

CERT'S PODCASTS: SECURITY FOR BUSINESS LEADERS: SHOW NOTES

Using the Smart Grid Maturity Model (SGMM)

Key Message: Over 100 electric power utilities are accelerating their transformation to the smart grid by using the Smart Grid Maturity Model.

Executive Summary

There is a massive public-private effort underway to modernize the electric power grid to enable important advances in energy efficiency, reliability, and security. The Smart Grid Maturity Model (SGMM) is a management tool that helps utilities plan smart grid implementation, prioritize options, and measure progress. Developed by utilities for utilities, the model is hosted by the Software Engineering Institute (SEI) as a resource for industry transformation with the support of the US Department of Energy and input from a broad array of stakeholders. [1]

In this podcast, David White, the team leader for the SEI's SGMM project, provides an update on SGMM use in the past year including the development of a new survey method, SGMM Compass, and a navigation method that supports utilities in making effective use of the Compass survey to accelerate their smart grid transformation.

PART 1: SGMM OVERVIEW; A PROFILE OF CURRENT SGMM USERS

Overview

SGMM is a model of characteristics for a utility to achieve smart grid transformation. SGMM is organized into eight domains, six maturity levels, and 175 characteristics. The characteristics are defined at the intersection of each of the eight domains with each of the six maturity levels.

The eight domains are:

- strategy, management, and regulatory – vision, planning, decision making, strategy execution, disciplines, regulatory, and investment
- organization and structure – communications, culture, knowledge management, training, and education
- technology – information, engineering, integration of information and operational technology, standards, and business analytics tools
- societal and environmental – conservation and green initiatives, sustainability, economics, and ability to integrate alternative and distributed energy
- grid operations – advanced grid observability, control, quality, and reliability
- work and asset management – optimized assets and resources (i.e., people and equipment)
- customer management and experience – retail, customer care, pricing options and control, advanced services, visibility into utilization, quality, and performance
- value chain integration – enabling demand and supply management, distributed generation and load management, and leveraging market opportunities

SGMM is used by utilities to develop a road map for their grid modernization efforts and to track progress.

Strategy, Management, and Regulatory Domain

Example characteristics for this domain include:

- maturity level 1: develop and document a vision for grid modernization
- maturity level 3: establish a smart grid governance model

- maturity level 5: identify new business opportunities that are emerging as a result of smart grid capabilities

Profile and Demographics for Current SGMM Users

More than 100 utilities have taken the SGMM survey, which is an indication that they've used SGMM. The profile of this user community is as follows:

- Slightly more than 50 percent of utilities are in the United States. The other 50 percent are distributed fairly evenly across Europe, Asia-Pacific, Canada, Mexico, and Central and South America.
 - Utility size is typically characterized by number of meters. Utilities using SGMM range from 34 million meters to 1500 meters.
 - In terms of function, about 25 percent of utilities provide electric power distribution only. Fully integrated utilities make up an additional 25 percent providing generation, transmission, distribution, and retail functions. The remaining 50 percent provide various combinations of functions.
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PART 2: USING SGMM COMPASS TO ASSESS SMART GRID PERFORMANCE

SGMM Compass Survey

This survey is a questionnaire that a utility fills out, resulting in a score that maps to a maturity rating in each of the SGMM's eight domains. Its objective is to provide feedback on where a utility is in its grid modernization effort as characterized by SGMM.

The survey is made up of twelve sections:

- Sections 1-4 include questions on demographic information, some standard performance information, and utility size and meter count.
- Each of sections 5-12 covers one of the eight domains, including one question for each characteristic within the domain, for a total of 175 questions.

Survey Results

In addition to their own performance and maturity rating, each utility that completes the survey receives summary statistics on how all other respondents have answered the questions and their resulting scores.

This allows each utility to see how it is performing in comparison to others in terms of, for example, being in the middle of the pack or being an outlier. In this way, every user of SGMM contributes data that provides value to every other user.

SGMM Navigation Process

With SGMM version 1.1, users can either perform a self-assessment (with scoring and phone support to interpret the results) or they can use the SGMM navigation process.

This process is a five-step process, led by a navigator. The steps are:

1. Preparation: The utility and the navigator work together to plan the entire process.
2. Survey workshop: All key utility stakeholders spend one-half day together, with the navigator, arriving at consensus responses to the SGMM Compass survey questions. Utilities have reported that they derive great value in working with one another in this workshop format.
3. Survey scored and analyzed: This is performed by the navigator.
4. Aspirations workshop: The navigator reviews the results with all utility stakeholders. Participants identify aspirations for where they want to be in two to three years. They also identify motivations regarding future SGMM improvement targets, actions to take, and obstacles to overcome. All of this information supports

strategic and tactical planning.

5. Wrap-up: The navigator documents and delivers the results of the aspirations workshop.

SGMM Navigator

An SGMM navigator is an expert in SGMM, an expert in the navigation process, and an expert in the electric power industry.

The SEI has developed a training and certification process for electric power industry experts to become certified SGMM navigators.

PART 3: SGMM IMPROVEMENT TRENDS; PLANS TO COLLECT BETTER PERFORMANCE DATA

Repeated Use of SGMM

According to the [Smart Grid Maturity Model Update October 2010](#), a number of utilities have taken the SGMM Compass survey twice. Some of the results include:

- Substantial improvement in three SGMM domains: strategy, management, and regulatory; organization and structure; and work and asset management
- Modest improvement across four domains: grid operations, technology, customer, and value chain integration
- A slight decline in societal and environmental, which may be due to making survey questions more comprehensive

Plans for the Coming Year

SGMM version 1.2 will be released toward the end of 2011 or in early 2012. Planned improvements include:

- A primary focus on collecting better performance data and measures based on SGMM grid modernization improvements to date
- Updates to the SGMM model, Compass survey, navigation process, and navigator training based on observed use and user feedback

Resources

[1] SEI Smart Grid Maturity Model [website](#).

SGMM Tools & Methods [website](#), including the SGMM Model, summary matrix, Compass survey, and navigation process

SEI [Webinar](#) “Empower Your Smart Grid Transformation,” March 2011.

[Smart Grid Maturity Model Update](#) October 2010

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CERT Podcasts:

- [The Smart Grid: Managing Electrical Power Distribution and Use](#)
- [Introducing the Smart Grid Maturity Model \(SGMM\)](#)