

# ***A GIS-CENTRIC PLATFORM FOR ASSET MANAGEMENT***

**Cityworks**

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# ***AZTECA SYSTEMS, INC.***

- Founded in 1986
- Headquartered in metropolitan Salt Lake City area, Utah
- 100+ Employees and vast partner network
- Strong Investment in R&D and Customer Support
- Running at over 450 licensed organizations worldwide
  - Various sizes, scopes, and industries.
- Esri Platinum Partner

**Cityworks**<sup>®</sup>

Empowering GIS<sup>®</sup>  
FOR PUBLIC ASSET MANAGEMENT



**esri**

Partner Network  
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# ***THE HISTORY OF CITYWORKS***

1996, the first iteration of Cityworks was released. This was a unique GIS-centric work management system based on Esri's ArcView and shapefiles. Since then, Azteca Systems™ has developed GIS-centric Management Solutions built exclusively on only Esri's industry-leading GIS software.

2002, Cityworks for ArcGIS was released, which supported Esri's ArcGIS 8x. ArcGIS utilized a geodatabase, enabling work management of any assets defined in the GIS. And, as market trends and client needs dictated, Azteca Systems developed add-on products for the Cityworks suite

As Esri released new products, Azteca Systems developed additional core products utilizing the new Esri technology.

2007, the first iteration of Cityworks Server AMS (Asset Management Solution) was released.

- Web-based platform
- Also in 2007, the first iteration of Cityworks Server PLL (Permits, Licensing, and Land) was released to targeted sites

Our API (Application Programming Interface) development made way for easy integration to 3<sup>rd</sup> party software setting off the Platform revolution

# ***HISTORY (cont')***

2011, the major release of Cityworks 2011 supports Esri's ArcGIS version 10. Cityworks 2011 incorporated use of Microsoft Silverlight

2012, Development of Cityworks Online utilizing Esri's ArcGIS 10.1 and Web Map technology hosted in a Cloud environment. Also the release of Cityworks Analytics, allowing users to analyze Cityworks data using Excel, producing reports such as KPI analysis, budgets, risk assessment, etc.

2013, "Field Mode" functionality optimized to utilize tablets connected to the Internet via cellular air cards or WiFi hotspot... JavaScript map.

2014, Mobile Native iOS/Android Apps, Storeroom and Designer are web based.

2015, Respond – responsive design framework for touch pad devices, Continued development of iOS/Android Apps, New ELM with responsive design that auto-sizes to the user device with enhanced functionality.

Present, Cityworks continues to be developed as a GIS-centric solution built on Esri GIS technology. New technology and enhancements are constantly being incorporated into Cityworks in order to help our clients manage their operations efficiently and cost effectively.

# CMMS

*A Computerized Maintenance Management System (also referred to as an Asset Management System) specifically uses software tools to organize and maintain a computer database of information about an organization's operations. This information is intended to help an organization not only make informed decisions, but also help more effectively manage their operations. Fundamentally, CMMS will extend the service life of both short-term and long-term infrastructure assets.*



Asset Repository Database



Maintenance History Database



Condition Assessment



Enterprise Asset Management Plan

# Citvworks®

# ***Asset Management***

**Infrastructure Asset Management** - the practice of managing the whole life cycle (design, construction, commissioning, operating, maintaining, repairing, modifying, replacing and decommissioning/disposal) of physical infrastructure assets such as structures, production and service plant, power, water and waste treatment facilities, distribution networks, transport systems, buildings and any other physical assets.

**Enterprise asset management (EAM)** - The practice of managing an organization's assets across departments, locations, facilities and, potentially business units through whole life planning, life cycle costing, reactive and preventative maintenance, and other industry best practices.

# **Cityworks®**

# What can an AMS do?

## 1. Customer Service and Call Center

- + Recording problems and logging customer calls

## 2. Service Requests and Inspections

- + Manage, dispatch investigations and record findings
- + Record labor costs and create work orders as needed

## 3. Work Order Management

- + Job codes and templates
- + Preventive and Reactive maintenance
- + Cost summaries and history
- + See where they are, "live" in GIS

## 5. Analytics

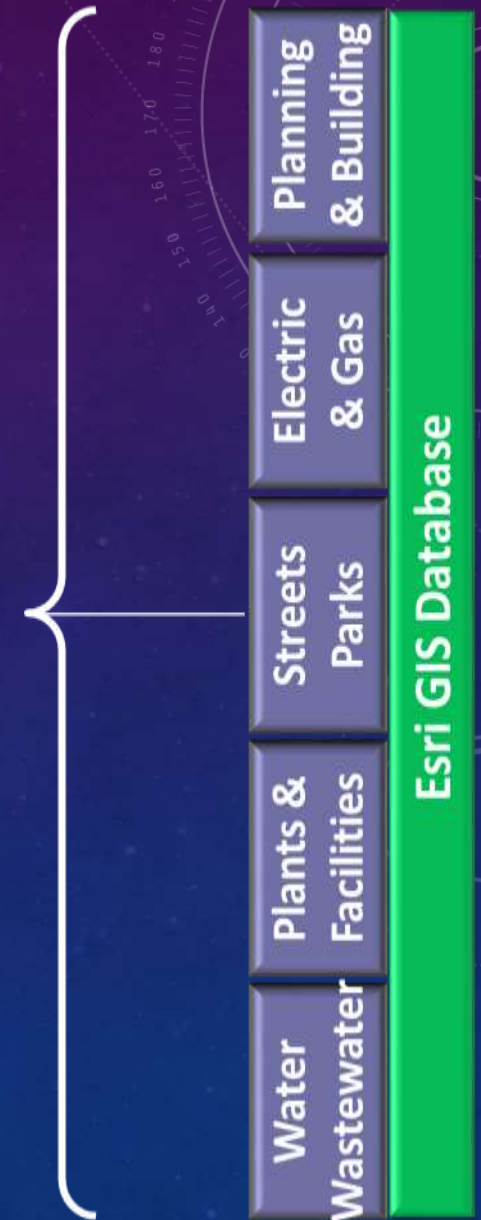
- + Condition Assessment, Heat Maps
- + Project Management and Budgeting

## 6. Reporting

- + Data export tools
- + Predefined and Custom reporting

## 6. Add-on functionality such as Storeroom, CW Analytics, eURL

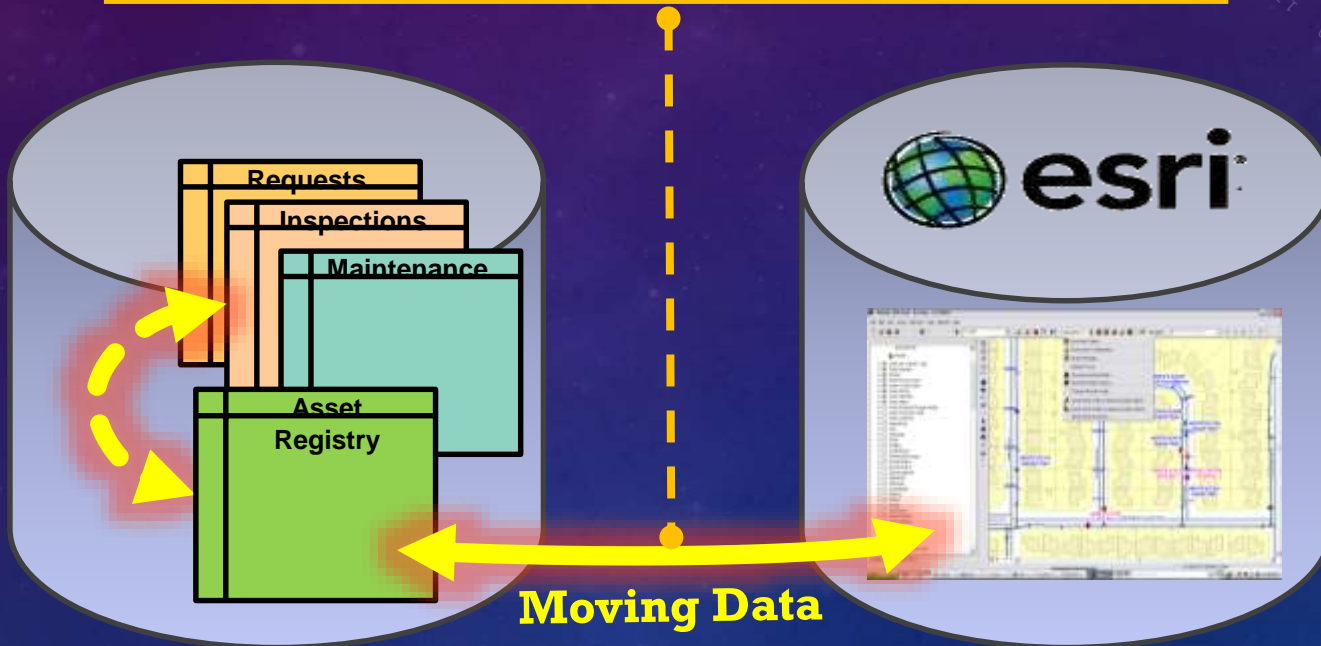
- + Actual / estimated labor
- + Warehouse inventory quantities
- + KPI, Budget Analysis



# Traditional approach to Asset Management

(non-GIS Centric - interface approach)

**Requires middleware or interface to synchronize redundant asset data.**



- CMMS database
- Work activity data
- Asset Data
- Address Data

*GIS is an after thought / optional*

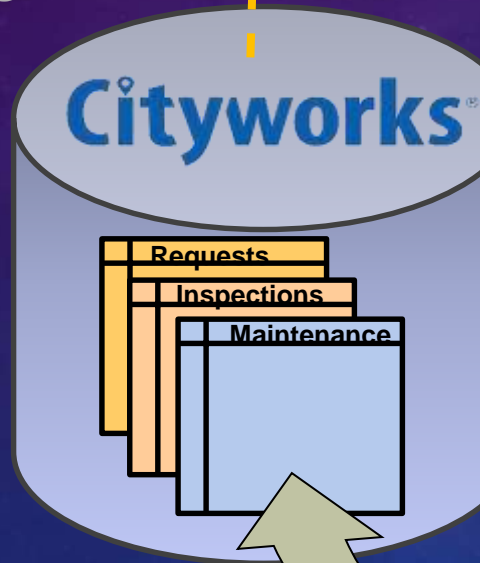
- Geodatabase
- Asset data
- Address data



# The GIS-Centric approach to Asset Management (Cityworks)

**Shared database**

Cityworks database  
Work activity data

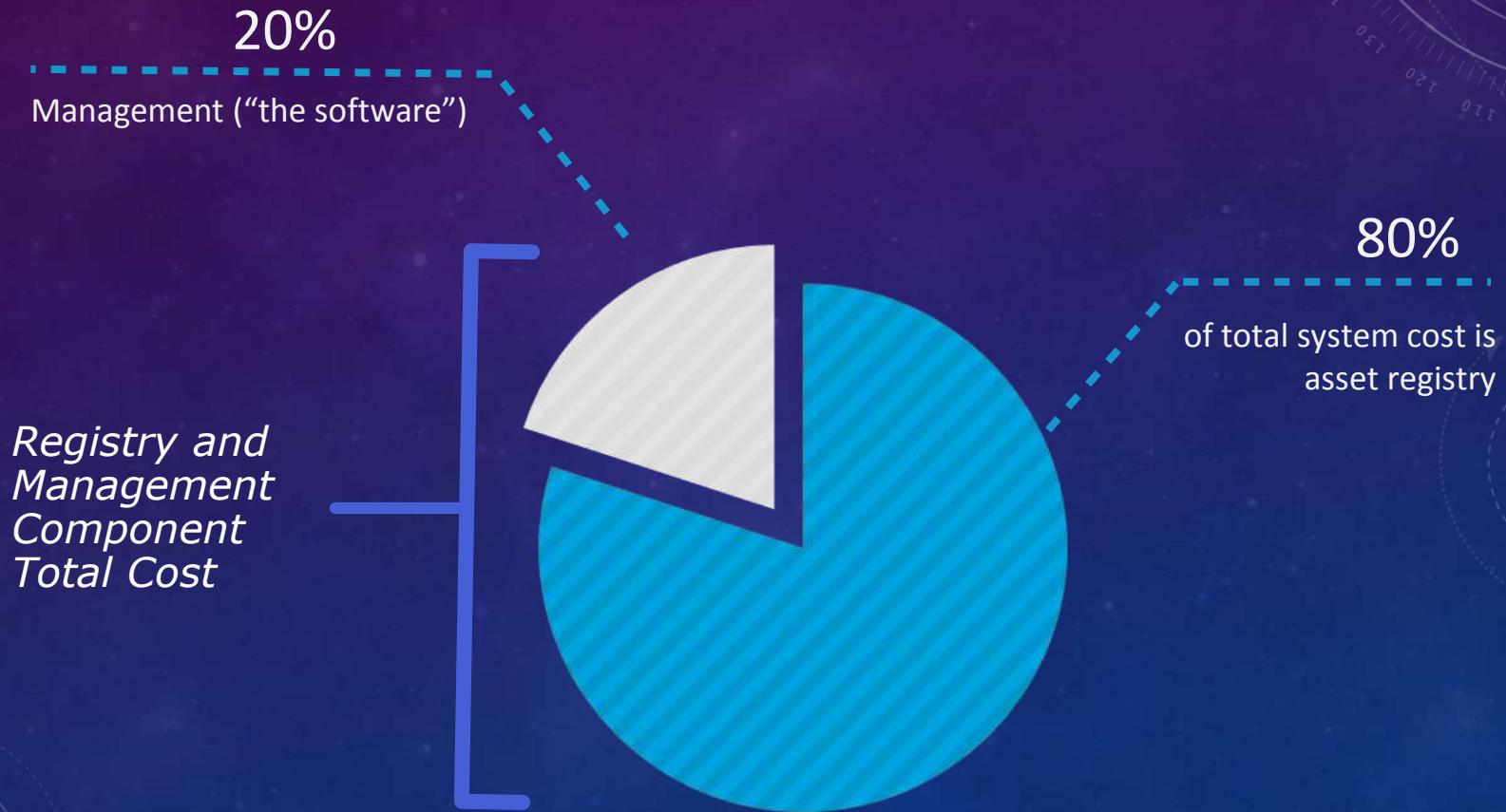


Open Geodatabase  
Asset data  
Address data



*GIS is required  
Geodatabase is "shared"*

# *Why asset registry can carry such a high cost?*



# Each asset can have 10 to 30 attributes

## Manhole

FEATURE_ID	100976
ASSET_TYPE	MH
BARREL_DIA	4.00
BASIN	LITCHFIELD
CONDITION	96
CONDITIONDATE	9/27/2007
CONTRACTOR	WATSON CONST
DATE_INSTALLED	1984
DEPTH	12.00
ELEV_RIM	1143.50
ENABLED	TRUE
ENG_NUM	1014
FACILITYID	18490
FEATURE_ID	23520
IMAGE	
LID_DIAMETER	36.00
LID_MATERIAL	IRON
LOCATION	1ST ST & 6 AV
MATERIAL	CON
MH_WIDTH	48.00
OWNER	CITY
STATUS	Active
SUB_BASIN	LITCHFIELD WEST
SUB_TYPE	MH

## Water Main

FEATURE_ID	25
ASSET_TYPE	MAIN
CONDITION	19
CONDITIONDATE	12/13/2009
CONTRACTOR	MISSION BAY
CP_MATERIAL	FBG
CRITICALITY	LOW
DEPTH_BURIED	6
DESIGN_PRESSURE	200
ENABLED	TRUE
EST_EFF_LIFE	50
INSTALL_COST	125000
INSTALLDATE	6/1/1992 0:00
LOCATION	South Weston St
MATERIAL	Cast Iron Pipe
OPERATE_PRESSURE	75
OWNER	CITY
PIPENO_FM	836
PRESSURE_SYSTEM	LITCHFIELD WEST
RECORDED_LENGTH	235.23
REPLACEMENT_COST	32227
SUB_TYPE	MAIN
FEATURE_ID	25
ASSET_TYPE	MAIN
CONDITION	19
CONDITIONDATE	12/13/2009
CONTRACTOR	MISSION BAY
CP_MATERIAL	FBG
CRITICALITY	LOW

## Sewer Main

FEATURE_ID	40760
OBJECTID	446
ASSET_TYPE	MAIN
SURFACE_TYPE	ASPHALT
AVG_FLOW	12.00
BASIN	LITCHFIELD
CONDITION	17
CONDITIONDATE	11/12/2008
CONTRACTOR	WIXOM CONST
DATE_INSTALLED	1972
DESIGN_FLOW	35.00
DIAMETER	8.00
DWN_DEPTH	-9.00
DWN_ELEV	1136.89
DWN_FACILITYID	4837
DWN_NODETYPE	SNODE
ENG_NUM	837
FACILITYID	562
LOCATION	509 S SANTA FE AVE
MATERIAL	CIP
MAX_FLOW	50.00
MIN_FLOW	0.00
PIPENO_E	562
PIPENO_FM	562
PIPENO_M	40
RECORDED_LENGTH	85.00
REHAB_STATUS	NA
RGH_COEFFICIENT	0.02
SLOPE	0.40
UP_DEPTH	-9.00
UP_FACILITYID	4838
UP_NODETYPE	SNODE
UPS_ELEV	1137.23

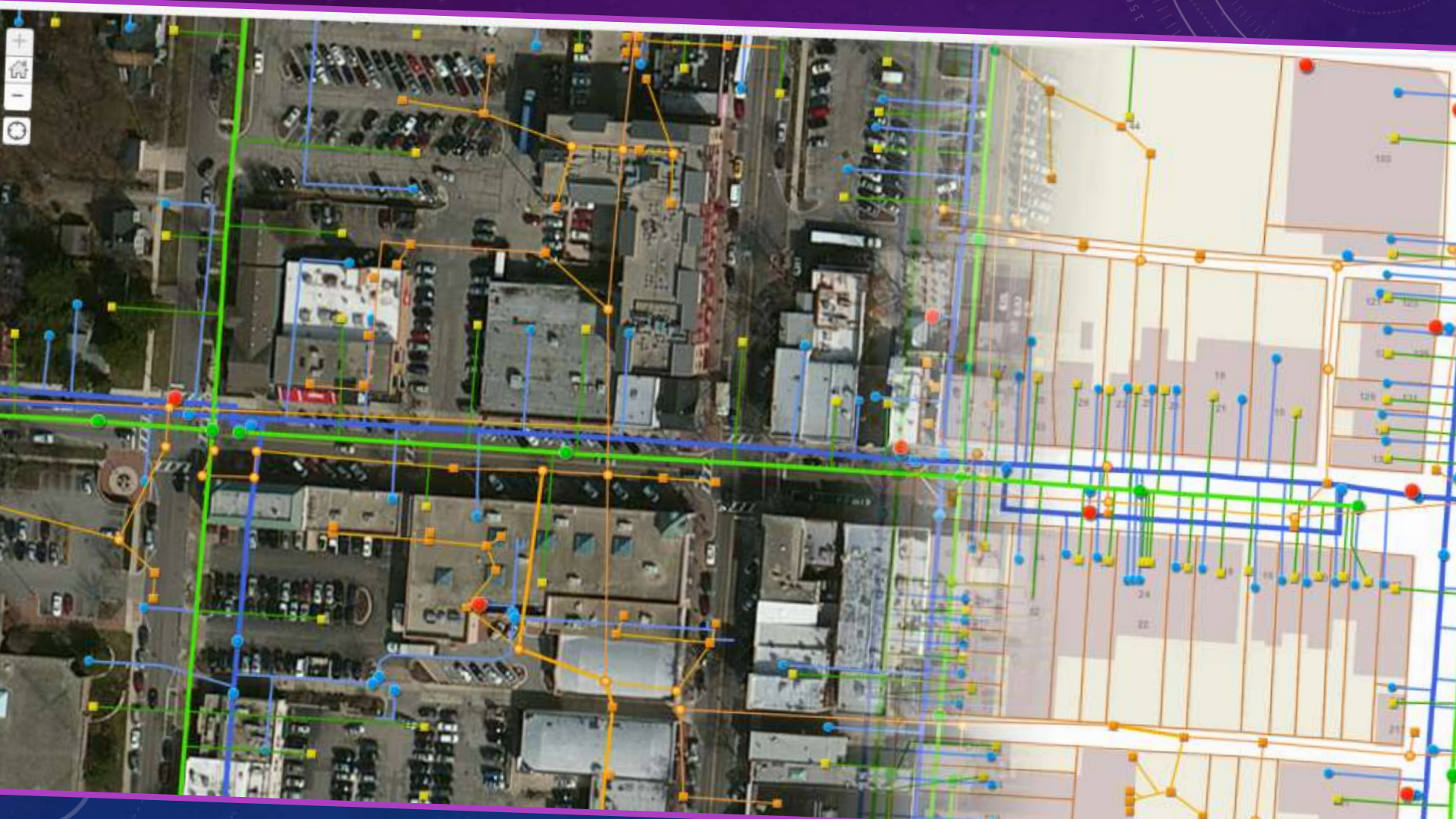
## Hydrant

FEATURE_ID	73253425
ANCILLARYROLE	None
ASSET_TYPE	HYDRANT
CONDITION	7
CONDITIONDATE	7/31/2012 22:14
CONTRACTOR	MILLESON
DIAMETER	6
ENABLED	TRUE
FACILITYID	8968
IMAGE	
IMPORTANCE	Critical Asset
Insp Condition	0
INSTALLDATE	8/1/1996 0:00
LEGACY_ID	
LOCATION	1700 FOXFIRE RD
MAP	1
OWNER	CITY
PNT	835
PRESSURE	
PRESSURE_SYS	LITCHFIELD WEST
STATUS	Active
WA_FITTING	N/A
WARRANTYDATE	12/30/1899 12:00:00 AM
x	2115143.04
y	237161.71

# A city of 75,000 can have over 500,000 assets

Asset	# Count
<b>Water</b> (pipes, hydrants, valves, meters, fittings, tanks, etc.)	<b>148,000</b>
<b>Wastewater</b> (pipes, manholes, lift stations, laterals, valves, etc.)	<b>111,300</b>
<b>Storm</b> (channels, culverts, end treatments, pipes, inlets, outfalls, etc.)	<b>21,500</b>
<b>Water Treatment Plants</b>	<b>880</b>
<b>Wastewater Treatment Plants</b>	<b>120</b>
<b>Airports</b> (taxiways, runways, lights, signs, storm, equipment, terminals)	<b>7,000</b>
<b>Electrical</b> (poles, meters, wires, streetlights, transformers, supporting equipment)	<b>164,500</b>
<b>Misc.</b> (fences, parking lots, other paved areas)	<b>44,000</b>
<b>Streets</b>	<b>9,750</b>
<b>Traffic</b> (signals, signs, traffic cabinets, poles, etc.)	<b>16,500</b>
<b>Total</b>	<b>~525,000</b>
*Does not include, curb,/gutter, sidewalks, parks, trees, city buildings or other offices	

# ***GIS-CENTRIC LEVERAGES EXISTING INVESTMENT AND ELIMINATES ASSET REPLICATION***



# Advantages of GIS-centric Asset Maintenance Management

## Leverage spatial data investment

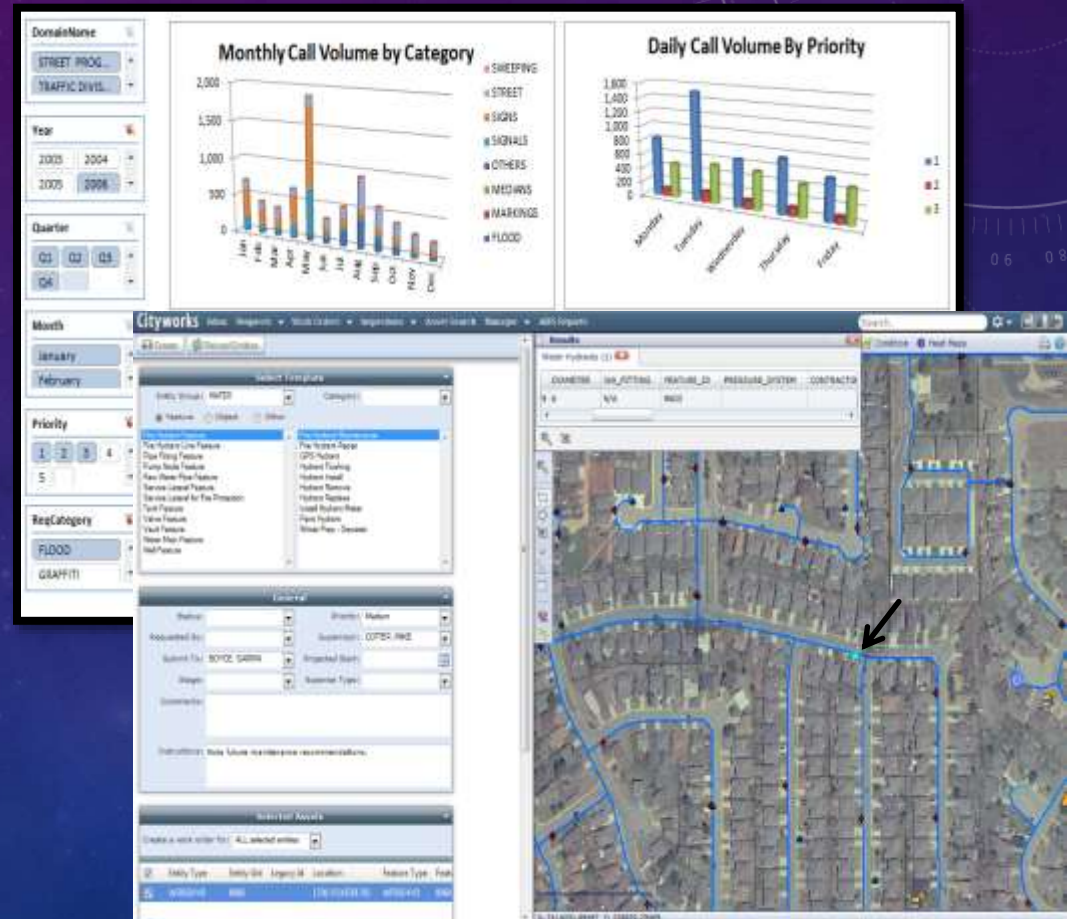
- ✓ GIS database is the asset inventory, and non-proprietary therefore eliminating redundant asset data
- ✓ ArcGIS software is used to create and maintain the asset inventory / feature data

## Utilize inherent spatial tools

- ✓ System trace
- ✓ Valve isolation
- ✓ Vehicle Routing
- ✓ Intuitive planning/scheduling
- ✓ Visual data management

## Development Platform for AMS

- ✓ Configurable and scalable to organizational needs
- ✓ Enterprise solution



# CITYWORKS and the PLATFORM

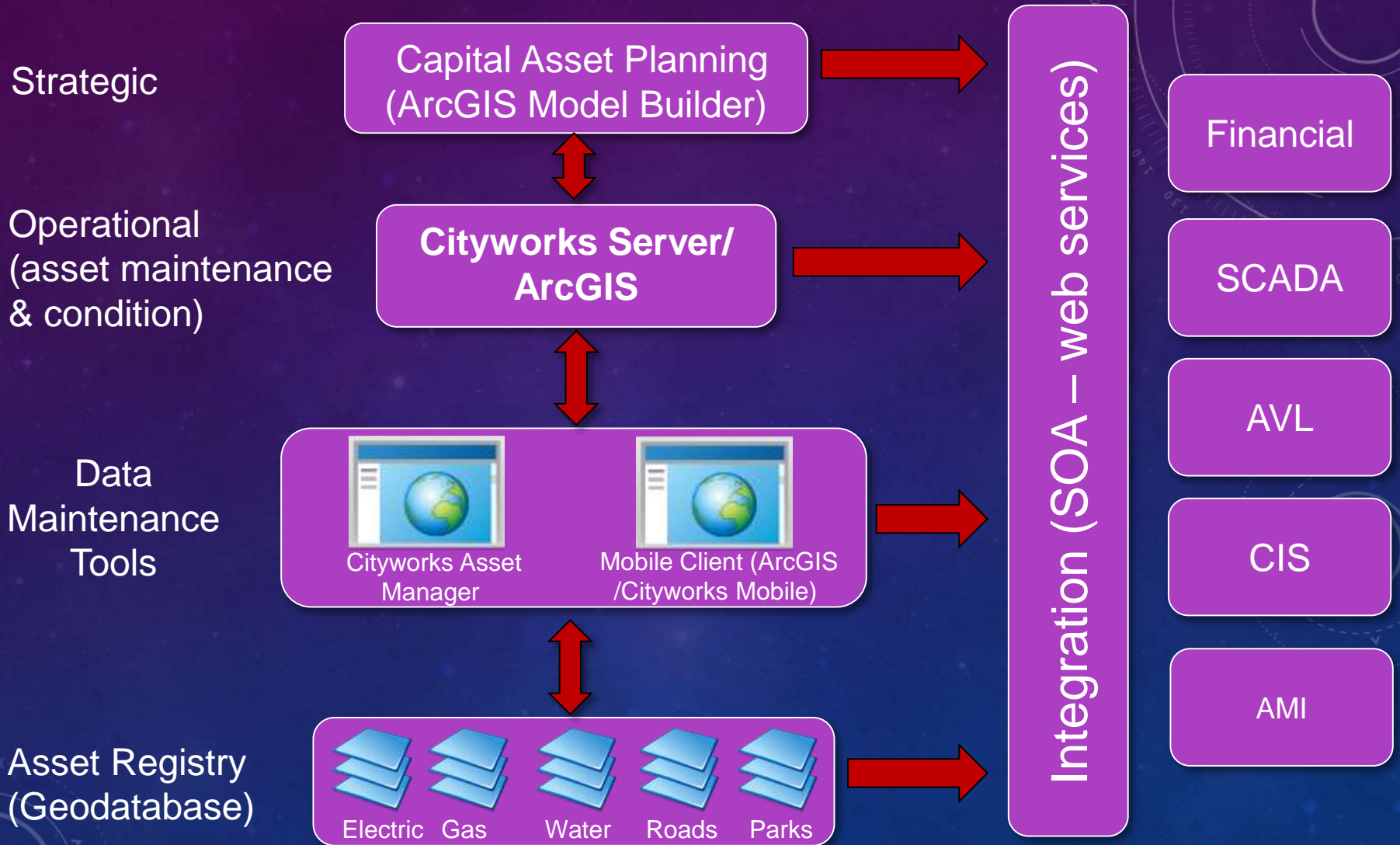


The Cityworks GIS-centric approach has broadened to become the GIS-centric Platform for public asset management. From the very beginning, the Cityworks GIS-centric approach made way for this with its union of two software systems: Esri ArcGIS and Cityworks.

At the core, Esri ArcGIS provides the tools necessary to maintain the asset inventory and for using geography as a management tool. Cityworks provides the tools for managing and tracking the work that regulates assets.



# Asset Management Framework





# ***DEMO: LETS TAKE A QUICK LOOK***

*Becky Tamashasky*

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*For more info visit:*

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