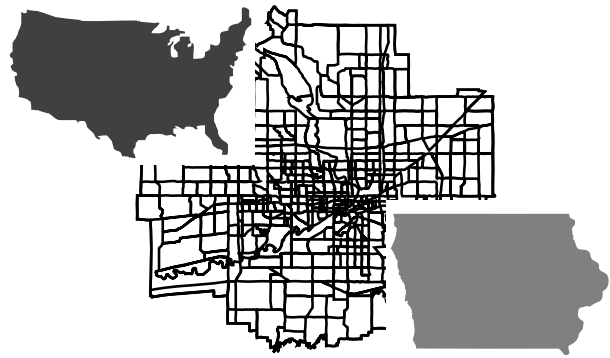


Coordinated GIS



Sharing data, exploring standards, and facilitating cooperation among Iowans who use Geographic Information Systems

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Third annual Iowa conference on geographic information systems

The University of Northern Iowa Department of Geography and the Iowa Geographic Information Council are cosponsors for the Third Annual Iowa Conference on Geographic Information Systems. The event is scheduled for **October 6 and 7, 1997, in Cedar Falls**. Early bird registration by September 22 is \$50 for participants and \$200 for exhibitors.

Newcomers and anyone considering using geographic information systems (GIS) and related technologies such as global positioning systems (GPS) are encouraged to attend. Information on GIS, GPS, and the implementation of these systems will be covered. Examples of the application of GIS to problems and organizations in Iowa will be emphasized during the

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IGIC conference mini proceedings

Following is a sneak preview of several of the sessions to be offered at Iowa's third annual GIS conference (October 6-7, University of Northern Iowa). Whet your appetite with these session summaries and then register for the real thing by September 22!

Plenary session

David Arringdale, Iowa Office of Technology Services, Des Moines:

lowAccess is a multimillion-dollar set of projects being funded by the U.S. General Services Administra-

tion and the state of Iowa and is designed to bring electronic government services to Iowa's citizens. It involves all levels of government from federal to local. An update on lowAccess will be provided.

Marty Adkins, USDA Natural Resource Conservation Service, Des Moines:

One lowAccess project involves building a better infrastructure for fostering increased use of GIS and

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coordinated GIS is a publication of the Iowa Geographic Information Council. The council is a partnership consisting of representatives of the geographic information system (GIS) user community in Iowa.

The GIS community includes federal, state, and local government agencies; universities; businesses; and nonprofit organizations that use or are planning to use GIS or global positioning system (GPS) technologies. These powerful technologies combine electronic maps, databases, and precision locations and can be used to improve decisions, save money, and enhance the quality of life of Iowa's citizens.

For more information about the council and its activities, contact the following members:

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e-mail: reg@iastate.edu

We welcome your comments and suggestions regarding **coordinated GIS**. What would **you** like to see in this newsletter?

Submit suggestions or questions to Reg Souleyrette

- by e-mail to reg@iastate.edu
- by mail (disk copy preferred; see the address listed above) or
- by fax to 515-294-0467

or to Marcia Brink

- by e-mail to x1brink@iastate.edu or
- by fax to 515-294-0467

The opinions, findings, or recommendations published here are those of the authors and do not necessarily reflect the views of the Iowa Geographic Information Council.

Managing Editor — Reg Souleyrette

Editor — Marcia Brink

Cover depiction of traffic analysis zones courtesy of the Des Moines MPO.



Conferences

IGIC conference mini proceedings

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related technologies in Iowa. The project includes establishing a state GIS coordinator position, enhancing the online clearinghouse for Iowa geospatial data, formalizing the Iowa Geographic Information Council, and implementing a statewide GIS education program.

Technical sessions

Using USGS data

Mark Coppersmith, USGS, Rolla, Missouri

The U.S. Geological Survey now offers many low-cost or no-cost data products that can be very useful in developing GIS applications. These include Digital Orthophoto Quads (DOQs) and Digital Raster Graphics (DRGs). This presentation will focus on how best to use these products in your applications.

GIS for managing seed-corn plots

Jim Webster, Pioneer HiBred International

Jim will be talking about how Pioneer uses GIS to track, organize, and manage seed-corn plots. Every year thousands of highly managed acres are needed to produce the seed corn Pioneer sells to corn producers all over the country.

GIS allows Pioneer to keep track of each field's development as well as soil chemistry and yield information that is important in management. The layers of information, data development, and analysis will be covered in the session.

GIS applications of USGS digital data

The National Mapping Division's mission is to ensure that the nation's needs for basic geospatial data are met. Accomplishing this mission involves developing partnerships with other federal, state, and local agencies to produce data to meet customers' needs and applications.

Digital data being cooperatively produced with the U.S. Geological Survey include digital line graphs, digital elevation models, digital orthophoto quadrangles, and digital raster graphics.

This presentation will focus on the uses and applications of digital raster graphics and digital orthophoto quadrangles in GIS applications. Techniques for combining images for use in GIS and GIS applications will be discussed.

Geological survey use of GIS technology

Bernard Hoyer, The University of Iowa

To people involved with GIS technology, the Geological Survey Bureau (GSB) may be best known as the manager of the Natural Resource Geographic Information System for the Iowa Department of Natural Resources. As such, GSB has been involved with developing and documenting spatial databases, establishing

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IGIC conference mini proceedings

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conventions or standards, training and assisting staff, and improving data access.

However, this role is really an extension of GSB's major roles: developing geologic information and making it available so it can be applied to various economic and environmental issues facing Iowa.

GSB is not simply a GIS manager. GSB is a significant GIS user for mapping geology and interpreting water resources. In reality, GIS technology has become a major tool in many aspects of GSB's mission.

This presentation will highlight examples of how GSB staff are using GIS to develop geologic information, interpret it, and provide information for both public and DNR clients.

GIS supports transportation

The Center for Transportation Research and Education (CTRE) at Iowa State University conducts research in the application of GIS to transportation. This presentation will highlight some of the center's Iowa projects, including the development of systems to support GIS-based accident location and analysis, freight demand, pavement management, transportation planning, and coordinated management of transportation infrastructure.

Specifically, CTRE is utilizing GIS to do the following:

- enhance the capabilities of the Iowa DOT's existing accident location and analysis system (PC-ALAS), providing advanced spatial query and display capabilities,
- support the analysis and decision-making processes required for enhanced freight planning in the state of Iowa,
- develop, implement, and operate a statewide pavement management system for the state of Iowa that utilizes a relational database management system (RDBMS) with dynamic segmentation capabilities,
- assist Iowa transportation planners and traffic engineers in conducting various impact studies, such as site impact analysis, interchange and other major infrastructure justification and bypass analysis, and
- establish databases for the formerly mandated ISTEAM management systems that are coordinated and that will support the investment decisions of the Iowa DOT and local governments for future transportation infrastructure in the state of Iowa.

Third annual Iowa conference on geographic information systems

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conference. Participants can also expect to learn about GIS software, GIS policy, and many potential applications. Exhibitors will be on hand to display products and services.

There will be a student GIS poster contest with first place, \$200; second place, \$100; and third place, \$50.

For further information on participant and exhibitor registration and the poster contest, please contact:

UNI Continuing Education
Non-Credit Programs Office
319-273-6988

For other information, contact:

Elizabeth Wilson
Continuing Education, Non-Credit Programs
132 SHC
University of Northern Iowa
Cedar Falls, IA 50614-0223
voice: **319-273-6913**
elizabeth.wilson@uni.edu

High-resolution commercial remote sensing satellites to blast off

Remote sensing may be defined as collecting information about a physical subject without being in contact with the subject. Aerial photography is probably the most familiar and most frequently used form of remote sensing, but satellites now collect information with instruments other than cameras (Kristina Ford, "Remote Sensing for Planners," Center for Urban Policy Research, Rutgers University, 1979).

Once the domain of only the military and intelligence gathering organizations, remote sensing satellites are going commercial in a big way.

Two companies, America's Eosat and France's Spot Image, have been offering remote sensing imagery for a number of years. However, coverage was limited and resolution was generally limited to 10 meters or more, meaning that objects smaller than one meter square could usually not be seen clearly. Only recently, in 1995, did six-meter resolution imagery become available commercially from an Indian satellite.

Within the next few years, the marketplace for remote sensing imagery will change dramatically as commercial remote sensing satel-

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Helpful GPS resources on the Web

Following is a list of World Wide Web resources to help answer common questions about GPS. I'm trying to keep it short, so it contains only pointers to other sources of information.

Where is this resources list on the Web?

- <http://www.bridge.de/~tom/mini-FAQL.htm>

How else can I get this list?

- e-mail only the word "gps-faq1" to ftp@atdbbs.com

Where can I find out more about:

how a GPS system (NavStar, GLONASS, etc) works?

- <http://galaxy.einet.net/editors/john-beadles/introgps.htm>
- <http://vancouver-webpages.com/pub/peter/gpswork.txt>
- <ftp://sundae.triumf.ca/pub/peter/gpswork.txt>
- <http://vancouver-webpages.com/pub/peter/gpsfaq.txt>
- <ftp://sundae.triumf.ca/pub/peter/gpsfaq.html>
- Differential GPS (DGPS):
 - <http://www.csi-dgps.com/gbl.htm>
 - <http://www.starlinkdgps.com/>
- NavStar:
 - <http://www.navcen.uscg.mil/gps/ggeninfo/>
 - <http://www.utexas.edu/depts/grg/gcraft/notes/gps/gps.html>
 - <http://www.laafb.af.mil/SMC/CZ/homepage/>
 - <http://milhouse.jpl.nasa.gov/>
- GLONASS:
 - <http://www.rssi.ru/SFCSIC/glonass.html>

a particular mapping system (datum)?

- <http://www.utexas.edu/depts/grg/gcraft/notes/datum/datum.html>
- <http://164.214.2.59/geospatial/products/GandG/GandG.html>
- <http://164.214.2.59/publications/guides/MADTRAN/index.html>
- <http://164.214.2.59/geospatial/products/GandG/sathtml/home.html>

which SVs (satellite vehicles) are visible right now?

- <http://tycho.usno.navy.mil/gps-altaz.html>
- <http://satnav.atc.ll.mit.edu/java/SVOverlay/SVOverlay.html>
- <http://satnav.atc.ll.mit.edu/java/Predictor/Predictor.html>
- <http://sirius.chinalake.navy.mil/cgi-bin/satpred-query>
- <http://www.cnde.iastate.edu/staff/swormley/gps/satellites.html>

the accuracy of GPS systems?

- <http://satnav.atc.ll.mit.edu/>
- <http://satnav.atc.ll.mit.edu/gps/images/gps-scat.gif>
- http://www.cnde.iastate.edu/staff/swormley/gps/check_sa.html

High-resolution commercial remote sensing satellites to blast off

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lites capable of resolving objects on the ground in the range of from 1 to 3 meters in size are launched into orbit. This means that for the first time, commercial satellite remote sensing imagery will be available at a level of detail that rivals aerial photography. At least two companies, Space Imaging (owned by Lockheed, Raytheon, and Mitsubishi) and a Colorado company called EarthWatch, are expected to become the major players in this market. It is likely that these images will be delivered via secure electronic commerce over the Internet. Both companies will use multiple satellites so that most locations on earth will be visited (and can be imaged) frequently.

One market research firm has valued the market for high-resolution remote sensing imagery at over \$2.5 billion per year worldwide by the year 2000. This compares with the current total for the GIS products market, which now exceeds \$2 billion and is growing quickly.

For a longer article on this topic, see "Private Spy," *Wired*, 5.08, August 1997, p. 114.

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- <http://www.erols.com/dlwilson/gps.html>
- <http://www.ualberta.ca/~norris/navigation/GPS/PlotSA.html>

calculating distances on a sphere or ellipse?

- <http://www.best.com/~williams/avform.htm>
- <http://www.best.com/~williams/gccalc.htm>

orbital models?

- <http://dSPACE.dial.pipex.com/town/plaza/he13/orbmot.htm>

manufacturers of GPS receivers?

- <http://www.eaglegps.com/> (Eagle)
- <http://www.garmin.com/> (Garmin)
- <http://www.lowe.co.uk/> (Lowe)
- <http://www.lowrance.com/> (Lowrance)
- <http://www.alloutdoors.com/magellan/> (Magellan)
- <http://www.cacd.rockwell.com/> (Collins)
- <http://www.nb.rockwell.com/> (RSS)
- <http://www.rockwell.com/> (Rockwell)
- <http://www.trimble.com/> (Trimble)
- <http://gauss.gge.unb.ca/manufact.htm> (others)

a particular GPS receiver?

- Garmin 12XL:
 - <http://www.bridge.de/~tom/garmin.htm>
- Garmin IIPlus:
 - <http://www.bridge.de/~tom/gps2plus.htm>
- Garmin Xceivers (incl. 12XL/45XL/45/38/II):
 - <http://www.eskimo.com/~klah/g45faq.txt>
 - <http://vancouver-webpages.com/pub/peter/g45faq.txt>
 - <ftp://sundae.triumf.ca/pub/peter/g45faq.html>
 - <http://www.oasiskc.net/~reid/gps/> (test mode & other tidbits)

software for GPS receivers?

- <http://ourworld.compuserve.com/homepages/rimmer/waypoint.htm> (Waypoint)
- <http://www.fugawi.com/> (Fugawi)
- <http://www.rmstek.com/> (Vista)
- <http://www.maincourse.com/> (NavMaster)
- <http://www.gpss.co.uk/> (GPSS)
- <http://www.anali.demon.co.uk/> (Anali)
- <http://www.gpspro.com/> (GPSPRO)
- <http://www.csn.net/~lwjames/GPSPRO.html> (GPSPRO)
- <http://mayko.com/xmap/> (XMap)
- <http://www.netcore.com.au/~biochem/4wgpslg.html> (4WGPSLog)

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Helpful resources on the Web

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- <http://www.stellarnav.com/mapsite.htm> (MapSite)
- <http://www.navcomp.com/software.htm> (RasTrac)
- <http://ourworld.compuserve.com:80/homepages/wingps/> (WingPS)
- <http://www.nobeltec.com/> (NavTrek)
- <http://vancouver-webpages.com/pub/peter/mapprogs.txt>
- <ftp://sundae.triumf.ca/pub/peter/mapprogs.txt>
- <http://vancouver-webpages.com/pub/peter/index.html>
- <ftp://sundae.triumf.ca/pub/peter/index.html>

re-sellers of GPS products?

- <http://www.csn.net/~lwjames/> (James and Assoc.)
- <http://www.commsys.com/> (Comm Systems Intermountain)
- <http://www.navtechgps.com/> (NavTech)
- <http://www.unibase.com/fps/homepage.html> (First Pacific Software)
- <http://users.iafrica.com/k/ke/keithp/gps/> (Keith Pickersgill)

Try these locations for more information:

- <http://www.gpsy.com/gpsinfo/>
- <http://www.eskimo.com/~archer/gps.html>
- <http://sirius.chinalake.navy.mil/homepage.html>
- <http://www.cnde.iastate.edu/gps.html>
- <http://www.eskimo.com/~klah/>
- <http://vancouver-webpages.com/pub/peter/index.html>
- <ftp://sundae.triumf.ca/pub/peter/index.html>
- <ftp://sundae.triumf.ca/pub/peter/nicad.faq>

Suggestions for changes to this list should be e-mailed to me.

The above opinions may differ from those of others. Take no offense.

For more information, contact the author:

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NSDI framework survey is coming!

If you are employed by a federal, state, or local government agency, please read this announcement!

The largest GIS data survey effort ever performed is about to get under way. If you work in either state or local government and have anything to do with geographic data, you will probably be asked to participate.

The Federal Geographic Data Committee (FGDC) and the National States Geographic Information Council (NSGIC) will soon survey thousands of government agencies as part of the development of the National Spatial Data Infrastructure (NSDI).

After months of development, the survey will be mailed early this fall.

The survey is phase one of a two-phase project jointly undertaken by NSGIC and FGDC to "snapshot" current data available from governments throughout the United States. Phase two will develop and test guidelines for building and main-

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Correction! It's really MAGIC

In the May 1997 issue of *coordinated GIS*, we mistakenly called the MidAmerica GIS Consortium "MAGIS." The correct acronym is "MAGIC." We apologize for the blopper.

And a reminder: MAGIC is planning a May 1998 symposium in Lincoln, Nebraska. Watch for details on MAGIC's Web site:

<http://www.geo.drake.edu/magic>.

Or contact:

Joyce Baker
voice: 319-341-9885
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joyce-baker@uiowa.edu

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taining inventories of data and reporting this information through the National Geospatial Data Clearinghouse.

"This is an exciting effort. After years of organizing and preparing, it starts us on the path of actually creating the NSDI," explains Bruce Westcott, one of many volunteers donating time to this effort. Westcott is executive director of the Vermont Center for Geographic Information and a member of the NSGIC board of directors.

The NSDI Framework Survey can be filled out in hard copy, on diskette, or even on the Internet. State and local agencies can expect to receive the survey from their state geographic information coordinator, or directly from NSGIC, in early fall.

For more information, contact the author:

Karen Siderelis
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karen@cgia.cgia.state.nc.us

or contact the NSGIC Secretariat
voice: **603-643-1444**
fax: **603-643-1600**
nsgic@aol.com

Iowa Lakes receives grant

Good news! Iowa Lakes Community College will receive a National Science Foundation Instrumentation and Laboratory Improvement Grant

(Iowa Lakes GIS/CADD Lab Improvement).

The grant will allow the college to purchase seven upgrade computers, a couple large digitizers, a color inkjet plotter, a sub-meter GPS system, and about \$30,000 of software. The new equipment will allow me to get a better start on teaching GIS.

The grant amount is for approximately \$51,000 plus a match of \$51,000 from the college for a total of \$102,000.

For more information, contact the author:

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rpatocka@ilcc.cc.ia.us

Iowa geospatial infrastructure project builds

The Iowa Geographic Information Council's steering committee put in a great deal of hard work last year in working with the Iowa Intergovernmental Information Technology and Telecommunications Task Force (IITTF) to develop a road map to foster more rapid deployment of GIS and related technologies. Their reward was a federal grant of more than \$200,000 from the U.S. Department of General Services (GSA).

Currently, a small group of IGIC steering committee members and others are working to make the

plan a reality. This project, dubbed the Iowa Geospatial Infrastructure Project, is now one of 13 projects encompassed by lowAccess, a multi-million dollar effort designed to bring the benefits of electronic government to Iowa's citizens.

The Geospatial Infrastructure Project has several key components, including the following:

- Formalizing the IGIC through an executive order from the governor. Similar formal GIS organizations now exist in a number of states, including Kansas and Minnesota. This will make the IGIC the official organization for coordinating GIS and related activities in Iowa.
- Hiring a state GIS coordinator to promote coordinated GIS development at all levels of government in Iowa. The coordinator will also serve as staff for the IGIC and will be housed in the state of Iowa's Office of Information Technology Services (ITS).
- Building an enhanced Iowa geospatial data clearinghouse on the Internet to encourage sharing of GIS expertise and data resources.
- Developing and implementing a statewide education and training program for GIS and related technologies. This program recognizes the current lack of GIS training and education resources in the state.

By the time of the annual Iowa GIS conference in October, the project should be well on its way to being implemented. The process of hiring

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GIS across Iowa

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the GIS coordinator has started, proposals for the clearinghouse have been sought and received, and work has begun on drafting the executive order and on the educational program. The entire plan will be implemented before summer 1998. It continues the IGIC's tradition of encouraging decentralized, voluntary cooperation and collaboration on GIS.

The Iowa Geospatial Infrastructure working group currently includes:

Federal government

Marty Adkins, Natural Resource Conservation Service, USDA (Co-Chair)

State government

Dave Arringdale, Office of Information Technology Services
Beth Henning, State Library of Iowa
Bernie Hoyer, Iowa Department of Natural Resources

Local government

John Brandt, Linn County Human Services
Harold Jensen, Story County Engineer

Universities and community colleges

Joyce Baker, University of Iowa
Kevin Kane, Iowa State University, GIS Support Facility
Roger Patocka, Iowa Great Lakes Community College
David Plazak, Iowa State University, Center for Transportation Research and Education (Co-Chair)

Support for the project is also being provided by the Iowa Office of Information Technology Services and the State Public Policy Group in Des Moines.

The IGIC also recently received a \$6,000 grant from the Federal

Geographic Data Committee (FGDC) to support its outreach and coordination activities such as this newsletter.

For more information about the lowAccess Project, contact either of the co-chairs:

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fax: **515-284-4394**

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