

0 What: Demonstrate Common Semantic Model Translations for End Device Data (6.2.5)

0.1 Abstract:

NIST should work with NEMA to translate the ANSI C12.19 End Device (meter) data model into a common form that will allow the semantics of this and End Device models in other standards to be more readily harmonized. The objective is to allow the lossless translation from the common form to the various syntactic representations prevalent in each Domain. Details will include the representation of the Decade/Table/Element model, as well as, the Table-independent representation of key measurements of a revenue meter. (6.2.5)

0.2 Description:

ANSI C12.19-2008 standard organizes metering (and other end device) data and operating criteria to be conveyed into and out of those devices into defined groupings of information called "Tables". A large number of Tables are supported to allow representation of many types of data in numerous formats for "standard" or common data elements as well as manufacturer specific data. A high degree of flexibility in formats for time, integer values, data order, character formats, and data access are provided for. This flexibility has also resulted in some difficulties in determining what elements should be expected to be used-- a minimum set of expected functionality. Individual utilities and organizations, such as the AEIC, have attempted to develop implementation guidelines. A criticism of ANSI C12.19 has been its continued use of Tables to represent information rather than more "modern" methods of representing semantic models and implementation syntax.

0.3 Objectives

- Identify key use cases [OB1]
- Define mapping between ANSI C12.19-2008 and MultiSpeak v4 [OB2]
- Define mapping between ANSI C12.19-2008 and IEC 61968-9 [OB3].
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0.4 Why:

This work has the potential to substantially reduce the labor costs of integrating large-scale systems that use metering data. By reducing or eliminating the amount of human intervention required, utilities can focus on products and services that provide benefit to the organization and to the customer, rather than spending extensive effort on simply achieving connectivity between computer systems.

The ability to share the resources represented by metering can greatly enhance the operation of the energy generation and delivery operations as well as opening up new ways to serve customers. This work can enable enterprise level sharing and support a variety of new applications.

0.5 Where:

Meter interface with: Metering System (28 – Operations Domain), Customer EMS (32 – Customer), Submeter (37 – Customer), Workforce Tool (39 – Distribution), Field Devices (41 – Distribution); Semantics layer

0.6 How:

1. Formulate team.
2. Leverage the significant published work that already exists on this topic - specifically EPRI Report 1012651 - *"IntelliGrid Metering Objects Integration for Customer Communications"*.
3. Create and publish a "how to develop" guide with respect to this topic.
4. Develop a strategy to fully capture and embody in the semantic model the more than 20 years of data modeling effort and participation by all major North American meter manufacturers, numerous utilities, and communications companies, that defines what data is produced by customer meters.
5. Implement the description in some form based on XML, XML Schema, and/or UML.
6. Investigate potential integration and harmonization challenges (e.g., with MultiSpeak, IEC 61968-9, IEC 61850, IEC 60256 COSEM, etc.) and create roadmap to minimize or eliminate those challenges.
7. Transfer the results to ANSI and other relevant standards groups

0.6.1 Previous Work:

- EPRI Report 1012651 - *"IntelliGrid Metering Objects Integration for Customer Communications"*. The primary source work for this effort since it has a very similar scope.
- ASHRAE Research Project RP-1011. Was intended to propose use cases and object models for applications dependent on the interaction of the commercial building and utility industry.
- Association of Edison Illuminating Companies Guidelines v1.0 – placed boundaries on implementations of ANSI C12.19-1997 to ensure that features of the standard that encourage interoperability, such as the agreement to use "big-endian" data representation, were implemented by all who comply. Version 2.0 is under development to match the recently published ANSI C12.19-2008.
- IEC 60256 COSEM object model for ANSI C12 – permits ANSI C12 Tables to be viewed through specific objects defined in the COSEM standard.

0.6.2 Task Descriptions

Identify key use cases [OB1] AMI-NET TF, AMI-ENT TF, CIMug, WHEN

Put together team and define mapping between ANSI C12.19-2008 and MultiSpeak v4 for the key use cases [OB2] AMI-NET TF, AMI-ENT TF, CIMug WHEN

Put together team and define mapping between ANSI C12.19-2008 and IEC 61968-9 for the key use cases [OB3] AMI-NET TF, AMI-ENT TF, CIMug WHEN

0.6.3 Deliverables

1. Key use case list
2. Mapping definition between ANSI C12.19-2008 and MultiSpeak v4
3. Mapping definition between ANSI C12.19-2008 and IEC 61968-9

0.7 Who:

Project Team
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0.8 When:

Task Description	Completion Date
Task 1: Identify key use cases	TBD
Task 2: Put together team and define mapping between ANSI C12.19-2008 and MultiSpeak v4 for the key use cases.	TBD

Task 3: Put together team and define mapping between ANSI C12.19-2008 and IEC 61968-9 for the key use cases.	TBD
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Illustrative Version