Infrastructure Asset Management

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Infrastructure Asset Management

“You can’t afford not to do it”

- Description of Geographic Information Systems (GIS)
- Planning to manage your assets
- Identifying assets to inventory
- Strategies to perform asset inventory
- Requirements of the asset management software
- Costs associated with Implementation
- City perspective
What is GIS?

GIS is an application that:

- Collects geographic feature data
- Stores geographic feature data
- Analyzes geographic data
- Maps & reports of geographic data
Planning to Manage Your Assets

• Identify and document the assets you need to manage (requirements)
  – Fed & state reporting requirements
  – City standards
  – Safety requirements
  – Ease of job duties

• Identify and document what things you need to know about each asset (requirements)
  – Fixed information (things that typically don’t change)
    • What type of asset
    • When asset was placed
    • Who placed the asset in the ground
    • Who designed the asset
    • Etc.
Planning to Manage Your Assets

- Identify and document what things you need to know about each asset (requirements)
  - Changing or continuing information
    - When was asset inspected
    - Inspection information
    - Condition rating of asset
    - When was the asset maintained
    - Pass regulatory requirements
    - Etc.
- Use requirements to identify Asset Management Software solutions
- Do all this in house or with consultant’s assistance
- Issue RFP and go with solution that meets requirements and budget
Assets to Inventory

- Fixed assets with fixed attributes & Unique IDs

- Structures
  - Location
  - Type (MS4?)
  - Rim, inverts etc.

- Pipes
  - Size/length
  - Material
  - Inverts, etc.

- Ponds
  - Location/shape
  - Type (dry/wet)
  - Water levels
Assets to Inventory
Assets to Inventory

- Fixed assets with fixed attributes & Unique IDs

- Storm Sewer
- Sanitary Sewer
- Asset Management System

- Structures
  - Location
  - Type
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Assets to Inventory
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- Storm Sewer
- Sanitary Sewer
- Water System

- Asset Management System

• Structures
  - Location
  - Type
  - Top nut elev.
Assets to Inventory
Assets to Inventory

- Fixed assets with fixed attributes & Unique IDs
  - Structures
    - Location
    - Type
    - Top nut elev.
  - Pipes
    - Size/length
    - Material
    - Install date
Assets to Inventory

- Fixed assets with fixed attributes & Unique IDs

- Streets
  - Location of CL
  - Lengths/widths
  - Sections
  - Pavement types
  - R/L add. range
  - Lanes
  - Speed limits
  - To-from cross streets
Assets to Inventory

• Fixed assets with fixed attributes & Unique IDs

• Streets
  o Location of CL
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  o R/L add. range
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  o Speed limits
  o To-from cross streets
Assets to Inventory

• Fixed assets with fixed attributes & Unique IDs
  - Sign Posts
    - Location
    - Type
    - # of Signs
  - Signs
    - Post
    - Category
    - Text on sign
  - Lights
    - Location
    - Type
    - Bulb type
    - Signs?
Assets to Inventory

• Fixed assets with fixed attributes & Unique IDs
  • Sign Posts
    o Location
    o Type
    o # of Signs
  • Signs
    o Post
    o Category
    o Text on sign
  • Lights
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Assets to Inventory

• Fixed assets with fixed attributes & Unique IDs

• Parks & Rec
  o Location
  o Type
  o Amenities
Assets to Inventory

• Fixed assets with fixed attributes & Unique IDs
  • Parks & Rec
    ○ Location
    ○ Type
    ○ Amenities
Assets to Inventory

• Fixed assets with fixed attributes & Unique IDs
  • Parks & Rec
    o Location
    o Type
    o Amenities
  • Buildings
    o Location
    o Type
    o Amenities
Assets to Inventory

• Fixed assets with fixed attributes & Unique IDs
  • Parks & Rec
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Assets to Inventory

- Fixed assets with fixed attributes & Unique IDs
  - Parks & Rec
    - Location
    - Type
    - Amenities
  - Buildings
    - Location
    - Type
    - Amenities
  - Trees
    - Location
    - Species
    - Size
    - Canopy (D)
Assets to Inventory

- Fixed assets with fixed attributes & Unique IDs
  - Parks & Rec
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Collecting the Asset Information

Existing assets in the ground

- Field visit with measuring devices
  - Survey equipment with data collectors
  - GPS equipment with data collector
- Use record plans (If they exist)
- Digitizing from aerial photos
- Combination of all of the above
- Hire a consultant
Collecting the Asset Information

Assets to be Built

• Field visit with measuring devices after construction
  – Survey equipment with data collectors
  – GPS equipment with data collector

• GIS compatible record plans from developers and consulting engineers

• Requirement in the project scope
Requirements of the Asset Management Software

- Store asset inventory data
- Work seamlessly with GIS applications
- Manage the data
  - Add new data when asset goes in the ground
  - Update data when things change (moved or changed)
  - Update data when errors are identified
- Search & retrieval functions
- Generate maps & reports
- Accessible by those that need
- Manage work assignments & maintenance activities
Costs

• Inventory of each asset
  – Quantity of asset
  – Accessibility of asset
  – Amount of data per asset
  – Estimate time per asset
  – Level of positional accuracy needed

• Cost savings for Inventory
  – Capture as much as you can when in the field (Signs & trees)
  – Utilize existing data
  – Level of accuracy needed
  – Use interns
Costs

- Software costs depend on the system that fits your needs
  - Stand alone systems depending on various types of assets
    $5,000 - $20,000+
  - Client – server systems
    - Server software depending on amount of functionality range from $10,000 - $250,000+ with annual maintenance fee
    - Hardware costs range from $6,000-$16,000+ (replace every 4-5 years)
    - Backup solution – offsite storage range from $100-$500+ a month depending on amount of data
    - Client software – range from free - $1,500+ per computer plus annual maintenance fees.
    - Only works on computers with the client software
Costs

• Software costs depend on the system that fits your needs
  – Web enabled system – **Maintained by you**
    • Same costs for servers in client – server scenario
    • Same costs for hardware
    • Same costs for backups
    • Same annual maintenance fees
  – Web Hosted (ASP) – **Monthly or Yearly Fee**
    – No client software
    – Accessed on any internet connected device
• Budget for ongoing maintenance – always
  – People
  – Resources
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A City Perspective