GIS Will Affect the Political Landscape for the Next Decade and Beyond
Mark Salling, Ph.D., GISP

Redistricting may be the most important application of GIS technology – period!

Every day the political vitriol spews out in the news media at us. Both major parties are more aggressive and uncompromising than ever.

That climate is sure to carry-over into the redistricting of congressional and state legislative districts in the coming months, as we now have the 2010 census data which is required in drawing district boundaries.

Redistricting is on the mind of every legislator across the country and the heat that it creates will intensify over the coming months. Redistricting will have a major impact on the politics we hear and read every day, and the results will affect our nation’s political make-up and thus the decisions made by legislators and our government for the next ten years, at least until the next census and new redistricting after the 2020 census.

GIS is at the heart of the process. It provides the critical tools needed for the redistricting task, enabling the user to draw lines on a map and get the resulting population (and recent election results if added to the database) almost instantaneously. Move a boundary and see the new population data in each affected district.

And it provides measures with which to compare and evaluate district plans. Calculate compactness of districts, their contiguity, the likely minority districts, the number of communities of interest divided by district boundaries, the competitiveness of each district based on the proportion of party votes in previous elections, and the representational fairness of the plan as measured by how the likely distribution of winners in each party compares to the overall distribution of votes for those parties.

When augmented with some of these tools GIS becomes a spatial decision support system that the decision makers can use to make district plans that meet their criteria – including making it so that one party has a significant advantage over others. And that advantage does not hold merely for the next election using the new district boundaries, but for the elections that follow, until the next redistricting takes place ten years later.

To underscore the importance of redistricting, I offer the following facts about elections in Ohio over the last decade.

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In Ohio, like most states, redistricting is decided in a partisan process. That is, the politicians draw the boundaries. Some have compared this to letting the fox guard the henhouse.

The most partisan decisions are possible when one party is in control – has a majority. This happened ten years ago in Ohio, when Republicans won two of the three statewide races – Governor and Secretary of State – that help to compose the Apportionment Board. That board, which also includes the state auditor and one from each party of the state legislature, draws the state legislative districts in the upper (senate) and lower (house) chambers. Republicans also took majority control of both parts of the legislature. Congressional districts in Ohio are created by legislation – the legislature with signature of the governor draw congressional boundaries. Thus Republicans controlled, without restraint, redistricting of both the state legislature and the 18 congressional seats the state held.

How effective were the district plans they drew in helping Republicans win elections? We present the numbers.

Before that though, please note that the presentation of data showing the benefits that Republicans gained as a result of their control of redistricting is not a condemnation of that political party. The Democrats would have done the same thing if they had the opportunity.

This is an argument about the importance of redistricting, and the impact that partisan control has on election outcomes – regardless of which party is in control.

**Here are the results.**

In state house elections in 2002, Republican candidates won 62 of the 99 seats – 63 percent. They did that with only 56 percent of the total votes statewide. If the split in the number of seats won was proportionate to the 56 percent of voters voting for Republican candidates, they would have won seven fewer seats. Their “representationally fair” total would have been 55 instead of 62 victories. It is reasonable to conclude that Republicans won seven seats just because they drew district boundaries to their advantage.

But this advantage lasted longer than the first election after the districts were re-drawn. In 2004, Republican candidates for the House won 59 of the 99 seats (60%), while getting just over half – 52 percent - of the votes statewide. That gave them eight seats more than what they would have won had the seats gone in proportion to the state’s voters’ preferences for Republican and Democratic candidates overall.

In 2006, despite garnering less than half - fewer than 48 percent - of the votes, Republicans won 53 seats – a majority. That is six seats won due to how the districts were drawn back in 2001 by the Apportionment Board. It enabled the party in control of redistricting five years earlier to keep a majority in the House despite getting less than half of the votes.

Without the disadvantage of geography, the Democrats would have taken majority of the House in 2006. They had 52 percent of the total votes.

Instead they had to wait until the Obama tidal wave in 2008, when they took control of the House 52 to 47. The Obama effect was so strong that the Democrats actually won two seats more than their share of votes.

But the impact of district boundaries favoring Republicans returned in the 2010 elections, when they returned to control in the House with 59 seats. Based on overall statewide preferences for the two parties Republicans won four seats due to how the lines were drawn 10 years earlier.

The pattern is the same in the Ohio Senate, where half of the 33 seats are at stake every other year. There are 16 or 17 seats contested every two years.

Again, the party that drew the lines has been able to win a disproportionate number of seats in every election.

In the 2002 election, with less than half the votes, they won 9 of 17 races – a majority. In 2004, they won 13 of 16 seats – 81 percent, when their statewide votes – 63 percent - would seem to only merit winning 11. Again with fewer than half - only 42 percent! - of the votes in 2006, they managed to take 8 of the 17 seats – one more than their vote share would indicate.

It continues. In 2008, they won 58 percent of the vote while taking 81 percent of the Senate seats – 13 out of 16. And in the most recent election they won 10 of 17 (59%) contested seats with only a bare majority of votes statewide (51%).

That is the work of the Apportionment Board 10 years earlier.

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years earlier.

With ratification by the governor the state legislature draws the US congressional boundaries.

The one-party-controlled legislature 10 years ago had a goal in mind – give Democrats some easy (non-competitive) districts by concentrating them in a few districts so that they have less chance of winning elsewhere. Spread the Republican votes around so that there is enough to ensure a probable Republican win.

As a result Republican candidates won 12 of 18 (67%) congressional seats in both 2002 and 2004 - with 57% and 51% of the votes in those years. Even more remarkable, in 2006 they won 11 of 18 races with only 47 percent of the statewide votes.

Their boundary advantages were offset by the Obama candidacy in 2008 with only 9 of the 18 seats won; but they were able to do that with only 46% of the vote. The partisan redistricting effect returned in the 2010 election – Republicans won 13, or 72 percent, of the races - while garnering only 56 percent of the vote.

With this most recent election, the voters again chose Republicans to control the Apportionment Board and the state legislature - and therefore the political landscape of Ohio for the next decade or more. The one-party-controlled legislature, which is at least partly in the majority now due to its ability to draw boundaries 10 years ago, is set to draw the congressional boundaries in its favor for the next decade. If they are good at it, and there is no Obama or similar game-changer, they could maintain their advantage well beyond.

Let’s make the point – in almost every election in the last 10 years, the party that had exclusive control over redistricting ten years ago won a disproportionate number of elections compared to their vote totals. The only exception was the Obama effect in 2008 - and that was only in the Ohio House.

Let me repeat --- this critical analysis is not aimed at those who drew the districts, nor their party. The purpose is to show what happens when the redistricting process allows one party to make the decisions. It is a huge advantage, one that few people really appreciate.

Certainly few realize how their vote for Governor, Secretary of State, and State Auditor can give such lasting advantage to one party. Few Ohioans can even name the State Auditor.

But though GIS facilitates drawing boundaries in favor of one candidate or party over others, it also now offers more potential than ever to evaluate districting plans. And because of advances in GIS and the Internet there will be more scrutiny of the redistricting process than ever before. Today’s technology makes drawing boundaries by non-experts relatively easy. And it facilitates comparisons of plans using “non-partisan” measures – such as representational fairness, compactness, and others.

Though improvements are still needed, GIS available via the Internet can be used by the average citizen with relatively little training to draw districts, evaluate results, and compare them to others. Non-partisan and fair election interest groups, especially, will be able to suggest plans that, based on measurable criteria, may be judged “better” by the public than those that the politically partisan decision makers will draw. Through this public participation application of GIS, there is a good chance that the issue of representational fairness in our representational democracy will enter the public debate.
Private and public sectors are scrambling to create efficiencies, find cost savings/avoidance and visualize choice through detailed spatial analysis. It has been the recent economic crunch that has brought unprecedented exposure and dependence on GIS technologies to deliver such benefits.

GIS technology is now becoming easily accessible to a much broader user community through cloud computing (using the Internet to host computer data and software). Esri has scaled out GIS resources and data to leverage this platform for wide scaled collaboration. It is this collaboration that will further add exponential value to many facets of public and private industry, government, and end users alike.

The Issue:
While Lake County GIS has been successful with embedding GIS technologies within its organization, there have been some considerations to work through such as basic GIS software training for the new end users, associated software and licensing costs and several others. The recent release of the new ArcGIS Online platform through arcgis.com may be the needed solution to most of these past considerations. Lake County needs an inexpensive way to identify and create efficiencies across and within functional departments, and GIS technology is the tool to deliver many of these efficiencies.

The Solution:
Now, with the advent of the Esri ArcGIS Online and ArcGIS Explorer Online cloud solutions, we can more efficiently and effectively leverage this technology to a much broader audience. Using a web based browser that can be accessed by anyone with a computer and Internet connection, GIS technologies are being leveraged to provide a much more efficient enterprise solution which contributes to enhanced customer service and better decision making. It is now possible to put simple map creation into the hands of staff who are not necessarily trained in GIS, and reserve the highly-skilled GIS staff for more intense and proactive activities, saving time and resources throughout the county.

Return on Investment:
The return on investment is anticipated to be tremendous from several perspectives for Lake County. Cost savings/avoidance, enterprise optimization, process improvement, communications and integration, seamless collaboration, and visibility to priority projects that add value to provided services are just a few of the major benefits. In addition, this platform has the potential to transform how GIS technologies are used by transforming how governments do business in a more proactive and transparent manner.

Such websites as Recovery.Gov and GIS for Stimulus Reporting are leveraging GIS technologies to drive decision making and enhance reporting capabilities to an unprecedented level. The strategic deployment of this technology is something Lake County is looking to do, but on a much smaller scale using ArcGIS Online.

While the traditional internal GIS infrastructure is necessary and critical to any successful enterprise initiative, we can now extend the GIS enterprise environment with little concern for additional software, hardware, or licensing expenses. This strategy would only increase the return on investment and allow the general public to actively explore and use GIS technologies. Lake County GIS attempts to add value by implementing high ROI GIS driven strategies, and is now attempting to position itself to do so again using the ArcGIS Online and ArcGIS Explorer Online cloud based solutions.

Some of our tentative plans to leverage this technology include porting over several application development projects to be accomplished using ArcGIS Explorer Online in place of customized application development. This will empower the custodian department of the project to update the ArcGIS Explorer Online Application Map themselves in a timely manner, thus freeing up GIS staff time. In Lake County’s case, it would allow other departments to create, edit, and share maps related to their specific function. There are tremendous Emergency Operation Center (EOC) possibilities for on-the-fly sharing of valuable data, such as flagging incidents, reporting damage assessments, sharing shelter site information to name just a few.
President’s Column

URISA’s Value
You’ve heard of the GIS Certification Institute, right? Many of you are probably certified GIS Professionals. And you’ve probably heard of GISCorps, I would imagine. You may be aware of recent missions they’ve undertaken in Japan, Haiti, Louisiana, and elsewhere to provide disaster relief mapping and geospatial services. These are just two high profile activities that URISA International has sponsored on behalf of you, its members. These activities and many others are possible because URISA International members support the organization with dues and active participation.

The Board of Directors, staff, and the URISA Divisions and Committees leverage the financial and human resources of the organization to a remarkable degree to provide direct and indirect benefit to you. If you aren’t aware, you should know about these other URISA International activities that are part of what makes URISA so valuable to you.

Many of you have probably been aware that URISA was leading the effort to develop and finalize a national Addressing Standard. Well, that standard was endorsed by the Federal Geographic Data Committee recently. This is an incredibly valuable piece of work that directly benefits every jurisdiction and will undoubtedly have far-reaching international ramifications as other countries use this development to spur their own address standardization and improvement efforts. Improving address data means the ambulance gets to the stroke victim more quickly and reliably. That’s huge. That’s URISA, working for you.

The U.S. Department of Labor (DOL) initiated a Geospatial Technology Competency Model ten years ago by working with a group of geospatial organizations. Progress was slow in gaining agreement from the GIS community about what constituted skills and competencies needed to be a GIS professional. In 2009, URISA leaders worked with a panel of experts convened by the National Geospatial Technology Center of Excellence to complete the DOL model.

URISA is now undertaking, with the support of DOL, the development of the Geospatial Management Competency Model. A full day track on this activity will solicit input from the GIS community at GIS-Pro 2011 in Indianapolis in November.

The GIS Capability Maturity Model is a relatively new effort to develop a standard method for any organization to assess its ability to accomplish defined GIS tasks...in other words to know where it stands with regard to its GIS maturity level. As other organizations complete the model, a basis will begin to develop to compare your organization to similar ones elsewhere.

The URISA Journal is one of the direct member benefits. It was recently recognized as one of the leading geospatial academic journals in the world. According to Past President Kathrine Cargo, “the sustained quality of the URISA Journal confirms the quality of our authors’ research, the dedication and skill of our editorial team, and the viability of open access publishing. URISA is proud to contribute these valuable resources to the benefit of the geospatial enterprise worldwide.”

A little over two years ago, URISA was instrumental in convening a group of stakeholder associations to form the Coalition of Geospatial Organizations (COGO). This new group provides a means for geospatial associations to share information about their activities and to bring their collective influence to bear on important issues. Recently, they’ve weighed in with Congress and the Executive Branch on geospatial privacy issues, potential GPS interference from a corporate broadband proposal, and the lack of geography education in the President’s STEM initiative. COGO, with URISA’s help, is also working on development of a Geospatial Infrastructure Report Card, following the model of the ASCE Infrastructure Report Card.

Another direct member benefit is the Advocacy Agenda that URISA has recently undertaken. The Agenda is developed from URISA Chapter input derived from the individual members of the 28 Chapters all over North America. The very first Advocacy Agenda is still being refined, but the substantive outline with the four main items is complete. This agenda is already being used in meetings with national leaders, state and provincial legislators, county and city commissioners to let them know what is

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important and problematic for geospatial professionals in their jurisdictions and beyond.

URISA spends a significant amount of time and resources on workshops and conferences to ensure that you have access to the best practices and latest methods and thinking on issues of critical importance. URISA has 26 certified workshops that are updated periodically. Six workshops (including two new courses: Business Intelligence and Data Integration for the GIS Professional and Applying Geospatial Standards in the Workplace) will be presented at GIS-Pro 2011 in November, leading off an innovative international conference from which you will take away new knowledge and invaluable insights to deliver value to your organization. And URISA has specialty conferences on Public Health, Addressing, Property Assessment, and Public Transportation, in addition to the recently revamped and highly acclaimed URISA Leadership Academy.

This is not a complete list, but my point in taking you through some of the URISA International activities is to show you that there’s more to the value proposition from your membership than a direct one-to-one, dollar-for-dollar return. If you look only at the direct benefits that accrue to you from the $175 membership, you’ll see that the return is at least 20:1, but as the famous credit card slogan goes, the value of URISA to you and to the geospatial community in total is priceless.

Of course, GIS technologies deliver value in many other ways to both internal and external users. This case study attempts to show how GIS driven cloud based web solutions will undoubtedly add value, and raise awareness on how much more they will be used and depended upon. Cloud based GIS technologies will deliver a collaboration platform that will spark innovation and interoperability never previously realized in the GIS industry, and there lies how and where GIS can continue to add value both globally and locally.

Advertise in THE GIS Professional!
For details, contact URISA at (847) 824-6300, info@urisa.org
Lining up Data in ArcGIS- A Guide to Map Projections
Reviewed by Chaula Jain, GISP, GIS DBA, Mecklenburg County GIS

Last year, Esri Press published another terrific guide book. Knowledge of Map Projections in GIS is fundamental for every GIS User. Margaret Maher takes the reader through a ten chapter course on map projections. Maher has worked with support services in ESRI for over ten years. During these years she specialized in map projections and data conversions.

The introduction to the book highlights pertinent issues which have been the result of regular interaction with GIS users over the author’s decade-long career.

The first chapter explains the methods to identify the coordinate system of a given data set. It could be either geographic, in which case it would have its unit in degrees, or it could be a projected system in feet or meters or a local coordinate system. The second and third chapters help to identify the type of geographic coordinate system and the datum in which the data was created. The third chapter illustrates the steps to determine the type of projected coordinate system of a data set; assuming that the data being examined is already in a projected system. In the United States, the most commonly used systems are the State Plane coordinate system which is in feet and the UTM (Universal Transverse Mercator) which is in meters.

The next chapter details how to work with data which is in different units and how to create specialized projection files for the same.

Data from CAD files is always a challenge to line up in ArcGIS. Chapters 5 and Chapter 6 enumerate the steps to project CAD data. These are critical chapters since a lot of data which need projection manipulation are in the form of CAD files.

The last two chapters explain how to transform data from one datum to another. Different methods of geographic transformations are elaborated.

The book should have really started with the last chapters. These chapters clarify the terms explained throughout the book and could have made the book easier. Different geographic projections and types of projected coordinates systems have been described and illustrated.

Sample data would have been extremely useful had it been provided with the book. The data would have helped to work out some of the steps explained in each chapter.

Maher’s book is a significant reference for the GIS professional in practice and an essential manual for a student. I would recommend this to be added to the library of every GIS professional.

By Michael Zeiler ISBN: 9781589482784; 2010; 308 pages
Review by: Bobby Jo Close, GISP, Civil Engineering Tech II with the County of San Luis Obispo Public Works and Transportation Department

The Second Edition of Modeling Our World is an excellent read for any GIS practitioner interested in updating themselves on current GIS technology as it relates to the geodatabase. The book’s forward, after talking about the first edition, sums up the intent of this book nicely: “The second edition of Modeling Our World is about enabling GIS practitioners to implement effective, elegant systems. People and their collective knowledge are a fundamental component in every geographic information system. Professional GIS users have the role of creating and managing authoritative geographic information for their subject matters and their areas of interest. We think that Modeling Our World will enable these professionals to do their jobs better.”

I personally found this book to be helpful in filling in some gaps. I have used Esri mapping products every working day since 1997 but find keeping up with the nuances of technology to be quite taxing. I tend to piecemeal my learning focusing on the information most needed to do my job better or to tackle a new assignment. Modeling Our World provides a comprehensive reference on...
the geodatabase that fills in the gaps and provides a greater understanding of the flexibility and capacity of the geodatabase. As stated in the summary, “This book is your foundation for knowledge on how to build a GIS solution using the geodatabase and its geographic datasets.” And, reading it has provided me with a greater understanding of the geodatabase and how better workflows and practices can be implemented to increase the integrity and accuracy of the data my organization maintains.

Each chapter is filled with details about each component of the geodatabase. The chapters are as follows.

- Inside The Geodatabase
- Coordinate Systems and Map Projections
- Vector Modeling With Features
- Linear Modeling With Networks
- Linear Referencing With Routes
- Finding Paces With Locators
- Imagery And Cell Modeling With Rasters And Mosaics
- Surface Modeling With Terrains
- Temporal Modeling With Time-Enabled Layers
- Multiuser Editing With Versioning
- Geoprocessing With Models And Scripts

I found the structure of the book to be very easy to read and I appreciated that the author did not assume that the reader has prior knowledge of the geodatabase and all of its features. The first chapter of the book provides a basic overview of each type of geodatabase. This chapter helps to ensure that the reader has the vocabulary and basic understanding of the geodatabase needed to continue through the remainder of the book. Additionally, I appreciated that the book did not assume that the reader has the optimum resources available to implement a project. The chapters often provide tables to illustrate the pros and cons of using one approach over another. The solutions provided are not one-size-fits-all solutions and the examples provided are realistic. Furthermore, the book provides case studies within each chapter that allow the reader to envision implementing these solutions in their own organization.

In summary, I would recommend the second edition of Modeling Our World to anyone interested in completely understanding the geodatabase. The book is a wealth of knowledge. And, after reading what Jon Murphy wrote on the Esri Blog, Inside the Geodatabase, I felt even more satisfied with the education I had just received by reading the second edition of Modeling Our World.

“As each chapter was completed it was reviewed by the respective experts here on the development teams at Esri’s campus in Redlands. Needless to say a lot of people put a lot of time into collaborating on this book and we are satisfied that the book delivers “a complete survey of the geodatabase information model.”

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**2011 URISA International Student Competition**

**Submissions due June 6**

**PAPERS** - Students are invited to submit a paper for a special section of the URISA Journal. Lead authors of the top three papers will receive an award of a one-year membership in URISA or free registration at GIS-Pro 2011: URISA’s Annual Conference.

**POSTERS** - Community college and GIS Certificate students are invited to submit posters. The top ten posters will receive an award of a one-year membership in URISA and will be recommended for free registration at a regional URISA conference.

All winning submissions will be posted on the URISA International website and announced through various industry publications and communications. Winners will also be recognized during the awards ceremony at GIS-Pro 2011: URISA’s 49th Annual Conference in Indianapolis.

The Adventures of Pam Sig, GISP

Somewhere over the Atlantic Ocean...

A vacation...finally it sure took me long enough to realize the office will be fine, just fine without me for a week...uh, what's that? I'll take the pasta, no, make it the broken and a red wine please...a few more hours and I'll be in Paris, the city of lights!

I'm here. I'm actually see from up here that plan is basically intact of the medieval city so much to learn just...where it's remarkable to haussman's 19th century and there are still vestiges that were once mas...by walking around

So, there's got to be something behind this quality of life, the food, the wine, the cheese, the bread...sure they have problems, but still...I won't be on vacation, but I wonder, there's got to be some urban planning going on...what sort of tools are they using here?

Look at these bikes...I read they're part of a citywide program called velib. I think you pay a euro for a day ticket and can take an unlimited number of 30-minute trips. You pick up a bike at any velib station and return it to any other. My eyes and throat tell me there's an air pollution problem here but this is at least part of the solution. Wondering how they figured out where to put the stations? Oh, there's my cell phone...yes, Monsieur, I'm so glad you got my message, yes, I'm so pleased you have time to meet with me, you're with apur? That's what again? Oh, the atelier parisien d'urbanisme? Yes, I'll be there.

So, after using tools like GSI to plan the velib bicycle program, study growth corridors, and you also use GIS and remote sensing to model building heat loss and the use of this info to inform the public via the web?

It's my vacation, what am I doing thanks work stuff? Still, they're doing some remarkable stuff here and that's always impressive...and besides, I did pick up this book...trees Parisian, next-to-last now if I could only find a scarf I like...everyone seems to be wearing them...oh, better write some postcards!

Bonjour mes amis! Much as it pains me to say it but I have to get a flight to home. And in different days to it than before...after a few meetings, I have a deadline coming. I hope you're doing well! You're going to be great for Paris, it can seem great, but once it's over, you can be great too...learned a thing or two...see you soon.

Follow @PamSig on Twitter or like the Pam Sig page on Facebook.

info@apem.com
The URISA Board of Directors recently approved the candidate slate proposed by the Leadership Development Committee. Within the next couple of months, candidates will submit profiles, professional experience and statements about their ideas about URISA’s future and contributions they plan to make if elected. This information will be posted online and an announcement will be distributed to members. Members will have the opportunity to vote from July 19 until September 2.

Approved 2011 Candidates:

FOR PRESIDENT—
• J. Allison (Al) Butler, GISP, City of Ocoee, Florida
• Geney Terry, GISP, El Dorado County, Placerville, California

FOR BOARD OF DIRECTORS—(to fill 3 positions)
• Al Little BES, OLS, OLIP, City of Hamilton - GIS Services, Hamilton, Ontario Canada
• Cindy Post, University of Alberta, Edmonton, Alberta Canada
• Tripp Corbin, GISP, Keck & Wood Inc., Duluth, Georgia
• David Lanter, GISP, CDM Inc., Philadelphia, Pennsylvania
• Martin Roche, GISP, CECd, GeoPlanning Services, Orlando, Florida
• Teresa Townsend, AICP, Planning Communities LLC, Raleigh, North Carolina

Conference Vision: To provide an open and participatory forum for advancing the effective use of spatial information and geographic information system technologies across the domains of public health, healthcare and community health preparedness.

Opening Keynote: Bill Davenhall, Global Manager - Health and Human Services, Esri

Closing Keynote: Dr. Ellen Cromley, Adjunct Assistant Professor, Department of Community Medicine, University of Connecticut Health Center

• Workshops
• Exhibits
• Numerous Concurrent Sessions
• Panel Sessions
• Interactive Discussions
• Poster Session
GISCorps has launched its 72nd project in Panama!

In April 2011, URISA’s GIS-Corps launched its 72nd mission and that brought the number of deployed volunteers to 211. Other than the mission in Panama, 10 other missions are in progress. The missions are in Malawi (watershed analysis: Christiana Pollack), Montgomery County - MD (demographic analysis: Rob George), Zambia (GIS trend analysis: Lisa Matthies), Mozambique (remote sensing: Joe Dickinson), Nigeria, North Korea (digitization - 32 volunteers), Saint Lucia, Belize, Bermuda, and in New Orleans - LA.

Panama, our latest mission, came to us from the Azuero Earth Project, a US based nonprofit organization. Two GIS Specialists (Josh Garver from Ohio and Emily Cheadle from New York) were selected for this project and will be assisting Azuero in developing a comprehensive hydrology dataset.

Another more recent and ongoing mission is a Caribbean project with MapAction. Seven volunteers with expertise in data mining, collation and cleansing of GIS datasets are currently working remotely on the project. The volunteers are: Anneka Imkamp (CA), Kyung Kim (VA), Kevin Mayall (Bermuda), Tia Morita (CA), Keith Olson (CO), Nathan Pugh (UT), and Jacob Spuck (FL).

In addition to our ongoing missions, since the beginning of 2011, six other missions have successfully concluded (Australia, New Orleans, Mexico, Nigeria, and Japan where GISCorps supported two post-earthquake missions).

Japan Missions
Shortly after the tragic earthquake and tsunami in Japan, eight of our volunteers were deployed to two missions; one at the request of Crisis Commons and the other on behalf of a fellow member of the International Charter Space and Major Disasters (Charter), the Japanese Aerospace Exploration Agency (JAXA). While the mission with Crisis Commons required skills in data mining and dissemination, the project with JAXA was for remote sensing specialists.

Terry Winemiller, an associate professor from Auburn University and his team of students were recruited for the JAXA mission and seven other volunteers were recruited for the Crisis Commons mission: David Hildebrand (Canada), Shingo Ikeda (US), Hiro Iseki (US), Yoh Kawano (US), George Oliver(US) George Technitis (Switzerland), and Jason Wadsworth (Australia).

Nigeria Mission
The first phase of our project with a nonprofit organization in Nigeria - Geographical Resources for Development Centre (GRDC) - was concluded earlier this year and a second volunteer, Hassan Adekoya from New York, was asked to continue building additional tools for a metadata clearing house node which was developed by our first volunteer Alison Fischer (from British Columbia) in 2010. Hassan is now in direct contact with the GRDC team.

New Orleans Mission
We also deployed a second volunteer to another project in New Orleans, LA. This project came to us from the University of New Orleans Department of Planning and Urban Studies (UNO-PLUS) and the Neighborhood Housing Services (NHS) and we deployed Rafael Ferraro (from Virginia) who developed an ArcGIS Server application for them. The first phase of the project was recently finalized and a second volunteer, Smitha Peethambaram from California, was selected to develop additional tools for them. Smitha is now working with UNO-PLUS project lead, Dr. Michelle Thompson.

Get Involved
As in previous years, the Core Committee and many GISCorps volunteers plan to gather at the Esri User Conference in San Diego. We will have a booth in the Map Gallery and will also hold our annual presentation and meeting during the week of July 11.

Of course, we will also be at GIS-Pro 2011 in Indianapolis in November. We hope you can join us.

Finally, it is the Core Committee’s pleasure to be associated with a fantastic group of GIS professionals who are willing to provide their expertise to those in need. We invite you to visit our website and read more about them and their invaluable work.
Apply for a 2011 URISA ESIG™ Award!

Has your organization improved the delivery and quality of government services through the application of geospatial information technology? If so, that achievement should be recognized and shared with your peers. Nominate your organization for a prestigious URISA Exemplary Systems in Government (ESIG™) Award. Or convince a colleague to participate!

Why Participate?
"I believe the award has done two things for me professionally. The first relates to leadership. The award was a source of pride for my team and reinforced the team’s belief in my ability to pull all the pieces together to develop a product worthy of national recognition and their ability to be successful in their roles. The second relates to credibility. Many of the District’s senior leaders have little experience in GIS. However, many of these leaders are familiar with URISA. Receiving this award has reinforced their decision to entrust me with this large, complex project and has demonstrated that I can deliver despite the statistics related to failed and overly expensive IT projects." - Don Nehmer, Capital Program Business Manager, Milwaukee Metropolitan Sewerage District, WI - SewerView, 2009 ESIG Enterprise Systems Category - Distinguished System

"By participating in the ESIG process we are able to demonstrate how GIS technology benefits the whole organization in a very broad scope. Winning the award also greatly increased “GIS awareness” in the organization. The project eventually received an internal “City Manager Award”, boosting the importance of GIS in the organization’s technology environment." - Nianwei Liu, GISP, Senior System Analyst, City of Charlotte, NC - Virtual Charlotte, 2009 ESIG Enterprise Systems Category Winner

"One of the most rewarding aspects of participating in the ESIG Awards process was the rare opportunity to formally acknowledge the outstanding efforts of our staff and regional partner agencies for their collaborative work. Recognition of their achievements by URISA’s respected community of GIS professionals and peers has provided quite a charge." - Eric Brandt, GISP, GIS Program Manager, Lane Council of Governments, OR - Regional Land Information Database (RLID), 2009 ESIG Enterprise Systems Category - Distinguished System

Winners will be recognized during the Awards Ceremony at GIS-Pro 2011: URISA's 49th Annual Conference in Indianapolis, Indiana and one person from each winning system will receive a complimentary full registration for the conference (Distinguished System winners will receive a discounted registration). ESIG award recipients will also have the opportunity to showcase their accomplishments in a conference session during GIS-Pro 2011. Winners will receive additional recognition in URISA publications and an announcement of their accomplishment will be made to media representatives around the world.

In order for the ESIG™ Review Team to fairly evaluate each system, specific information (A-F below) must be included in your submission. When submitting this application, send it as an email attachment to info@urisa.org in PDF or Microsoft Word format. In the body of the email, specify the format, version number, and the length of the attached document. Include “ESIG™ Application” in the email subject field. URISA no longer accepts applications in paper form. Provide all requested information in your submission. Incomplete applications will not be considered.

The application deadline is: June 6, 2011

A. System
1. Name of system and ESIG™ category for which you are applying (Enterprise System or Single Process System).

ESIG™ Award Categories:
- **Enterprise Systems**: Systems in this category are outstanding and working examples of using information systems technology in a multi-department environment as part of an integrated process. These systems exemplify effective use of technology yielding widespread improvements in the process(es) and/or service(s) involved and/or cost savings to the organization.
- **Single Process Systems**: Systems in this category are outstanding and working examples of applying information system technology to automate a specific SINGLE process or operation involving one department or sub-unit of an agency. The system application results in extended and/or improved government services that are more efficient and/or save money.
2. A letter from the executive administrator authorizing submission of the system application (letters must be signed and scanned).
3. One (1) page, or less, summary of what the system accomplishes and why it is exemplary.
4. Three “user testimonials”. These testimonials should include the title of the system, the person’s name, job title (if relevant), a statement of what specific ways the system improves their work and/or the work of their organization, and how frequently they use the system (testimonials may be signed and scanned).

B. Jurisdiction
1. Name of jurisdiction
2. Population served by the organization/agency
3. Annual total budget for jurisdiction
4. Name, title, and address of chief elected and/or appointed official
5. Name, title, address, telephone, FAX, and email for contact person for system

You must answer each of the following questions. Please cross-reference your responses to each of the topics/questions listed below. Be sure that your responses are clearly written and sufficiently comprehensive for reviewers to develop a clear understanding of the system. Responses should be in complete sentences and as brief as possible while communicating the necessary information. If appropriate, include graphics.

C. System Design
1. What motivated the system development?
2. What specific service or services was the system intended to improve?
3. What, if any, unexpected benefits did you achieve?
4. What system design problems were encountered?
5. What differentiates this system from other similar systems?

D. Implementation
1. What phases did you go through in developing the system?
2. Were there any modifications to the original system design? Why? What?

E. Organizational Impact
1. What user community does the system serve and how?
2. What are the ultimate decisions/operations/services being affected? If appropriate, provide a few examples including, but not limited to: screen input/output forms, paper products, or other descriptive graphics.
3. What were the quantitative and qualitative impacts of the system?
4. What effect has the system had on productivity?
5. What, if any, other impacts has the system had?
6. How did the system change the way business is conducted with and/or service delivered to clients? Give specific examples comparing the old way with the new.

F. System Resources
1. What are the system’s primary hardware components? Give a brief list or description of the hardware configuration supporting the system.
2. What are the system’s primary software components? Describe the primary software and, if a commercial package, any customizations required for the system.
3. What data does the system work with? List and briefly describe the database(s).
4. What staff resources were required to implement the system? (i.e., report approximate staff and consultant time as FTE’s)
5. Comment on anything unusual about the resources used to develop your system, such as data, software, personnel and financing.

Application Deadline: June 6, 2011
Join the exclusive list of ESIG™ Award winners (http://www.urisa.org/esig).

If you’ve successfully improved the way in which government operates, through the use of geospatial information technology, you should apply for a 2011 URISA ESIG™ Award.

If you have any questions, contact URISA Headquarters at (847) 824-6300 or info@urisa.org
Clearing Right of Way (ROW) is one of the major expenses most electric utilities face in any given year. With the financial melt-down, budgets for most utility operations have shrunk, making it even more difficult to keep up with high-dollar operations like ROW clearance or vegetation management. It has become more and more important for electric utilities to spend their cooperative members’ hard earned money in an efficient way.

Deciding when and where to cut ROW may seem like an easy task but it is hardly so. Depending on the size of an electric utility and the extent of their vegetation coverage or vegetation problems in their service area, a ROW program can be as simple as one crew clearing ROW once every so often or, on the hand, be as complex as having an arborist on staff and a comprehensive integrated vegetation management program. Most small rural utilities have a ‘blanket’ row plan, which involves clearing the ROW at fixed intervals of time. However, if one considers the fact that most rural electric service territories are hardly homogenous (different soil types, different topography, and if the aerial extent is large maybe different rainfall zones; and consequently different vegetation types and subsequent growth patterns), it seems reasonable to also have site-specific practices for clearing vegetation.

The most obvious or immediate effect of deferring ROW clearance is a reduction in system reliability. A utility will most certainly experience more outage events and subsequently more customer outage hours when ROW is not taken care of in a timely manner. Although the most conspicuous negative impact of deferring ROW clearance is the reduction in system reliability, the cost that is involved when ROW has to be cleared after vegetation has grown to close to conductors needs some serious consideration.

A study by Browing and Wiant provides an in-depth analysis of the economic impacts of deferring electric utility tree maintenance. [Browning, M and Wiant, H.V (1997). The Economic Impacts of Deferring Electric Utility Tree Maintenance. Journal of Arboriculture 23(3).] In their study, which involved three electric utilities, they found that the cost of pruning a tree increased significantly as the tree grew closer to and beyond the conductors. The amount of biomass and thus disposal cost also increased with the length of time a tree was allowed to grow. The authors noted that for every routine maintenance dollar deferred, substantially more than one dollar must be spent in subsequent years to re-establish the preferred cycle.

Today GIS data is not as scarce as it was a few years ago. Online data houses exist for aerial imagery, land use, vegetation type, soils, rainfall and other data which can be used to model vegetation growth and plan ROW clearance. These data when manipulated in a GIS can aid in creating a ROW clearance program and GIS can be used to maintain the plan once it’s in place. A site-specific vegetation management plan can go a long way in making sure that money is spent at locations which are strategic enough to create a huge impact in reducing outages.

This short paper presents some few steps which can be taken in formulating a ROW clearance program. The proposed method can be used by any utility which has access to the right data, GIS tools, and personnel. This method was developed and implemented at Mid-South Synergy Electric Cooperative in Texas. The plan is in its second year now and the first year saw a significant reduction in vegetation related outages.

General data requirements for ROW plan formulation:
Current and historic outage data. This data can be mapped in a GIS to show the spatial distribution of vegetation related outages. It can also be analyzed in GIS to come up with long term outage event trends in outages. Most utilities have this data readily available from their outage management systems. Even if this may be the only data a utility has access to or can afford, it is still useful for planning purposes and can be considered as the first line of defense. If a utility can see a visual picture of the spatial distribution of vegetation related outages, it becomes easy to make a decision on how to allocate resources. For some utilities with a little more advanced GIS tools like Spatial Analyst, an outage density grid can be created where each cell can represent the number of
outage events in a sq mile in a given period of time. Such data can be used as input in raster calculations in combination with other grid data to create simple models.

Current and historic ROW clearance data. Some utilities have done a good job maintaining ROW clearance records in digital format. Highlighting ROW clearance on a paper map is still a common practice and is obviously better than not having any records at all, but there are limitations on how you can store, retrieve, and use the data as model input. A simple ROW database can be created and maintained in core ESRI software. Over the last few years, there has been a surge in third party software companies creating software just for ROW maintenance. Such targeted applications allow for creating, maintenance, analysis and visualization of ROW operations. Reports can also be generated in these applications making it easy to schedule ROW operations. Feeders that have just been cleared can wait a little longer (based on the frequency established for ROW clearance) and vice versa.

Aerial imagery covering the service territory. Some electric utilities have good aerial imagery coverage at resolutions as high as 6 inches. Apart from simply overlaying the utility distribution lines on aerial photos to get a good visual of where there may be vegetation issues, aerial photos can be reclassified using ArcGIS extensions like Feature Analyst to create vegetation maps of the territory. The resulting vegetation map can be used in marking primary conductors which are located within a specified distance from vegetation. Although the land cover or vegetation map may not differentiate vegetation types or species, it will give a good idea of which feeders to concentrate on for ROW clearance. The ones that are closest to vegetation will need to get higher priority in any model to be created.

Land Use/ Land classification data. Where high resolution land class and land use data is available and current, then aerial imagery does not need to be reclassified. A land use/land class map shows the different cover types or land classes in the service. Understanding the vegetation types in the service territory gives the utility an upper hand in the bidding process for ROW clearance if they use contractors. This is because the utility can negotiate the rate a contractor will charge based on their knowledge of the system. A part of the territory that has primarily pasture or grassland should not be charged the same amount to clear as a forested part, for example. In addition, land cover grid data can be used as input in raster calculations for model creation. It is important to know the location of wetlands or drainage lines because typically the vegetation in such areas grows faster. Land class data will clearly show where the wetlands are located.

Vegetation type map. It is not enough to just know that there is forest or vegetation in a certain part of the territory, it is also necessary to know which types of vegetation are there. For example Pine trees have different growth and regrowth patterns than Oak trees. This needs to be accounted for when planning a ROW clearance program.

Customer density data. This is probably the most easily available of all the datasets needed for ROW plan formulation. Knowing where most of the customers are located or knowing where the highest density of customers is located is an important factor when formulating a ROW clearance program. I think most utilities are trying to reduce customer outage hours.

GIS Tools and functions needed:
ArcGIS. This is the core ESRI software and is used for creating grid data out of vector data and for applying mathematical functions in raster data to create models. The software will also allow for maintaining the vegetation dataset in a geodatabase, data analysis, crew performance analysis, scheduling, and report generation.

GIS functions or steps needed to create a ROW clearance plan
To use Raster Calculator in
Spatial Analyst, the input data must be in grid format hence the first step is to convert any of the vector data to raster format.

Create outage and customer density grids using the kernel density function in Spatial Analyst; choose a cell size that is consistent with the other data sets so that local functions can be applied on cells of the same size later during the model creation. The outage density shows the number of outages in a square area and customer density grid shows the number of customers in each square.

Reclassify the density grids to reduce the number of values to a smaller set which is easy to manage. For example 1 can be the lowest density and 3 can be the highest density for both datasets.

After converting the Land Class and/or Vegetation type vector files into grids, reclassify them to reduce the values to a smaller set of classes. So for example to be consistent with classification in (3) above where the higher number represents the extreme case, woody wetlands which have a faster growth rate and need more frequent pruning can be given a value of three whereas grassland or pasture can be given a value of 1. Likewise for the vegetation type file, Pine Hardwoods would be classified differently from Water Oak based on their growth rates.

With the four reclassified grid files from above (customer density; outage density; vegetation type grid; land class grid), use Raster Calculator to calculate the product (vegetation type * land class * outage density * customer density).

Reclassify the output grid making sure that the areas with the highest score i.e the worst case has the highest priority for ROW clearance and vice versa.

Step 6 concludes the modeling exercise. However it is important to note that no computer model can substitute common sense gained through years of experience and knowledge of the system. All through the modeling process, there should be enough room for incorporating human knowledge. Although the plan may look good on paper, it still has to be practical operationally and easy to implement in the field. At the end of the year it is important to evaluate the plan based on the vegetation related outages for that year and a decisions needs to be made about whether to modify the plan or not. All operations in the field need to be entered into the GIS either in the field as the crews are working or once they get back to the office.

Have you talked to anyone about URISA lately? The more members we have, the more knowledge can be shared! Make it a point to talk to your colleagues about the organization and encourage them to join.

Introduce young professionals and students to URISA. Let’s expand the URISA Network together!
Welcome New URISA Members

Syed Yasir Ahmed GISP, Ministry of Municipal and Rural Affairs, Riyadh, Saudi Arabia
Meghan Larson Anderson, GISP, Kirkland, WA
Nathan Bell, Contract Land Staff, Sugar Land, TX
Chad Benham, Georgia Power Company, Atlanta, GA
Penny Black MS, University of Wisconsin Population Health Institute, Madison, WI
Kristan Blackhart, NOAA Fisheries,Seattle, WA
Andrea L. Bohn, GISP, Great River Associates, Springfield, MO
Tom Brody, USEPA, Chicago, IL
William Brown, University of Illinois, Urbana, IL
Bridget Brown, HDR Alaska, Anchorage, AK
Derek Lloyd Bryant, GISP, Visual Risk Technologies, Inc., Nashville, TN
Jennifer Jane Cannon MURP, Gainesville, FL
Jon Caris, GISP, Smith College, Northampton, MA
Janghwoan Choi, GISP, Dewberry & Davis, Fairfax, VA
Jorge Alberto Coronel, GeoSIMA S.A., Guayaquil, Ecuador
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Steven Benjamin Stout, GISP, Saint Charles, MO
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A number of chapters presented successful conferences recently and several have events rapidly approaching:

**URISA Alberta**, GITA Alberta, AGG and GeoEdmonton are busy with activities leading up to GeoAlberta 2011 which will be at the Shaw Conference Centre in Edmonton, May 30 – June 1, 2011. The theme of this year’s conference is “GIS Evolution: From Drafting to Dreaming”. Have a great event!

**URISA Ontario** is hosting the 2011 Be Spatial event on Tuesday, May 3 at Black Creek Pioneer Village, in North York. Numerous sessions, Best GIS Challenge and Map Gallery Awards, and an Exposition are included in the program which will end with a Black Creek Brewery Tasting.

Presented by **URISA’s California Chapters**, CalGIS 2011 took place in Fresno, during the last week of March. Nearly 300 individuals participated with keynote presentations by Scott Gregory – California’s GIO, Mano Marks – Google, and Don Cooke – Esri. Preconference tours and a Python workshop, instructed by Dave Hansen, GISP kicked the week off. Jeff Orton was the Conference Chair. Next year’s conference will likely be in Sacramento and Dan Henderson, GISP will chair the event.

**Carolina URISA** sponsored the 2011 NC GIS Conference with NCCGIA that took place February 16-18, 2011 in Raleigh, NC. “Even in this ‘down’ economy the conference was a big success with 880 attendees which says a lot about how important this conference is to GIS users in the southeast.”

The **Chesapeake Chapter** is re-organizing! To join the discussion: http://groups.google.com/group/urisachesapeake

The **Chicagoland Chapter** hosted a Student Competition at URISA HQ. Great presentations!

- Storms, Floodplains & Urban Development: Remote Sensing Change Analysis of Brisbane’s 100-year Flood – Poster presentation by Elizabeth Browder, DePaul University
- Food Accessibility in Chicago: A Correlational Study of Conventional and Alternative Food Sources in Chicago’s Communities – Presentation by Benjamin Bauman, Northeastern Illinois University
- Correlations between income, crime, race, and population density of Chicago, Illinois - Presentation by Ramon Gutierrez, Harold Washington College
- A Study of Possible Monopile Wind Generator Locations in Lake Michigan Areas Controlled by the State of Illinois - Presentation by Gregg Herman, Harold Washington College

**Georgia URISA** hosted a Student Career Day on April 25!

**MAC-URISA** (Mid-Atlantic) is hosting its 2011 Spring Meeting on May 18 at Rowan University. The topic will be, “2010 Census Data for Geospatial Professionals”.

**New England URISA** has been hosting a number of Ignite Spatial events around the region, with the next one in Hartford, Connecticut in June.

**Northern Rockies URISA** hosted another successful Intermountain GIS Conference, March 21-25, in Pocatello, Idaho. Congratulations!

**Ohio URISA** is hosting a LiDAR workshop in June and also recently updated their bylaws.

**Oregon & Southwest Washington URISA** just concluded the 2011 GIS In Action Conference at Portland State University, attended by almost 300 individuals. Annual elections were held at the conference. OR-URISA is pleased to announce that Amy Esnard, GIS Manager at Multnomah County has been elected as President Elect with her term to start in 2012. OR-URISA is also pleased to announce that Molly Vogt, GIS Manager at the City of Gresham, has been elected as an at-large Board of Directors member. Congratulations Amy and Molly!

**Rocky Mountain URISA** recently sponsored a Geospatial Career Night.

**Washington URISA** is hosting the 2011 Washington GIS Conference May 9-11, 2011 at the Lynnwood Convention Center.

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**Get Involved!**

To connect with your local chapter, visit [http://www.urisa.org/urisa_chapters](http://www.urisa.org/urisa_chapters).

It is a great way to network and also volunteer locally.

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**Chapters Support Each Other**

Both Oregon and Washington URISA recently sent letters of support to Washington’s Governor and key legislators supporting the development of Washington’s GIS Strategic Plan and GIS Business Plan. It was a great example of cooperation between two URISA chapters!
Developing Crucial GIS Leadership Skills - The success of any GIS program is largely tied to the capabilities of its leader. Strong leadership is necessary to establish a solid GIS program, operate efficiently and effectively, coordinate participants, adapt to change, and move a program forward.

Attend the ULA and explore GIS Leadership, comprehensively, with your peers:

- Introduction to Leadership and Management
- Building a Successful Team
- Building Organizational Capacity as GIS Leaders
- GIS Politics and Change Management
- Putting It All Together – Evaluating Where You Are and Planning Where You’re Going

Session details, instructor profiles and registration/travel information is online at www.urisa.org/ula.

The ULA will take place at the Moonrise Hotel in St. Louis, offering participants $99 sleeping room rates.

Attendance is limited. Register early to reserve your place in the 2011 ULA Class.

“I’ve been working in the GIS field for 15 years and this was, by far, the most valuable and comprehensive training I have received. No matter how much you think you know about GIS management, you will learn more than you ever thought possible.”

- Scott A Weisman, GISP, GIS Technical Services Manager, Tallahassee-Leon County GIS
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The Sidwell Company is an industry leader of GIS solutions for cadastral mapping and land-records management, and a provider of aerial photography, software development, and photogrammetric services. Already well established in the Midwest as a regional firm, Sidwell has become a name recognized on the national GIS level with the success of their ParcelBuilder™ product. Parcel Builder is an extension to ESRi’s flagship GIS software, ArcGIS® 10. Sidwell has been recognized as a Foundation Partner by ESRi multiple times (in 2003 and 2008), which serves as testimony to the company’s commitment to providing premier GIS solutions and services using ESRi technology.

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Valtus Imagery Services provides end-to-end solutions for the storage, management and delivery of geospatial information in the form of aerial & satellite imagery and LiDAR data, helping government and commercial users gain a better understanding of the geographies they serve. Various access options are available, allowing customers to choose the method most conducive to their structure and environment.

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The company’s mission is to provide reliable 24GIS services related to consulting, analytics and data acquisition in the creation and use of spatial information systems for public institutions, business and academics.

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GIS Innovations Ltd. was incorporated in July of 1993 with a mission statement: to help customers succeed with GIS technology. The principal, Bob Janowicz, has been working in GIS since 1985. In fact, most of our team has been involved with GIS related technologies since before 1990. GIS Innovations Ltd flagship product is the Road Atlas of BC. GIS Innovations has wealth of skill and expertise at integrating and validating GIS data, especially address and street related data. GIS Innovations also works with a collection of local consultants in projects related to land and/or environmental planning studies.

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info@spatialfocus.com
www.spatialfocus.com
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**THE GIS PROFESSIONAL**  
A publication of URISA – The Association for GIS Professionals. URISA is a non-profit professional and educational association that promotes the effective and ethical use of spatial information and information technologies for the understanding and management of urban and regional systems. It is a multidisciplinary association where professionals from all parts of the spatial data community can come together and share concerns and ideas.

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