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

1. Introduction to the Governance of GIS
   • Strategic | Tactical | Technical | 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
“Implementation is a Management Problem, not a Technical Solution”
Healy 2004

“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 2002

“If the road’s not bumpy, you’re not traveling fast enough”
Mario Andretti 2000
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?
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?
### Developing a Vision

#### SWOT Analysis

**SWOT Analysis** is a strategic planning method used by GIS to evaluate the Strengths, Weaknesses, Opportunities, and Threats involved in the GIS implementation plan. It involves specifying the utilization of GIS technology for the City of Guapé project and identifying the internal and external factors that are favorable and unfavorable to achieve the City of Guapé’s objectives.

**Strengthes** - the characteristics that place the City of Guapé at an advantage for implementing an Enterprise Wide GIS

- **Weaknesses** - are characteristics which may arise for the City when implementing an Enterprise Wide GIS

- **Opportunities** - to improve organizational effectiveness and efficiency when the City implements an Enterprise Wide GIS and will show a Return on Investment (ROI)

- **Threats** - issues that the city may encounter that could threaten the implementation of an Enterprise Wide GIS.

GIS will utilize the SWOT analysis when developing the departmental needs assessments. The departments that we anticipate to participate include, but are not limited to the following:

<table>
<thead>
<tr>
<th>Community and Social Services</th>
<th>Planning and Building, Engineering and Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate and Human Resources</td>
<td>Building</td>
</tr>
<tr>
<td></td>
<td>Permit &amp; Zoning Services</td>
</tr>
<tr>
<td></td>
<td>Inspection Services</td>
</tr>
<tr>
<td>Financial Services</td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td>Transportation Planning &amp; Development Engineering</td>
</tr>
<tr>
<td></td>
<td>Infrastructure Planning, Design and Construction</td>
</tr>
<tr>
<td></td>
<td>Technical Services</td>
</tr>
<tr>
<td></td>
<td>Corporate Property Construction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Planning and Building, Engineering and Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building</td>
</tr>
<tr>
<td>Permit &amp; Zoning Services</td>
</tr>
<tr>
<td>Inspection Services</td>
</tr>
<tr>
<td>Engineering</td>
</tr>
<tr>
<td>Transportation Planning &amp; Development Engineering</td>
</tr>
<tr>
<td>Infrastructure Planning, Design and Construction</td>
</tr>
<tr>
<td>Technical Services</td>
</tr>
<tr>
<td>Corporate Property Construction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finance and Enterprise</th>
<th>Operations and Transits</th>
<th>Water Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Energy Initiative</td>
<td>By-law Compliance and Security</td>
<td>Water Supply</td>
</tr>
<tr>
<td>Economic Development</td>
<td>Emergency Services (not including Fire Prevention)</td>
<td>Water Supply</td>
</tr>
<tr>
<td></td>
<td>Fire Prevention</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dispatch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ambulance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emergency Management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Public Works</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Roads and Right of Ways</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Traffic and Parking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Forestry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transit</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water Information</th>
<th>Water Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conservation and Effluent Landscaping</td>
</tr>
<tr>
<td></td>
<td>New Water Supply Program</td>
</tr>
</tbody>
</table>

---

**Section 2: The Governance of GIS**

**GIS Managers Workshop**
What is a SWOT Analysis?

• Strategic planning method used to evaluate the following in regards to the GIS implementation plan
  • Strengths
  • Weaknesses
  • Opportunities
  • Threats

• Involves specifying the utilization of GIS technology

• Identifies the internal and external factors that are favorable and unfavorable to achieve goals and objectives
• What is working well?
• What do we do better than anyone else?
• What unique successes have we had?
• What do people in your department see as GIS strengths?

• Examples
  • High level executive commitment to using technology to solve problems
  • Basemap files already created
  • Widely used on-line mapping web site
  • Basic understanding and experience of GIS within multiple departments
  • Good network infrastructure
  • Reliable, usable existing data
  • Technology-friendly executive management
  • Progressive IT department
WEAKNESSES

• What could you improve?
• What should you avoid?
• What are people in your department likely to see as weaknesses?

• Examples
  • Missing potential of GIS to reduce costs and improve services because not aligned with city IT and business strategy
  • Limited advanced GIS technical skills among city staff
  • Existing hardware and software infrastructure outdated
  • No clear understanding of the potential benefits of GIS
  • Poor IT infrastructure
  • Little usable data
  • History of unsuccessful technology decisions
  • High employee and/or management turnover
OPPORTUNITIES

• What good opportunities can you spot?
• What interesting trends are you aware of?
• Examples
  • Create portfolio of GIS projects to improve services and reduce costs
  • Facilitate collaboration and knowledge sharing among departments
  • Contribute to green agenda of City
  • Good pilot project candidate
  • Data-sharing agreement
  • Organization-wide technology upgrade
  • “Photo ops”
  • Services to the Public Via the Internet
THREATS

• What obstacles do you face?
• Are quality standards or specifications for your job, products or services changing?
• Is changing GIS technology threatening your position?
• Could any of your weaknesses seriously threaten your ability to get your job done?

• Examples
  • Competition for funding from other new technology initiatives
  • Lack of buy in for GIS from selected executives
  • Budget shortfalls
  • Hardware crises
  • Management/staff turnover
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

What is Governance?

Governance is the act of governing. It relates to decisions that define expectations, grant power, or verify performance. It consists of either a separate process or part of management or leadership processes. These processes and systems are typically administered by a government.
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

**Section 2: The Governance of GIS**
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

---

**Decentralized 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 #1 - Orange County, CA

Population: 3,010,759

Section 2: The Governance of GIS
Industry Best Practices

- Clark Co, Nevada
- Cook County, IL
- Dallas County, TX
- Denver County, CO
- King County, WA
- Los Angeles County, CA
- Multnomah County, OR
- Riverside County, CO
- Sacramento County, CA
- Salt Lake County, UT
- San Bernadino County, CA
- San Diego County, CA

Section 2: The Governance of GIS
Industry Best Practices

Is There a GIS Authority?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Industry Best Practices

What Department is in Charge of Central GIS?

- IT: 5
- Transportation and Land Management: 1
- GIS Department: 3
- Public Works: 2
- None: 2

Section 2: The Governance of GIS
Do You have a Steering or Management Committee?

- Yes: 7
- No: 6
Industry Best Practices

Using ArcGIS Server

- Yes: 3
- No: 10
Case Study #2 – City of Hagerstown, MD

Section 2: The Governance of GIS
• **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

**Section 2: The Governance of GIS**
### Projected GIS Software Tier Level Users by Department

<table>
<thead>
<tr>
<th>Department</th>
<th>Tier 1 Flagship Users</th>
<th>Tier 2 Analytical Users</th>
<th>Tier 3 Browser Users</th>
<th>Total Projected GIS Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Administrator</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>City Clerk</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Code Administrator</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Community Affairs</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Community Development</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Economic Development</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Engineering</td>
<td>4</td>
<td>4</td>
<td>14</td>
<td>22</td>
</tr>
<tr>
<td>Finance</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Fire</td>
<td>2</td>
<td>5</td>
<td>76</td>
<td>83</td>
</tr>
<tr>
<td>Human Resources</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Information Technology</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Light</td>
<td>3</td>
<td>3</td>
<td>41</td>
<td>47</td>
</tr>
<tr>
<td>Parks and Recreation</td>
<td>0</td>
<td>0</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Planning</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Police</td>
<td>0</td>
<td>2</td>
<td>150</td>
<td>152</td>
</tr>
<tr>
<td>Public Works</td>
<td>0</td>
<td>4</td>
<td>30</td>
<td>34</td>
</tr>
<tr>
<td>Purchasing</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Sewer Operations</td>
<td>2</td>
<td>5</td>
<td>20</td>
<td>27</td>
</tr>
<tr>
<td>Water Operations</td>
<td>2</td>
<td>6</td>
<td>48</td>
<td>56</td>
</tr>
<tr>
<td><strong>Totals Users</strong></td>
<td><strong>15</strong></td>
<td><strong>31</strong></td>
<td><strong>467</strong></td>
<td><strong>513</strong></td>
</tr>
</tbody>
</table>

### Tiers of GIS Users

<table>
<thead>
<tr>
<th>Group</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>✅ GIS Administration</td>
</tr>
<tr>
<td></td>
<td>✅ Data maintenance</td>
</tr>
<tr>
<td></td>
<td>✅ Data conversion, creation</td>
</tr>
<tr>
<td></td>
<td>✅ Spatial Data Management</td>
</tr>
<tr>
<td></td>
<td>✅ Technical support</td>
</tr>
<tr>
<td></td>
<td>✅ Coordination</td>
</tr>
<tr>
<td>Tier 2</td>
<td>✅ Data Maintenance</td>
</tr>
<tr>
<td></td>
<td>✅ Analytical functions/Geoprocessing</td>
</tr>
<tr>
<td></td>
<td>✅ Complex queries</td>
</tr>
<tr>
<td></td>
<td>✅ Modeling</td>
</tr>
<tr>
<td></td>
<td>✅ Use of desktop extensions</td>
</tr>
<tr>
<td></td>
<td>✅ High quality map production</td>
</tr>
<tr>
<td>Tier 3</td>
<td>✅ Browsing/Look-up</td>
</tr>
<tr>
<td></td>
<td>✅ Standard reports</td>
</tr>
<tr>
<td></td>
<td>✅ Simple query</td>
</tr>
<tr>
<td></td>
<td>✅ Map production</td>
</tr>
</tbody>
</table>

---

**Section 2: 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
Section 2: The Governance of GIS

Describe Your Situation?

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?
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
## Comparing the Benefits and Challenges

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

<table>
<thead>
<tr>
<th>Potential Challenges to the Organization:</th>
<th>Centralized Model</th>
<th>Decentralized Model</th>
<th>Hybrid Model</th>
</tr>
</thead>
</table>
| Potential for Too Many Standards (formal agreements proliferate)  
  - Too many meetings and committees  
  - May Require Extensive Negotiations  
  - Difficult to understand | | | |
| 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) | | | |
| Funding Risks (if funding is suddenly cut)  
  - All the eggs are in one basket | | | |
| Exclusion of Smaller Departments (if everyone is not equal)  
  - Funding  
  - Service  
  - Technology | | | |
| Risk for Departmental System Isolation (everyone does their own thing)  
  - Solo Initiatives  
  - Lack Cooperation  
  - Risk of pull outs or refusals to participate | | | |
Benefits vs. Challenges of Centralized (Corporate) Model

**Benefits**
- Clearly defined roles from a central chain of command
- Standard software and maintenance procedures
- Shared overhead costs
- Decisive and straightforward direction
- Solutions to operational problems are implemented from the top down
- Greater operational efficiency
- Reduction in data duplication
- Many integration opportunities with other business systems
- Central access point for data sharing
- Team-based processes, critical functions are beyond one person deep
- Spatial information maintenance improves because users are well trained and devoted to specialized tasks

**Challenges**
- Inflexible decision making
- Maintenance procedures and standards becoming too rigid
- Poorly funded implementations or budget cuts disrupting the whole system
- Lack of end-user input and design in the planning process
- Smaller agency may not know what to ask for from the central agency since they don’t have any GIS experience
- Poor centralized leadership or direction, with the top down design, could lead to undesired results
Benefits vs. Challenges of Decentralized Model

**Benefits**
- Departments can guide GIS activity independently of organizational initiatives
- Bottom-up decision making
- Line departments are more sensitive to user needs since they are in close proximity to the developers
- Clear lines of responsibility within the department
- Multi-tasking is facilitated
- Multiple funding sources for large projects and initiatives
- Sharing resources and costs between two departments or sub-divisions
- Willingness for staff to help each other

**Challenges**
- Requires strong communications, paperwork, and bureaucracy to forge agreements between multiple agencies
- Redundant roles and functions
- Guided by individuals rather than teams
- Multiple GIS systems and applications
- Databases and skills are often fragmented
- Overhead costs are not shared
  - Redundant effort in multiple departments
  - Multiple copies of data being edited and stored in several locations
- Difficult to standardize software
- Poor data sharing and isolated databases
- Staff must wear multiple hats and may sacrifice GIS competency
- Staff compete with each other for funding or recognition instead of working together

Section 2: The Governance of GIS
## Benefits vs. Challenges of Hybrid Model

### Benefits

- **Shared Costs**
  - Database management and maintenance
  - Network and server resources
  - Highly specialized GIS staff

- **Improved efficiency**
  - Integrated multi-departmental solutions can be implemented
  - Central data warehouse
  - Team-based processes (critical functions are no longer one person deep)
  - Improved data quality
  - Departmental ownership of relevant datasets is maintained
  - Automated validation routines
  - Real-time distribution of data
  - Improved end-user support

### Challenges

- Roles are not clearly defined making expectations unclear (dual accountability)
- Unnecessary bureaucracy from too many standards or too many agreements and negotiations
- No clear direction from leadership, stakeholders end-up setting their own priorities and looking out for their own needs
- Insufficient funding, critical functions could be cut by a single department hurting the remainder of the enterprise
- Smaller departments with small staffs may be left out of the planning process and miss out on opportunities to participate
Which GIS governance model do you use?

What challenges do you face?
1. Introduction to the Governance of GIS
   • Strategic  |  Tactical  |  Technical  |  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
### Examples of Existing GIS Implementation/Governance Problems and Recommended Solutions

<table>
<thead>
<tr>
<th>Problem Description</th>
<th>Recommended Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lack of data standards</td>
<td>Develop models that enforce data standards. The design of an enterprise GIS database will enforce data standards and require accurate data input.</td>
</tr>
<tr>
<td>2. Lack of data policy</td>
<td>Implement Quality Assurance / Quality Control (QA/QC) standards.</td>
</tr>
<tr>
<td>3. GIS Infrastructure/ architectural problems/ poor wireless coverage</td>
<td>The Strategic Implementation Plan will outline the recommendations for a phased implementation of ArcServer and effective use of SDE.</td>
</tr>
<tr>
<td>4. GIS funding constraints</td>
<td>An innovative Web-based revenue-generating solution may be feasible for use by the municipality. However, quantifying the Return on Investment (ROI) of GIS technology will secure a “buy-in” by elected officials and Department heads. Other initiatives include improving committee participation and applying for Public Safety Grants.</td>
</tr>
<tr>
<td>5. Only modest success with intergovernmental agreements and a data warehousing/ technical support initiative- funded by municipalities within the organization</td>
<td>Visit municipalities and sell the idea of a consortium role—secure agreements and price for GIS services.</td>
</tr>
<tr>
<td>6. Underutilization of GIS or departmental end-user participation</td>
<td>Enforce User Group meetings, joint and active participation in newsletters, presentations, conferences, and articles for magazines.</td>
</tr>
</tbody>
</table>

*Section 2: The Governance of GIS*
### Examples of Existing GIS Implementation/Governance Problems and Recommended Solutions

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution/Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Insensitivity to users with design and functionality of GIS technology</td>
<td>Demonstrate your listening skills and sensitivity to user needs by interviewing each department. Users' sensitivity and input will be required for the new Arc server ADF initiative.</td>
</tr>
<tr>
<td>8. Timely technical support</td>
<td>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.</td>
</tr>
<tr>
<td>9. Redundant roles and functions- example: updating and maintaining the street centerlines</td>
<td>Present a solution to consolidate and enforce a single business process and unit operations for the street centerline—also get buy-in from departments and clearly define roles and responsibilities.</td>
</tr>
<tr>
<td>10. Multiple (GIS) systems and applications</td>
<td>Migrate or live with duplication. Quantify the value of a consolidated licensing scheme.</td>
</tr>
</tbody>
</table>
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
## 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

<table>
<thead>
<tr>
<th>Goal</th>
<th>Vision</th>
<th>Goals</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Build and Maintain Reliable GIS Data</td>
<td>The enterprise-wide GIS initiative should make data accessibility simple and easy for your organization’s departments and citizens</td>
<td>Train, Educate and Inform Your Staff</td>
<td>Improve the GIS knowledge base within departments</td>
</tr>
<tr>
<td>Make GIS Data Accessible</td>
<td>Integrate GIS Functionality with Existing Systems</td>
<td>Implement an Optimum GIS Governance Model</td>
<td>A clear and understandable strategy for the management and effective utilization of GIS</td>
</tr>
</tbody>
</table>

### Objectives

- Objective: Establish a centrally managed geographic database
- Objective: Establish and implement a system design for enterprise GIS architecture
- Objective: Establish standards and procedures for the development and maintenance of geospatial data
- Objective: Establish QA/QC standardized methods
- Objective: Establish effective organization-wide access to geospatial data
- Objective: Guide the implementation of web based applications that facilitate access by citizens and departments
- Objective: Improve public access to online services
- Objective: Use GIS as a tool to provide timely and accurate data to elected officials
- Objective: Integrate GIS with existing business systems
- Objective: Use state of the art technologies in order to ensure more seamless technology integration
- Objective: Integrate GIS as fully as possible and apply it in a simple but effective way
- 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
- Objective: Provide GIS training and educational opportunities to all staff to empower them to fully utilize GIS knowledge
- Objective: Develop intergovernmental agreement to facilitate data sharing and cooperation
- 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

Section 2: The Governance of GIS