

“Which technology breakthroughs in the last decade have had the greatest impact on the state of the geospatial industry in 2006?”

—GPS, creation of GIS databases, and the Internet

ESRI, Giffels-Webster Engineers, Magellan, and Avineon tell you why

ESRI

GPS, DATABASES, AND THE INTERNET—NOT TO BE TAKEN FOR GRANTED

We take GPS, databases, and the Internet for granted, but they have built the foundation for the rapid growth of GIS (Geographic Information System) worldwide.

GPS technology has had a profound effect on GIS and the entire geospatial industry. The ability to acquire precise coordinates in a global reference system has enabled accurate data collection across very large geographic areas at a low cost; and the cost is dropping rapidly. With the implementation of RTK networks (RTN), real time, centimeter-level data collection will soon be the standard. This is driving GIS databases to incorporate precise data sets and survey control. Many surveyors are replacing assumed coordinate systems with standard systems and projections, which means that their data can be used and managed with other data in a GIS instead of in flat, independent files.

Another major technology that has had dramatic effect on the geospatial industry is the development of geographic database systems or, geodatabases. The ability to store and manage very large and precise survey and mapping data sets in a single database has enabled GIS to become the de facto standard for managing geographic data, regardless of the method of their acquisition and use. From land surveying and photogrammetry, to LiDAR, and other remotely sensed data, GIS database tech-

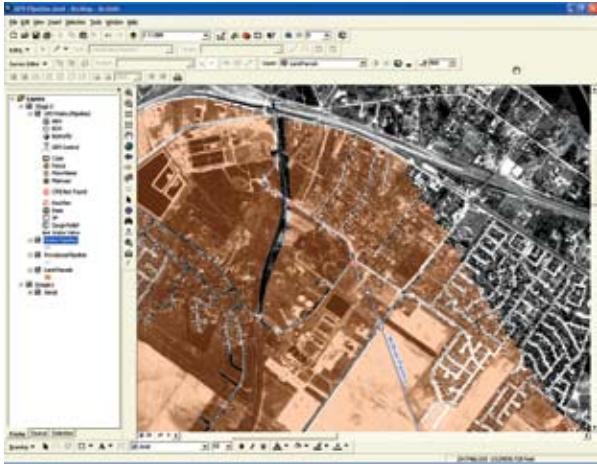
nology has powered the integration of vast and disparate data sets. This movement of geographic data from a project's flat and control files and filing cabinets to storing and managing data in a single database is expected to provide efficiencies to small organizations and large organizations alike.

The Internet has been the enabler of free distribution of geographic data (aerial photography, parcel maps, land use, and land cover among others). The availability of geographic data has greatly contributed to the growth and use of GIS. Data is the foundation of GIS, and with more data becoming available and easily accessible over the Internet, the growth of GIS will continue. Collecting, managing, and storing data on servers in databases and publishing them to the Internet will continue to fuel the expanding uses of GIS. This is well demonstrated by the National Geodetic Survey's GIS server implementation publishing the National Spatial Reference System as a web service accessible over the Internet via a direct connection.

ACSM Bulletin: How have these breakthroughs impacted ESRI directly?

ESRI: GPS, geographic databases, and the Internet have contributed vastly to the growth of ESRI. The availability of precise positions has driven our database development to accommo-

date them. Along with accurate data, data sets have become incredibly large. It's not uncommon to have in excess of ten million points collected on a project with LiDAR, and five terabytes of aerial imagery, and flat files just can't manage such a huge amount of data well. The demand for management tools for these large data sets has fueled much of the database development at ESRI.



GPS pipeline [Source: Digital Mapping Services, L.P.]

ACSM Bulletin: Which ESRI products brought to the market in 2006 owe their development to the industry-wide breakthroughs?

ESRI: The launch of the ArcGIS server in 2006 is a direct result of the need for technology to manage large and precise data sets, and to use them across entire organizations, or to publish them on the Internet. As I have already mentioned, NGS, in concert with the 2007 readjustment of the Nation's control network, has identified this enabling technology to redeploy the National Spatial Reference System, thus ensuring real-time availability of updated positions for use in many technologies.

ACSM Bulletin: What's its most outstanding feature?

ESRI: The ability to manage geographic data on a single server is an outstanding IT benefit, contributing to efficiencies in governments and private organizations.

ACSM Bulletin: How did ESRI's GIS technology inform or enhance the trend in geospatial data technology in 2006?

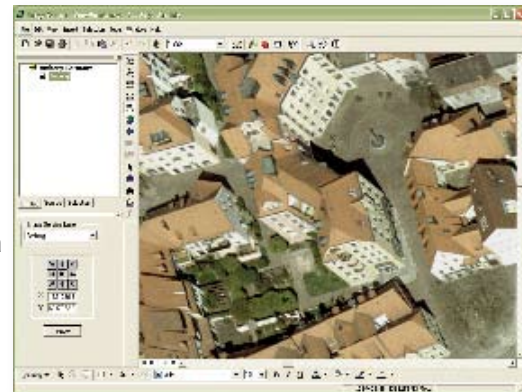
ESRI: The demand to eliminate multiple copies of data and individual "islands of data" has been driving the development of geospatial technology for some time. The trend to manage geospatial data and applications on a single platform continues, and ESRI is delivering technology to meet that demand.

ACSM Bulletin: Describe the use of selected ESRI GIS products in a specific project setting.

ESRI: ESRI products are configured in a multitude of ways by our business partners and users. Typical implementations include the centralized management and distribution of an organization's geospatial data assets, including survey control, imagery, plans, and plats and maps. Government implementation of GIS technology spans the spectrum of tax mapping and resource analysis to electric network outage management to land cover mapping.

The possibilities of GIS are limited only by our imagination. The existing integration and use of data deployed in a GIS is truly noteworthy. As a result, a surveyor laying out a preliminary design for a subdivision can access electric transmission facility data, wetlands, and resource-protected areas by connecting to current aerial photography and tax information, for instance. The ubiquitous nature of data in GIS is tied to efficiencies that daily spread to new areas.

The mutual recognition between professional surveyors and GIS experts is also changing rapidly. Surveyors are beginning to deliver more services to the GIS community, and GIS professionals are beginning to appreciate the value of accurate and reliable data that surveyors are accustomed to providing. GIS applications will continue to grow with the availability of more accurate data, and surveyors will be increasingly tasked with providing such data.



Satellite imagery of western Europe [Source: ESRI]

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