FEMA’s Hazus Program provides standardized tools, data, methods and guidance on natural hazards (earthquake, hurricane, flood, and tsunami) risk assessment for stakeholders across the United States and its territories. Risk information from the Hazus Program can be used to mitigate natural hazard losses at project, community, state, territory, tribal and national scales. The Hazus Team is responsible for developing and distributing Hazus software, which serves an industry leading free and publicly available risk modeling tools. Hazus is currently developed as an extension of ESRI’s ArcGIS Desktop software, but the Hazus Program has begun developing a suite of open source, standalone risk assessment tools for distribution via the FEMA Maps Service Center (MSC) and GitHub.

Hazus incorporates spatial and tabular data for structures, population, infrastructures (transportation, utilities, and critical facilities), and hazard intensity in order to calculate impacts from earthquakes, hurricanes (wind or combined wind and surge), floods (riverine or coastal), and tsunamis (distant source or near-source, with combined earthquake impacts). Impacts are calculated using a diverse collection of methodologies from the science and engineering community that relate structural and hazard information to economic losses, casualties, debris generation and sheltering needs.

Hazus risk model results are more accurate when custom datasets are used as inputs. Hazus provides baseline nationwide data at the census tract, block, or point level (in the case of facilities available from the Homeland Infrastructure Foundation Level Data (HIFLD) Program) designed to give users the ability to assess risk in their communities even when they do not have access to detailed local building stock inventory. Point level data are updated annually in partnership with HIFLD, while baseline inventory data summarized by census tracts or blocks are updated during each new census.

As risk and resilience actions become increasingly important in community and mitigation planning for communities across the nation, the Hazus Program has started expanding its suite of risk assessment tools and resources. These include open source analytical utilities, an online platform of searchable and graphic risk reports, and the Microsoft national structure database for risk assessment. A handful of our latest resources are summarized below.

**Nationwide Earthquake Risk Information**

Representatives from the USGS and FEMA used Hazus to assess 2014 levels of seismic risk across the U.S. and Puerto Rico by estimating annualized economic losses and debris, shelter and casualty impacts based on the probability of ground motion in any given area. The results of this study are published online.

1. [https://msc.fema.gov/portal/resources/hazus](https://msc.fema.gov/portal/resources/hazus)
2. [https://github.com/nhrap-hazus](https://github.com/nhrap-hazus)
3. [https://gii.dhs.gov/hifld/](https://gii.dhs.gov/hifld/)

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**continued on page 2**
lished in the Hazus Estimated Annualized Earthquake Losses, FEMA Publication 366\textsuperscript{4}(P. 366), and are used to support grant funding from the interagency National Earthquake Hazard Reduction Program (NEHRP) resource planning. The full analysis are published in the Hazus Estimated Annualized Earthquake Losses for the United States report (Jaiswal et al. 2017).

The process of minimizing earthquake impacts in the United States has historically been shaped by knowledge of earthquake hazards, including the location and type of faulting and ground failure, and the distribution of strong ground motion or shaking. Earthquake hazard databases and maps—produced by the U.S. Geological Survey (USGS), state geological surveys and other research institutions—provide consistent and useful data. While hazard maps contribute to understanding earthquakes, there is increasing recognition among policy makers, researchers and practitioners of the need to analyze and map earthquake risk in the United States. Earthquake risk analysis begins with hazard identification but goes beyond that to investigate the potential consequences of the event to people and property, including buildings, lifelines, and the environment.

The Hazus Annualized Earthquake Losses (Jaiswal et al. 2017) study addresses the following two key components of seismic risk: the annualized probability of ground motion occurring in a given study area (2014 USGS Seismic Map) and the consequences of the probabilistic ground motion in terms of physical damage and economic loss (Hazus). It considers regional variations in risk driven by both components. For example, the level of earthquake risk in the New Madrid seismic zone is measurably different from the risk in the Los Angeles Basin with respect to (a) the probability of damaging ground motions, and (b) the consequences of the ground motions, which are largely a function of building construction type and quality, as well as ground shaking and failure during earthquakes. The level of seismic hazard and its impact do vary regionally; for example, the earthquake hazard is higher in Los Angeles than in Memphis, but the general building stock in Los Angeles is more resistant to the effects of earthquakes.

The Annualized Earthquake Losses summarizes expected losses by averaging earthquake losses per year, which factors in historical patterns of frequent smaller earthquakes with infrequent but larger events to provide a balanced presentation of earthquake risk. This enables the comparison of risk between two geographic areas, such as Los Angeles and Memphis, or Alaska and South Carolina. The AEL values are also presented on a per capita basis, to allow comparison of relative risk across regions based on population.

Risk analysis is useful for communities, regions, and the nation in making better decisions about how to best allocate resources and set priorities. At a national level, the ability to compare risk across states and regions is critical to formulation of effective earthquake-risk mitigation measures. At the state and community level, an understanding of seismic risk is important for planning, evaluating costs and benefits associated with building codes, and other prevention measures. Additionally, an understanding of earthquake

\textbf{Figure 1:} Comparison of U.S. Regional Seismic Risk by Annualized Earthquake Losses (AEL).
risk is important to risk management for businesses and industries. In addition, understanding the consequences of earthquakes is critical to developing emergency operations plans for catastrophes.

**National Structure Database for Risk Assessment**

Federal, State, local, tribal, and territorial (SLTT) institutions concerned with risk reduction and resilience are increasingly interested in characterizing risk at the structure level rather than generalizing risk at larger geographic scales. While Hazus users can conduct structure-level risk assessments using their own local building information, Hazus provides an open, freely available national baseline inventory aggregated at census geometries. In coordination with the U.S. Army Corps of Engineers National Structure Inventory team, the Hazus Program is developing a new national inventory using nationwide structure data from building outlines recently released by either Microsoft or Oak Ridge National Laboratory, depending on the results of ongoing research into the coverage, accuracy and applicability of each dataset (Burns et al. 2019).

These building outlines represent a significant innovation for risk analysis in the U.S., especially in accuracy since the intersection of buildings and hazards can be more precisely measured. However, in order to leverage building outline data in loss modeling, vulnerability attributes must be estimated for each building location. The Hazus Team has developed an automated process to assign flood vulnerability attributes to each footprint based on statistical assumptions derived from census information, including occupancy type, first floor elevation, and foundation type. FEMA is testing the accuracy of these attribute assumptions for structures in the New York City, Minot, North Dakota, and the State of West Virginia, by comparing the distribution of statistically assigned structure attributes with those derived from local sources. The recently released open source Hazus Flood Assessment Structure Tool (FAST) in Figure. 2, can be used to calculate flood losses. This tool is used to assess attribution accuracy for structures at each case study location using both statistically derived and locally derived attributes to better understand how assumptions in structure attributes affect flood risk assessment results.

If structure vulnerability attributes assigned using census-based assumptions can be shown to produce risk assessment results that can be summarized at the block level with reasonable accuracy, a national structure database ready for nationwide risk assessments could be established. This nationwide structure database will dramatically increase the accuracy of basic, cost-effective risk assessments in communities across the U.S. and support the development of a national baseline risk analysis to drive actionable resilience measures.
Hazus Flood Assessment Structure Tool (FAST)
The Hazus flood model calculates economic losses due to flooding at structures based on a set of engineering-based damage functions that relate a structure’s foundation type, first floor height, and value with flood depth to derive damage. As the availability of the structure data and flood depth grids required to run this kind of risk analysis increases and the interest in assessing and communicating flood risk expands beyond the GIS community, the Hazus Program identified the need for an open source, lightweight utility for structure-level flood risk assessment. Hazus FAST is a Python tool with a simple user interface that calculates flood losses at a rate of 10,000 structure points per second. FAST requires a table of structure data with latitude, longitude, occupancy type, foundation type, first floor height and number of stories as well as a raster containing flood depth values across the analysis area for either riverine or coastal flooding.

In November 2019, FEMA’s Natural Hazards Risk Assessment Program released the Hazus FAST utility on FEMA.gov and the GitHub page. In addition, the FAST prototype is currently being leveraged within risk assessment and communication projects such as an update to New York City Mitigation Plan and the West Virginia Statewide Risk Assessment. The increased availability of open source, simplified risk analysis tools will contribute to a broader understanding of how risk is distributed across space, populations, and structure types and an increased adoption of effective risk reduction strategies.

References

Are you on social media? URISA is (except for Instagram... does anyone want to volunteer to take that on?)

- Join our Facebook Group & Like/Follow the URISA Page
- Join our LinkedIn Group & Follow the URISA Page
- Follow URISA on Twitter

URISA’s GISCorps:
- Join the Facebook Group & Like/Follow the URISA GISCorps Page
- Follow the GISCorps LinkedIn Page
- Follow GISCorps on Twitter

URISA’s Vanguard Cabinet:
- Join the Facebook Group & Like/Follow the URISA Vanguard Cabinet Page
- Follow the VC LinkedIn Page
- Follow the Vanguard Cabinet on Twitter

And there are tons of URISA Chapters on Social Media. We’ll start a laundry list soon, but if you search for “URISA” in any of the platforms, chapter accounts pop up.
A new guidebook proposes to help States move toward a common foundation for roadway data collection, editing, and publication while simultaneously reducing the cost.

Today's transportation infrastructure is becoming more complicated, as is the mix of data providers and users. State and local transportation agencies have discovered that the well-established methods and tools used for decades have reached their evolutionary limits. Each state has its own definitions, business rules, and data elements that have evolved within the organization. This has led to a disconnected, stovepipe data collection and usage structure that no longer works.

Over the past year, the Federal Highway Administration, dozens of states, and many geographic information system (GIS) experts worked together to develop the Applications of Enterprise GIS for Transportation: Guidance for a National Transportation Framework (AEGIST Guidebook). It establishes a set of business rules and standard definitions to help public transportation agencies consistently create, maintain, and govern roadway data to achieve better coordination of activities across all levels of government. The rules are based on best practices for managing technology, data, and transportation system assets.

Publication of the AEGIST Guidebook is just one step along the evolutionary path of managing the nation’s transportation infrastructure. It began at the state level. States identified the need and were very involved in the guidebook development through an extensive peer exchange process. Their decisions represent a shift in perspective. Rather than continuing disparate paths for data compilation, maintenance, and delivery, the states chose to work together to find a common set of business rules and implementation mechanisms.

Identifying the need
States, along with their local, regional, and tribal partners, manage transportation assets. Efficient utilization of these assets is a growing need. There is no single silo or workgroup, such as policy, planning, safety, pavement management, traffic operations, and bridge management, which can meet this need. Strict observance of the state/local jurisdictional boundary for transportation facilities is being replaced by multi-agency partnerships formed to solve joint problems. For these reasons and more, enterprise GIS transportation data is now a necessity.

Developing the recipe
The AEGIST Guidebook is a recipe for enterprise GIS. It is designed to help agencies at all levels of government (state, local, tribal, regional and other partners) develop a consistent way to collect, maintain, and publish spatial data. At a detailed, technical level, the AEGIST Guidebook addresses the specific needs for defined objects and their attributes, including the required accuracy, resolution, and precision. At a higher, organizational level, the AEGIST Guidebook explains how to construct a more reliable and sustainable spatial data governance and management structure based on civil infrastructure management.

Reaping the benefits
Agencies that adopt the AEGIST Guidebook business rules will advance enterprise GIS for transportation in many ways:

- States will be better organized and equipped to meet federal requirements for collecting and reporting attributes and usage data associated with roadway segments, intersections, and interchanges using the Highway Performance Monitoring System.
- Software vendors can develop products that appeal to scores of customers, not just the handful of states that have a particular set of business rules.
- FHWA can use enterprise GIS data to create a national roadway base map by combining the individual G of each state.
- States will be better equipped to collect and analyze safety data to detect problems and identify root causes of operational dysfunctions, select countermeasures, develop solutions, and prioritize safety projects.

The AEGIST Guidebook presents solid guidance on how to move a state to enterprise data governance and asset management in a way that lowers the cost of managing transportation assets at all points in their life cycle. It also shows how to undertake this process with minimal impact on data users. It is now up to the states to utilize this guidance, as they deem appropriate.

FHWA has posted the AEGIST Guidebook here.

About the author:
Joe Hausman is a Community Planner on the Systems Planning and Analysis Team in the Federal Highway Administration's Office of Planning in Washington, D.C. He provides program expertise and technical support for the implementation of the metropolitan planning process with an emphasis on data needs for transportation planning, programming, and project development. Before joining FHWA in 2009, Joe managed the Ohio Department of Transportation GIS data and roadway network for 16 years.
BOOK REVIEW

Introduction to Human Geography Using ArcGIS Online

By: J. Chris Carter, Professor of Geography, Long Beach City College, CA.

Reviewed by: Allison J. Bailey, Associate Professor of Geography and Environmental Sustainability, Lewis F. Rogers Institute for Environmental & Spatial Analysis, University of North Georgia.

According to Carter, *Introduction to Human Geography Using ArcGIS Online* “bridges classroom lecture and live, current, interactive data for reinforced learning and a hybridized teaching approach.” The book is organized into twelve chapters, beginning with an introduction and including mapping activities for each. Carter asserts that this is a book for active learners who want to not just read geographic concepts, but engage in analyzing the data spatially. Chapter titles include:

- Introduction
- Population
- Migration
- Race and ethnicity
- Urban geography
- Food and agriculture
- Manufacturing
- Services
- Development
- Cultural geography
- Political geography
- Humans and the environment

Each chapter explores the patterns and correlations between humans and location with a collegial reading style connected to ArcGIS Online software in order to enhance student comprehension and mastery human geography. Exercises embedded within the content guide geography instructors in how to design homework assignments to local environmental conditions. Carter consistently and thoroughly broaches each standard topic found in a human geography course as someone seasoned in teaching would. The text is straightforward, clear, and concise while also expanding simple concepts into detailed analysis. For each chapter, readers are directed to complete exercises in ArcGIS online. The link to the exercises are not directly written in the book, so a little searching online at [https://esripress.esri.com/bookResources](https://esripress.esri.com/bookResources) is needed to find them. The Kindle reader version of Introduction to Human Geography Using ArcGIS Online has embedded click and go link to exercise maps which makes an e-book version a preferred format. An organizational account is needed to access the exercises which would require a high school or college instructor to take some time to create student accounts before implementing use of the book. An individual can access the exercises with a public account; however, to monitor student completion of exercises, an organizational account and group would be optimal if this text was chosen for instruction.

The first chapter provides an overview of human geography and ArcGIS online to introduce the reader to understanding that the primary purpose of this book is to lead students into becoming active learners. In addition, the basics of reading maps, GPS receivers, interacting with geospatial software, and conducting analysis with maps are explained. Chapter two focuses on population growth, density, and clusters to build foundational knowledge on where humans live on the earth and why. Infographics, images, and data is visualized on maps to best convey carrying capacity of humans across the globe. Building on the concept of native born populations, the third chapter explores how and why humans flow between nations and what forces pull and push migration patterns. Continuing with the discussion on population, chapter four deals with how people cluster in different areas within a country; one exercise specifically examines census data for the United States. Chapter five brings economic factors into the analysis of human populations in cities. The relationship between agriculture and economic growth continues in chapter six, so that the reader can understand how this affects employment locally and trade globally. Chapter seven reveals the impact of manufacturing industry on human populations in different areas; and specifically, why companies may administrate their business in a first world nation yet build manufacturing facilities where employment costs are lower and environmental regulations reduce production costs in developing countries. Both of these factors influence business decisions that affect how people live. In chapter eight, consumer decisions for purchasing and for relocating for work relates to minimum wage laws in the United States. Chapter nine broadens these considerations with the human development index and gender development index as indicators of human health, wellness, life expectancy, income levels, and education levels. As countries develop this affects cultural geography. Chapter ten looks at folk and popular culture, music, food choices, language assimilation, and religion. One related ArcGIS Online exercise for this chapter reveals the meaning and decisions behind toponyms to represent place. Chapter eleven delves into political decision making for district boundaries, gerrymandering, and landlocked developing...
countries. Pollution and climate change are two issues which are not respectful of boundaries. Chapter twelve investigates spatial relationships between humans and environmental conditions.

When comparing this book to other human geography textbooks, the greatest strength in Carter's book is how this text marries all human geography standard curriculum conversations to concrete and tangible examples in ArcGIS online allowing students to interact with the data to bring theory alive. This approach uniquely situates map study beyond memorization of cities, countries, and continents into map analysis of human behaviors related to place. A great asset to students of geography, but also beneficial to readers who want to learn why humans do what they do where they do what. GIS professionals who work in any field where a comprehension of decision making processes and human behavior will help them achieve their job tasks and can develop critical thinking skills by completing the ArcGIS Online exercises provided.

See you in Louisville for #GISValTech2020

- Hotel block is nearly sold out
- Limited exhibit and sponsorship opportunities

URISA and the International Association of Assessing Officers (IAAO) are pleased to announce the 2020 GIS/Valuation Technologies Conference in Louisville, Kentucky. Formerly known as GIS/CAMA, the event has been re-branded to take into account the abundance of technologies that, when integrated with GIS, make valuation and assessment more accurate, efficient and applicable for jurisdictions of all sizes.

Check out the detailed agenda and make your plans today! The conference will take place at the Omni Louisville, which is not only a beautiful property, but it is also perfectly situated for exploring downtown Louisville. Make your plans today!
Committee Column
This column will be a regular feature in the GIS Professional and will highlight the various URISA committees.

By now, URISA members should all be aware of the recent implementation of URISA Connect, our new member-only, online community.

We know the value that URISA members put on the networking and educational opportunities we provide through our conferences and programs throughout the year. To build on that value, we are excited to enter into this new phase of member communications by providing you with an environment to connect, engage and share critical industry information and best practices in real time. URISA Connect is an online community for URISA members to discuss and debate topics of interest and importance to the profession, share solutions and best practices, and connect with fellow members outside of their immediate area – and all without being face-to-face at a conference.

This new community will also help URISA communicate more dynamically with our members, by responding more quickly to your needs and receiving your input on critical industry issues. This will only strengthen our ability to implement our mission to foster excellence in GIS.

Members are quickly becoming comfortable posting questions about technology or asking for advice. It’s extremely likely that one of your fellow members has ‘been there, done that’ and will be happy to share lessons learned. URISA Connect may also become a good way to identify potential candidates for job openings as well.

Through the Open Forum and special topic Communities, members can gather to continue discussions, problem solve and share documents that will help the work of the committees. In the GIS Leadership & Management Community, participants are already sharing examples of strategic plans that have worked for their GIS departments. What a huge time-saver this could be.

If you are new to URISA Connect, we encourage you to check out some of the features. You can elect to receive a daily digest so you’re not bombarded with messages or forced to log in multiple times a day. If something catches your eye, you can click FOLLOW (the star icon) at the top right to receive real-time notifications when a post is updated. And any URISA member can create a community on a topic of interest to them.

Wondering if URISA Connect will be of benefit to you? Just check out some of the dialogue that is already happening. Wendy Nelson – URISA’s Executive Director – has been using this platform with the American Association of Executives for a number of years. Her experience has been a positive one as illustrated with these comments. “I belong to several ASAE communities: CEO, Small Staff Associations, Marketing, Meetings… and have saved so much time and frustration over the years by following the discussions. At least once a week, one of my peers from somewhere across the country posts something that grabs my attention whether it’s a way to save an expense at a conference, helpful hints for managing multiple projects, or best practices for working with a volunteer work force. I’ve also saved hours by not recreating the wheel. Members have shared RFPs and position descriptions along the way that have helped me immensely.”

So what are you waiting for? Jump in. Dive in. Get involved. Participate in a discussion. Start a Community. Ask a question. Ask for advice. URISA members have always been a community willing to share their experiences; URISA Connect is making this happen in a more timely fashion. Ride the wave with us.

Call for Volunteers:
The Professional Education Committee is looking for a few volunteers to assist with the development of articles for The GIS Professional. We are in the process of virtually assembling a small group to assist in writing and/or procuring regular columns. We are open to new ideas for columns in addition to some we already have planned that are ready for someone to shepherd them. Those include Story Map of the Month, Member of the Month (just a short interview with members), and Committee activities. Your time commitment will be small, but your support will make a huge difference by helping URISA continue to provide a publication to its members that contains current, useful and interesting information about the GIS profession.

If being part of the fun and creative GIS Professional team is something that interests you, contact Judy Colby-George at jcq@spatialalternatives.com.
President’s Corner
Keri Brennan, president@urisa.org

Time Famine
We are in the age of the Time Famine. We have demands on us daily to complete projects at work, spend time with family, hit the gym and then participate in activities that will further our careers and desire to give back to the geospatial community. How do we find the time for all of the demands on us?

Recently I had an opportunity to attend the American Society of Association Executives Exceptional Boards Symposium with Wendy Nelson, our executive director and Kevin Mickey, President Elect of URISA. One of the common themes that was discussed during this event was that so many members of associations are living the time famine.

The truth is, we are not actually in a time famine. We don’t need more time to get things done, but what we do need is to prioritize the work we do have in front of us. How does this affect your desire to participate in the good work that URISA is actively engaged in? Volunteering your limited time – giving it away, may actually increase your sense of leisure. Volunteering will increase your time affluence, compared to spending time on yourself, spending time on others increases your overall sense of accomplishment.

As with all associations, URISA relies on our hard working and dedicated volunteer corps to help us accomplish our mission, build upon the three foundational tenants that we are focused on. Without your hard work we would not be able to:
- Protect, promote and grow the GIS profession,
- Support GIS professionals at all stages of their careers, and
- Sustain and strengthen URISA as an organization.

Volunteering has benefits that are obvious, like earning GISP points, and giving back to the geospatial community as a whole but those efforts can be challenging to take on when you feel that you are in a time crunch. Not everyone has the desire or time to devote to writing a URISA workshop from scratch or be on committee calls monthly. That does not mean there is not a place for you in URISA. In fact, it is just the opposite. Committees and Task Forces are currently actively looking for volunteers to make a big impact in a relatively short amount of time.

The newly re-engaged Membership Committee, as an example, is looking for members to help define “Who is a URISA Member?”, “How are member benefits valued?”, and “What can URISA do to help meet your greatest work challenges?”. It is not a large time commitment to help foster this research.

Our Professional Education Committee (PEC) is actively engaged discussing the development of valuable content and best modes of delivery to our members. Have you attended any of the PEC’s free monthly webinars yet? The Community Resilience Task Force is a force to be reckoned with and the NG9-1-1 Task Force has come together to produce reports, webinars, and training materials. The committee in charge of the GIS Leadership Academy is updating content, while at the same time brainstorming about a GLA 2.0.

Each URISA committee and task force is building on the strategic plan and annual work plans that have been developed over the past few months.

So how to you become engaged? You do not need to start with a big task, like becoming a chair of a committee. Start with a time commitment that you are comfortable with, if you have a few hours a month to participate, that is awesome.

To actively become engaged, there are a few different ways that you can dip your toe in the pool. First, start with visiting URISA Connect, our recently activated digital community for URISA members. In this platform, you have access to all of the communities that are active in URISA. You have the opportunity to engage in online conversations, look for calls for volunteers and actively engage in the URISA community. Our simply ‘lurk’ for a while to find out what they’re focused on. When you see a project or task that interests you or a committee that is engaged in activities you wish to participate in, simply reach out to the committee chair, via URISA Connect, or email. They’re happy to help identify volunteer tasks that meet your areas of interest.

So is there a time famine? Perhaps, depending on what external factors are influencing you, but does that mean that you cannot take a little time to volunteer with URISA? Absolutely not. Spending time furthering the geospatial profession not only helps to further your career aspirations, it also helps you to feel more satisfied and avoid the pitfalls of the time famine. By donating your time, you can actually help yourself to feel less stressed and more focused. The rewards of volunteering go beyond what I have stated above and give you access, no matter what stage of your career, to mentors, access to a social and professional network that extends around the world and can help you strengthen your leadership and project management skills.

In my 15+ years as a URISA member, I have volunteered on many committees and the time, relationships and knowledge I have gained have always outweighed the time I have spent in pursuit of assisting URISA. I look forward to serving on committees with all of you in the future.
GIS for Science: Applying Mapping and Spatial Analytics
by Dawn J. Wright and Christian Harder

Esri Press, 2019
Paperback: 252 pages
ISBN: 9781589485303

Published by Esri Press in July 2019, GIS for Science: Applying Mapping and Spatial Analytics is a compendium of various scientific topics and how GIS is being used to tackle the biggest problems of the 21st century. It touches on climate change, homelessness, conservation science, archaeology, glaciology, and ecosystem mapping. Coming across as a coffee table book, there is plenty of information within its pages to inform and educate without overwhelming the reader. For those needing more than the text has to offer for each chapter, there’s a wealth of supplemental resources online at GISforScience.org.

Esri’s chief scientist Dawn Wright and author and editor Christian Harder have compiled real-world examples of how scientists around the world are leveraging GIS and spatial science to combat issues in their fields. Harder has edited other Esri Press notables such as The ArcGIS Book: 10 Big Ideas about Applying The Science of Where, and Understanding GIS: An ArcGIS Pro Project Workbook. Wright is a geographer and oceanographer and is author of several pieces on marine GIS.

This book is organized into five themed reviews of scientific topics. In Part I: How Earth Works, we learn about global ecosystem mapping, supervolcanoes in the Central Andes, landslide risk in Washington state, and assessing the climate’s effect on global seagrass habitat. This last study of Part I explores how Esri is using machine learning techniques to model where seagrass habitats could grow or recede based on increases in sea temperatures of just 0.1 degrees Celsius. The use of predictive modeling in this study was an example for researchers to demonstrate how novel visualization techniques like the space-time cube could be used in desktop GIS for mapping hot-spots.

Part II is all about how earth looks. Covered are topics related to rising global temperatures and the impact of extreme heat events, addressing homelessness in Los Angeles, rising sea levels and coastal communities, and bird habitats in a warmer world. The chapter on homelessness, called Finding a Way Home, presents how researchers are using data to predict where homelessness is increasing and then describes how best to aid people who are currently homeless. Readers can follow along with the methods in this chapter by completing a guided tutorial in Esri’s ArcGIS Pro on combining risk factors to predict homelessness, found at GISforScience.org.

In Part III: How We Look at Earth, scientists use drones to map cultural heritage sites in Iraq in the first presented study, and in the second, Chesapeake Conservancy and Microsoft Research leverage artificial intelligence and satellite imagery to uncover areas for restoration and conservation. In Mapping Ancient Landscapes, Harvard researchers use the power of drones and historic aerial photos to conduct archaeological analysis of the remnants of the Assyrian Empire (ca. 705 BC) in the Kurdish region of Iraq. Using spatial methods, the research team located key structures integral to the Assyrians to learn about migration and civilization expansion patterns.

Part IV is named Training Future Generations of Scientists and covers two studies on the use of GIS in education. The first one is about glaciological processes in Wyoming and the second is on conservation science practices in Panama. In A Glacier in Retreat, readers learn what students from Central Wyoming College are doing to study the Dinwoody Glacier in the U.S.’s third most glaciated state. Students are using kite aerial photography (KAT) and ground penetrating radar (GPR) to assess the rate of glacial retreat since a 1970’s survey expedition. The student-led project, in addition to glacier studies, leverages GIS in identifying where there are buffalo kill sites at high altitudes to confirm the presence of ancient American Indians.

The last part, Technology Showcase, is a collection of eleven short GIS for science snapshots. This section is a presentation of the latest and greatest technology features available to scientists (and non-scientists) for use in solving challenging spatially-related problems. These vignettes cover the geospatial cloud, the new equal earth projection, Jupyter Notebook analysis for hurricane modeling, emergency response to flooding, mapping impact sites on Mars, and the value of Esri Story Maps.

Altogether, GIS for Science is an informative review of the world’s biggest challenges and the opportunity that location analytics presents to combat them. With real-time data collection like drone and kite imagery, predictive modelling of future climates, and historical studies about earth processes and the human footprint, scientists like the ones featured in this book are on the front lines of climate change, public health, and conservation efforts. The content within the pages, as well as the additional blogs, tutorials, Story Maps, and published articles in the companion website will greatly benefit any reader of GIS and science research.

Reviewed by: Dave Grolling, MPSGIS, dgrolling@gmail.com
We Can’t Wait for GIS-Pro 2020 in Baltimore!

We had a phenomenal response to the Call for Presentation Proposals. Proposals were submitted within these categories:

- GIS Leadership & Management
- Community Resiliency & Sustainability
- Equity & Social Justice Implications of GIS
- GIS Supporting Health & Human Services
- Data Management & Analysis
- Geospatial Technology Innovations
- NextGen 9-1-1
- Federal GIS
- National Spatial Reference System/Datums 2022
- Inspiring the Future of GIS and Education

The planning committee will meet in early March to discuss submissions and develop the complete educational agenda.

We’ve already got phenomenal keynote speakers confirmed and a comprehensive workshop line-up in development.

GIS-Pro 2020 registration will open in late March.

A registration table detailing rates for individuals, students, young professionals, one-day, full conference, etc. is posted online.

Venue: Events will take place at the Hilton Baltimore Inner Harbor (401 W. Pratt Street, Baltimore, Maryland 21201 USA). The Hilton is located in a prime place in the Inner Harbor, an iconic seaport area of restaurants, museums, shops, sports complexes, nightclubs and historic ships. It is right next door to Camden Yards (Baltimore Orioles) and across the street from M&T Stadium (Baltimore Ravens). It’s a short walk to the National Aquarium, Maryland Science Center and a waterfront concert at Pier Six Pavilion. URISA negotiated an amazingly affordable $179 single/double occupancy room rate at the Hilton for GIS-Pro 2020, including wifi access. The group rate will be available until August 26 or until the room block is depleted. (Note that in New Orleans last year, the block filled extremely quickly so make your plans early!). A limited number of rooms are also available in our government per diem block.

Get started:

- Neighborhoods of Baltimore
- Local Artisans
- Dining/Foodies

Baltimore is easy to get to and easy to navigate once you’re there. Start planning your trip!
Flexing Your Leadership Courage
By: Dr. Steve Yacovelli

Remember in The Wizard of Oz how the Cowardly Lion—when he got to see the Wizard—was like, “What? I already had courage?” It was kind of not cool that the Wizard made the poor guy go all the way through that drama, only to say, “That gift you want? You already got it!” Well, leadership courage is a lot like that. Often when leaders ask, “How can I get more courageous in my leadership?” the answer is—like the Lion—you already got this; just tap into that which you already have.

At its core, it’s easiest to think of courage as that adrenaline-filled action hero that you see in the movies or when you’re home Netflixing and chillin’. Amazon warriors like Wonder Woman, death-facing young wizards like Harry Potter, countless soldiers and sailors entering the massive battle to win the war: you see these images in media and get an idea of what “courage” is supposed to be. But if you’re not a Navy SEAL or a wand-wielding wizard or an immortal Amazonian princess, you’re in luck! Courageous leadership doesn’t require you to be any of those. But—by nature of being in that leadership role within your organization—there’s a strong argument that you already have some semblance of courage up your sleeve. The challenge is to build and harness that courage to be even more effective as a leader.

When you think about being courageous in the workplace, even if you’re being your bravest self, there’s still a lot of factors that can prevent you from being your most courageous (and effective) leadership self. Time and again, these are the top three “courage-inhibitors” that tend to come up for many leaders:

1. The Challenge of Fear
If you were to ask around, you’d likely find that a lack of courage and abundance of complacency in the workplace comes down to one simple thing: fear. When you think about this in the business context it can be broken down into two subtypes: (A) Fear of (Perceived or Actual) Failure, and (B) Fear of Feeling Like an Outsider. With Fear “A,” you tend to strive for perfectionism, where the idea of submitting anything less than perfect could alter the opinion of a boss or trusted ally. Typically, most folks want their best foot forward; they want to be seen as a rock star performer. Anything less is deemed a failure (even if your “C” work is on par with some others’ “A” work).

But Fear “B” comes from a more personal place, where challenging the status quo may make you feel like an outsider within your own workplace. At some point in your career, you’ve likely had that feeling before (or maybe you currently do). It’s not fun, it’s alienating, and, for some, it’s a feeling they don’t want to ever feel again. So, in a work context, this desire to avoid the feeling of being the “other” leads you to be compliant, even if in your core you know the idea at hand really needs to be challenged for the good of the organization. Having leadership courage here is to be OK with failing, being OK with being perceived as that outsider for the sake of doing better work, benefitting your team members or moving your organization forward.

2. The Challenge of Assumptions (or “Filling in the Blanks”)
As humans, it’s common to fill in the gaps when presented with a situation where all the data isn’t available. It’s easy to connect the dots between one problem and the next, even when the two aren’t related, without taking the time to examine your own approach. It’s how humans are wired. When you think of this in the context of courage, you’re either avoiding truly understanding the situation, or you’re scared (back to fear again!) to dive deeper into the truth of the situation. Having leadership courage means lifting up those rocks and seeing what’s underneath. Lack of courage here is making assumptions about the situation without knowing all the information.

3. The Challenge of Being Locked into Current Behaviors
Let’s talk about change for a minute. Here’s a little secret you probably already know: most people don’t like change. On a fundamental level, change is a really awesome idea: it’s fresh and new, it expands horizons, it allows for innovation and to have new experiences. In the workplace context, you initiate change so that the organization can grow and prosper. But the hard truth? The vast majority of people hate change. Why? Well, on one hand (at the unconscious level) humans don’t like to change because it hits a part of our brain that likes safety and security. As our cave-ancestors survived and grew as a species, they (like us) were wired to be fearful of changes. Engaging in something new could lead to a dangerous situation.
Now, flash forward to today: you’re still wired like this in changing situations. When most people engage in change, it leads to an unsettling feeling of vulnerability. On the other hand, your conscious self doesn’t like change because it’s difficult. There’s a tendency to simply get used to situations and know how to act and adjust to them, even if the situation isn’t ideal. You might have heard the old adage: “The devil you know versus the devil you don’t,” meaning that we as humans tend to be OK with even bad situations/bosses/friends/relationships/etc. because we know where we stand in this context. Some people don’t like change so much that they’d sooner stay in a bad situation because it’s familiar rather than make a move to newness. So, whether unconscious or conscious, for most people change is hard! It takes courage to try something new, something different, and individual resilience to keep at it when it doesn’t work perfectly the first time.

As a leader, courage should be the bedrock that’s your foundation—the courage to challenge the status quo, and to be your authentic and effective self in front of the world. It’s a super power that every leader has within them: it’s just a matter of avoiding the three “courage-inhibitors” and channeling that courage just like the not-so-Cowardly Lion did.

Dr. Steve Yacovelli (“The Gay Leadership Dude”) is Owner & Principal of TopDog Learning Group, LLC, a learning and development, leadership, change management, and diversity and consulting firm based in Orlando, FL, USA, with affiliates across the globe. With over twenty-five years’ experience, Steve is a rare breed that understands the power of using academic theory and applying it to the “real” world for better results. His latest book, Pride Leadership: Strategies for the LGBTQ+ Leader to be the King or Queen of their Jungle came out June 2019. www.topdoglearning.biz

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Dr. Ruiz was passionate about her role as a mentor of graduate education at the University of Illinois at Urbana-Champaign. This scholarship supports young professional participation in the annual GIS-Pro Conference, fostering their professional connections and educational development. Contributions are tax deductible as charitable donations. Donate today!

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Dates and Locations

[Images of event locations]

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Abstract. Geographic Information Systems (GIS) is a technology with significant potential to transform Governments. Since 1999, the municipal government of Porto Alegre, capital of the State of Rio Grande do Sul in Brazil, has initiated a series of actions to develop and implement an enterprise GIS. However there is significant variation in the development of enterprise GIS between different departments and agencies within Porto Alegre City Hall (PMPA). The goal of this case study was to carrying out a comparative study between three different models of maturity of GIS capacity. This is done in order to identify the most appropriate model for measurement of the GIS maturity level of institutions within the centralized and decentralized administration of Porto Alegre City Hall (PMPA).

Introduction

The city of Porto Alegre is located in the far south of Brazil, with an area of 476.3 km². It is a meeting point of different natural systems that give a diverse geography to the city. With more than 1.4 million inhabitants, it is the tenth most populous city in Brazil. Porto Alegre, the capital of Rio Grande do Sul province, is a center of trade of goods and services par excellence and of advanced technology. It is the economic, financial, political, cultural and administrative center of the 31 satellite cities that make up the Metropolitan Region. Historically, Porto Alegre has actively participated in the political, economic, sports and cultural life of the country.

The current administrative structure of Porto Alegre City Hall (PMPA) includes 16 direct offices and, indirectly, 9 departments (Figure 1).

Since 2006, Porto Alegre City Hall has adopted numerous initiatives to develop and implement an enterprise GIS. Currently, a large amount of geographic information is produced and maintained by the various agencies of the municipality’s direct and indirect administration, and made available to technicians and civil society through WebGIS applications.

As an example, the Municipal Informational Statement of Urban Conditions of Land Use (DMI) application integrates part of the alphanumeric and geographical information produced by the Municipality. DMI provides spatial data related to the urban regime (Density, Activity, Utilization Index and Volumetry), building alignment, listed buildings, infrastructure networks (water, sewage, electricity and gas) and administrative restrictions (non-buildable lanes, aerodrome and helipad protection zones, permanent...
preservation areas). DMI is a valuable tool, necessary for feasibility studies, preparation of building and parceling projects, prospecting areas for specific projects / activities, etc.

However, the technology infrastructure required to meet the increasing demand for spatial data production, maintenance, and availability, and for GIS services and applications is undersized. In addition, there is a large imbalance in the level of GIS maturity among the Porto Alegre City Hall (PMPA) agencies. Many GIS processes are ad-hoc and a large portion of the data do not have a standardized structure. In addition, the lack of enterprise coordination and agency performance indicators make it difficult to expose the most sensitive and needy areas of GIS, both at the PMPA enterprise level and within individual city agencies.

It was recognized that to make an action plan to mitigate deficiencies and to modernize PMPA GIS would be difficult without a clear understanding of current conditions. To achieve this level of understanding it was decided to perform an assessment of the GIS maturity of PMPA administrative bodies by utilizing the URISA GIS Capability Maturity Model (GISCMM) (Babinski 2013), in order to diagnose the most critical components of PMPA GIS.

The GISCMM has been identified as an effective tool to assess and report on the key elements of an enterprise municipal GIS. We also utilized it to understand the capability and process maturity level within individual departments and agencies within PMPA.

PMPA Analysis Process with the GISCMM
Before PMPA could utilize the GISCMM, minor changes were necessary to adapt the form to an evaluation of the individual secretariats / departments of the PMPA. This adaptation was required because the original format of the Model was for evaluation between organizations (municipalities, states). Thus, questions number eight (Architectural Design) and twelve (Data back-up and security) of the Enabling Capability dimension were eliminated, because they are currently planned and being executed by PMPA’s IT company PROCEMPA. Finally, issue number twenty-two of the Execution Ability dimension was also excluded.

Results
The GISCMM form was submitted to all PMPA bodies that had representation in the Geoprocessing Working Group. Nine secretariats Municipal Secretariat of Environment and Sustainability (SMAMS), Municipal Secretariat of Finance (SMF), Municipal Secretariat of Culture (SMC), Municipal Secretariat of Economic Development (SMDE), Municipal Security Secretariat (SMSEG), Municipal Secretariat of Infrastructure and Urban Mobility (SMIM), Municipal Secretariat of Urban Services (SMSURB), Municipal Secretariat of Institutional Relations (SMRI), Municipal Secretariat of Health (SMH) and four departments Municipal Housing Department – (DEMHAB), Municipal Department of Water and Sewers (DMAE), Municipal Department of Urban Cleaning (DMLU) and Public Transport and Circulation Company – (EPTC) responded to the form, totaling thirteen PMPA bodies.

Results are presented using radar charts as they provide a clear way to display multivariate quantitative observations, where each variable is represented by an axis starting at the center of a circle (corresponding to Level 0).

The following are the questions that were submitted through the form and the results obtained for PMPA bodies by the GISCMM, displayed through radar charts and column charts.

GISCMM Enabling Capability Components:
The GISCMM defines Enabling Capability as ‘...the technology, data, resources, and related infrastructure that can be bought, developed, or otherwise acquired to support typical enterprise GIS operations.

Enabling capability includes GIS management and professional staff.’ The Enabling Capability components applied to the PMPA study include:


For the PMPA study, the GISCMM Enabling Capability assessment scale (from 0.00 to 1.00) was modified to assess capability from 0 to 10.

GISCMM Execution Ability Components:
The GISCMM defines Execution Ability as ‘...the ability of the staff to maximize the use of the available capability, relative to a normative ideal.’ The Execution Ability components applied to the PMPA study include:


For the PMPA study, the GISCMM Execution Ability assessment scale (from 1 to 5) was not altered.

Results of the Enabling Capability Assessment of PMPA
The results of the GISCMM assessment showed high levels of variation in available Enabling Capability resources across PMPA agencies and generally low levels of Execution Ability process maturity across agencies. Figure 2a and Figure 2b show that SMF has much higher Enabling Capability compared with EPTC and SMSEG.

Additional statistical analysis shows the average Enabling Capability assessment for each agency (Fig. 3a) and the average
score for each Enabling Capability component for all PMPA agencies (Fig. 3b). The agency assessments show a sample mean of 2.64, with a standard deviation of 1.78. The three lowest scoring Enabling Capability components for PMPA agencies as a whole were: EC 19 - GIS Governance Structure, EC 14 - GIS Application Portfolio Management, and EC 21 - GIS Budget.

Results of the Execution Ability Assessment of PMPA
Similar to the Enabling Capability results, the GISCMM assessment showed high levels of variation across PMPA agency’s GIS execution ability results. Figure 4a and 4b show the large difference in execution ability between SMF (higher performance / maturity) compared to EPTC and SMSEG (lower performance / maturity).

Additional statistical analysis shows the average Execution Ability assessment for each agency (Fig. 5a) and the average score for each Execution Ability component for all PMPA agencies (Fig. 5b). The agency assessments show a sample mean of 1.80, with a standard deviation of 0.85. The three lowest scoring Execution

Figure 2a: Enabling Capability Results of the 16 PMPA agencies

Figure 2b: Enabling Capability Results of SMF, EPTC and SMSEG only

Figure 3a: Average Enabling Capability Assessment for Each PMPA Agency

Figure 3b: Average Score for Each Enabling Capability Component for all PMPA Agencies

Figure 4a: Execution Ability Results of the 16 PMPA Agencies
Ability components for PMPA agencies as a whole were: EA 11 - Regional Collaboration, EA 15 - Client Satisfaction Monitoring and Assurance, and EA 16 - Resource Allocation Management.

**Conclusions**

From the results obtained and the experience gained in applying the GISCMM Model by PMPA, it can be concluded that:

- In fact, the GIS maturity level of PMPA agencies is considerably low except for SMF;
- Agencies that are known to have GIS incorporated into the organization’s strategic objectives tend to have a higher level of maturity because they end up investing more resources, which increases the level of maturity. This situation is observed in SMF, SMRI and DMAE;
- Based on knowledge of the PMPA, the Model presented extremely consistent results. Only a few minor misstatements were caused due to lack of understanding of what was being requested on the GISCMM form. It was was important to communicate with participants before applying the form to clarify specific and consistent understanding of each GISCMM question;
- If an agency does not have a good maturity level in variables EC 19 - GIS Governance Structure, EC 20 - GIS is Linked to Agency Strategic Goals, and EC 21 - GIS Budget, it will probably have a very low overall maturity. These three components seem to be the core ‘enabling’ foundations for successful development of GIS;
- The application of the GISCMM was reasonably simple and the model easy to understand. It is undoubtedly an excellent evaluation tool, resulting in reliable information to support management in GIS. It is hoped, therefore, to be used for additional new evaluation cycles, in order to verify the evolution / adherence of this technology / culture within the PMPA.
- We believe that use of the GISCMM was a very effective tool for the entire PMPA administration to understand the development level of our GIS. Because the GISCMM is a respected peer-reviewed model, its use within PMPA added credibility to our analysis of our enterprise GIS in the eyes of our administration management.
- We were able to understand clearly the variations in GIS implementation level, capability, and process maturity in PMPA departments and agencies. This understanding will allow us to develop a strategy going forward, to make targeted system improvements. We will likely use the GISCMM again in the future to chart our progress towards our enterprise GIS goals.

About the Author: Rodrigo de Marsillac Linn graduated in Architecture and Urbanism (2004). He also has a Master in Remote Sensing (2008) and specialization in IT Management (2018) degrees. He is currently manager of the Enterprise GIS project of Porto Alegre City Hall / RS - Brazil. He has experience in Urban Territorial Planning, Urban Cadastre, Geoprocessing and Remote Sensing. He can be reached at: rodrigo.linn@ufrgs.br

Greg Babinski, King County GIS (Seattle, WA), provided editorial comments and advice to Mr. Linn.
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GIS Professionals Volunteering for a better world.
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URISA’s GIS Hall of Fame
Nominations Invited

URISA’s GIS Hall of Fame honors persons and organizations that have made significant and original contributions to the development and application of GIS concepts, tools, or resources, or to the GIS profession. URISA is inviting nominations for 2020 inductees.

Anyone may nominate a person or organization for induction to URISA’s GIS Hall of Fame. To make a nomination, submit a written statement to URISA describing:

• The nominee’s achievements, emphasizing significant and original contributions to the development or application of GIS concepts, tools, or resources, or to the GIS profession; and
• The significance of the nominee’s contributions, in terms of their enduring impact on the GIS field or profession, and their social benefit.

Hall of Fame laureates are expected to exemplify vision, leadership, perseverance, community-mindedness, professional involvement, and ethical behavior.

Nominations are due on or before May 11, 2020. The 2020 URISA GIS Hall of Fame celebration will take place during GIS-Pro 2020 in Baltimore, Maryland.

For details about the nominations criteria and process, and to review the path-breaking accomplishments of previous inductees, visit https://www.urisa.org/awards/urisa-gis-hall-of-fame/.
Meet the 2020 Vanguard Cabinet of Young Professionals

URISA is pleased to announce the newest members of its Vanguard Cabinet. The Vanguard Cabinet (VC) is a URISA initiative (which debuted in 2011) to engage young GIS practitioners, increase their numbers in the organization, and better understand the concerns facing these future leaders of the GIS community. The VC is an advisory board who represent the young membership of the organization. The Cabinet’s mission is to collaborate with URISA’s Board of Directors and Committees in creating and promoting programs and policies of benefit to young professionals.

Comprised entirely of passionate young members selected from different geospatial disciplines, the Cabinet aims to position URISA as the center of opportunities for ambitious young professionals who are committed to improving URISA and the geospatial profession via innovation, collaboration, networking, and professional development. Each will serve a three-year term.

**2020 URISA Vanguard Cabinet Members:**

Josiah Burkett, GIS Analyst, GeoTechVision Enterprises Limited, Kingston, Jamaica: “I’m really excited and looking forward to having a role in URISA where I can lend my expertise to collaborate with other professionals and continue the great work of the past VC members. I intend to increase the awareness of sustainable solutions using GIS and allow young professionals to network and develop their skills within an amazing community.”

Shenyue Jia, Research Fellow, Chapman University, Orange, California: “I look forward to expanding and strengthening URISA’s bond with colleges. I’m also passionate about introducing geospatial tools to untraditional fields of GIS, such as digital humanities.”

Rachel Layko, Dangermond Fellow at the National Audubon Society and Fellow in the Center for Geospatial Analysis, The College of William & Mary Center for Geospatial Analysis, Williamsburg, Virginia: “I am thrilled to have the opportunity to work with and learn from my fellow Vanguard Cabinet members! I am looking forward to connecting students and young professionals to tools and resources to support their career journeys, and I am excited to work with GIS professionals across disciplines to grow mentorship opportunities and spaces for collaboration.”

Harraz Mohd Reza, GIS Technician, Governor’s Office of Information Technology, State of Colorado, Denver, Colorado: “I am so honored to have been selected for the prestigious URISA Vanguard Cabinet. I look forward to increasing the diversity and exclusivity of our organization while increasing our visibility. I’m excited to geek out with fellow peers on all things geospatial and to make new friends and lasting relationships. I love the power of storytelling and believe that every person has a unique story to tell. I cannot wait to hear all of them!”

Frank Romo, Public Safety GIS IV, City of Detroit & CEO at RomoGIS Enterprises, Detroit, Michigan: “I am thrilled to join the Vanguard Cabinet’s group of highly motivated and talented young professionals. This is an exciting opportunity to expand my GIS network and develop strong professional connections around the world. During my time with the Vanguard Cabinet, I intend to support the mentorship program in developing outreach and training materials for future GIS users including those in K-12 educational settings. I am also very excited to present at the upcoming GIS-Pro conferences to pursue my passion for using GIS to advance academic research in the areas of urban planning, public safety and public health.”

Dru Sexton, GIS Specialist, Buckeye Hills Regional Council, Marietta, Ohio: “Joining the Vanguard Cabinet for me is an opportunity to help us strengthen our organization through building strong academic partnerships in an effort to help us bridge the gap between academia and GIS professionals. I also have many ideas that I am eager to share with the organization in hopes of making URISA the very best professional organization to be a part of! I would like to think that we may inspire the next generation of professionals through leading by example!”

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Shradha Shrestha, Graduate Research Assistant in NSF INFEWS project, Rochester Institute of Technology, New York: “I am honored and very excited to be a member of URISA’s Vanguard Cabinet of 2020-2023. In my tenure, I would be more focused on motivating young girls in STEM fields, particularly towards geoscience and creating networking opportunities among graduate students of geospatial studies. My long-term goal is to integrate knowledge across various domains (e.g., Machine learning in Natural Resource Management and Urban Ecology) to create a multidisciplinary knowledge base in geo-intelligence.”

Caitlin Thomas, Geospatial Emergency Management Specialist, Federal Emergency Management Agency (FEMA), Atlanta, Georgia: “I am grateful for this opportunity to contribute to a collective voice representing young professionals in URISA and in the GIS industry! I hope to encourage participation and engagement among GIS enthusiasts, especially about topics we face frequently as working professionals. I’d also like to help influence the narrative around GIS being an accessible community through initiatives supporting diversity and inclusion. Thank you for the warm welcome to this group of passionate leaders!”

Shivon Van Allen, GIS Technician III, NW Natural, Portland, Oregon: “I am excited to have been selected to join the Vanguard Cabinet and to get to know my fellow Vanguard Cabinet members over the coming years. Participation in URISA through my regional chapter has helped shape my career, develop my GIS skills, and expand my network. I am eager to get to work with the Vanguard Cabinet on projects and initiatives that support other young GIS professionals on a large scale. My interests include expanding GIS content in secondary education, developing resources for emerging professionals, and connecting the Vanguard Cabinet with young professional groups in regional URISA chapters. I am excited for this opportunity and look forward to making a meaningful impact on the next generation of GIS leaders.”

Megan Young, Research Data Specialist II, California Public Utilities Commission, San Francisco, California: “It’s an honor to have the opportunity to serve on this cabinet and collaborate with the other dedicated members of my cohort. During my term, I intend to champion inclusivity and design thinking, and I look forward to further developing the VC’s goals in expanding resources and networking opportunities for young professionals in the geospatial field.”

In addition, Vanguard Cabinet members selected Haley J. Zehentbauer, GIS Analyst, Stark County, Canton, Ohio to serve as VC Chair and Meredith DiMattina, Crime Analyst Supervisor, City of Burlington, North Carolina, to serve as VC Secretary for 2020.

Cabinet members are selected through an application process, with a review by the Vanguard Steering Committee. The application process for 2021 Vanguard Cabinet members will open in October 2020. Learn more about VC activities here: https://www.urisa.org/vanguardcabinet

URISA is pleased to announce that Rachel Rodriguez (Marquez) has been named URISA’s Young Professional of the Year in recognition of her outstanding contributions as part of URISA’s Vanguard Cabinet.

Rachel noted, “URISA’s Vanguard Cabinet is the most dynamic committee of URISA! As the Past-Chair, I am honored to win this Award on behalf of our team. Over the last year we have made substantial changes by implementing a “Learn-Do-Teach Model” and adding a third year to the term of Cabinet members. “From Dorm Room to Boardroom” is our focus. We continue to expand the learning opportunities for our fellow young professionals, which have ranged from managing remote teams and relationships to conference call etiquette. Our success is further highlighted by the high number of VC members who are also leading their local URISA chapters. In 2020, I start my third term on the Vanguard Cabinet, and I am looking forward to guiding the second and first years into even greater accomplishments. The entire team, past and present, deserves the recognition for their tireless work, dedication, and their ability to shift perspectives when finding new roadblocks to success.”

Rachel is the Countywide Address Management System (CAMS) Program Coordinator for the County of Los Angeles’ Enterprise GIS (eGIS) Group. She has 10+ years of experience in varying industries and applications of geographic information systems (GIS). In addition to the Vanguard Cabinet, Rachel is the Co-Chair for URISA’s Next Generation 9-1-1 Task Force, and represents her local chapter, as SoCAL URISA President, in aligning with URISA International’s OneURISA model.
URISA is pleased to announce the Exemplary Systems in Government (ESIG) Awards process for 2020. Since 1980, URISA’s ESIG Awards have recognized extraordinary achievements in the use of geospatial information technology that have improved the delivery and quality of government services. The award competition is open to all public agencies at the national/federal, state/provincial, regional and local levels. Winners will be recognized during the Awards Luncheon on September 29 during GIS-Pro 2020 in Baltimore, Maryland.

Submissions are invited in two 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.

Submissions are due on or before Monday, June 1, 2020. A detailed application requiring details about the Jurisdiction/Organization, System Design, Implementation, Organizational Impact and System Resources is available online.

The list of 2019 ESIG Award Recipients follows.

**2019 Enterprise System Winners:**

Exemplary System: Land Information Management System (LIMS)
*Submitted by Nadine Clah GISP, IT Analyst/GIS Coordinator, Navajo Housing Authority, Arizona*

Exemplary System: Streamlining a City-wide Process for Optimal Small Cell Site Locations: A Collaborative Approach
*Submitted by Eva Cancino, GIS Coordinator, City of Naperville, Illinois*

Distinguished System: The City of Roswell GIS
*Submitted by Patrick Baber, GIS Manager, City of Roswell, Georgia*

**2019 Single Process System Winners:**

Exemplary System: The City of San Antonio Solid Waste Management Department Service District and Route Optimization System
*Submitted by Chelsie McNicol and Team, City of San Antonio, Texas*

Exemplary System: Carriage Alerts Mapping Platform (CAMP): Real-Time GIS to Manage Tours & Equine Waste
*Submitted by Emma Paz, GIS Developer, City of Charleston, South Carolina*

To view these winning submissions and accompanying organizational videos, visit: [http://www.urisa.org/awards/exemplary-systems-in-government/](http://www.urisa.org/awards/exemplary-systems-in-government/)

Instead of renewing as an individual member or young professional member for the coming year, consider a government agency, corporate partner or educational institution membership.

Don’t let your URISA membership lapse! Renew your 2020 membership here: [https://www.urisa.org/2020membership](https://www.urisa.org/2020membership)
Platinum Corporate Partners

Esri

380 New York St, Redlands, CA 92373
Phone: (909) 793-2853
info@esri.com

Since 1969, Esri® has been helping organizations map and model our world. Esri’s GIS software tools and methodologies enable them to effectively analyze and manage their geographic information and make better decisions. They are supported by our experienced and knowledgeable staff and extensive network of business partners and international distributors.

A full-service GIS company, Esri supports the implementation of GIS technology on the desktop, servers, online services, and mobile devices. These GIS solutions are flexible, customizable, and easy to use.

Esri software is used by hundreds of thousands of organizations who apply GIS to solve problems and make our world a better place to live. We pay close attention to our users to ensure they have the best tools possible to accomplish their missions. A comprehensive suite of training options offered worldwide helps our users fully leverage their GIS. Esri is a socially conscious business, actively supporting organizations involved in education, conservation, sustainable development, and humanitarian affairs.

Michael Baker International

Since 1940, Michael Baker International has built its global legacy— and full continuum of solutions— on a diverse culture of innovation.

Solving our clients’ most complex challenges often requires new ideas, new processes, new technologies— new solutions where none existed previously. Our success always has drawn on the collaborative creativity of our dedicated employees, who leverage our diverse backgrounds, expertise, experience and can-do attitudes to make the communities we serve safer, more accessible, more environmentally sustainable, and more livable.

The result: a growing portfolio of exclusive innovations at Michael Baker that add significant dimension and value to our ability to deliver our full continuum of solutions. Michael Baker innovations— and the innovators behind them— serve as game-changing differentiators in the industry and demonstrate once again how We Make a Difference for our clients and the communities we serve.

• A suite of products and services to support the NG9-1-1 call-routing environment

Michael Baker International’s DataMark suite of software solutions and services support public safety answering points (PSAPs) and their GIS stakeholders in this mission critical transition. DataMark solves upgrade challenges, helps improve public-safety communications and ensures the data meets the precise NG9-1-1 requirements. The software considers all aspects of the data that is provisioned to a NG9-1-1 system (data creation, clean up, quality and maintenance workflows). With extensive expertise in GIS and public safety, Michael Baker can help GIS departments determine what they need to do in order to support NG9-1-1.

• GIS-based mobile app for managing infrastructure assets

Michael Baker International engineers created a mobile phone-based computer software platform, MICAP (Mobile Infraction Capture) to collect and analyze data and images over broad geographic areas to help monitor utility equipment for changes and compliance problems. The GIS-based MICAP platform provides access to licensed data, as well as the collection and analysis of new data and images, delivering an improved workflow interface for managing assessments, repairs, and geographic changes to infrastructure assets. It is designed for state agencies, municipalities, utility companies, land developers and other engineering firms that need to effectively monitor and manage utility poles, underground cables, utility pipelines, bridges, roadway infrastructure and other assets. MICAP is free and available via the App Store and Google Play.

• Local watershed assessment at the push of a button

iWATR (Integrated Watershed Assessment Tool for Restoration) is a mobile app-based innovation developed by Michael Baker International’s water services team to add speed, capability — and value — to provide an easy-to-use assessment tool for any city, county or state planner across the U.S. to develop or better manage local land. The app combines GPS features and data from the U.S. Environmental Protection Agency and other government sources, to compile local data at the push of a few buttons. It tabulates a comprehensive assessment, and provides several solution options with cost estimates to solve specific water quality-impairment problems in watershed areas.

• Analyzing bridge data with ease

iUSBridges, is a geographic information system (GIS)-based app that allows users to locate nearby bridges, explore details of those bridges, save information on favorite bridges, and share feedback. iUSBridges uses data retrieved from the Federal Highway Administration’s (FHWA) National Bridge Inventory. State departments of transportation provide updated bridge information on a cyclical basis to the FHWA.

For more information, click here.

For information about URISA Partnership, please visit:
Silver Corporate Partners

Cityworks

Cityworks provides users with a web GIS-centric solution that helps them manage, track, and analyze your infrastructure maintenance and risk assessment. Cityworks includes an integrated permitting and community services management system to include activities done across residential, commercial, and other community infrastructure.

Since 1996, Cityworks | Azteca Systems, LLC has created and designed public asset management software for cities, counties, utilities, and authorities (i.e. local government). Cityworks pioneered the web GIS-centric paradigm and approach for public asset management to help organizations improve service and maintain the public infrastructure. Cityworks is a major software system used by organizations throughout North America and Internationally for managing utilities, public works, parks, planning and development, and airports. Daily, Cityworks is used by over 40,000 public sector employees to service and maintain the vital public assets for communities with a combined population of more than 80 million people.

For more information please go to cityworks.com

Cyclomedia Technology, Inc.

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Walnut Creek, CA 94596
Phone: 800-790-3652
Email: usa@cyclomedia.com
www.cyclomedia.com
www.thedrivingdutchman.com

Cyclomedia is the market leader in systematic imaging of large-scale environments from cities to complete countries. Cyclomedia’s smart imagery solution creates Cycloramas — 360-degree panoramic photos — with high accuracy, providing current and clear views of street-level environments.

The Cyclomedia recording system is like no other. It uses patented technology to determine the exact position and orientation of every picture taken. By creating a dense network of geometric street images, Cycloramas are always focused on the correct address or feature from multiple vantage points.

Our solution revolutionizes the way asset and property assessment is managed and reported. It reduces field visits and provides accurate feature measurements with convenient spot-checking. It simplifies maintenance and enables automated inventory and controlled processes. It also saves valuable resources while simplifying the decision-making process, improving operations and increasing efficiency.

We provide ready-made solutions throughout Europe, North America, and Asia. Our technology is widely used in government GIS, public safety, and security markets, as well as in construction, infrastructure management, and insurance.

We provide a full range of services related to 3D mobile mapping. Data is captured and delivered worldwide.

Our primary market segments include:
- Property Taxation, Appraisal, and Building Inspection
- Transportation and Infrastructure Management
- Public Safety and Homeland Security
- Engineering and Construction Planning

Cyclomedia offers the following licensed products:

Content
- Cycloramas — Seamless, accurate 360° panoramas taken at street-level with our patented recording technology.

Viewer Software
- GlobeSpotter — Our feature-rich web app for viewing Cycloramas that runs on any browser supporting Flash.
- GlobeSpotter for ArcGIS Desktop — The power of GlobeSpotter inside Esri’s leading GIS software.

Hosting Solutions
- GlobeSpotter Cloud — Secure, scalable hosting service managed by Cyclomedia that’s free to customers.
- GlobeSpotter Server — Locally hosted option supporting all Cyclomedia’s content and software.

Developer Tools
- GlobeSpotter API — Integrate GlobeSpotter components into your user’s existing business workflow.
- Panoramic Rendering Service — Extract pictures for reports and texture map buildings with Cycloramas.

Data Transfer Solutions

3680 Avalon Park Blvd East, Suite 200, Orlando, FL 32828
Phone: (407) 382-5222
aibaugh@dtsgis.com

Headquartered in Orlando, DTS is a leader in asset management, geographic information systems, and transportation planning. We specialize in creating solutions to help clients automate their worlds, reduce their workload and organize their data through customized technology.

DTS is comprised of seven divisions, each with its own scope of services. Often however, a single project spans several divisions before completion because we uniquely offer all the necessary cutting-edge services, integrated within one company.

EagleView Technologies

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1-855-984-6590

EagleView Technologies offers Pictometry® Intelligent Images®. The high-resolution oblique and ortho images are captured and processed with patented technology and delivered through innovative analytical tools to allow for the most accurate assessment of properties.

Used daily by GIS, assessment, public safety, defense, insurance, construction and utility professionals, Pictometry solutions bring field work to the desktop. Solutions are easily integrated into existing workflows through strategic partnerships and make it easy for users to make informed decisions and enhance productivity. To find out more please visit www.eagleview.com

Every day, new applications for Pictometry are realized. Discover how Pictometry can help you work better, faster, smarter and with optimal cost savings.
2020 Partner Directory

Bronze Corporate Partners

**Clark Nexsen**

Our clients leverage our expertise and rely on our long history of proven performance to develop geo-related solutions, including Geographic Information Services, GPS survey and map grade data collection, geo-enabled photogrammetry, aerial imagery analysis and processing, and cloud mapping.

As a trusted partner, we collaborate with our clients to identify their goals and deliver solutions and products that exceed expectations. Our team’s cutting-edge technical capabilities meet the emerging survey, mapping, data collection, and application development needs of our clients, building on a strong foundation of experience and proven ability to perform and execute multiple, simultaneous task orders.

Learn more: Featured Projects

**Evari GIS Consulting**

Evari GIS Consulting, Inc. (Evari) was founded in 2009 with the mission of providing high quality, custom GIS solutions for municipal projects. Evari has a wide array of project experience supporting municipalities, utilities, and energy service companies, providing As-Needed GIS support for Transportation, Civil Engineering, Storm Water, Undergrounding Master Planning, Street Lighting and Planning projects. Evari is driven to innovate, employing GIS to streamline data management, empower field crews with mobile GIS technology, and facilitate Smart City, IoT solutions. With a focus on producing clear, accurate and valuable data, maps and figures, Evari’s provides its clients with effective decision-making and project communication tools. Evari leverages the Esri Technology Stack (ArcGIS) and the Amazon Web Services Cloud Computing platform for a broad range of municipal GIS applications.

**New Light Technologies**

New Light Technologies Inc. (NLT), a small business based in Washington DC, provides comprehensive information technology solutions for clients in government, commercial, and non-profit sectors. NLT specializes in DevOps enterprise-scale systems integration, development, management, and staffing and offers a unique range of capabilities from Infrastructure Modernization and Cloud Computing to Big Data Analytics, Geospatial Information Systems, and the Development of Software and Web-based Visualization Platforms.

This broad technology expertise enables customers to:
- Take advantage of best in class capabilities
- Leverage existing technology investments
- Be more integrated, scalable, secure, adaptable, and sustainable
- Reduce cost and risk
- Meet & exceed mission requirements

Learn more about NLT today: https://newlighttechnologies.com/

**GeoDecisions**

GeoDecisions is an international consulting firm specializing in geospatial information systems, cloud technology, and analytics for commercial, municipal, state, and federal government organizations. We offer a suite of Software as a Service and custom-designed solutions that equip decision makers with the data, intelligence, and visual information critical to planning, logistics, public safety and emergency response, security, asset management, incident management, resource management, and mass notification. We improve existing infrastructure and implement new systems that integrate vast collections of location-based data assets to help clients streamline processes, boost productivity, and push the boundaries of data-based insights. We are ISO 9001:2015 Certified, which assures clients that we meet the most rigorous and independently audited quality standards.


**Pond & Company**

Pond, an Atlanta-based company founded in 1965, is a progressive, full-service architecture, engineering and planning consulting firm, and was recently named Engineering News Record’s (ENR) Southeast Design Firm of the Year. With over 550 employees, Pond provides technology-driven full-service engineering, architecture, planning, construction and geospatial design solutions to defense, government, corporate and private sector clients worldwide. With 25 locations throughout the world, Pond is one of the fastest growing A/E/P and Geospatial firms in the country.

Pond provides comprehensive GIS solutions to a variety of clients throughout the continental US and overseas including Department of Defense, Federal, State, Energy and other private sector clients. Our hub for Geospatial services is located in New Orleans, with support offices in Huntsville, AL, Colorado Springs, CO, and San Diego, CA.

For more information please visit us at www.pondco.com

Business Partners

**AmigoCloud**

Based in San Francisco with an additional location in Lima, Peru, AmigoCloud was founded by a team of GIS experts in 2013 to empower companies and individuals to collect, manage, visualize, and analyze location data to better understand their business and reveal hidden patterns to reduce costs and increase operational efficiency.

AmigoCloud has developed the first Collaborative Mapping Platform, offering two products, amigoCollect and amigoPlatform. amigoCollect is a mobile application, built for Android and iOS devices, that helps your field crew collect data, whether online or offline, and collaborate with as many people as your team needs.

RFP Distribution

URISA members, remember that URISA will distribute your RFP/RFQ announcements to our corporate and business members at no charge. Simply email your announcement to info@urisa.org (Subject: RFP Service) and we’ll send it right out for you!
With a streamlined and quick workflow, you can collect, store, transform, enrich, visualize, and analyze data as easily as create, embed, and publish meaningful maps. We reduce, and in some cases completely eliminate, mapping workflows that would normally take several days or weeks. Our software is designed to support services for both government and private sector entities. Established in 1996, the foundation of Es² has always focused on the leading-edge technologies in GIS, Global Positioning System (GPS), photogrammetry, and remote sensing to support its environmental and engineering projects. Es² offers an industry-leading array of GIS services. Our diverse background, experienced and professional teams, combined with the most current Enterprise GIS technology allow Es² to provide customized, web-based, enterprise-wide solutions using the Esri platform.

Additionally, Es² also offers:
- Enterprise GIS Consulting Services, Including Installation, Setup, and Configuration of ArcGIS Enterprise and SQL Server
- Web and Mobile Application Development Utilizing Esri Configurable Apps
- CAD / GIS Data Conversion and Import
- Survey-Grade Field Data Collection Utilizing RTK GPS and Robotic Total Station Systems
- Mapping and Data Analysis
- UAS Aerial Photography Acquisition and Digital Photogrammetry
- Esri Silver Partner with the following specialty designations:
  - Local Government
  - ArcGIS Online
  - Federal Small Business
  - Release Ready

Contact: info@es2-inc.com
For more information: http://www.es2-inc.com/

**Environmental Science Services, Inc. (Es²)**

Es² is a registered engineering firm in Louisiana, Mississippi, Florida, and Texas that provides a wide range of environmental consulting, engineering, and science support services for both government and private sector entities. Established in 1996, the foundation of Es² has always focused on the leading-edge technologies in GIS, Global Positioning System (GPS), photogrammetry, and remote sensing to support its environmental and engineering projects. Es² offers an industry-leading array of GIS services. Our diverse background, experienced and professional teams, combined with the most current Enterprise GIS technology allow Es² to provide customized, web-based, enterprise-wide solutions using the Esri platform.

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- UAS Aerial Photography Acquisition and Digital Photogrammetry
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  - ArcGIS Online
  - Federal Small Business
  - Release Ready

Contact: info@es2-inc.com
For more information: http://www.es2-inc.com/

**Planning Communities, LLC**

Planning Communities, LLC provides a wide range of multi-disciplinary planning services for local, state and federal agencies, tribal nations and community organizations. Community, transportation, environmental and GIS services include local/regional planning, visioning/scenario planning, land use, socioeconomic, market and cost-benefit analysis, community asset mapping, tool/application support and development, process improvement/integration, consensus-building and facilitation.

Headquartered in Raleigh, North Carolina, Planning Communities has additional offices in Charlotte (NC) and Seattle (WA). Planning Communities is a North Carolina certified Small Professional Service Firm (SPSF) and is certified as a DBE in North Carolina, Tennessee, Florida and Delaware.

**MGP**

701 Lee Street Suite 1020
Des Plaines, IL 60016
Tel: (847) 656-5698
info@mgpinc.com
www.mgpinc.com

MGP is an information systems services company that specializes in geo-spatial solutions. Our comprehensive range of geographic, data modeling, and business process solutions provide you new opportunities to find a better way. We believe that innovation creates opportunity and collaboration breeds success. MGP was formed as a shared business model in which clients are partners. This philosophy enables significant cost savings and makes it possible for any client, regardless of size, to get where they need to go. MGP is the managing partner of the GIS Consortium.
**SOLV3D, Inc.**

SOLV3D creates innovative software solutions that enable people to effectively use a myriad of geospatial datasets, to enhance their existing workflows. The SOLV3D engine™ processing toolkit, is a middleware application that makes it easy to clean and optimize point cloud data, from any source. With SOLV3D encompass™ collaborative platform, using only a web-browser, companies are able to merge and share point cloud data, imagery, CAD drawings, shapefiles, as well as many other geospatial datasets. The result is an engaging common operating picture within a robust virtual environment, empowering all stakeholders to better leverage the value of their datasets for estimation, planning, design, and decision-making.

**Spatial Relationships, LLC**

800 Boylston St #990756
Boston MA 02199
(857) 400-8920
Contact: Kathryn Brewer, James Armstrong

Spatial Relationships, LLC is a consulting firm that provides on-demand teams of expert Geospatial Professionals to ensure organizations have the capability to deliver on existing and future goals, manage business risk, and increase profitability. Think of us as your geospatial concierge. Our "concierge services" provide resources and solutions for planned or abrupt disruptions as well as future projects. These can include:

- Being a key person down – planned leave or unexpected departure
- Technical requirements – fill skills, knowledge and training gaps
- Budget constraints – less than anticipated funds for the same scope of work
- Capacity constraints – completing urgent priorities for overbooked staff

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Contact: trackit@trackitpr.com or 305-479-3121

TrackIt provides software solutions for data assessment, data conflation and migration, quality assurance and control (QA/QC) of data, and data reporting in compliance with Local and Federal standards. We are the leading group in location services for data validation, analysis and integration in Puerto Rico. In addition, TrackIt uses Radio-frequency and Satellite Technologies in people and goods to track them and give a digital companionship to our clients. The key to our success is service and a 24/7 operation on a remote surveillance system to private or public sectors over vehicle fleets, machinery, individual cars, goods and personal tracking devices. FTA and FCC compliance systems and devices.

Relevant information: We designed a complete digital companion system, offer a designated driver program and VIP surveillance, designed student ID with digital record keeping systems as well as hospital ID with restricted areas protection. We are including digital reminders to prevent children left in car seats and loss prevention of goods. Now drone documentation operations and 3D building scanning capabilities.

Learn more.

**XSoft, Inc.**

XSoft, Inc. (XSoft®) is an innovative technology company focused on government financial software solutions and consulting services. The company was formed in January 2006 with one goal in mind; providing local governmental agencies with a dynamic alternative to the traditional assessment software solutions available.

Since its formation in 2006, XSoft® has focused 100% of its efforts on our CAMA and Tax client base. We see ourselves as partners with our clients, working together to generate fair and equitable assessments, on-time tax bills, and collections/distribution of funds in the most effective and efficient manner. We feel that the solution is simple; provide a superior product with superior service.

**COMPANY MISSION:** We partner with our clients to deliver government financial solutions, which generate fair and equitable assessments, on-time tax bills, and collections/distribution of funds through the effective and efficient use of CAMA and Tax software.

**Educational Institution Members**

**Brandman University**

Brandman University is a private, non-profit regionally accredited institution that provides educational opportunities for working adults. There are over 25 campuses throughout California and Washington, and a virtual campus online.

Undergraduate Certificate, GIS Use in Non-Profit Organizations - An innovative, problem-solving approach to learning and using GIS.

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- Graduate Certificate in Geospatial Information Science (GIS)

Texas A&M University — College Station, Texas

USC Spatial Sciences Institute
Since its founding in 2010, the Spatial Sciences Institute at the University of Southern California has been using the power of spatial thinking and literacy — the ability to connect place, space and time — to help address our most challenging global issues, including those connected with population growth, urbanization, environmental sustainability and human well-being.

Through our innovative research and academic programs, we educate and empower today’s and tomorrow’s spatial problem solvers to deploy spatio-temporal perspectives and insights across every possible discipline and industry. Members of our internationally-recognized faculty contribute to the rapidly-evolving body of geospatial knowledge and technology. From our home base in the USC Dornsife College of Letters, Arts and Sciences, we collaborate with faculty colleagues throughout the university and with other prestigious institutions around the world on funded research that links SSI faculty and students with decision makers and citizens and combines knowledge with action. We promote the analysis, modeling and visualization of location-based data through interdisciplinary use-inspired and integrated research and teaching.

We harness geospatial science and technologies to foster collaboration, build consensus, reach decisions and take actions to create a better world.

Roster of Academic Programs

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- Minor in GIS and Sustainability Science
- Minor in Human Security and Geospatial Intelligence
- Minor in Spatial Studies
- B.S. in GeoDesign
- B.S. in Global Geodesign
- B.S. in Human Security and Geospatial Intelligence

Masters:
- Graduate Certificate in Geospatial Intelligence
- Graduate Certificate in Geospatial Leadership
- Graduate Certificate in Geographic Information Science and Technology
- Graduate Certificate in Remote Sensing for Earth Observation
- M.S. in Geographic Information Science and Technology
- M.S. in Human Security and Geospatial Intelligence
- M.S. in Spatial Economics and Data Analysis
- M.S. in Spatial Data Science

Doctoral:
- Ph.D. in Population, Health and Place

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Routt County Steamboat Springs CO
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Wasco County, The Dalles OR

Learn more about Government Agency Membership.
Mark Your Calendar!

March 23-26, 2020
GIS/Valuation Technologies
Conference (formerly GIS/CAMA)
Louisville, Kentucky

February 9-11, 2020
CalGIS 2020
Long Beach, California

June 8-12, 2020
URISA GIS Leadership Academy
Minneapolis, Minnesota

August 17-21, 2020
URISA GIS Leadership Academy
Portland, Oregon

September 27-October 1, 2020
GIS-Pro 2020
Baltimore, Maryland

November 9-13, 2020
URISA GIS Leadership Academy
St. Petersburg, Florida

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entirely consistent with those of URISA and its affiliates.

connect
conversation and community connected by URISA

A 365 day online community,
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solutions and talk over
challenges with your peers and
leaders in the profession. Have
you connected yet?