

The Geographic Approach to Aeronautical Information Management

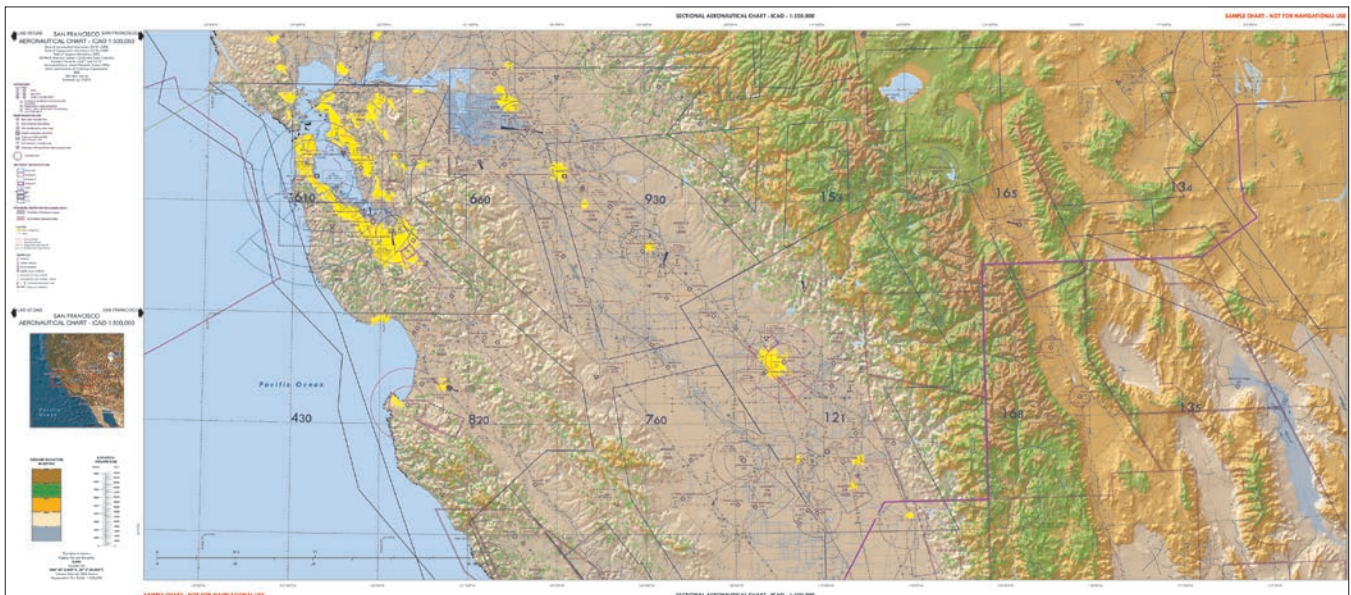


GIS for the Aeronautical Industry

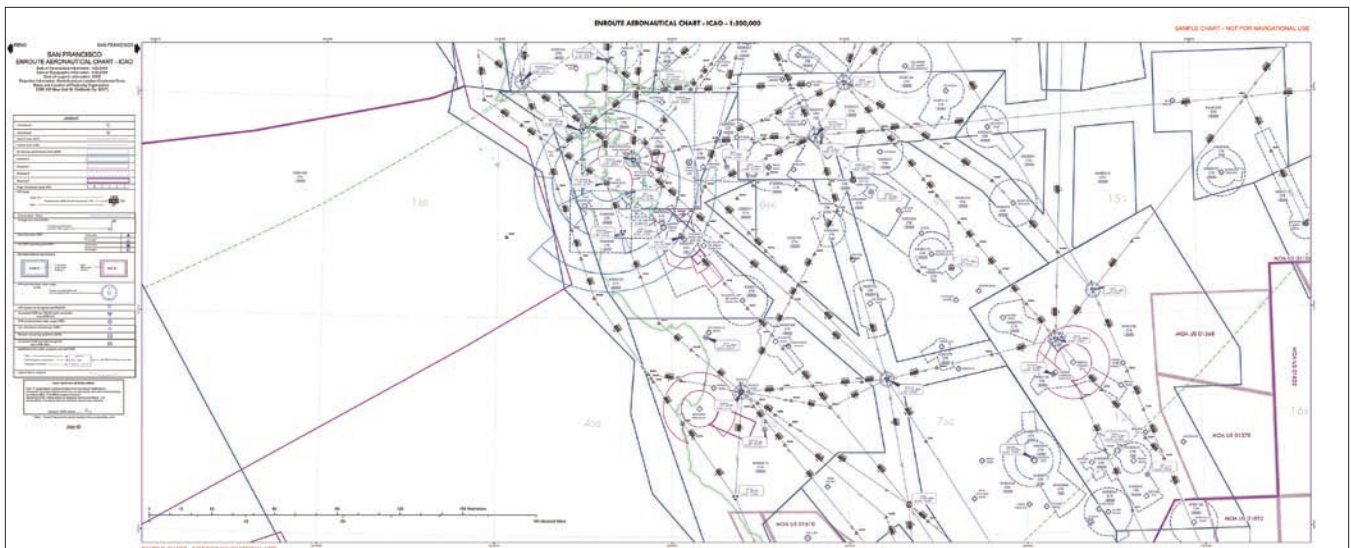
National aeronautical offices and institutions, their contractors, and commercial chart producers can use geographic information system (GIS) to create and maintain quality data for analysis and standards-based chart production. ESRI's GIS solutions are ideal for aeronautical production, since data is stored spatially, retaining the geometric integrity that is so important to aeronautical charting.

GIS allows data to be created, edited, and stored in a centralized manner for further uses such as:

- Charts
- Aeronautical Information Publications (AIPs)
- Aeronautical data creation, tasking, and Web services
- Multi-dimensional visualization and analysis



Sectional charts for visual flight rules can be created accurately and efficiently with GIS.

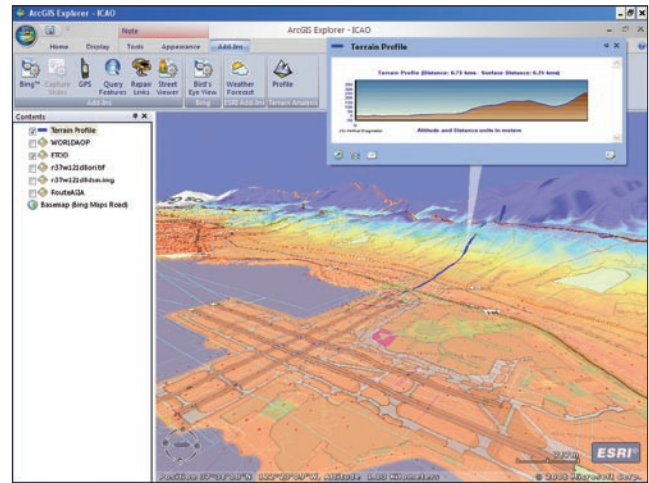


Enroute charts provide flight crews with information that facilitates navigation along routes in compliance with air traffic services procedures.

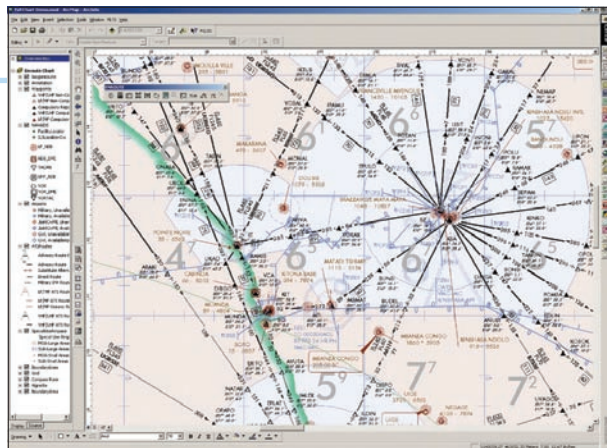
Safe Air Navigation

Reduce the probability of editing errors or using out-of-date or inaccurate data by ensuring that data is stored in only one location instead of several. Create navigational products using the correct data every time, maintaining safe navigation.

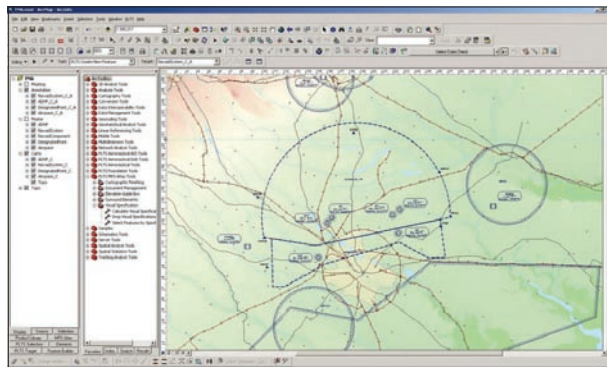
Manage large collections of obstacle and terrain data necessary for Electronic Terrain and Obstacle Database (eTOD) compliance. GIS allows the creation, viewing, and analysis of this data and gives a replicable workflow that makes aeronautical information system (AIS) updates easier.



The eANP allows authorized users to submit, store, update, manipulate, analyze, and chart global air navigation planning data from a centralized ICAO server using ArcGIS®.



Aviation administrations like RCAA rely on ESRI GIS to help them maintain digital aeronautical datasets for chart production.



The Romanian Civil Aeronautical Authority uses GIS for data management, creating and editing cartographic products, and viewing spatial data.

Case Study

Romanian Civil Aeronautical Authority Enhances Safety, Security, and Efficiency with GIS

As with many other aviation authorities, the Romanian Civil Aeronautical Authority (RCAA) is faced with doing more with less. Historically, the organization used computer-aided design and drafting software for creating maps and charts. Looking for a solution that would allow it to efficiently create the products required to do its job, as well as share data with the International Civil Aviation Organization (ICAO) in the best way possible, RCAA chose ArcGIS® because the software provides a standards-based platform for the spatial analysis, data management, and mapping the organization was required to perform. ArcGIS and specialized extensions are used for data management and mapping and viewing spatial data. To find out more and read more case studies, visit www.esri.com/aeronautical.

“[ESRI GIS] is very efficient and allows me to produce data and chart products faster with better quality.”

Iuliana Radu
Aeronautical Inspector
RCAA

Your Products Delivered on Time

All charts can be stored in one common database. Data can be updated once and reflected in all the products that are needed: charts, maps, AIPs, electronic AIPs, and supplements. This reduces the chance of errors, streamlines workflows, and condenses the size of data that needs to be physically stored, reducing costs.



Efficiently produce and disseminate charts such as this radar minimum altitude chart.

Case Study

The National Geospatial-Intelligence Agency

The National Geospatial-Intelligence Agency (NGA) is a U.S. Department of Defense (DoD) combat support agency and member of the national intelligence community. Its primary mission is to provide geospatial intelligence (GEOINT) to U.S. armed forces and government agencies in support of national security.

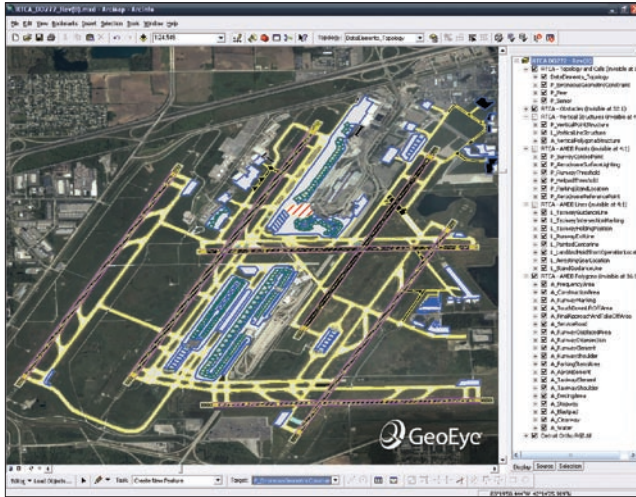
Geospatial intelligence is a critical tool for U.S. armed forces and the intelligence community, aiding the front line by providing accurate depictions of the geographic features relevant to the mission at hand. For NGA's GEOINT operations to function successfully, the data must be timely, relevant, and correct. Beginning in 2001, NGA began transforming its processes and systems to better support its mission. NGA's Aeronautical Division created an automated GIS-based charting process that significantly reduced the time required to update, produce, and disseminate Flight Information Publications (FLIPs). Three years later, NGA created Enterprise Product on Demand



The ePODS implementation lets a user preview the extent of an existing Operational Navigation Chart (ONC) for a region of the United States, then select that chart for printing. (International copyright 2007, NGA, U.S. government)

Service (ePODS) to automate map and chart creation, gain efficiency, and reduce errors. The ePODS application allows NGA to focus more of its resources on data quality, integrity, and currency rather than cartographic product generation. With ePODS, NGA is able to provide its customers with timely access to relevant and accurate GEOINT data. Safety of navigation is also significantly improved for both military personnel and civilians with the improvements in accuracy and timeliness of charts.

Dependable Information



Everyone can view the information they need.

Knowing where data comes from and that it is accurate and quality checked is important. GIS provides quality control and data review on-the-fly so everyone can see when and how data was edited. Database changes can be automatically synchronized between offices, teams, and Civil Aviation Authority (CAA) contractors. Managers can monitor workflows, overseeing the progress of projects.

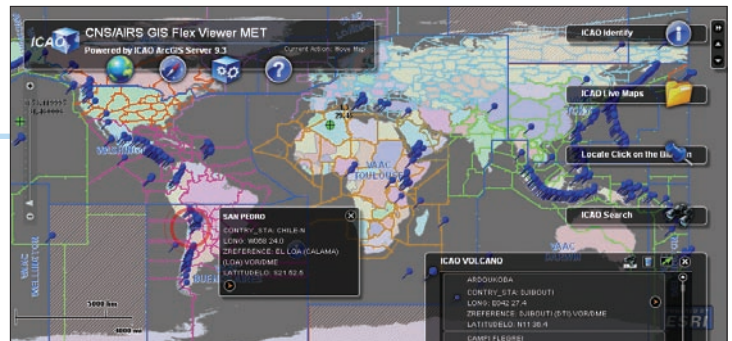
Case Study

The International Civil Aviation Organization Headquarters, Montreal, Improves Air Navigation Planning Workflow and Data Management

ICAO is a specialized agency of the United Nations and serves as a global forum for member states to work together toward safe, secure, and sustainable development of civil aviation. For many years, ICAO staff members did not have an efficient way to visualize aviation data. ICAO needed a better process to update data more frequently and efficiently. It developed the ICAO electronic Air Navigation Planning (eANP) GIS portal, a gateway combining database and Internet-based GIS that allows

“ArcGIS Server provides the platform for ICAO to develop more robust, user-friendly, and secure enterprise GIS applications.”

Gilbert Lasneir
GIS Services Manager
ICAO



The global aeronautical community can access ICAO GIS information via the Internet using ArcGIS.

authorized users to submit, store, update, manipulate, analyze, and chart global air navigation planning data from a centralized ICAO server. The eANP interactive maps are gradually replacing the air navigation plans that are delivered on paper. This is beneficial to ICAO, as the data accessed via eANP is up-to-date and accurate. Through eANP, air navigation systems are being implemented more efficiently at the national, regional, inter-regional, and global levels. Planning and implementation groups are able to take the information and expedite plans in accordance with ICAO priorities. To read more about ICAO and other case studies, visit www.esri.com/aeronautical.

New Opportunities

Using GIS to manage and analyze navigational data opens up a world of opportunities through sharing common data to do many different tasks, reaching out to new communities of users.

Reduced Emissions

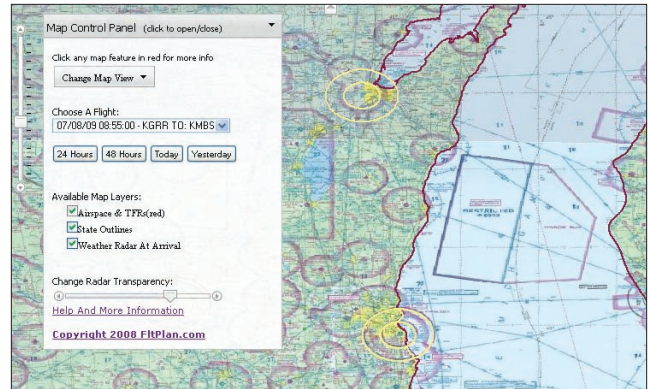
The number of people who fly grows every year. GIS can model reduced taxi times, slower flying speeds, and more direct routes to help reduce fuel consumption and lessen the impact of carbon emissions and noise pollution.

Real-Time Tracking and Analysis

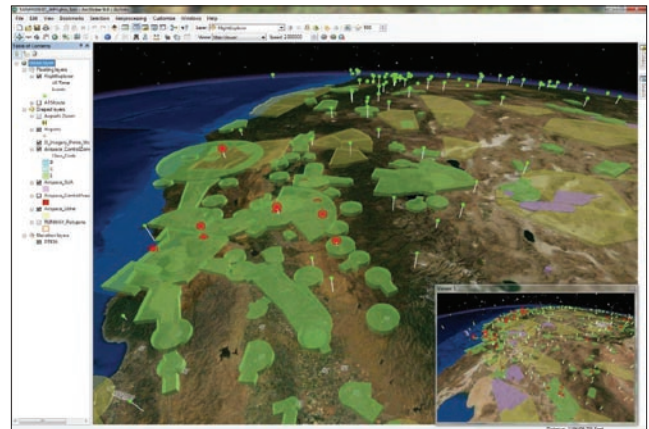
Provide the ability to track assets, conduct real-time analysis, and produce what-if scenarios on live or recorded aeronautical information feeds.

Sustainable Growth

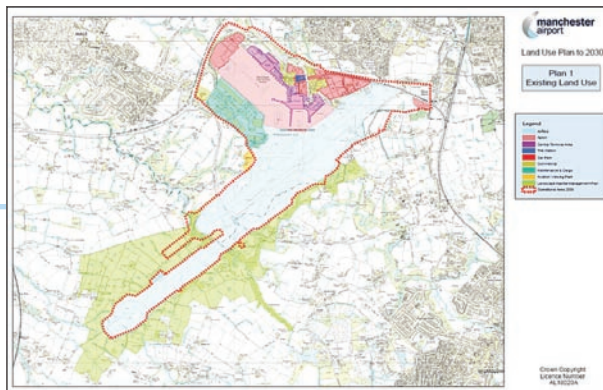
Use GIS throughout an airport for all aspects of operation. Sharing the use of the technology ensures that the correct data is used throughout the organization and that resources are shared for more viable growth.



South Carolina GIS consulting firm and ESRI business partner ROK Technologies serves flight-tracking maps to the general aviation industry easily with GIS.



View the volume of controlled airspace to protect air traffic operating to and from airports in real time.



Manchester Airport has three terminals and two runways serving nearly 2.3 million passengers per year. GIS helps the airport plan sustained growth through the year 2030.

“GIS is an efficient way to manage time, effort, and budgets. It integrates seamlessly into our business and evolves with our needs, helping us fulfill our stated aims of being a responsible neighbor, investing in our community, and spending money on the things that really matter.”

Vickie Withnell
Chief Technology Officer
Manchester Airport

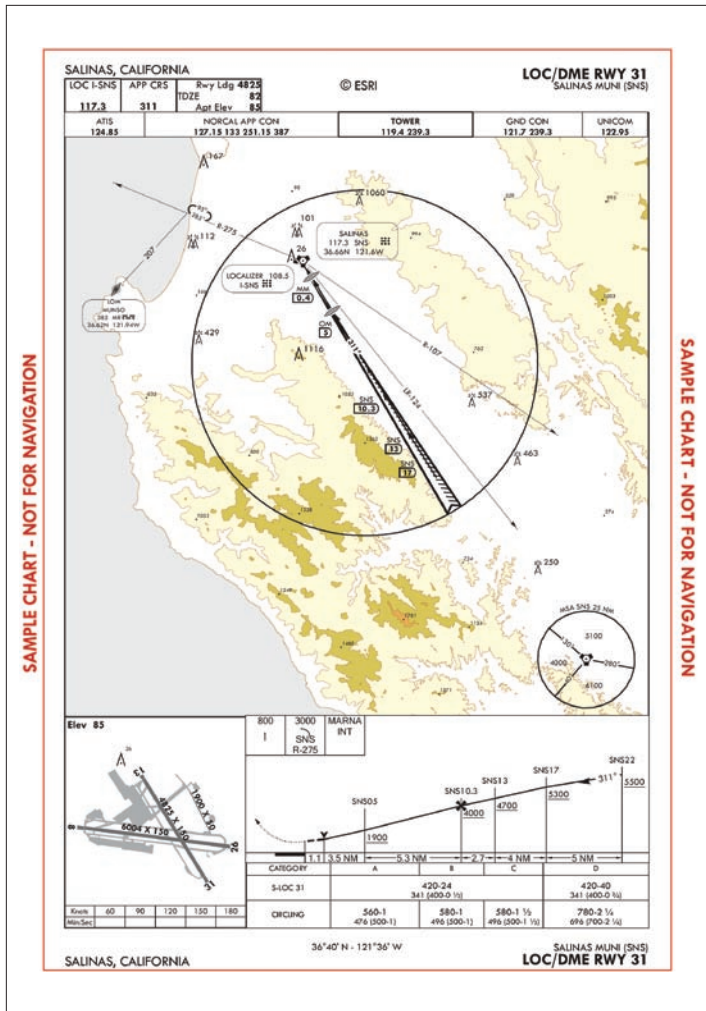
Case Study

Manchester Airport

For more than 10 years, GIS has helped Manchester Airport transform itself from a transportation hub to a sustainable business. The technology has assisted in mapping, analyzing, and mitigating the business, social, and environmental aspects of the airport, ensuring that it remains a profitable business sensitive to its impact on the community. Having the data managed centrally allows it to be kept up-to-date easily and shared effectively with contractors and other agencies. This saves time and ensures that the data is accurate, consistent, and timely.

GIS is estimated to have saved the airport upwards of US\$220,000 and 1,200 person-hours a year just in the operational costs of map production and data collection.

Take Flight with GIS



Instrument approach procedures are one example of charting accomplished using ESRI GIS.

ESRI® GIS provides tools for managing aeronautical information needs. Data can be efficiently managed and high-quality charts produced. Both civil and military agencies, commercial airlines, and chart producers can create, maintain, and use standard aeronautical datasets based on the latest digital data.

Increase your efficiency over traditional production systems by centralizing information, minimizing data entry, and maximizing product output. Something as simple as a single edit that is automatically reflected on all output products, including charts, digital files like AIXM, and Web services, can save time and money and reduce the chance of errors.

For more information, visit www.esri.com/aeronautical.



About ESRI

Since 1969, ESRI has been helping organizations map and model our world. ESRI's GIS software tools and methodologies enable these organizations to effectively analyze and manage their geographic information and make better decisions. They are supported by our experienced and knowledgeable staff and extensive network of business partners and international distributors.

A full-service GIS company, ESRI supports the implementation of GIS technology on desktops, servers, online services, and mobile devices. These GIS solutions are flexible, customizable, and easy to use.

Our Focus

ESRI software is used by hundreds of thousands of organizations that apply GIS to solve problems and make our world a better place to live. We pay close attention to our users to ensure they have the best tools possible to accomplish their missions. A comprehensive suite of training options offered worldwide helps our users fully leverage their GIS applications.

ESRI is a socially conscious business, actively supporting organizations involved in education, conservation, sustainable development, and humanitarian affairs.

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