



SGIP Catalog of Standards Criteria and Analysis Report: MultiSpeak Specification

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1 Background and Purpose

This white paper is produced by an SGIP Working Group (WG) analyzing the standards applicability to the SGIP Catalog according to the specific criteria presented in Section 2 of the Standards Catalog Process and Structure document [1]. This is part of the process of adding a standard to the catalog (see Section 4.1 step 5).

The following Criteria are used to determine whether a specific standard, guide, or practice is to be included in the catalog. The Criteria are required attributes for a standard to be included in the Catalog.

1.1 Overview of the standard

Describe briefly the scope and purpose of the standard in this section.

The MultiSpeak Initiative is an industry consortium of software vendors and utilities in collaboration with the National Rural Electric Cooperative Association (NRECA), which has been actively involved in standardizing software interfaces since 2000. The Initiative has developed a specification for interfaces among software applications that are used in distribution utilities and the distribution portion of vertically-integrated utilities. The specification includes a data model documented in a unified modeling language (UML) class model and cast in use as an XML Schema. Interface messages are based on standardized SOAP web services and are documented in standard web services description language (WSDL) contracts. Utilities and vendors may use the library of pre-defined services to implement a wide variety of interface functionality. The MultiSpeak Specification includes over 30 mature profiles for interfacing smart grid applications, including AMI, meter data management (MDM), demand response, SCADA, outage management systems, GIS, and work management. MultiSpeak interfaces for automation systems are in operation at over 700 utilities including electric cooperatives, municipals, and investor-owned utilities, in at least 19 countries, including the United States.

2 Criteria for Inclusion

A proposed standard for the Catalog must provide justification of support for each topic criterion in this section.

2.1 Relevancy

The standard facilitates interoperability related to the integration of Smart Grid devices or systems. Relevant Smart Grid capabilities are as defined by the EISA [3]. For each section below, provide a description of how this standard is relevant to the EISA goals. If the standard is not relevant to one or more of these goals, leave that section in place and simply add NOT RELEVANT to that section.

2.1.1 Improve reliability, security and efficiency of the Smart Grid

The MultiSpeak Specification includes significant functionality that assists utilities to exchange information among automation systems such as AMI, MDM, IVR, OMS,

DMS, and GIS. Examples of services included in the defined interfaces that assist in improving system reliability and efficiency include capabilities that exchange: (i) outage status between AMI, MDM and OMS/DMS systems, (ii) SCADA device status to OMS/DMS systems, (iii) information about customer outage calls between IVR and OMS/DMS systems, and (iv) system measurements between AMI, SCADA, or DA systems and OMS/DMS systems to enhance analysis of system state.

2.1.2 Dynamic optimization of grid operations and resources, with full cyber-security

The MultiSpeak specification includes capabilities to exchange system state information with systems enabled to take control actions. An example of such functionality is the ability for a DMS system to obtain system voltage information from AMI or other measurement systems and to send control signals to reduce load or to operate capacitor banks as necessary to achieve optimized operations of distribution feeders. The MultiSpeak Specification has included guidance on how to securely implement interfaces since 2005 and has recently (Fall 2012) developed an updated normative security standard.

2.1.3 Deployment and integration of distributed resources and generation, including renewable resources.

MultiSpeak includes capabilities to report information about the state and operational characteristics of distributed resources, but the management of such resources is outside the scope of the standard.

2.1.4 Development and incorporation of demand response, demand-side resources, and energy-efficiency resources.

The MultiSpeak Specification has a rich set of demand response capabilities including commands to effect direct load control, price-sensitive demand response and control of smart demand-responsive loads.

2.1.5 Deployment of “smart” technologies¹

The Specification includes interfaces between Operations domain systems (such as AMI head-end systems and demand response management systems) that effect changes in customer thermostats and other demand-responsive loads.

2.1.6 Integration of “smart” appliances and consumer devices.

¹ Real-time, automated, interactive technologies that optimize the physical operation of appliances and consumer devices for metering, communications concerning grid operations and status, and distribution automation.

The Specification does not directly effect integration in the customer domain, but integrates systems in the Operations domain that affect the control of customer appliances and devices.

2.1.7 Deployment and integration of advanced electricity storage and peak-shaving technologies²

MultiSpeak includes capabilities to report information about the state and operational characteristics of distributed storage resources, but the management of such resources is outside the scope of the standard.

2.1.8 Provision to consumers of timely information and control

The Specification includes robust capabilities to effect delivery of information to customer in-home display devices, including such information as peak alerts, billing and usage history, as well as pricing information. If the customer devices and the head-end system that controls such devices permit customer controls, such as bypassing demand response commands, feedback about such actions may be returned to the system that initiated the demand response command using MultiSpeak messages.

2.1.9 Development of standards for communication and interoperability of appliances and equipment³

Devices in the customer domain may be affected by commands exchanged among systems in the utility domain, but direct communication among devices in the customer domain is outside the scope of the standard.

2.1.10 Lowering of unreasonable or unnecessary barriers to adoption of Smart Grid technologies, practices, and services.

The MultiSpeak Specification includes time-tested and standardized system interfaces that reduce the cost of implementing integrated automation systems. Furthermore, the Initiative has documented how the interfaces may be used to implement utility business processes in over 300 standard use cases, thus reducing the time required for utilities or vendors to understand and implement MultiSpeak-compatible integration.

2.2 Community Acceptance

The standard should be widely acknowledged as facilitating interoperability related to the integration of devices or systems that enable Smart Grid capabilities.

² Including plug-in electric and hybrid electric vehicles, and thermal-storage air conditioning.

³ Connected to the electric grid, including the infrastructure serving the grid

The MultiSpeak Specification is known to be in use at over 700 utilities including electric distribution cooperatives, municipals and investor-owned utilities. MultiSpeak has been documented to be in operation in at least 19 countries.

2.3 Deployment Suitability

The standard must demonstrate evidence of either having been deployed or it must be expected to fulfill a Smart Grid deployment gap with demonstrated adequate performance capabilities in commercial (real-world) applications.

The MultiSpeak Specification has been in wide-spread implementations at utilities since 2001. It is known to be in use at over 700 utilities including electric distribution cooperatives, municipals and investor-owned utilities. MultiSpeak has been documented to be in operation in at least 19 countries.

2.4 Interface Characterization

The relevant portions of the standard focus on requirements for integration and interaction through well-defined interfaces. The standard facilitates independence and flexibility in device or system design and implementation choices.

MultiSpeak is based on industry standard SOAP web services and XML message payloads, using well-defined WSDL contracts. As such it supports loosely-coupled, but well-documented service contracts. The reference architecture consists of 30 (as of Fall 2012) modular abstract software functional endpoints. Utilities and vendors are free to combine the functional endpoints to create a flexible set of interfaces for a wide variety of software applications.

2.5 Document Maintenance

The standard is supported by a multi-member organization that will ensure that it can be unambiguously referenced, that it is regularly revised and improved to meet changing requirements, and that there is a strategy for ensuring its continued relevance.

The MultiSpeak Specification has been developed by, and is maintained by, the MultiSpeak Initiative, an open collaboration of the National Rural Electric Cooperative Association and over 90 leading software vendors serving the electric utility market. MultiSpeak also has over 90 utility members supporting its use and providing active feedback to the MultiSpeak Technical Committee on the suitability of the standard. MultiSpeak has been under constant enhancement since 2000 and currently is in its fourth major version. The current release (as of 10/15/2012) is Version 4.1.6.

3 Additional Discussion

Write here any additional appropriate information and background material that will help the SGIP Plenary members properly interpret the contents of this report.

Additional information about the MultiSpeak Initiative and Specification may be found at: <http://www.multispeak.org> .

4 SGAC Comments

Insert the analysis results of the Smart Grid Architecture Committee here.

5 CSWG Comments

Insert the analysis results of the Cyber Security Working Group (CSWG) here.

6 Document References

- [1] Catalog of Standards Process Description Document, Version 1.0, 23 May 2011,
[http://collaborate.nist.gov/twiki-
sggrid/pub/SmartGrid/StandardOperatingProcedures/Standards_Catalog_Process_and
_Structure_V1_0.pdf](http://collaborate.nist.gov/twiki-
sggrid/pub/SmartGrid/StandardOperatingProcedures/Standards_Catalog_Process_and
_Structure_V1_0.pdf)
- [2] NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release
1.0 http://www.nist.gov/public_affairs/releases/smartgrid_interoperability_final.pdf
- [3] Energy Independence and Security Act (EISA) of 2007,
[http://frwebgate.access.gpo.gov/cgi-
bin/getdoc.cgi?dbname=110_cong_bills&docid=f:h6enr.txt.pdf](http://frwebgate.access.gpo.gov/cgi-
bin/getdoc.cgi?dbname=110_cong_bills&docid=f:h6enr.txt.pdf)

7 Revision History

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Rev. Number	Date	Author/Editor	Summary of Revisions
0.7	20110701	Marty Burns	Original Version
0.8	20121015	Gary A. McNaughton	Provided MultiSpeak Initiative input.

7.1 Contributors

Gary A. McNaughton is the Technical Coordinator for the MultiSpeak Initiative and can be contacted for further information at gmcaughton@multispeak.org .