Fostering Excellence in GIS
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2014 URISA Certified Workshop Catalog

Half-Day (4 hour) Offerings

Emergency Preparedness for GIS

As GIS goes from being a silo technology in an organization to an integrated enterprise solution, there is a pressing need for cross training on the non-technical disciplines GIS staff is being asked to support. Specifically, public safety (emergency management, police and fire services) and the ridged work flows which accompany their daily duties, often prove foreign to those unfamiliar with these specific disciplines. In order to accommodate their needs in a time-sensitive situation, out experience is that by taking the 'GIS' out of the analyst-emergency responder relationship is the best approach. The key is to arm the GIS professional with enough knowledge so they can effectively discern the needs of the incident commander and quickly produce the spatial document(s) which best support decision making in an emergency.

This workshop is divided into a two part structure:

First, an overview of the incident command structure and the national incident management system. We will briefly discuss common situations specific to each discipline and show case studies/examples of how GIS is used to support each. We will also discuss relevant data sets to public safety and suggestions for the integration of GIS into their organizations disaster preparedness planning.

The second part of the workshop will include an interactive emergency technology table exercise with participants from the audience and provide take away knowledge that can be implemented in their own organizations.

Intended Audience: GIS Managers, Emergency Management and Public Safety professionals.

GIS Return on Investment

Determining the Return on Investment (ROI) for GIS can assist in securing support and funding for the project/program. Developing the metrics for comparing the costs associated with the implementation, operation and maintenance verses identifying and quantifying the benefits can be a daunting task. This workshop will present a method to accomplish this goal.

Lectures/Facilitated Discussion

- Types of Benefit Cost Studies
- What are we measuring?
- Costs
- Benefits
- Categorizing the results

Hands-on Exercises

- Identifying and documenting costs
- Identifying and measuring benefits
- Putting it together

Note: Participants will need to bring a laptop computer with spreadsheet capabilities to participate in hands-on exercises.

Intended Audience: IT Directors/Managers, GIS Managers, decision makers and operational personnel responsible for quantifying return on investment.

GIS Capability Maturity Model

This workshop introduces the new URISA GIS Capability Maturity Model (GISCMM). Through a hands-on exercise, workshop attendees will complete an initial assessment of their own GIS operation.

Enterprise GIS is expensive to develop, maintain, and operate. Even small-to-medium-sized cities, counties, and regional agencies have invested millions of dollars to develop their GIS capabilities, and they can have large annual operating budgets. Many recent third-party studies have proven that GIS delivers significant financial return on investment (ROI) to organizations

that deploy it as an enterprise business-support tool. However, almost no GIS operation would be considered to be 100% implemented. In fact, most enterprise GIS operations lack important resources to meet all of their potential business needs, their sustainability is uncertain, and ROI varies depending on the maturity of their GIS management practices.

The URISA GIS Capability Maturity Model will be described, along with its relationship to the GIS Management Institute®, including development of the GIS Management Body of Knowledge. The current development status of the GISCMM will be discussed and future uses and activities outlined. These will include development of new GIS management best practices and the offering of an enterprise GIS accreditation service.

Workshop attendees will receive copies of the GISCMM. An exercise will be conducted during the workshop, where attendees will be asked to perform an initial assessment of their agency by applying the GISCMM. This workshop will be of value to those interested in the development, implementation, and use of GIS management professional standards and best practices.

Specific Topics include:

- What is a capability maturity model? Origins of the GIS Capability Maturity Model
- The URISA Geospatial Management Competency Model
- Theory of GIS Management
- Development of the revised, peer-reviewed URISA GIS Capability Maturity Model
- Exercise: The URISA GIS Capability Maturity Model—Step by Step
- Exercise: Attendee discussion and feedback

Intended Audience: IT directors/managers, GIS managers, decision makers, and operational personnel interested in understanding the overall state of their GIS operations.

Full-Day Offerings

3D Geospatial: Project Implementation Methods and Best Practices

The convergence of new technologies and business requirements is fostering a new wave of 3D geospatial applications that allow users to access virtual built environments. Urban governments are using complex 3D data and visualization tools to support emergency preparedness, urban planning, and many other business practices.

This course introduces the data, systems, and processes to be considered when implementing 3D applications. Using extensive case studies and several group exercises, attendees will learn how to navigate the dizzying array of options and prepare for a sustainable 3D geospatial practice.

Specific topics include:

- Guidelines for project implementations using 3D technologies
- Introduction to a wide range of 3D analysis and visualization software
- Aerial and terrestrial 3D data acquisition methods, as well as update techniques
- Case studies of urban applications
- An introduction to 3D data models, including emerging open standards and best practices for model development

Intended Audience: Project managers creating or maintaining 3D data, geospatial data analysts considering integration of 3D technology, and local and regional government leaders implementing 3D geospatial programs.

Building an Address Repository Using the FGDC Standard: Implementing Quality and Data Sharing

Street addresses are the key, user-friendly geospatial identifier used by everyone, but addressing processes are usually poorly organized at the local level.

This workshop will help you understand the addressing process, managing address data, and organizational challenges. It will guide you in developing a Master Address Repository that serves the needs of the entire organization. The workshop will also review the Federal Geographic Data Committee Street Address Data Standard, and help you understand how the standard can help you build quality address data.

Specific topics include:

- What is an address?
- What are the types of address?
- How are addressing systems structured, and addresses assigned?
- How do you develop a Master Address Repository
- Geocoding and managing addresses in the GIS
- Organizational issues with addressing
- Working with the FGDC Street Address Data Standard

Intended Audience: GIS Managers, staff members who assign, maintain or use addresses. This workshop will focus on managing address workflows, address data, and use.

Asset Management: Planning, Strategy, and Implementation

Public and private agencies face continuous challenges to accomplish more with less as increases in demand, regulatory requirements, infrastructure deterioration, and political and economic forces have significantly outpaced increases in capital and operating budgets. Many of these agencies are turning to Asset Management to cope with these challenges and improve business performance and effectiveness.

This workshop will focus on several aspects of developing an asset management system that could help improve performance, reduce long-term costs, and maximize return on investment in infrastructure assets.

Specific topics include:

- Strategy and Planning
- Data Collection Methods
- Software Solutions
- Information Management and Decision Support Tools
- Evaluation and Performance Measures
- GASB34 Reporting
- Life Cycle Costs

Intended Audience: This workshop is intended for utility, transportation, engineering, planning, and environmental managers and analysts of the public and private sectors.

Business Intelligence & Data Integration for the GIS Professional

This workshop covers the general topics of Business Intelligence (BI) and Data Integration (DI) and ways to add a spatial component to BI and DI systems. It will give GIS professionals the knowledge to identify and leverage opportunities to enhance decision support through interaction with existing Business Intelligence frameworks or by implementing a new Business Intelligence framework.

Business Intelligence is the ability of organizations to collect, maintain, and organize data. BI technologies provide historical, current and predictive views of business operations. The goal of business intelligence deployments if to support better business decision-making, something that all organizations, especially ones with an enterprise GIS, or ones working towards a full enterprise implementation, can benefit from.

Data integration involves combining data residing in different sources and providing users with a unified view of these datas. GIS is a core user of data from multiple sources. Learn key ways to integrate data from multiple sources in order to enhance your GIS functionality and leverage the power of external (to GIS) data sources.

Building Quality Spatial Data

Spatial data plays a big part in the Information Age, from on-line mapping services to downloadable data from thousands of government agencies.

- Do you always trust spatial data?
- Do your users trust your GIS data?

Creating and maintaining accurate spatial data is one of the keys to a successful GIS implementation. Without quality data, the most user-friendly GIS will not be accepted and used by its intended audience. This course will present best practices, processes, quality control and quality assurance techniques for developing and maintaining high quality spatial data that users will trust and utilize.

Specific topics include:

- Guidelines for selecting the appropriate levels of quality and accuracy
- Establishing an effective data quality control program
- Data conversion quality control / quality assurance
- How to attack and defeat quality problems
- High quality processes lead to high quality data
- Principles and processes for statistics-based quality assurance testing

Intended Audience: Project managers and technical staff creating or maintaining spatial data, GIS users considering acquiring or developing new spatial data – both in the government and private sectors, and spatial data users who need a better understanding of how quality data is developed.

Cartography and Map Design

An effective map portrays a place, delivers a message, or reveals a pattern with representational accuracy and visual clarity. How to make that happen is the subject of this workshop, which gives GIS practitioners the practical information and techniques needed to create effective, successful maps in any display medium.

Specific topics include:

- The cartographic process - the form and function of maps
- Map fundamentals – the spatial aspect of maps
- Map fundamentals – the representational aspect of maps
- Map fundamentals – the parts of a map
- Map data
- The process of making a map – conceptualization and planning
- The process of making a map – design, production, editing & Q/A, output, and reproduction

Intended Audience: This workshop is designed for the individual who may be new to GIS or who has not had specific training in cartography, but needs to create maps to support GIS data analysis and display. It will also be useful for GIS managers to understand how to manage a major cartographic project effectively.

Deploying Mobile Solutions: What to Consider

One way to meet demands for providing superior service levels and operational efficiencies under tightening budget constraints is to leverage new technology that places GIS data in the hands of field crews. This allows for improved management and better maintenance of work processes to properly appraise infrastructure assets and to meet service request response times.

This workshop is designed to provide local government managers with practical guidelines for building an effective mobile GIS program across multiple departments.

Specific topics include:

- Practical guidelines for building a mobile GIS

- Business drivers for moving GIS technology and data into the field
- Alternative strategies for implementing GIS-based field solutions
- Overcoming obstacles to automating field processes
- Steps in the mobility implementation process

Intended Audience: Supervisors and managers responsible for public works operations. GIS and IT department managers interested in mobilizing user applications and Mobile GIS project managers.

GIS Enterprise Architecture & System Integration

The objective of this workshop is to examine both GIS enterprise architecture and the integration between various systems (GIS included) in an organization. Instructors will examine the past, current, and future of GIS within an enterprise context, and apply the experience, discipline, and future direction of the Information Systems (IS) profession to Geographic Information Systems (GIS).

This course will provide GIS professionals with an understanding of some of the complex technical and specific technical management issues that must be addressed.

Specific topics include:

- Definitions of Enterprise GIS
- Definitions of System Integration
- Architecture design and development
- Management and phasing of enterprise environments
- Staffing and maintenance of enterprise environments
- Network, data and web architectures and roles in the enterprise
- Open systems and standards
- Future issues and trends

Intended Audience: This workshop is intended for public and private sector managers, elected officials, and policy professionals, database developers and administrators, and GIS professionals.

GIS Program Management

"I will highly recommend this workshop to my colleagues at SCAG and throughout our region." - *Javier Aguilar, PTP, Senior Regional Planner, Southern California Association of Governments*

Today, most government organizations have some type of GIS programs in place. They vary from being in their early stages, to the rebuilding or tuning-up phase, to being completed changed as new technologies and applications emerge. This workshop is designed to provide guidelines for managing your GIS program. It will look at the various organizational and technical issues program managers must address in order to develop a successful GIS program.

The discussions will include managing all aspects of a GIS program from staffing and budgeting to procuring technology and working with vendors. A variety of real world examples will be presented showing a range of GIS programs and their implementations. This course presents an overview of successful and unsuccessful techniques for implementing GIS. Specific topics include:

- Program development
- Project management techniques
- Budgeting
- Staffing
- Sustaining program support
- And managing consultants and vendors

Intended Audience: GIS Program Management is a must for anyone embarking upon a GIS program, involved with a less-than-successful GIS, or who is seeking ways to improve a successful implementation.

GIS Strategic Planning

Strategic planning is a vital tool for all geospatial programs, at any stage of development. An effective strategic plan is crucial to ensuring that a GIS program gets started right. As a GIS program matures, strategic planning methods are important tools for program management, program review, responding to change, and solving problems. An effective strategic plan will help you win program approval and funding, ensure that program goals and return on investment are achieved, and keep a program on track in a changing environment.

This course teaches strategic planning methods and tools in the context of developing and managing a GIS program. Participants will learn how to successfully select and apply appropriate methods for a variety of situations.

Specific topics include:

- Strategic planning models, methods, and tools
- Selecting and applying the best approach for any GIS situation
- Developing an initial GIS strategic plan
- Integrating GIS, IT, and organizational strategic plans
- Developing an effective action plan and ensuring follow-through
- Updating a GIS strategic plan
- Conducting a GIS program review and effecting improvement

Intended Audience: GIS managers and staff, GIS users and program participants, and managers, executives, and other professionals who are involved with GIS programs.

Introduction to Open Street Map for GIS Users

Open Street Map is an open source project to create a free editable map of the world. Users are encouraged to map their neighborhoods, cities, and areas that interest them. Data that is mapped is then provided free to whoever wants to use this data to create maps or do analysis or some worth.

This workshop will cover the following subjects:

- Introduction to Open Street Map covering the history and current state of the project
- Who uses OSM?
- Geometry of Open Street Map
- Making edits and assigning attributes
- Download the data and using it in a GIS
- Contributing data from a GIS to OSM
- Future of OSM

Intended Audience: Anyone interested in free and open source geographic information system software. The workshop will suit both managerial and technical needs and it does not require any prerequisites.

Introduction to Public Participation GIS: Using GIS to Support Community Decision Making

As GIS becomes more widely available, many organizations and community groups are taking GIS out of the back room and are using it in public settings. Using GIS technology to engage various "publics" in decision making requires more than traditional GIS skills.

This course focuses on the process of entering into this type of engagement. It will also review how GIS techniques and software can be adapted for use in community settings. Using real world examples, the course will explore both government and community-led projects that encourage citizen participation and engagement.

Although this workshop will be focused on PPGIS within North America our case studies will illustrate the wide variability in the presence of governmental, societal, and technological infrastructure in different communities.

Specific topics include:

- PPGIS for Civic Engagement
- Principles and Methods of Community Organizing and Engagement
- Innovative Use of Technologies
- Visual Communication

Intended Audience: Individuals who have GIS experience and want to expand their skills to reach out and engage the public. Participants should be well versed in GIS general practices and analysis.

Introduction to GNSS

The use of the Global Navigation Satellite System (GNSS) has become pervasive in the GIS and Surveying communities, and with anyone who needs or collects data that has a geographic or locational component. Local, state and federal agencies regularly use it for a myriad of purposes including E911, utility locations, pavement inventories, biological studies and more. In the private sector, surveyors, GIS data collectors and other consultants use GNSS in their everyday work. Even hikers, boaters and hunters rely on GNSS to document their fishing holes, hunting blinds and to leave virtual bread crumb trails. This data finds its way into thousands of different databases and maps and is used in every conceivable application. GNSS is a highly specialized technology that, by its very nature, is prone to accidental misapplication; and it will produce inaccurate results that are not recognized to the untrained user. This workshop will, in a non-technical, yet thorough manner, explore the GNSS satellite constellations, how geographic positions are determined, sources of errors in GNSS data collection, and the types of receivers with the goal of arming users with the ability to achieve the results they expect and need in their work.

Specific topics include:

- The Global Navigation Satellite System – satellites, control and receivers
- How GNSS works - Measurements from 12,000 miles up
- Latitude and Longitude
- Factors affecting the accuracy of GNSS measurements
- Determining the accuracy of my GNSS measurements
- How to obtain more accurate results
- Types of GPS receivers
- Methods of making GNSS measurements – Static, Rapid Static, RTK
- GPS, GLONASS and other Global Navigation Satellite Systems

Intended Audience: Any person who uses a GPS receiver, or who relies on or uses geographic locations determined by GNSS measurements

An Overview of Open Source GIS Software

Free and open source software (FOSS) has been offering choices to computer users for a number of years. Over the past few years the open source choices in GIS have been broader and more capable than ever before. This workshop will focus on GIS open source software. It will give an overview of current developments from technical and management perspectives. Selected packages and their applications in various projects will be demonstrated and discussed.

Specific topics include:

- Open Source GIS background and development
- Overview of Open Source GIS spatial functionalities
- Live demonstration
- Interoperability: The Open Source GIS spectrum
- Planning and implementation issues

Intended Audience: Anyone interested in free and open source geographic information system software. The workshop will suit both managerial and technical needs and it does not require any prerequisites.

Public Data, Public Access, Privacy, and Security: U.S. Law and Policy

As data distribution capacities increase, there is increasing tension between access to public records as a foundation of a free society, citizen expectations of confidentiality, and protection of public security.

- What data are subject to Freedom of Information laws?
- What about privacy restrictions and homeland security concerns?
- Can a government raise revenue (or defray maintenance costs) by charging market prices for the data?
- What about liability for data errors?

This workshop will focus on the critical legal issues and the policy options they frame.

Specific topics include:

- State and federal Freedom of Information laws
- State and federal informational privacy laws
- Secrecy and homeland security protections
- Balancing public access, privacy, and secrecy
- Data sales vs. data access
- Protecting ownership and minimizing liability
- Policy and technical considerations

Intended Audience: This workshop is intended for public sector managers, and policy professionals, database developers and administrators, and GIS professionals.

Quality Management: Introduction to Issue Tracking

Geospatial applications and data development "issues" are defects, errors, bugs, omissions, or usability problems that negatively impact a deliverable's quality. Unresolved issues are important to find, prioritize, and resolve prior to reducing user satisfaction and blocking project completion.

Issue tracking improves geospatial application and database development project quality by documenting defects; measuring quality, determining project status; and managing, prioritizing, scheduling, and communicating development and quality assurance tasks. Problem resolution with a web-enabled issue tracking database system is an important technique that can aid in improving the performance of development teams, and increasing the effectiveness of their development processes.

This course will explain the issue resolution workflow, and the use of an issue tracking system.

Specific topics include:

- Improve and mature the application and data development process
- Document and classify errors, features (i.e. capabilities), and inquiries
- Administer the workflow for resolving development issues
- Effectively manage priorities and schedule resources for issue resolution
- Leverage lessons learned from prior projects

Intended Audience: Project managers, project directors, quality managers, and applications and data development professionals interested in coordinating project quality management efforts while attending to schedules and budgets.

Transportation Spatial Database Design

Although almost all data maintained by transportation agencies may be considered as spatial, the data used by GIS applications are generally separate from those used by the mainstream applications of the agency.

The workshop will show the student how to develop an integrated multimodal database design for transportation agencies that not only serves to break down cross-functional barriers but also offers a foundation for true enterprise-level spatial databases. Such a design offers the opportunity for GIS to come out of the backroom and be a viable real-time agency management tool.

Specific topics include:

- Basics of database design and UML
- Survey of major transportation data structures in use today
- Dataset and feature-level metadata
- Support for transactional updates
- Workflow control
- Treating location as a relationship between a position and a datum
- Separating features into their component elements.
- Identifying events and characteristics

Intended Audience: Students completing this workshop will be able to create database designs that support such functions as reproducing the state of the dataset at any historical point in time, storing data once and use it many times, providing certified datasets and changed-record updates to external users without significant processing overhead, and integrating stovepipe datasets in to a comprehensive multimodal enterprise database for use by both GIS and non-GIS applications. To get the most out of the workshop, students should be prepared to discuss at least one spatial database design issue they presently face at work.