

WATER UTILITY AMR/AMI STANDARDIZATION OVERVIEW

Water utilities know that standards for the radio transmission of meter readings and the use of valuable data that is generated do not exist in the water industry. Utilities are becoming alarmingly aware that one vendor's system is not compatible with another. The result is an inefficient marketplace where competition is discouraged and utility choices constrained. Once a utility selects a vendor, it is difficult and costly to make a change. There is no evidence that typical mechanisms for standardization and interoperability between Advanced Meter Infrastructure (AMI) and vehicle driven automatic meter reading (AMR) systems will progress towards standardization and interoperability through normal channels like AWWA. This was recognized by the Water Research Foundation (WRF) in discussions with their utility members and culminated in a project that was awarded to American Water in 2012 and continues through June 2014. This is a brief summary of the issues and the work performed on the project.

The fundamental goals of the WRF project are to identify requirements and specification criteria for AMR/AMI systems and to outline approaches to develop and implement standards that address water utility needs. Recommendations gathered have been grounded with input from utilities identifying requirements and specifications found in other parts of the utility industry. Following multiple meetings and participation from over 30 utilities, priorities with respect to data transmission, collection, data management and interoperability have been prioritized. Work then began on some specific standard like language that has also been discussed in utility meetings and in some cases shared with utilities contemplating initiating or renewing their AMR/AMI systems. It is that critical point of selection where utilities are most aware of the limitations they have in the marketplace.

Through the project, a spinoff committee named AMI.ABLE has been organized through the Alliance for Water Efficiency to allow water utilities to drive one another to incorporate changes after the WRF ends. The specification language developed through the project is viewed by the utility network as a way to create "standards by default." If utilities incorporate consistent language in future RFPs, a standard, in fact will exist. This language is not fixed and will need continued improvement. Ongoing efforts must include input from the vendors and other concerned parties who have specific knowledge that can make the standards more effective and credible. As a result, the later stages of the WRF project have included open dialogue and workshops with vendor participation. Though there are some clear differences in how to proceed, it now appears that most vendors perceive that standardization and interoperability would seem to be the ultimate direction of the industry. More dialogue and exchange of information is needed.

Utilities are encouraged by some recent developments in the industry but much work remains to be done. Only one manufacturer has clearly expressed directly assisting the utility interoperability movement to date. Some other vendors have voiced supportive statements but actions are not as positive as most vendors have moved cautiously towards the goal and/or moving forward as long as their way of working becomes the standard. One alternative way that

the system can move forward is if a superior and cost effective technology comes about and funnels vendors into a single direction. There may be some technology out there that might unite vendors to incorporate a way to interoperate, at the data collection level or least at the data level.

One of the prime arguments provided by utilities to the vendors is that standardization and interoperability to support expansion of the industry. Vendors have used proprietary information to preserve their piece of the market. But with better interoperability and standards, more utilities will be encouraged to enter the market and the market itself will expand. There are certainly examples in the electronics, radio field (computers, cell phone communication) to demonstrate that standardization and interoperability tend to support expansion of such businesses. One way that the industry can grow is the use of additional monitoring equipment that can use the communication system to transmit information about the system. Acoustic monitors stationed out in the system to listen for leaks on piping has been in use for nearly ten years and the development of improved systems in recent years will make this an attractive addition and in some cases will support the business case for AMI. Customer shutoff valves are also penetrating the market and will be available for both AMI and AMR systems. Some intelligent meters or AMR transmitters can send alarms about continuous flow or reverse flow. Pressure monitors and water quality monitors are on the horizon.

The development of these markets is a mix of efforts by third parties and the meter/AMI/AMR companies. With few exceptions the majority of these developments remain with one or two vendors. So utilities face limited choices using third party equipment because the AMR/AMI choice limits options. Perhaps the most telling example is the evolution of the first acoustic monitors. The private company that developed the units employed an open protocol to allow for multiple AMI companies to consider them. But an AMI company bought the technology and in a few years changed the model to their proprietary protocol and redesigned the unit so that it could only communicate with the single company AMI device. The sales of the redesigned unit are limited to the buyers of the one AMI companies. Even if the unit was technologically superior, the AMI company has limited its potential. The slow developing result today is a product with a limited market that has not progressed. What might have happened if the acoustic monitor had remained available to all is unknown. What can be seen is the technology has been advanced significantly by other companies in the industry. In recent years, another AMR/AMI firm has purchased another acoustic monitor firm and cultivated an advanced unit now on the market. It will be interesting to observe whether these monitors will be made available to other AMI firms.

The utility effort is ongoing. There have been some encouraging moves by vendors to recognize that this transition to standards and interoperability are inevitable. Utilities have felt that their voices have not been heard. By taking the issue to the industry as a collective voice, progress seems highly likely.