McCurtain County GIS Project Orientation Seminar

Project Overview

For

Proposed Development and Utilization of GIS Capability for McCurtain County, OK Public Officials

Users Reference Guide

October 26, 2009
Table of Contents

1. Problems 3
2. Introduction 4
3. Overall Goal 5
4. Overall Objective 5
5. Basic Need for Capability 6
6. General Methodology 7
7. Pilot Project User Participation 8
8. Pilot Project Implementation Methodology 9 - 12
9. Systems Considerations 13 - 14
10. User Orientation and Training Considerations 15
11. User Needs and Requirements Considerations 16
12. User Applications and Query Considerations 17 - 21
13. Pilot Project Management and Support 22
14. Other Project Support 23
15. Management and Support Structure 24
16. Project Activity Task Flow 25
17. Project Schedule and Milestones 26 - 27
Problems for Rural Counties adapting/advancing GIS Technology

-Rural Counties of Oklahoma compared to metro Counties not adapting/advancing GIS Technology

-Although GIS data is accessible through various State programs, the process to request and acquire data is often slow and costly

-State Programs emphasize limited generation of products for use by County and Local Officials but not offering sufficient methods for these Officials to obtain in-house capabilities to be GIS self-sufficient.

-Direct and timely use of GIS by County Managers and Public Officials to acquire data does not exist.

-Funding and support resources such as training and proactive technology transfer are not readily available to be GIS self-sufficient
Introduction

-The Oklahoma State University (OSU) Extension Service has been keenly aware that rural Counties are slow to adapt, advance, and use GIS Technology through their close associations with Counties.

- The OSU Cooperative Extension Service through the Division of Agricultural Science and Natural Resources is initiating new program approaches to assist Rural Counties of Oklahoma to adapt and use Geographic Information Technology currently employed by larger metropolitan Counties and Municipalities.

- OSU Extension Service is proposing a new proactive approach to accomplish the transfer of technology for continued, direct, and routine use of GIS data by rural County Public Officials.
Overall Goal

-Promote and facilitate the advancement, establishment, and use of GIS Capabilities for Public Officials in rural Counties and Municipalities throughout the state of Oklahoma so that these Counties and Municipalities can eventually sustain the operations and maintenance these capabilities on their own.

Overall Objectives

-Bring together and focus existing Federal, State, County, Municipal, and private resources to assist rural Counties and municipalities to demonstrate, evaluate, adapt and use GIS technology.

-Offer to rural Counties and municipalities the support resources such as training, state and federal database availability, technical and research assistance, assistance to access alternate funding sources, and organization and management assistance to eventually sustain GIS self-sufficiency.
Basis for this Needed Capability

-Many Rural Counties are very similar economically and are located in a vast area of low-density population and vast recreation-outdoor opportunities - SE Oklahoma

-Dominated by large forestland tracks owned by large landholders and timber industries and the forest practices driven by market forces are beginning change.

-Southeast Oklahoma is now being discovered and is forecasted to realize its growing economic potential.

-This changing scenario will require some latest information technology such as GIS to plan, manage, and keep pace with this new economic development.
General Methodology

-OSU Extension Service through their County offices plans to become the source within any given rural County to promote and coordinate the development and use of GIS capability and related technology in rural Counties.

-Support County Public Officials and public interest groups, and small business to explore and develop GIS capability alternatives through providing and maintaining shared GIS technology for this purpose and assist the County to find the most suitable alternative to acquire or share capabilities within the County.

- Develop a network of communication and agreements across various State governments to participate in the use of GIS Technology, pursue available funding sources through this network, and promote and find strategies to share resources.

- Pilot Project with One County will be conducted to measure this success and find what works and doesn’t work before expanding the methodology to other Counties. The Pilot Project will help us determine how quickly we can support other Counties with these services.

-OSU has selected McCurtain County as our test case Pilot Project before extending this support to other rural Counties.
Pilot Project Participation

- Building a formal McCurtain County Users Group to participate in this Pilot Project.

- The User Participation Group will consist of member/Users from McCurtain County public offices, County public interest groups, Municipality offices, County public authorities, public districts, Federal and State Government offices, and private sector businesses to participate as Users.

- Personnel must be capable of representing their organizational functions and the informational needs and data requirements to perform their planning, management and operational tasks within their organization.

- Demonstrated knowledge for computer operations including software application uses and managing information data for these computerized software operations.

- Individual user skills and their own knowledge base regarding GIS and Information Technology may vary substantially. Users will advance to more complex applications when he or she is ready and has the need to advance.
Pilot Project Implementation Methodology

-Pilot Project will began in early October 2009 and will continue through September of 2010

-Consist of 4 phases during this period.

  Phase 1 - Project Planning and definition

  Phase 2 - System development and readiness

  Phase 3 – Initial training, demonstration and evaluation

  Phase 4 - Further training enhancement and additional demonstration and evaluation

  Phase 5 - Performance measurement Applied to Transferability
1st phase – Definition and planning
- Definition and planning of the Pilot Project
- Determining the level and type of participation and responsibilities of each participant implementing project
- Identifying those Public Officials to participate and benefit from the project
- Definition of system equipment, software, and training needed to conduct the demonstration
- Defining the user needs of this capability
- Defining further needed data and information to conduct the demonstrations and training of the project
- Identify any specific technical obstacles needed further attention.

2nd Phase– Systems development and operational readiness
- Collection of all data and information
- Acquisition of the needed equipment and software
- Input of the data collection into the system
- Integrated testing of the data with system the
- Collection of preliminary requirements for application queries provide by the public participants
- Performing the readiness of the system for further demonstration with these application queries
- Establishing the detailed training procedures for user orientation and actual use of the capability.
3rd phase – Initial training, demonstration and evaluation

- Conducting orientation and detailed training in use of the GIS capability
- Establish and conduct initial demonstrations using the GIS application capability to the user participants based on each users application requirements
- Perform evaluations of the demonstration results by the participants
- Formulate any changes to existing query applications
- Defining new query applications for further demonstration

4th phase – Further training enhancement and additional demonstration and evaluation

- Coordination and development of newly defined application queries and modify the existing application queries for the final demonstration to the Individual County participants
- Perform the need training to the user participants for the newly developed applications
- Conduct the final demonstration and evaluation of these application and related queries with the user participants
- Demonstration of the transferable GIS Application System
- Develop recommend setup requirements, operational procedures, overall cost, and available funding methods for a hosting a permanent facility of this GIS Capability.
5th phase – Performance measurement of the GIS capability and its utility applied to McCurtain County and the transferability to other rural County

-Perform measurement activity of the Pilot Project results. This includes the system capability to satisfy individual user requirements and the overall friendliness of the system to the user and the ease of operations to the hosting management within a rural County
-Develop and document a working model to use and transfer this GIS capability to other rural County and their Public Officials for their continued use
-Develop Recommend setup requirements, operational procedures, the level and type of training needed, the hosting and management of the capability, overall cost, personnel requirements, funding requirements, and available funding methods for a hosting a permanent facility of this GIS Capability
System Considerations for Pilot Project
(User GIS Equipment, Application Software, and Geo-data-base Access Consideration)

- Geo-data-base for McCurtain County previously developed 2009 and updated by OSU
- All data from this geo-data-base will be accessible to the Users through a designated web page and can be downloaded by authorized User sources.
- Geo-data-base is designed for using ARCGIS Desktop by ESRI as User applications data workstations.
- Specific specification for the ARCGIS Desktop capability will be determined by the project based on User application needs.
- The project intends to use MapWindows where possible, which is readily available at no cost.
- ARCGIS Desktop software licenses will be authorized for the McCurtain County Extension Office.
- Additional licenses can be obtained from the OSU Extension Service Office for those Users needing ARCGIS Desktop such as the McCurtain County Tax Assessors office and the County Emergency Management and Medical Service Authority.
- Other Users may only need MapWindows for most of their applications uses, which is available at no cost and can be downloaded from the ESRI website.
- Other Users may occasionally warrant the use of a ARCGIS Desktop, this will be provided at the County Extension Office or other designated facility on a shared/scheduled basis.
- The OSU Extension Service will install, test, and maintain all ARCGIS Desktop software used by this Pilot Project.
ArcGIS Shared Facility

Public Data Layers
- Geology
- Soils
- Topos
- Utilities
- Lakes/Streams
- Census
- Roads
- Parcel Maps
- Aerial Photos
- Many Others

ArcGIS 9.2 Processing Station

Individual Arc Explorer Processing Station

Private Data Layers
- Tax Collector
  eg. Tax Delinquent Data
- City Mayor
  eg. City Asset Location Data
- Emergency Mgmt.
  eg. Environmental Data
- Other

Private Data
User Orientation and Training Considerations

- General orientation training will begin early in the project development including:
  - Basics of overall GIS technology
  - Geo-spatial referencing, Geo-spatial databases, Geo-spatial mapping
  - Needed equipment, available Software tools, various software applications, and general uses of the technology
  - Basics of using and operating MapWindows software
  - Basics of operating and using ARCGIS software, which has more capability specifications than MapWindows

- This orientation training will precede the identification and development of each members User needs and data requirements
- Once the orientation training and requirements development is completed specific detailed training will be developed based on these User requirements and this training
- Detailed training will be conducted either individually and often times collectively since the application requires use common techniques
User Needs and Requirements Considerations for GIS Capability Applications Development

- Users will participate in review of possible application queries as presented below by the project. These are submitted by the project to stimulate discussion and to introduce to the Users to possible useful applications.

- Users can select one more queries to assist them in developing their own needs for this Pilot Project demonstration.

- Not all queries listed can be developed during this project because of limited funding and support resources.

- User should strive to define any of these application or other requirements based on his or her knowledge base regarding GIS and Information Technology and this may vary substantially.

For the most part the Pilot Project proposes to begin with training and application activities that are in nature less complex and easier accomplish by the participants and eventually the User can grow to more advanced applications after The Pilot Project is completed.
Potential User Applications and Queries for Consideration

*Emergency Management Authority*

- Address pin-maps of all citizens
- Finding and mapping all categories land use, geographic features, properties, transportation, utilities, flood plains etc
- Zooming in on all features and properties with latest aerial photo
  - Showing all tax parcel information
  - Showing selected property ownership distributions
- Showing adjacent properties to selected features
- Showing property boundaries, districts, precincts etc
- Showing all related natural resources, census, economic info for designated areas
- Providing information to enhance decision-making associated with emergency planning, response, recovery, and mitigation efforts.
  - GIS can provide regular maps of the local community and of areas of special interest to emergency management.
- GIS can conduct spatial queries and display the results. Such queries could include: what residents are within a 100 year flood zone; which schools or nursing homes are within 300 yards of a rail line or major state highway; or how many people live within a 100 year flood zone.
- Conduct complex spatial analyses such as the area, residents, and businesses that would be vulnerable from a chemical release from a fixed facility or an intersection.
**Tax Collector**
- Finding and mapping delinquent tax properties
- Zooming in on property with latest aerial photos
- Showing all tax parcel information
- Showing adjacent properties
- Showing property boundaries
- Showing all related natural resources info.

**Tax Assessor**
- Finding and mapping all categories of properties
- Zooming in on property with latest aerial photo
- Showing all tax parcel information
- Assist in tax parcel mapping
- Showing selected property ownership distributions
- Showing adjacent properties
- Showing property boundaries
- Showing all related natural resources info for properties
Mayors and City Managers
- Using GPS to update existing asset data bases and maps such fire hydrants, manhole covers, sewer lines, etc
- Finding and mapping all categories of properties
- Zooming in on property and areas with latest aerial photography
- Showing all tax parcel information
- Showing selected property ownership distributions showing adjacent properties
- Showing all related Natural Resources info for their Cities and all properties
- All types of demographic analysis
- Bond election demographics
- Site planning analysis

Idabel Industrial Authority
- Finding and mapping all categories of properties
- Zooming in on property with latest aerial photography
- Showing all tax parcel information
- Showing selected property ownership distributions
- Showing adjacent properties
- Showing property boundaries
- Showing all related Natural Resources info for properties
- All types of demographic analysis
- Bond election demographics
- Site planning analysis
Law Enforcement

- Pin-mapping of crime scenes
- Pin-mapping of identified sex offenders
- Pin-mapping of identified felons
- Address-matching creating computer "pin-maps" of County and City Citizens
- Patrol briefing maps
- Finding, mapping, updating, tracking all roads by District and Precinct
- Finding and zooming in on property and areas with latest aerial photography
- Providing information to enhance decision-making associated with police and emergency planning, response, recovery, and mitigation efforts.
- Conduct spatial queries and display the results. Such queries could include: what residents are within a 100 year flood zone; which schools or nursing homes are within 300 yards of a rail line or major state highway; or how many people live within a 100 year flood zone.
- Conduct complex spatial analyses such as the area, residents, and businesses that would be vulnerable from a chemical release from a fixed facility or an intersection.
- Provide regular maps of the local community and of areas of special interest to police and emergency management.
School Districts
- Address pin maps of all students
- Create and print maps at any scale of the district including streets and a variety of other layers
- Generate and maintain school attendance boundary maps
- Upload student data files for address-matching creating computer "pin-maps" of student locations
- Visualize patterns on a map and color-code your student population based upon User-defined database queries
- Perform attendance boundary planning scenarios with the school site online redistricting tools
- Access community demographic reports for any area within your school district which include current year estimates and five year forecasts of population by age, socio-economics and housing data
- Bond election demographic analysis
- Excellent teaching tool for geography and participation from Students.
Pilot Project Management and Support

- Local County Cooperative Extension Service Office
  - Site project manager to plan, coordinate, and manage all the User task activities of the project
  - Primary interface between all county User participants and OSU Extension Service to represent county needs and data requirements
  - Provide status and reporting of all User task activities occurring in the county

- OSU Cooperative Extension Service
  - Establishes, controls, and maintains the geo-data-base and web data distribution
  - Obtains, controls, and maintains all GIS system equipment and software
  - Establishes, controls, and conducts all training for county participants of the project
  - Controls, coordinates software and procedure development support for county participant Users for new application queries.
  - Control, manages, and coordinates all special technical issue investigation tasks assignments
  - Control and management oversight of all project plan tasks
  - Provide project management direction to implement the User task activities of the project plan

- OSU Geography Department/Center for Geo-spatial Information
  - Provide data releases as requested by the OSU Extension Service
  - Provide technical, research, and training support to the User when requested by the OSU Extension Service project manager
Other Project Support

-Oklahoma Tax Commission - Data release and updates
-OU Center for Spatial Analysis – Data releases and updates
-OSU Center for geo-spatial information – Data releases and updates
-McCurtain County Tax Assessors Office - Tax Parcel data release and updates
-US Forest Service /Hochatown – Data release and consulting support
-Choctaw Electric Company – Data release and consulting support
-Oklahoma State Forestry Office at Broken Bow - Data release and consulting support
OSU Forestry Extension Office/Idabel - Data release and consulting support
-Idabel Mayors Office – Data release and updates
-Broken Bow City Managers Office – Data releases and updates
-US Agricultural Stabilization Adm. – Data release and updates
-US Geological Survey - Data release and updates
-Oklahoma KEDDO (Southeastern Oklahoma Council of Governments) – Data Support and consulting support
Management and Support Structure For Pilot Project

OSU Department of Geography
  - Program Support
  - Ctr. For Geospatial Information OCGI

OSU Division of Agriculture Science & Natural Resource
  - OSU Cooperative Extension Service
    - Project Manager
      - DASNR Technology Support
        - Other Program Support
          - County Cooperative Extension Service
            - County Site Manager
              - Training Support
              - Demo & Evaluation Support
              - Equipment & Software Support

OU Department of Geography
  - Program Support
  - Ctr. For Spatial Analysis CSA
Request Letter for Users → Selection of Users → Establish User Support

Support General Orientation Training Definition → Conduct Orientation Training For Users → Begin User Needs and Requirements Definition

Assess Previous Application Demonstrations → Assess Previous Geo-data-base Data and Information & Define New Data → Assess Applications Types Used By others

Assess Proposed Software And Equipment to be Used → Complete Definition of User Needs and Requirements → Assess MapWindows Applied to Requirements **

Finalize GIS Software and Equipment Used in Project → Define GIS Software/Equipment Orientation Training → Support GIS Software/Equipment Installation

Perform GIS Software/Equipment Training ** → Begin Development of Specific User Applications and → Support Definition of User Specific Applications Training

Perform Specific Applications Training ** → Assist and Support Definition of Application Technical Issues ** → Assist and Support GIS System Test, Verification & Readiness

Perform Applications Demos Of Previous Developed Apps. → Assess Demonstration Results and Modify Application → Finalize Newly Defined Specific User Applications and Queries

Perform Further User Specific Applications Training ** → Conduct Demo & Evaluation of Both Original and New → Conduct Specific Cost/benefits For All Applications

Conduct and Present Demos & To County Managers → Support Operational Capability Assessment & Provide Recommendations → Support Pilot Project Assessment and Reporting

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- Define technical Issues needing further investigation: (Document/each User)
- Equipment/software testing & verification readiness: Project Team
- Demonstrations using previously developed applications: (All Users)
- Assess previous application demonstrations and define modifications: (Document/each User)
- Demonstrations using newly developed applications: (Document)
- Assess new application demonstrations and define modifications: All Users
- Further specific user application training if needed: (1/2 to 1 day training Each User)
- Demonstration and evaluations of original and new applications: (All Users)
- Assess cost-benefit for all Applications: (Document)
- Demonstrations to County managers & decision makers: Each Mgr.
- Assess of GIS capability & develop recommendations: Project Team
- Final assessment of Pilot Project: Project Team (Document)