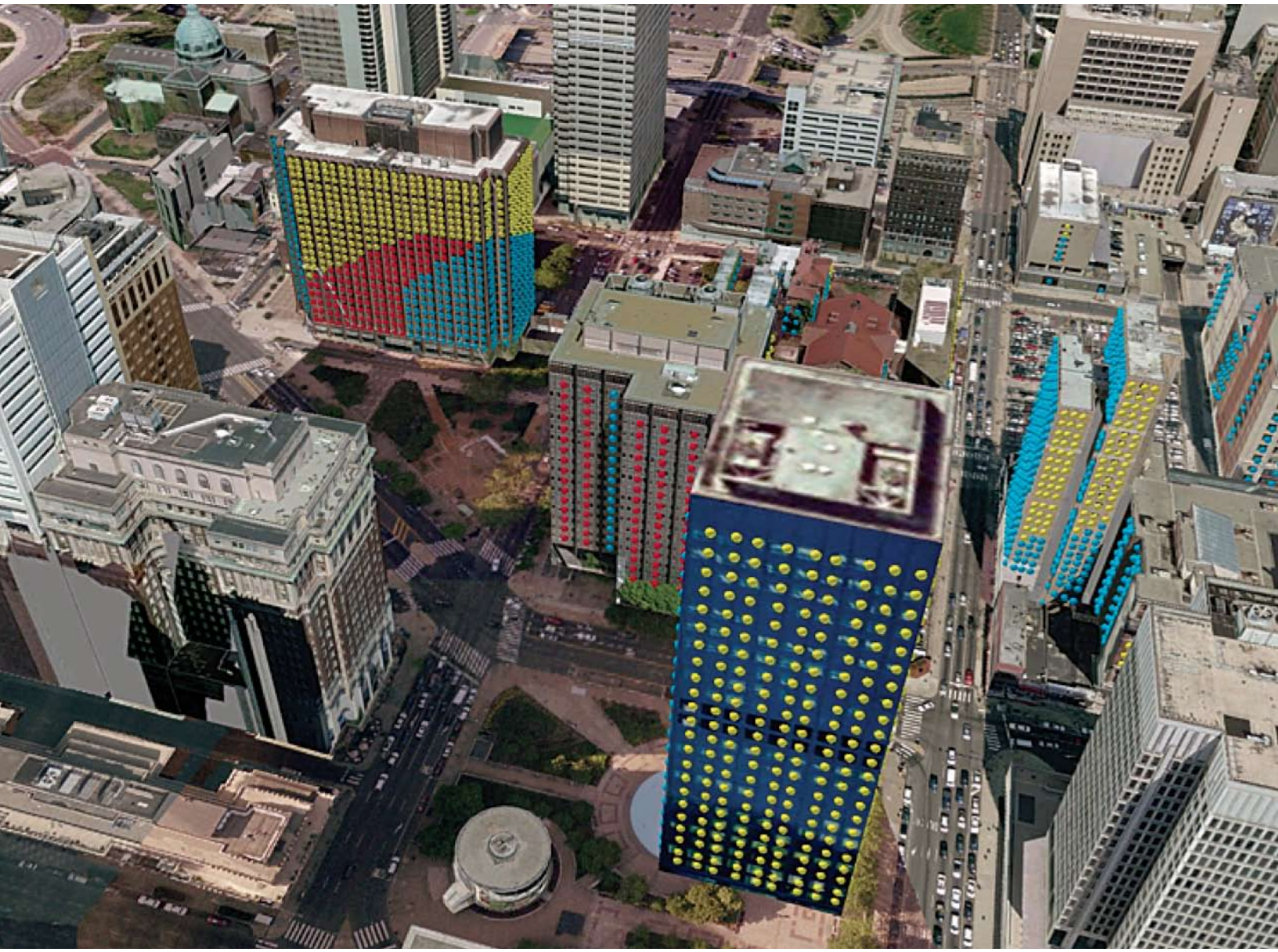
GIS for Asset and Facilities Management

Efficient Management of Assets, Interior Space, and the Building Life Cycle



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Where Are Your Assets?

One of the biggest costs to an organization, second only to human resources, is asset and facilities management. If these are managed well, an organization can reduce its overall business costs through more efficient maintenance, managing space more effectively, and locating and using resources in the most efficient manner.

To do this effectively, it is important to understand where real property, such as offices, warehouses, vehicles, pipelines, computers, and desks, are located. Using geographic information system (GIS) software to do this gives users a more accurate reflection of real-world circumstances and allows organizations to make better business decisions.

GIS can be used throughout the life cycle of a building for more efficient asset and facilities management.

The National Institute of Building Science estimates that facilities consume 40 percent of the world's energy. Carnegie Mellon University research has indicated that improving productivity in building functions by just 3.8 percent would pay for a facility's design, construction, operations, and sustainment. GIS brings this efficiency to facilities management.

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What Is GIS?

GIS combines location data with both quantitative and qualitative information about the location, letting you visualize, analyze, and report information through maps and charts. Using the technology, you can answer questions, conduct what-if scenarios, and visualize results.

GIS is often first identified as a system to manage infrastructure assets and natural resources outside of buildings, but this is only part of the story. Buildings, campuses, military bases, and industrial plants, to name a few, also have geography and can be mapped. It is easier to analyze and manage facility and asset data stored in GIS, making design, construction, and maintenance more efficient and profitable.

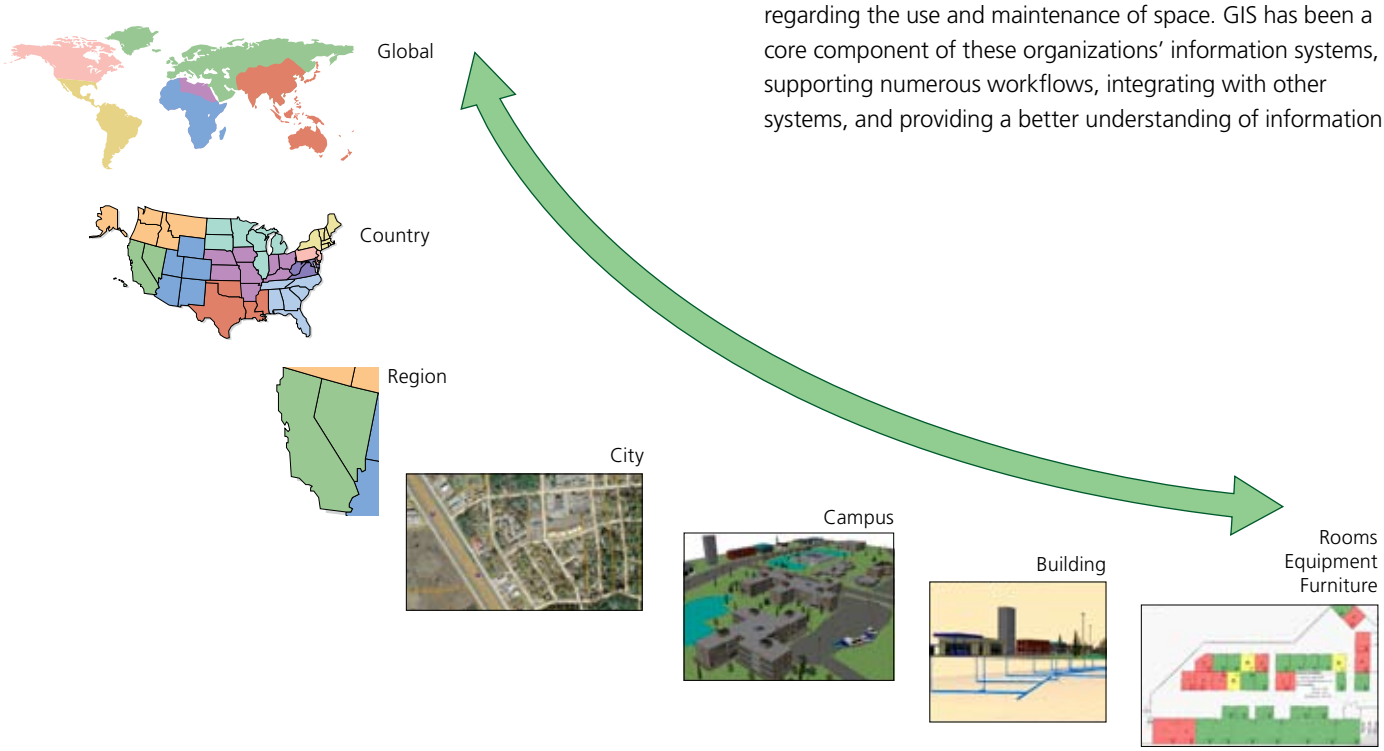
Why Use GIS?

GIS can integrate with and extend your current facilities management (FM) system. Maintaining and managing all your disparate facilities and assets in GIS means everyone in your organization knows their location and status. Data can be updated quickly, work orders created efficiently, and space used more effectively.

Using the same data throughout a project is more efficient, cuts down on errors, and allows everyone to be on the same page.

Join an Established Community of Users

Mapping, managing, and analyzing information about interior spaces and their assets are not new. For decades, Esri customers in health care, defense, commercial real estate, and finance have used GIS to make smarter decisions regarding the use and maintenance of space. GIS has been a core component of these organizations' information systems, supporting numerous workflows, integrating with other systems, and providing a better understanding of information.



GIS allows organizations to use the same data and software to see their facility information across all scales.

GIS Applications for FM

Compliance

Meeting compliance codes ensures that a building or asset is safe and operates as intended. Building compliance can span from energy efficiency, safety, and zoning to issues dealing with conformity to laws such as the Americans with Disabilities Act (ADA) of 1990. Buildings and assets are inherently spatial; they are located somewhere on the earth. GIS can be used to efficiently collect and store information based on their location, providing a means for query, analysis, and reporting when necessary.

Asset Management and Maintenance

GIS helps organizations gain efficiencies even in the face of finite resources and the need to hold down costs. Operations and maintenance staff can deploy enterprise and mobile workforce applications that provide timely information to the field for faster, more accurate work order processing.

Lease and Property Management

Revenue can be increased and operations and maintenance costs reduced when GIS helps manage space. Real estate and property managers can see and make queries about space including its availability, size, and special constraints for the most cost-effective use.

Space Usage

GIS helps facilities managers organize and spatially visualize space and how it can best be used. Operational costs can be decreased by more efficiently using space including managing the moves of personnel and assets as well as the storage of materials.

Disaster and Business Continuity Planning

Viewing buildings and the locations of assets along with emergency information, such as weather patterns and disaster zones, can give organizations the information they need to make decisions quickly. GIS provides a holistic understanding of facility status and performance and brings together departments, business systems, and data sources for a comprehensive view into and throughout organizations.

Green Buildings

Increase a facility's sustainability by using GIS to help reduce energy and water use, find better waste disposal, and decrease a building's carbon footprint. By managing information both inside and outside buildings down to the asset level, a difference can be made in the environmental impact of development.

Save thousands of hours of labor by calculating building space and usage in a single building or across an entire base like the U.S. Army Corps of Engineers, Fort Worth District, Texas. Dewberry & Davis helped the installation get a handle on data accuracy, integrity, and paperwork with its AMMO-FM solution.

Compliance

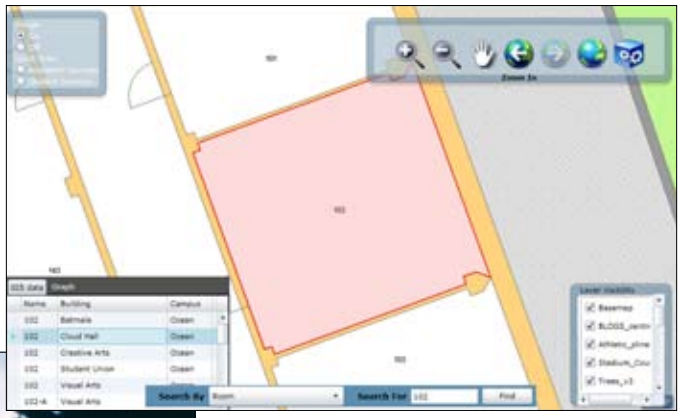
The Americans with Disabilities Act is a federal civil rights law that prohibits the exclusion of people with disabilities from everyday activities. To meet its goals, the ADA establishes requirements for both for-profit and nonprofit organizations. Finding and viewing locations of ADA-compliant features at campuses and buildings, as well as planning and evaluating them for compliance, are made easier with GIS.

City College of San Francisco

Attended by more than 100,000 students each year, City College of San Francisco (CCSF) maintains and uses 300 facilities spread across 11 campuses in the city of San Francisco, California. CCSF is one of the largest community colleges in the country, and the college confers the most associate degrees in arts and sciences in the state of California. CCSF worked with i-TEN Associates, Inc., an Esri partner located in Berkeley, California, to create a centralized and flexible GIS for organizing and delivering facility information, particularly to assist the college with correctly identifying the current level of physical accessibility to all classrooms and buildings according to the ADA. GIS provides access to ADA information at all campuses in the district. Features necessary for people with mobility issues can be displayed, including path of travel, parking for the disabled, easily accessible entrances, and elevators. Queries can be performed to find buildings, rooms, student services, and staff on campus. The result is a map with features that are helpful for navigation and a report on and picture of each room. Using GIS, different departments can tailor a map service to meet their needs, and data can be updated and served to staff or the public in a timely manner.

"This was the first time we have been able to view all the utility assets at one time."

Mono Simeone,
Project Manager, CCSF GIS Mapping Collaborative



Facility data can be viewed and queried at any time from all over the CCSF campus.

Rosenberg Library is one of the buildings at CCSF Ocean Campus that can be accessed via GIS by students with mobility issues.

Asset Management and Maintenance

You can't manage something if you don't know where it is located. This seems simple enough, but locating assets and tracking information about them can save an organization a great amount of time and resources. Streamlining data collection and dissemination, eliminating redundancies, and clearing the path for more informed decisions lead to increased work performance.

Bureau of Indian Affairs

The Bureau of Indian Affairs (BIA) Division of Irrigation, Power, and Safety of Dams (IPSOD) is responsible for administering and managing 100,000 structures across 66 million acres of land. With so many structures across a vast landscape, BIA field crews find it challenging to locate assets needing maintenance. BIA created a solution by integrating IBM's Maximo® and Esri's ArcGIS® to create Asset Map Viewer. Workers throughout BIA can use the system to see and select assets on a map and access photos, deferred maintenance data, and work orders. Using GIS has been a cost-effective way to share data throughout a diverse and widely dispersed organization, increasing the efficiency of the organization and the accuracy of the data.

"By enhancing our facilities management with GIS, we have seen the value of using spatial data."

Assad Reichdan,
Technical Program Manager,
Bureau of Indian Affairs Division of
Irrigation, Power, and Safety of Dams

Asset Map Viewer is the main portal for asset information and is used by more than 200 BIA workers daily across a broad geography.

Lease and Property Management

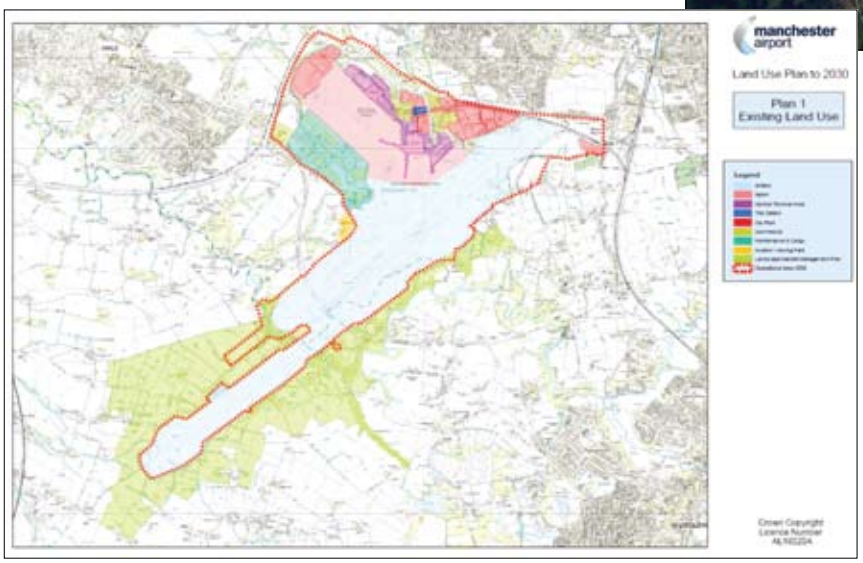
Evaluate and analyze information about rentable space to maximize your dollars per square foot. Combining GIS software with geodemographic data identifies specific locations that meet the detailed criteria of individual clients. By analyzing demographics and market conditions, property managers can present the space that best meets particular needs. GIS can supply maps of the competition, aerial photographs of sites, demographics, market research information, and site plans, giving a complete picture of each location and market.

Manchester Airport

Manchester Airport in the United Kingdom operates as a small city, serving 22.7 million passengers each year. As an ongoing business, the airport employs 19,700 people supporting 310 different companies at the facility. Managing the retail side, with 130 shops and restaurants and retail sales in excess of US$447 million a year, the airport uses ArcGIS Server for everything from initial planning for a retail outlet to ensuring proper licensing and store expansion. ArcGIS assists in visualizing the impact of each store on airport operations.

"The airport has a waiting list for available space, so GIS is necessary for us to manage our space effectively."

Vickie Withnell,
Chief Technology Officer,
Manchester Airport



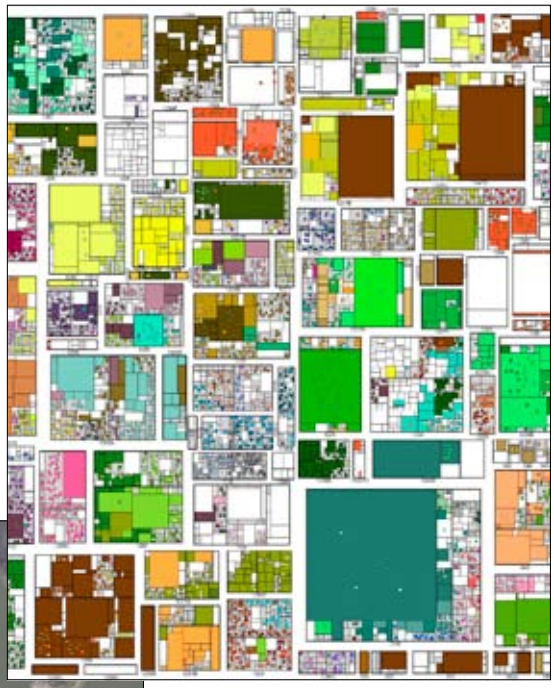
For more than 10 years, Manchester Airport has used GIS to transform itself from a simple transportation hub to a diversified and profitable business.

Space Usage

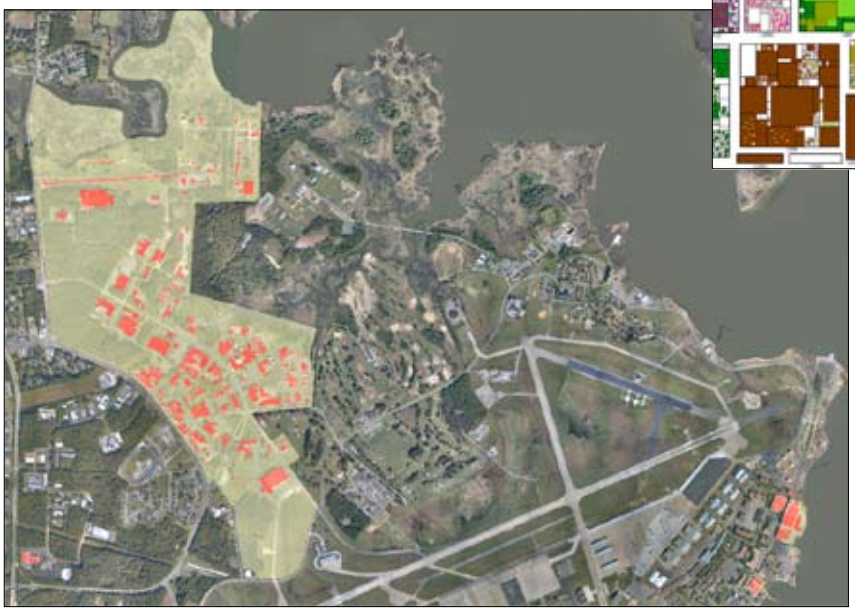
GIS provides a scalable framework for optimizing space to achieve compliance with space requirements; managing space changes; creating synergy in strategically locating groups of people; and, ultimately, saving money.

NASA

NASA Langley Research Center (LaRC) is a technology and innovation leader in both aeronautics and space research. It makes sense, then, that NASA would have space utilization figured out, too. Technical disciplines at NASA require the work of specialized personnel forming many teams and using state-of-the-art facilities and resources. GIS is used to optimize facility usage, minimizing operational costs while maximizing the synergy among employees, groups, departments, and technical functions. NASA relies on ArcGIS to optimize space and manage it more effectively so errors are reduced and the time gap between data collection and data upload is eliminated. Annual operations and maintenance cost savings from GIS that accrue over multiple years and among multiple centers will result in hundreds of millions of dollars of benefit to the U.S. government and its taxpayers.



Using GIS, NASA is able to better utilize space based on staff proximity to labs, groups that commonly interact, and special constraints due to lab equipment.



NASA's LaRC in Hampton, Virginia, uses GIS to manage the 800-acre facility, which has 400 buildings and test structures totaling 3.7 million square feet.

Disaster and Business Continuity Planning

Each year, one in five businesses will experience a major business disruption from power outages, internal flooding, weather events, fire, terrorism, crime, or transportation problems. As companies look to maintain security of service and mitigate risk, many are discovering how GIS-based business continuity planning enables them to move beyond static paper plans. GIS integrates many seemingly unconnected data sources and provides an intuitive visual snapshot of the company's assets. GIS allows managers to understand where assets, facilities, and employees are located and analyze the risks and threats they face. The technology can assist with facilities management, employee notification, incident mapping, weather mapping, office relocation, evacuation, threat assessment, and supply chain assessment.

Super Bowl XLIII

Esri and Digital Sandbox, Inc., provided a complete geospatial enterprise for the 2009 Super Bowl®, held in Tampa, Florida. The two companies linked more than 10 command posts and the emergency command center with real-time data feeds and analysis. Whether viewing an NFL® alumni dinner or player awards ceremony, monitoring congested traffic, or assessing multiple arrests in close proximity, staff members had constant information and communication to maintain their mission of providing a safe, secure environment for fans and employees alike.

"Instead of pockets of knowledge or separate information flows, there was one complete framework benefiting the many different agencies managing security. The speed of information capture and exchange was many times faster than what was previously available."

Anthony F. Beverina,
President and Cofounder,
Digital Sandbox

ArcGIS, integrated with Digital Sandbox Risk Analysis Center software, supplied a map-based common operating picture during the Super Bowl in Tampa, Florida.

Green Buildings

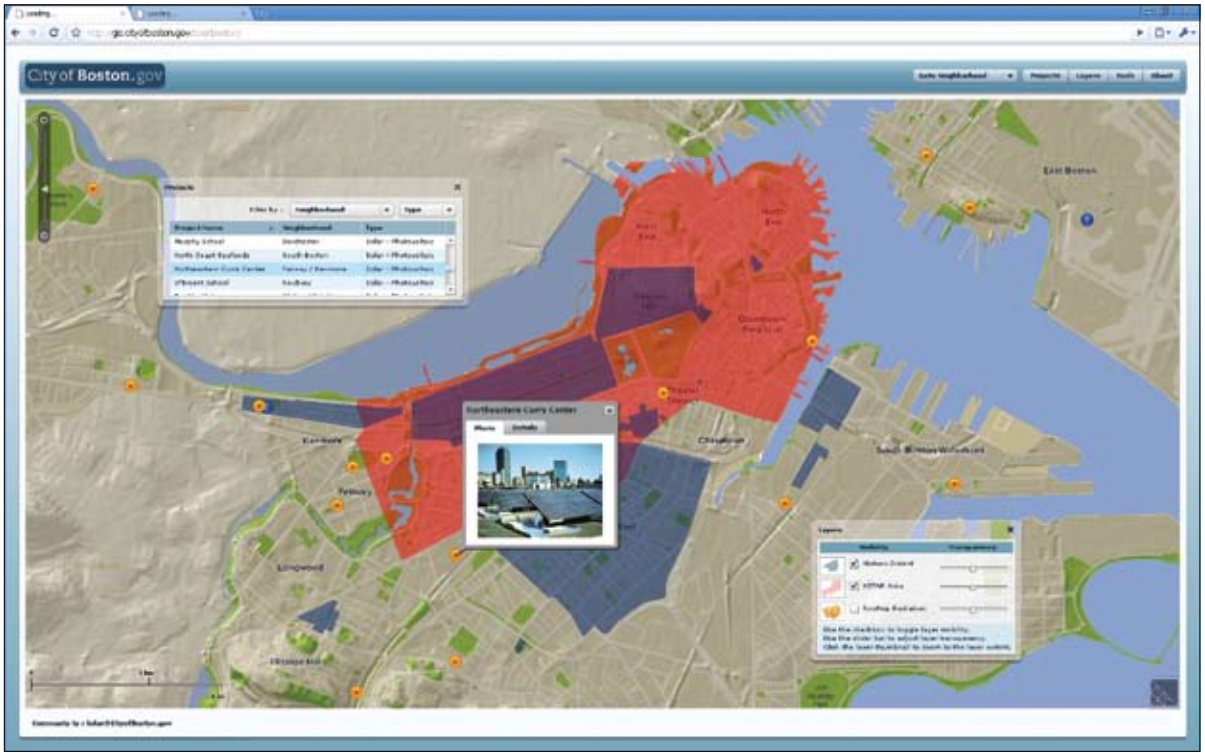
Many organizations are managing capital assets with huge environmental footprints. Forty percent of global raw materials are consumed by buildings. Facilities consume 65 percent of the total U.S. electricity and contribute 40 percent of emissions in inside and outside building management. With GIS, anyone managing a building can make a difference.

Solar Boston

The Solar Boston project uses GIS over the Internet to facilitate the goals of Solar America, a Department of Energy initiative promoting solar power use nationwide. Solar Boston's goal is to add 25 megawatts of solar power to the city's grid by 2015. Facilitating this goal is Boston Redevelopment Authority, which created a public Web site where investors can view existing solar installations and calculate power potential for their buildings. ArcGIS Server was the foundation for this solution, which showcases the success of existing solar installations and promotes the benefits of renewable energy to the city's real estate sector.

"Without GIS, we'd have no concept of the size of the city's solar industry, how fast it had grown, and what potential it had."

Wilson Rikerson,
Solar Boston Coordinator



The ArcGIS Solar Radiation tool gives users the ability to research solar power capacity by builiding.

Putting Geography in Facilities Management

GIS serves you through the life cycle of your space, from site selection, space planning, and maintenance to lease management, usage, continuing safety issues, and continuity planning.

Establish an authoritative information source with GIS for better operational performance. Integrate GIS with your existing FM systems. Make Esri® GIS an integral part of your workflow.

Visit esri.com/fm for technical resources and data models, and become a part of an active community of users.

To learn more, visit
www.esri.com/fm.

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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