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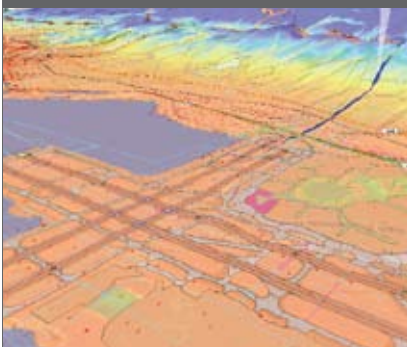
Improves Air Navigation Planning Workflow and Data Management

CHALLENGE

To ensure continued safety of airways, aviation authority needed to shift from static tabular data to an interactive GIS portal.
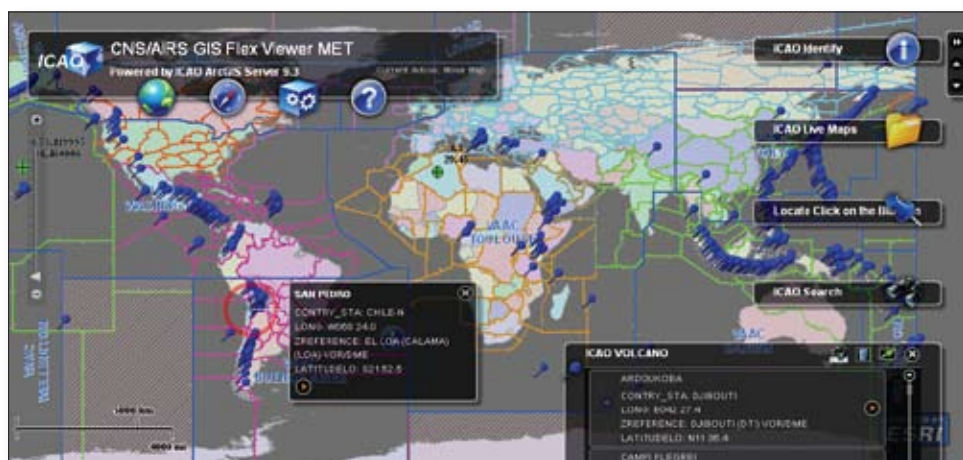
RESULTS

- **Implemented GIS portal hosting global data for local ICAO users**
- **Developed processes to support coordination between state and international organizations**
- **Increased frequency of data updates**
- **Improved daily organization of work**

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

Gilbert Lasnier,
GIS Services Manager, ICAO

The International Civil Aviation Organization (ICAO) is a specialized agency of the United Nations (UN). It serves as a global forum for member states to work together toward the safe, secure, and sustainable development of civil aviation.

ICAO works in close cooperation with other members of the UN, including the World Meteorological Organization, the International Telecommunications Union, the Universal Postal Union, the World Health Organization, and the International Maritime Organization. Nongovernmental organizations also participate with ICAO and include the International Air Transport Association, the Airports Council International, the International Federation of Air Line Pilots' Associations, and the International Council of Aircraft Owner and Pilot Associations.

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

The Challenge

Visualizing aviation data, such as major air traffic flows, regional air navigation plans, and other regional data is important to ICAO staff in order for them to ensure safe air travel. ICAO staff did not have an efficient way to see this data, relying on unsophisticated methods to organize their work and visualize data, which meant that information was not updated in a timely fashion. ICAO recognized the need for a better process that would allow data to be updated more frequently and efficiently, ensuring quality control of the data and ultimately safety of lives and property.

The Solution

In 2003, the Eleventh Air Navigation Conference (AN-Conf/11) recommended that ICAO develop a database containing all tabular material from ICAO regional air navigation plans together with major traffic flows and other regional data to achieve this goal. The database, along with all associated charts, would be made available through the Web. To meet these objectives, the organization had to make management of updates easier and allow more staff members within the ICAO community to access data. ESRI's ArcGIS® Server, a server-based geographic information system (GIS) solution with client access via the Web, was chosen to meet ICAO's needs.

Learn more at **www.esri.com/aeronautical**.

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The ICAO electronic Air Navigation Planning [eANP] GIS portal is a gateway combining a database and Internet-based GIS technology allowing authorized users to submit, store, update, manipulate, analyze, and chart global air navigation planning data from a centralized ICAO server.
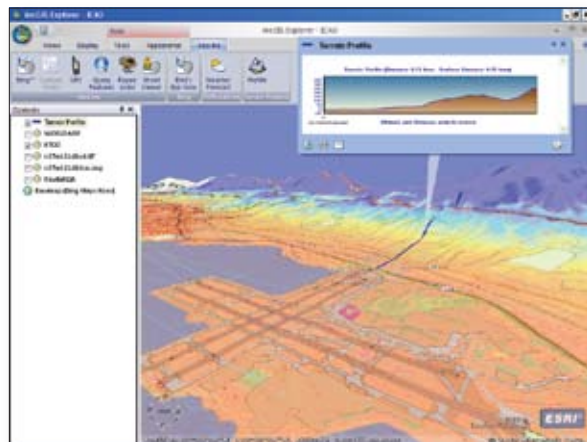
Phase one of eANP was deployed in fall 2008 and makes the ICAO Global Air Navigation Plan (GANP) database available to many users: states, the ICAO Council, ICAO staff at headquarters and in the field, regional planning and implementation groups, aviation partners, other UN agencies, civil aviation entities, and the public. Users access the GIS portal via the Internet to browse data directly using a variety of clients depending on the use of the application, including Microsoft® Internet Explorer®, ESRI ArcGIS Explorer, or ArcGIS desktop clients.

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

Essentially, eANP displays dynamic, interactive charts. Users are now able to perform many different functions besides viewing the data. They can create and view what-if scenarios of new routes, chart traffic flow information with other user-selected criteria, and update the data. Users can "fly" 3D electronic Terrain and Obstacle Databases (eTOD) in ArcGIS Explorer.

Global air navigation plans available in the GIS portal include Air Traffic Safety charts (ATSanp), Flight Information Region charts (FIRanp), Air Traffic Management charts (ATM), Aerodome Operational Planning (AOP) satellite images, regional charts, and many other thematic maps. The GIS portal can be accessed online at http://192.206.28.81/eganp/.

Results

The GIS portal's interactive maps are gradually replacing the air navigation plans that are now delivered on paper. This is beneficial to ICAO, as the data accessed via eANP is up-to-date and accurate, making it a more reliable means of navigation. Through eANP, air navigation systems are being implemented more efficiently at the national, regional, interregional, and global levels. EANP is beneficial for planning and analysis of planned facilities status and services that need to be included in regional air navigation plans. Planning and implementation groups are able to take the information and expedite plans according to ICAO priorities "Having this information available online greatly facilitates updating and accessing the latest information for states, ICAO regional offices, and other users," says Lasnier.

Learn more at **www.esri.com/aeronautical**.