# Empowering GIS to Manage Public Works, Utilities, and Permitting

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**Cityworks | Azteca Systems**

# Terminology

- GIS-Centric
- Computerized Maintenance Management System (CMMS)
- Public Asset Management System (also known as AMS)

# The Makings of a Public Asset Management System

- GIS
  - A GIS is a system of hardware, software, and data used to create, store, edit, manipulate, and analyze information within a geographic area
  - GIS has become a predominant information system within many local governments, public works, and utilities agencies
  - GIS is used to create a model of the real world systems and how these systems interact
  - The majority of CMMS software leverage the GIS

# Taking a Look Inside the CMMS Database

- Work History on Assets
- Code History on Land
- Licensing History on Buildings
- Service Requests on Assets
- Inspection History on Assets and Buildings
- Future Work Planned on Assets
- Labor/Material/Equipment Costs on Work Orders
- Constituent Database (could be integrated from billing/land ownership database)

# CMMS, AMS, GIS? Let's Break it down.

- Local governments and utilities need to manage their assets
- A GIS-centric design meets these needs by layering assets with maintenance management and in some cases permitting/licensing tools on top of the ArcGIS platform, fully utilizing the Geodatabase as the asset repository or Asset Management System (AMS).
- This unique solution allows users to not only leverage their investment in GIS, but extend the capabilities of ArcGIS into their day-to-day business processes.
- This also provides an environment where everyone has the ability to touch GIS as part of an enterprise workflow.

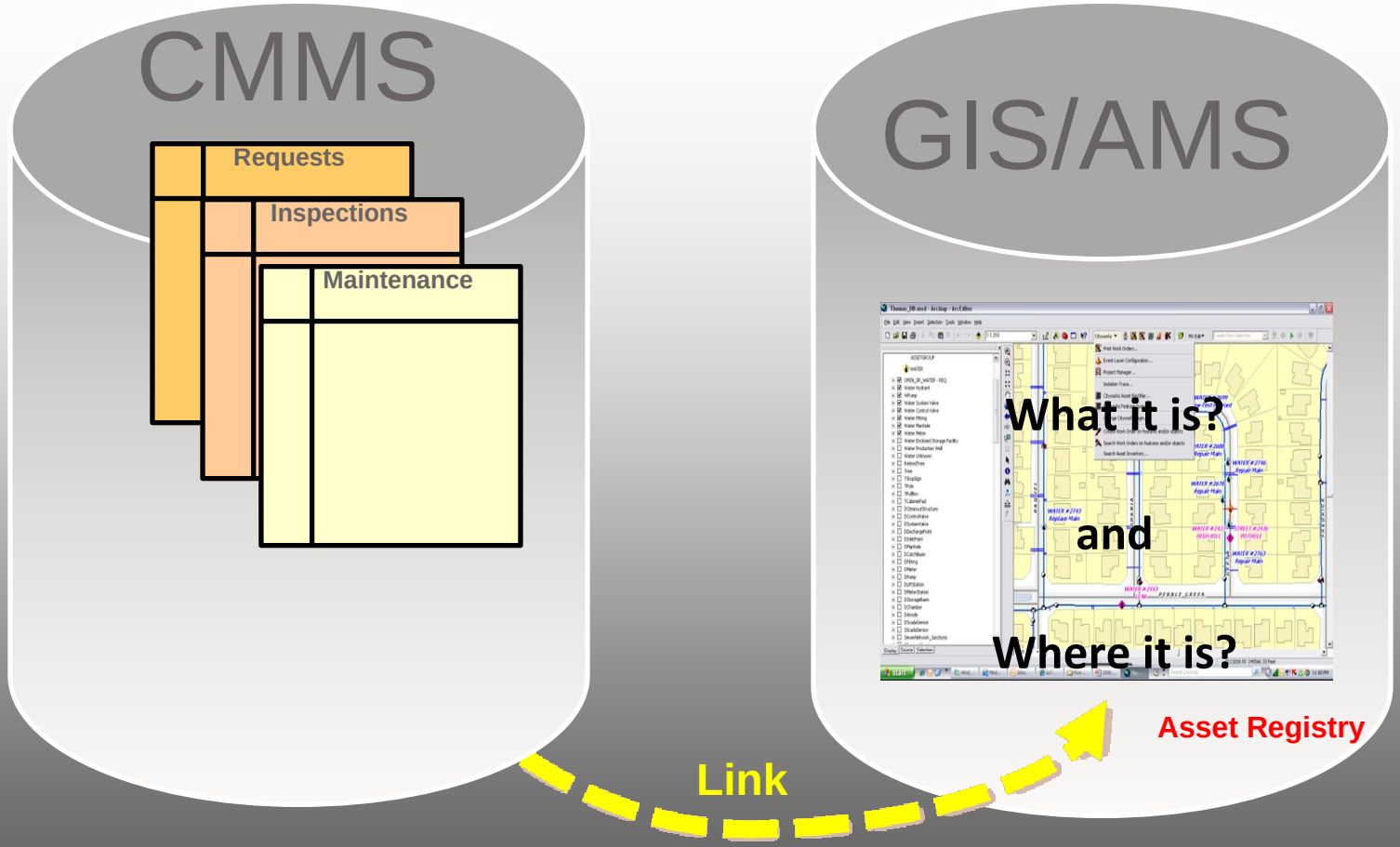
# Like Two Peas in a Pod

- Introduction of Computers has off-loaded many tedious tasks associated with book keeping/accounting/etc.
- Today computers have grown into nearly every facet of human life.  This benefit has been measured and demonstrated.
- Today's business cannot function without computer technology
- Maintenance Management has been around since long before the computer age and GIS
- Since Maintenance Management works with assets that have x,y, values, why not merge with GIS?

# Who Should be Interested and Why?

- **GIS – Centric Organizations**
- **Who?**
  - Cities, Counties, State Agencies, Private Utilities, Airports
- **Asset Groups**
  - Water, Wastewater, Stormwater, Streets, Traffic, Gas, Electric, Parks/Rec, Facilities, Parcels, & Land
  - Even internally….IT Departments
- **Drivers**
  - Many Different Regulations Requirements, (CMOM, Sign Reflectivity, etc)
  - Efficiencies Gained
  - ROI in the way of coordination, communication, and access to data is now wide open and available
  - FEMA responses

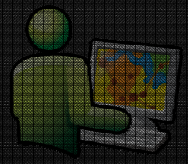
# Relationship of GIS to CMMS



# GIS-Centric Patterns of Business

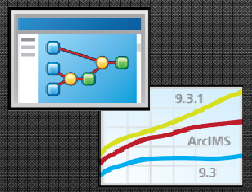
**Asset Management**

Collect, Organize, & Exchange Data



**Planning & Analysis**

Transform Data Into Actionable Information

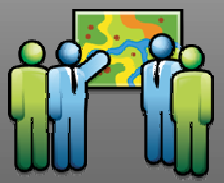



**Field Mobility**

Get Information Into and Out of the Field

**Operational Awareness**

Disseminate Information Where and When it is Needed



**Citizen Engagement**

Get Feedback and Make Informed Decisions

# Primary Questions of Asset Management

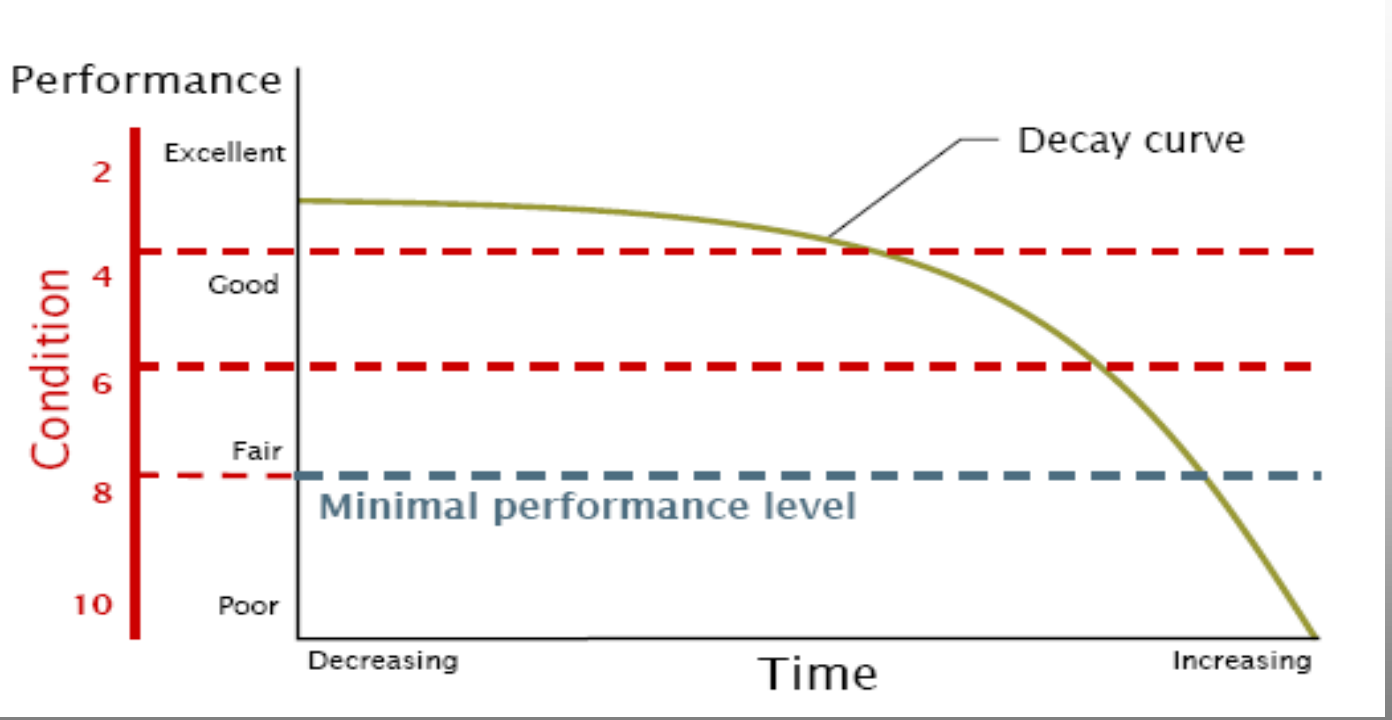
1. What is the current state of assets?
2. What is the required level of service (LOS) of my assets?
3. Which assets are critical?
4. What are the best O&M and CIP strategies?
5. What is the best long-term funding strategy?

# Asset and Maintenance Management

- Service Request
- Work Order
- Activities & Tasks
- Tests & Inspections (CCTV)
- Metrics (SCADA, Metering, Telemetry, Mileage, etc)
- Permitting
- Budgeting
- Search & Reporting

# Planning and Analysis

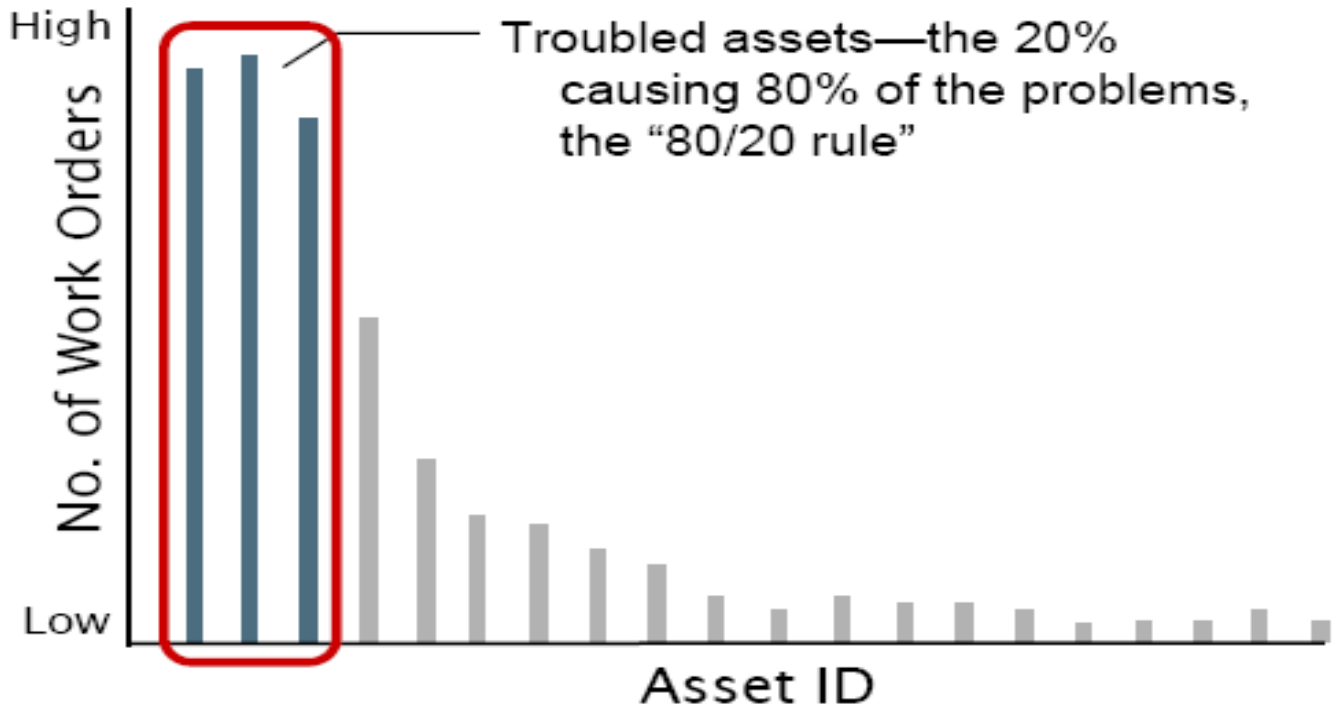
## Age-Based Condition Assessment



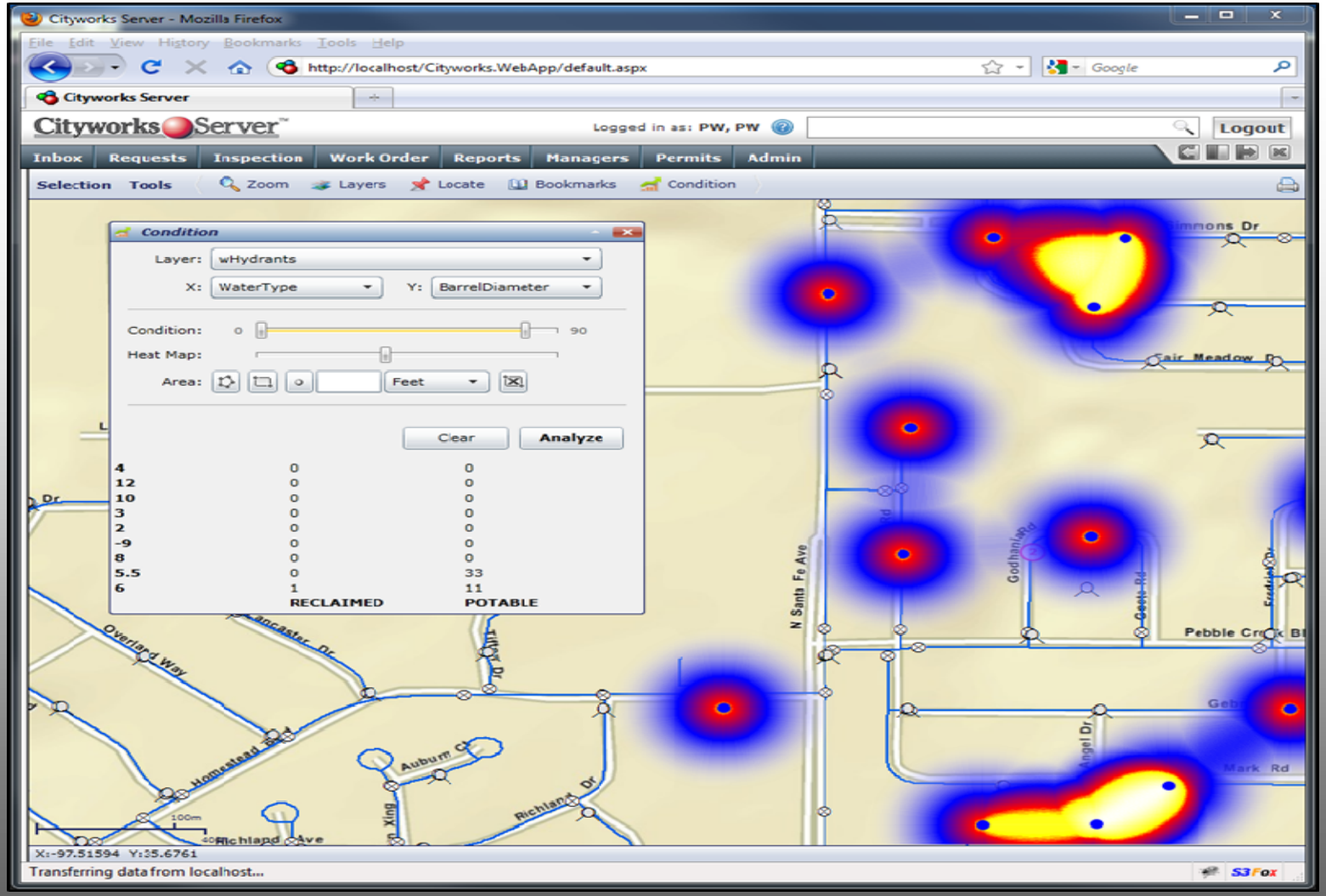

*"Scary Number" Budget Planning*

# Maintenance Activity Assessment

Do we know which are our problem assets?



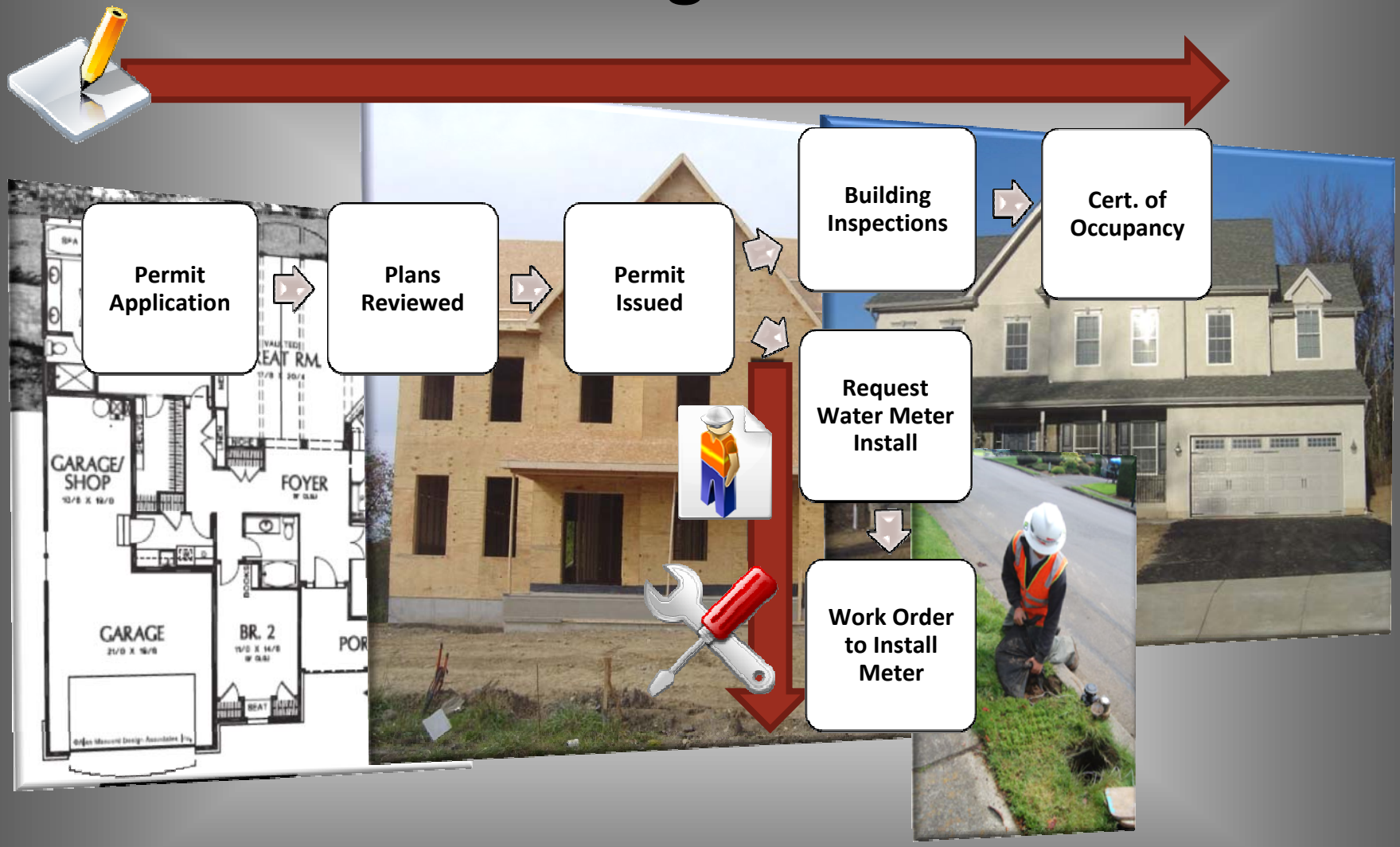
# GIS Analysis of Maintenance



# The Concept of a Public Asset Management System

# Code Enforcement
# - Vegetation Overgrowth

# Residential Building Permit



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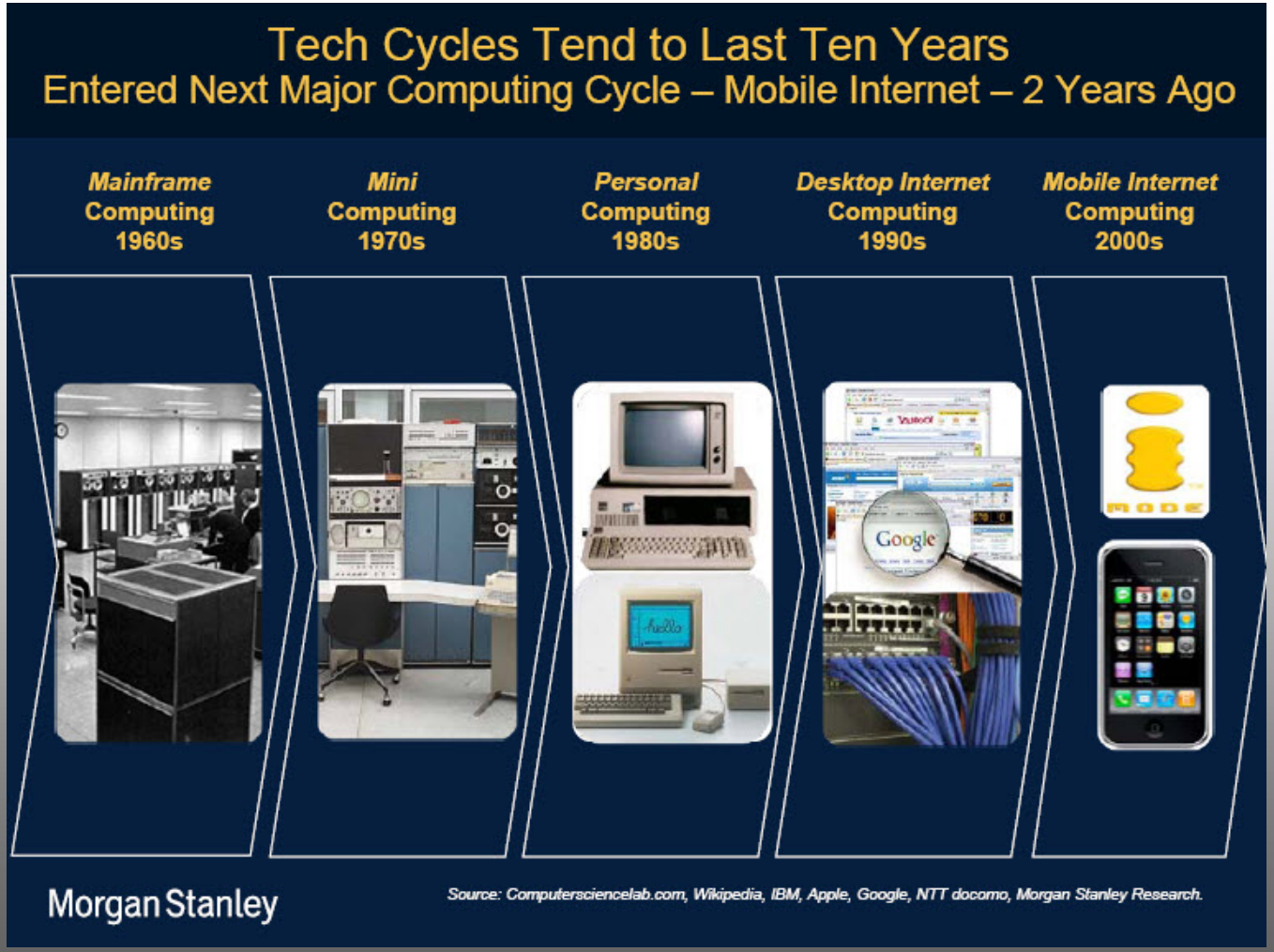

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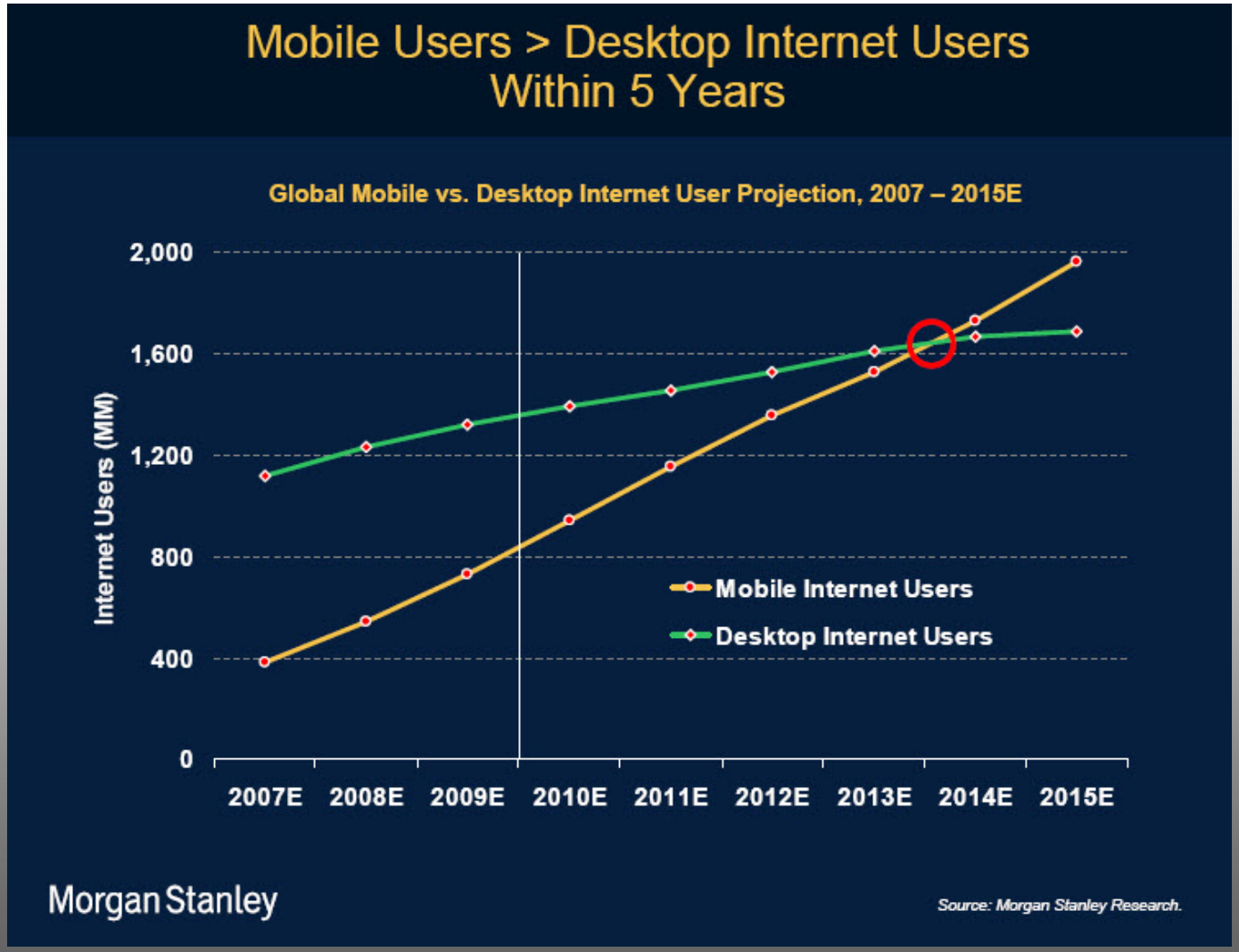


# Mobile Devices

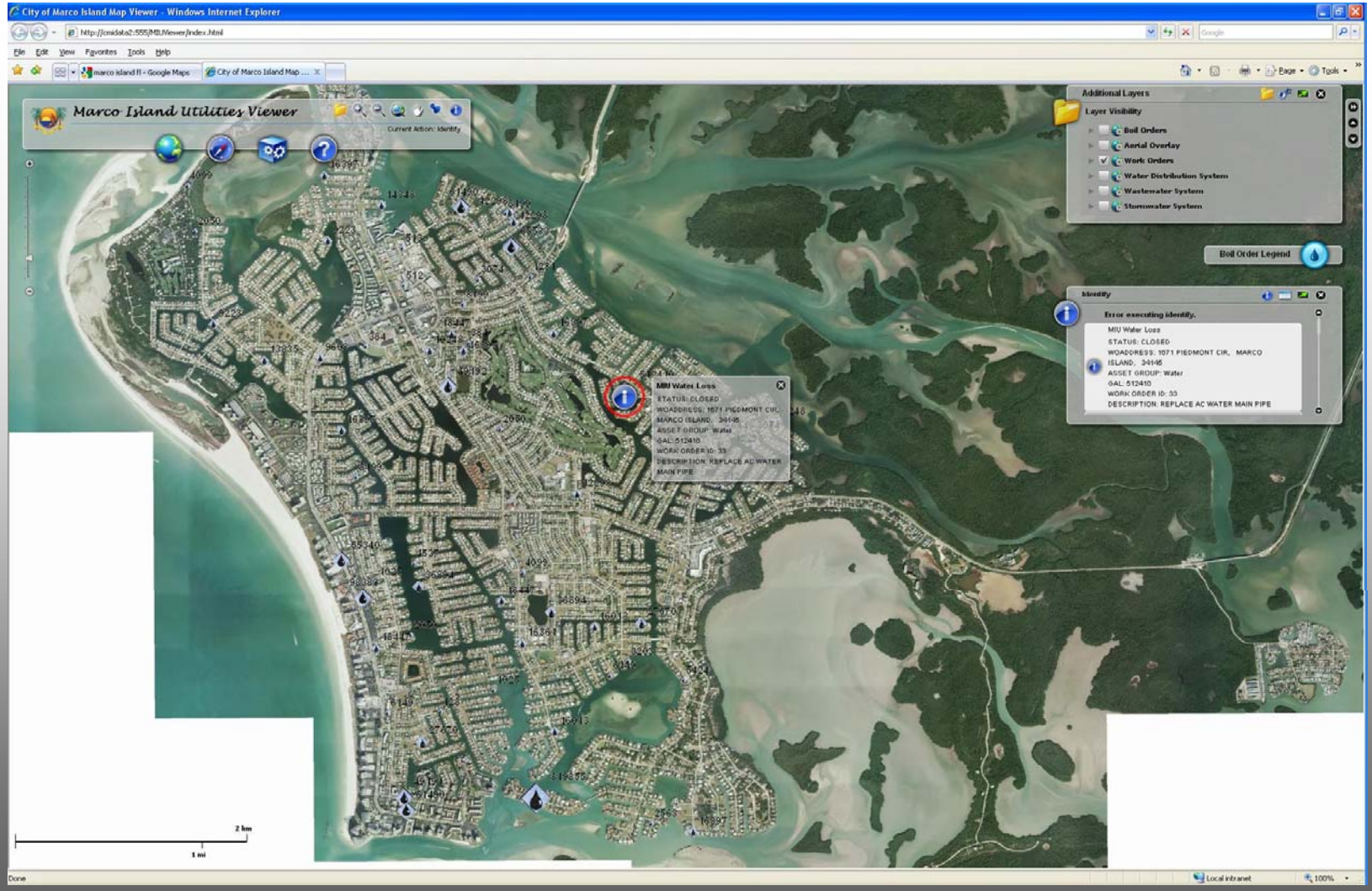
# Cloud Computing

- More work done off-site (in the cloud)
- Enables greater hardware versatility
- Smaller IT footprint
- In the event of an emergency, your cloud environment is still running in a different location(s)

# Operational Awareness

- Leveraging data mining abilities of your GIS and CMMS allows you to create charts or informative data driven maps instead of lengthy reports.
- What used to take hours, or days to complete now takes minutes.
- Easy to digest data
- Quickly you can view saved searches in a dashboard environment.

# Dashboards


City of Marco Island Map Viewer - Windows Internet Explorer
Marco Island Utilities Viewer
Additional Layers
Layer Visibility
Boil Orders
Aerial Overlay
Work Orders
Water Distribution System
Wastewater System
Stormwater System
Boil Order Legend
Identify
Error executing identify.
MIU Water Loss
STATUS: CLOSED
WOADDRESS: 1071 PIEDMONT CIR, MARCO ISLAND, 34146
ASSET GROUP: Water
GAL: 512410
WORK ORDER ID: 33
DESCRIPTION: REPLACE AC WATER MAIN PIPE
2 km
1 mi

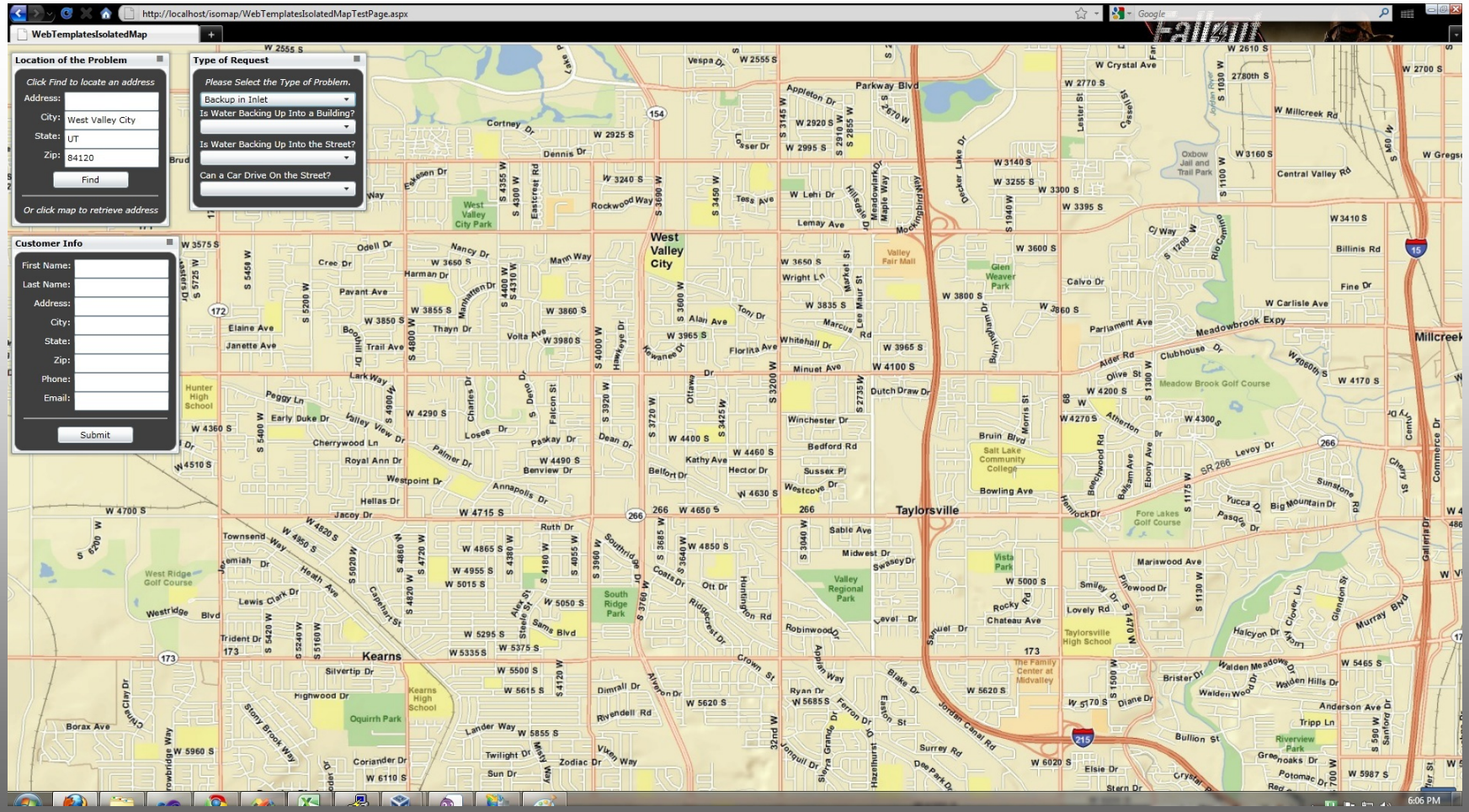
# Dashboard Mash-up

- Uses ArcGIS Flex API
  - AMS/GIS
  - Phone system – Tracks hold times, call frequency, etc
  - Dig Smart – Utility locate tickets

# Citizen Engagement

- Collect information like…
  - What is the problem
  - Where is the problem located
  - Who is actually calling about the issue
  - What is the extent of the problem
  - Has the same problem already been reported?

# Citizen Engagement



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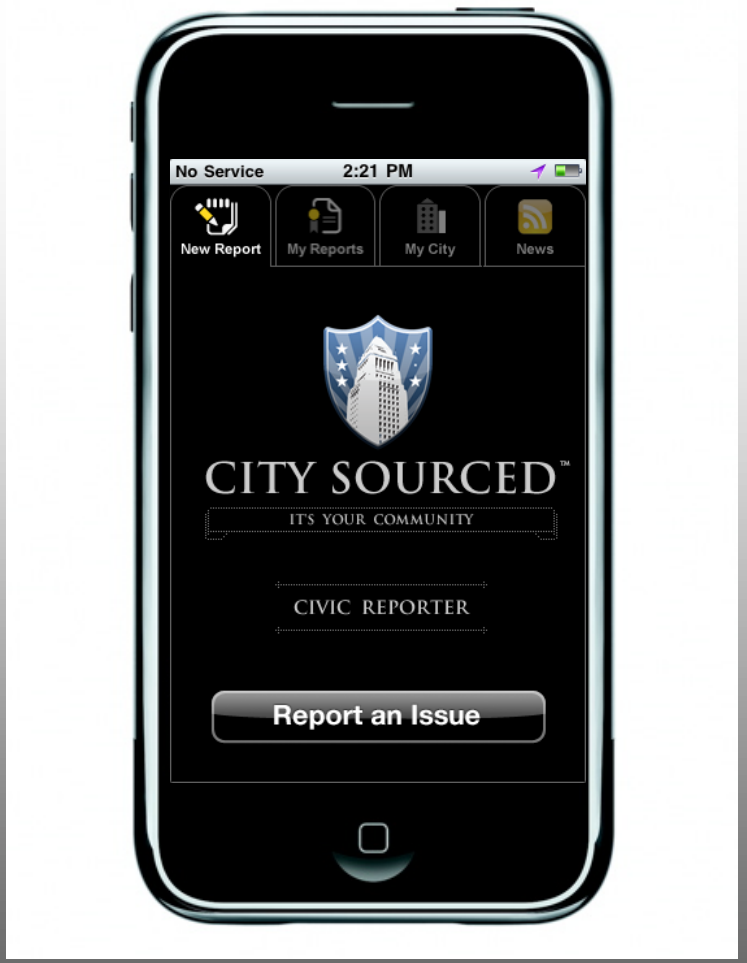

# Empowering your GIS for your Public Asset Management System

**Asset Management**

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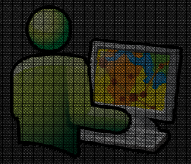

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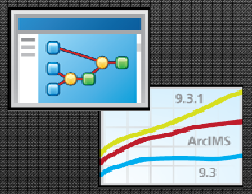


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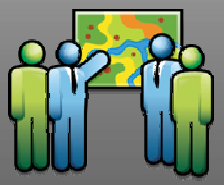

**Constituent Engagement**

Get Feedback and Make Informed Decisions

# Thank you!

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