TC SmartM2M overview and SAREF Focus

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ETSI TC SMARTM2M

It is the center of competence for IoT standardization in ETSI since 2009. It developed the first IoT standard and promotes their globalization in oneM2M.

ETSI SmartM2M is currently:

- Supporting the European industry and institutions on the identification and adoption of IoT standards, building a common solution around the oneM2M/SAREF framework, including AIOTI and the LSP.

- Bridging the European needs and requirements in the area of IoT, in particular towards SAREF/oneM2M.

- Supporting ETSI activities the IoT area, in collaboration with the other groups (CYBER, SmartBAN, ITS, EMTEL, CIM, etc).

- Support oneM2M, in terms of promotion, testing support and pre-standardization.
SAREF core specs (1/2)

It started from the original study about the Energy products (Appliances) using and producing Energy in the home. ETSI collaborated with DG Connect and DG energy to provide a standardized solution including the following main specification sets:

1) **ETSI TS 103 264: SAREF and oneM2M Mapping**
   - It standardizes the core of SAREF and its mapping on the base ontology defined by oneM2M.
   - A first version of this specification has been published in November 2015,
   - Direct inputs from major associations (EEBus and Energy@home) have been included
   - A revised version including a full mapping on the base ontology of oneM2M has been published in January 2017.
   - It will be updated again to take into account the new sectors
2) **ETSI TS 103 267: SAREF Communication Framework**
   - Published by ETSI in November 2015, it complements the common ontology with the means to communicate and share information, it mandates the use of oneM2M as interworking and communication framework for SAREF, to assure the ability for smart appliances to communicate in a common way, either directly or via interworking with specific vertical protocol.

3) **SAREF Testing suite** Published January 2017
   - TS 103 268-1: Smart Appliances; testing methodology
   - TS 103 268-2: Protocol Implementation Conformance Statement (PICS)
   - TS 103 268-3: Test Suite Structure and Test Purposes (TSS&TP)
   - TS 103 268-4: Abstract Test Suite (ATS)
What is SAREF: Universal semantic interoperability

1) Vertical ontologies support

2) Semantic Support

3) Communication Framework

- SAREF and its extensions
- IoT base ontology + Data annotation
- IoT Data sharing
From Smart Appliances REFerence ontology to Smart Applications REFerence ontology

SAREF evolved to include multiple sectors, again under stimulus and support of the EC DG Connect, so even the acronym has evolved.

Today the set of specification includes:

- TS 103 410-1 SAREF for Energy
- TS 103 410-2 SAREF for Environment
- TS 103 410-3 SAREF for Building
- TS 103 410-4 SAREF for Smart Cities
- TS 103 410-5 SAREF for Industrial and manufacturing domains
- TS 103 410-6 SAREF for Smart Agriculture and Agrifood domains
- TS 103 410-7 SAREF for Automotive Domain
- TS 103 410-8 SAREF for E-health and Well Aging
- TS 103 410-9 SAREF for Wearable Domain
- TS 103 410-10 SAREF for Smart Watering
- TS 103 548 SAREF for SEAS reference ontology patterns
SAREF/oneM2M and its extensions

Semantic interoperability

ETSI TS 103 264: SAREF and oneM2M Mapping
ETSI TS 103 410 (1-10 ): SAREF extensions
ETSI TS 103 267: SAREF Communication Framework
ETSI TS 103 268 (1-4 ): SAREF Test Suite

TS 103 548 SEAS reference ontology patterns
How to contribute to SAREF (1/2)

SAREF specifications are developed and maintained in TC SmartM2M and are dependent of oneM2M - the interworking framework used by SAREF -, under stimulus and support of the EC DG Connect.

The specific ontologies to be integrated in SAREF are developed by the industry stakeholders - by companies, associations, and other SDOs.

The input from the stakeholders has so far been conveyed

✔ through STFs in 2016-2017-2018-2019 supported by ETSI,
✔ and in 2019-2020 will be expanded through a new STF supported by EC DG Connect,
✔ by ETSI members belonging to industry (e.g., Digital SME),
✔ and through liaisons and inputs received by TC SmartM2M as a group or by participating TC SmartM2M members.
How to contribute to SAREF (2/2)

Ontologies are dynamic structures constantly evolving with the technologies and the products, so direct contributions from stakeholders are needed to sustain SAREF evolution.

TC SmartM2M is working on the development of an open portal to gather direct contribution to SAREF, a sort of “open source” project dealing with ontologies instead of source code.

The stakeholders’ data model inputs will be then reflected in the ETSI SAREF and oneM2M specifications by TC SmartM2M.

Requirements and prototyping are under development in

TR 103 608 SAREF “Publication framework for its community of users” (STF 556)
SmartM2M: STF 547 Security/Privacy and Interoperability of Standard IoT Platforms

This work is developed by a Specialist Task Force supported by the EC

STF 547 - Security/Privacy and Interoperability of Standard IoT Platforms

Working on privacy and security for IOT, and on IoT guidelines for interoperability at platform and semantic level

Results are foreseen by end 2019

Initial draft results available for security and privacy has been anticipated at the Monday pre-event: «Challenging IoT Security & Privacy»

TR 103 533: SmartM2M; Security and Privacy; Standards Landscape and best practices from IoT initiatives/projects
TR 103 591: SmartM2M; Privacy study report; Standards Landscape and best practices
TR 103 534-1: SmartM2M; Teaching material; Part 1: IoT Security
TR 103 534-2: SmartM2M; Teaching material; Part 2: IoT Privacy
SMARTM2M: oneM2M Interoperability with Agricultural Machines

ETSI TC smartM2M (STF 542) has completed (09/2018) the definition of a PoC for the use of oneM2M as standard interworking framework between cars and agricultural machines – TR 103 545 Pilot test definition and guidelines for testing cooperation between oneM2M and Agricultural equipment

OneM2M is playing the role of communication enabler and interworking enabler for the AEF ISOBUS standards toward the automotive standards (such as the ETSI ITS ones like ETSI EN 302 637-3 (Decentralized Environmental Notification Basic Service) or ETSI EN 302 637-2 (Cooperative Awareness Basic Service)

AEF - the Agricultural Industry Electronics Foundation (http://www.aef-online.org/home.html)
SMARTM2M: oneM2M Testing

TC SmartM2M is supporting the development of oneM2M test suites housing Special Task Forces and coordinating their effort in collaboration with ETSI CTI, enabling the development of oneM2M Certification programs and the execution of Interoperability Events.

STF 531 completed in 2018 the development of the testing suites for Release 2 of oneM2M.

STF 559 has just started with the target to complete by end 2019 the development of the testing suites for Release 2A and Release 3 of oneM2M.

Test descriptions and priorities

Formal Test Suites

Interop events

Certification
SMARTM2M Other activities

Architecture and Components for Virtualized IoT- STF 535
- TR 103 523 Landscape for open source and standards for cloud native software applicable for a Virtualized IoT service layer
Published 2018/08

Smart Lifts
- TR 103 546 Requirement & Feasibility study for Smart Lifts in IoT
Publication Planned Q1 2019
Collection and analysis of ontology requirements and use cases (with potential convergence with SAREF/oneM2M)
SmartM2M current main collaborations and relations in ETSI

TC ITS

ISG CDP

TC CYBER

ISG CIM

SC EMTEL

TC SmartM2M

oneM2M
Integration and overlapping avoidance

ITS interworking

Use cases
Requirements

Security Privacy

IOT emergency services

SAREF Wearables

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