# GEOGRAPHIC TECHNOLOGIES GROUP

## *GIS Manager's Workshop*


UNDERSTANDING LOCAL GOVERNMENT

# GIS Manager's Workshop

1. Introduction to the Key Issues of Managing Enterprise-wide GIS
2. The Governance of GIS
3. Enterprise Implementation of GIS
4. The Business Case for GIS

# 1

# Introduction to the Key Issues of Managing Enterprise-wide GIS

**Section 1: Managing GIS**

# Introduction to the Key Issues of Managing Enterprise-wide GIS

1. Introduction
2. Workshop Goals
3. Nationwide Statistics
4. What is a Successful Enterprise-wide GIS?
5. Possible Outcomes (Success or Failure)
6. Ensuring Your Organization's Success
   - Needs Assessment and Implementation Plan
   - Funding Models

# Introduction to the Key Issues of Managing Enterprise-wide GIS

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# Introduction

CEO/OWNER

David Holdstock

Mr. David Holdstock has over sixteen years of experience in the use and management of Geographic Information Systems (GIS) for state, federal, and local governments.

- *Owner and CEO of Geographic Technologies Group (GTG)*
- Sixteen years of GIS experience
- Extensive experience in GIS for Public Works, Utilities and Engineering
- *Worked on over 100 GIS Strategic Implementation Plans*
- Former GIS Cost Center Manager for worlds leading Transportation Engineering Company – PPQD, NY
- *Extensive publications* and presentations on GIS for local government
- *Certified GIS and GPS trainer*
- Project Manager on eight GIS based Hazard Mitigation Plans

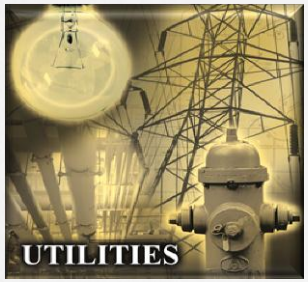
CEO/OWNER

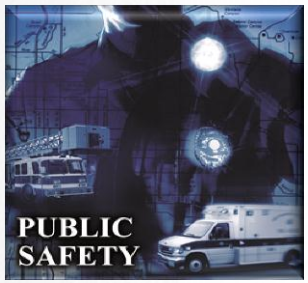
Curtis Hinton

Curtis Hinton has over sixteen years of GIS experience. As Wilson, North Carolina's GIS Coordinator, Curtis spearheaded the development and implementation of GIS for the City of Wilson.

- *Owner and President of Geographic Technologies Group (GTG)*
- *Specializes in integrating GIS with existing information technology investments*
- *Won the URISA and American City and County Excellence in GIS Award*
- Has *hands-on experience implementing GIS* for all city and county departments
- Was GIS Professional of the Year as voted by NC URISA







| Number of Clients | |
|---|---|
| Cities/Towns | 516 |
| Counties | 217 |
| State/Federal | 32 |
| Other | 52 |


**Established 1997**

- North Carolina
- Texas
- Missouri
- Florida

GEOGRAPHIC TECHNOLOGIES GROUP

Understanding Local Government

**Core GIS Business**

- GIS Strategic Planning
- GIS Software Engineering
- Data Collection, Conversion and Creation
- GIS Training and Education

- *ESRI Business Partner and Developer*
- *Microsoft Business Partner and Developer*
- *Award Winning GIS Company*
- ***Software** Integrator 700+ Clients*

# Poll the Audience

- City, County, State, Private, Other
- GIS <1Yr, 1-3, 3-5, >5
- Is your GIS:
  - Not successful
  - Mildly successful
  - Successful
  - Successful in a mighty way

# What Are Your Biggest Challenges?

**Name, Title, Organization**

- ❑ **Funding**
- ❑ **Key Staff – Don't Relate Well to Others**
- ❑ **Staffing Not Enough**
- ❑ **Staffing Not Competent out of Field**
- ❑ **Technical Issues**
- ❑ **Educational Issues**
- ❑ **Buy-In From Your Organization**
- ❑ **Improper Software**
- ❑ **Inadequate Hardware**
- ❑ **Networking**
- ❑ **Other**

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# Workshop Goals

- How to identify a successful GIS
- Understanding key components of an enterprise-wide GIS
- Understanding various governance models
- How to make GIS an enterprise-wide tool
- How to sell and justify your GIS

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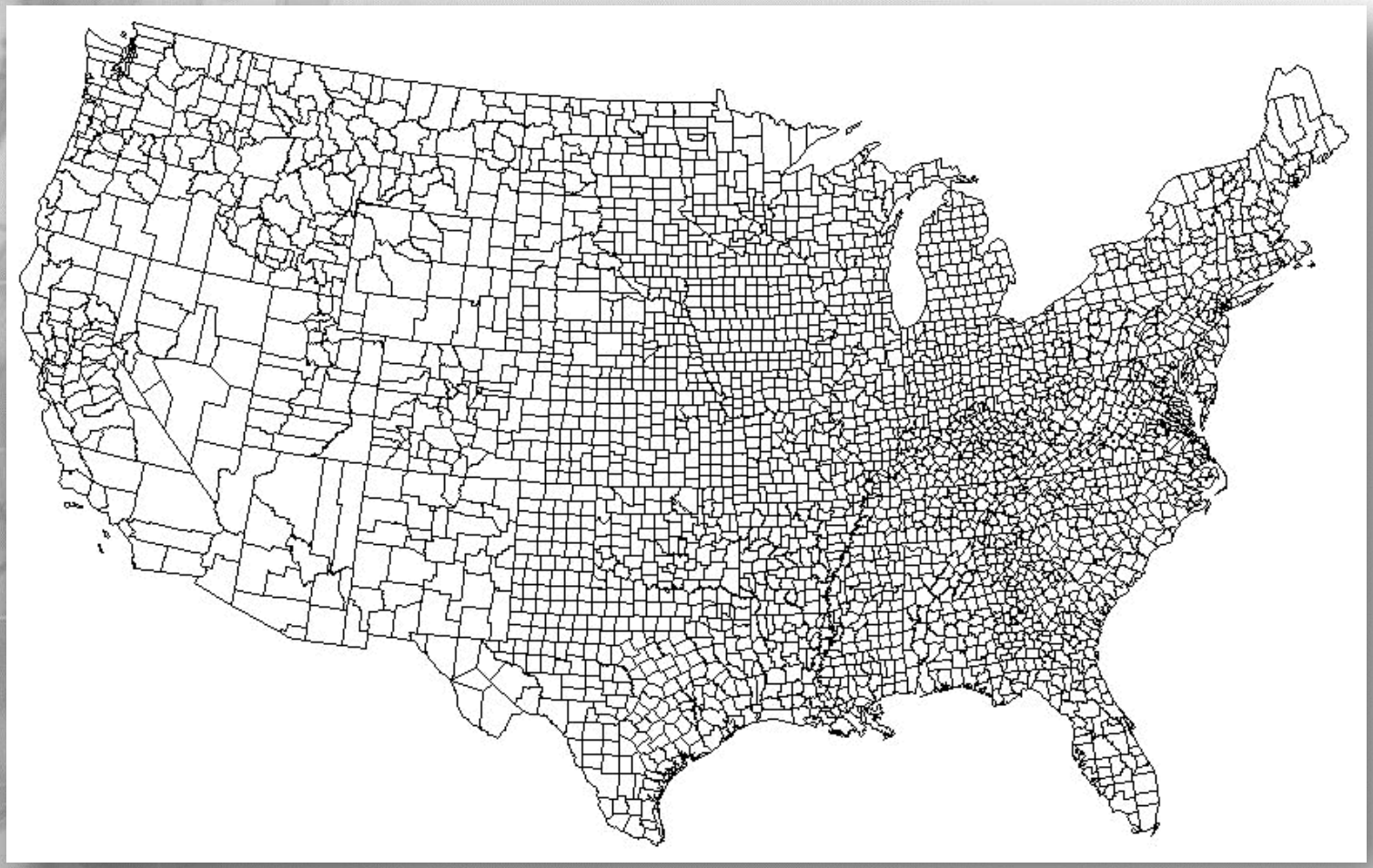
# Nationwide Statistics

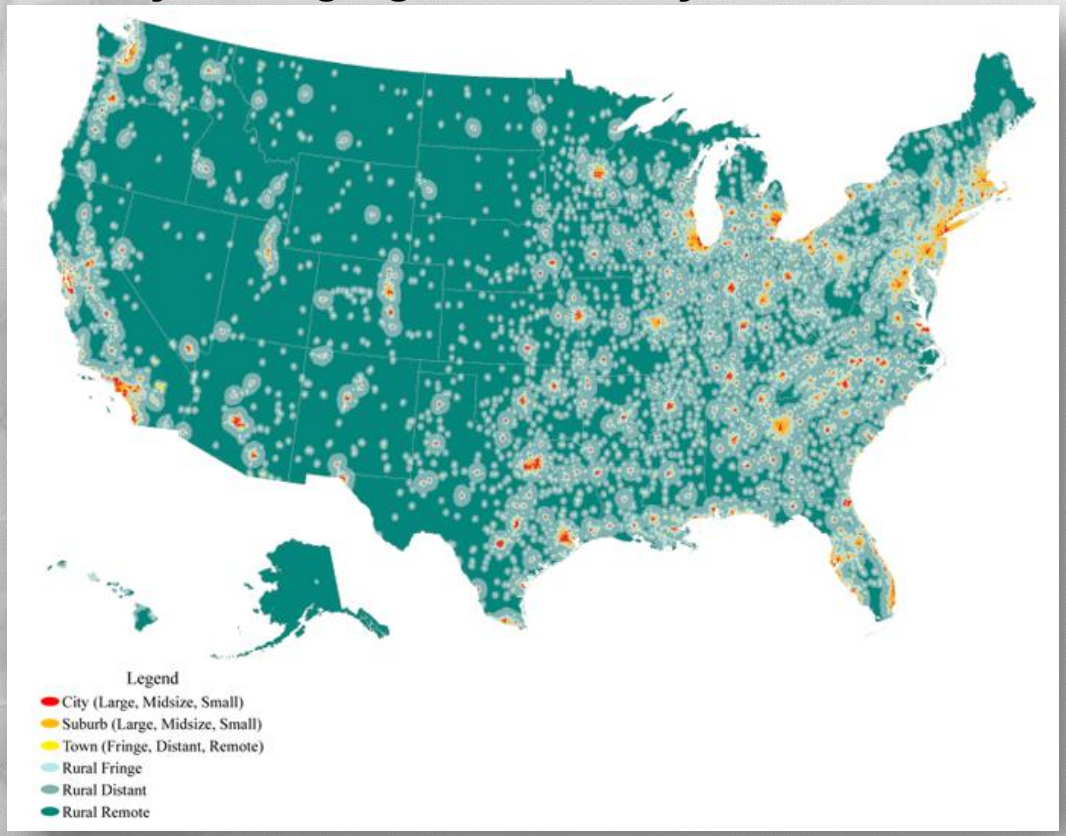
**Why Managing a GIS Really Does Matter**



Total Counties in the United States: 3,140

# Nationwide Statistics

**Why Managing a GIS Really Does Matter**



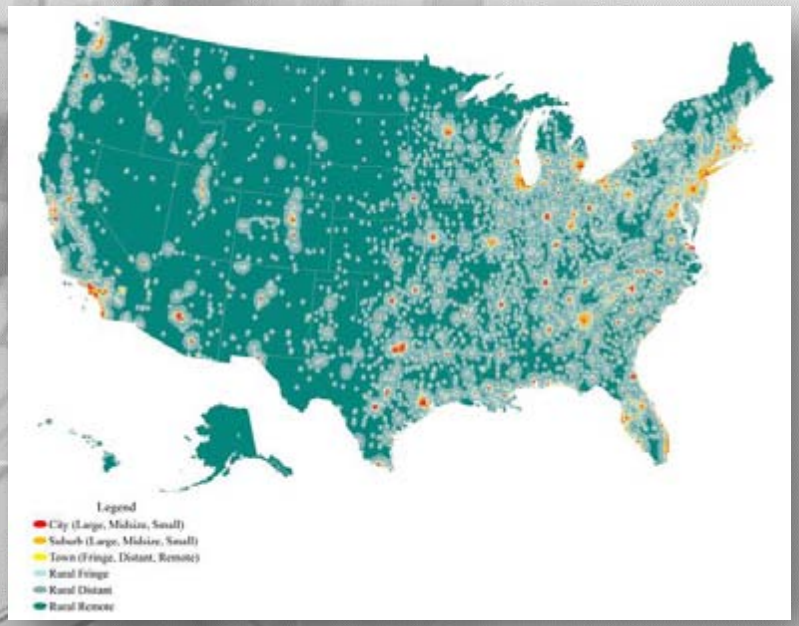

Total Cities/Towns in the United States:

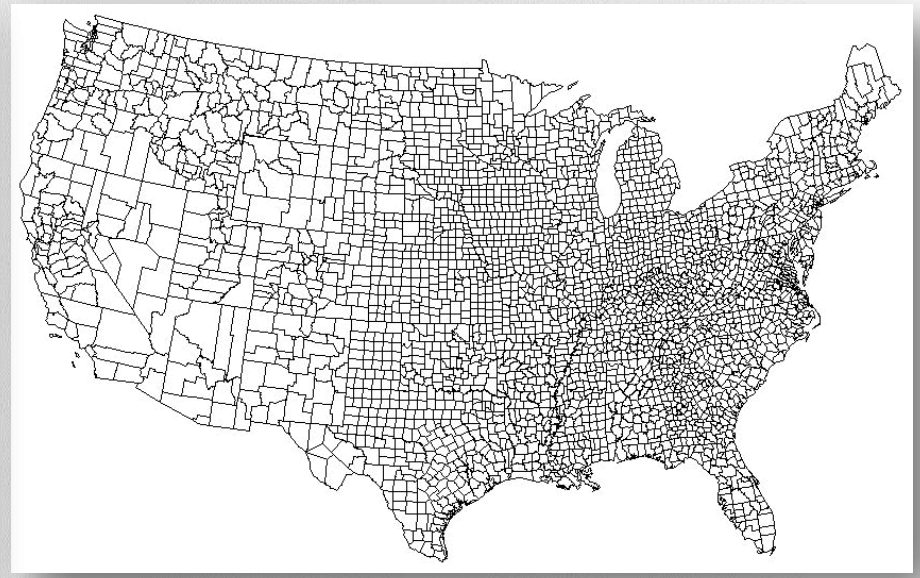
approximately 30,000 incorporated cities

400,000 State and Federal Agencies

# Nationwide Statistics

**Why Managing a GIS Really Does Matter**



- **90% have some type of GIS tool - 2,826 Counties, 27,000 Towns and Cities, 360,000 state and federal agencies**
- **Billions of dollars being spent**
- **Time, money, and lives depend on responsible implementation**
- **Is your GIS a successful enterprise-wide GIS?**
- **Recent conversation – my job doesn't matter**

# It does matter

- You help save money
- You help save lives
- How to make GIS an enterprise-wide tool
- How to sell and justify your GIS

# PROBLEM

- Various properties in Orange County were not on the tax rolls
- With the previous tax collecting method in place, the County did not realize that these properties were being missed

# SOLUTION

- GIS enabled the County to uncover $800 million worth of property that was not being taxed
- 2% of this money went directly to the County

# *RETURN ON INVESTMENT*

## Improve Information Processing

- **$16 million was able to be collected due to the new method of collecting taxes**

# Return on Investment

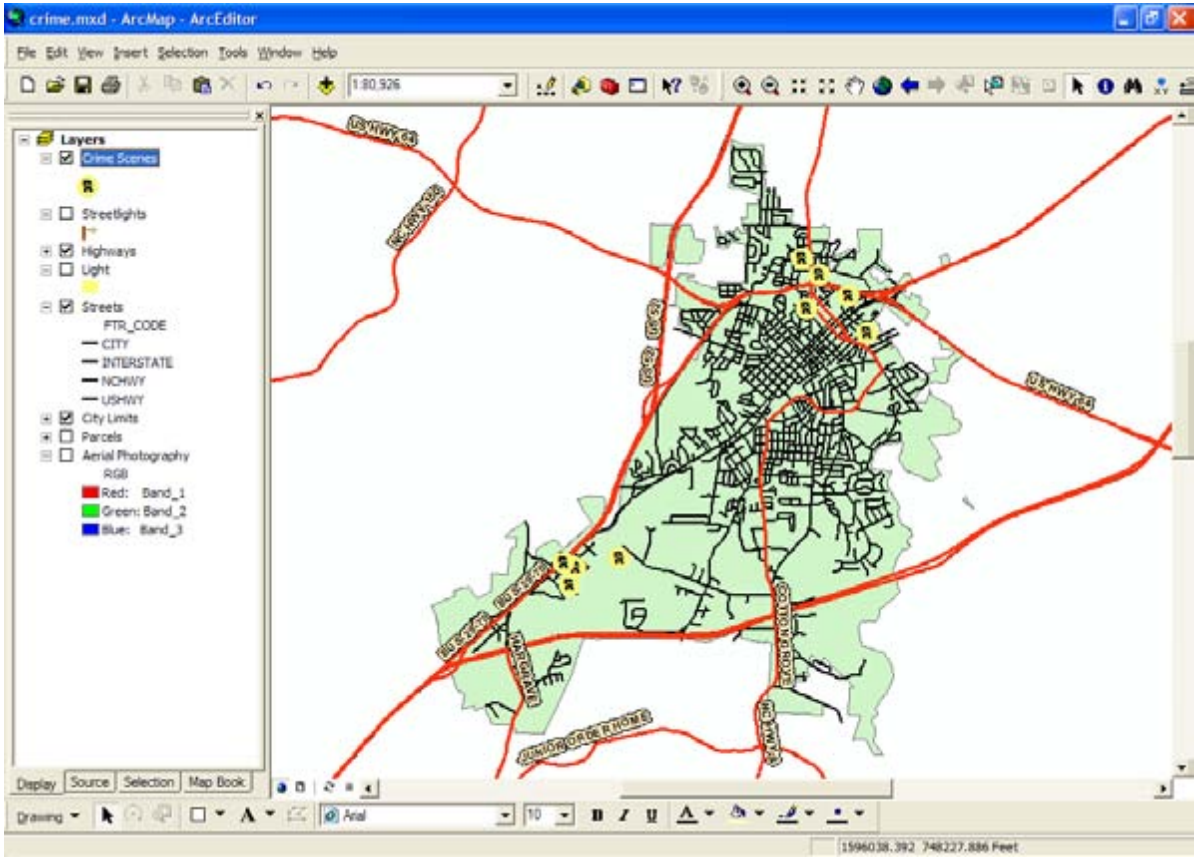
## *PROBLEM*

- Wilson experienced five (5) rapes in a four month period in the northeast side of town.
- The MO was always the same; the carpet was torn and the evidence was removed from the scene. It appeared that the City had a serial rapist on their hands.


# Return on Investment

## *PROBLEM*

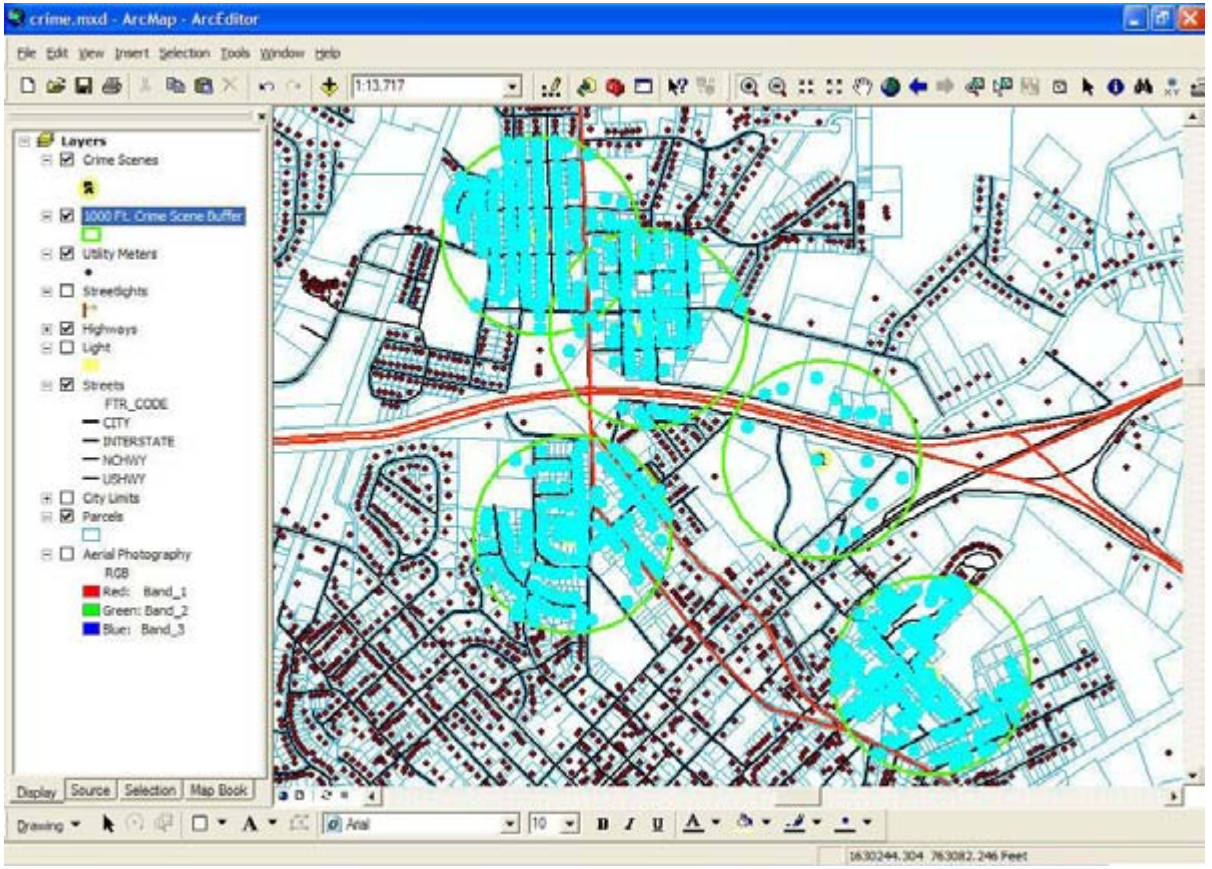
- There was a five month break in the activity.
- However, five months later, rapes with the same MO began happening again, but this time in the southwest side of town.



# Return on Investment

## *SOLUTION*

- The City used utility billing files to locate matches on utilities in the two buffered areas where the rapes occurred
- The utility files provided a valuable list of 35 names with utilities in both areas. Authority's used this list to find the perpetrator.



# Return on Investment

## *RETURN ON INVESTMENT*

### Protect Your Community

- A serial rapist is taken off the streets
- Citizens feel a sense of relief and more confidence in their law enforcement

# Return on Investment Lack Thereof

## *Problem*

- Call comes into 911
- Address is shown as 1241 North Beach Rd.
- Bad GIS Data
- Went to wrong part of County
- Over one hour to find the call
- Bad PR and life threatening

# GIS Return on Investment

## Improve Efficiency

GIS helps organizations reduce and eliminate redundant steps in workflow processes. By implementing GIS programs you can reduce workloads for your staff and you can develop new procedures, resulting in increased productivity and ultimately efficiency.

## Increase Productivity

puts accurate, current info
on at your staff's fingertip
they need it, eliminatin
eed to waste time searc
r lost data or trying to co
naccurate data. Accura
l and electronic GIS ma
can be easily accessed
shared among all depa
s. And because inform
an be accessed so quick
accurately, productivity w
ove in all departments.

## Save Time

Having the information when you need and want it saves time, staff resources, and ultimately money. Information can be made available to the public through a Web site or touch screen kiosks in convenient locations, reducing the demands on your staff.

## Save Money

S helps control spending
rough cost savings and cost
oidance. Immediate savings
n be seen through better de-
sions and increased produc-
ity. Cost avoidance becomes
parent over time, as GIS
lps organizations reduce and
minate costs.


## Make Better Quality and More Effective Decisions

A GIS is a critical tool to query, analyze and map data in decision support. GIS can, for example, be used to choose a location for a development that has minimal environmental impact, is located in a low risk area, and is close to a population center.

## Improve Data Accuracy

GIS creates maps from data. Paper maps can be digitized and translated into GIS. Maps can be created on any location, at any scale, and showing selected information to highlight specific characteristics. Precise GIS data enables users to generate accurate reports and produce quality maps instantly.

## Automate Workflow Procedures

GIS helps automate tasks that expedite workflow and enhance your ability to react efficiently during a crisis. GIS can automate routine analysis, map production, data creation and maintenance, reporting, nd statistical analysis.


## Save Lives

In an emergency, GIS can lead rescuers quickly and accurately to the scene. In an emergency, every second counts. The time saved in locating a citizen can be the difference between life and death.

## Improve Processing

Enterprise-wide GIS streamlines the flow of information throughout the organization, leading to better accuracy, better access, and increased efficiency in every aspect of the organization.

## mply with Stat and Federal Mandates

Digital inventories of water, sewer, and storm water infrastructure are becoming increasingly important in local governments. A complete GIS program includes asset management, inventory control, and depreciation based on accurate and timely data including age, size, and construction materials; this allows managers to predict and schedule repairs and replacement.

## Improve Communication, oordination, and Collaboration

dials develop emergency plans and respond to disasters more effectively than ever before. GIS offers the tools to monitor conditions, recognize threats, predict consequences, and respond effectively and efficiently to man-made or natural disasters. GIS can also help officials deliver information to citizens during an emergency, through emergency notification systems and the Internet.

## Improve Communication, Coordination, and Collaboration

Good communication is the key to running an effective organization. GIS helps staff members and elected officials convey complex information in easy-to-understand formats.

## Provide Data to Regulators, Developers, and Other Interested Parties

GIS makes it easy to deliver information for complex political and regulatory requirements. GIS allows regulators and developers to consider all pertinent data, which results in informed decisions and better results.

## Improve Communication, Coordination, and Collaboration

Good communication is the key to running an effective organization. GIS helps staff members and elected officials convey complex information in easy-to-understand formats.

## Improve Citizen Access to Government

nternet access to GIS infor-
nation is the ultimate conve-
ience for citizens: 24/7/365,
om their home or office. Staff
s then free to help citizens with
ore complicated requests, re-
ulting in increased customer
atisfaction.

## Effective Management of Assets and Resources

Effective management starts with analyzing, tracking, managing, allocating, and conserving assets. GIS technologies make production and delivery quick and efficient with maximum benefits.

# Return on Investment

## *PROBLEM*

- There was a snow storm in a city in New Jersey.
- The City did not have any way to track which streets had been plowed and which ones hadn't.
- Citizens witnessed snow plows plowing private roads and driveways when major roads had not yet been plowed
- This created a dangerous situation for drivers and disabled people in need of emergency services during the snow storm

# Return on Investment

## *SOLUTION*

- AVL software would allow the city to properly track the location of snow plows and which streets had been plowed
- GIS would allow better communication, ensuring that all roads are plowed in a timely manner

# Return on Investment

## *RETURN ON INVESTMENT*

### Improve Efficiency

- GIS would allow plows to communicate, plowing more roads in less time

### Save Time

- Snow plow units would be able to save time by focusing on roads that needed to be plowed

### Improve Communication, Coordination, and Collaboration

- GIS software would allow units to communicate with the control center where they plowed and when

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# What is a Successful Enterprise-wide GIS?

- All GIS implementations are deemed successful
- Many are expensive mapping systems
- Breaks down barriers between departments
- Adds value to existing technology
- Participation and use by all departments
- Word processor analogy
- 90% are less than successful

# Geographic Technologies Group

## Seven Keys to GIS Success

**1) GIS Master Plan**
Careful planning ensures broad organizational commitment and adequate funding, and minimizes common road blocks. It serves as a guide for staffing, data standards, training, and hardware and software purchases.

**2) Coordination**
This is the most critical characteristic of successful GIS programs. Most organizations will need to evaluate and implement the optimum governance model for managing and maintaining their GIS.

**3) Quick Success**
The earliest phases of GIS are typically the most expensive and the most important, but the least glamorous. High impact projects that can be implemented in the first year help maintain enthusiasm and build credibility for GIS.

**4) Education**
Make sure users throughout the organization understand what GIS can do for them. Give users at all levels a preview of how they will soon be able to do their jobs more efficiently with GIS.

**5) Ease of Use**
Gone are the days when GIS was limited to a few highly trained power users. Make sure you implement intuitive, easy solutions so everyone can benefit. Some of the most widely accepted GIS applications are delivered to the public via the Internet.

**6) Enterprise-Wide Implementation**
Spread the responsibilities for GIS throughout the organization and offer all departments the opportunity to use the technology. GIS should be as widely used as a word processor, on every desktop in the organization. This approach helps turn data into valuable information.

**7) Quantify Benefits vs. Cost**
Proving savings in time, life, and money guarantees continued support and momentum. Make sure you invest resources on solutions that solve specific problems.

## Plan for Results

Strategic GIS planning should focus on the keys to success; it should be detailed, organized and comprehensive.

- We're all about your return on investment.
- We're focused on your success.
- We focus on your organization's vision, goals, and objectives.
- We achieve measurable success quickly for your organization.
- We build and foster commitment in your organization.
- We show you how your organization can make better decisions.
- We demonstrate how your organization can respond more quickly to citizen requests.

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# Possible Outcomes Success or Failure

## Implementation One - Fail

- No Implementation Plan
- Staffed incorrectly
- Placed in Engineering Department
- Did not produce results early
- Five years working on implementation with little to show
- No enterprise-wide tools
- Spent 1,000,000 +
- Final Result - Elected officials scrapped project

## Implementation Two - Pass

- Adopted a 3-Year Implementation Plan
- Staffed correctly
- Placed in Manager's Office
- Produced showcase results throughout
- Provided software tools to all users
- Spent 1,000,000 +
- Final Result – Over 100 users enterprise-wide and public. Great accolades from the organization and the press.

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# What Can You Do to Ensure Your Organization's Success?

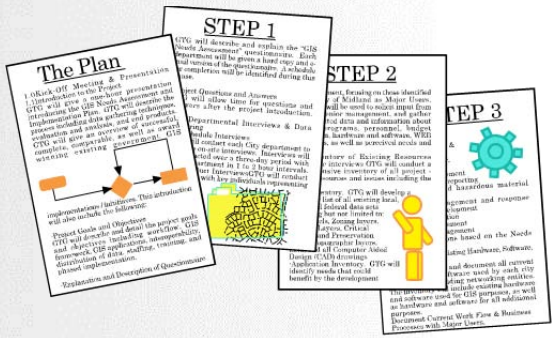
# Step One

## Have a Well Thought Out Master Plan

"The conscientious plodder is nearly always outdistanced by the fellow who stops occasionally to analyze and plan." W.J. Cameron

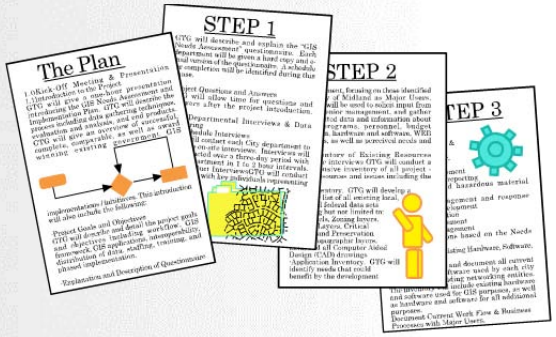
# Needs Assessment Implementation Plan

- Plan containing detailed steps of GIS implementation
- Have well defined goals
- Update GIS plan regularly
- Provide copy of master plan and completed steps to all involved parties
- Have it approved by involved parties



# Needs Assessment Implementation Plan

- Consultant with real world experience
- Should address
  - staffing
  - data needs
  - data acquisition and creation options
  - training and education
  - relationships with other organizations
  - hardware and software
  - Infrastructure needs
  - The role of the GIS within the organization
  - Costs and benefits
  - A three-year implementation schedule
  - Specific not nebulous suggestions
- Can rescue a floundering project



# Vision

- Coordination
- Data Standards
- GIS Functionality
- Data Creation and Maintenance
- GIS Infrastructure
- Public Service and Customer Relations

→

- Establish Enterprise-Wide GIS
- Establish Uniform Business Process
- Leadership & Management Support
- Necessary Skills in Spatial Data Handling
- Wide Variety of Needs

# Vision

- Coordination
- Data Standards
- GIS Functionality
- Data Creation and Maintenance
- GIS Infrastructure
- Public Service and Customer Relations

→ Accurate, Reliable and Consistent Digital GIS Data

- Database Design
- Metadata Standards / Procedures
- Establish Quality Control Procedures

# Vision

- Coordination
- Data Standards
- GIS Functionality
- Data Creation and Maintenance
- GIS Infrastructure
- Public Service and Customer Relations

Effective Use of GIS in an Enterprise-wide Environment

Three Tiers of GIS Functionality

- Power Users
- Analytical Users
- Browser Users

# Vision

- Coordination
- Data Standards
- GIS Functionality
- Data Creation and Maintenance → Spatial Data Handling to Acquire, Process, Store and Distribute Geo-Spatial Data
- GIS Infrastructure
- Public Service and Customer Relations

# Vision

- Coordination
- Data Standards
- GIS Functionality
- Data Creation and Maintenance
- GIS Infrastructure
- Public Service and Customer Relations

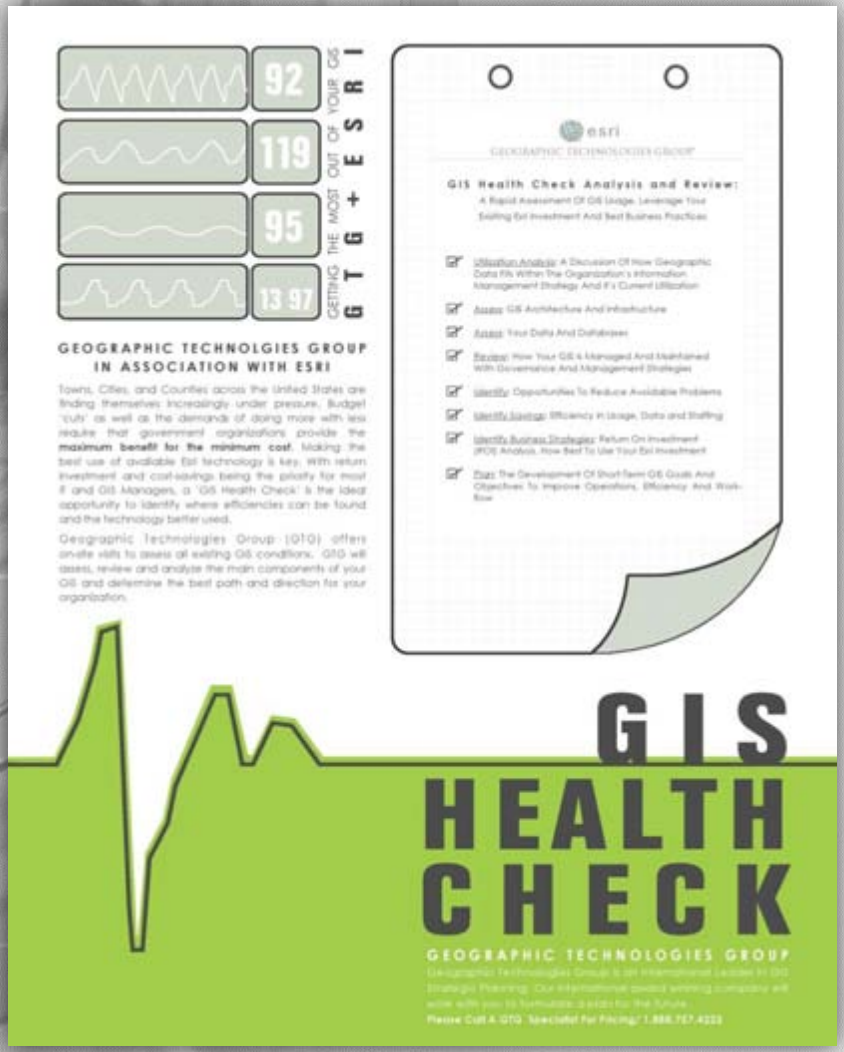
→ Materials - Technology and People
Hardware – Software – People – Networks

# Vision

- Coordination
- Data Standards
- GIS Functionality
- Data Creation and Maintenance
- GIS Infrastructure
- Public Service and Customer Relations

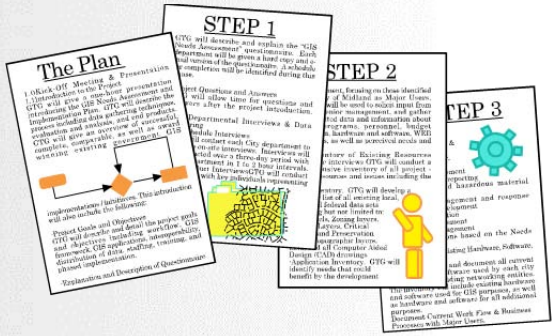
Improve Efficiency, Increase Productivity and allow citizen access to data and information
Changing Standards for Citizens
- Performance Expectations
- Higher Accuracy

# GIS Health Check




# What are You Doing?

- How do you plan from year to year?
- Do you have a plan?
- Examples



# Funding Models

- Time Frame: 3- 5 Years
- Enterprise Funds
- Regular Budget
- Lump Sum or Spread Out
- Grants
- Discussion


# Grant Options

GRANTS OFFICE

Grants Office Pricing Schedule: 2010 Grantwriting

| Tier | Program | Price |
|---|---|---|
| I | Assistance to Firefighters | 3,625.00 |
| | Byrne Justice Assistance Grants (JAG) | 3,625.00 |
| | Emergency Management Performance Grants (EMPG) | 3,625.00 |
| | Foundation Proposals | 3,625.00 |
| | Hospital Preparedness Program (local pass through) | 3,625.00 |
| | SAFER | 3,625.00 |
| II | Byrne Discretionary Grants | 4,875.00 |
| | Museums for America | 4,875.00 |
| | UASI Nonprofit | 4,875.00 |
| | Small Research Grant to Improve Health Care Quality Through HIT (R03) | 4,875.00 |
| | AHRQ Small Grant Program for Conference Support (R13) | 4,875.00 |
| III | Foreign Language Assistance Program (FLAP) | 6,125.00 |
| | Boating Infrastructure Grant Program | 6,125.00 |
| | Community Oriented Policing Services (COPS) Programs | 6,125.00 |
| | Consolidated Applications: 2009 | 6,125.00 |
| | COPS Secure our Schools | 6,125.00 |
| | Enhancing Education through Technology (ED TECH/EETT/E2T2) | 6,125.00 |
| | FCC Universal Service Corporation Pilot Program | 6,125.00 |
| | Fire Safety & Prevention Program | 6,125.00 |
| | HOPE VI Main Street Program | 6,125.00 |
| | Improving Literacy through School Libraries | 6,125.00 |
| | Infrastructure Protection Program: Buffer Zone | 6,125.00 |
| | Infrastructure Protection Program: Bus Security | 6,125.00 |
| | Infrastructure Protection Program: Public Transportation Security | 6,125.00 |
| | Law Enforcement Terrorism Prevention Program (LETPP) | 6,125.00 |
| | National Criminal History Improvement Program (NCHIP) | 6,125.00 |
| | Smaller Learning Communities | 6,125.00 |
| | State Homeland Security Grant Program (SHS) | 6,125.00 |
| | Teaching American History | 6,125.00 |
| | Urban Area Security Initiative (UASI) | 6,125.00 |
| | Small Research Grant to Improve Health Care Quality Through HIT (R03) | 6,125.00 |
| | AHRQ Grant Program for Large or Recurring Conferences (R13) | 6,125.00 |
| | BTOP-Infrastructure (Phase 2; Due Diligence) | 6,125.00 |
| | Broadband Initiatives Program (Phase 2; Due Diligence) | 6,125.00 |
| | Earmarks | 6,125.00 |
| | SAMHSA Offender Reentry Program (ORP) | 6,125.00 |
| | Port Security Grants | 6,125.00 |
| IV | 21st Century Community Learning Centers | 7,375.00 |
| | Broadband Community Connect Program | 7,375.00 |
| | Carol M. White Physical Education for Progress (PEP) | 7,375.00 |

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# Grant Options

GRANTS OFFICE

## Grants Office Pricing Schedule: 2010 Grantwriting

| | | |
|---|---|---|
| | Emergency Management for Higher Education | 7,375.00 |
| | Grants For School-Based Student Drug-Testing Programs | 7,375.00 |
| | Healthcare Facilities Partnership Program | 7,375.00 |
| | Healthcare Facilities Emergency Care Partnership Program | 7,375.00 |
| | Hospital Preparedness Program (state proposal) | 7,375.00 |
| | Metropolitan Medical Response Systems Program (MMRS) | 7,375.00 |
| | NIJ Biometrics Technologies | 7,375.00 |
| | NIJ Communications Technology | 7,375.00 |
| | NIJ Crime and Justice Research | 7,375.00 |
| | Public Health Emergency Preparedness | 7,375.00 |
| | Rail Security Program | 7,375.00 |
| | Readiness and Emergency Response for Schools (REMS) Teaching and Learning with Essential New Technologies in the 21st Century (TALENT21) (New Jersey) (Recovery Act) | 7,375.00 |
| | Community Connect | 8,625.00 |
| | Community Facilities Program | 8,625.00 |
| | Consolidated Applications: Full Narrative Year | 8,625.00 |
| | Distance Learning & Telemedicine | 8,625.00 |
| | Health Information Technology Implementation for Health Center Controlled Networks (Recovery Act) | 8,625.00 |
| | Information Technology Evaluation Program (ITEP) | 8,625.00 |
| V | Infrastructure Protection Program: Port Security | 8,625.00 |
| | Integrated Advanced Information Systems (IAIMS) | 8,625.00 |
| | Intelligent Transportation Systems | 8,625.00 |
| | Internet Access to Digital Libraries (IADL) | 8,625.00 |
| | Pre-Disaster Mitigation Program | 8,625.00 |
| | Safe Schools/Healthy Students (SS/HS) | 8,625.00 |
| | Star Schools | 8,625.00 |
| | Transforming Healthcare Quality through Information Technology (THQIT) | 8,625.00 |
| | BTOP-Public Computer Centers | 9,875.00 |
| | BTOP-Sustainable Broadband Adoption | 9,875.00 |
| | Health Information Technology (HIT) Planning Grants | 9,875.00 |
| | High Impact Electronic Health Record Implementation | 9,875.00 |
| | Electronic Health Record Implementation | 9,875.00 |
| VI | Utilizing Health Information Technology to Improve Health Care Quality (R18) | 9,875.00 |
| | Exploratory and Developmental Grant to Improve Health Care Quality Through Health Information Technology (R21) | 9,875.00 |
| | National Science Foundation Proposals (Low Complexity) | 9,875.00 |
| | Research and Development Grants (Low Complexity) | 9,875.00 |
| | WIRED Grant | 9,875.00 |

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# Grant Options

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| | | |
|---|---|---|
| | Recovery Act 2009 Limited Competition: Innovative Adaptation and Dissemination of AHRQ Comparative Effectiveness Research Products (iADAPT) (R18) | 9,875.00 |
| | Telehealth Network Grant Program (TNGP) | 9,875.00 |
| Exceptions and Packages | Justice Assistance Grant and Byrne Discretionary Grant Discount Package | 7,375.00 |
| | Strengthening Institutions (Part 1) | 3,125.00 |
| | Strengthening Institutions (Part 2) | 5,500.00 |
| | Strengthening Institutions Package (Part 1 & Part 2) | 8,625.00 |
| | Weed and Seed (Part 1-Official Recognition) | 3,187.50 |
| | Weed and Seed (Part 2 - Competitive Application) | 5,550.00 |
| | Weed and Seed Package (Part 1 & Part 2) | 8,625.00 |
| | Recovery Act 2009 Limited Competition: AHRQ Clinical and Health Outcomes Initiative in Comparative Effectiveness (CHOICE) Grants (R01) | 11,125.00 |
| | ARRA-AHRQ Recovery Act 2009 Limited Competition: PROSPECT Studies: Building New Clinical Infrastructure for Comparative Effectiveness Research (R01) | 11,125.00 |
| | R03 Package (includes Small Research Grant to Improve Health Care Quality Through HIT and either R18 or R21) | 13,750.00 |
| | National Science Foundation Proposals (Moderate Complexity) | 12,375.00 |
| | National Science Foundation Proposals (High Complexity) | 14,875.00 |
| | Research and Development Grants (Moderate Complexity) | 12,375.00 |
| | Research and Development Grants (High Complexity) | 14,875.00 |
| | BTOP-Infrastructure (Phase 1; Initial Application) | 18,625.00 |
| | Broadband Initiatives Program (Phase 1; Initial Application) | 18,625.00 |

* Special Pricing available depending upon the level of support needed.

Grants Office LLC
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# Recap

- Successful GIS Implementation Can Be Achieved
- Often it is Not
- Must Have a Plan
- Discussion

2

# The Governance of GIS

**Section 2: Governance of GIS**

# The Governance of GIS

1. **Introduction to the Governance of GIS**
   - **Strategic I Tactical I Technical I Logistical**
2. **Governance Models**
   - **Centralized (Corporate) Model**
   - **Decentralized Model**
   - **Hybrid Model**
3. **Describe Your Situation**
4. **Comparing the Benefits and Challenges of GIS Governance Models**
5. **Troubleshooting GIS Implementation**
6. **A Key Ingredient to Governing GIS within your Organization**
   - **Developing a Vision, Goals and Objectives**

# The Governance of GIS

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# The Governance of GIS

"Implementation is a **Management Problem**, not a Technical Solution"
Healy 2010

"Implementation is not regarded as one state within an inevitable linear progression towards utilization. In practice, it can be **difficult to determine the start and finish of Implementation**"
Massey 2008

"If the road's not bumpy, **you're not traveling fast enough**"
Mario Andretti 2000

# Strategic GIS Questions?

- ☑ What is the goal for GIS technology?
- ☑ What are the short-term and long-term objectives?
- ☑ How do we define our organization's goals and objectives?
- ☑ How will GIS enhance our organization's functions?
- ☑ What are the priorities for services and GIS functions?
- ☑ What pitfalls might our organization encounter?
- ☑ How can our organization best use intergovernmental agreements?

# Tactical GIS Questions

☑ How will our organization manage GIS?

☑ What type of governance model should be used?

☑ What  type of GIS users should exist within the organization?

☑ What general policies and procedures are needed?

# Technical GIS Questions

☑ What type of GIS Architecture is required?

☑ What type of data and databases exist?  Which should we integrate?

☑ What skills might a potential staff member need?

☑ What options are there for maintaining and managing the GIS?

# Logistical GIS Questions

☑ Who should perform certain GIS functions?

☑ Who manages all the components of a GIS?

☑ What staff support and contractual services are needed?

☑ Is it possible for existing staff to perform GIS work?

☑ What are the costs (on-going cost) of GIS Implementation?

☑ Could our organization's resources better support GIS?

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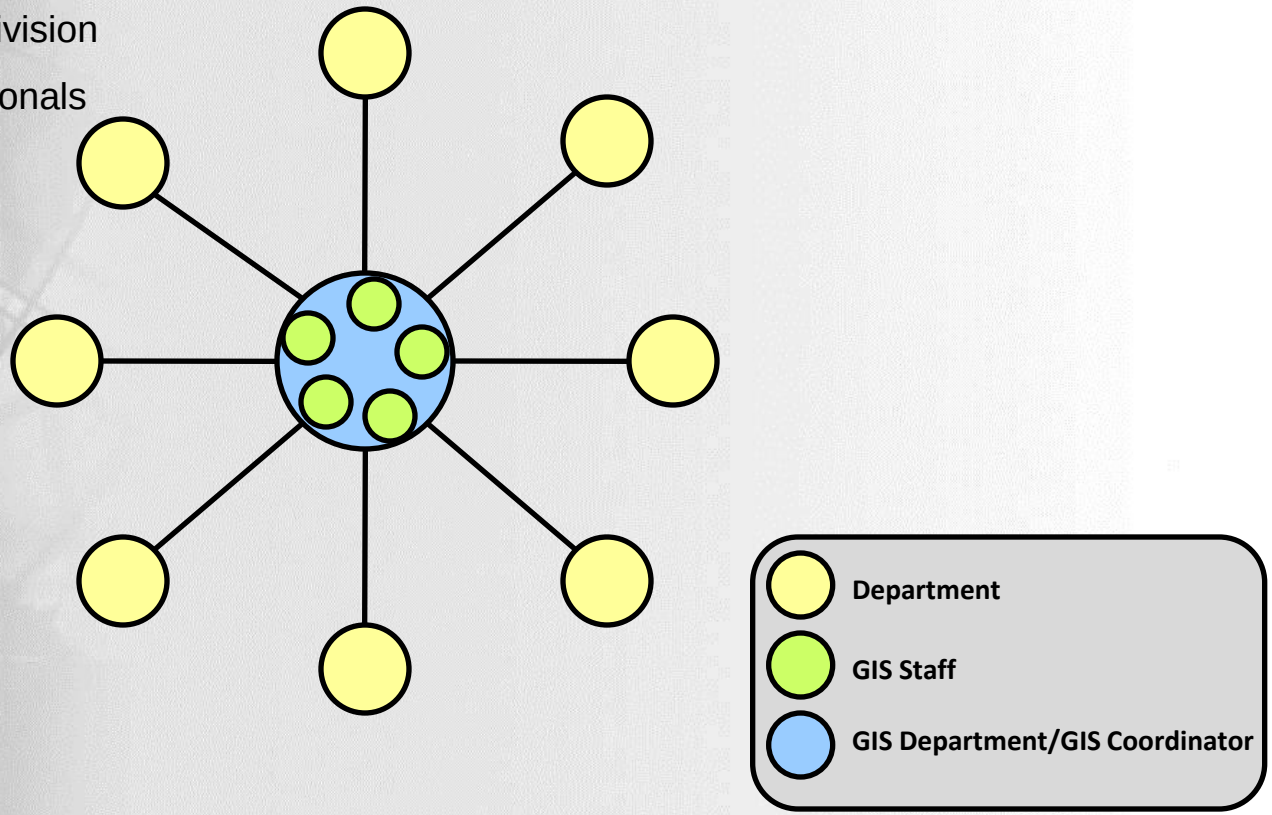
# Centralized (Corporate) Model

The first type of governance model is **centralized**. A centralized organizational structure maintains a central department or division that is responsible for all GIS services.

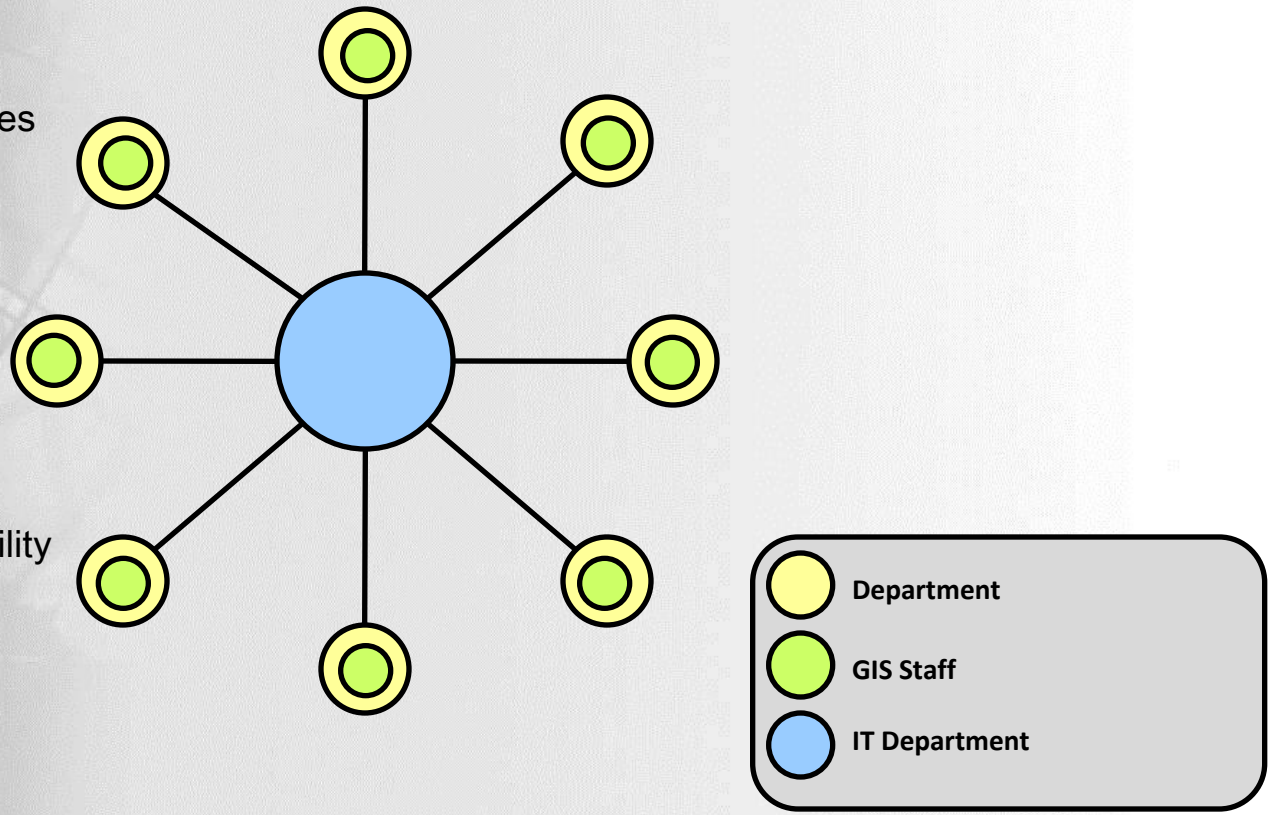
- Single GIS business unit
- Dedicated department or division
- Core group of GIS professionals
  - create and edit data
  - hardware/software
  - analysis
  - data distribution
- Single budget source



# Decentralized Model

The second type of management strategy is called a **decentralized** model. As the name implies a decentralized organizational structure divides GIS responsibilities throughout various departments.

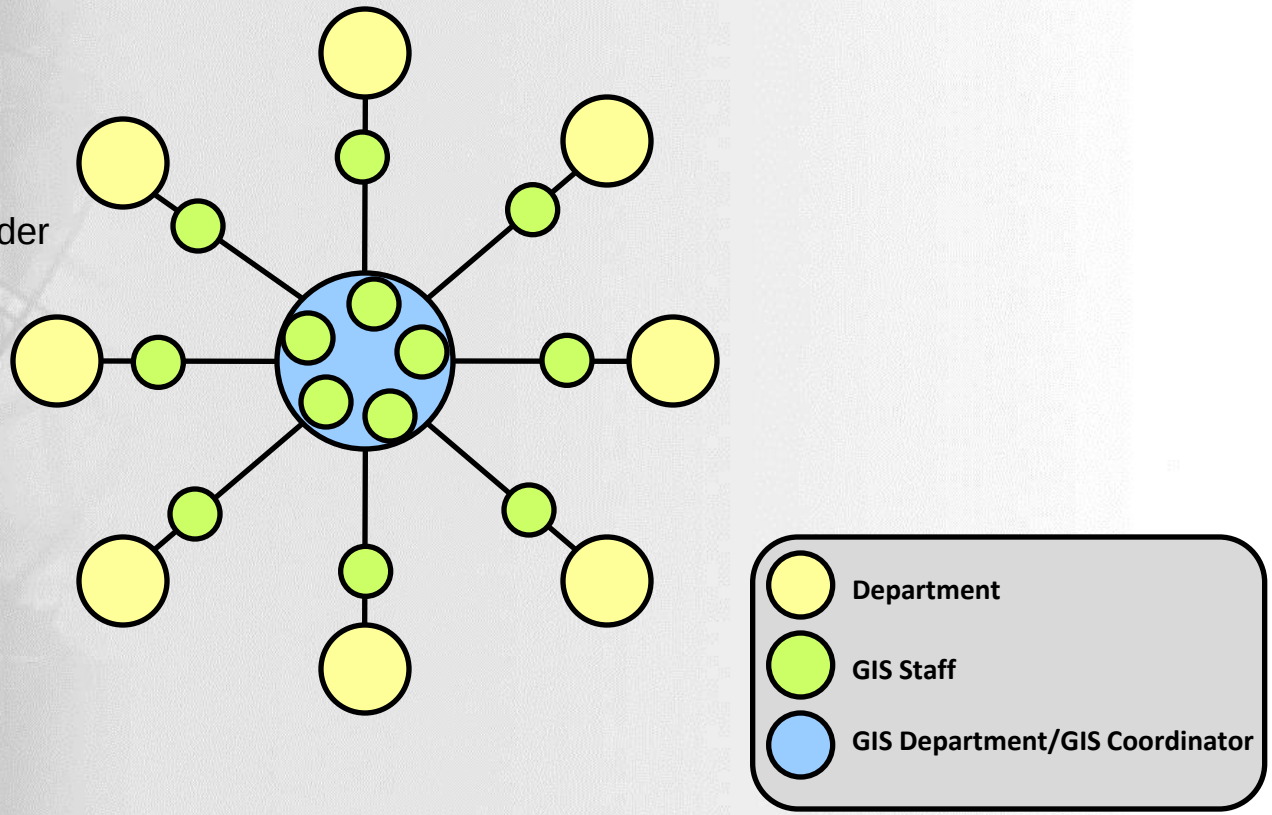
- GIS responsibilities are divided throughout the organization
- Multiple GIS groups/activities
- Small group of GIS professionals
  - hardware/software
  - data distribution and exchange
  - training
- End users share responsibility for maintaining data
- Multiple budget sources



# Hybrid Model

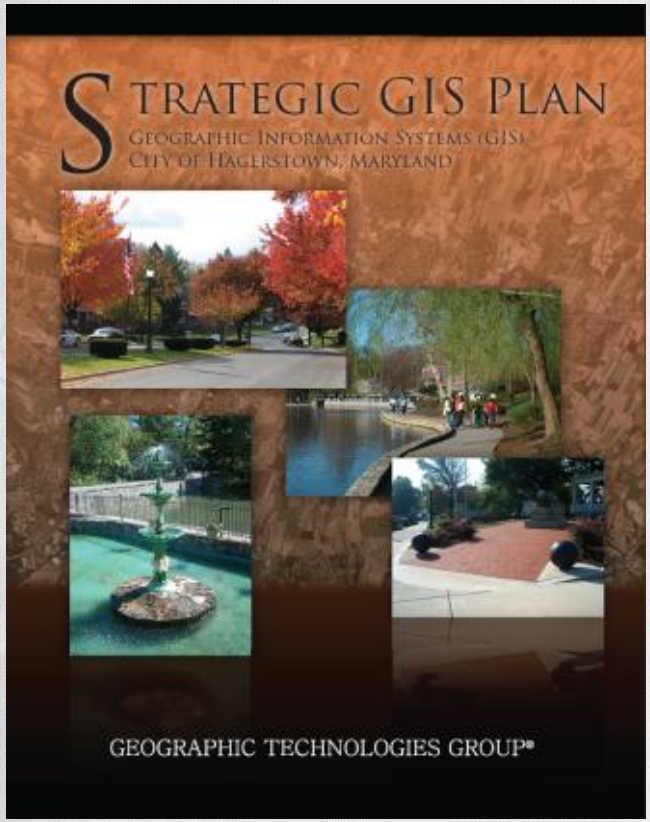
Many local governments utilize a **hybrid** GIS organizational structure, based on the advantages of centralized and decentralized organizational structures.

- Attempts to capture the strengths of unified and distributed models
- GIS functions are managed using a responsibility matrix
- Intra-departmental stakeholder teams
- Funding and leadership are shared
- Dual accountability



# Case Study #2
# City of Hagerstown, MD

Population: 39,728



# City of Hagerstown, Maryland

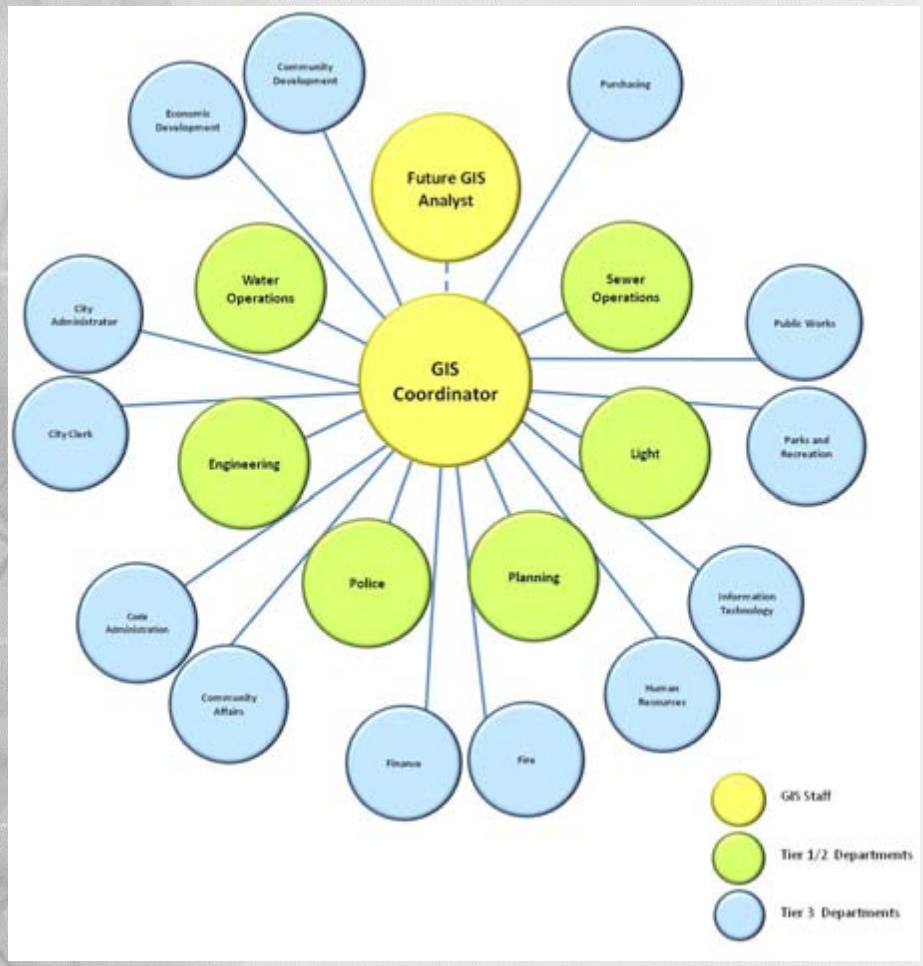
## GIS Coordinator Options

- **Option 1** - In the Information Technology Department (IT), as a Coordinator/Coordinator reporting directly to the IT Director. In this scenario it is recommended that the GIS Coordinator report findings and key issues to the City Administration in at least in report form.

- **Option 2** – In the City Manager's Office, as a Coordinator reporting directly to the City Manager and the City Council. In this scenario it is recommended that the GIS Coordinator work closely with IT in regards to all aspects of the GIS implementation.

- **Option 3** – In a heavy GIS using department such as the Engineering Department. In this scenario the GIS Coordinator will need to keep City Management apprised of GIS progress and work closely with IT to insure seamless integration.

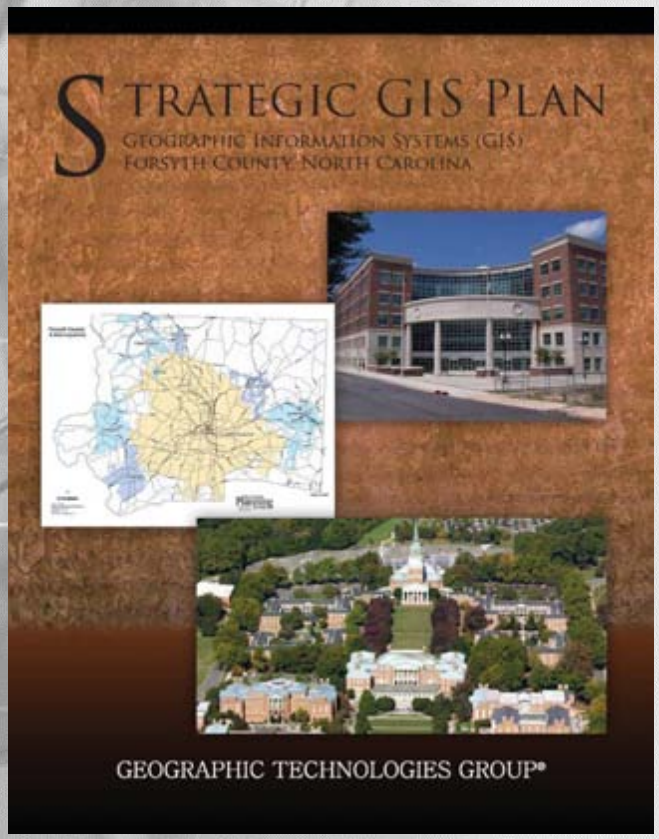
# Recommended Governance Model

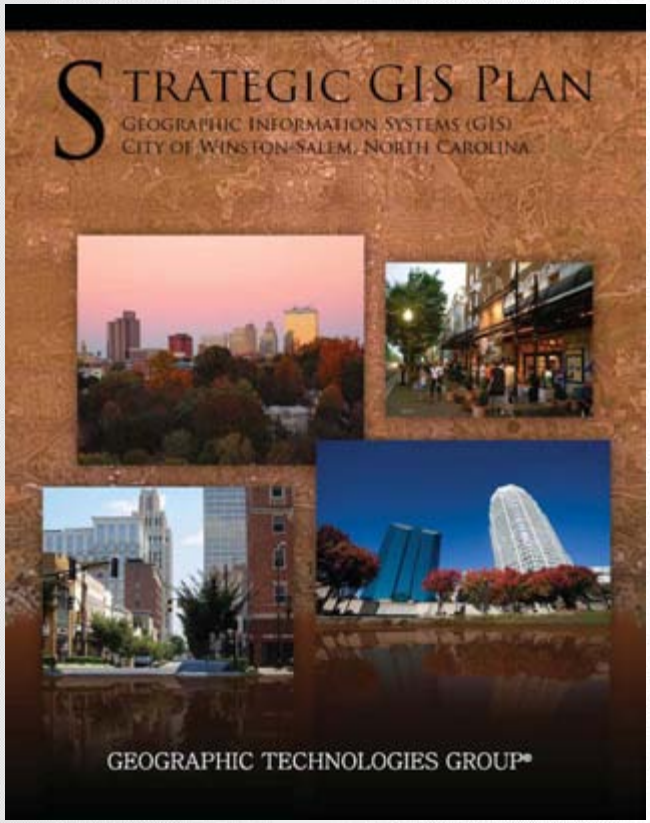



| Staff Position | Department | Ideal Year of Staffing | Notes |
|---|---|---|---|
| ***GIS Coordinator*** | IT | 1 | Citywide GIS coordination |
| ***GIS Analyst*** | IT | 3 | Support of GIS function within all departments |

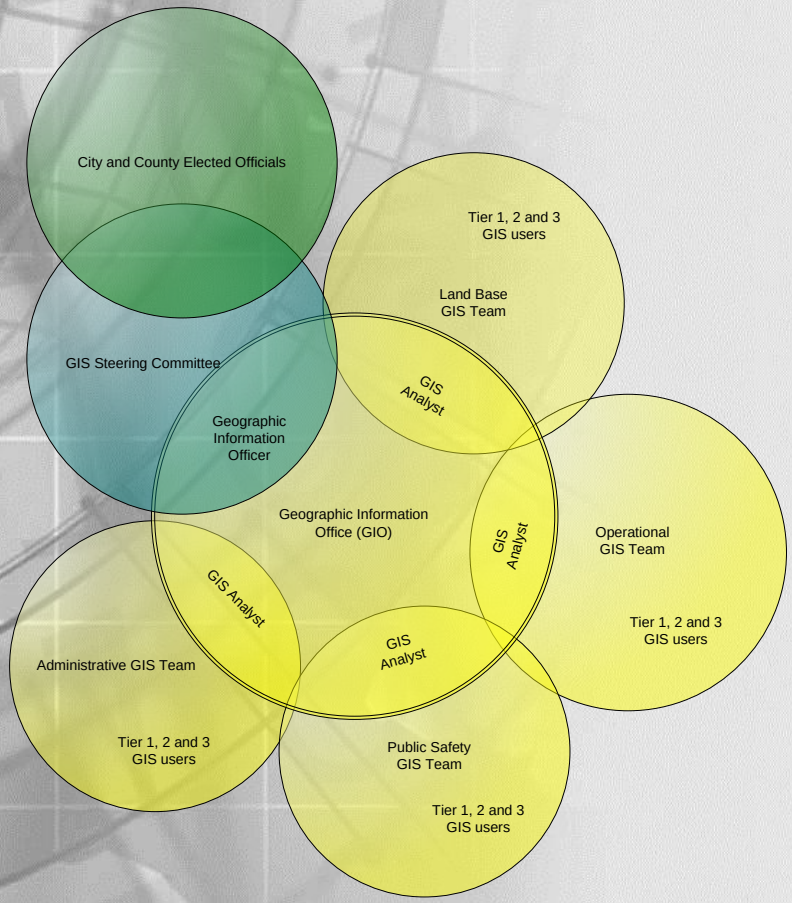
# Case Study
## Forsyth County/Winston-Salem, NC

Population: 338,774 / 229,828



# *Option 1 – Hybrid Model - Functional Team Approach*
# *Establish a Central GIS administrative authority with GIS Lead and Key GIS Staff*




**Governance Model** –

- Establish an autonomous central GIS administrative authority, as a Geographic Information Office (GIO), directed by a Geographic Information Officer reporting directly to the GIS Steering Committee
- GIS administrative staff (defined as GIS Analysts) within the GIO would be assigned to each functional GIS team and would also be responsible for enterprise database and network analysis
- Needed GIS administrative staff could be transferred from the current staff within existing departments or as new staff positions.
- Subject Matter Experts (SME's) should be identified in each department/division with current/future Tier 1 or 2 GIS users.
- In Tier 3 GIS usage only departments/divisions, the GIO, GIS Analysts, and other SME's would assist with more complex GIS tasks.

# The Governance of GIS

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# Describe Your Situation?

| | Yes | No |
|---|---|---|
| 1. Do you have clearly defined GIS roles? | ❑ | ❑ |
| 2. Do you share the costs of the GIS? | ❑ | ❑ |
| 3. Are sensitive to user needs? | ❑ | ❑ |
| 4. Is there a duplication of effort? | ❑ | ❑ |
| 5. Is your GIS integrated with other business systems? | ❑ | ❑ |
| 6. Do you have a team based approach? | ❑ | ❑ |
| 7. Are there clear departmental expectations? | ❑ | ❑ |
| 8. Do you have extensive GIS participation? | ❑ | ❑ |
| 9. Do you offer GIS training across the organization? | ❑ | ❑ |
| 10. Are your end users knowledgeable? | ❑ | ❑ |
| 11. Is there lack of participation in GIS? | ❑ | ❑ |
| 12. Do you have too many standards? | ❑ | ❑ |
| 13. Our your standards too rigid? | ❑ | ❑ |
| 14. Are you vulnerable to GIS funding? | ❑ | ❑ |
| 15. Do you have many different departmental GIS initiatives? | ❑ | ❑ |
| 16. Is there a lack of cooperation? | ❑ | ❑ |

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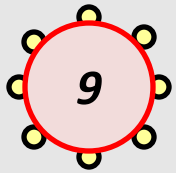
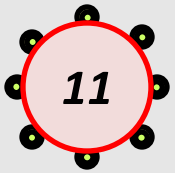
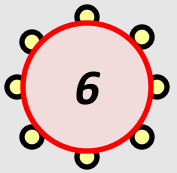
# Comparing the Benefits and Challenges

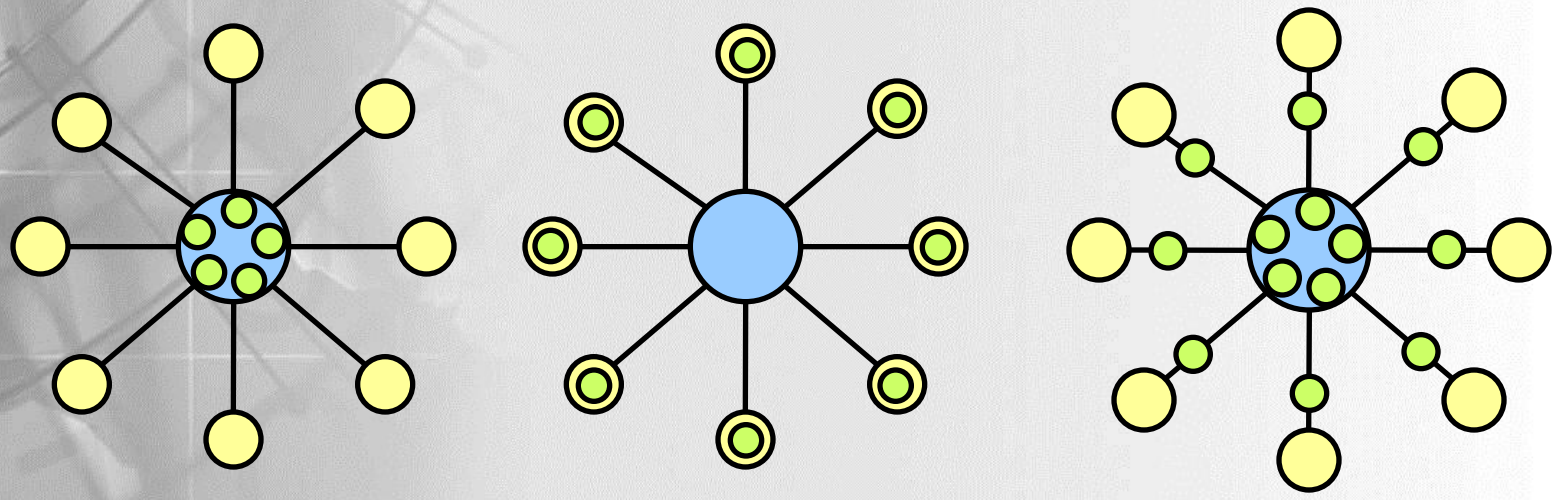
| Governance Model Comparison Chart | 15 | 12 | 17 |
|---|---|---|---|
| Potential Benefits to the Organization: | Centralized Model | Decentralized Model | Hybrid Model |
| Clearly Defined Roles Reducing Conflicts or Confusion About Service<br>• Level Direction and Goals<br>• Central Chain of Command (Top-Down Solutions)<br>• Clear and Straight Forward (I need a map)<br>• Quick Fully Informed Decision Making<br>• Predictable Format | 2 | 1 | 2 |
| Shared Costs Reduced<br>• Database Management and Maintenance<br>• Network and Server Resources<br>• Highly Specialized GIS Staff | 3 | 1 | 2 |
| Achieving Stakeholder Needs<br>• Departments Contribute GIS Input and Resources<br>• Sensitive to Department and User Needs | 1 | 3 | 2 |
| Reduction Duplication<br>• Data (Multiple Copies of Data)<br>• Effort (Data Creation and Maintenance)<br>• Project Initiatives and Expenses | 3 | 1 | 3 |
| Improved Data Sharing/Integration with Other Business Systems<br>• Systems<br>• Multi-Departmental Solutions<br>• Central Access Point | 2 | 1 | 3 |
| Institutional Legacy<br>• Team-Based Processes<br>• Cross-training of Employees<br>• Fail-Safe Critical GIS Functions and Tasks (beyond one person deep) | 3 | 2 | 3 |
| Clear Departmental Expectations<br>• Responsibilities<br>• Participation<br>• End-user knowledge | 1 | 3 | 2 |

# Comparing the Benefits and Challenges

| Governance Model Comparison Chart |  |  |  |
|---|---|---|---|
| Potential Challenges to the Organization: | Centralized Model | Decentralized Model | Hybrid Model |
| Potential for Too Many Standards (formal agreements proliferate)<br>• Too many meetings and committees<br>• May Require Extensive Negotiations<br>• Difficult to understand | 1 | 3 | 2 |
| Potential for too Rigid Standards (more time is devoted to following standards and the letter of the law and less to the original purpose of the program) | 3 | 1 | 1 |
| Funding Risks (if funding is suddenly cut)<br>• All the eggs are in one basket | 3 | 2 | 1 |
| Exclusion of Smaller Departments (if everyone is not equal)<br>• Funding<br>• Service<br>• Technology | 1 | 2 | 1 |
| Risk for Departmental System Isolation (everyone does their own thing)<br>• Solo Initiatives<br>• Lack Cooperation<br>• Risk of pull outs or refusals to participate | 1 | 3 | 1 |

# Which GIS governance model do you use?

# What challenges do you face?



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# Troubleshooting GIS Implementation

| Examples of Existing GIS Implementation/Governance Problems and Recommended Solutions | |
|---|---|
| 1. Lack of data standards | 1. Establish data standards and develop models that enforce data standards- The design of an enterprise GIS database will enforce data standards and require accurate data input. |
| 2. Lack of data policy | 2. A need for Quality Assurance / Quality Control QA/QC standards. |
| 3. GIS Infrastructure/ architectural problems/ poor wireless coverage | 3. The Strategic Implementation Plan will outline the recommendations for a phased implementation of ArcServer and effective use of SDE. |
| 4. GIS funding constraints | 4. An innovative Web based revenue generating solutions may be feasible for use by the municipalities. However, Quantify the Return on Investment of GIS technology (ROI) will secure a “buy-in by elected officials and Department heads (sell the technology). Other initiatives include improve committee participation, and apply for Public Safety Grants. Promote your organization. |
| 5. Only modest success with intergovernmental agreements and a data warehousing/ technical support initiative- funded by municipalities within the organization | 5. Visit municipalities and sell the idea of a consortium role- secure agreements and price for GIS services. |
| 6. Underutilization of GIS or departmental end-user participation | 6. Enforce User Group meetings, joint and active participation in newsletters, presentations, conferences, and articles for magazines. |

# Troubleshooting GIS Implementation

| Examples of Existing GIS Implementation/Governance Problems and Recommended Solutions | |
|---|---|
| 7. Insensitivity to users with design and functionality of GIS technology | 7. Demonstrate your listening skills and sensitivity to user needs by interviewing each department. User sensitivity and input will be required for the new Arc server ADF initiative. |
| 8. Timely technical support | 8. Develop performance metrics and have a single point of contact for departments. Develop a process where notification of support is complete; then if not solved- develop a process by which to notify directors. |
| 9. Redundant roles and functions- example: updating and maintaining the street centerlines | 9. Present a solution to consolidate and enforce a single business process and unit operations for the street center-line – also get buy-in from departments and clearly define roles and responsibilities. |
| 10. Multiple (GIS) systems and applications | 10. Migrate or live with duplication. Quantify the value of a consolidated licensing scheme. |
| 11. Working as a team | 11. Top down enforcement of participation in Steering Committee, Technical committee, and User Group. Team building exercised using outside consultant. |

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# Developing a Vision, Goals and Objectives

## Geographic Information System (GIS) – Vision, Goals & Objectives

**Vision**

Establish, maintain and effectively use accurate, reliable and consistent geo-spatial data while providing the materials, technology and people with necessary skills in spatial data handling to acquire, process, store and distribute geographic information for a wide variety of existing and anticipated future needs.

### Goals

| Goal | Goal | Goal | Goal | Goal |
|---|---|---|---|---|
| **Build and Maintain Reliable GIS Data** Your organization's GIS initiative should focus on accurate, consistent, and reliable geographic data | **Make GIS Data Accessible** The enterprise-wide GIS initiative should make data accessibility simple and easy for your organization's departments and citizens | **Integrate GIS Functionality with Existing Systems** Integration and interoperability of GIS with existing business processes and systems | **Train, Educate and Inform Your Staff** Improve the GIS knowledge base within departments | **Implement an Optimum GIS Governance Model** A clear and understandable strategy for the management and effective utilization of GIS |

### Objectives

| | | | | |
|---|---|---|---|---|
| • Objective: Establish a **centrally managed geographic database**<br>• Objective: Establish and implement a **system design** for enterprise GIS architecture<br>• Objective: Establish **standards and procedures** for the development and maintenance of geospatial data<br>• Objective: Establish data QA/QC **standardized methods** | • Objective: Establish effective **organization-wide access** to geospatial data<br>• Objective: Guide the **implementation of web based applications** that facilitate access by citizens and departments<br>• Objective: **Improve public access to online services**<br>• Objective: **Use GIS as a tool to provide timely and accurate data to elected officials** | • Objective: I**ntegrate GIS with existing business systems**<br>• Objective: Use **state of the art technologies** in order to ensure more seamless technology integration<br>• Objective: **Integrate GIS as fully as possible** and apply it in a simple but effective way<br>• Objective: Quantify the benefits of integrating GIS. | • Objective**: Implement a total governance model** for sharing ideas, discussions, and information about GIS and related topics like GPS, AVL, Mobile Solutions<br>• Objective: Provide GIS **training and educational opportunities** to all staff to empower them to fully utilize GIS knowledge<br>• Objective: Establish a **GIS user group network** within the organization to help facilitate growth | • Objective: Establish a **governance structure for review and coordination for all GIS initiatives**<br>• Objective: Develop an **on-going GIS program** to ensure efficient use of enterprise GIS resources<br>• Objective: **Develop intergovernmental agreement to facilitate data sharing and cooperation**<br>• Objective: Understand the **strength and weaknesses** of your governance model. |

# Recap and Discussion

- **Strategic I Tactical I Technical I Logistical**
- **Understanding Governance Models**
- **Your Situation?**
- **Understanding the Benefits and Challenges**
- **Troubleshooting**
- **A Key Ingredient: Developing a Vision, Goals and Objectives**