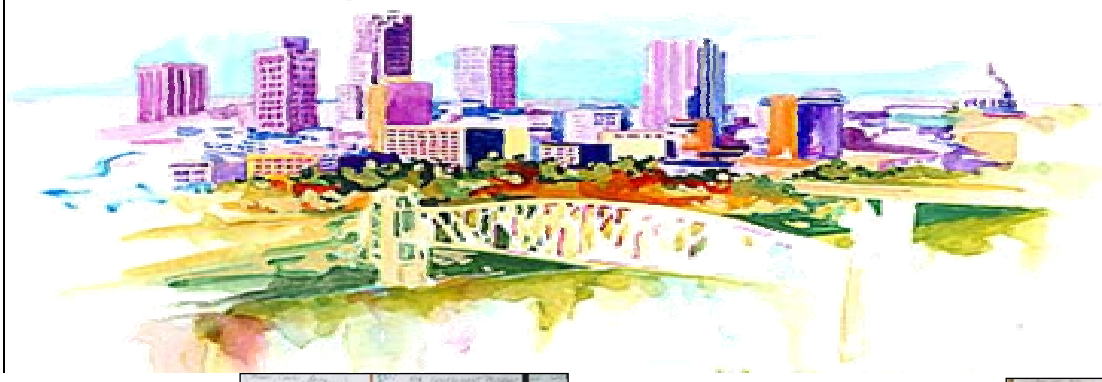Pulaski Area Geographic Information System (PA*gis*)

GIS Visioning Workshop Report

August 19-20 2003

PAgis : All the data, all the time.

PAgis
Pulaski Area
Geographic
Information System

September 18, 2003

Mr. Jos Bell
GIS Manager
PA*gis* / Central Arkansas Water
1500 West Maryland Avenue
North Little Rock, AR 72120

Dear Mr. Bell:

Enclosed is a copy of a report on the GIS Visioning Workshop that was held by the Pulaski
Area Geographic Information System (PA*gis*) on August 19-20, 2003. We have tried to
incorporate all of the pertinent information that was captured during the activity. On behalf
of Ed Crane and myself, we were delighted with the excellent participation and the eagerness
shown by all of the workshop participants in their desire to create an enterprise GIS that
services the full community of interests in the Greater Little Rock Area. Some of the
discussion and recommendations made during the workshop showed a good understanding of
the path ahead.

To help you and the other workshop participants develop a series of next actions for GIS
implementation, we have developed the following summary recommendations from the
workshop report as well as our personal evaluation of your situation. Please keep in mind
that this is not a comprehensive review of the situation, but rather a series of observations
based on the workshop discussion and our experience working on successful GIS systems in
other communities.

1) First, recognition must be given to the excellent GIS work that has already been
   accomplished by individual departments in the Little Rock area: Central Arkansas
   Water, Little Rock Waste Water Utility, Little Rock Public Works, Pulaski County
   Assessor, and PA*gis*. Each of these departments and others has developed a range of GIS
   databases and applications designed to meet departmental needs and requirements. Each
   of these departments should be commended for their leadership and commitment to
   improved efficiency, reduced cost and improved customer service. However, despite
   individual departmental efforts, it appears that little inter-departmental data and
   application sharing is taking place. While PA*gis* provides access to a range of data
   within the community, it appears that very few layers are consistently maintained or are
   actively used by local departments. One of the real values of enterprise GIS systems is
   the ability to create data once and use it many times. Without database sharing and
   workflow applications designed to streamline inter-departmental processes and maintain

core database elements, much of the potential and promise of GIS is lost.

2) An excellent framework has been created with the PA*gis* Consortium to create a true enterprise environment; however, due to a variety of issues, it appears that the PA*gis* mechanism is not working to the extent necessary to provide the leadership and core technology required to support a community-based enterprise GIS capability. One of the primary recommendations from the group was a need to revitalize the PA*gis* Consortium in the following ways:

   a) Get more active executive involvement and commitment – while an excellent multi-tier committee structure exists within PA*gis,* it appears that executive participation is limited and not representative of all of the local shareholders in a true enterprise GIS. We recommend that PA*gis* enable a stronger connection between technical providers and users with department and elected leaders, rather than a structure that insulates these two groups.

   b) Reexamine the mission, membership and priorities of PA*gis* so that it truly meets local needs. All of the major players in the region need to be involved, particularly all Pulaski County Government Departments.

   c) PA*gis* needs to establish a true Spatial Data Warehouse and Web portal that is accessible by all PA*gis* members and eventually the public. This should provide easy web and application access to all of the most current data that is available in the community. Please look at the Geospatial One-Stop (www.geodata.gov) and the Geography Network (www.geographynetwork.com) as excellent examples of this technology. Further it has proven effective to have a centralized pool of talent and support for these technologies, a function that PA*gis* could provide to a wide group that otherwise may not be able to implement on their own effectively.

   d) PA*gis* needs to consider working with individual members to build and document a variety of "Small Win" GIS applications in support of Public Access, Facility Location and Notification, GeoAccounting and Customer Service. It's only through the successful implementation of such GIS applications in support of departmental mandates that the true promise of GIS will be realized by the overall community. Priorities should be established based on a basic return-on-investment analysis.

3) The following GIS Vision Statement was developed and received the majority of the votes during the workshop:

"All the data, all the time."

This vision statement provides a good sense of direction for the PA*gis* and Greater Little Rock GIS activities with an emphasis on completeness and accessibility of basic local

government information. All proposed GIS applications should be measured against this criterion.

4) From the results of the nominal group activity on GIS application requirements, it is recommended that PA*gis* together with workshop participants embark on the major application and core database development activities. Each of these applications, if well designed, implemented, and managed, have the potential provide a significant R-O-I (Return-On-Investment) for the community.

a) **Address Framework Database** – The number one application requirement selected by workshop participants was the development of a database of well-maintained addresses. This framework should consist of parcel situs addresses (the parcel location address), building addresses, sub-parcel identifiers (e.g., apartment addresses), place name aliases, and street segment address ranges. Given the importance of address referencing for virtually all geographic activities in the community, a consistent well-maintained address management process needs to be undertaken by PA*gis* involving all stakeholders in the process (Planning, Development, Permitting, Public Works, 911, etc.).

A multi-jurisdictional workflow analysis needs to be conducted to identify local address ordinances, determine mandated authority, and define actual address assignment and maintenance activities. Based on this analysis an address management process needs to be established and appropriate ordinances created or amended to support an address maintenance process. Once the maintenance mechanism have been identified and established, PA*gis* should coordinate the development of a consistent regional address geodatabase to serve as the foundation for regional address management. See the following site for more information: http://support.esri.com/index.cfm?fa=downloads.dataModels.filteredGateway&dmid=32

b) **Transportation and Traffic Data Management System** – Workshop participants also identified the development of a comprehensive Road & Bridge Inventory System along with a traffic data management system as a critical need for the Little Rock area. PA*gis* maintains a centerline database for the region that could serve as the basic framework for a GIS-based Road and Bridge inventory and asset management system. PAgis should also take advantage of road inventory and pavement management data from the Arkansas Highway and Transportation Department by merging that data with the use of conflation tools with the local centerline database. There are currently a number of excellent COTS (Commercial Off The Shelf) transportation-based asset management systems that are fully integrated into GIS that should be considered as part of a integrated system to support road, bridge and ancillary feature inventories, work management capabilities, and GASB 34 accounting.

In addition to inventory and asset management capabilities, the systems should also be designed to support routing and logistic capabilities as well as real-time vehicle tracking. A number of excellent GIS integrated packages can be acquired to support work-crew routing, garbage collection, emergency vehicle location, traffic modeling, etc. If based on a solid inventory that is dynamically maintained, this system can serve to support real-time traffic modeling and dispatch.

The development of a Transportation and Traffic Data Management Systems will require a solid system design, evaluation of local and state data sources, existing database enhancement, development of a workflow re-engineering process to assure on-going maintenances, and selection of a COTS-based Asset Management System that can be integrated into the PA*gis* GIS capabilities.

c) **Pulaski County / PA*gis* Parcel Pilot Project** – The need to develop a well-integrated and maintained parcel and planimetric database capability was also identified. Currently, two independent databases are being developed and maintained: A Parcel Database by the Pulaski County Assessor and a Planimetric Database by PA*gis*. Ideally, both groups need direct access to the others' data to develop an enterprise GIS capability. Without integrated land records, planimetric, and infrastructure data, it is virtually impossible to develop a meaningful community-wide enterprise GIS capability.

Since the Pulaski County Parcel data and the PA*gis* Planimetric data have never been integrated, it is strongly recommended that a Pilot project be undertaken to translate and integrate parcel (boundary and attribute) data, planimetric data, and orthophotography within a small pilot project area; georeference the data based on local survey control; develop a PMF (publish map file) on CD along with ArcReader and distribute it to all interested parties for review and comment; and then evaluate procedures and calculate cost to extend the pilot to all of Pulaski County.

This project would be an important first step in developing an enterprise GIS capability and building professional confidence among all participants. To assist the community in accomplishing this pilot project, ESRI has agreed to provide technical assistance and to build the pilot for local participants at no charge.

5) Development of GIS database standards and metadata for all geographic features and attribute data shared between departments. Specific emphasis should be directed to the development of community-wide standards for parcel situs addressing.

6) Establish a GIS training program for all participating agencies. The program should provide authorized training for GIS products and related computer technology. A training program about the availability of federal, state and local GIS databases should

also be created. ESRI will actively re-energize a local ESRI User Group to compliment this effort beginning this fall.

7) Begin to build applications that take advantage of the analytical and modeling power of GIS for decision support as part of regional planning efforts to establish growth management and environmental protection policies and to develop resource allocation strategies for the community.

8) An incremental GIS implementation philosophy of creating "small win" GIS applications should be pursued. Applications with revenue enhancement potential should be evaluated for early implementation. Workshop participants designated the following list of applications as high priority applications. A detailed evaluation of each application should be made to determine the cost and benefits of the application prior to implementation.

Land Records Management:
- Development of an integrated land records capability – "Pulaski Property Points"
- Intranet and Internet public access to the Parcel Database
- Expand the Zoning Administration and Planning System
- One Stop Subdivision Tracking System
- GIS Integration to Building Permits

Infrastructure Management:
- Infrastructure Customer Access Notification
- Transportation and Traffic Data Management System
- Customer complaints / Customer Service
- Field Crew Data Access
- GASB 34 Compliance
- Right-of-way and Easement Mapping
- Hydrant Information System

Public Safety:
- Automated Vehicle Tracking System
- Building Hazard Information and Simulation System
- Terrain Mapping and Topography for Public Safety
- Emergency Dispatch and Response
- Internet Access to Crime Analysis Data

Administrative:
- Address File Cross-reference for Public Notification
- Smart Map Query and Analysis

- Geo-demographic Marketing for Public Facilities and Programs
- Facility Location and Usage Analysis
- Web-based Citizen Service Request System

GIS Support:
- Spatial Data Warehouse and Web Portal
- Address Framework Database
- Pulaski County / PA*gis* Parcel Pilot Project
- Jurisdictional Boundary Management System

9) Recommend using Tiger Team technique to strengthen the ability of multiple groups to implement community GIS applications. Perhaps PA*gis* could support a 'war room' for developing applications or responding to critical GIS needs.
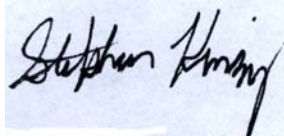
Jos, I hope these recommendations help in getting more of an enterprise approach to GIS established for the Greater Little Rock Area. We also hope that the cooperation and communication we witnessed during the workshop will enable all participants to begin steps toward the development of a community-wide GIS program with broad participation. City and County departments currently have the opportunity to enhance and expand their operational capabilities with GIS technology; this can be further extended with web technology to improve GIS access to many more users.

Please thank Julie Kent, Ian Bowles, and Kevin Pruett for all their help coordinating the workshop and their excellent presentations during the first day. It was very nice to see all of the progress that has been accomplished by your GIS technical staff. I'm sure that all of the workshop participants were equally impressed also.
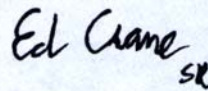
If ESRI can provide any further assistance to you, please let us know. We have really enjoyed being partners in your success. Thank you for the opportunity.

Sincerely,

Environmental Systems Research Institute, Inc.

Stephen Kinzy   Ed Crane
Regional Manager   Account Manager

Enclosure: GIS Visioning Workshop Report

Introduction

On August 19 and 20, 2003, Pulaski Area Geographic Information System (PA*gis*) conducted a Geographic Information System (GIS) Visioning Workshop at the Arkansas 4-H Center in Little Rock. Recognizing that the benefits of GIS extend far beyond one department, PA*gis* and Central Arkansas Water sponsored the workshop in hopes that other local government departments in the community could utilize and extend existing PA*gis* capabilities.   When used as a core enterprise technology, GIS can have a profound impact on local government operations. The objective of the GIS Visioning Workshop was to develop a consensus between City and County departments on the future application of GIS technology within the community. To help the group achieve their objective, Steve Kinzy and Ed Crane from ESRI facilitated the following agenda using short overview presentations and a series of consensus-building Nominal Group Techniques (NGT).

The following individuals representing their respective departments participated in the workshop:

Name	Position	Agency
Robert Voyles	Planning Director	North Little Rock Planning
Allen Vincent	Director of Information Services	Central Arkansas Water (CAW)
Delbert Dawson	Facility Manager	Little Rock Zoo
Nat Banihatti, P.E.	Traffic System Manager	City of Little Rock Public Works
Emory Reed	Distribution Designer	City of North Little Rock Electric
Kenny Shaw	Emergency Mgmt. Admin.	Little Rock Fire Department
Steve Haralson	Civil Engineering Manager	City of Little Rock Public Works
Pruett, Kevin	GIS Analyst	City of Little Rock Public Works
Capt. Daryl Brenneise	Staff Captain	North Little Rock Fire Department
Mike Pearce	Commercial Div. Manager	Pulaski County Assessor Office
Stephanie Thomas	Assist. Finance Director	City of North Little Rock
Rick Johnston	Director of Mapping/GIS	Pulaski County Assessor Office
Mike Smith	Chief City Engineer	North Little Rock Public Works
John Barber	IT Director	North Little Rock Police Dept.
Thad Luther	Director of Engineering	Little Rock Wastewater Utilities
Steve Gertsch	GIS Coordinator	Little Rock Wastewater Utilities
Rhonda Crabb, SPHR, CLRP	Dept. of Human Resources	City of Little Rock
Bryan Stewart	Computer Engineering Supv.	Arkansas Highway. & Trans. Dept.
Paul Edwards	Mapping & Graphics Supv.	Arkansas Highway. & Trans. Dept.
Robert Fuhler	Environmental GIS Specialist	Arkansas Highway. & Trans. Dept.
Dale Russom	Director of Operations	Central Arkansas Water
Lee Stephens	Director of Reappraisal	Pulaski County
Jos Bell	GIS Manager	Central Arkansas Water / PA*gis*
Julie Kent	Administrative Assistant	PA*gis*
Ian Bowles	Technical Manager	PA*gis*

GIS Visioning Workshop Agenda
August 19-20 2003

Day One   **Welcome & Introductions**

Jos Bell, PA*gis* Manager, welcomed the group and introducing the two opening presentations by Dale Russom, Chief Operating Officer of Central Arkansas Water, and Shelby Johnson, State Geographic Information Coordinator.

Jos Bell – CAW / PA*gis*

Dale Russom
Central Arkansas Water

Shelby Johnson
State of Arkansas

Dale Russom opened the workshop by describing how GIS is transforming Central Arkansas Water and is providing real value to their customers every day. He illustrated the point by identifying the numerous GIS applications that CAW was using to improve customer service and reduce cost. Dale indicated that managers can now have real time access to customer facilities information while answering customer questions on the phone. Dale also challenged the group to develop broad information sharing strategies to improve inter-departmental and community access to core PA*gis* data.

Shelby Johnson followed Dale's presentation by describing the GIS resources that ware available from the State of Arkansas to the organizations represented at the workshop. He also stressed the importance of data sharing and the use of metadata to catalog local GIS resources. He indicated that a number of small counties in the State, with very few staff, had developed integrated GIS capabilities in less than a year. Shelby challenged the group to continue to work to develop a true enterprise capability that included the integrated use of land record and infrastructure data.

Presentation—GIS Overview: The Power of Enterprise GIS

An overview presentation was presented to give everyone a common understanding of GIS and its power to impact the organization. The CAGIS (Cincinnati Area Geographic Information System) Consortium in Cincinnati was used as a case-study example of a multi-department, enterprise GIS.

A group exercise was conducted around the following nominal group question to identify and rank a list of primary GIS requirements for the workshop participants.

Nominal Group Question:

What are the four most important GIS application requirements for <u>your</u> department?

Ranking of Responses: *(total weighted points in parenthesis)*

1.   Well-maintained addresses **(47)**
2.   Commitment from management <u>plus</u> departments to support and use GIS **(46)**
3.   Location of individual property parcels **(34)**
4.   Responding to customer complaints/customer service provision **(25)**
5.   Everyday/year-round customer service on facilities location **(23)**
6.   Traffic volume data/mapping **(15)**
7.   Bridge and road inventory/mapping **(14)**
8.   Provide adequate, on-going, effective training **(13)**
9.   One stop for developers **(9)**
10A.   Terrain mapping/topography/contours–Public Safety **(8)**
10B.   Link parcel/property information to address **(8)**
11.   Smart Map Query and Analysis **(7)**
12A.   Incident response information **(6)**
12B.   Jurisdictional/organizational responsibility for data maintenance **(6)**
13A.   Field crew data access **(5)**
13B.   GASB 34 Support/Compliance **(5)**
13C.   Effective/easy public access to geographical & property data **(5)**
13D.   Demographic marketing for government programs **(5)**
14A.   Establish security/public access standards **(4)**
14B.   Current/real-time data (road conditions/weather) **(4)**
15A.   Establish responsibility for collecting/updating master address database **(3)**
15B.   Service/program demand information **(3)**
15C.   Tracking project/job status **(3)**
15D.   Understand address assignment workflow **(3)**
16A.   Right-of-way mapping and easements **(2)**
16B.   Hydrant information (flow, pressure, location) **(2)**
16C.   Automatic notification (outages, reverse 911, etc.) **(2)**

17.   Need to find additional revenue and offset operating costs
18.   Property rights management "<u>Current Zoning</u>"
19.   Electric facility location connected to address
20.   Inventory of all traffic control devices
21.   Mapping crimes/statistics
22.   Mapping environmental constraints
23.   Institutional knowledge collection

24.   Zoo membership database–who and where (demographic customer database)
25.   Forecasting/what if? Modeling
26.   Historical road/address data (consistent, accurate information to public)
27.   Data integrations and joins
28.   Intersection and major arteries traffic data
29.   Mapping program effectiveness and location of deployment
30.   Interior and special facilities information (high-risk facilities)
31.   Integration of census data to local mapping base
32.   Visualize and publish equity of property values
33.   Digital video data integration/document access
34.   Storm drainage, watershed information for forecasting & planning
35.   Sanitary sewer overflow compliance
36.   Maintain application data (plan, fund, and do it!)
37.   Incident mapping (non-crime)

Lunch

PA*gis*, City of Little Rock, and Central Arkansas Water GIS Application and Database Presentations

Jos Bell, PA*gis* Manager, provided an excellent report to the GIS participants entitled "Your GIS Data Warehouse" which provided PA*gis* background material and a list of the data layers warehoused at PA*gis*.

Kevin Pruett, GIS Analyst with the City of Little Rock Public Works, gave a presentation and ArcView demonstration of Little Rock's Public Works GIS database and GIS applications for handicap accessibility and an Adopt-a-Street program.
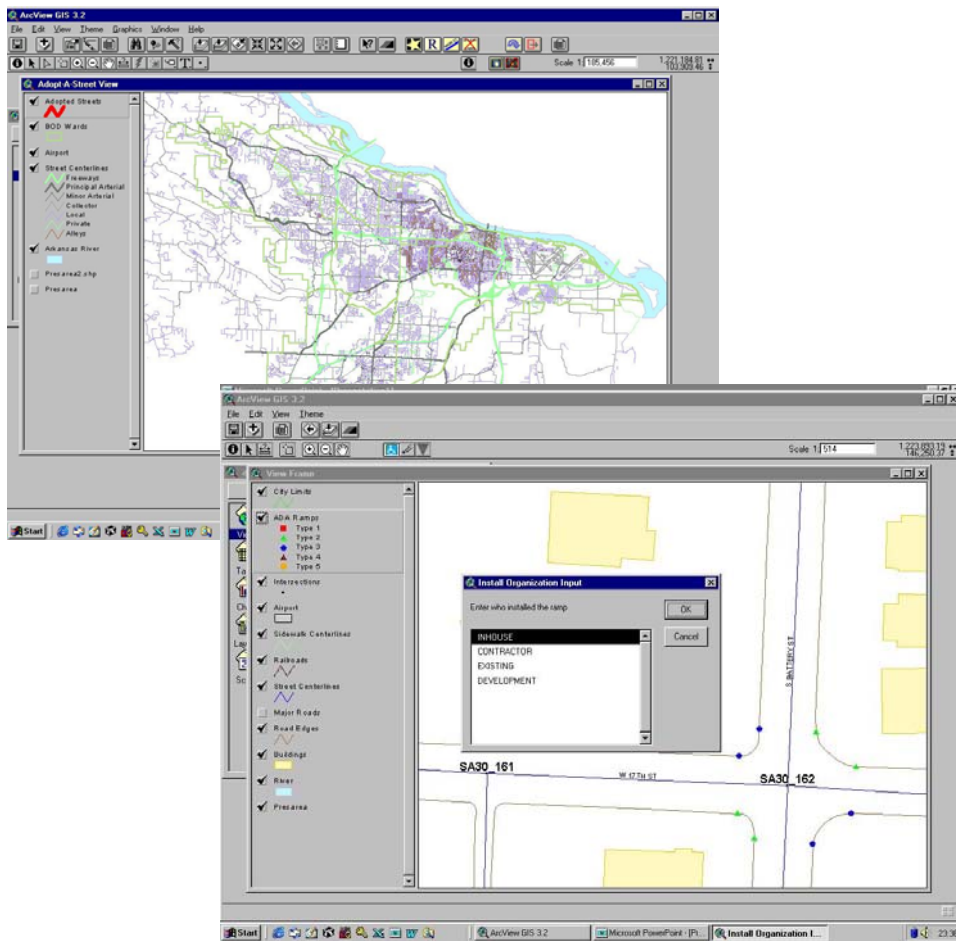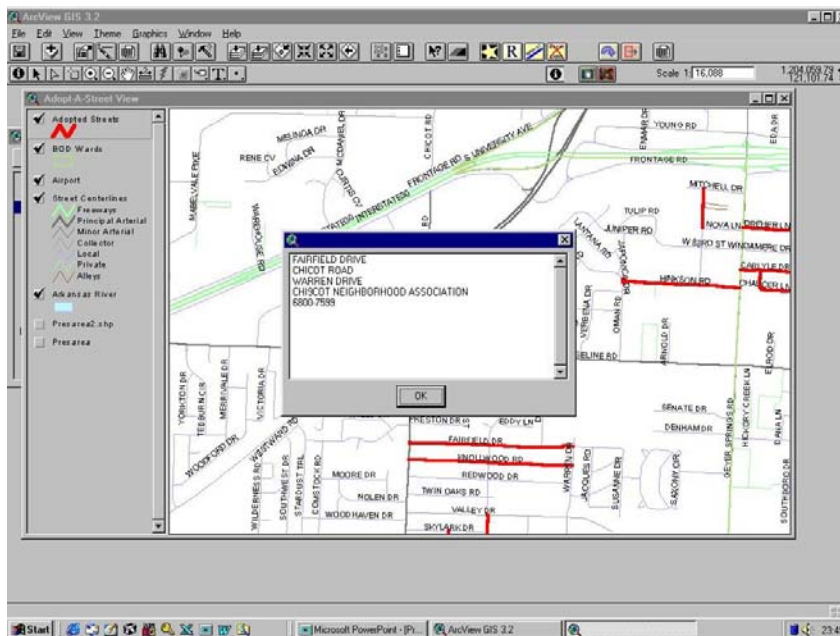
Jos Bell, CAW-PA*gis* GIS Manager, gave a presentation and ArcGIS demonstration of Central Arkansas Water's database and GIS applications for facility location, pressure calculation, document management and construction management.
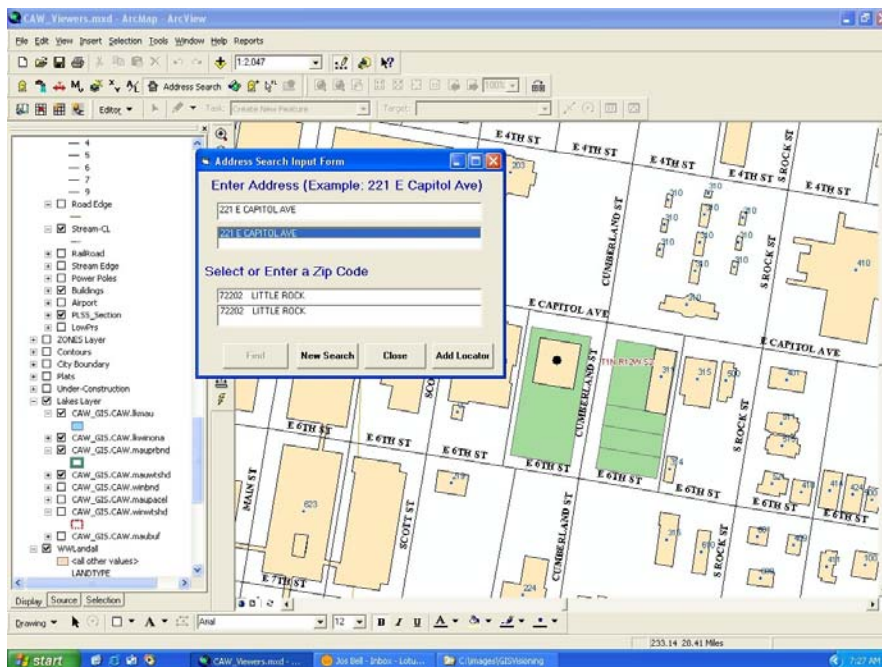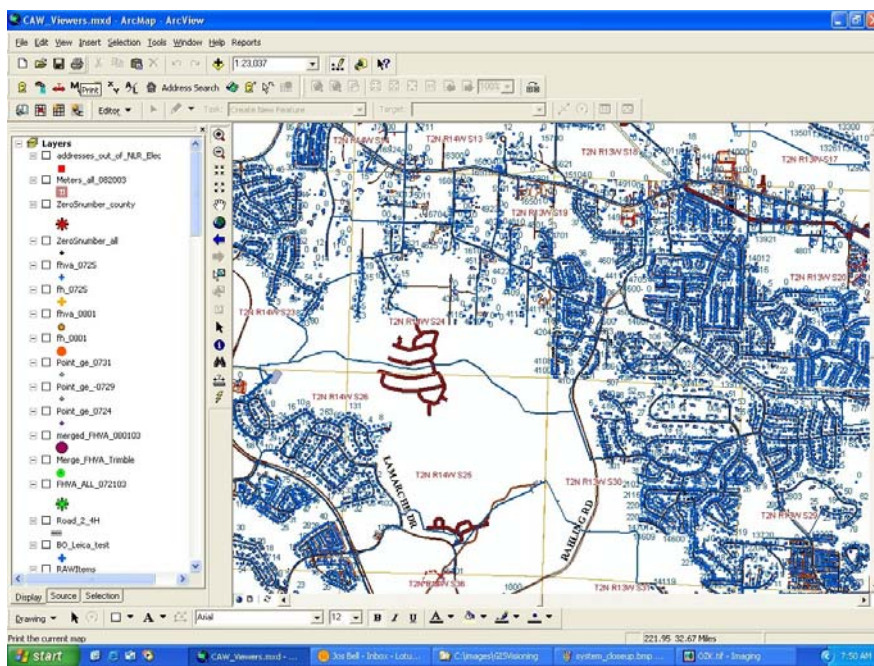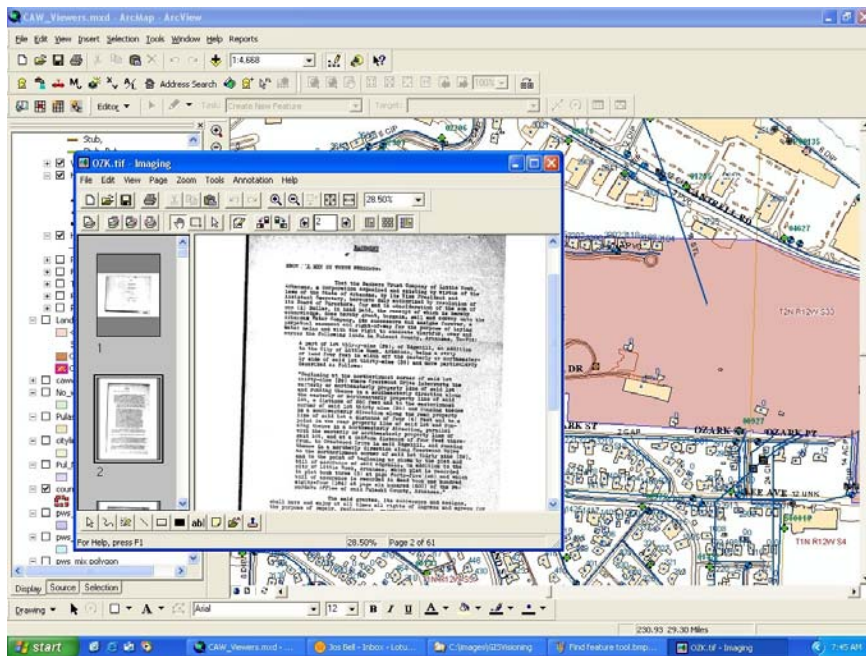
PA*gis* Vision Statement

At the end of the first day of the workshop, a homework assignment was given. Each participant was asked to develop a Vision Statement for the PA*gis* GIS project.

Day Two   **Recap of Day One**

Ed Crane, ESRI Account Manager for Arkansas, conducted a recap of the first day's activities.

Small Group Discussion—Vision Statement for PA*gis.*

Participants were asked to suggest a vision statement for the GIS project. Their responses are listed below. During the remainder of the day, they voted on which statement they liked the best, and their votes are indicated in parenthesis.

PA*gis* GIS Vision Statements:

Ranking of Responses: (total weighted points in parenthesis)

- **All the data, all the time. (5)**

- Managing and analyzing geographic information consistently (magic). **(4)**

- Global information for the local community. **(2)**

- Connecting for our customers. **(2)**

-

- Not a map, but information. **(1)**

- Leadership and education for GIS mapping. **(1)**

- Quality information determines our quality of life.

- Moving beyond maps to people.

- Warehouse and maintain the most accurate data for public and member agencies.

- To utilize and maximize technology to produce accurate GIS info.

- To provide accurate, easy-to-use and fiscally responsible information.

- Create and maintain an accessible digital geography inventory of useful spatial and related information.

- Accessible, useable quality data always.

- Great information service around the clock for greater Little Rock.

Presentation—GIS Application and Database Design Process: A Focus on Results

This presentation provided an overview of GIS application and database design with emphasis on the "Big Three" database components:

1. Land-Structure-Occupancy (LSO) Database
2. Networks and Right-of-Way Database
3. Geographic Information System Linkages

The presentation included a discussion of: geographic feature requirements, identification of geographic keys, and attribute database linkage. GIS applications that generate significant results and R-O-I were also discussed.

Small Group Sessions—Application Design

To capitalize on the workshop discussion to this point, the participants were divided into four teams based on their functional responsibilities and knowledge: Land Records, Infrastructure Management, Transportation, and Administration. Each team was given the task of selecting a critical GIS application that could build on the PA*gis* database and then to develop a conceptual GIS system design.

Presentation—GIS Implementation: It's a Journey, not a Destination

Prior to the groups beginning their work, a presentation was given on GIS implementation strategies. Emphasis was placed on "small win strategies" and incremental system development.

Lunch

Group Presentations

Each group was given approximately two hours to develop their designs. They were asked to design a GIS application that could be built on a majority of existing PA*gis* data and could be completed in nine months. Once the designs were completed, each team was asked to make a short presentation about their application design and recommended implementation strategy.

Small Win – Land Records Application # 1 : "Pulaski Property Points"

Purpose: To merge existing land records to assist citizens and agencies for a variety of purposes.

1. Analyzing data to identify development trends and declining neighborhoods
2. Easy access to current land records
3. Help with records maintenance

Objectives

1. Plan for future needs
2. Strategically focus resources
3. Better information resource for new development

How to Achieve Our Objectives

1. Link existing CAMA and addresses to census demographic data
2. Link property points to zoning, flood plains, and other data sets

Geographic Keys

1. Address are property points
2. Link to tax parcel numbers (CAMA)
3. Link points to zoning and FEMA

Attribute Data Elements

1. Link scanned deeds, plats, and surveys to property points

System outputs

1. Establish a county website.
2. Reports as needed

Application benefits

1. Constantly improve the community by strategically focusing resources
2. Assessment equity
3. Plan for infrastructure development

Short-term priority

1. Finish assignment

Long-Term priority

1. Use it!

Small Win – Transportation Application # 2:
Pulaski County Road Management System

Purpose: To have a complete inventory of road network for better infrastructure management.

Objective: Provide needed information to engineers, field personnel, administrative staff, public and decision-makers in a fast and efficient manner.
Map data elements:
1. Centerline file (line segmentation)
2. Polygon (bridges)
3. Hydrographic features

Attribute Data:

1. Road classifications
2. Pavement type
3. Physical attributes
    i. Cross-section
    ii. Materials information
    iii. Number of lanes, dimensions
4. Construction information (job record)
5. Archive data
6. Traffic volume, levels of service
7. Maintenance records
8. Devices
9. Bridge records

Benefits:

1. Public hearings
2. Planning maps
3. Scheduling maintenance
4. Real-time web applications
5. Traffic volume maps
6. Routing (emergency, multi-modal)

System Outputs:

1. Maps/reports showing maintenance requirements
2. Traffic volume maps
3. "Construction zones" on web-based applications
4. Maps showing levels of service
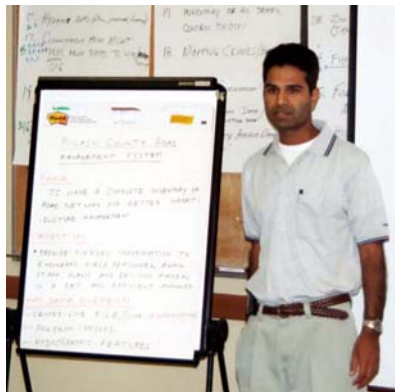
Small Win – Administrative Application # 3.
Parcel Layer Match-Up for Pulaski County Assessor to PA*gis* Addresses

Purpose: Improve process use, use correct additional bills to collect additional $$$

Objectives:

1. Mail returned – save $$$
2. Save time
3. 35 employees researching 27,000 pieces of returned mail
4. Accurate addresses the first time
   Outputs

1. Maps – overlay labels
2. Form letters
   i. Map Data:_ Elements, points
   ii. Geo. Key: Point Address
   iii. Data: Attributes, name, permit, city/county, fire inspection, tax, residential v. commercial

Application Benefits

1. Time
2. $$$
3. Cooperate with other agencies
4. Correct/valid information

Short-Term Priorities

1. $$$
2. Labor/time
3. One zip-code area

Long-Term Priority

1. One addressing authority county-wide

Small Win – Infrastructure Application # 4:
Infrastructure Customer Access Notification (CAN)

Purpose: Create applications to identify customers, to notify them of planned outages, and to provide customer/address/phone number output to include list for tele-notification and/or mail out automation.

Objective: Create a simple tool to support multiple departments to identify and notify customers within a user-defined area.

1. Simple polygon creation tool to identify selection area
2. Define selection set based upon CAW or NLR electronic billing files
3. Automate selection based on user-defined polygon
4. Provide user tools to provide customer listing
    i. Mail out and auto voice message products

Map Data Elements

1. SCADD
2. BPADD
3. RE (Road Edge)
4. Sewer facilities
5. Water facilities
6. Electrical facilities
7. Flood plain
8. RR (Railroad)
9. Hydrographic layers

Geographical Keys

1. Address: BPADD, CAW customer file
2. NLR electronic billing file

Attribute Data Elements

1. Name
2. Mailing address
3. Service address
4. Telephone number
5. Email address

User-defined message

1. Text
2. Voice

1. System Outputs
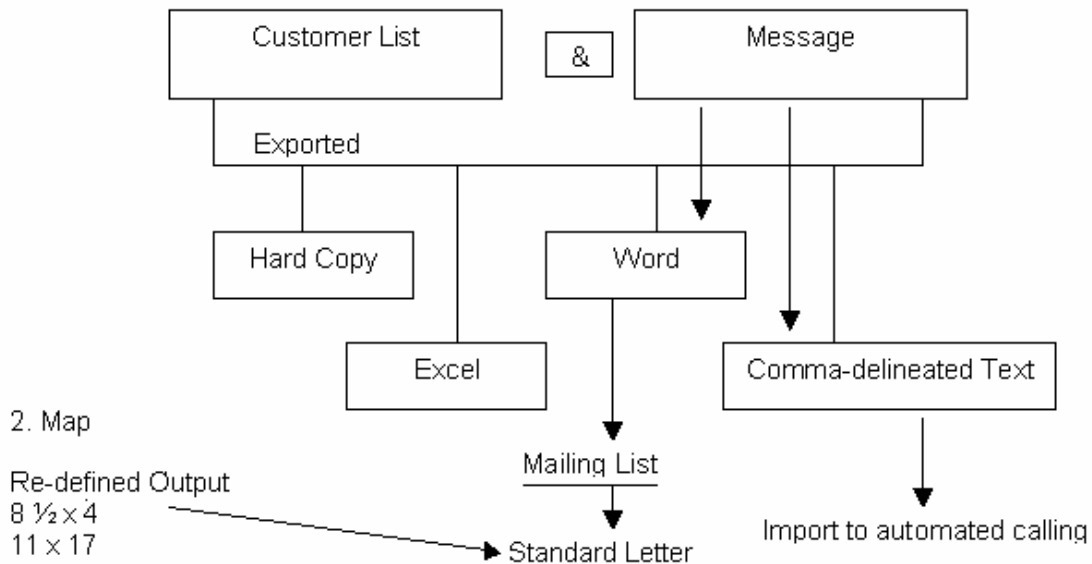
2. Map

Application Benefits

1. Quicker notifications
2. Reduced labor cost
3. More accurate notification
4. Better customer service
5. Increased customer satisfaction

Short-Term Priorities

1. Hardware/software for end users
2. Access to billing files
3. Develop a stand-alone application
4. Structure routine update of data files
5.

Long-Term Priorities

1. Network access to data
2. Expand beyond infrastructure application (i.e., social, political)

Nominal Group Exercise on GIS Implementation Priorities

On the basis of the information provided by the application team, a nominal group exercise was conducted to determine overall GIS implementation priorities for the PA*gis* communities.

Nominal Group Question:

What are the three most important implementation priorities for PAgis participants?

Ranking of Responses: *(total weighted points in parenthesis)*

1. Correct and complete addresses **(18)**
2. Educate and persuade top officials on value of shared data/applications/GIS **(17)**
3. Data sharing **(10)**
4. Establish dedicated funding–to all local entities (cities, counties, schools) **(9)**
5. Re-examine PA*gis* roles and function **(8)**
6. Member participation **(7)**
7. Compatibility **(5)**
8. Commitment to training **(3)**
9. Cost/cooperativeness/commitment **(3)**
10. Ability to answer geographic question when they call **(2)**
11. Public access **(2)**
12. Advertise PAgis **(2)**
13. Commitment and financial support for management **(1)**
14. Customer service to global community **(1)**

15. Agreed upon goals and processes
16. Application education ups and downs
17. Private sector participation

Wrap-up Discussion

A final group discussion was held to evaluate the results of the workshop and to arrive at a consensus for the next set of GIS actions within the community. The major discussion focused on the revitalization of PA*gis* to facilitate data sharing and to provide a wider range of data and application products to its members.

It was recommended that while the existing PA*gis* organization structure adequately provided for a multi tier committee structure for policy and technical inputs, the PA*gis* mission, membership and development priorities needed to be re-examined. More active executive involvement was needed, and PA*gis* membership needed to be expanded including the active participation of Pulaski County Departments and the Assessor. Application development priorities need to be established with specific emphasis on Customer Service, GeoAccounting, and intranet access to the PA*gis* Spatial Data Warehouse by all PA*gis* members.

At the end of the discussion, each workshop participant was asked if the workshop had been helpful in getting a better understanding of the value of GIS technology for the community. The group collectively agreed that the workshop had been a success and were anxious to begin development of a true enterprise GIS program for the greater Little Rock area.