*

*Jeffrey Poplin, Director  
GIS Consulting and Integration  
Dewberry & Davis*

The U.S. Army Corps of Engineers, Fort Worth District, was established in 1950 after disastrous floods in the area. Today, the district is responsible for water resource development in two-thirds of Texas along with military design and construction at U.S. Army and U.S. Air Force installations in Texas and parts of Louisiana and New Mexico. This design and construction includes facilities such as family housing, training and aircraft facilities, schools, child care centers, clinics, and hospitals. The district covers 410,000 square miles and employs more than 900 team members.

### The Challenge

Increased demands on federal operations and maintenance (O&M) budgets are keeping real property managers under pressure to provide additional space to their clients with minimal funding. This fundamental conflict not only affects the space allocated to users but also directly affects the amount of O&M dollars an installation receives for the upkeep of its facilities. To address the allocation of space, validation of assets, and verification of organizations and related personnel, the Fort Worth District, including White Sands Missile Range (WSMR) and Ft. Bliss, needed an automated system to track and update facility floor plans and related room utilization data.



*Facility utilization data including the number of personnel and workstations, room conditions, and room types.*

### The Solution

ESRI business partner Dewberry & Davis, based in Fairfax, Virginia, was contracted to provide the data collection and program creation services for the Fort Worth District and each of the installations. Dewberry implemented ESRI's ArcGIS® Server and ArcGIS™ Online for the project. "The software had everything we needed, from the geodatabase to manage and maintain data in one central location to its Flex API for fast display over the Internet," says Jeffrey Poplin, director, GIS Consulting and Integration, Dewberry & Davis.

Dewberry deployed 26 staff members for 12 weeks to redline floor plans and collect room utilization information for WSMR and Ft. Bliss military installations. The Dewberry analysts collected facility utilization information including the number of personnel and workstations, room conditions and organization, and room types. All this information is now stored in a geodatabase, the common data storage and management framework for ArcGIS.

The online application Dewberry created to access this information in a manner that is useful and intuitive to staff members at Fort Worth District is the Facilities Management (FM) Module, a component of Dewberry's Asset Management, Maintenance, and Operations Toolkit (AMMO-FM). AMMO-FM has an easy-to-use interface that is based on ArcGIS API for Flex™. ArcGIS API for Flex is integrated with Adobe® Flex Builder 3 and provided Dewberry with the

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### ESRI SOFTWARE USED

ArcGIS Server

ArcGIS Online

ArcGIS API for Flex

### OTHER SOFTWARE USED

Dewberry® AMMO-FM

Microsoft® SQL Server®

Oracle® DBMS

### DATA USED

Imagery data included in  
ArcGIS Server and ArcGIS  
Online

Tele Atlas® street data included  
in ArcGIS Server and ArcGIS  
Online

Fort Worth building and  
street information created by  
Dewberry & Davis

### FOR MORE INFORMATION



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G36959 11/09HC

ability to combine geographic information system (GIS)-based Web services from ArcGIS Server with other Web content and data, making it accessible to users through simple clicks on a map.

To use the system, clients log in and view the district's database of buildings and rooms, called the Installation Geospatial Information and Services (IGI&S) database. Clients can view each particular installation at the district using aerial and street basemaps from ArcGIS Online for a better understanding of each building's location.

The building floor plans can be viewed as basic outlines or shaded by any descriptive information such as category code, unit identification code (UIC), or room condition.

As well as viewing this data, managers can also dynamically update the utilization data in real time individually, in a set selected through the map, or queried via the database. Editing data in this manner significantly cuts down on the time and resources necessary to update information. "We needed a quick solution for our users when a group moved from one building to another," explains Poplin. "Editing the field attribute data one at a time didn't make sense. Now they can select the number of rooms that are affected and update them all at once. This simple change will save each installation hundreds of hours in data processing, surveying, and reporting."

AMMO-FM can calculate whether rooms can accommodate specified numbers of personnel as well as the actual usable square footage of the rooms, excluding corridors, closets, and other unusable areas.

### The Results

AMMO-FM has made the Fort Worth District's data more accessible, easier to use, and more accurate. Data is stored in one location, the geodatabase, leaving less room for error. ArcGIS Server employs geodatabase versioning, making multiple-user access and simultaneous data editing possible while preserving data integrity. Spatial calculations, such as finding usable square footage as opposed to total square footage, are based on the actual dimensions of the rooms, which are also stored directly in the geodatabase. Having this information readily available for querying and analysis has improved the management of Fort Worth District's space and made personnel moves much easier than before.

Using ArcGIS API for Flex, AMMO-FM has an application reporting function that generates standard U.S. Department of Defense (DoD) forms such as the DD1354 (real property transfer form) and DD805 (storage space management report). Being able to input data directly into the geodatabase and derive calculations from the data stored there has saved more than 10,000 man-hours for the buildings surveyed to date, decreased errors, and made moves more efficient. Instead of each form taking up to 30 minutes per building to fill out, staff members are able to do the same work in only a few minutes for all buildings.

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