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| ETSI_logo_Office_Colour_Small | ***ToR STF BP (TC SmartM2M)*** |
| Version: 1.2 |
| Author: SmartM2M – Date:18 April 2017 |
| Last updated: 7 July 2017 |
| page 1 of 6 |

Terms of Reference - Specialist Task Force

STF BP (TC SmartM2M)

“SAREF extensions”

**Summary information**

|  |  |
| --- | --- |
| Approval status | TC SmartM2M approved. STF Review Panel recommended for FWP 2017 2nd allocation with removal of wearables domain and smaller budget.  For Board#113 approval. |
| Funding | **Maximum budget: 96 000 € ETSI FWP** |
| Time scale | October 2017 to April 2019 |
| Work Items | * **DTR/SmartM2M-103506**   Title: SmartM2M; SAREF extension investigation; Requirements for Smart Cities. SAREF Investigation for Smart Cities  Scope: Determine an initial semantic model for Smart Cities based on a limited set of use cases and from available existing data models. This work is expected to be developed in close collaboration with AIOTI, the H2020 Large Scale Pilots, the H2020 lighthouse projects on smart cities and with ETSI activities in Smart Cities, primarily ISG CIM, and oneM2M. Use cases and the related semantic model are expected to be aligned with corresponding work in ISG CIM. Further extensions are envisaged in the future to entirely cover the Smart Cities domain.   * **DTS/SmartM2M-103410-4-SRF4CITY**   Title: SmartM2M; Extension to SAREF; Part 4: Smart Cities Domain. SAREF4CITY  Scope: Specify an initial extension to SAREF to include the semantic model for Smart Cities. This initial extension will be based on a limited set of use cases and available existing data models identified in the corresponding requirements TR. This work is expected to be developed in close collaboration with AIOTI, the H2020 Large Scale Pilots, the H2020 lighthouse projects on smart cities and with ETSI activities in the Smart Cities, primarily ISG CIM, and oneM2M. Use cases and the related semantic model are expected to be aligned with corresponding work in ISG CIM. Further extensions are envisaged in the future to entirely cover the Smart Cities domain.   * **DTR/SmartM2M-103507**   Title: SmartM2M; SAREF extension investigation; Requirements for industry and manufacturing domains. SAREF Investigation for Industry and Manufacturing Domains  Scope: Determine the requirements for an initial semantic model for the industry and manufacturing domains based on a limited set of use cases and from available existing data models. It will include deployment and related services aspects. This work is expected to be developed in close collaboration with AIOTI, the H2020 Large Scale Pilots and with ETSI activities in the industry and manufacturing domains and oneM2M. Further extensions are envisaged in the future to entirely cover the industry and manufacturing domains.   * **DTS/SmartM2M-103410-5-SRF4INMA**   Title: SmartM2M; Extension to SAREF; Part 5: Industry and Manufacturing Domains. SAREF4INMA  Scope: Specify an initial extension to SAREF to include the semantic model for extension to the industry and manufacturing domains, including deployment and related services aspects. This initial extension will be based on a limited set of use cases and available existing data models identified in the corresponding requirements TR. This work is expected to be developed in close collaboration with AIOTI, the H2020 Large Scale Pilots and with ETSI activities in these domains and oneM2M. Further extensions are envisaged in the future to entirely cover these domains.   * **DTR/SmartM2M-103511**   Title: SmartM2M; SAREF extension investigation; Requirements for AgriFood domain. SAREF Investigation for smart agriculture and food chain domain  Scope: Determine the requirements for an initial semantic model for smart agriculture and food chain domain based on a limited set of use cases and from available existing data models. This work is expected to be developed in close collaboration with AIOTI, the H2020 Large Scale Pilots and with ETSI activities in the smart agriculture and food chain domain. Further extensions are envisaged in the future to entirely cover the smart agriculture and food chain domain.   * **DTS/SmartM2M-103410-6-SRF4AGRI**   Title: SmartM2M; Extension to SAREF; Part 6: Smart Agriculture and Food Chain Domain. SAREF4AGRI  Scope: Specify an initial extension to SAREF to include the semantic model for the smart agriculture and food chain domain. This initial extension will be based on a limited set of use cases and available existing data models identified in the corresponding requirements TR. This work is expected to be developed in close collaboration with AIOTI, the H2020 Large Scale Pilots and with ETSI activities in the smart agriculture and food chain domain and oneM2M. Further extensions are envisaged in the future to entirely cover the smart agriculture and food chain domain. |
| Board priority category | “Emerging-domains for ETSI” and “Standards enablers/facilitators (conformance testing, interoperability, methodology)” |

Part I – Reason for proposing the STF

# Rationale

In November 2015, the first version of the SAREF standard for smart appliances was published by ETSI TC SmartM2M (TS 103 264 V1.1.1). This standard subsequently evolved in a new version published in March 2017 (TS 103 264 V2.1.1) and currently includes also TS 103 410, parts 1 (SAREF4ENER), 2 (SAREF4ENVI), 3 (SAREF4BLDG), TS 103 267 (Smart Appliances Application of oneM2M Communication Framework) and the related testing suite in TS 103 268, parts 1 (Methodology), 2 (PICS), 3 (TSS&TP) and 4 (PIXIT).

The standard is based on the Smart Appliance REFerence ontology (SAREF), which was originally created in a standardization initiative launched by the European Commission (EC), DG CONNECT, to be conducted in collaboration with ETSI TC SmartM2M. The EC, as a first step, identified an immediate need of the current market to reduce the energy utilization by managing and controlling Smart Appliances (for example, in a house or an office building) on a system level. In particular, the Industry and the EC raised the need for a common architecture with standardized interfaces and a common data model to assure interoperability. Without these two components, the current market would continue to be fragmented and powerless. Therefore, the development of a reference ontology was targeted as the main interoperability enabler for appliances relevant for energy efficiency, and ETSI accepted to cover the communication aspect and provide the necessary standardization process support.

As a result, following a broad consultation with stakeholders to address clear market needs, the EC financially supported a study to create a language (so-called 'reference ontology') for smart appliances. TNO performed the study (SMART 2013/0077) to create the first version of this reference ontology (SAREF), which was completed on April 1st 2015. The outcomes of the study were then transferred to ETSI, to turn the study outcome into a Technical Specification. This task was executed by ETSI TC SmartM2M and the specification was published in November 2015 (TS 103 264 V1.1.1).

This ETSI specification defines a new reference conceptual language for energy-related applications. This language will be used by devices in the home (from lamps and consumer electronics to white goods like dishwashers) to allow them to exchange information with any energy management system, which could physically be in the home or in the cloud.

SAREF will enable demand-response to flourish, will bring additional energy and cost savings for building owners and users, and will foster new markets. The intention is to build on converging standardization work and on the development of open platforms on which technologies and solutions will co-exist and interact across application domains.

In 2016, ETSI TC SmartM2M requested a Specialist Task Force (STF) to provide input on the management of SAREF, and identify and create possible SAREF extensions in specific domains. STF 513 was established and developed 3 extensions for SAREF in the energy, environment and building domains. These extensions have been published in January 2017 as follows:

* **TR 103 411** “SmartM2M; Smart Appliances; SAREF extension investigation”
* SAREF for Energy (SAREF4ENER): **TS 103 410-1** “SmartM2M; Smart Appliances Extension to SAREF; Part 1: Energy Domain”
* SAREF for Environment (SAREF4ENVI): **TS 103 410-2** “SmartM2M; Smart Appliances Extension to SAREF; Part 2: Environment Domain”
* SAREF for Building (SAREF4BLDG): **TS 103 410-3** “SmartM2M; Smart Appliances Extension to SAREF; Part 3: Building Domain”

TR 103 411 describes the use cases covered by the three extensions SAREF4ENER, SAREF4ENVI and SAREF4BLDG, and the requirements from the energy, environment and building domains that were used to build these extensions. TR 103 411 further proposes a strategy for the extension and maintenance of SAREF and its extensions in the future. Furthermore, it identifies additional domains where an extension of SAREF could be beneficial.

STF 513 has additionally developed a new version of SAREF, taking into account the feedback received from the industrial stakeholders since its first release in April 2015. As a result, a new version of SAREF was published in March 2017 (TS 103 264 V2.1.1), which contains the specification of SAREF 2.0, including the changes compared to the previous version, and an updated mapping to the oneM2M base ontology. This mapping was developed by STF 513 in collaboration with the oneM2M experts responsible for the oneM2M base ontology.

# Objective

The SAREF initiative has been welcomed by the Smart Appliance and IoT Industry which clearly indicated the intention to adopt the SAREF ontology and its related communication framework. As confirmed in the EC Rolling Plan for ICT Standardisation 2016/2017, SAREF is a main ontology standard in the IoT ecosystem, and sets a template and a base for the development of similar standards for the other verticals to unlock the full potential of the IoT.

Since its first creation in 2015, SAREF has gradually become a “brand” to indicate (the network of) standardized semantic models that continues to grow systematically within the SmartM2M TC in ETSI. Currently, the proposal to change the SAREF acronym from the original “Smart Appliances REFerence ontology” to, e.g., “Smart Anything REFerence ontology” is under discussion, to better reflect the fact that SAREF is not limited to smart appliances and energy efficiency, but can serve as upper reference model to enable better integration of data from various vertical domains in the IoT. To that end, requirements are needed from new domains (e.g., Smart Cities, Smart AgriFood, Smart Industry and Manufacturing, Automotive, eHealth/Ageing-well) to create new (and reuse existing) semantic models aligned with SAREF, while guaranteeing a consistent cross-domain maintenance and evolution of the network of extensions sprouting from SAREF.

During the work of STF 513, a number of industrial sectors expressed the interest to extend SAREF into their domains in order to fill the gaps of the semantics not yet covered by the first version of the ETSI specification published in 2015 and the extensions created in 2016.

Some organizations, such as the AEF (Agricultural Industry Electronics Foundation), also suggested that SAREF could additionally cover the domains where they are active, or made explicitly clear that they find it particularly important to be able to make full use of SAREF and its extensions for cross-domain semantic interoperability.

The proposed work of this STF is therefore to extend the SAREF standard taking into account:

* Smart Cities domain use cases and available existing data models, in close collaboration with AIOTI, the H2020 Large Scale Pilots, the H2020 lighthouse projects on smart cities, the ETSI activities in the Smart Cities domain, primarily ISG CIM and oneM2M. Use cases and related semantic models are expected to be aligned with corresponding work in ISG CIM.
* Smart Industry and Manufacturing domain use cases and available existing data models (including deployment and related services aspects), in close collaboration with AIOTI, the H2020 Large Scale Pilots, the ETSI activities in these domains and oneM2M.
* Smart Agriculture and Food chain domain use cases and available existing data models, in close collaboration with AEF, AIOTI, the H2020 Large Scale Pilots, the ETSI activities in the smart agriculture and food chain domain, and oneM2M.
* .

To that end, the STF will produce 3 Technical Reports, one for each domain (i.e., Smart Cities, Smart Industry and Manufacturing and Smart Agriculture and Food chain domains), with the scope to determine the requirements from the considered domains, collect use cases and identify available existing data models. Moreover, the STF will produce 3 Technical Specifications, one for each domain, with the scope to specify an initial extension to SAREF for each of these domains based on the requirements expressed in the corresponding TR.

It is of particular importance that, for identifying the requirements and defining the extensions in these domains, the stakeholders in the domains are consulted and actively involved to ensure that the extension is supported from the beginning of its development.

# Relation with ETSI strategy and priorities

Smart Appliances activities were identified as one of the ETSI 2015 Strategic Topics, as a result of an EC proposal made to the ETSI Board. Subsequently, an ad hoc group on the Strategic Topic “Smart Appliances” was created to ensure that the organisational aspects of the Smart Appliances activities would allow in particular for open, full and equitable cross-industry participation. In close co-ordination with the EC (DG CNECT), the group launched and further strategically conducted the standardization activity in ETSI on this new technological area.

Smart Appliance SAREF ontology evolution and this proposed STF are a direct consequence of the ETSI Board SAP recommendations, and are in line with the two ETSI Board strategic priorities/categories “Emerging-domains for ETSI” and “Standards enablers/facilitators (conformance testing, interoperability, methodology)”.

This work is currently strictly related with the Board IoT strategy work and was part of its 2016 program of work, referred to as SAREF evolution.

# Context of the proposal

## ETSI Members support

|  |  |  |
| --- | --- | --- |
| **ETSI Member** | **Supporting delegate** | **Motivation** |
| TNO | Laura Daniele | Support the development of IoT and Smart Appliances market via the diffusion of ETSI standards (e.g. SAREF and oneM2M). Support to EU initiatives in the IoT area. |
| UPM | Raúl García-Castro | Support the development of IoT and Smart Appliances market via the diffusion of ETSI standards (e.g. SAREF and oneM2M). Support to EU initiatives in the IoT area. |
| Telecom Italia Spa | Enrico Scarrone | Support the development of IoT and Smart Appliances market via the diffusion of ETSI standards (e.g. SAREF and oneM2M). Support to EU initiatives in the IoT area. |
| HUAWEI Sweden | Francisco Da Silva | Support the development of IoT and Smart Appliances market via the diffusion of ETSI standards (e.g. SAREF and oneM2M). Support to EU initiatives in the IoT area. |
| BNETZA | Markus Maass | Support the development of IoT and Smart Appliances market via the diffusion of ETSI standards (e.g. SAREF and oneM2M). Support to EU initiatives in the IoT area. |

## Market impact

The availability of a network of standardized semantic models that consistently grow and systematically extend SAREF within TC SmartM2M in ETSI will allow implementers and manufacturers of Smart Appliances - and more in general IoT devices - to fully support various, multiple and cross-domain use cases for their devices. It will enhance the interoperability between their devices and the devices of other manufacturers and will allow them to broaden their market.

The overall deployment of Smart Appliances and IoT devices will directly lead to a quick adoption of the related M2M ETSI standards as developed by oneM2M. These standards potentially address a multi-billion product market.

## Tasks that cannot be done within the TB and for which the STF support is necessary

The TC SmartM2M members do not have sufficient resources and skills to develop the extensions for the SAREF ontology on time, with the required high quality that only the use of ETSI recommended methodologies may bring. The technical competence required to investigate the requirements for the new IoT domains of interest and produce the corresponding SAREF extensions needs the support of an STF that will foster the efficiency and quality of the standardization.

## Related voluntary activities in the TB

The ETSI Members supporting the creation of the STF are committed to supporting this STF in terms of participation in the STF Steering Group, providing input and review to the STF at the Steering Committee and the TC SmartM2M meetings.

## Outcome from previous funded activities in the same domain

STF 513 (95 800 EUR) - Three extensions of SAREF for the following domains:

* Energy demand & response: SAREF4ENER
* Building: SAREF4BLDG
* Environment: SAREF4ENVI

The three extensions are specified in TS 103 410 parts 1 (SAREF4ENER), 2 (SAREF4ENVI) and 3 (SAREF4BLDG) and the requirements for these extensions are described in TR 103 411.

## Consequences if not agreed

The ETSI Smart Appliances specification aims to be deployed in the European market in a potential of 250 million European dwellings as a first step, and potentially worldwide later. If SAREF is not quickly extended to other domains, this may have a strong negative impact on the adoption of the ETSI SAREF standard and consequently on the adoption of the oneM2M IoT communication framework. On the contrary, it will leverage on the Smart Appliance initiative launched by the EC and the existing momentum around smart cities, smart agrifood, smart industry, etc.

Part II – Execution of the work

# Technical Bodies and other Organizations involved

## Leading TB

TC SmartM2M

## Other interested ETSI Technical Bodies

* oneM2M Partnership Project (including oneM2M TP WG5 MAS Management, Abstraction and Semantics)
* ETSI Board IoT
* ISG CIM

## Other interested Organizations outside ETSI

* European Commission, DG CNECT

# Working method/approach

## Organization of the work

The work can be separated into 3 main tasks:

* Task T1: Project Management
* Task T2: SAREF requirements gathering
* Task T3: Production of SAREF extensions

## Base documents

|  |  |  |
| --- | --- | --- |
| **Document** | **Title** | **Stable draft** |
| ETSI TS 103 264 | SmartM2M Smart Appliances Common Ontology and oneM2M mapping | Published |
| ETSI TS 103 267 | SmartM2M Smart Appliances – Communication framework | Published |
| ETSI TR 103 411 | SmartM2M; Smart Appliances; SAREF extension investigation | Published |
| ETSI TS 103 410-1 | SmartM2M; Smart Appliances Extension to SAREF; Part 1: Energy Domain | Published |
| ETSI TS 103 410-2 | SmartM2M; Smart Appliances Extension to SAREF; Part 2: Environment Domain | Published |
| ETSI TS 103 410-3 | SmartM2M; Smart Appliances Extension to SAREF; Part 3: Building Domain | Published |

## Deliverables

|  |  |  |
| --- | --- | --- |
| **Deliv.** | **Work Item code**  **Standard number** | **Working title**  **Scope** |
| D1 | DTR/SmartM2M-103506 | SmartM2M; SAREF extension investigation; Requirements for Smart Cities. SAREF Investigation for Smart Cities |
| D2 | DTR/SmartM2M-103507 | SmartM2M; SAREF extension investigation; Requirements for industry and manufacturing domains. SAREF Investigation for Industry and Manufacturing Domains |
| D3 | DTR/SmartM2M-103511 | SmartM2M; SAREF extension investigation; Requirements for AgriFood domain. SAREF Investigation for smart agriculture and food chain domain |
| D5 | DTS/SmartM2M-103410-4-SRF4CITY | SmartM2M; Extension to SAREF; Part 4: Smart Cities Domain. SAREF4CITY |
| D6 | DTS/SmartM2M-103410-5-SRF4INMA | SmartM2M; Extension to SAREF; Part 5: Industry and Manufacturing Domain. SAREF4INMA |
| D7 | DTS/SmartM2M-103410-6-SRF4AGRI | SmartM2M; Extension to SAREF; Part 6: Smart Agriculture and Food Chain Domain. SAREF4AGRI |

The STF will produce the following deliverables, for TB approval and publication by ETSI:

* **DTR/SmartM2M-103506**

Title: SmartM2M; SAREF extension investigation; Requirements for Smart Cities. SAREF Investigation for Smart Cities

Scope: Determine an initial semantic model for Smart Cities based on a limited set of use cases and from available existing data models. This work is expected to be developed in close collaboration with AIOTI, the H2020 Large Scale Pilots, the H2020 lighthouse projects on smart cities, the ETSI activities in the Smart Cities domain, primarily ISG CIM and oneM2M. Use cases and the related semantic model are expected to be aligned with corresponding work in CIM. Further extensions are envisaged in the future to entirely cover the Smart Cities domain.

* **DTR/SmartM2M-103507**

Title: SmartM2M; SAREF extension investigation; Requirements for industry and manufacturing domains. SAREF Investigation for Industry and Manufacturing Domains

Scope: Determine the requirements for an initial semantic model for the industry and manufacturing domains based on a limited set of use cases and from available existing data models. It will include deployment and related services aspects. This work is expected to be developed in close collaboration with AIOTI, the H2020 Large Scale Pilots, the ETSI activities in the industry and manufacturing domains, and oneM2M. Further extensions are envisaged in the future to entirely cover the industry and manufacturing domains.

* **DTR/SmartM2M-103511**

Title: SmartM2M; SAREF extension investigation; Requirements for AgriFood domain. SAREF Investigation for smart agriculture and food chain domain

Scope: Determine the requirements for an initial semantic model for the smart agriculture and food chain domain based on a limited set of use cases and from available existing data models. This work is expected to be developed in close collaboration with AIOTI, the H2020 Large Scale Pilots, the ETSI activities in the smart agriculture and food chain domain, and oneM2M. Further extensions are envisaged in the future to entirely cover the smart agriculture and food chain domain.

* **DTS/SmartM2M-103410-4-SRF4CITY**

Title: SmartM2M; Extension to SAREF; Part 4: Smart Cities Domain. SAREF4CITY

Scope: Specify an initial extension to SAREF to include the semantic model for Smart Cities. This initial extension will be based on a limited set of use cases and available existing data models identified in the corresponding requirements TR. This work is expected to be developed in close collaboration with AIOTI, the H2020 Large Scale Pilots, the H2020 lighthouse projects on smart cities, the ETSI activities in Smart Cities, primarily ISG CIM and oneM2M. Use cases and the related semantic model are expected to be aligned with corresponding work in CIM. Further extensions are envisaged in the future to entirely cover the Smart Cities domain.

* **DTS/SmartM2M-103410-5-SRF4INMA**

Title: SmartM2M; Extension to SAREF; Part 5: Industry and Manufacturing Domain. SAREF4INMA

Scope: Specify an initial extension to SAREF to include the semantic model for extension to the industry and manufacturing domains, including deployment and related services aspects. This initial extension will be based on a limited set of use cases and available existing data models identified in the corresponding requirements TR. This work is expected to be developed in close collaboration with AIOTI, the H2020 Large Scale Pilots, the ETSI activities in these domains and oneM2M. Further extensions are envisaged in the future to entirely cover these domains

* **DTS/SmartM2M-103410-6-SRF4AGRI**

Title: SmartM2M; Extension to SAREF; Part 6: Smart Agriculture and Food Chain Domain. SAREF4AGRI

Scope: Specify an initial extension to SAREF to include the semantic model for the smart agriculture and food chain domain. This initial extension will be based on a limited set of use cases and available existing data models identified in the corresponding requirements TR. This work is expected to be developed in close collaboration with AIOTI, the H2020 Large Scale Pilots, the ETSI activities in the smart agriculture and food chain domain, and oneM2M. Further extensions are envisaged in the future to entirely cover the smart agriculture and food chain domain.

## Deliverables schedule:

|  |  |
| --- | --- |
| DTR/SmartM2M-103506 | * Early draft requirements overview Jan 2018 * Stable draft requirements overview Apr 2018 * Final draft requirements overview Jun 2018 |
| DTR/SmartM2M-103507 | * Early draft requirements overview Jan 2018 * Stable draft requirements overview Apr 2018 * Final draft requirements overview Jun 2018 |
| DTR/SmartM2M-103511 | * Early draft requirements overview Jan 2018 * Stable draft requirements overview Apr 2018 * Final draft requirements overview Jun 2018 |
| DTS/SmartM2M-103410-4 | * Early draft extension Jun 2018 * Stable draft extension Sept 2018 * Final draft extension Feb 2019 |
| DTS/SmartM2M-103410-5 | * Early draft extension Jun 2018 * Stable draft extension Sept 2018 * Final draft extension Feb 2019 |
| DTS/SmartM2M-103410-6 | * Early draft extension Jun 2018 * Stable draft extension Sept 2018 * Final draft extension Feb 2019 |

# Work plan, time scale and resources

## Organisation of the work

The work must be performed in cooperation by 2 or 3 service providers, which must be prepared to share tasks as required. The actual number of contributors will depend on the mix of skills that will be available from the applications proposed and will be decided by the ETSI Secretariat in consultation with the TC Chairman, when setting up the STF.

In order to address the needs of the SAP Industry and the domains for which extensions will be defined, it is anticipated that companies and organizations in the area of Smart Appliances will also provide voluntary effort to support the work (review, commenting, etc.) This is to achieve a limited team that can represent different industry domains working on Smart Appliances.

ETSI CTI expertise is requested to contribute to the STF to provide support in the agile methodology and to manage the software development platform.

The work can be separated into 3 main tasks:

* Task T1: Project Management
* Task T2: SAREF requirements gathering to result in 3 ETSI TRs
* Task T3: SAREF extension development to result in 3 ETSI TS

## Task description

Task 1: Project Management

**Objectives:** Coordination, communication, reporting and leading of the STF team activities, in collaboration with the ETSI secretariat and TC SmartM2M. The project will be organized in an Agile/Scrum way for the sake of efficiency and to foster the quick development of the new SAREF extensions.

**Interactions:** ETSI secretariat, TC SmartM2M, other interested ETSI Technical Bodies (as described in section 5.2) and interested Organizations outside ETSI (as described in section 5.3).

Task 2: SAREF requirements gathering

**Objectives:** This task will gather requirements from the domains interested in a SAREF extension.

**Interactions:** TC SmartM2M, other interested ETSI Technical Bodies (as described in section 5.2), interested Organizations outside ETSI (as described in section 5.3) and stakeholders from the domains of interest, namely

* Smart Cities, including partners from AIOTI, the H2020 Large Scale Pilots, the H2020 lighthouse projects, the ETSI activities in the Smart Cities domain - primarily ISG CIM and oneM2M.
* Smart Industry and Manufacturing, including partners from AIOTI, the H2020 Large Scale Pilots, the ETSI activities in these domains and oneM2M.
* Agriculture, including AEF and John Deere B.V. and partners from AIOTI, the H2020 Large Scale Pilots, the ETSI activities in the smart agriculture and food chain domain, and oneM2M.

**Input:** Base documents (as describedin section 6.2).

**Output**: Three Technical Reports, i.e., DTR/SmartM2M-103506, DTR/SmartM2M-103507 and DTR/SmartM2M-1035011 (as described in section 6.3).

Task 3: SAREF extension development

**Objectives:** The objective is to include input from the industrial actors of the IoT domains of interest and domain-specific aspects to produce four extensions of SAREF, one for each considered domain, based on the study described in the corresponding Technical Reports.

**Interactions:** TC SmartM2M, other interested ETSI Technical Bodies (as described in section 5.2), interested Organizations outside ETSI (as described in section 5.3) and stakeholders from the domains for which the extensions will be produced, namely

* Smart Cities, including partners from AIOTI, the H2020 Large Scale Pilots, the H2020 lighthouse projects, the ETSI activities in the Smart Cities domain - primarily ISG CIM and oneM2M.
* Smart Industry and Manufacturing, including partners from AIOTI, the H2020 Large Scale Pilots, the ETSI activities in these domains and oneM2M.
* Agriculture, including AEF and John Deere B.V. and partners from AIOTI, the H2020 Large Scale Pilots, the ETSI activities in the smart agriculture and food chain domain, and oneM2M.

**Input:** Results of Task 2

**Output:** Three Technical Specifications, i.e.,DTS/SmartM2M-103410-4-SRF4CITY, DTS/SmartM2M-103410-5-SRF4INMA and DTS/SmartM2M-103410-6-SRF4AGRI (as described in section 6.3).

## Milestones

Milestone 1 – Early draft TRs (Task 2) for TB review and start work on TS (Task 3)

Milestone 2 – Approval of final draft TRs (Task 2) and early drafts TS (Task 3) for review

Milestone 3 – Final drafts TS (Task 3) and publication

## Task summary

|  |  |  |
| --- | --- | --- |
| **N** | **Task / Milestone / Deliverable** | Target date |
|
| M0 | Start of work | Oct 2017 |
| T1 | Project management | Oct 2017 - Apr 2019 |
| T2 | SAREF requirements gathering | Oct 2017 - May 2018 |
| M1 | Early draft TRs for TB review and start work on T3 | Jan 2018 |
| T3 | Production of extension of SAREF | Jan 2018 - April 2019 |
| M2 | Approval of final draft TRs for adoption and TS early drafts for review | Jun 2018 |
| M3 | Approval of TS finaldrafts for adoption and publication | Feb 2019 |
| M4 | Deliverables published, STF closed | April 2019 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Task Milest.** | **Description** | **O** | **N** | **D** | **J** | **F** | **M** | **A** | **M** | **J** | **J** | **A** | **S** | **O** | **N** | **D** | **J** | **F** | **M** | **A** |
| T1 | Project management |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T2 | SAREF requirements gathering |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| M1 | Early draft TRs for TB review and start work on T3 |  |  |  | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T3 | Production of extension of SAREF |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| M2 | Approval of final draft TRs for adoption and TS early drafts for review |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |  |  |
| M3 | Approval of TS finaldrafts for adoption and publication |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |
| M4 | Deliverables published, STF closed |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |

## Working methods and travel cost

Travel cost for working sessions will be included in the contract compensation (manpower cost). Presentation of results to the reference TB and other TBs will be reimbursed as real cost from the travel budget. For other cases, refer to the travel budget table in Part III.

# Required expertise

## External expertise

The following expertise is required to perform the work:

* Expert knowledge of oneM2M standards, semantics and IoT vertical domains (i.e., Smart Appliances, Smart Cities, Smart Industry and Manufacturing and Smart AgriFood domains.
* Experience in industry-specific ontology development, especially SAREF
* Networks within the domains targeted for extensions

Part III: Financial conditions

# Maximum budget

Maximum budget for this action will be 96 000 €.

## Travel cost

|  |  |
| --- | --- |
| **Expected travels** | **Cost estimate** |
| Reference TB meetings (5x), meetings with other interested TB such as ISG CIM, oneM2M (4x), meetings with EC (4x), stakeholders meetings (5x) | 7 000 EUR |
| **Total cost** | **7 000 EUR** |

## Total cost

|  |  |
| --- | --- |
| **Description** | **Maximum estimated cost** |
| Service Contracts | 89 000 EUR |
| Travels | 7 000 EUR |
| **Total cost** | **96 000 EUR** |

Part IV: STF performance evaluation criteria

# Key Performance Indicators

Key performance indicators suitable for this kind of STF projects are the following:

Contribution from ETSI Members to STF work

* Number and relevance of ontologies solution considered for addition
* Number and relevance of organizations engaged/contacted in the extension
* Voluntary work of experts
* Delegates attending meetings/events related to STF (number of participants/duration)
* Direct contribution of delegates (e.g. number of documents/comments/e-mail)
* Support to the STF work

Contribution from STF experts to ETSI work

* Contributions presented to TB/WG meetings (number, type, comments received)
* Presentations in workshops, conferences, stakeholder meetings

Liaison with other stakeholders

* Stakeholder participation in the project (category, business area)
* Cooperation with other standardization bodies
* Potential interest of new members to join ETSI
* Liaison to identify requirements and raise awareness on ETSI deliverables
* Comments received on drafts – all sources

Quality of deliverables

* Approval of deliverables according to schedule
* Respect of time scale, with reference to start/end dates in the approved ToR
* Quality review by TB
* Quality review by ETSI Secretariat

In the course of the activity, the STF Leader will collect the relevant information, as necessary to measure the performance indicators. The result will be presented in the Final Report.

## Time recording

The STF expert shall report, in the time sheet provided by ETSI, the days spent for the performance of the services.

# Document history

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Date** | **Author** | **Status** | **Comments** |
| 0.1 | 18-Oct-2016 | SmartM2M | Draft | First Draft |
| 0.2 | 22-Mar-2017 | Smart M2M | Draft | Second Draft |
| 0.3 | 18-Apr-2017 | Smart M2M | Draft | Third draft (split in Part 1 and Part 2) |
| 0.4 | 24-Apr-2017 | SmartM2M | Draft | Draft for submission to ETSI Board |
| 0.5 | 03-May-2017 | ETSI FPO | Draft | Secretariat initial comment |
| 0.6 | 10-May-2017 | SmartM2M | Draft | Comment secretariat processed and included |
| 1.0 | 10-May-2017 |  | Draft | Board/OCG consultation |
| 1.1 | 09-Jun-2017 | ETSI Sec | Draft | Board#113 approved after removal of one task |
| 1.2 | 07-July-2017 | ETSI Sec | Final | Clean version for CfE |