



# imagi NEWS

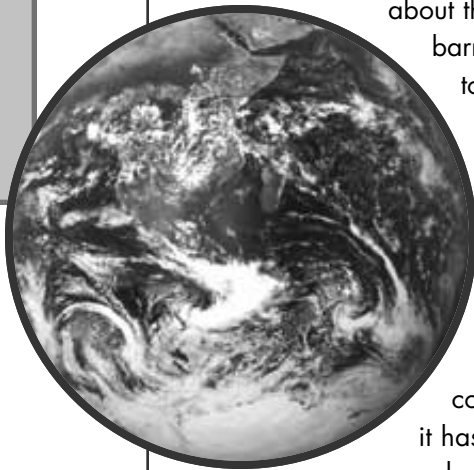
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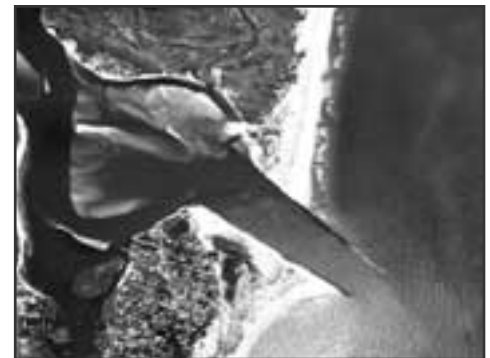


## LIDAR Brings New Mapping Benefits to Great Lakes Region

Shoreline features have always been a particular mapping challenge. But whether it's a federal agency concerned about the safety of protective barriers or a county/ township assessor looking for new docks and piers for reassessment, those shoreline features need to be mapped.

In the three years LIDAR has been used commercially, it has proven to be a good solution for shoreline mapping. With the refinement of LIDAR's capability for radiometric analysis, it's even more valuable.

Fly over, and you can see the jetty clearly, guarding the mouth of the inlet. Capture it on aerial photography, and it's just as clear — a straight line with ocean waves breaking across it. But try to capture it photogrammetrically to create mapping, and you're out of luck. Because the top of the jetty is often under water, it's



impossible to set targets necessary for the mapping process. And the constant ebb and flow of waves breaking atop the rocks means that every exposure is different, so it's impossible to see the photography stereoscopically.

On a recent shoreline mapping project, Woolpert LLP used LIDAR to develop a Digital Terrain Model (DTM) with a measurement every 2.7 feet to produce



1-foot contours. Moreover, by analyzing the radiometric intensity of the LIDAR returns, Woolpert was able to characterize the difference between water and rock, showing

the precise location of individual stones in a jetty. The information was then geo-referenced onto a digital orthophoto base

# Who is Doing What in GIS and Spatial Technology?



NAME OF MUNICIPALITY: City of Southfield  
 POPULATION: 75,728 (1990)  
 SIZE: 26.6 Square Miles (68.9 km<sup>2</sup>)

## STATUS OF PROGRAM:

In 1998, the City of Southfield selected the consultant team of Consulting Engineering Associates, Wade-Trim and Orchard, Hiltz & McCliment to develop our citywide GIS project. To date, the City has incorporated the following data into the GIS system:

- Oakland County parcel map
- Parcel ownership information
- GPS located 30,000 utility structures
- Oakland County orthophotography
- Planimetrics (edge of road, sidewalks, building foot prints, two-foot contours)
- Sewer lead locations
- Scanned images of water lead locations
- Wetlands/woodlands
- Streetlights
- Traffic signals and signs

The water mains, sanitary sewers, and storm/combined sewers themes will be completed this spring. The City received a grant from the Rouge Program Office to develop the storm sewer theme. A variety of software products are used to create, maintain and analyze the City of Southfield's data:

- ArcView for desktop viewing and data analysis
- MicroStation/Geographics for data creation, maintenance and engineering drawings
- Oracle for databases, forms, and reports

A combination of custom Oracle forms, reports, and a customized ArcView interface are used to enable users to retrieve basic information quickly and easily. Users access GIS data through a simple menu. If they want to locate a property by address, they simply type the information into the form and click a button to retrieve ownership information. Another click of a button sends them directly into ArcView, where the desired parcel is located and highlighted. Users can add themes easily by using custom ArcView pull down menus without having to navigate through numerous data files.

A half-day Introduction to Southfield GIS class was implemented to familiarize City employees with the data and how to access basic GIS information. The level of participation was excellent considering this was strictly voluntary. There was a nice cross section of personnel from department heads to new hires. As users become more familiar with the data and how to retrieve it, more advanced training will be provided.

There are currently two central GIS workstations that are accessible for all employees. In addition, there are GIS workstations in the following departments: Planning, Engineering, Transportation, Assessing, Police, and Fire. GIS has been taken into the field using laptop computers loaded with GIS data and software. This past winter, Water Supervisors used GIS during emergency water main breaks to quickly locate water shut-off valves that were buried in a foot of snow.

## DESCRIPTION OF NEW PROJECTS OR ACTIVITIES:

Most of the field data collection will be completed this spring. The next phase of the GIS implementation will focus on developing new applications, integrating existing data into

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## A Fresh Start from the Events Committee...



Jennifer Miller

The buzz around the coffee pots and soda machines has been that the 2001 IMAGIN Conference was a great success! We got a lot of positive feedback about our Student Paper competition, shorter presentation times, mix of speakers, and our extracurricular activities (despite the rain)!

The Lansing Center was crowded with over 400 attendees from all over the United States. Every session was well attended and speaker surveys were filled out on nearly every speaker! We tried many new things at the 2001 IMAGIN Conference; some we will keep with us next year and others we will work more diligently at to make sure they are a success in 2002!

The 2002 conference will also bring in some changes. We are looking forward to a brand new venue in northern lower Michigan, The Grand Traverse Resort! We hope to bring you new and exciting topics, more "nuts and bolts" sessions,

workshops and lots of other fun activities for during and after the conference! If you are interested in arranging or providing any of the above, please contact a Board Member or Events Committee Member!

There will be one major change to the 2002 IMAGIN Conference. The Events Committee chairperson, Jessica Moy is stepping down after organizing two great conferences! She did a wonderful job keeping us all on the ball and making sure we met our deadlines. Our new co-chairpersons are thankful that she has agreed to continue her involvement in committee! Taking over for Jessica are Barbara Saunders and Jennifer Miller.

The 2002 IMAGIN Conference is in the beginning planning stages. If you would like to get involved, even if it's only through email, please contact our new chairpersons at [barbara\\_saunders@michcon.com](mailto:barbara_saunders@michcon.com) or [jennifer\\_mmiller@yahoo.com](mailto:jennifer_mmiller@yahoo.com).

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### WHO IS DOING WHAT *continued from page 2*

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the GIS, and deploying GIS citywide. Some future projects are as follows:

- Deploying GIS throughout the City intranet
- Begin scanning building, engineering and site plans and incorporate these images into the GIS.
- Developing water valve shut-off and water main break applications
- Incorporating other data (pavement management, bench marks, free data) as it becomes available
- Developing a public GIS internet application

#### WHAT VALUABLE PIECE OF INFORMATION WOULD YOU LIKE TO SHARE?

A GIS project is a team effort. The project team includes every Department throughout Southfield as well as

consultants. To help make this a successful GIS project we will also need the support of our software and hardware vendors as well as support from the Oakland County GIS Utility.

The goal in the City of Southfield is to have a project that can be used by every department in the city. The availability of up-to-date data, along with our trained staff will allow city staff to incorporate GIS functions into their daily jobs. This will allow them to perform tasks more efficiently, more quickly and perform tasks they couldn't have in the past.

Name: Lynne Herf

Title: Project Manager/Traffic Engineer

Organization: City of Southfield

Telephone: (248) 354-4589

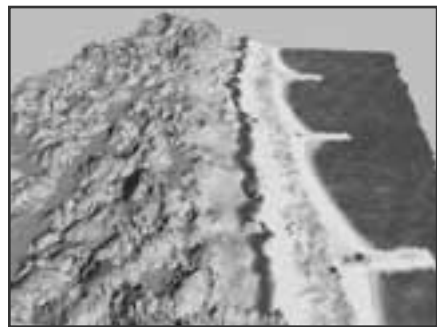
Email: [l\\_herf@cityofsouthfield.com](mailto:l_herf@cityofsouthfield.com)

LIDAR/NEW MAPPING BENEFITS *continued from page 1*

map. With that information in hand, the client will be better equipped to manage shoreline resources.

Just what is LIDAR? A distance measuring technology similar to radar, it works by emitting laser pulses, measuring the angle of the pulse and the time before it echoes back, then calculating the distance from the plane to the spot on the ground. Emitting 10,000 laser pulses per second, it gathers an enormous amount of data. Improvements in the past year or so have made LIDAR a much more practical solution for a much wider variety of projects than when it was first introduced.

Chief among the improvements is radiometric analysis. Radiometry measures the intensity of the return pulse, which is directly related to the surface off which it bounces.



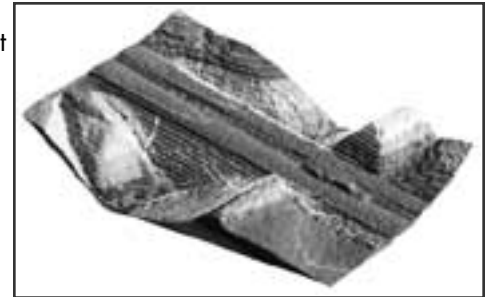
Mastering the analysis of these small variations in intensity can help overcome LIDAR's shortcomings in distinguishing between the ground and all manner of things on the ground, from trees to lakes to

impervious surfaces. Many photogrammetry firms are working to perfect software that will help with this analysis, which will aid greatly in feature extraction.

Even as those improvements are in the works, LIDAR continues to prove its value for projects such as shoreline mapping and corridors, where access is difficult or traditional photogrammetry is inefficient. Shoreline mapping is always a likely candidate for LIDAR because access is difficult. Integrating the LIDAR data with photogrammetric review often yields better results since shorelines frequently have heavy ground cover, and the mapping goal is frequently 1-foot contours. Working the technologies together saves significant time and effort over gathering the two data sets separately. LIDAR produces the DTM, so that compilers can begin the topographic mapping process with a geodetic framework in place. The operator checks the LIDAR-generated DTM superimposed over the stereo images to ensure the DTM is accurately positioned on the surface. LIDAR distant measurements alone can't distinguish between the edge of pavement and a car parked at the edge of the road, and it can't tell the difference between a treetop and a clearing. But the operator can easily make such distinctions visually. The

process saves significantly on compilation time and increases the accuracy of the DTM over one produced by LIDAR alone.

Like shoreline mapping, corridor mapping has its own unique set of characteristics in which LIDAR can prove to be valuable. Corridor mapping can benefit from LIDAR because it is cost effective, accurate, and an efficient time saving tool. While pipelines, electric transmission lines, and highway corridors appear to travel straight as far as the eye can see, they do in fact zig and zag their way across the countryside. These sites are often remote and difficult to map using traditional methods.



Couple these benefits of refined accuracies, new radiometric analysis and access to remote sites with LIDAR's long-acknowledged ability to turn a project around quickly — and you have new technology that is truly revolutionizing the mapping industry.

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**ELEVENTH ANNUAL IMAGIN CONFERENCE**

**GRAND TRAVERSE RESORT AND SPA  
APRIL 29-MAY 1, 2002**

**Mark your calendars now for the next Imagin Conference!**

Planning has begun to include all the educational tracts, activities and workshops you've told us **YOU** want to attend. Look for Call for Paper announcements, Exhibitor and Attendee Information in the Fall editions of the *ImagiNews*.

We are excited about Grand Traverse and welcome all input. Please feel free to email Conference suggestions to [execdir@imagin.org](mailto:execdir@imagin.org).

# Tenth Annual Imagin Conference



*Above: Student Paper Competition finalists: Ed Bissell, Michael Woods, Darcia Little, Jaclyn Burke*

Thank you to all who attended the Tenth Annual Imagin Conference held May 21-22, 2001 at the Lansing Center, Lansing, Michigan. Special thanks to Jessica Moy, Conference Chair, of the MSU Center for Remote Sensing for her dedication and tireless volunteer efforts in making this Conference a success. The Conference Survey results have been tabulated and we will be incorporating the suggestions for next years' Conference at the Grand Traverse Resort and Spa, April 29-May 1, 2002.

*Below: Charlie Bristol of Camp, Dresser & McKee presents cash award to Student Paper Competition winner Jaclyn Burke.*



TENTH ANNUAL IMAGIN CONFERENCE *continued on page 6*

TENTH ANNUAL IMAGIN CONFERENCE *continued from page 5*

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Bob Panick of Microsoft delivered the keynote speech and attendees enjoyed a wide variety of educational tracts, exhibits and software demonstrations at the Conference. Forty six exhibitors and over 70 speakers participated in the Conference along with Conference Sponsor ESRI and Co Sponsor ERDAS.

*Imagin President  
Jim Bennett  
opens the  
Imagin Conference.*



New this year was the addition of the Student Paper Competition. Four student finalists were selected to present papers - giving the students invaluable experience and exposure to their peers. The finalists were: Ed Bissell, Jaclyn Burke, Darcia Little, and Michael Woods with the judging panel choosing Jaclyn Burke as the overall winner. We look forward to next years' Student Paper Competition and please pass the word to any students you may know for the upcoming 2002 Student Paper Competition.



*Bob Panick of Microsoft  
delivers keynote speech.*

The Events Committee has begun preparations for the 2002 Conference and plans to continue the tradition of successful Conferences meeting the needs of the statewide GIS community. Volunteers are always welcome – should you wish to volunteer on the Events Committee or another Imagin committee, please email [execdir@imagin.org](mailto:execdir@imagin.org) for additional information.

IMAGIN AWARD WINNERS

Congratulations to the Imagin Award winners selected by the Imagin Quality Committee. The 2001 Award winners were:

GIS FOR EVERYONE: Oakland County

This award recognizes an individual or organization that promotes the propagation of GIS by exhibiting a program with any of the following characteristics: Data Sharing, Enterprise, Multi-participant and Internet Use.

GIS EDUCATION AND OUTREACH:

Orchard, Hiltz, McCliment - Scott Harrod, Parveen Darbar, Janice Lerg, Stephen Strain & Dave Berish

This award recognizes an individual or organization that established an original GIS program or activity that promotes GIS education seminars, training and GIS Day activities.



*Shane Pavlak of REGIS wins mountain bike raffle by SDI.*

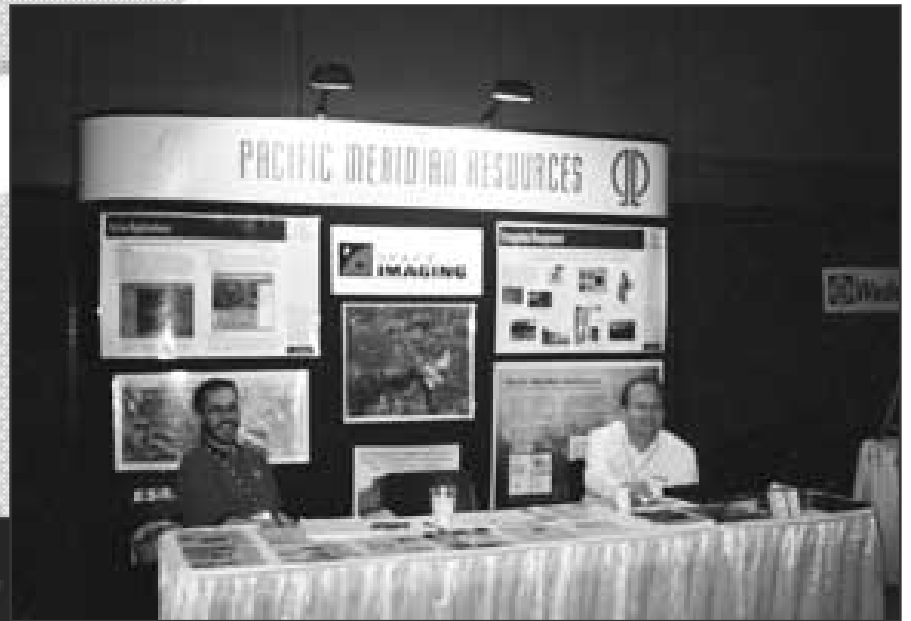


*Charlie Bristol, Jessica Moy and Brian Berdanier pick the winning raffle tickets for assorted door prizes.*

OUTSTANDING INDIVIDUAL ACHIEVEMENT IN GIS: Dave Shinavier - Barry County

This award recognizes an individual who has advanced the field of GIS through his/her contributions while representing and promoting the ideals of Imagin.

# Exhibitors Enjoy the Imagin



# Conference.



*Attendees catch up  
at the wine and  
cheese party.*



## New Members

### INDIVIDUAL MEMBERSHIPS

**Lynne Houston**

*City of St. Clair, City Assessor*  
547 N. Carney  
St. Clair, MI 48079  
(810) 329-7121

**David Brooks**

*Voter Education Fund*  
208 Fourth Ave.  
Ann Arbor, MI 48104  
(734) 327-7668

**Merritt Brown**

*City of Three Rivers, Engineering*  
1015 S. Lincoln  
Three Rivers, MI 49093  
(616) 273-1845

**Susan Sitterly, City Assessor**

**Tim Eggleston, Director**

*City of Tecumseh*  
309 E. Chicago Blvd.  
Tecumseh, MI 49286  
(517) 423-2107

**David Berry**

*Macomb Cty Health Dept.*  
*Environmentalist II*  
43525 Elizabeth Lake Rd.  
Mt. Clemens, MI 48043  
(810) 469-5236

**Jill Montgomery, Student**

*Grand Valley State University*  
209 E. Apple  
Muskegon, MI 49442  
(231) 724-1293

**Richard Mangus**

*City of Madison Heights, GIS Supervisor*  
300 W. Thirteen Mile  
Madison Heights, MI 48071  
(248) 837-2656

**Rick Comstock**

*Consumers Energy, GIS Analyst*  
1945 W. Parnell  
Jackson, MI 48854  
(517) 788-1452

**Brodey Hill, Assistant Planner**

*Langworthy, Strader, LeBlanc & Associates*  
15 Ionia SW Ste. 450  
Grand Rapids, MI 49503  
(616) 336-7750

**Raja Narreddy, CEO**

*Quantum Infotech, Inc.*  
30600 Telegraph #2220  
Bingham Farms, MI 48025  
(248) 593-1924

**John Meissner, Central Dispatch Technician**

*Livingston County*  
300 S. Highlander Way  
Howell, MI 48843  
(517) 546-4620

**Ken Koleda, GIS Manager**

*Ralph Tyler Companies*  
399 Survey Heights  
Westland, MI 48186  
(734) 326-3436

### SUPPORTING ORGANIZATIONS

**Andrews Land Surveying**

*Donald Andrews, Manager*  
*Janet Floirendo, GIS Specialist*  
67659 N. M-66  
Sturgis, MI 49091  
(616) 659-0079

### INDIVIDUALS ADDED TO EXISTING SUPPORTING ORGANIZATIONS

**Grand Blanc Township**

*Matt Malone, GIS Coordinator*  
*Larry Parks, Controller*  
5371 E. Saginaw  
Grand Blanc, MI 48439  
(810) 424-2600

**Oakland County**

*Steve Gay, Program Evaluation Analyst*  
1200 N. Telegraph Bldg. 34E  
Pontiac, MI 48341  
(248) 858-1318

**Wayne County GIS**

*Andrew Keller, GIS Specialist*  
*Larry Frank, GIS Analyst/Programmer*  
*Tammi Shepherd, GIS Analyst/Programmer*  
*Sarah Bozman, GIS Technician*  
415 Clifford,  
Detroit, MI 48226  
(313) 224-7715

**Livingston County**

*Robert Paul, GIS Coordinator*  
2300 E. Grand River  
Howell, MI 48843  
(517) 546-9858

**Dept. of Environmental Watershed Mgt. Division**

*Audra, Mealy, GIS & Data Manager*  
3600 Commerce Ct. Bldg. E  
Wayne, MI 48184  
(734) 326-3936



**Deborah L. Stoner**  
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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.

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