

Application Led, Application Leaders

Dr. Mitch Tseng (Huawei Technologies), Vice Chair of the U.S. Telecommunications Industry Association's TR-50.1, outlines the progress so far on Machine-to-Machine (M2M) Standardization



Dr. Mitch Tseng

Dr. Mitch Tseng, the Vice Chair of TIA TR-50.1 Sub-Committee, is a veteran in international standardization with more than 20 years of the industrial experience. He has participated in CDMA standardization activities since 1998 through TIA, and later on, through 3GPP2, representing Nortel Networks, Nokia, and now Huawei Technologies.

He is a well-known expert and leader in 3GPP2 and CDMA Community. He is very familiar with the operations of the ecosystem of the wireless communications and has been dedicated himself to strengthen the value-chain of wireless services through defining the features and requirements of telecom

services. He also accumulated valuable international marketing experience while he stationed in Beijing in 2004-2007 promoting Smartphone Platforms to operators. Later on, he engaged in solving issues with CDMA-LTE interworking in both 3GPP and 3GPP2.

In addition to be an active contributor in TIA TR-50 "Smart Device Communications", his latest passion is to promote the Machine-to-Machine Applications, and is working on building effective means to help deploy "Internet of Things" over "Cloud Computing" platform.

Q: What's the background to TR-50?

A: The Telecommunications Industry Association's (TIA) TR-50 Smart Device Communications (SDC) Engineering Committee was formed in December 2009 to meet a growing need in machine-to-machine (M2M) communications. Currently, M2M applications stare at their own silos and seldom work with each other.

As a result, TIA TR-50 set out to develop and maintain access agnostic interface standards for the monitoring and bi-directional communication of events and information between smart devices and other devices, applications or networks.

TIA's standards development efforts pertain to, but are not limited to, the functional areas such as requirements; system architecture; cross-industry communication; leverage existing (and future) physical infrastructure; information models (state diagrams); security (e.g., data content, mutual authentication); end-to-end performance and scalability of equipment and networks; network management/operations; device management (incl. discovery and identity); protocols; minimum performance, and conformance and interoperability testing.

There are many organizations and industrial forums in the world already working, directly or indirectly, on M2M standardization. Most of them focus on access technology such as UMTS and GSM (3GPP, ETSI); CDMA (3GPP2); WiFi; WiMAX; "ZigBee" (IEEE), and others like RFID-related groups. At TIA TR-50, we went from the application level and then went down to middleware. The reason is, in communication standard development, traditionally, we only define the optimized architecture of the infrastructure to carry the information flow and the elements needed for it. We pretty much leave the specifications of the service applications run on the communication systems to the application vendors or operators. This model seems to have run



► well for telecom operators over the years.

However, SDC/M2M applications can be much diversified due to a wide range of services. We want to encourage creativity, but we also need to develop a means to ensure the new elements for SDC/M2M applications can be reused (“horizontally”) across different applications. That’s why we wanted the standard to be access agnostic. Then for each application, we try to understand the necessary elements at the application level and identify the common elements for a group of applications and so on.

Earlier M2M standardization work at the European Telecommunications Standards Institute (ETSI TC M2M) has provided the industry with a good starting point. Other groups around the world are now contributing to the standardization effort. Leaning on this knowledge base, our emphasis is on the need for middleware and common data framework.

Q: You have detailed the goals; how far along are you in delivering them?

A: We are focusing on two things at TIA TR-50 and, more specifically, within TIA TR-50.1, which was created in April 2010 to work on requirements and architecture.

First, we are examining the system architectures for various M2M applications and the other is defining a common data framework that can be applicable to the majority of SDC/M2M applications. The way we are doing it right now in TR-50.1 is by reviewing use cases in various domains such as in-home automation, in-building automation and others. We are also turning to other groups or forums, which have done similar work. For example, at TIA, there are other Engineering Committees such as TR-48,

which is working on Vehicular Telematics and TR-49, which is looking into these matters from a healthcare ICT perspective.

Second, as we examine those applications, we try to create scenarios and syntax, and map them to use cases. Once we come up with a common data framework, we can then identify some ‘primary’ elements which can be used from one application to another.

TR-50’s objectives are to focus on the requirements for each application and then identify the architecture and data framework structure. We will use a multi-part structure for the standards. The first few initial volumes of the multi-part standard are targeted to be completed by next spring or early summer next year and released to the industry.

The initial volumes of the standard will define and document the SDC terminologies. In the second part of the standard, we are going to define reference architectures for SDC. We recognize that people look at issues related to M2M applications from different angles and with different focuses and our work will take this environment into account. As a matter of fact, TR-50.1’s scope specifies that requirements, system architecture, data models shall be agnostic to the applications, but shall reflect the requirements of the applications of interest.

However, we are still pretty young and there is a lot of work to be done. We have the advantage to be able to rely on a group of experienced M2M-focused leaders such as Numerex and ISL Technology; as well as major manufacturers, the likes of Mitsubishi Electric, Tyco Electronics, Intel and Qualcomm; and leading telecom operators like Verizon, AT&T and Sprint-Nextel. In

addition, TR-50 also includes standardization veterans from Sigma Delta Communications, Alcatel Lucent, Motorola, and Huawei to cover a wide spectrum of detailed standard work.

Q: How are you working with other organizations to achieve your aims?

A: There are both formal and informal communications between TIA TR-50 and other national and international forums. We have been using liaison processes to share and update our progress with other groups.

Recently, TIA attended Global Standards Collaboration (GSC)-15 in Beijing, China. At this meeting, a GSC “M2M Standardization Task Force (MSTF)” was approved in order to foster harmonization and collaboration among the different Standards Developing Organizations (SDOs) in the M2M area around the world. TIA TR-50 is expected to play an active role in the newly formed MSTF. Through this international cooperation, we are trying to promote synergy and avoid duplication of efforts. In particular we work closely with other organizations such as, but not limited to, the Institute of Electrical and Electronics Engineers (IEEE), 3rd Generation Partnership Project (3GPP based on evolved GSM), 3rd Generation Partnership Project 2 (3GPP2 based on CDMA), the Open Mobile Alliance (OMA), and the International Telecommunication Union (ITU). With new standards, we are confident that SDC/M2M applications will bring cost-effective services that improve our lives while bringing additional revenue for the industry. It will be a win-win for all.

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