

Sustainability Matters

BRINGING GIS & FMIS TO THE USER COMMUNITY

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www.spatialsys.com

TIMESHARING, REVISITED

A Message from Larry E. Newman, P.E., LEED AP

I wonder how many of you remember the “good ‘ol days” of timesharing. When I graduated from engineering school in the mid ‘70s, “mainframe” computers were common. In order to use computer technology, a young engineering graduate would gain access to one of these mainframes via a telephone hookup, generate a properly formatted input file for submission, and would dial back in sometime later to retrieve the results of the computer “run.” My first jobs at engineering firms included responsibilities to access these services, because the engineers with more design experience did not know how. The service provider would bill my employer monthly

Now users have the choice of *not* building and maintaining large computer infrastructures, but utilizing the cloud’s infrastructure instead and being able to access the cloud from virtually anywhere.

for my use of this “timesharing service.” The amount of the bill would be reflective of the amount of disk storage I used, the number of “compute cycles” I consumed, and a surcharge for whatever application software I was running. In other words, we paid for what we used.

In the late ‘70’s, it became common for firms to acquire their own “minicomputers” that allowed me to operate the analysis and design software without the need for a timesharing service. In 1982, IBM introduced the “personal computer.” In 1984 they added a whopping 10 MB disk drive

and in 1985 Autodesk introduced drafting software that operated on these PC’s. About that time, Novelle came out with the concept of “networking” these computers together to allow individuals to share printers, storage, etc. between computers. In the early 1990’s, Microsoft introduced the Windows operating system and Esri introduced PC ArcInfo and ArcView. Prior to that, all Esri software ran on the minicomputer or mainframe platforms described earlier, or on Unix-based “workstations.”

PC’s became more common and powerful, Windows evolved with a wealth of applications, and we all started using the internet to share information and to communicate. In about 1998, Esri introduced ArcGIS to replace ArcInfo, and the concept of the geodatabase—storage of GIS data in generic SQL-compliant databases rather than the Pick-based INFO database. About the same time, Esri introduced their first internet-based application, ArcIMS. Similar in function to ArcView, ArcIMS allowed users to view GIS data via the web, but not to perform analysis, build cartographic products, or build/edit datasets.

Throughout the first decade of this century, Esri has continued to add functionality to the web-based offering. ArcGIS for Server now has much of the functionality of the ArcGIS of the late 1990’s, but it operates in “the cloud” of the internet. Now users have the choice of not building and maintaining large computer infrastructures, but utilizing the cloud’s infrastructure instead and being able to access the cloud from virtually anywhere! The term “Software as a Service” (SaaS) is often applied to this concept. Amazon and other organizations are making it their business to provide the 24/7 expandable computer infrastructure and communications necessary to make

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HIGHLIGHTS

- » Md PropertyViewPro is more useful than ever! **See page 2.**
- » Spatial’s MMS product is being implemented at both Commercial & Government sites. **See page 2.**

this work in a big way, including providing security so that even sensitive data can be protected.

This is very good news! It means that we can all get back to working with the functionality of the software rather than worrying about computers, networks, disk space, etc. The cost? Well believe it or not, we are heading back to the concept of timesharing—pay for what you use rather than buying hardware and software licenses, trying to anticipate what resources your organization may need to consume, and building your systems accordingly. Sorry, IT managers. Today you can establish an online account, load your data, and use Esri’s technology with little up-front cost if you do it properly. Spatial Systems has been assisting our government and private clients in establishing these systems for several years now, providing consulting, programming, and administration of the services. If you are interested in how this all works, give us a call. We would be happy to help you get back to the way things were done in the ‘70s (those good ‘ol days), but with today’s superior technology and communications. It’s worth a look! Ten years from now, who can guess where we will be? [SSA](http://www.spatialsys.com)

PRODUCTS 
in the SPOTLIGHT

Md PropertyViewPro

By Susan Hmel

GIS Application Developer & GIS Database Administrator

The Maryland Department of Planning originally developed MdProperty View to provide a dataset of property and parcel information using Esri technology. SSA was one of the first organizations given the opportunity to market the MdProperty View product for the Maryland Department of Planning and the Maryland Department of Assessments and Taxation. As a general provider of GIS services to State and Local government organizations, SSA is aware of some of the needs of our clients for functionality or additional data. SSA has developed our own value-added version of MdProperty View which we call Md PropertyViewPro.

Our product includes:

- » ADC page index and Property Map index
- » Current property tax maps and assessment data (Administrative and CAMA)
- » Monthly sales file update
- » The latest Maryland State Highway Administration Grid maps, road centerlines, County road map and County boundaries
- » NAIP 2007 and 2009 Imagery
- » 1990, 2000, and 2010 Census Tract and Block Group boundaries and data
- » Latest ZIP code boundaries
- » 2002 Legislative & Congressional District Boundaries
- » 1973 & 2002 Land Use/Land Coverage Data
- » Latest Priority Funding Areas
- » 2002 and 2010 Floodplain data
- » Generalized zoning maps
- » Protected Lands
- » Sewer service areas
- » National register of historic properties
- » Watershed boundaries
- » Residential sales data for 2002-2009

- » Established ArcMap 9.x and 10.x Project files for analyzing and visualizing datasets
- » Tools for display and printing of raster tax maps
- » Census Tiger line roads
- » MSGIC Environmental Data—county and state wide

All of these datasets and features are combined into a simple to use installer allowing for instant use of updated data.

We are constantly assessing our client's needs and striving to provide a product that meets those needs without adding additional cost.

What's new in Md PropertyViewPro for 2011

The Md PropertyViewPro 2011 version includes Census 2010 data and updated land use and land cover provided by the Maryland Department of Planning. In addition, parcel polygons have become available for certain counties. These datasets are distributed along with the traditional raster tax maps for analysis and display of property information.

Please note that the 2011 version of MdProperty View will no longer support ArcView 3.x. If you are a current subscriber using MDPV with ArcView 3.x, SSA will be happy to assist you with a transition to the latest version of Esri's ArcGIS software. ArcGIS Desktop versions of MDPV are available for 9.x and 10.x.

We are constantly assessing our client's needs and striving to provide a product that meets those needs without adding additional cost.

Please contact Spatial Systems Associates with any questions you may have regarding the Md PropertyViewPro 2011 product or to place an order. [SSA](http://ssa.com)

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TECHNOLOGY UPDATE

Spatial MMS: A web-based solution

Our facilities management solution for energy monitoring and asset management employs a wide range of the latest web based technologies. These tools work in concert, providing a rich user experience and a flexible framework for customized solutions. The underlying communication architecture reports timely, accurate information regarding the consumption of resources and allocation of assets within a building. By implementing a flexible system that leverages the internet, **SpatialMMS** can be applied within one structure, built-out to monitor an entire campus, or connect several implementations across regions. Information can be accessed from anywhere, at any time.

Esri's ArcGIS Server 10 plays a vital role in providing maps and location specific information regarding a building or campus within the **SpatialMMS** product. By using ArcGIS Server we provide access to detailed floorplans, basemaps, satellite imagery, and asset information and create an interactive user experience. By implementing Esri's API for Microsoft Silverlight/WPF we have built a rich internet application around the mapping component to better serve detailed information about energy usage and indoor environment conditions over time periods through graphs and charts. Incorporated in the system is a document management section granting access to the scans of the original working drawings and draft plans. These can be downloaded for contextual, detailed decision making. *Continued on next page*

PROJECTS in the SPOTLIGHT

Charles County Department of Public Works

By **Patrick McLoughlin**
Project Manager

Charles County, MD, part of the Washington DC Metropolitan area, provides services for approximately 150,000 citizens. SSA has performed a wide variety of GIS support functions for various agencies of Charles County government since 1998. We started with acquisition of digital orthophotography and the development of a street centerline file, attributed with address ranges, for use by the E911 response group. Following that, we acquired LiDAR data for the County, from which we developed 2-foot contours countywide. Upon completion of this work, we were selected by the Department of Public Works to design and build a GIS-based information system for the county's water and wastewater infrastructure.

The Department of Public Works recognized the need to move to a digital data layer of its wastewater and water system maintenance and analytical functions. Like many Public Works and Utility departments, all of its operations were based on the use of deteriorating paper as-built drawings (and scanned versions of these) to locate their utility infrastructure. The Department approached SSA for assistance in early 2007, and SSA responded with a phased approach to build GIS datasets that could be fully integrated into the Department's evolving business practices. As a temporary holdover until the feature conversion work began, SSA built a map book and web application to locate plan drawing sets in the approximate area of the County represented on the drawings. We then scanned over 17,000 plan drawings at 400dpi grayscale for use in the vectorization task, while also building a document indexing system that made the new scans immediately available

to county staff via a web-based interface. This gave the field staff access to the complete library of as-builts in the field utilizing ruggedized laptop computers equipped with suitable communications ability.

SSA then modified Esri's water and wastewater data model to meet Departmental requirements for a pilot vectorization task for the Mattawoman Interceptor (which links to WSSC facilities). The wastewater pilot vectorization task was completed successfully and the Department contracted with SSA for the completion of the vectorization of the entire wastewater collection and water distribution systems. Vectorization has included georeferencing

The Department had a vision of how they wanted to improve their business operation; the use of GIS technology has been a powerful tool.

of appropriate scanned images and conversion of all water and sewer features found on the as-built up to and including the customer location, i.e. property point. In addition, we attributed the resulting features with information on size, material, date of installation, and other information gleaned from the as-built drawings. Moreover, SSA associated the raster images with relevant vector features so that, by selecting any particular feature, county staff could identify and view all as-built drawings on which that feature is depicted. To date, 571 miles of wastewater and 415 miles of water assets have been captured.

As part of this project SSA has built a project tracking web site, including an Esri ArcGIS Server web viewer, which gives the Department real time access to vectorization work product as it is posted to the site. It also provides a mechanism for resolving questions about system features and locations as they arise. The project tracking site has the added benefit of providing an audit trail of issues and resolutions posted over the life of the project. The department is now using the project tracking web site as

the basis for a system management application designed to be used by field crews to view system drawings and update feature information. To assist in the red-lining process, a print capability was provided that allows county staff to print all or a portion of both the GIS data and the as-built drawings should that be necessary.

Though the Department now has access to their data anytime and anywhere so long as there is internet connectivity, they do not always have access to a laptop in the field. What they do have access to is their smartphone! SSA developed mobile applications for both iOS and Android devices allowing the Department to interact with their data and make important decisions without the need for a computer.

The Department had a vision of how they wanted to improve their business operation and the use of GIS technology has been a powerful tool assisting in the implementation of those improvements. Utilizing the web-based approach to accessing their resources (GIS data, as-builts, etc.) has greatly reduced the effort it takes to retrieve system drawings and the number of field visits required to mark locations for proposed site disturbance and to better plan for field work when tools and parts must be gathered for a repair project. GIS will continue to play an important role in Charles County's Public Works operations. [SSA](#)

TECHNOLOGY *CONTINUED*

The true value of **SpatialMMS** lies in its live monitoring and reporting functionality. A customized network of wireless electrical and indoor environment sensors can be installed to provide on the minute readings. Alternatively, **SpatialMMS** can make use of an existing internal controls system output via a standardized API or data transfer protocol. The underpinning of **SpatialMMS** is a BISDM modified database hosted in Microsoft SQL server. The application makes use of Windows Communication Foundation(WCF) for secure data mining and incorporation into the Silverlight based user Interface. [SSA](#)

—**Stephen Sporik**, GIS Application Developer

SSA, INC.

COMPLETE GIS AND FMIS IMPLEMENTATION AND SUPPORT SERVICES

GIS & FMIS

GEOGRAPHIC INFORMATION SYSTEMS

Needs/Cost Benefit Analysis

Excited, curious, or confused about the potential for GIS in your organization? Spatial Systems has been implementing these technologies for years. Allow us to evaluate your needs, project the potential for savings or increased revenues, and otherwise explain the potential for GIS in your business.

GIS Systems/On-Site Consulting

Maybe you need a little help bringing it all together. No one ever said GIS could be integrated overnight. Let us come on-site, provide implementation management and QA/QC to help you implement this time and money saving technology.

Web-Based Hosting

Perhaps you don't really want the hassle of building and maintaining a GIS internally. Consider allowing Spatial Systems to host your GIS data or its services and make GIS functionality available to you and/or your clients over the internet.

Wide-Format Scanning

Make it digital! Convert maps, blueprints, and imagery into a new theme/layer for your GIS. Unlimited length specifications with widths accepted up to 50" B/W, full-color, with various resolutions and output formats available.

Analysis

If you simply want to be able to take advantage of the ability of GIS technology to help meet the needs of your organization without the bother and cost of acquiring GIS software and learning to use it, Spatial Systems offers the services of our experienced staff to perform analysis and produce suitable reports and cartography for you.

Vectorization

Take all of your hardcopy or image files and turn them into topologically structured GIS compatible layers, with attribute links to your database.

Integration

Combine the new datasets with your existing data or models to fully integrate GIS technology with your legacy data systems.

FACILITIES MANAGEMENT INFORMATION SYSTEMS

System Design

We specialize in the use of legacy systems and data in the implementation of our SpatialMMS product line. Allow us to sit down with you to understand your need for FMIS technology and to recommend the most effective approach to implementation.

Data Development

Whether you have no as-builts or a sophisticated Building Information Model (BIM), or anything in between, Spatial Systems is prepared to use what is currently available in the establishment of a consistent and accurate dataset that is customized for your facility. When necessary, our field staff will gather relevant information on-site to meet the requirements of your desired functionality.

Monitoring Tools

Spatial Systems will arrange, when necessary, for the installation of energy, water, and indoor environmental sensors to capture relevant data for your facility. If your facility already has a monitoring or other control system, Spatial Systems will integrate our SpatialMMS tools to use the output from those systems to the extent permitted by your other vendors.

Dashboard Customization

SpatialMMS utilizes a fully customizable dashboard for your interface with the system. By understanding your specific requirements, we will deliver a web-based solution that meets your needs.

Hosting

If preferred, Spatial Systems will host your FMIS data and interface on our in-house servers. There is no need to purchase hardware or software to take advantage of this technology, and access to your facility data can be made available to anyone you designate who has access to the internet.

Alerts

If any of the monitoring technology detects that the readings from a sensor fall outside of parameters that you establish, SpatialMMS can generate an alert in the form of an email, a mail message, or establishment of a new work order in your existing work order management system.

Reports

Reports from SpatialMMS can be generated on demand or on a regularly scheduled basis to confirm for you that the building systems are operating properly and to report the periodic results of automated analysis of the collected data.

CONTACT US



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