

MultiSpeak® Specification

AMI/HAN Webcast
July 14, 2009





Ten Characteristics of an Acceptable Mature Standard

1. **Ready to implement today.**
2. **Has been proof-tested in multiple existing installations.**
3. **Offers true interoperability in “off-the-shelf” products available in today’s market.**
4. Allows product development that does not require extensive customization by the end user – *thus* significant technical or IT staffs or outside consulting support are not required.
5. Can be used either with or without messaging infrastructure (e.g. “middleware”).
6. **Is extensible without compromising the basic interoperability of the interface.**
7. Are scalable to allow use for any size utility or information demand.
8. Are supported by wide range of vendors.
9. Have an existing, modestly-priced commercial testing process to help utilities and vendors ensure interoperability.
10. Have a large number of individuals trained in the use of the specification.

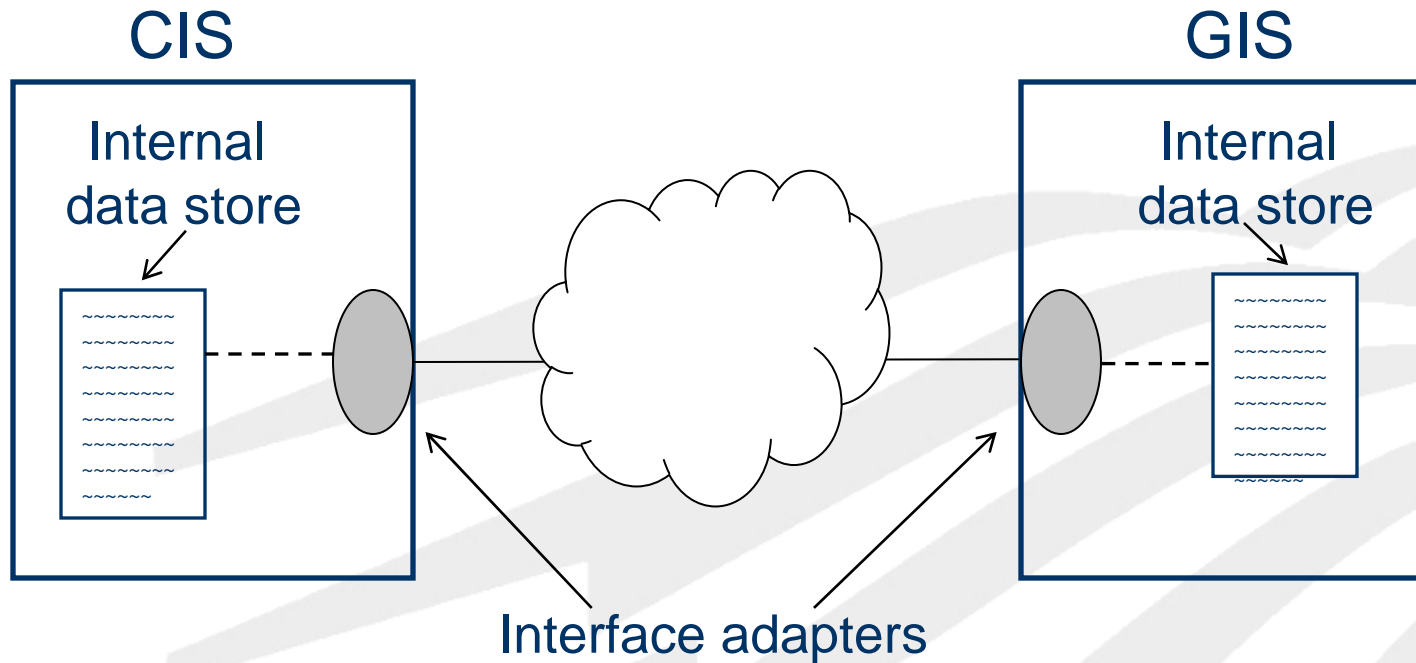


Introduction to MultiSpeak®

- Developed by NRECA in collaboration with key industry vendors
- Currently covers applications of interest to distribution utilities and to the distribution portion of vertically integrated utilities, moving towards support for transmission.
- Standard is mature, scope is continuing to grow
- In use at over 350 utilities
- Well over 1,000 tested interfaces in place
- More information and specification available at www.MultiSpeak.org



MultiSpeak Approach





MultiSpeak Specification

- Semantic framework documented in XML schema.
- Rich set of service definitions, documented in web services (WSDL).
- Web service payloads formatted in XML.
- Easy to extend for semi-custom implementations.
- Currently most implementations are in Version 3.0.
- Version 4.0 issued in February 2009
- Well defined, third-party compliance and/or interoperability testing program since 2001 – applies to all interfaces.



Completed Interoperability Tests (as of 9/08)

**28 Version 3.0
Interoperability
Interfaces Tested**

- Survalent SCADA v. 1.08.0626
- Elster EnergyAxis MAS v. 6.0.2 – Milsoft DisSPatch & Web Server v. 7.2
- Aclara (TWACS) AMR (OD) with C3-ilex SCADA (acting as OA).
- Aclara (TWACS) AMR (MR) with NISC iVue (CB).
- Aclara (TWACS) AMR (OD) with NISC iVue (OA).
- Hunt Command Center v.2.2.2 (MR) – Milsoft Windmil & Web Server v. 7.1 (EA)
- Hunt Command Center v.2.2.2 (OD) – Milsoft Windmil & Web Server v. 7.1 (OA)
- Advanced Control Systems PRISM Web Service Gateway v. 1.0
- Cannon Yukon v. 3.1.17 (MR) – Milsoft DisSPatch & Web Server v. 7.1 (EA)
- Cannon Yukon v. 3.1.17 (OD) – Milsoft DisSPatch & Web Server v. 7.1 (OA)
- DCSI Optimum v. 0.1 – Milsoft WindMil, DisSPatch & Web Server v. 7.1
- Hunt Command Center v. 2.2.2 (MR) – NISC iVUE v. 1.8 (CB)
- Survalent Windows SCADA v. 3.0 (SCADA) – Milsoft WindMil, DisSPatch & Web Server v. 7.1 (OA)
- Survalent Windows SCADA v. 3.0 – Milsoft WindMil, DisSPatch & Web Server v. 7.1 (EA)
- QEI TDMS Plus SCADA System v. 7.0.0 (SCADA) - Milsoft WindMil, DisSPatch & Web Server v. 7.2 (OA)
- QEI TDMS Plus SCADA System v. 7.0.0 (SCADA)- Milsoft WindMil, DisSPatch & Web Server v. 7.2 (EA)
- Aclara (TWACS) AMR (OD) with Milsoft WindMil, DisSPatch & Web Server v. 7.2 (OA)
- Aclara (TWACS) AMR (MR) with Milsoft WindMil, DisSPatch & Web Server v. 7.2 (EA)
- Aclara (TWACS) AMR (MR) with Milsoft WindMil (CB)
- Exceleron PAMS v. 1.0 (CB) – Hunt Command Center v. 3.0 (CD)
- Exceleron PAMS v. 1.0 (CB) – Hunt Command Center v. 3.0 (MR)
- Exceleron PAMS v. 1.0 (CB) – Cannon Yukon v. 3.2 (CD)
- Exceleron PAMS v. 1.0 (CB) – Cannon Yukon v. 3.2 (MR)
- Exceleron PAMS v. 1.0 (CB) – DCSI TWACS OPTIMUM V. 1.5 (CD)
- Exceleron PAMS v. 1.0 (CB) – DCSI TWACS OPTIMUM V. 1.5 (MR)
- Cannon Yukon v. 3.2 (MR)– NISC iVUE v. 1.8 (CB)
- Cannon Yukon v. 3.2 (OD) – NISC OMS v. 1.7 (OA)
- DCSI TWACS OPTIMUM v. 1.5 – NISC OMS v. 1.7 & iVUE v. 1.8



MultiSpeak Background

- MultiSpeak Initiative is a group of about 50 vendors that provide products and services to distribution utilities.
- Recently membership was opened to utilities interested in supporting the effort.
- Currently about 20 utilities are members of MultiSpeak, including Consumers Energy and DTE.
- Members have access to latest drafts of specification and can affect the direction of the spec.



Market Needs Drove MultiSpeak Design Choices

- Co-ops often have few or no IT staff, hence relied on vendor-supplied integration.
- Co-ops often have no messaging infrastructure or ESB – hence protocol needed to address lack of message persistence.
- Originally P2P interfaces with simple transport layer security were adequate. Late in V3 services were recast for bus implementation.



MultiSpeak Past Process

- Effort began in 2000.
- Original work was documentation of data model, based on existing vendor interfaces.
- Assumed that existing interfaces inherently supported necessary use cases
- Didn't "boil the ocean" – focused on a few well-defined point-to-point interfaces
- Developed processes, policies and testing procedures
- Version 1.1 was batch data integration only
- Version 2.2 extended number of interfaces, added real-time support and service definitions using a CIM-like messaging interface



MultiSpeak Recent Process

- Version 3.0 moved to web services, but maintained batch interface - deprecated messaging framework.
- Recent (Version 4) interface development based on more traditional use case driven development since, in many cases, existing interfaces do not exist.
- Interoperability testing has become more important than compliance testing.



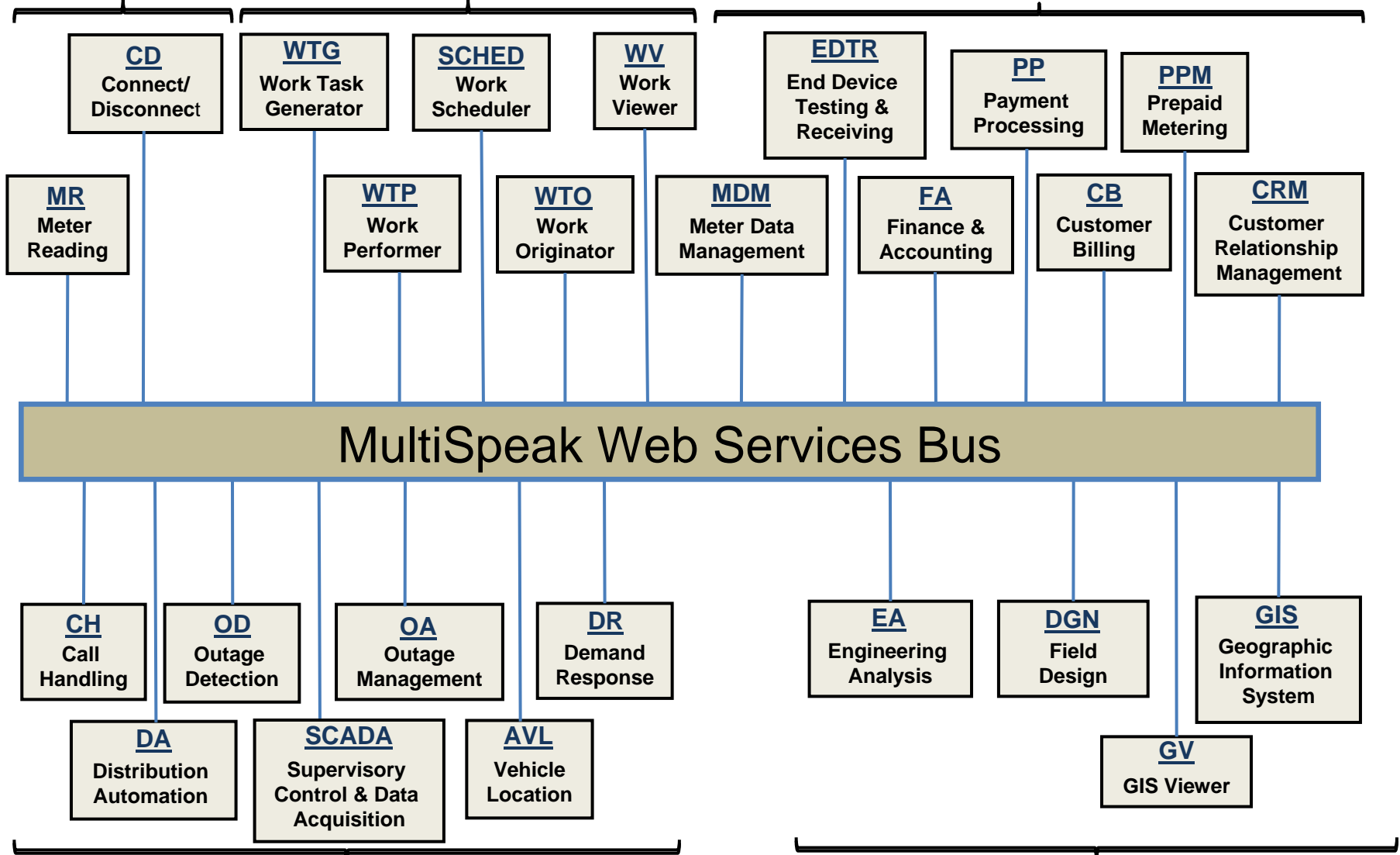
MultiSpeak Approach

- Data objects are formalized in an XML Schema that is highly extensible
 - New objects can be added
 - Existing objects can be extended
- Messaging components defined in messaging schema (V2.2) or in Web Services (V3.0)
- All transports support request/response and pub/sub
- Graphical constructs sent as XML in standard Geography Markup Language primitives, not proprietary graphics formats
 - GML is a standard issued by the OpenGIS Consortium, Inc.

Distribution System Monitoring

Work Management

Business Functions External to Distribution Management



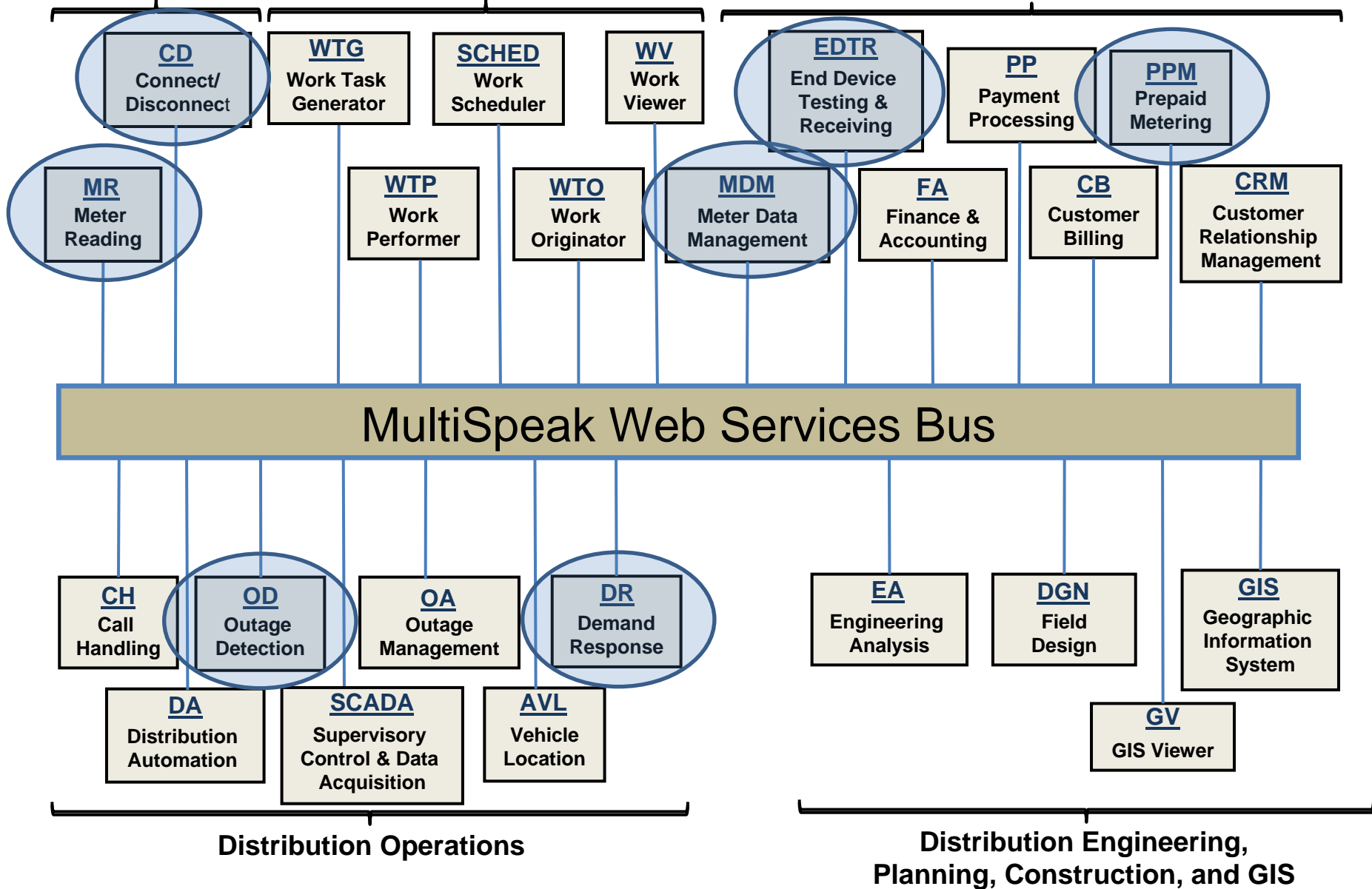
Distribution Operations

Distribution Engineering, Planning, Construction, and GIS

Distribution System Monitoring

Work Management

Business Functions External to Distribution Management





Specific AMI/MDM Use Cases Supported by MultiSpeak Today

- Feeding AMI data to an MDM or CIS
- Publishing meter events and event history
- Establishing, maintaining and reading meter groups
- Reading electric, water and/or gas meters
- Feeding AMI data (load, voltage, harmonics, blinks, etc.) to a DMS
- Feeding DMS connectivity to AMI
- Detecting customer outages and notifying OMS
- Displaying customers, meters, etc in GIS
- Using a CIS to drive customer disconnect/reconnect
- Meter receiving (transfer of data to facilities accounting and/or asset management)
- Meter testing (third part or testing board to asset management)



Changes in Version 4

- Internationalization
 - International telephone and address fields
 - Unit/value pairs with wide selection of units
 - Supports all ISO 4217 currency codes
- Adds work management and AVL
- Enhanced support for water and gas metering
- Adds support for engineering model catalogs
- Adds CIM CPSM-compatible transmission power system model exchange, will add in CIM CDPSM as unbalanced profile is completed
- **In development** - Enhanced support for AMI-focused smart grid, including IHD, demand response, Zigbee[®] Smart Energy Profile and the work of UtilityAMI/UtilityHAN.



IEC (CIM) Harmonization Status

A collaboration has been established that will create and propose two sets of IEC standards:

- IEC 61968-14-1: Mapping between MultiSpeak 4.0 and IEC 61968, parts 3 through 10 and 13
- IEC 61968-14-2: A CIM profile for MultiSpeak 4.0, one profile for IEC 61968 parts 3 through 10 and 13



Plans for 2009 Interop Testing

- Joint CIM/MultiSpeak V4 Interop Testing Planned for Third Quarter 2009:
 - IEC 61968 – 9, Meter Reading and Control Profile
 - IEC 61968 – 13, CIM CPSM Transmission Network Model Exchange Profile (and CDPSM Model Exchange Profile, if it is ready for testing)



MultiSpeak Vendor Members

(6/2009)

- **Aclara (DCSI TWACS)**
- Advanced Control Systems
- **Apogee International**
- C3-Ilex
- **Carina Technology, Inc.**
- Central Service Association
- Clevest Solutions
- **Cooper Power (Cannon Technologies)**
- Cooperative Response Center
- Cornice Engineering
- Daffron
- **Elster Integrated Solutions**
- EnerNex
- Enspira Solutions
- EPRI
- ESRI
- **Exceleron Software**
- GeoNav Group
- **Landis + Gyr**
- Meltran, Inc.
- Milsoft
- N-Dimension Solutions
- **Nexant, Inc.**
- NISC
- NRTC
- **Olameter, Inc.**
- Open Secure Energy Control Systems
- Open Systems International
- **Oracle Utilities**
- Ovace A Mamnoon
- Partner Software
- Powel
- Power Delivery Associates
- Power System Engineering (PSE)
- Professional Computer Systems
- Progress Software
- QEI
- RMA Engineering
- SageQuest
- SEDC
- **Siemens**
- SpatialNet
- Survalent Technologies
- **Tantalus**
- Telvent/Miner & Miner
- Trimble/UAI
- UISOL
- Wireless Matrix
- Xtensible Solutions

Vendors in red sell
metering or MDM



MultiSpeak Utility Members

(6/2009)

- Barton County EC, MO
- Central Alabama Elec. Co-op
- Central REC, OK
- Co-Mo EC, MO
- Consumers Energy Company, MI
- Corn Belt Energy, IL
- Dakota EA, MN
- Dixie EMC, LA
- Detroit Edison Company, MI
- Duck River EMC
- East Central OK EC
- Hart EMC, GA
- KAMO Power, OK
- New Hampshire Electric Co-op
- Northern Neck EC, VA
- Oklahoma Electric Co-op
- Owen Elec. Co-op, KY
- Pioneer REC, OH
- Platte-Clay Elec. Co-op, MO
- Poudre Valley REA, CO
- Santee Elec. Co-op, SC
- Southwest EC, MO
- STAR Energy Services, MN
- Vermont Electric Co-op
- White River Valley EC, MO
- WIN Energy REMC, IN



To Learn More

- Join the Initiative!
- Download the V3.0 specification or Utility User's Guide from web site
- Browse the web services on the web site or download version for local hosting
- Watch the web site for developments and subscribe to the MultiSpeak mailing list (www.MultiSpeak.org)



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