



The **Telecommunications Industry Association (TIA)**

ADVANCING GLOBAL COMMUNICATIONS

Smart Device Communications Standardization at TIA, & GSC M2M Standardization Task Force (MSTF)

IoT GSI Event – May 9-13, 2011, ITU Headquarters, Geneva, Switzerland

Jeffrey O. Smith, Ph.D.
Chief Technology Officer of Numerex
Chair of TIA TR-50 on Smart Device Communications
Convener of the GSC M2M Standardization Task Force (MSTF)

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TIA TR-50 Scope

(Chair: Jeff Smith, Numerex; Vice Chair: Jim Wert, ILS Technology)

- Engineering Committee TR-50 Smart Device Communications is responsible for the development and maintenance of access agnostic interface standards for the monitoring and bi-directional communication of events and information between smart devices and other devices, applications or networks. These standards development efforts pertain to but are not limited to the functional areas as noted: 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
- TR-50 is developing a Smart Device Communications framework that can operate over different underlying transport networks (wireless, wired, etc.) and can be adapted to a given transport network by means of an adaptation/convergence layer. The TR-50 framework will make its functionality available to applications through a well-defined Application Programming Interface (API) that is agnostic to the vertical application domain (eHealth, Smart Grid, Industrial Automation, etc.)



TIA TR-50.1 Scope

Requirements and Architecture

(Chair: Peter Nurse, Sigma Delta; Vice Chair: Mitch Tseng, Huawei)

- The development and maintenance of publications pertaining to requirements. Such requirements shall be agnostic to the application (e.g. eHealth, Smart Grid, Industrial Automation, etc.), but shall reflect the requirements of the applications of interest. Examples of such publications include Use Cases and Stage-1 Descriptions.
- The development and maintenance of publications pertaining to system architecture. Such system architecture shall be agnostic to the application, but shall reflect the requirements of the applications of interest, including their information models. Such publications include, for example, description of the functional elements, definitions of relationships between functional elements, definitions of relationships between functional elements and elements external to the system, data flow diagrams, control flow diagrams, and definition of the application program interface, State Diagrams and Stage-2 Descriptions.
- The development and maintenance of publications pertaining to data models. Such requirements shall be agnostic to the application, but shall reflect the requirements of the applications of interest. Examples of such publications include Stage-3 Descriptions, XML schema.
- In its work, Subcommittee TR-50.1 shall take account of the following: Security (e.g., data content, authentication, signaling); End to End Performance and scalability of equipment and networks; and Device Management (incl. discovery and identity)



TR-50 Smart Device Communications Security Ad Hoc Group (SDCSG)

(Chair: Chuck Bokath, Georgia Tech Research Institute; Vice Chair: Mihai Voicu, ILS Technology)

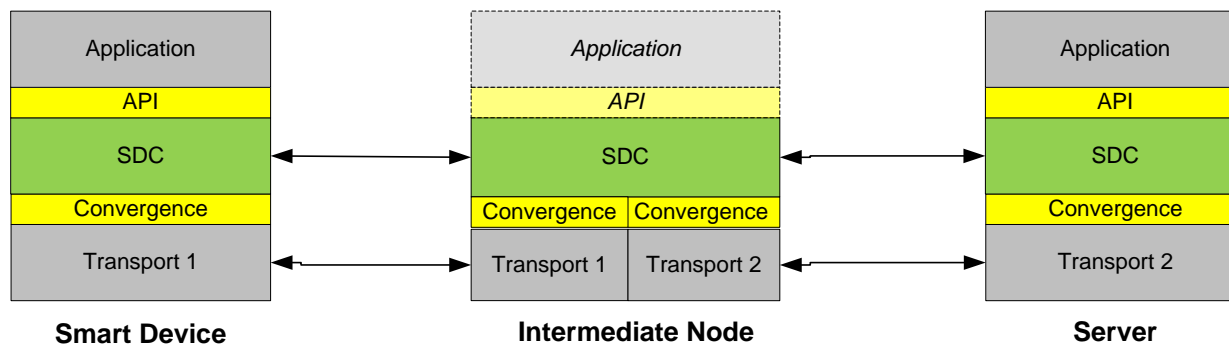
- The scope of work within TR-50 SDCSG includes the following:
 - Participate with TR-50 and its other subcommittees to contribute requirements, architecture, protocols, etc. related to the topic of security in Smart Device Communications.
 - Review and approve all ballots by TR-50 and its subcommittees to ensure that any architectures, protocols, or specifications meet the requirements set by the SDCSS for a secure solution.
- Additional directives to be followed by the TR-50 SDCSG:
 - The architecture, protocol, or specification should be compliant with export compliance laws and regulations such that it may be distributed without undue overhead in the U.S., Europe, and Asia. (example is that companies should be able to acquire ECCN 5D992 compliance easily)
 - The architecture, protocol, or specification should seek to reuse as many existing algorithms and technologies as possible and consider the creation of new algorithms only as a last resort.



TIA TR-50 Protocol Layering

The scope of TR-50's work is the "monitoring and communication of events and information from intelligent/smart devices to other devices, applications or networks." The TR-50 specifications target the application layer and will be independent of the underlying transport layer. TR-50 will also specify APIs to expose the SDC functionality to applications running on smart devices and on network servers that remotely monitor and control the devices.

The following figure illustrates an SDC protocol layering diagram that has been discussed within TIA TR-50.1, TR-50's subcommittee in charge of requirements and architecture. The figure includes a gateway device that provides wide-area connectivity for Smart Devices that may be equipped only with short-range connectivity. The SDC protocol layer shown in green can execute over different transports by means of convergence or adaptation layers (the presence of applications on the gateway device is still under discussion).



Proposed TR-50 SDC Protocol Layering Diagram

Source: Peter Nurse, Chair of TIA TR-50.1, Liaison Statement to ITU-R Working Parties 1A and 5D, ITU-T JCA-NID, ITU-T SG 16, ITU-T SG 17, and External Organizations on "Mobile Wireless Access Systems Providing Telecommunications for a Large Number of Ubiquitous Sensors And/Or Actuators Scattered Over Wide Areas in the Land Mobile Service"

Cooperation in M2M Standardization Is a MUST



The Tower of Babel - Pieter Bruegel the Elder (c. 1563)



Industry, National & International Dialog Required for M2M Standards

*“... Various players including device manufacturers, system integrators, applications developers, M2M vendors and telcos all have to be able to function together for ease of deployment. Each vertical seems to have different requirements for the entire architecture, including devices, modules and SIMs. Until we find a way to standardize how things are done we will continue to have fragmentation and interconnectivity problems /.../ **future collaboration and standardization efforts are necessary**, which are currently idling, and eventual **cooperation** between sectors will enable complete end solutions to customers. “*

*Frost and Sullivan reported by IT Web, South Africa, “Telcos Look to M2M”, July 30, 2010
http://www.itweb.co.za/index.php?option=com_content&view=article&id=35424:telcos-look-to-m2m&catid=350#*

- TIA TR-50 is attentive to what is being SDdeveloped in other Os and similar groups (liaises with 3GPP2, CDG, IETF, US National Institute of Standards and Technology (NIST), ITU-R WP 5A, etc.)
- Review of commonalities between ETSI TC M2M’s and TIA TR-50’s work is underway.



What is Global Standards Collaboration (GSC)?



<http://www.itu.int/en/ITU-T/gsc/Pages/default.aspx>

- The goal of GSC is to promote innovation and collaboration in the area of global telecommunication and radiocommunication standards development between the world's leading telecommunications and radio standards organizations.
- Some hundred participants from Participating Standards Organizations (PSOs) and the International Telecommunication Union (ITU) meet approximately once a year, along with observers from additional groups. ITU is the repository of GSC documents from past meetings (www.itu.int/ITU-T/gsc/meetings.html).
- GSC was born in 1990 in Fredericksburg, Virginia, U.S.A. at the Inter-regional Telecommunications Standards Conference (ITSC). Most recent GSC meeting (GSC-15) was in Beijing, China (8/30 – 9/2010).

Global Standards Collaboration (GSC) Members



ICT Standards Advisory Council of Canada (ISACC)



European Telecommunications Standards Institute (ETSI)

Telecommunications Technology Association (TTA) of Korea



Alliance for Telecommunications Industry Solutions (ATIS)

Sponsored by:



Telecommunications Industry Association (TIA)



China Communications Standards Association (CCSA) of China



Association of Radio Industries and Businesses (ARIB) of Japan



Telecommunications Technology Committee (TTC) of Japan



ITU Telecommunication Standardization Sector (ITU-T)
ITU Radiocommunication Sector (ITU-R)



Observers at GSC-15 (Beijing, China)

“Standards Collaboration Beyond Crisis”

Alliance of Sensing China
American National Standards Institute (ANSI)
APT Wireless Forum
Broadband Forum
CDMA Development Group (CDG)
China Electronics Standardization Association (CESA)
China Interactive Media Industry Alliance
China National Technical Committee of ITS Standardization
European Patent Office (EPO)
FuTURE MOBILE COMMUNICATION FORUM
Global ICT Standardization Forum for India (GISFI)
Home Gateway Initiative (HGI)
International Electrotechnical Commission Sector Board 4 (IEC SB4)
ISO/IEC Joint Technical Committee 1 (JTC1)
Open Mobile Alliance (OMA)
SCDMA Wireless Broadband Industry Alliance
TD Forum
TD-SCDMA Industry Alliance (TDIA).



GSC-15 and M2M

Standards Collaboration
Beyond Crisis

Global Standards Collaboration

Machine to Machine (M2M) was identified as a High Interest Subject (HIS)

Main GSC observations (GSC 15 Opening/Plenary Summary Report):

- M2M is a quickly emerging market driven by telecom operators, integrators, vendors, semi-conductor makers and regulatory
- M2M is becoming mainstream via major applications like Smart Meters, Smart Grid, eHealth, City Automation, Connected Consumer, Telematics to the Internet of Services, Things and Objects
- Many M2M standardization activities are spread over the globe
- Strong need for coordination of M2M standardization to avoid creating a multitude of non compatible M2M standards and keeping a good alignment between standards and market needs

M2M Standardization Task Force (MSTF)

Created at GSC-15, in Beijing, China, Sept. 2, 2010 – Resolution GSC-15/30



Considered:

- a) That standards are most conducive to economies of scale if they are compatible worldwide.
- b) That many organizations around the world, including PSOs, are working on M2M standardization; thereby increasing the possibility of redundant or conflicting standards.
- c) That global coordination and collaboration will reduce the risk of standards duplication and will increase standardization effectiveness.
- d) That coherent global standards should be developed whenever feasible.
- e) That M2M introduces new components that are distinct from user communications and need to be made coherent with the work of existing communication networks including NGN.
- f) That GSC's mission is to reduce duplication, foster synergy, and encourage coherence

Resolved:

1. To facilitate global coordination and harmonization.
2. To openly share relevant M2M material through liaisons, meeting invitations, etc.
3. To outline the worldwide M2M activity map and make recommendations on current and future activities
4. To encourage broad participation in the MSTF by GSC members and beyond
5. MSTF to report on its activities and recommendations to GSC-16 (to be held at the end of October 2011 in Halifax, Canada, and hosted by the ICT Standards Advisory Council of Canada - ISACC).
6. To appoint convenor until GSC-16



**Global Standards
Collaboration (GSC) Machine-
to-Machine Standardization
Task Force (MSTF) Meeting
May 18, 2011, Dallas, TX,
U.S.A.**

At:

Gaylord Texan Hotel
& Convention Center
1501 Gaylord Trail,
Grapevine, Texas
76051
U.S.A.

During:



www.tia2011.org

MORNING BRIEFINGS

8:15 a.m. – 8:20 a.m.

Welcome

8:20 a.m. – 8:35 a.m.

Grant Seiffert, President, Telecommunications Industry Association (TIA)

Introduction to Global Standards Collaboration (GSC)

8:35 a.m. – 8:45 a.m.

Jim MacFie, Chairman, ICT Standards Advisory Council of Canada (ISACC)

MSTF Meeting Objectives

8:45 a.m. – 9:00 a.m.

Jeff Smith, Numerex CTO, Chair of TIA TR-50, Convener of the GSC MSTF

General Trends and Critical Issues in M2M Standardization

Eric Barnhardt, Division Chief, Georgia Tech Research Institute (GTRI)

9:00 a.m. – 9:20 a.m.

Telecommunications Technology Association (TTA, Korea)

Hyoung-Jun Kim, Chairman of IPv6 Project Group (PG 210) and M2M Project Group (PG 708) of Telecommunication Technology Association (TTA, Korea)

9:20 a.m. – 9:30 a.m.

Q&A

9:30 a.m. – 9:50 a.m.

Hyoung-Jun Kim, Convener of Joint Coordination Activity (JCA) of the Internet of Things (IoT) of the International Telecommunication Union's Telecommunications Standardization Sector (ITU-T)

9:50 a.m. – 10:00 a.m.

Q&A

10:00 a.m. – 10:30 a.m.

COFFEE BREAK

10:30 a.m. – 10:50 a.m.

Fumihiko Tomika, Director General, Inter-Industry Innovation Center (I3C), Telecommunication Technology Committee (TTC, Japan)

10:50 a.m. – 11:00 a.m.

Q&A

11:00 a.m. – 11:20 a.m.

Catherine Hammond, Director of Standards, Orange Labs

Wavenis Open Standard Alliance delegate

11:20 a.m. – 11:30 p.m.

Q&A

11:30 a.m. – 11:50 a.m.

Eric Perrier de la Bâthie, Électricité de France

OCARI (Optimization of Communication for Ad hoc Reliable Industrial Network) delegate

11:50 a.m. – 12:00 p.m.

Q&A

12:00 p.m. – 1:00 p.m.

LUNCH



**Global Standards
Collaboration (GSC) Machine-
to-Machine Standardization
Task Force (MSTF) Meeting
May 18, 2011, Dallas, TX,
U.S.A.**

At:

Gaylord Texan Hotel
& Convention Center
1501 Gaylord Trail,
Grapevine, Texas
76051
U.S.A.

During:



www.tia2011.org

AFTERNOON BRIEFINGS

1:00 p.m. – 1:20 p.m.

TIA (USA)

Peter Nurse, Principal, Sigma Delta, Chair of TIA TR-50.1

1:20 p.m. – 1:30 p.m.

Q&A

1:30 p.m. – 1:50 p.m.

Alliance for Telecommunications Industry Solutions (ATIS, USA)

ATIS representative (TBA)

Q&A

1:50 p.m. – 2:00 p.m.

National Institute of Standards and Technology (NIST) (USA)

2:00 p.m. – 2:10 p.m.

David Su, Chief, Advanced Network Technologies Division, NIST

Q&A

2:10 p.m. – 2:20 p.m.

2:20 p.m. – 2:40 p.m.

Open Mobile Alliance (OMA)

Gary Jones, Treasurer and Board Officer of OMA

Q&A

2:40 p.m. – 2:50 p.m.

2:50 p.m. – 3:10 p.m.

COFFEE BREAK

3:10 p.m. – 3:30 p.m.

European Telecommunications Standards Institute (ETSI, Europe)

Joachim Koss, Cinterion, ETSI Board of Directors and Vice-Chair TC M2M

3:30 p.m. – 3:40 p.m.

Q&A

3:40 p.m. – 4:00 p.m.

Global ICT Standardization Forum for *India (GISFI)*

Ramjee Prasad, Founding Chairman of GIFSI Association

Q&A

4:00 p.m. – 4:10 p.m.

China Communications Standards Association (CCSA)

4:10 p.m. – 4:30 p.m.

Duo Liu, Deputy Secretary of CCSA and Mitch Tseng, Huawei, Vice-Chair of TIA-TR50.1

Q&A

4:30 p.m. – 4:40 p.m.

4:40 p.m. – 5:00 p.m.

Jeff Smith, wrap-up and next steps

(If time permits)

Third Generation Partnership Project 2 (3GPP2)

Cheryl Blum, TIA Vice President, Chair of 3GPP2 Steering Committee



Thank You!

Jeffrey O. Smith, Ph.D.

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