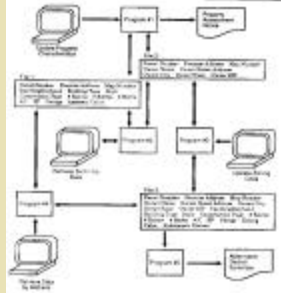


- ### TRANSACTION-BASED SYSTEM
- ◆ Popular because
- Efficient in processing information
 - Easy to cost-justify
 - Quick to develop
 - Easy to use

- ### TRANSACTION-BASED SYSTEM
- ◆ Becoming a problem
- Computerized data useful for many other functions
 - Managers asking for modifications
 - Design based on single function
 - Rigid structure
 - Difficult to change to accommodate new functions
 - Modifications complex and time consuming
 - More time changing existing system than developing new ones

EXAMPLE TRANSACTION-BASED TAX ASSESSMENT SYSTEM



DATA-BASE SOLUTION

- ◆ Managers realized that data are valuable to share
- ◆ Data-base management systems (DBMS) make data independent of
 - Programs
 - Applications
 - Systems used

DBMS

- ◆ Reduce program maintenance significantly
 - Only one field in data base needs to be changed in ZIP Code example
 - Only programs using Zip Code need to be changed
- ◆ Enhance data sharing
 - Information needs based on an organization-wide scale rather than individual office
 - Promotes logical linking of data from diverse functions

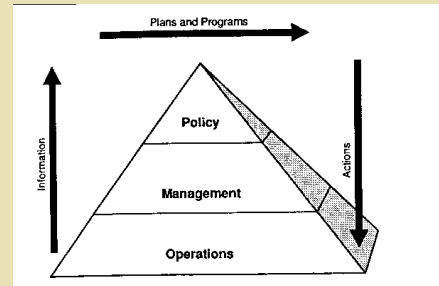
DBMS

- ◆ Expensive
- ◆ Time-consuming to develop
- ◆ Require high level of sophistication to use
- ◆ Data modeling techniques now used by many organizations
 - Concentrate on information needs of whole organization – not data processing needs of individual functions

MAJOR FUNCTION OF AN ORGANIZATION

- ◆ Operations
 - Producing or delivering the product or service
- ◆ Management
 - Controlling organization's resources need to run its operation
- ◆ Policy
 - Establishing long-term, overall direction of the organization

URBAN INFORMATION PYRAMID



URBAN INFORMATION PYRAMID

- ◆ Three-dimensional because information is behind each level
- ◆ Information is integrated
 - Horizontal data integration – data combined with other information to support operations
 - Vertical integration – data summarized as it flows up organization

SUCCESSFUL INFORMATION SYSTEMS

- ◆ Based on data needs of operations
 - Good decisions require good information
 - If out of data or inaccurate – jobs more difficult to perform
- ◆ Managers generally need summary information of operational data
- ◆ At policy level, information is less detailed but more integration, aggregation, and flexibility

BUILDING INSPECTION EXAMPLE

- ◆ **Operations**
 - Inspections
 - What are the violations?
 - Re-inspections
 - Which homes require re-inspections
 - Enforcement
 - How long have violations been outstanding
- ◆ **Management**
 - Budgeting
 - How many inspectors required to inspect X number of homes
 - Performance evaluation
 - Are all violations being re-inspected?
 - How many re-inspections are required
 - How long is compliance time?
 - Housing program development
 - Where are high incidents of violation
 - What percentage have serious defects
 - What would it cost to repair them
 - Workload balancing
 - How large should inspection district be?

URBAN INFORMATION PYRAMID

- ◆ **Policy**
 - City budget process
 - Community development program approval
 - Housing code ordinance changes
- ◆ **3 levels of pyramid using same data for 3 different functional uses**
- ◆ **Contains standards and flexibility so can be used at all levels**
- ◆ **Features**
 - Accuracy in detailed level
 - Currency – inspectors depend on it to do job
 - Efficiency – less data redundancy
 - Durability – needed by so many people

HOUSING CODE VIOLATION

Policy:
Citywide Concerns Which Direct Services Over Multi-year Periods.
• City Budget
• Housing Code Ordinance Change
• Community Development Program Approval

Management:
Departmental Concerns Which Affect the Ability of the Department to Carry Out its Mission.
• Budget Preparation
• Inspector Performance Monitoring
• Workload Balancing

Operations:
Bureau or Divisional Concerns Which Result in Specific Tasks
• Vacation Homes
• Inspector Work Order Reports

System Information Flow

PROPERTY RECORDS SYSTEM

Policy:
Citywide Concerns Which Direct Services Over Multi-year Periods.
• Vacant Land Studies for Economic Development
• Tax Assessment Change Statistics by Aldermanic District

Management:
Departmental Concerns Which Affect the Ability of the Department to Carry Out its Mission.
• Housing Unit Counts for Sewer Service charge Rates
• Assessment District Boundary Changes

Operations:
Bureau or Divisional Concerns Which Result in Specific Tasks
• Tax Assessments
• Mailing Labels of Property Owners

System Information Flow

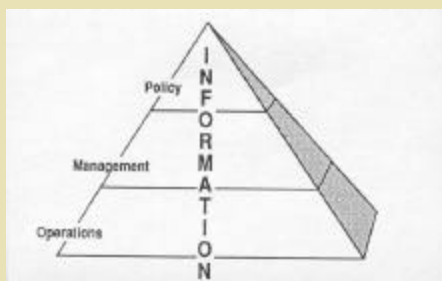
INEFFECTIVE SYSTEMS

- ◆ Designed only for
 - operational activities
 - Data created outside normal operating activities
 - Do not have support needed during times of high workload demand or when budgets get trimmed
 - management or policy purposes
 - Data cannot be summarized or integrated with other data systems for use at higher levels of organization

SUCCESSFUL SYSTEMS

- ◆ Strive to develop systems that
 - Improve daily operation of government
 - Can be used by managers and policy-makers to improve decision making, planning, policy analysis
- ◆ Must understand need of all levels of government
- ◆ Must design system with strict data standards and flexible use

SUCCESSFUL SYSTEMS



GOALS A GIS STRIVES TO MEET

- ◆ Increased productivity in utilizing maps and geographic information
- ◆ Improved geographic data management
- ◆ Better strategic ways to use geographic data to support decision making.