



AMERICAN WATER

Utility Driven Approach to AMR/AMI Standardization and Interoperability

Alliance for Water Efficiency Webinar
February 19, 2015

Water Research Foundation (WRF) Project AMR/AMI Standardization for Drinking Water Systems (Project #4467)

- An Emerging Opportunity project developed out of WRF meetings with utilities confirming the need for the work
- Awarded to American Water in June 2012 and scheduled for completion (after a one year extension to June 2015).



Goals of the AMR/AMI Standardization for Drinking Water Systems (Project #4467)

- Provide overview of AMR and AMI systems in use/available in North American utility market.
- Identify requirements or specifications of AMR/AMI standards strongly preferred by water utilities.
- Provide recommendations for the development and implementation of practical AMR/AMI standards that map to utility stated requirements.

WRF and Utility Support

- ◆ Jian Zhang, Project Manager

Project Advisory Committee

- ◆ Bob Day, San Jose Water
- ◆ *Ed Hackney, United Water*
- ◆ *Tommy McClung, City of Houston*
- ◆ Kevin Davies, Las Vegas Water District
- ◆ Rodney Johnson, City of Detroit
- ◆ Pat Sampson, Las Vegas Water District

Support Members who are participating in multiple meetings or workshops

- Duane Griffin, Winnipeg Water & Waste
- Tom Kelly, WSSC
- David Blumer, City of Ames, Iowa
- *John Bennett, City of Dallas*
- Dave Petty, Scottsdale, Arizona
- *Jonathan Leung, John Cox LA Water & Power*
- *Lauren Preston, DC Water*
- *Dave Wallenstein, East Bay MUD*
- *Kathy Koch, Portland Water Bureau*
- Darren Kinylside, Ottawa Water
- Arwa Sayid, Delia Dee, City of San Diego
- Jason Brelsford, Sam Adams, Greg Kemton, City of Scottsdale
- Mike Yeager, Todd Overturff, Water One
- *Joe Samples, San Antonio Water*
- Clyde Walker, California American Water
- *Heather Pohl, San Francisco PUC*

How the Project Worked

- Initial utility meetings valued all utility input and set priorities for standards and then worked on language
- As utility meetings progressed strategies were developed including need to organize when the project concluded
- Subsequent workshops opened up discussion on outputs proposed and approach taken to vendors and interested third parties
- In all over 20 phone conferences or workshops to date.



Why Standards?

- **Why / How are standards useful?**
 - Establish minimum performance levels
 - Increase interoperability
 - Increase competition between vendors – lower costs, quality assurance, improves user perceptions
 - Allow for industry expertise to improve products
- **Drawbacks?**
 - Some claim that security is at risk and some claim that standards stifle innovation

So What is Happening

- There are no AWWA standards that reference or mention AMI or AMR
- Standards – No movement within the industry to establish
- Without baseline criteria utilities must rely on experts or become experts to spot differences in competitors and make choices
- Interoperability - Utilities finding it difficult to change to another technology when a change is needed
- Utilities limited in selection of third party monitors

Setting Priorities – Utility Priorities for AMI

- **Data Transmitters** -
 - transmitter robustness including battery performance. Frequency of reads (hourly), time stamping. Reliable connection between the meter and transmitter.
- **Data Collectors** -
 - reliability of the collection system to gather the data related to collectors placement and data transfer. Propagation studies essential.
- **Data Management** –
 - high interest in customer portals and adequate security to restrict access. Interfacing CIS system and long term management of data vital. Tracking inactive accounts

Utility Priorities for Interoperability

- AMR –
 - ability to use the transmitted and collected data with the next future system
 - ability to use standard computer apparatus to program AMR/AMI devices. (\$70 flashlight)
- AMI –
 - high interest on the ability to use the transmitters and collected data with the next future system.
 - compatibility with other system monitoring.
 - need to access (transfer) data after contract ends.

So what can change?

- Will anything change?
- Utilities elect to value vendors who promote standards and open architecture
- Utilities imitate electric industry and create a water utility organization (done)
- Utilities hope for unifying technologies that force a cooperative standardization effort



Vendor Interviews

- 10 questions asked seeking feedback from 13 vendors
- Feedback came from 9 vendors

8	AMR/AMI	<p><i>Is your system open architecture?</i> <i>After hearing yes/no answers, I concluded no vendor architecture is open. Security risk?</i></p> <p><i>Would you choose to remain closed architecture if other vendors open?</i> <i>All vendors responded overwhelmingly yes due to their proprietary development and escrow contracts.</i></p> <p><i>Why would you run contrary to the requests of the utility clients?</i> <i>The majority stated security as the main factor.</i></p>
9	AMR/AMI	<p><i>Would you be willing to work towards a format that is not your own (or any other manufacturer's)?</i> <i>Six vendors responded yes, if the format was market driven. The remaining two vendors stated they don't know what their companies would agree to towards a universal format.</i></p>
10	AMR/AMI	<p><i>Would you provide a high level definition of interoperability and what progress has your company made to date?</i> <i>Every vendor had a different definition of interoperability and they all stated within their own adaption their company progress has been very limited due to their proprietary systems and competition in the utility marketplace. Also, most vendors stated cost versus revenue guides executive decisions.</i></p>

Interoperability Discussion

- Not just about one method its about opening the formatting and communication for others to access
- **Scope of standards**
 - Provide for interoperability of devices in AMR system and AMI network
- **What can be standardized?**
 - radio frequency
 - message format
 - future guidelines
 - Universal data collector



Signs of Interoperability

- Some vendors appear more willing to share their formats.
- Some vendors may negotiate for access with larger utilities.
- Utilities now asking for an indication of interoperability in AMI bid specifications.
- Vendors going to third parties for meter data management systems.
- More system monitoring devices and actuators integrating into AMI (these other applications included in business cases to make a case for AMI).

The Piece of the Pie Argument

- Some vendors are unwilling to share their formats fearing they will lose their portion of the market.
- Utilities argue that standards and interoperability promotes confidence in the market, creating more demand.
- Standards and interoperability will promote more innovation and spur utilities to invest more in the systems.
- Vendors not willing to move when others do will lose its share as would any non-competitive vendor.



A Way Forward for Interoperability

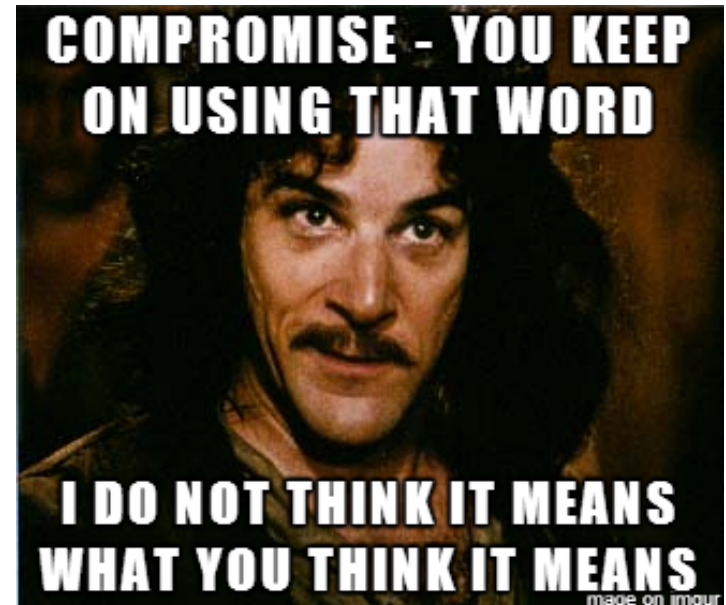
- Support for systems that promise interoperability
 - A factor in bid evaluation
 - More detailed economic analysis looking at the next install (and maybe not 20 years away)
 - Open standard protocols deliver real substantive solutions
 - Level the playing field to initiate participation
- Steps to take
 - Identify vendors moving in this direction
 - Incorporate as a bid element
 - Encourage vendors participation in developing rules
 - Embrace standards tied to next generation

Sample specification language

- Batteries
 - Battery life shall be guaranteed for stated full warranty period of the MIU. For systems using two way communication (most AMI systems and migrating AMR to AMI system), the system through the data management system shall provide indications of battery remaining life and in all cases shall provide a warning that battery failure can occur within 6 months (6 months reasonable minimum).
 - How is vendor delivering (does battery use include acoustic monitoring or other draining). Use of heavy inquires on two way transmitter will accelerate decay. Battery performance using use % is an option. What about disposal?
 - Vendors indicated that issues with water tightness would counter an effort for a field serviceable battery?

BIG PICTURE How do we get standards in place

- Supporting organizations?
 - Water utilities
 - Meter vendors
 - Meter reading system vendors
 - Meter data management systems
 - AMR/AMI component suppliers
 - Industry at large
 - Related industries
 - Consultants
 - Other associations
 - Suppliers



Upcoming communication actions and issues

- **Utilities join A4WE committee, non member utilities and others (vendors) can become auxiliary members**
- **Enlist consultants to update on upcoming RFPs and broaden contact**
- **Workshop for Utilities Spring 2015**
 - Will outline future involvement of industry at large
- **Results from workshops and vendor submissions incorporated into specification language output**
- **Workshop ACE June 2015 Anaheim**
- **Final Report**

BIG PICTURE How do we get standards in place

- **Steps to take with the AMLable committee**
 - Continue language preparation (use workshop feedback)
 - Organize further workshops
 - Draft interoperability requirements
 - Build to a draft standard
 - Continue seeking feedback
 - Organize and fund

bye bye, boys!



**have fun stormin the
castle!**

Questions

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