



## Bridging Silos With Technology

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Bruce Phillips,  
Group President, Aclara



# Industries Have Intended and Unintended Silos



“Silos” are built to surround and protect a single fundamental element, to that end they serve a purpose.



# Even Best Intentions Can Have Issues



When challenged to meet new roles and realities the silo could may not be the right technology and could fail under it's own weight.



## Water AMI – a tale of two cities with the same needs.



What do you think when you hear the terms “Water AMI?”

We know much about Electric AMI.

Is Water AMI the same as Electric AMI?

The answer has two parts:

- 1) Water AMI has some of the same benefits.
- 2) Water AMI has some of the same challenges.

Two major cities recently broke down the silos that kept them from maximizing the value of their water utilities.



Water AMI Benefits

New York City Water AMI Project

Ann Arbor Water AMI Project

Why You Need Intelligent Infrastructure



Reduced water meter reading costs.

Reduces costs associated with field visits and customer calls.

Improved billing accuracy and improved cash flow.

Improved outage information and response.

More efficient asset management and distribution engineering design.

How do you achieve these benefits?

**Answer: Intelligent Infrastructure for water utilities**



Improves understanding of consumption and flow patterns

Allows you to track and predict change in usage trends and demand

Highlights anomalies

Warns of high or low flows

Identifies leaks and other waste minimization operations

Shift water consumption to other parts of the day

How do you achieve these benefits?

**Answer: Intelligent Infrastructure for water utilities**



The New York City Department of Environmental Protection is deploying the largest AMI system in North America

- Key drivers for transforming their meter collection system includes
  - Support modest reductions in usage that could reduce water bills by \$90 million
  - Savings due to technology will save or add up to 550 jobs
  - Metering accuracy leading to:
    - Conservation through better data availability
    - Better customer service with improved billing intervals
    - Identification of system and building leaks
    - More accurate and fair collections
  - Reduced operational costs to read meters

## The Regulator Bridges the Silo



"This is another prime example of bringing new technology to City government to improve services - and in this case we will potentially save New Yorkers millions of dollars a year. "

"The new system will read water meters four times a day instead of four times a year, giving homeowners and small businesses a clearer picture of their water use so they can look for ways to conserve."

New York City Mayor Michael R. Bloomberg



"The most effective technology deployments help organizations to transform business processes and improve service delivery to their customers."

DoITT Commissioner Paul J. Cosgrave

# The City of Ann Arbor, Michigan Bridges its Silo



Ann Arbor needed to:

Recover costs of water service (timed with meter replacement)

Improve customer service

Save on labor, fuel, and equipment

Read meters daily with wireless/solar AMI (vs manually collected readings on a quarterly basis)

Improve asset management capabilities

## The Ann Arbor Action Item



**The City began in 2002** – March 2004 business case development

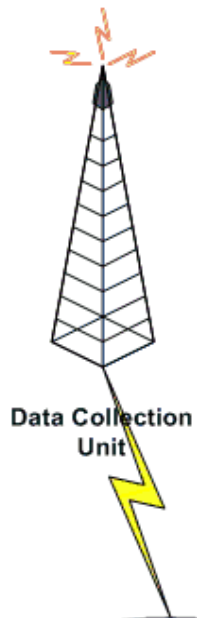
**December 2003** – Contracted Water and Wastewater Cost of Service Study report published by Carter & Burgess. The intent of the study was to identify rates necessary to cover the projected costs over a five-year period and to assist the City in meeting its desire to make rate adjustments based on a cost of service approach.

**May 2004** – Preconstruction meeting between Aclara (formally Hexagram), AMCO Water, UMI, and Ann Arbor

**August 2004** – AMI Agreement signed between Aclara and AMCO Water for \$3.2 million of Hexagram equipment (31 DCUs and 28,000 MTUs)

**October 2004** – Start of AMI deployment (meter and MTU installation)

**November 2005** – Core Mass completion of AMI technology



**City of Ann Arbor - My Property Portal Application\***

Enhanced Customer Service Delivery



**Water Bill Statement Summary**



**Water Consumption Analysis**

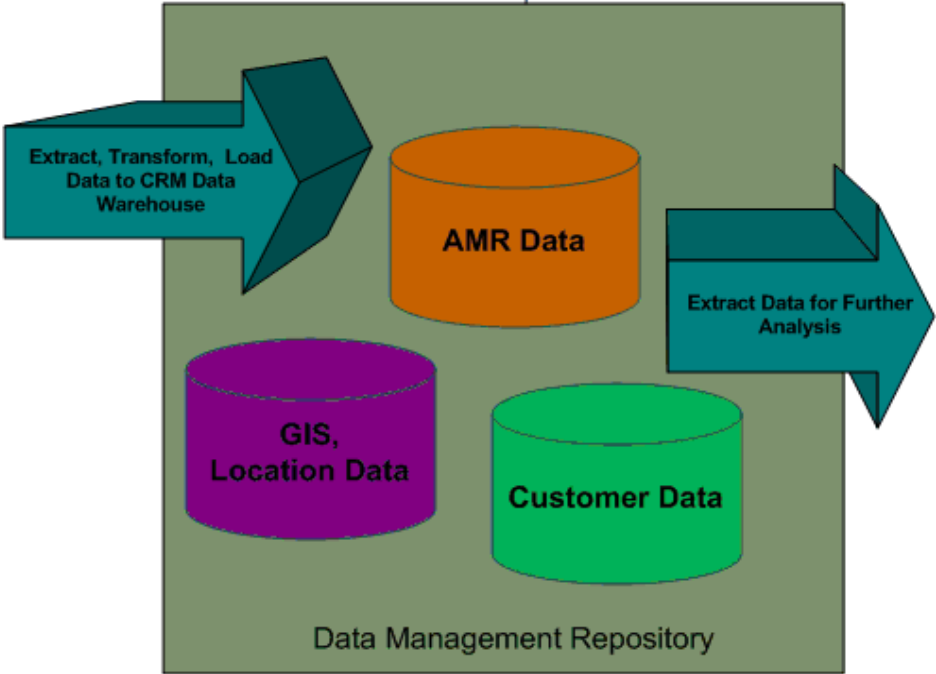
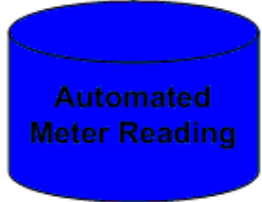


**Bill Presentment & Payment \***

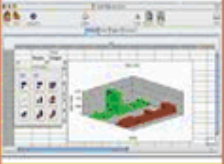


**Consumption 'what-if' scenarios\***

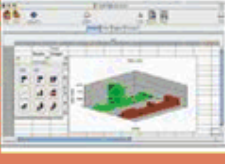
\* Features scheduled for release in 2008




Analysis and Decision Making



**Rate Analysis**




**Service Delivery Costs**



**Leak Detection**



**Load & Demand Management**



**GIS-Centric Strategic Asset Management**



**Water Consumption by Pressure District**

# Fixed Network Meter Reading - Water



Meter Transmission Unit (MTU)- A radio transmitter placed on each meter

- Single port
- Dual port
- Extended range

Data Collection Units (DCU) - receive radio transmissions from the meter and phone the readings into the NCC (server)

- Rooftop Mount
- Utility pole mount





## Innovative technology and process solutions

- Utility-wide data/communications networking
  - Advanced Wide Area Network (WAN) technologies
  - Advanced Metering Infrastructure (AMI)
- Meter Data Management Systems
- Consumer Web Portals
- Home Area Networking Systems
- Advanced Leak Detection systems
- Remote connect/disconnect solutions

# Creating Smart Rate Strategies for On-Peak Reductions

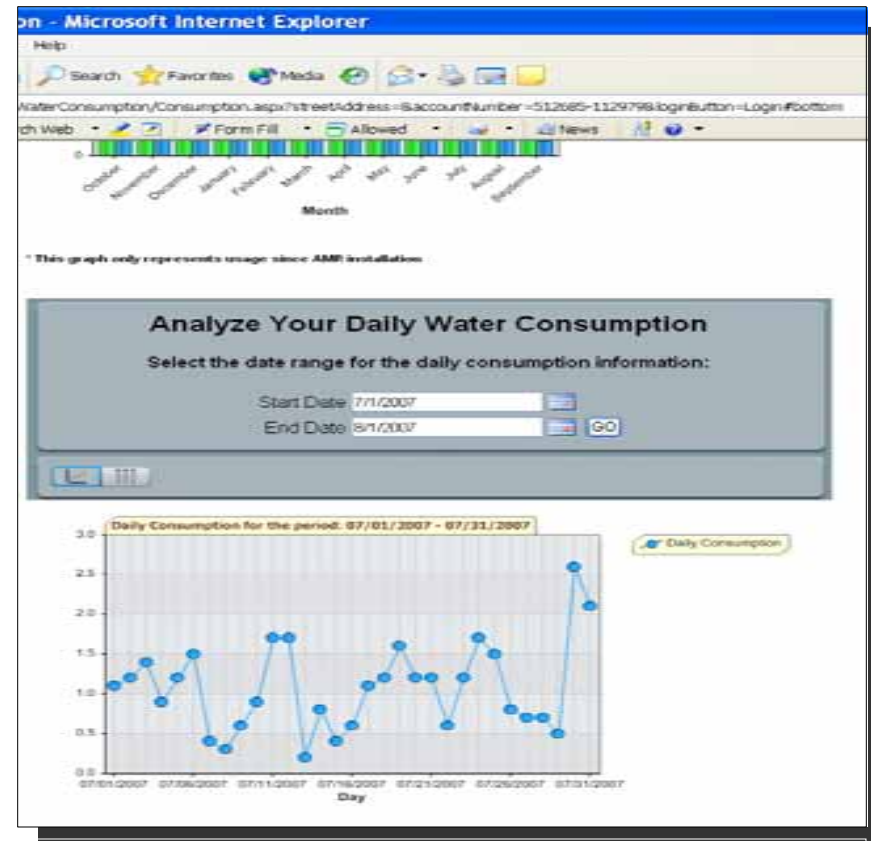


AMI consumption data allows smart rate setting decisions and supports:

- Peak rates
- Demand rates
- Tier structures

“Customer perceptions of the “value” of water has resulted in on-peak reductions in Ann Arbor”

- Data Driven Conservation



Through cost-of-service programs and creative use of technology, a city can refine its distributed costs to customers based on peak usage.

# Solving Non-Revenue Water Loss



Non-revenue water loss in our aging infrastructure can bring water losses to typically 20-40%

- The Aclara STAR Network gathers data to analyze consumption patterns and recognizes possible system leaks, both before and after the meter.
- In less than seven years, the fast growing community of Leesburg VA, was able to slash its non-revenue water loss from 23% to 3% by bridging AMI data with their operations department.

In less than seven years, a fast growing community, was able to slash its non-revenue water loss from 23% to 3%.



# Integrating Systems to Find Leaks



Typically, breaks like these do not happen in an instant.

- A small growing leak has typically been active for weeks or months
- The high impact water loss has already occurred when discovered by “more visible” means.

On Average a line leak:

- Takes 182 days to “find”
- Loses 6500 gallons/day
- Loses 1.2 M gallons/year

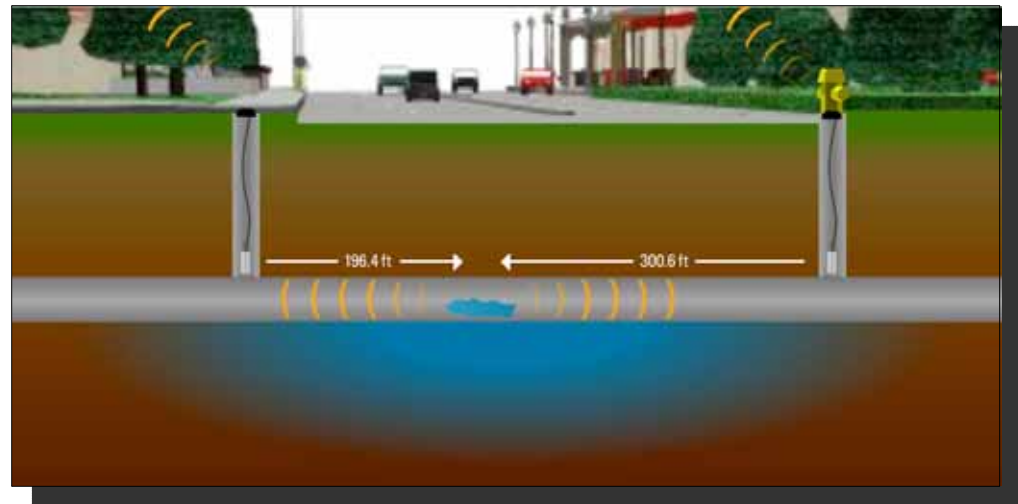
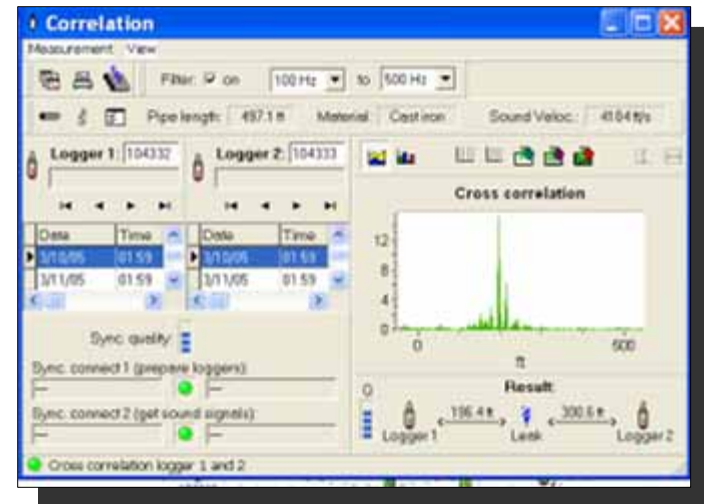


# Integrating Systems to Find Leaks



Fixed Network Leak Detection locates issues, saves resources and expense

- Uses the AMI Network to bring lead data back for processing
- Pinpoints leak signatures within inches



# How Can Regulators Help Build The Intelligent Infrastructure Bridge



Support innovation that crosses operational silos

- Technology applied to today's silos will create tomorrows successes

Create opportunities for educated consumers

- Data Driven Conservation
- Increased interval reporting
- Communication portals

Encourage investment in automation

# Water Industry Needs Its Own Intelligent Infrastructure™



An Intelligent Infrastructure™ encompasses the design and implementation of:

- Smart strategies
- Cutting edge solutions
- Advanced networks



