



# imagi NEWS

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## The State Orthoimagery Program

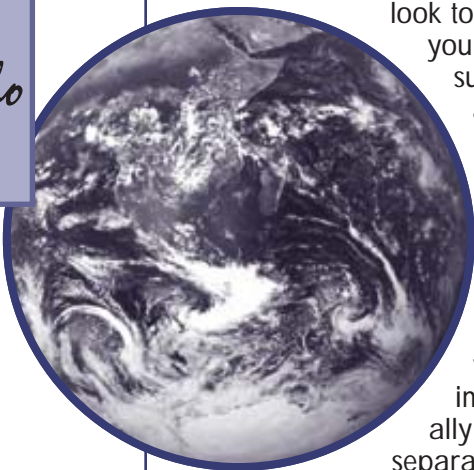
By Rob Surber and Kathleen Weessies

The State Ortho Program

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Those of you who want newer and higher resolution imagery of your local unit, please raise your hand. If you look to your left and right you'll see yourself

surrounded by state and federal employees who also use imagery of the entire state for various projects.

Because each group has different funding sources and varied needs, imagery has traditionally been purchased

separately, and considerable overlap occurs in imagery purchases.

To answer this problem, the Michigan Center for Geographic Information has developed a plan to partner with local governments to acquire imagery of the entire state on a five-year cycle. A plan to improve imagery would certainly be welcomed by all, but one may wonder how the differing needs of the contributing players can be met to everyone's advantage. The answer is an innovative and ambitious project, The Michigan Orthoimagery Partnership Program, the brainchild of Rob Surber and a combination of other interested people at the Michigan Center for Geographic Information (CGI).

The Michigan Orthoimagery Partnership Program will help local governments pay for their imagery acquisition with the

agreement that state government employees and contractors will also be able to use the imagery. Spearheaded by CGI, the program partners multiple state and/or federal agencies with counties and regional planning agencies to purchase imagery. The Program reconciles the varied needs of all participants, saves money, and will result in high quality imagery for the entire state.

CGI is proposing two types of partnerships, primary and secondary. A primary partnership occurs when CGI sits at the table with the local government at the time of setting specifications for the imagery product. The State's needs would be considered in the specification process along with all other participants. In return, the state government will likely agree to pay a larger percentage of the cost. The recent Southeast Michigan 2005 Regional Orthoimagery Project purchase is an example of this kind of partnership (see box on page 3).

A secondary partnership occurs when the State enters into the process after the specifications have been set but before the flight has occurred. If imagery specifications meet the minimum requirements of the State, then the State would pay some percentage of the imagery acquisition cost.

CGI is committed to sharing some imagery with all interested users. At this time, 1998 false color and 1992 black-and-white imagery of the state is available at the Geographic Data Library. The State plans to offer a degraded product

# Who's Doing What in GIS and Spatial Technology



## Northeast Michigan Council of Governments (NEMCOG)

**Population Served:** 141,199

**Geographic Coverage:** 4,810 square miles (12 457.843 km<sup>2</sup>); encompassing Alcona, Alpena, Cheboygan, Crawford, Montmorency, Oscoda, Otsego and Presque Isle counties

**Number of Staff:** 10

**Annual Budget:** Budget is determined on a per project basis.

### PROGRAM STATUS

Formed under Public Act 281 of 1945, NEMCOG facilitates the development of intergovernmental cooperation and coordination within the eight-county region of Northeast Michigan. The agency is committed to providing for a controlled growth policy, to preserve and improve the environment, to pursue greater efficiency and responsiveness of local units of government, and to improve the ecological, social, and economic well being of citizens within the region. NEMCOG is involved in community and recreation planning, land use planning, data distribution, economic development, environmental protection, grant writing, solid waste planning, transportation planning and improvements, and community corrections.

GIS plays an important role in many of NEMCOG's program areas such as water resources, land use, transportation, and natural resource planning. NEMCOG's approach to GIS/computer cartography involves each planner using GIS on his or her own project versus having a single support staff person providing that service for all projects. This model works best since the person developing data sets, conducting

analysis, and using GIS as a decision tool learns from the process and strengthens the final product.

Since most municipalities in its service area do not utilize any type of GIS, NEMCOG has been working to establish itself as a regional GIS center in order to fulfill the mapping and data distribution needs of the entire region. NEMCOG maintains and updates a central filing system with GIS files for each county containing information such as aerial photos, base map features, census data, current and future land use information, floodplain maps, geologic features, infrastructure assets, oil and gas location information, parcel data, public and private ownership data, raster graphics, recreational assets, soil survey information, wetlands, and zoning information.

These files are then utilized in many different project areas, including coastal zone management projects, economic development activities, groundwater management plans, local land use planning and zoning activities, natural resource planning, recreational planning and development, rivers, lakes, and watershed management plans, transportation planning projects, and wetland protection projects. For its GIS activities, NEMCOG primarily uses ArcGIS 9 and Maptitude 4.6. In addition, ArcGIS 8.3 and several versions of ArcView 3.x are still in use.

### NEW PROGRAMS AND ACTIVITIES

**Non-Motorized Trail Map:** A major GIS project that is currently underway is the creation of a non-motorized trail map for the Michigan Department of Transportation. NEMCOG is coordinating with the Northwest Michigan Council of Governments (NWMCOG) to create a map of MDOT's northern region, encompassing the counties of Alcona, Alpena, Antrim, Benzie, Charlevoix, Cheboygan, Crawford, Emmet, Grand Traverse, Iosco, Kalkaska, Leelanau, Manistee, Missaukee, Montmorency, Ogemaw, Oscoda, Otsego, Presque Isle, Roscommon, and Wexford.

Once completed, this map will show all known and proposed bicycle, hiking, riding, and ski trails in the northern Lower Peninsula as well as all identified state, county, township, and municipal recreational facilities with icons indicating amenities available at each facility. The map will also depict roads according to traffic volume and by width of the paved shoulder. Other data layers of information appearing on the map include points of interest, medical facilities, land use (developed areas, wetlands, and forests), state and national forests, other lands in public ownership, and service levels within the various communities.

**Hazard Mitigation:** NEMCOG has been working with all eight counties in its region to develop Hazard Mitigation Plans. A critical step in the process was to compile and analyze many different geographic data sets. Countywide hazards maps were compiled to identify hazards and

*THE STATE ORTHOIMAGERY continued from page 1*

from these cooperative ventures, perhaps 2-foot (60.96 cm) resolution imagery, free through the Data Library. This is an anticipated point of concern for local governments, as some recover their costs through imagery sales. Surber counters this concern with his finding that local governments don't actually recoup that much through imagery sales. More money is recovered, generally, from selling elevation data and parcel data. Will local governments recoup more costs through imagery sales than they receive from the State's portion of the purchase price? Receiving the money up-front rather than waiting for sales may allow the local government to afford a flight not otherwise possible or allow considerably better imagery than would otherwise be possible. After the purchase is completed, the local government still owns the imagery and can still sell it. The high quality imagery will still be desirable to buyers interested in high-resolution imagery.

Surber sees this cooperative venture as an excellent proposition for all parties and as a creative way to make dollars go farther and to pool expertise. The project offers a good return on investment, a win-win situation for all. The partnership also results in intangible benefits of fostering good will, and experience in building partnerships with other local governments.

The program is voluntary, but the State will eagerly seek partnerships with as many counties or regional planning commissions as possible. Cities and townships can participate by working with their county or region. Surber hopes to line up the equivalent of 15-20 counties per year for the first four years of the five-year cycle and is hopeful that 50% of the state imagery will be acquired through partnerships. In the fifth year, coordinating state and federal agencies will contract out the remainder of the State at the best specification they can afford with remaining funds. Such leftover nature may satisfy less wealthy counties unable to afford imagery acquisition, but the data quality will likely be lower than what is possible in a partnership. But, Surber notes, even 18" (45.72 cm) pixel imagery is better than the 1 meter currently available via the Data Library.

At the completion of the first five-year cycle when all imagery is acquired, the statewide coverage will be a patchwork quilt of varying products. Some areas will have color, some black and white. Some may have 6" (15.24 cm) pixels, perhaps others 18" (45.72 cm) pixels. All, however, will meet the minimum needs of the state agencies allowing base feature identification for asset management purposes.

How much money can a local hope to get? It varies and the amount will be negotiated depending on a number of factors unique to each situation. The State will consider how desirable the project is, and how likely the USGS can be enticed to participate. A variety of factors can make a project desirable. The USGS, for one, regularly acquires imagery for updating the topographic quadrangle maps. If

local government imagery acquisition specifications meet the needs of the National Map program, the State can bring more funds to the table than otherwise possible. Also, the USGS is interested in the several urban areas in the state identified by the Department of Homeland Security as "susceptible as targets".

This model was crafted looking at some other states that have cooperative programs. These other states programs are set up differently in that they only allow primary partnerships in which the state sets uniform specifications for every acquisition. In the Michigan model, however, instead of having inflexible specifications, Michigan will end up with varied products. But allowing such variations may enable more local governments to participate by minimizing disruption of local practices.

This project is already underway. Several partnerships have already been formed for spring 2005 flights, but some opportunities for fall flights are still possible. CGI is also looking ahead to 2006, 2007, and 2008.

*Interested parties should contact Rob Surber at [surberR@michigan.gov](mailto:surberR@michigan.gov) or (517) 373-7910 for a partnership application.*

## Southeast Michigan 2005 Regional Orthoimagery Project

The Southeast Michigan 2005 Regional Orthoimagery Project is a coordinated effort to acquire digital orthoimagery for the entire Southeast Michigan region. SEMCOG (Southeast Michigan Council of Governments) led this partnership in cooperation with Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne Counties; the Detroit Water and Sewerage Department; the State of Michigan; and the United States Geological Survey. The local cities, villages, and townships benefited through their partnership with the counties.

Deliverables included 6-inch (15.24 cm) color, 6-inch (15.24 cm) black and white, 1-foot (30.48 cm) color, 2-foot (60.96 cm) color, minor civil division tiled image mosaics, county mosaics, and reflective surface coverages, all at a lower cost than traditional imagery for seven separate county projects.

## WHO'S DOING WHAT *continued from page 2*

assess a community's vulnerability to hazards.

**Coastal Zone Management:** NEMCOG has been active for many years with the Coastal Zone Management Program administered by the Department of Environmental Quality. A recently completed project involved developing and updating GIS data sets covering all coastal communities (townships and cities) in Alcona and Alpena counties. Tasks included: update MIRIS land use/cover inventory files; update and/or create digital zoning maps; digitize parcel lines for parcels five acres (2.023 ha) or larger; develop soil constraints maps (color thematic constraints maps such as hydric soils, steeply sloped lands, septic system limitations, building constraints, prime farmlands) with digital USDA soils survey. As a result, communities were given CDs that contained color maps in Adobe PDF format and digital data sets in ArcView shapefile format in the Michigan GeoRef (meters) projection. This approach allows communities to reproduce and distribute maps to all planning commission members, organizations, businesses and the general public. In addition, GIS data sets were installed on Alpena and Alcona County systems, and the series of PDF maps have been posted on NEMCOG's web page.

**Alcona County GIS:** NEMCOG is currently working with Alcona County to establish a countywide GIS program. A local committee of departments and agencies has been formed to guide the development of the county GIS. Data sets developed for Hazard Mitigation and Coastal Management projects have been incorporated into the County's GIS. Current efforts include digitizing parcels and providing staff and agency training.

In addition to major projects that require higher level GIS analysis, NEMCOG also provides mapping services to any local agency or municipality that requests it. The agency has created numerous land use and future land use maps, zoning maps, oil and gas location maps, recreation facility maps, transportation planning maps, and base maps on a "per project" basis.

**GIS "Portability":** Communities thinking of developing a GIS component need not invest tremendous amounts of money in developing a centralized GIS Department. GIS is a very portable, spatially adaptable technology. The NEMCOG main office is located in Gaylord, on the western boundary of the region. This has led to the development of a satellite office in Alpena, on the eastern boundary of the region, to better serve the easternmost communities within the region. Staff members that live in the eastern areas can "telecommute" to the main office while providing assistance to the local communities around which they live. A large portion of the GIS projects are undertaken in the Alpena office where data management issues are addressed through routine Internet-based file transfers and other electronic communication methods. Maps that must be printed on the plotter at the main office or maps that need to be sent to a community or agency without GIS capability

are converted into PDF format. Employing these telecommuting methods saves the agency a good deal of travel time and expense and allows staff members to work in their own communities.

## LESSONS LEARNED/RECOMMENDATIONS

There have been challenges as NEMCOG'S operation model evolved over a two year period from one staff person providing GIS support services to five planners doing their own GIS on planning projects. Adding to the challenges are community/agency data sets in different coordinate systems, two different software packages, no formal "rule book" for storing and naming data sets, two office locations, limited funding sources, independent thinkers and normal staff turn-over.

The first step was to form an informal internal GIS users group to discuss issues and develop solutions. Some of the early-on steps included migrating all data sets to standard state-wide Michigan GeoRef, still recognizing that many communities are currently committed to other coordinate systems and projections. Therefore, data would be reprojected and sent back to the communities. NEMCOG established protocol for file naming nomenclature and directory structure. Additionally, there has been an effort to standardize color schemes for color thematic maps such as land use, future land use, wetlands, and zoning maps.

NEMCOG has recognized the need to provide direct on-site GIS services to member communities. The challenge has been finding secure stable funding paths. The goal would be to have NEMCOG staff on-site in a community four days a month and available for consultation at other times. While grants have helped start-up and short term funding, a sustainable on-site technical assistance program must be funded by local dollars. Given current budget issues in many communities, it will be a long process to reach this goal.

NEMCOG has been committed to using and promoting GIS since the late 1980s. The agency started back in the DOS-based CMap Version 1.0 days with a 286 processor, dual screen monitor system and a hard drive not large enough to store all of the region's data. NEMCOG is proud the GIS program has evolved into a robust decision making support tool for agency and community programs. By incorporating GIS tasks into appropriate projects, NEMCOG was able to allocate portions of grant monies to advance the agency's GIS capabilities. However, the overall credit to NEMCOG's success story can be attributed to the efforts of creative, dedicated, and hard working staff.

*For more information on NEMCOG's GIS program, please contact: Richard Deuell, Deputy Director/Senior Planner at (989)732-3551 or [rldeuell@nemcog.org](mailto:rldeuell@nemcog.org) or Denise Cline, GIS Specialist/Community Planner at [dmcline@nemcog.org](mailto:dmcline@nemcog.org).*

## From the President

As the days get warmer and summer springs upon us, many of us are planning vacations. But as we plan, think about the journey as much as the destination. Some of you may be familiar with the *Roadside Geology* series of books. These are typically focused on road cuts or cross sections observable from the roadside. There may be a specific reference to a fossil, an "erratic" (a rock deposited by the glacier that originated far away), or a discontinuity (a place where the geologic sequence is interrupted). By walking or driving through these cross sections, you can exchange space for time and see the geologic history of the place. A similar method can be applied to roadside geography, and Michigan is an outstanding place to study. Two handy books, John Poppelier's *What Style is It?: A Guide to American Architecture* and Grady Clay and S. Allen Chambers, Jr.'s *Close-Up: How to read the American City* and are invaluable resources. The first book provides a field identification key for architecture, the second focuses interpreting discontinuities on the landscape.

Driving almost any small US highway, or better still a state route, you can observe a seemingly endless sequence of urban cross sections. As the miles roll by, agricultural or forest land will transition into recent development, which will slowly transition through the architecture of the last hundred years, back to a town square or center with the major cross street. Frequently, this center has some of the most impressive buildings of the town, such as a courthouse, a bank, or a general store. The residential architecture of each period is distinctive - the Victorian two-story, the Sears cube, the ranch house of the 50s and 60s, the split-level, and so forth. The commercial architecture is similarly distinctive. Then the sequence will be reversed, and you'll gradually pass from old town to new town to out-of-town.

This cross section can be observed virtually anywhere, at various scales, from relatively large cities like Detroit and Lansing to small towns like New Buffalo and Frankfort. Just as in geologic cross sections, you see the occasional fossil - a five and dime store, or an A&W with the old drive-in booths. You may see erratics - the giant chicken on the west side of US127 in Hillsdale County, for instance. And you'll almost certainly see discontinuities - reflections of the relative prosperity of a place through time. For instance, the absence of a ring of 50s ranches likely indicates some tough times for a community. Thus it is possible to read the landscape for clues to both the physical and societal past.

The last few years have become increasingly fast-paced. Fax machines, cell phones, email - all seem to demand our immediate attention. But they've also brought GPS and in-car navigation, so no matter how far off the beaten path you get, you can still find your way home. So rather than sitting in traffic amongst SUVs, boats, and fifth-wheels this summer on I75 or US127, take a road less traveled and appreciate the journey. And if you're driving on Route 2, there's a great place to stop for a pasty between St. Ignace and Gladstone. You can recognize it by the sign - EAT.

IMAGIN President Steve Aichele can be reached at (517) 887-8918 or saichele@usgs.gov

# Mark Your Calendar!

## IMAGIN's 2006 Annual Conference

### May 1-3 2006

### at the Grand Traverse Resort in Traverse City.

**The Call for Abstracts will be distributed this Fall - share your success stories and challenges with your peers!**

## The National Agriculture Imagery Program (NAIP)

A large number of state and federal agencies are working together to purchase statewide coverage of 1 meter leaf-on color imagery. Federal partners will be responsible for two-thirds of the funding, with MSU and the State of Michigan responsible for one-third. These files will pass a rigorous QA/QC process for spatial accuracy, and spectral quality and will be certified by the Farm Services Agency. This imagery, which will be orthorectified to 1:12,000, will become freely available to the public in February 2006.

Project participants are: Michigan State University Remote Sensing & GIS (project leader), Michigan State University Land Policy Program, Michigan State University Remote Sensing & GIS, Michigan Department of Environmental Quality (MDEQ), Michigan Department of Agriculture (MDA), Michigan Department of Natural Resources (MDNR), Michigan Department of Transportation (MDOT), Michigan Department of Labor and Economic Growth (DLEG), Michigan Department of State Police (MSP), Michigan Center for Geographic Information (CGI), USDA Farm Services Agency (FSA), USDA Natural Resources Conservation Service (NRCS), and United States Forest Service (USFS).

For more information, contact Robert Goodwin, GIS/Remote Sensing Analyst, Remote Sensing & GIS Research and Outreach Services, Michigan State University at [goodwinr@msu.edu](mailto:goodwinr@msu.edu) or (517) 432-0879.

## Welcome New Members

- Ben Barker**, Northrop Grumman
- Anthony Bedogne**, Washtenaw County
- Pat Cummins**, ESRI
- Jerry Roberts**, City of Monroe
- Wendy Rodaz**, Northrop Grumman
- Patrick Sloan**, Livingston County
- Dale Smith**, Air-Land Surveys Inc
- Prince Tettch**, Air-Land Surveys Inc
- Lynda White**, Northrop Grumman

## Members News

**GeoAnalytics, Inc.** – a GIS consulting firm headquartered in Madison, Wisconsin – has completed development of a first-generation Automatic Vehicle Location (AVL) system based on Web and ESRI GIS technology for Oakland County, Michigan. Key customization services included developing Web-based vehicle status reports and application interface enhancements to meet County website standards.

**Hubbell, Roth & Clark, Inc (HRC)** – a consulting engineering firm servicing southeastern Michigan – is proud to announce it's celebrating its 90<sup>th</sup> anniversary this year.

**Hubbell, Roth & Clark, Inc (HRC)** – a consulting engineering firm servicing southeastern Michigan – is pleased to announce the Thomas D. LaCross, P.E. rejoins HRC as Associate after a ten-year period with Spalding, DeDecker, Associates, Inc., most recently as Vice President. Mr. LaCross originally joined HRC in 1987 and has 19 years of experience in large scale water and wastewater engineering concepts, design, and construction.

**InfoGeographics, Inc.** – a Traverse City based GIS products and services company – is pleased to announce the addition of intern Krystan Erickson. Krystan, a drafting and design technology student at Michigan Technical Education Center at Northern Michigan college (M-TEC), will be supporting several important GIS projects around the State.

**Encourage a colleague to join**  
**IMAGIN today!**  
[www.imagin.org](http://www.imagin.org)

The eleventh semiannual meeting of the **ESRI Northern Michigan User Group (ENMUG)** is scheduled for **July 12, 2005**.

This meeting will be hosted by Benzie County at the Government Center in Beulah.

**All are welcome to attend.**

For more information, see the group's website:  
[www.infogeographics.com/enmug](http://www.infogeographics.com/enmug)

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IMAGIN is a non-profit 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.

Steve Aichele, IMAGIN President

Tara Holmes and Matt Malone,  
Co-chairs/Services and Benefits Committee

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