

# STAR Fixed Network AMR

Larry Sears, Chief Technology Officer,  
Founder

Hexagram, Inc.



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UTC  
TELECOM2004



## Who needs AMR?

- Utility Customers
- Utility Managers
- Utility Shareholders



## Why do they need AMR?

***Information!***



## Customer's *Information!*

- Comprehensive usage data
  - Detailed daily consumption data
  - Notification of abnormal usage
  - Leak detection



## Manager's *Information!*

- Engineering/distribution
- Supply requirements
- Outage reporting
- Collections
- Tamper/theft



## Shareholders' *Information!*

- Cost control
- Operating efficiency
- Cash flow and collections
- Asset utilization
- Competitive advantage



## What information is needed?

- **Detail of activity at each meter**
  - Water / Gas, residential - every 12 hours
  - Water / Gas, commercial - every hour
  - Electric, residential - every hour
  - Electric, commercial - every 15 minutes
- **Immediate notification of events**
  - Tampering
  - Outages / Restorations



## How to get this information?

You need a modern AMR system!  
(surprise!)



## What does the AMR system need to do?

- Fully automatic collection of readings from every meter, at any desired rate
- Sophisticated software to operate system and manage information
- Handle event occurrences efficiently and rapidly
- Grow with user's needs
- Be affordable



## Meter Reading Technologies

- Hand-held computers to reduce errors
- Outside remotes to eliminate accessibility problems
- Walk-by / Drive-by to increase productivity
- Fixed Network for total automation and comprehensive data collection

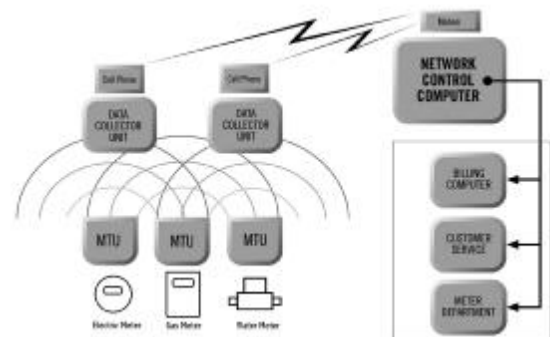


## STAR Concept

- **True Automatic Meter Reading**
  - All electronic, no meter readers involved
  - No site visits
  - Makes it possible to read very frequently
- **Detailed Information from Every Meter**
  - Know what's happening at each meter
  - Provide extensive Customer Services



## STAR System



## STAR Operation

- Meter Transmitter Units (MTUs) wake up at their programmed interval and transmit a short message containing an ID number, meter reading, tamper status and other information
- One or more Data Collectors (DCUs) receive transmissions and decode and store them in memory
- DCUs make a daily call to computer and transfer readings data



## MTU - Features

- Interfaces to any pulse or encoder meter
- Calculated 20 year battery life
- Dual port version for compound or dual meter use
- Hermetically sealed for indoor and outdoor use
- Available for Pit installations



## MTU - Water



## MTU - Gas



## MTU - Electric



## DCU - Features

- Typically provides 1 square mile of coverage, with a capacity of 30,000 meters
- Solar power, no connection to power lines
- Cellular phone, no connection to phone lines
- Full diagnostics



## DCU - Data Collector Unit



Rooftop Mount



## DCU - Data Collector Unit



Utility Pole Mount



## STAR Software

- Maintains all reading data in database
- Data Extract program provides data for billing system
- Customer Service inquiry into reading data
- Many standard reports



## STAR Software 2

- Integrates into existing office network
- Operates as an Intranet server
- Supports workstations over office network
- Uses Internet technologies to support modern operations
- Versatile connectivity supports CIS, Finance, and Customer Service systems



## STAR Software System



## Technology

- Licensed narrowband RF (Not Unlicensed Part 15)
- Mature, Proven product



### Licensed vs Unlicensed

- Licensed operation provides protection from interference both initially and over the life of the system
- Licensed channels readily available
- Only STAR uses licensed radio to carry reading information
- Licensed operation delivers longer range



### How does this work out?

- Over 50 STAR systems installed
  - STAR, and Hexagram, are very successful and growing rapidly
- So, what is it like to have a STAR system??

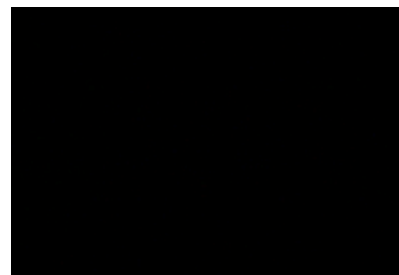


### Star delivers: Completely automatic meter reading operation

- Automatically reads every meter at least twice each day, provides detailed consumption profile
- Performs daily analysis of all meter activity
- Provides immediate out-of-cycle reads



### STAR delivers: Completely automatic meter reading



- Neil Goldfine - Atlantic City MUA
- Regina Lookis - Evanston Utilities
- Jerry Johnson - DC-WASA
- Rich Figurelli - Evanston Utilities

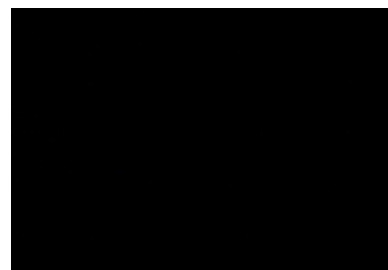


### STAR provides: Outstanding Customer Service

- Immediately resolve customer questions
- Identify over/under consumption
- Never, ever send estimated bills
- Complete billing flexibility



### STAR provides: Outstanding Customer Service



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*Star is:*

## Unobtrusive

- No meter readers or vehicles traveling around your service area.
- No trespassing issues, traffic accidents and insurance liabilities
- Your customers will never know that the system is there.



*Star provides for:*

## System growth

- Allows for expansion into new service areas
- Supports all types of water meters
  - All manufacturers, all types
  - Past, present, and future meters
- Reads gas and electric meters



*Star is:*

## A proven, no-risk system

- Most deployed Fixed Network AMR system in the water industry.
- Proven in urban, suburban, and rural settings, large and small systems
- Working with all meter manufacturers
- Successful projects with utility installers and installation companies



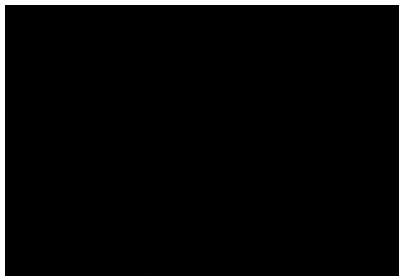
*Star is:*

## An astounding value

- Negligible ongoing cost
- High performance fixed network often costs less than drive-by systems
- Can provide revenue by reading other utility's meters, can be a profit center!



*STAR is:* An astounding value



Rich Figurelli -  
Evanston Utilities


Regina Lookis -  
Evanston Utilities

Jerry Johnson -  
DC-WASA




**BWSC  
STAR  
System**





**DC-WASA  
STAR  
System**




### Wisconsin Public Service

Sheboygan, Green Bay, Oshkosh, Sturgeon Bay,  
New Holstein, Algoma, Eagle River, .....




### HBWS STAR System




### Summary

- Versatile, high-performance system using a simple, robust network
- Lowest cost, fixed-base system
- No compromise design supports advanced services
- In service now, every installation a success!



### Questions?



### For Further Information:

- Visit Hexagram in Room xxx, call 216/496-9908 for appointment
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