This is a draft proposal for discussion and review. Drafted and edited by William Cox, wtcox@CoxSoftwareArchitects.com 20090208. Comments to the mailing list

smartgrid-discuss@lists.oasis-open.org.

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If you would like to support this proposal, send email to the editor.

Draft TC Proposal

1) The Charter of the TC, which includes only the following items:

(1)(a) The name of the TC

OASIS Energy Interoperation TC

(1)(b) A statement of purpose, including a definition of the problem to be solved.

As energy use and peak demand increases, the supply-side, namely delivery and generation infrastructure, has not kept pace. There have typically been limited high demand periods (on the order of ten days per year, and for only a portion of each of those days). This presents opportunities to shift energy use to times of lower demand and also to reduce use during peak periods so that the existing infrastructure will suffice. This shifting and reduction can reduce the need for new power plants, transmission and distribution systems, and through greater economic efficiency, reduce costs to energy consumers. This is often called Demand Response (DR) or demand shaping.

Likewise, as the use of alternative and renewable energy has grown—moving beyond hydroelectric to wind and solar sources, from industrial co-generation to plug-in hybrid vehicles—the roles of supplier and consumer have become less clearly defined. A supplier at one time may be a consumer at another time and vice versa. More intermittent renewable power also increases the challenge of maintaining the reliability of the electric grid.

Better communication of energy prices addresses growing needs for lower-carbon, lower-energy buildings, net zero-energy systems, and supply-demand integration that take advantage of dynamic pricing. New interaction technology is needed to encourage the use of local energy storage, including electric charging and thermal storage systems.

In this environment, buildings and businesses and the power grid will benefit from automated and timely communication of energy pricing, capacity information, and other grid information. This is called Auto Demand Response.

Consistency of technology for interoperation and standardization of data communication can allow essentially the same model to work for homes, small businesses, commercial buildings, office parks, neighborhood grids, and industrial facilities, simplifying interoperation across the broad range of energy providers, distributors, and consumers, and reducing costs for implementation.

These communications will involve energy consumers, producers, transmission and distribution systems, and must enable aggregation for both consumption and curtailment resources. Market makers, such as Independent System Operators (ISOs), utilities, and other evolving mechanisms need to be supported so that interoperation can be maintained as the Smart Grid evolves. And at those interfaces, building and facility agents can make decisions on energy sale purchase and use that fit the goals and requirements of their home, business, or industrial facility.

As more energy resources are brought into the Smart Grid, the symmetry of interfaces must be considered: a consumer of energy may be a producer when the sun is shining, the wind is blowing, or a facility is producing co-generated energy.

In addition to architectural symmetry, this work should create composable solutions that leverage existing technologies (such as OASIS fine-grained web services security standards and reliable messaging standards) rather than reinventing. Defining service interfaces and the data on which they operate will allow

interoperation without requiring deep knowledge of the implementations that may be communicating.

To gain the economic and societal benefits promised by the interaction of Smart Grids with Smart Buildings/Facilties and Enterprises, dynamic pricing, reliability, and emergency signals must be communicated through interoperability mechanisms that meet business needs, scale, use a variety of communication technologies, maintain security and privacy, and are reliable. As technology evolves, we must try to define interoperability in a manner that will work with anticipated changes as well as those we cannot predict.

(1)(c) The scope of the work of the TC.

This TC will leverage existing work wherever feasible, and will produce specifications for interoperation consistent with architectural principles including symmetry, composability, service orientation, and aggregation.

The TC will develop a data model and communication model to enable collaborative and transactive use of energy. Web services definitions, service definitions consistent with the OASIS SOA Reference Model, and XML vocabularies will be developed for interoperable and standard exchange of:

- Dynamic price signals
- Reliability signals
- Emergency signals
- Communication of market participation information such as bids
- Load predictability and generation information.

This work will be done to facilitate enterprise interaction with energy markets, including but not limited to:

- Response to emergency and reliability events
- Take advantage of lower energy costs by deferring or accelerating usage
- Enable trading of curtailment and generation
- Support symmetry of interaction between providers and consumers of energy
- Provide for aggregation of provision, curtailment, and use

The definition of a price and of reliability information depends on the market context in which it exists. It is not in scope for this TC to define specifications for markets or

for price and bid communication, but the TC will coordinate with others to ensure that commonly used market and pricing models are supported.

Specific work with which the TC intends to coordinate is listed in Section (2)(a).

(1)(d) A list of deliverables, with projected completion dates.

Projected times are from inception, the date of the initial TC meeting.

Insofar as possible the TC will coordinate its schedules with UCAI and other initiatives including those supported by NIST and related regulatory agencies.

TBD

(1)(e) Specification of the IPR Mode under which the TC will operate.

The TC shall operate under RF on Limited Terms.

(1)(f) The anticipated audience or users of the work.

Anticipated users of this work include:

- Implementers of facility agents, embedded communications clients in control systems, and gateways
- Market makers and participants such as Independent System Operators
- Aggregators of energy provision, curtailment, and use
- Consumers of energy for acquiring energy in a cost-effective manner consistent with their business and/or personal activities
- Transmission, distribution, and utilities

(1)(g) The language in which the TC shall conduct business.

The TC will use English as the language for conducting its operations.

(2) Non-normative information regarding the startup of the TC:

(2)(a) Identification of similar or applicable work that is being done in other OASIS TCs or by other organizations, why there is a need for another effort in this area and how this proposed TC will be different, and what level of liaison will be pursued with these other organizations.

There is no standard for interaction and interoperation in this space.

The Demand Response Research Center (http://drrc.lbl.gov) at Lawrence Berkeley National Laboratory (http://www.lbl.gov) has defined a specification called "Open Automated Demand Response Communication Specification (Version 1.0)," also known as OpenADR or Open Auto-DR, (http://openadr.lbl.gov), which addresses many of the issues described in the Charter. Since May 2008, OpenADR has gone through two major public drafts and is being used commercially and as pilots by several utilities in the states of California and Washington in the U.S. OpenADR is one element of the evolving Smart Grid information and communications technologies that are being developed to improve collaboration between electric supply and demand.

The LBNL OpenADR body of work is being extended through two organizations being created: this proposed OASIS TC and the proposed UCAIug OpenADR Task Force.

OpenADR will be contributed to the TC at its inception (see Section (2)(g).

The UCA International Users Group (http://www.ucaiug.org/) is a not-for-profit corporation bringing together utilities and supplier companies. An innovative collaboration is being developed that will focus goals and requirements from utility and utility supplier stakeholders as input to the definition of XML vocabularies and interoperation specifications by this TC.

We anticipate that the UCAIug OpenADR Task Force (in formation) will accept responsibility for refining and evolving the technology independent requirements and information model contributed by the LBNL OpenADR effort, and for focusing and providing requirements input from the utility and energy service provider perspective to the OASIS TC and other bodies developing technology specific implementations. We anticipate that that task force will also accept responsibility for developing

consensus regarding DR requirements and information exchange from other UCAIug Working Groups, Task Forces, and alliances including AMI-Enterprise, CIMug, and the ZigBee/HomePlug alliance, and for collaboration with the OASIS TC through timely contributed models, requirements, and comments on technical work.

This OASIS TC is responsible for defining and evolving the XML technology specific aspects of this work, including but not limited to data models, XML vocabularies, Web services definitions, and protocols for information exchange, engage in analyzing and clarifying goals and requirements, and managing public and other reviews and inputs to the OASIS standardization process.

The UCAIug provides focused input from a significant group of stakeholders, but not the entire range of potential users of the planned work of the TC. Accordingly, we are working to engage with other groups of stakeholders to allow similar requirements and information model collaboration.

We believe that close coordination and balancing among the full range of stakeholders is essential to ensure that a single, technology independent requirements specification and abstract information model can be developed that can be implemented by the OASIS TC and any other entities that may develop non-XML profiles, thus assuring interoperation at the model level in the future.

The utilities, Independent System Operators (ISOs), energy market makers, and wholesale energy market participants have defined interactions that could support and contribute to this TC's work. We welcome them as stakeholders and potential contributors.

We anticipate input from technology, policy and business stakeholders and organizations, including but not limited to NIST Domain Expert Working Groups (NIST DEWG) and Task Groups (http://www.nist.gov/smartgrid/), The Federal Energy Regulatory Commission (FERC http://www.ferc.gov), the National Association of Regulatory Utility Commissioners (NARUC http://naruc.org/) and the Electric Power Research Institute (EPRI http://www.epri.com).

The development of open, transactive energy is a goal of the GridWise Architecture Council (http://www.gridwiseac.org/). We expect to engage the members throughout the lifecycle of the TC, as well as with emerging Smart Grid Architecture efforts from NIST.

The definition of a market is a required context for understanding prices, pricing, and bids. Market definition is outside the scope of this TC; we expect to interact with work developing out of the 2009 GridEcon conference (http://www.gridecon.com/2009/), NIST, and the evolving Smart Grid Architecture. We anticipate a Technical Committee will be formed to define details of prices and bids in a manner usable by and consistent with OpenADR.

Work on defining business attributes of a service, being developed by the OASIS Service Oriented Architecture End-to-End Resource Planning TC (SOA-EERP TC), may apply to define attributes of energy.

The (proposed, in formation) OASIS WS-Calendaring Technical Committee will be creating an interoperable XML vocabulary and model for time that is applicable to energy pricing and automated building management. We expect to coordinate with that TC when it is formed.

Composability with the WS-Transaction family of OASIS Standards may be beneficial for consistent distributed outcomes, particularly across enterprises with diverse ownership.

Service definitions and the approach of the TC should be consistent with the OASIS Service Oriented Architecture Reference Model (http://www.oasis-open.org/specs/#soa-rmv1.0) and industry practice in that area.

Other work TBD.

(2)(b) The date, time, and location of the first meeting, whether it will be held in person or by phone, and who will sponsor this first meeting. The first meeting of a TC shall occur no less than 30 days after the announcement of its formation in the case of a telephone or other electronic meeting, and no less than 45 days after the announcement of its formation in the case of a face-to-face meeting.

TBD

(2)(c) The projected on-going meeting schedule for the year following the formation of the TC, or until the projected date of the final deliverable, whichever comes first, and who will be expected to sponsor these meetings.

The TC will conduct its business via weekly teleconference calls. The time of the call will be determined during the first meeting of the TC. The TC will conduct face-to-face meetings as needed and determined by the TC. The TC participants will sponsor teleconference facilities and face-to-face meetings.

Time zone difference of participants may require flexibility in meeting times, quorum, and subcommittees (if any).

(2)(d) The names, electronic mail addresses, and membership affiliations of at least Minimum Membership who support this proposal and are committed to the Charter and projected meeting schedule.

Note: need a minimum of 5, of which at least two of which must work for OASIS Organizational Members.

PENDING. Contact wtcox@CoxSoftwareArchitects.com if you are interested in supporting this work.

(2)(e) The name of the Convener who must be an Eligible Person.

Mary Ann Piette, Lawrence Berkeley National Laboratories, MAPiette@lbl.gov.

(2)(f) The name of the Member Section with which the TC intends to affiliate

The Energy Interoperation TC intends to affiliate with the OASIS BLUE Member Section.

(2)(g) Optionally, a list of contributions of existing technical work that the proposers anticipate will be made to this TC.

OpenADR WG and Lawrence Berkeley National Laboratory's Demand Response Research Center have agreed to contribute "Open Automated Demand Response Communication Specification (Version 1.0)," also known as OpenADR or Open Auto-DR, (http://openadr.lbl.gov), to the Technical Committee when it is formed.

Others TDB.

(2)(h) Optionally, a draft Frequently Asked Questions (FAQ) document regarding the planned scope of the TC, for posting on the TC's website.

TBD

(2)(i) Optionally, a proposed working title and acronym for the specification(s) to be developed by the TC.

TBD