



imaginNEWS

Merging Internet Mapping and e-Commerce Technologies

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Ten years ago high-level GIS capabilities were only available to Federal Government agencies and the more affluent counties. Capabilities required expensive hardware and software and data capture took many hours of hand digitizing or scanning. Today, inexpensive — even free — data exists, albeit at various levels of quality. Software can be purchased for hundreds rather than thousands of dollars and hardware capabilities are readily available and capable of running on the computer that resides in the family room. This capacity is creating an increase in demand for imagery and GIS layers from both the public and private sectors. Requests vary widely from individual citizens desiring aerial or satellite photography of their neighborhood or house, realtors wanting more detailed information for house and property valuation, or regional, state and federal planning agencies that wish to integrate

data over larger areas to support resource analysis, policy and decision making or regional development issues.

Some of the best data available resides at the lowest levels of government, such as city, township, or county. These units do not normally have the resources to work individually with all users to supply data in appropriate formats and media. These activities consume valuable GIS staff resources to accomplish product definition, ordering, retrieving and formatting and billing on a case-by-case basis. To reduce staff time and cost, the Pima County Association of Governments (PAG) in Tucson, Arizona contracted with Veridian Systems Division to develop an Internet-based Regional Data Center (RDC) to allow users to access, view, order and download GIS data via the Internet.

The Internet-based RDC was developed using ESRI's® ArcIMS® software, an advanced GIS Internet Map Server. ArcIMS® provides a robust set of features and tools for developing GIS Internet applications, allowing users interactive mapping capabilities including panning, zooming, identifying and querying features. The RDC system incorporates the standard features of ArcIMS® to access and display spatial data along with

Who is doing What in GIS and Spatial Technology?



WHO: REGIS — Grand Valley Regional Geographic Information System, an agency of the Grand Valley Metro Council

POPULATION: 600,000+

GEOGRAPHIC COVERAGE: All of Kent and portions of Ottawa County

NUMBER OF STAFF: 10

YEARLY BUDGET:

Approximately five million dollars during build-out phase. Anticipated to be about two million during O & M.

GIVE A STATUS OF YOUR PROGRAM:

The REGIS effort began with a pilot project in 1998. The full implementation phase of the project began in January of 1999 and is scheduled to conclude in the late summer of 2001.

The full implementation phase will see the conversion of 100 plus layers of data in the submodels of Cadastral, Transportation, Landbase, Water, Sanitary Sewer, Storm Sewer, Street Lighting Network, Steam Systems, Planning, Political Boundaries and Public Safety. Conversion is being completed by Analytical Surveys, Inc. of Indianapolis and by an in-house conversion team employed by REGIS.

REGIS deployed a centralized system architecture. Six large servers are used to house the REGIS applications and data. The database is an Oracle/SDE platform. Citrix is used to reduce the amount of the data being transferred over the network. The orthophotos are also compressed using MrSID. The 20 REGIS participants will be connected to the servers via a Wide Area Network. This same WAN will also be used to connect them to Kent County's Property Tax Administration System.

Some applications being developed or deployed as part of the full implementation phase include: a customized ArcView, facilities and parcel maintenance editor (ArcFM), general feature-based editor, Web-integrated parcel/GIS and ArcIMS. Convergent Group from Denver is our systems integrator.

Participants in REGIS include the following: County of Kent, cities of Grand Rapids, Walker, Wyoming, Kentwood, Grandville, Cedar Springs, East Grand Rapids, Hudsonville and Rockford; village of Sparta; townships of Alpine, Plainfield, Grand Rapids, Cascade, Gaines and Byron; and the organizations of the Grand Valley Metro Council, Kent County Road Commission and Inter Transit Partnership.

DESCRIBE ANY NEW PROJECTS OR ACTIVITIES:

Currently most activities are focused upon full implementation. In the near future we will be taking up the issue of data distribution for citizens and businesses. We anticipate making the data available using a number of different methods, including the Internet.

Also under development are a host of policies associated with the running of a multi-participant GIS. This includes everything from user accounts to a region-wide pricing strategy for data.

WHAT WOULD YOU DO DIFFERENTLY IF YOU HAD TO START OVER?

We would advocate reducing the number of applications we are developing in this phase and refocus those dollars and energy on issues like data maintenance planning and change management issues associated with implementing a GIS. While all of the applications benefit various user communities, it has proven a challenge to keep all the balls in the air. We have managed to accomplish this (with lots of effort and some pain) but have not been able to simultaneously devote the energy to planning for the future to the extent that it is needed. We are making a concerted effort to devote focus to data maintenance now in spite of the fact that the full implementation is not yet complete.

WHAT VALUABLE PIECE OF INFORMATION HAVE YOU LEARNED THAT YOU WOULD LIKE TO SHARE WITH THE GIS COMMUNITY?

For a multi-participant effort, “people issues” are as or more important to your success than the technology being implemented.

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Message from the President

Hi everyone, this month I want to talk about our committee structure: why it is the way it is, and what it means to get involved. IMAGIN is first and foremost a volunteer-based professional society and as such is directly responsible to and run by the membership, or YOU! Hence, to make the organization and our profession strong in Michigan we depend on the active participation of the membership.

This is especially true now, when through the result of some very productive strategic planning exercises, the Board of Directors decided to hone and strengthen the committee structure of IMAGIN. “Divide and Conquer” I believe was the intended motto, as we had found that a small group of volunteers at the top level, however well meaning, could not contribute enough to really move the organization forward. This has turned out to be a very good move, as evidenced by the continuing high quality of the newsletter, the conferences, and the addition of new ways to collaborate, such as the Quality Awards, Student Competitions and Map Galleries, to name a few. These positive activities are telling us that the structure and process are working, and the future for more exciting possibilities is on the horizon.

The member-based committees in IMAGIN are *Education, Events, Information Resources, Outreach, Quality, and the Web site Development Task Force* (what a name, eh). You can look on the IMAGIN Web site to see the current members of these



Jim Bennett
President of Imagin

committees. As of now, we have two of these committees, the Education Committee and the Outreach Committee that we would like to get into a more active status. So, this article is also a call for membership for these two committees. We are looking for people who wish to actively participate. The Education Committee is working on a Metadata grant and the Outreach Committee would like to really dive into making contacts and relationships with the many other organizations in Michigan that are connecting with GIS. Look for a sign-up board at the Annual Conference.

The advantages to serving on these committees are many. Besides contributing to the quality of GIS in Michigan, it is an excellent way to make professional contacts throughout the state (never a bad career move), become involved with your peers on meaningful projects, and prepare for deeper involvement in IMAGIN. There is an advancement track through IMAGIN from the committees to committee chairs to Board of Directors to officers such as myself. From my personal view, it's been very rewarding and always interesting. Come join us in these exciting pursuits!

If you're interested, please contact the Executive Director, Tracey Breen, for more information, or feel free to contact me. That's it for this chat. I look forward to seeing you at the conference and talking to you again soon.

INTERNET MAPPING/e-COMMERCE from page 1

additional customized functionality allowing PAG to easily and cost effectively disseminate their spatial data.

The PAG RDC consists of two main components: an interactive mapping component and an order fulfillment component. The interactive mapping component allows users to map, visualize and analyze spatial information. The order fulfillment component supports on-line data ordering functionality as well as server-side order processing, tracking, and invoicing. It also maintains information about the available data (i.e., metadata) as well as customer, shipping, billing and order information. Figure 1 shows the interactive mapping interface for RDC. A customized tool pallet (upper left) supplements the familiar ArcIMS tools (middle left).



Figure 1 — The Web-based RDC Interface provides simplified access to pan and zoom, data query and layer control.

identification tools. Another tool available in the RDC is *Easy Search™* which allows users to quickly identify specific points or areas of interest, such as specific addresses, street

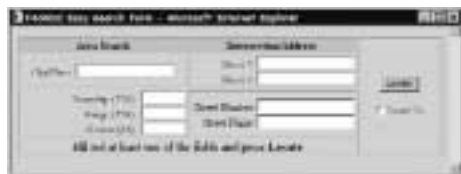


Figure 2 – Easy-to-use feature locator.

intersections, Public Land Survey System (PLSS) sections, city and place names. Figure 2 shows the *Easy Search™* interface.

Additional RDC interfaces step users through the process of ordering data on-line. Prior to ordering, users are able to visually review the quality of the data and attributes in conjunction with other data sets. After the user has reviewed the data, the first step in the order process is to select the

geographic area of interest. PAG's RDC uses the PLSS sections as the basis by which to select an area of interest. RDC support a variety of methods for selecting an area of interest including a simple rectangle, buffering selected features such as roads or parcels, or by selecting individual PLSS sections to form more complex patterns. Once the PLSS sections of interest have been selected, the user proceeds using the *On-line Data Request* wizard to step the user through the ordering process.

After selecting the data layers the user fills out the standard customer information form. If the user has previously ordered data from PAG they simply enter their e-mail address and the database will retrieve the billing and shipping information. The user then advances to the order summary page to review the order and select a payment method. Currently, the PAG RDC supports pre-paid (via check or money order) and invoiced orders. The system can be easily modified in the future to accept credit card payments. Once payment has been received, PAG simply updates the order status field to initiate automated processing of the data. Generally, the user receives ordered data within a few days. The user interaction with the spatial data combined with the ability to order the data using the data system is what sets the RDC apart from other on-line systems. Figure 3 shows the Customer Information and Layer Selection forms.

The other components of the PAG RDC are the Order Fulfillment System Database and Order Processing Tool. The database maintains the data layer availability, its pricing, customer information and order status. When orders are placed they can be immediately processed or held until receipt of payment. Once payment has been received the order is marked for processing.

The Order Processing Tool is used to prepare the GIS data and imagery by collecting and organizing the ordered data and metadata. Also included on the CD-ROM is a file listing basic order information (e.g., data layers, contact information etc.). The automated order processing system greatly reduces the level of effort required of the GIS staff by also automatically generating a CD-ROM label, packing slip and invoice.

Demand for GIS and Image data are increasing tremendously each year as government and commercial entities begin exploiting GIS data for various types of projects. These projects may be as diverse as a business selecting a location from available property, an outreach program determining the maximum return for a public cleanup effort, or state government wishing highly detailed data for a road

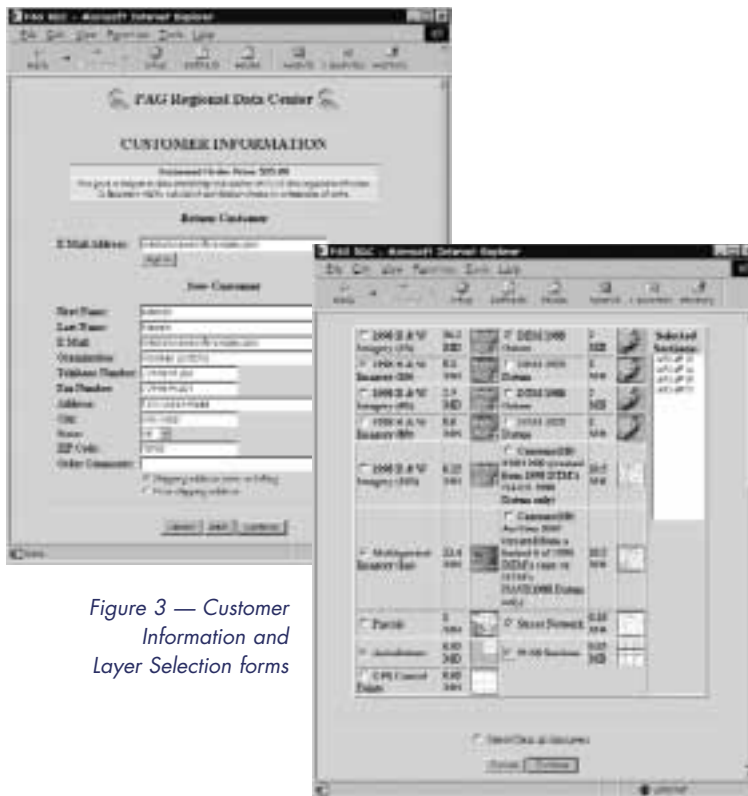


Figure 3 — Customer Information and Layer Selection forms

development project. To meet this demand at the local level with already-over-taxed GIS staff will be a major undertaking. The obvious solution is to combine the emerging new technologies that provide basic mapping and GIS analysis functionality with a standard Web browser and e-Commerce to support on-line data ordering. The PAG RDC merges both features into a single system that gives users the ability to view and evaluate the data and then purchase the specific data they need with minimal effort.

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State News

by Gary Bilow

The Department of Natural Resources (DNR) has begun taking delivery of digital orthophoto quarter quadrangles (DOQQs) for selected areas of the state. The DOQQs are being produced under an Innovative Partnership with the United States Geological Survey (USGS). USGS provides aerial photography (1998-99 color infrared) and digital elevation data used in DOQQ production. They coordinate federal funding for the project with National Resources Conservation Service, Environmental Protection Agency, Farm Services Administration and others. DNR coordinates state funding for the project (Michigan Information Center and DNR) and manages the contract for DOQQ production. USGS does the final quality assurance review before the imagery becomes part of the National Spatial Data Infrastructure.

DNR is re-projecting the DOQQs to the Michigan GeoRef coordinate system used in Michigan Information Center's Geographic Framework. They are being compressed using Lizard Tech's MrSID process and will be available for download on DNR's Spatial Data Library (www.dnr.state.mi.us/spatialdatalibrary).

Michigan Information Center (MIC) has begun re-positioning the Michigan Geographic Framework using digital orthophotography. Positions of features in the current framework are based largely on a combination of the old Michigan Resource Inventory System base map and U.S. Census Bureau TIGER line files. The arrival of improved Global Positioning System accuracy and high-resolution digital imagery provide both the impetus for and the tools to create a more accurate Framework. The center is using the best available imagery to accomplish this task. Re-positioning is a major effort which will require several months to complete.

DNR's Spatial Data Library now contains an On-line Maps link that allows users to view many of the Department's most requested maps. Included are Public Land Ownership, General Land Office Survey Plats, Geological Maps and others. Soon to be added (thanks to Department of Consumer and Industry Services, Subdivision Control and County Remonumentation Section) are maps showing locations of Re-monumented Public Land Survey Corners in the State. All maps are in Adobe Acrobat .pdf format and can be viewed with the free browser plug-in and saved to the user's machine.

IMAGIN Web Site Updated

by Brian Buckley, Systems Analyst, MSU CRS GIS

In an effort to provide better service to IMAGIN members and the Michigan GIS community in general, significant new functionality has been added to the IMAGIN Web site. The IMAGIN members' contact information is now available on the IMAGIN Web site. Also, there are several areas where users can post messages to the Web.

The "Current Members," "Board of Directors" and "IMAGIN Committees" pages in the "About IMAGIN" section now query a copy of the IMAGIN members database. If you get a chance, please check your contact information. If you would like to update it or release/withhold it, contact the Executive Director.

The "Current Members" page allows you to view the entire list of IMAGIN members. You can always view the member's name, title and organization. If the other contact information is marked as "Withheld" the member has requested that the contact information not be released. The members' contact information can be selected, sorted and displayed in numerous arrangements so that you can select the people you want and display their information in the format you prefer.

There are several areas where users can post, free of charge, their own messages and events to the Web site.

- What's New — news items you wish to publicize
- Resources/Training — any training classes you wish to publicize
- Resources/Calendar of Events — any other events you wish to publicize
- Market Place/Jobs — any jobs or internships
- Market Place/Resumes — your resume
- Market Place/RFPs — Requests for Proposals
- Market Place/Classifieds — any classified ads (except Jobs)

You can view upcoming IMAGIN Board and Committee meetings (they are open to the public) in the "About IMAGIN" section. Committee members are encouraged to post their upcoming committee meetings.

Please e-mail your suggestions to me at buckley@msu.edu.

Remember to think of the IMAGIN Web site the next time you need or want to share these types of information. The IMAGIN Web Committee hopes that we can make the IMAGIN Web site the hub of GIS in Michigan.

Brian Buckley is a Systems Analyst for the Center for Remote Sensing & GIS at Michigan State University. In addition to his MSU duties, he is also the Webmaster for the IMAGIN Web site and a member of the IMAGIN Web Committee.

New Members

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IMAGIN is a nonprofit 501(c)3 organization comprised of individuals and organizations interested in the use and application of geographic information system (GIS) technology in Michigan. Our members are committed to improving the quality and availability of digital data necessary to make good use of GIS. We believe that cooperation and open communication are necessary to achieve these objectives.

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