

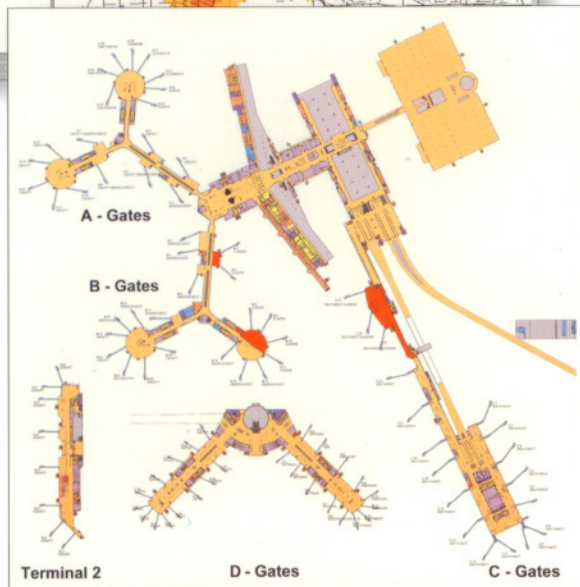
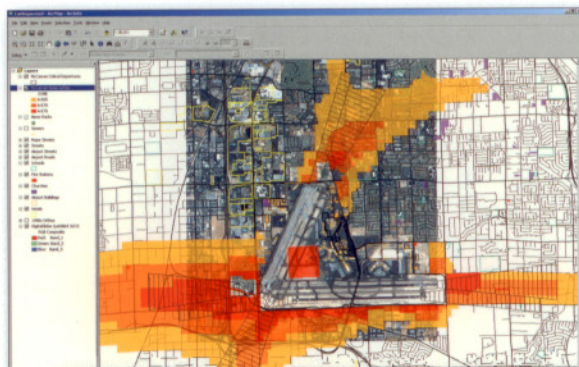
# GIS Solutions for Airports and Aviation



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Airports represent some of the most highly used facilities on our planet. Given the sensitive nature of flights, especially takeoffs and landings, these facilities must remain at a high level of performance at all times of the year, sometimes under trying circumstances. Airport managers cannot afford lengthy downtimes or untimely lapses in performance. They must plan and maintain their facilities for peak performance and identify potential points of failure well before a critical failure can occur.

For many years, airport managers have turned to geographic information system (GIS) technology to support their efforts in planning, operations, maintenance, and security by adding spatial information and modeling. GIS provides unique information and analytical capabilities not available in other information systems.



*Airport analysts integrate map and image data to build information-rich displays about their airport facility and surrounding community. They can also prepare and store standard map layouts for printing and distribution.*



*Mobile workers bring GIS data with them as they inspect and maintain airport facilities. Map data courtesy of Clark County Department of Aviation, and satellite imagery courtesy of DigitalGlobe.*

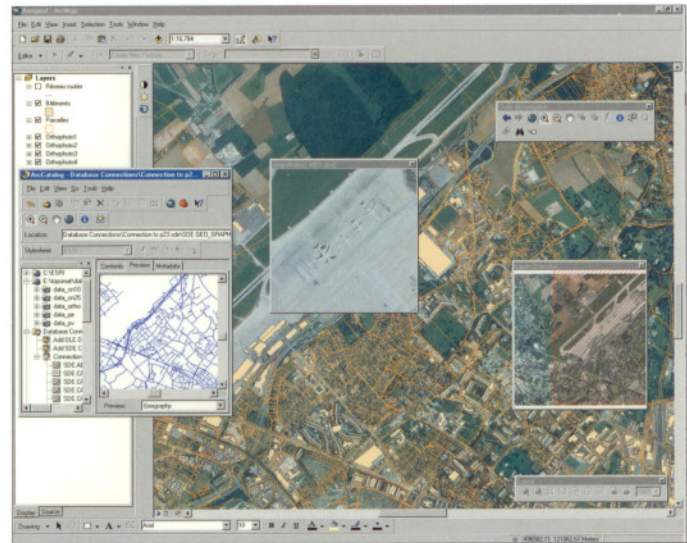
## Areas where GIS is applied for airport management

- Facilities Management
- Capital Planning
- Property/Lease Management
- Land Acquisition
- Security and Risk Assessment
- Flight Path Management
- Airport Layout Planning
- Capacity Planning
- Pavement Management
- Parking Management
- Courtesy Vehicle Management
- Utility Maintenance
- Lighting Management
- Noise Monitoring and Modeling
- Environmental Assessment

Commercial airlines and air traffic control regulators use GIS for airspace planning and routing applications as well as for facilities management applications. Recent enhancements to three-dimensional GIS allow more advanced airspace modeling applications to be combined with geographic information from local communities such as parcels, land use, building heights, new construction, and modified terrain around the airport.

GIS software allows for a greater level of interoperability with other key software tools such as computer-aided drafting (CAD) systems and relational database management systems. Users can now take greater advantage of information captured in digital aerial photographs, which can be registered geographically, providing excellent background layers for mapping applications.

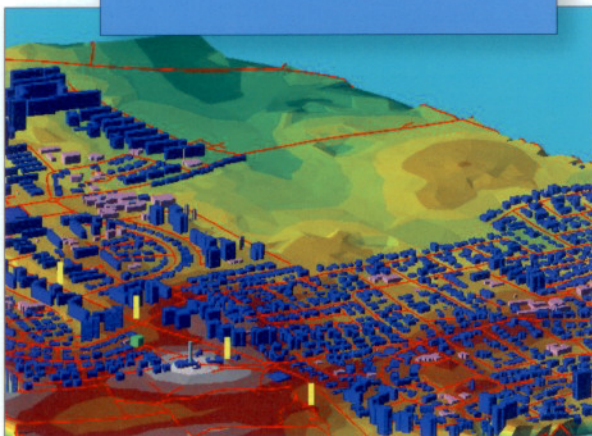
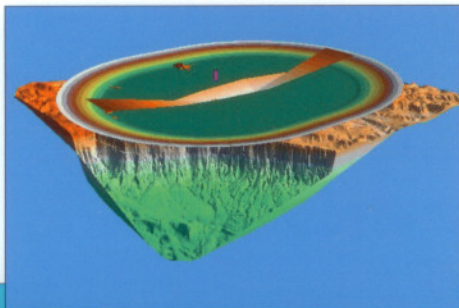
Significant growth in traffic has left many airport properties severely constrained for space. Airport managers must carefully manage competing needs for revenue-generating facilities and effectively readjust facilities for the ever-changing needs of their tenants. GIS can be integrated with property management applications, improving accuracy and timeliness in responding to property information requests.



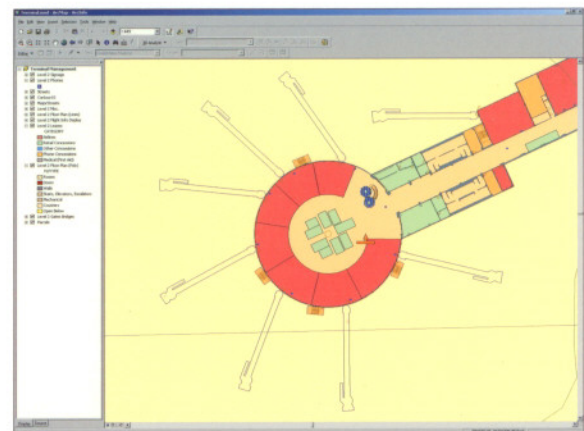
*This highly detailed view shows how both mapping and raster image data can be combined in a single information system. Complex analysis can be accomplished through the precise integration of both. ArcGIS™ provides advanced geoprocessing and metadata tools to assist the user.*

The security needs of airports have been significantly revised in recent years. GIS provides a powerful analytic capability for understanding vulnerability in existing facilities as well as in pinpointing trends in incidents and past security breaches. Tying incident log information directly to the exact location in the airport's facility maps can help in planning for improvements in security equipment and procedures.

Many engineering firms have adopted GIS as a tool for expansion studies and design reviews. Using mapping data from the local community, such as current roadway or railway access to the airport grounds, neighborhood constraints, and environmental sensitivities, can significantly reduce the time spent in understanding the complexities involved, particularly for expansions of land-locked facilities in large, densely populated urban areas.



*The Israel Civil Aviation Authority uses ArcView® 3D Analyst™ to study airspace around airports in order to issue construction permits. ArcView identifies potential obstructions in proposed flight paths.*



*GIS can support lease and property management activities. This example shows concessioned and nonconcessioned space in a color-coded fashion.*



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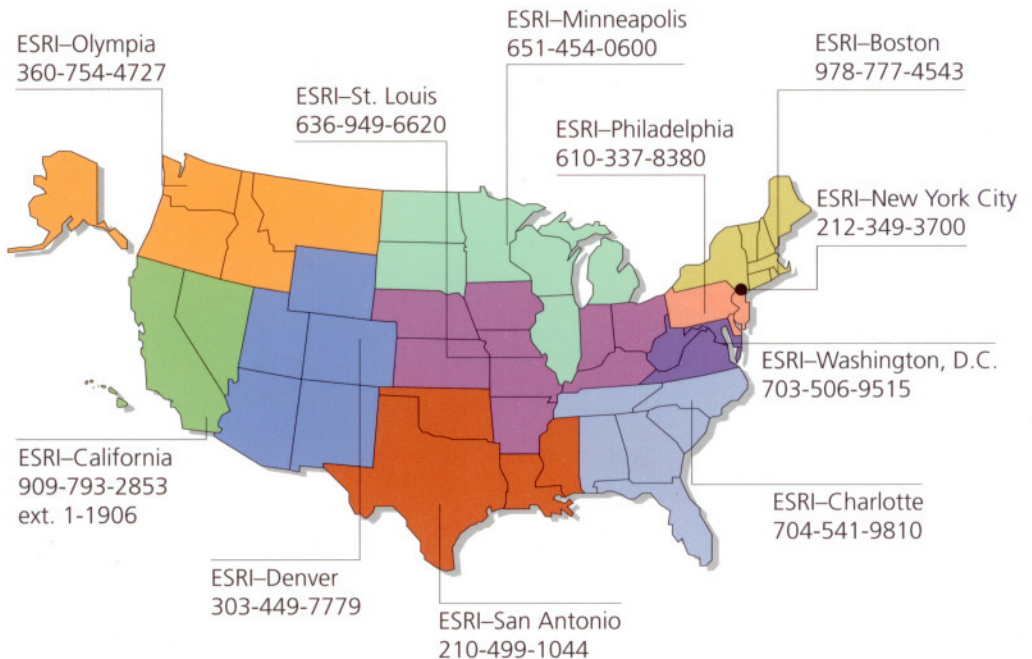
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