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| ETSI_logo_Office_Colour_Small | ***ToR STF CL/556 (TC SmartM2M)*** |
| Version: 1.1 |
| Author: SmartM2M – Date: 27 February 2018 |
| Last updated by Youssouf Sakho: 07 May 2018 |
| page 1 of 17 |

Terms of Reference - Specialist Task Force

STF CL (TC SmartM2M)

“Consolidation of SAREF and its community of industrial users, based on the experience of the EUREKA ITEA

12004 SEAS project”

**Summary information**

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| --- | --- |
| Approval status | Approved by Board#117 (20 April 2018) |
| Funding | **Maximum budget: 55 000 € ETSI FWP** |
| Time scale | June 2018 to July 2019 |
| Work Items | * **DTR/SmartM2M-103549** * **DTS/SmartM2M-103548** * **DTR/SmartM2M-103608** |
| Board priority category | “Emerging-domains for ETSI” and “Standards enablers/facilitators (conformance testing, interoperability, methodology)” |

Part I – Reason for proposing the STF

# Rationale

ETSI SmartM2M tackles IoT, interoperability, and Semantic Interoperability challenges, contributing to the digital transformation of industry sectors in Europe. The SAREF standard ontology is a key flagship to reach semantic interoperability in IoT and Web-based applications where digitized assets play a central role. The first version of SAREF (now Smart Applications REFerence ontology) was published in November 2015 by ETSI TC SmartM2M, and subsequent extensions are being developed to describe digital assets for various domains including energy, environment, building, agriculture, smart city. 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. Commercial products from industry already exist that use SAREF and SAREF4ENER, and oneM2M, as a way to interoperate with appliances from other vendors. The first proof-of-concept solution was demonstrated in a recent study funded by the Commission (SMART 2016/0082 study) as a follow up of the first SAREF study (SMART 2013/0077). This successful story in the Energy domain can be now used to provide guidelines to industry stakeholders in other IoT domains that want to create similar interoperability solutions based on SAREF.

The EUREKA ITEA 12004 SEAS (Smart Energy Aware Systems) project is a 35 partners and 13.5 M€ project that ran from Feb 2014 to Dec 2016 (<https://itea3.org/project/seas.html>), and received the ITEA Award of Excellence 2017. Its goal was to design and develop an eco-system of smart things and services, collectively capable of optimizing the energy efficiency within the future Smart Grid. 100 use cases were defined by 35 partners. From these use cases one identified gaps not yet covered by SAREF to be filled in the SEAS knowledge model. SAREF focuses on the notion of Device, while industry use cases often require some description of the physical systems and their connections, value association for their properties, and the activities by which such value association is done. The SEAS ontology development was initiated during a workshop that gathered 45 participants during 3 days and continued with close collaborations between ontology engineering experts, domain experts, and industry software architects. The result is a modular and versioned ontology with all the terms it defines having the same namespace (<https://w3id.org/seas/>). Ontology patterns are like design patterns in object oriented programming. They describe structural, logical, or naming, best practices that one can consider when building an ontology. **The SEAS ontology** contains a core of SEAS reference ontology patterns that can be instantiated to create the SEAS ontology itself with a homogeneous and predictable structure for the modelling and the description of any kind of engineering-related data/information/systems. This STF will consolidate the SAREF ontology adapting the SEAS strategy, and filling some of the representational gaps that were identified.

**This because despite of the initial success and the good initial footprint of SAREF, TC smartM2M still have to support the vertical business players (in this case the energy providers and distributors) that have not yet developed the necessary competences on SAREF, oneM2M and more in general on ontologies and semantic interoperability. So, one part of the effort of this STF is dedicated to support the inclusion of the SEAS ecosystem in the ETSI SAREF/oneM2M mainstream.**

**The remaining part of the work of this STF (the majority of the effort) is attaching the general need of facilitating the inclusion and self-contribution of the actors form the different vertical business sectors (not only the energy one, but starting from the energy one) by creating tools (portals, feedbacks and bug reporting, etc) and procedures to enable these players to provide their feedbacks and proposals**.

**The value of SAREF is strongly correlated with the size of its community of users, and ontologies must be available on the Web. As such, SAREF users’ community and the industry actors need be attracted to SAREF with clear documentation and a clear indication about how to provide their input and the kind of input that they can provide**.

The ETSI members that contribute to SAREF will be therefore able to get benefit from feedback coming from its open community of industrial users, to better plan new evolution of the current and future extensions, and reduce the costs of developing these extensions. That being said, the development of SAREF must remain in ETSI's hands to ensure high quality standards are met, and users that provide feedback must understand the implication in terms of IPR. The publication and/or use of such feedback must therefore be controlled by ETSI, but the possibility to provide feedback will be open to the world. This STF will specify, in collaboration with the ETSI IT department, the SAREF publication framework to reinforce the engagement of its community of users and enable them to implement solutions with SAREF faster.

**The final vision is to make the business community able to provide their input to SAREF and to maintain SAREF without the need of a special support form ETSI, but just with a revision from the ETSI members, and in particular from SmartM2M.**

# Objective

From the 100 use cases defined by 35 partners in the ITEA2 SEAS project, one identified gaps not yet covered by SAREF to be filled in the SEAS ontology. SAREF focuses on the notion of Device, while industry use cases in SEAS all required some description of the physical systems and their connections, value association for their properties, and the activities by which such value association is done. The SEAS ontology patterns are applicable to multiple engineering-related verticals such as Smart Grids, Micro Grids, Smart Home, Smart Building, Electric Mobility, Industry of the Future/Industry 4.0, including all their field devices/processes/systems, measurements, environment, actors/players and their relations, as well as flexibility/trading/business related aspects.

Some industrial groups such as ENGIE expressed the interest to use the SEAS ontology for their domains and extend it for other projects where cross-domain semantic interoperability is of utmost importance. Incorporating SEAS reference ontology patterns in SAREF will help covering additional generic use cases and achieving greater interoperability. Instantiations of these patterns will specialize these use cases to multiple industry sectors, with similar ontological structures, making it easy for industrials to understand the overall structure of SAREF using analogy.

Also, the SEAS reference ontology patterns extend and are aligned to the core of the following ontologies: OGC and W3C joint Semantic Sensor Network ontology (SOSA/SSN), QUDT (Quantity, Unit, Dimension and Type), and SAREF. Therefore, the proposed STF contributes to the convergence of the different reference ontologies relevant for the IoT domain.

At the same time, strict requirements were adopted for the SEAS ontologies publication framework. These were defined in close collaborations between ontology engineering experts, domain experts, and industry software architects. The SEAS ontology is published as a modular ontology, versioned, with all the terms it defines having the same namespace. The two latter choices avoid existing implementations to break when new versions are released, or when new editorial choices are made. In addition to this, all the metadata and publication best practices should be met, and the documentation webpages should be harmonized and adapted to target SAREF users instead of ontology engineers. The proposed STF aims at translating these requirements to SAREF to make its adoption faster for software engineers and domain experts.

The proposed work of this STF is therefore to extend the SAREF standard considering:

* The relevant use cases defined by the ITEA2 SEAS project;
* Other standard ontologies such as W3C&OGC SOSA/SSN, and QUDT;
* Preservation of alignments with oneM2M base ontology, SAREF adoption with ISG CIM;
* Recommendations from AIOTI and influencing them;
* Semantic versioning, metadata, publication, and documentation, best practices for ontologies.

To that end, the STF will produce 2 Technical Reports and 1 Technical Specification.

The first Technical Report describes high-level use cases and requirements covered by the SEAS reference ontology patterns that can bring additional value to SAREF and its extensions. Generic ontology patterns are valid for SAREF and could motivate some changes in SAREF. Some of these ontology patterns are instantiated for different verticals (e.g., types of electric power systems and topology of energy grids), and can therefore motivate some changes in some SAREF extensions (SAREF4ENER for example). The second Technical Report specifies, in collaboration with the ETSI IT department, the SAREF publication framework: a uniform documentation website for SAREF and its extensions such that (1) the documentation is more designed for domain experts and software developers instead of ontology engineers, (2) industries can like or share the content, provide useful feedback to SAREF developers or suggest additions. As a beneficial side effect, SAREF developers would get to know more about the SAREF community and who is using the ontology.

In addition to that, the STF will produce 1 Technical Specification, with the scope to specify updates to SAREF for consolidating it with the experience of the SEAS project. In the context of the proposed STF, it may be the case that some of the new requirements will lead to proposals to produce other Technical Specifications, with the scope to specify updates to extensions of SAREF.

# Relation with ETSI strategy and priorities

Smart Appliances activities were already 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 Applications 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, was part of its 2016 program of work, referred to as SAREF evolution, and was also part of its 2017-2018 program of work, referred to as SAREF extension.

# Context of the proposal

## ETSI Members support

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| --- | --- | --- |
| **ETSI Member** | **Supporting delegate** | **Motivation** |
| TELECOM ITALIA S.p.A. | Enrico Scarrone | Saref and oneM2M is the solution expressed by the standard to build IoT based data and information sharing across components and solutions. This work is expected to provide methodologies and tools to increase the integration and the contribution form the various business and technological sectors that are composing IoT. Additionally, it is expected to evolve the actual Saref integration respect to the energy sector due to the specific original nature of the SAES project. |
| ORANGE | Said Gharout | - good capitalization from European project experience, with input from first tier industry partners  - responds to the need to reengineer SAREF in order to make it more consistently extensible and evolvable, while taking into account alignment with CIM and oneM2M ontologies  - proposal comes from a team with impeccable credentials and a widely recognized track record of research in semantics |
| TNO | Laura Daniele | For the SAREF community |
| Facultad de Informatica | Raúl García Castro | To support the development of the IoT market via the diffusion of the SAREF family of standards. As developers of ontology engineering infrastructure, to support the creation of a community-oriented portal for the development and maintenance of the SAREF ontology and its extensions. |
| Huawei Technologies Sweden AB | Francisco Da Silva | - The consolidation of SAREF ontology by filling some of the representational gaps that were identified.  - The design and development of the SAREF publication framework to reinforce the engagement of its community of users and enable them to implement solutions with SAREF faster.  - And because SAREF provides a connection to vertical industries also to oneM2M.Soon to be included in the final draft |
| Easy Global Market | Franck Le Gall | We are in particular interested to see a platform for community based management of ontologies development and maintenance. |
| Institut Mines-Telecom | Noel Crespi | In particular because of its modularity and applicability to multiple verticals.  It includes the addition of core SEAS ontologies to SAREF, and some of the extensions that have been developed during the SEAS project and after. It also includes an important work to design and develop the new publication and documentation website for the SAREF ontology and its extensions, such that: (1) the documentation is designed for domain experts and software developers instead of ontology engineers, (2) industries can like or share the content, provide useful feedback to SAREF developers and suggest additions/modifications. Additionally, SAREF developers would get to know more about the SAREF community of users. This deliverable will enable industries to implement solutions with SAREF faster. It will reinforce the engagement of the community of users such that the SAREF developers can plan new evolution of the current and future extensions |

Additional Support from external/non-ETSI members companies and institutions

|  |  |  |
| --- | --- | --- |
| **Company Institution** | **Contact** | **Motivation** |
| ENGIE | Philippe Bourguignon | Our industrial prototypes and cooperation with our ecosystem of partners are now limited operationally due to the lack of a structured instantiation of SEAS reference ontologies patterns. Whenever pilots projects are already existing, the lack of on homogeneous and predictable structures for the modelling and the description of any kind of engineering-related data/information/system is detrimental to the development of the model. We will support any early deployment/testing on our field test during the work he STF |
| Nobatek/INEF4 | Pierre BOURREAU | - The experience of Nobatek/INEF4 on developing software solutions for smart building and smart grids monitoring confirms the need of a standard to the international community so as to reduce the effort in developing such solutions.  - Our own experience proves there is a need for a better communication between industries and software companies to enrich such a standard, which is a complex work that requires special and continuous attention and efforts. |
| SOMEFLU | Alexandre Lacour | As an equipment manufacturer for industrial applications, SOMEFLU is working on predictive maintenance and real-time monitoring system in a edge computing architecture. Due to the integration of our equipment in global industries and complex systems, having a standards, well documented which will be usable over equipment would be efficient for our industries. |
| CSTB (French Scientific and Technical Centre for Building) | Bruno FIES | The need of efficient exchange of information is particularly crucial for the building sector. It is true in the design phase and the two past decades have seen the emergence of standards to ensure interoperability among the various actors involved around a Construction project. It is now also extremely important in the exploitation phase with the emergence of so-called “smart building” where embedded components and equipment are talking to each other within and outside the building borders.  The first version of SAREF is a good starting point but limited in terms of expressiveness (few concepts available) and the need for a wider semantic framework coming along with tools and guidelines to semantically interconnect various domains like construction, energy, city, transport is a must that will exert a significant leverage on the advent of Smart-cities.  CSTB is already involved in several projects that are making use of SAREF. We confirm we are very interested by the fields this STF proposes to investigate. |
| Fraunhofer IBP | Georg Schneider | SAREF emerged as a core development from smart home to be a general nucleus for future smart systems and environments. It has a strong industrial as well as academic background. While reusing SAREF in our work we came across some difficulties with different evolutions steps of the SAREF ontology. A concise and descriptive documentation and versioning mechanism applied to the ontology would help to solve this issue.  The SEAS ontologies constitute a number of reoccurring ontology patterns reappearing in the modelling of technical systems such as part-of relationships, measurements, sensors observation, decomposition of systems. The SEAS ontologies are distributed on the web following the best practices of publishing ontologies on the web including a high-quality documentation. Also, versioning is supported. We ourselves reused the ontology in our projects and work which focusses on the modelling of control logic in automation systems [1]. Additionally, there is some overlap in the ontologies considering e.g. devices.  Please note that the Fraunhofer Association is a member of ETSI. However, Fraunhofer IBP does not act on behalf of the Fraunhofer Association and does not refer to this membership. We intend to strive for a separate membership instead.  [1] Schneider, G. F., Pauwels, P. & Steiger, S. (2017) Ontology-based Modeling of Control Logic in Building Automation Systems. In: IEEE Transactions on Industrial Informatics (Online) DOI: 10.1109/TII.2017.2743221. |
| Department of Applied Informatics based at Faculty of Civil Engineering, CTU in Prague (CZECH TECHNICAL UNIVERSITY) | Richard Pinka | 1/ the topic of the STF is touching the need of overall ontologies development within data/information exchange in construction industry processes - which is the focus of our team.  2/In the Czech Republic the activities below the Ministry of Industry and Trade focused to BIM (Building information modeling ) implementation to procurements/public contracts had started. Within main document describing the implementation untill today are not mentioned ontologies such possible data interchange and storage methodology, just IFC (Industry Foundation Classes) data format as open BIM standard for data interchange. We consider this as inappropriate way to solve data interoperability which is not up-to-date with actual technology and knowledge level on the research and development in this field. There is also huge lack of specialists on the field of ontologies within technical and building data and data formats - that is why we consider results of this group as very important.  3/Activities below Czech Ministry of Interior, focused to implement ICT within the state internal processes and agenda for developing Czech E-government includes also the agenda of construction development below the Building law. Situation today is to offer as CTU joined research teams a possible solutions of processing and managing this building agendas by ontologies. Some activities within development in this field has already started by other departments at our university. Sooner or later, there will be need to link the data about processes in building agenda with ontology patterns with implemented technical data from construction sites, building designs, and industrial products used within buildings. That is why we consider actual and future results of this group as very important.  4/ Specialist Task Force SEAS-SAREF and its members are possible partners for further cooperation within Czech national activities and pilot projects leading to implementation of ICT more into building processes, building agenda and building law.  5/ Possible cooperation with STF Experts about helping developing better knowledge base for increasing the PhD students in both IT branches and domain expert branches within Czech Republic would be welcomed - by this support the research activities in CZ.  6/ Cooperation within national research projects and preparing H2020 project consortium will be warmly welcomed and discussed. |

## 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/Smart Applications - 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 IoT/M2M ETSI standards as developed by oneM2M. These standards potentially address a multi-billion product market.

The development of the SAREF publication framework will reinforce the engagement of its community of users, enabling industries to implement solutions with SAREF. Also, SAREF developers will get to know more about the SAREF community of users, which will help measuring the impact of SAREF, and planning new evolution of the current and future extensions

## Tasks for which the STF support is necessary

The TC SmartM2M members do not have sufficient resources and skills to consolidate SAREF with new reference ontology patterns based on the experience of the SEAS project, and to specify the SAREF publication framework on time, with the required high quality that only the use of ETSI recommended methodologies may bring. Technical and Semantic Web competences are required to investigate the requirements for the SEAS patterns and publication framework and adapt them to SAREF. The support of an STF is required to 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.

## 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 SAREF and its extensions aims to be deployed in the European market in a potential of 250 million European dwellings as a first step, and potentially worldwide later. SAREF focuses on the notion of Device, while industry use cases often require some description of the physical systems and their connections, value association for their properties, and the activities by which such value association is done. If SAREF is not quickly extended to cover these requirements, 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 SAREF initiative launched by the EC and the existing momentum around IoT technologies, etc.

At the same time, if the publication framework of SAREF is not quickly specified (and then developed), its learning curve may be too steep for software engineers and domain experts, issues cannot be raised to help SmartM2M members keep up enhancing SAREF, existing implementations may break when new versions are released, or when new editorial choices are made. This may have a strong negative impact on the adoption or retain of the ETSI SAREF standard and consequently on the adoption of the oneM2M IoT communication framework.

Part II – Execution of the work

# Technical Bodies and other stakeholders

## Reference TB

TC SmartM2M

## Other interested ETSI Technical Bodies

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

## Other stakeholders

* European Commission, DG CONNECT

# Base documents and deliverables

## 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** | **(Title)**  **Working title**  **Scope** |
| D1 | [DTR/SmartM2M-103549](https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=53167) (TR 103 549) | **Title:** Guidelines for consolidating SAREF with new reference ontology patterns, based on the experience from the EUREKA ITEA SEAS project  **Working Title**: Guidelines for consolidating SAREF with new reference ontology patterns  **Scope**: The scope of the present document is to provide guidelines for consolidating the SAREF ontology with new reference ontology patterns, using the experience of the EUREKA ITEA 12004 SEAS (Smart Energy Aware Systems) project, and to use cases for Smart Energy, Smart Building, and Industry of the Future/Industry 4.0 verticals.  The present document is applicable to multiple engineering-related verticals such as in particular Smart Grids, Micro Grids, Smart Home, Smart Building, Electric Mobility, Industry of the Future/Industry 4.0, including all their field devices/processes/systems, measurements, environment, actors/players and their relations, as well as flexibility/trading/business related aspects.  These guidelines will result in a new set of requirements to update SAREF and its extensions. |
| D2 | [DTS/SmartM2M-103548](https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=53166) (TS 103 548) | **Title**: SAREF consolidation with new reference ontology patterns, based on the experience from the EUREKA ITEA SEAS project  **Working Title**: SAREF consolidation with new reference ontology patterns  **Scope**: The SEAS reference ontology patterns can be instantiated to create ontologies with homogeneous and predictable structures for the modelling and the description of any kind of engineering-related data/information/systems. The SEAS reference ontology patterns extend and are aligned to the core of the following ontologies: W3C&OGC SOSA (Sensing, Observation, Sampling and Actuation) and SSN (Semantic Sensor Network), QUDT (Quantity, Unit, Dimension and Type) and SAREF (Smart Applications REFerence).  The SEAS ontology patterns are applicable to multiple engineering-related verticals such as Smart Grids, Micro Grids, Smart Home, Smart Building, Electric Mobility, Industry of the Future/Industry 4.0, including all their field devices/processes/systems, measurements, environment, actors/players and their relations, as well as flexibility/trading/business related aspects.  The scope of the present document is to consolidate the SAREF ontology, and all the relevant SAREF extensions, adapting the SEAS reference ontology patterns, in order to achieve higher semantic interoperability. |
| D3 | [DTR/SmartM2M-103608](https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=54480) (TR 103 608) | **Title**: SAREF publication framework reinforcing the engagement of its community of users  **Working Title**: SAREF publication framework  **Scope**: To specify, in collaboration with the ETSI IT department, the publication framework for the SAREF ontology and its extensions. The publication framework provides a uniform documentation website for SAREF and its extensions such that (1) the documentation is designed for domain experts and software developers instead of ontology engineers, (2) industries can like or share the content, provide useful feedback to SAREF developers and suggest additions/modifications. Additionally, SAREF developers would get to know more about the SAREF community of users. The publication framework will enable industries to implement solutions with SAREF faster. It will reinforce the engagement of the community of users such that the SAREF developers can plan new evolution of the current and future extensions. |

The STF will produce the deliverables D1, D2 and D3, for TB approval and publication by ETSI:

## Deliverables schedule:

|  |  |
| --- | --- |
| **Deliverable**  **Working Title** | **Schedule** |
| D1 (DTR/SmartM2M-103549)  **Working Title**: Guidelines for consolidating SAREF with new reference ontology patterns | * Early draft requirements overview Sep 2018 * Stable draft requirements overview Jan 2019 * Final draft requirements overview Feb 2019 |
| D2 (DTS/SmartM2M-103548)  **Working Title**: SAREF consolidation with new reference ontology patterns | * Early draft extension Feb 2019 * Stable draft extension Apr 2019 * Final draft extension May 2019 |
| D3 (DTR/SmartM2M-103608)  **Working Title**: SAREF publication framework | * Early draft requirements overview Sep 2018 * Stable draft requirements overview Mar 2019 * Final draft requirements overview May 2019 |

# Work plan, time scale and resources

## Organisation of the work

The work can be separated into 4 main tasks:

* Task T1: Project Management
* Task T2: SAREF requirements gathering to result in ETSI TR 103 549
* Task T3: SAREF extension development to result in ETSI TS 103 548
* Task T4: Specification of the SAREF ontology publication framework to result in ETSI TR 103 608

## 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).

**Resources required**: 5 000 EUR

Task 2: SAREF requirements gathering

**Objectives:** This task will gather requirements for consolidating the SAREF ontology with new reference ontology patterns, using the experience of the SEAS project. The experts will review the SEAS use cases, the 4 core SEAS modules, the 32 SEAS module (especially those related to verticals partly modelled in existing SAREF extensions), and the OGC&W3C SSN ontology, to gather a new set of requirements to update SAREF and its extensions.

**Input:** Base documents (as describedin section 6.1), Results of SEAS.

**Output**: D1 DTR/SmartM2M-103549 (TR 103 549) (as described in section 6.3).

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

**Resources required**: 10 000 EUR

Task 3: SAREF extension development

**Objectives:** The objective is to consolidate the SAREF ontology, and all the relevant SAREF extensions, adapting the SEAS reference ontology patterns, in order to achieve higher semantic interoperability.

**Input:** Results of Task 2

**Output:** D2DTS/SmartM2M-103548 (103548) (as described in section 6.3).

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

**Resources required**: 20 000 EUR

Task 4: Specification of the SAREF publication framework

**Objectives:** The objective is to initiate, in collaboration with the ETSI IT department, the specification of the SAREF ontology publication framework (gather requirements and develop the corresponding portal), reinforcing the engagement of its community of users. ETSI members will be able to better plan new evolution of the current and future extensions, and this publication framework will be reusable for reducing the costs of developing these extensions.

**Input:** Results of SEAS

**Output:** D3DTR/SmartM2M-103608 (TR 103 608) (as described in section 6.3), the SAREF ontology portal.

**Interactions:** TC SmartM2M, other interested ETSI Technical Bodies (as described in section 5.2), interested Organizations outside ETSI (as described in section 5.3). The specification must be done in coordination with ETSI IT department

**Resources required**: 10 000 EUR

## Milestones

Milestone 1 – Early draft TRs (Task 2 and 4) for TB review

Milestone 2 – Final draft TR (Task 2) and Early draft TS (Task 3) for TB review

Milestone 3 – Final draft TR (Task 4) and TS (Task 3)

Milestone 4 – Deliverables published, STF closed

## Task summary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **N** | **Task / Milestone / Deliverable** | Target date | Estimated cost | |
| EUR | Days (optional) |
| M0 | Start of work | Jun 2018 |  |  |
| T1 | Project management | Jun 2018 - Jun 2019 | 5 000 |  |
| T2 | SAREF requirements gathering | Jun 2018 - Feb 2019 | 10 000 |  |
| T3 | SAREF extension development | Nov 2018 - May 2019 | 20 000 |  |
| T4 | Development of the SAREF publication framework | Jun 2018 - May 2019 | 10 000 |  |
| M1 | Early draft of TRs D1, D3(Task 2 and 4) and Progress report available for TB review 2 weeks before SmartM2M#47  Progress report approved by TC SmartM2M during SmartM2M#47 | 25-Sep-2018 |  |  |
| M2 | Final draft TR D1(Task 2) , early draft TS D2(Task 3) and Progress report available for TB review 2 weeks before SmartM2M#49  Progress report and Final draft TR D1 approved by TC SmartM2M during SmartM2M#49 | Feb 2019 |  |  |
| M3 | Final draft TR D3(Task 4) and TS D2(Task 3) and Progress report available for TB review 2 weeks before SmartM2M#50  Final report and Final draft TR D3 and TS D2 approved by TC SmartM2M during SmartM2M#50 | Jun 2019 |  |  |
| M4 | Deliverables published | Jul 2019 |  |  |
| **Total** | | | **45 000** |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Task Milest.** | **Description** | **J** | **J** | **A** | **S** | **O** | **N** | **D** | **J** | **F** | **M** | **A** | **M** | **J** | **J** |
| T1 | Project management |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T2 | SAREF requirements gathering |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T3 | SAREF extension development |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T4 | Development of the SAREF publication framework |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| M1 | Early draft TRs (Task 2 and 4) for TB review |  |  |  | X |  |  |  |  |  |  |  |  |  |  |
| M2 | Final draft TR (Task 2) and Early draft TS (Task 3) for TB review |  |  |  |  |  |  |  |  | X |  |  |  |  |  |
| M3 | Final draft TR (Task 4) and TS (Task 3) |  |  |  |  |  |  |  |  |  |  |  |  | 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.

# Expertise required

## Team structure

Up to 3 participants to ensure the following mix of competences:

* Experience in industry-specific ontology development, especially SEAS, SAREF, W3C&OGC SOSA/SSN (Task 2, 3, 4)
* Experience in ontology publication framework design (Task 4)
* Expert knowledge of oneM2M standards, semantics and IoT vertical domains (e.g., Smart Energy, Smart Building, and Industry of the Future/Industry 4.0 verticals). (Task 2, 3, 4)

Part III: Financial conditions

# Maximum budget

Maximum budget for this action will be 55 000 €.

## Manpower cost

|  |  |
| --- | --- |
| Task 1 | 5 000 EUR |
| Task 2 | 10 000 EUR |
| Task 3 | 20 000 EUR |
| Task 4 | 10 000 EUR |
| **Total** | **45 000 EUR** |

## Travel cost

|  |  |
| --- | --- |
| **Expected travels** | **Cost estimate** |
| Reference TB meetings (3x), meetings with other interested TB such as ISG CIM, oneM2M (3x), meetings with EC (3x) | 10 000 EUR |
| **Total cost** | **10 000 EUR** |

**Total cost**

|  |  |
| --- | --- |
| **Description** | **Maximum estimated cost** |
| Service Contracts | 45 000 EUR |
| Travels | 10 000 EUR |
| **Total cost** | **55 000 EUR** |

Part IV: STF performance evaluation criteria

# Key Performance Indicators

Contribution from ETSI Members to STF work

* Direct financial contribution (co-funding)
* Support to the STF work (e.g., provision of test–beds, organization of workshops, events)
* Steering Group meetings (number of meetings / participants / duration)
* Number of delegates directly involved in the review of the deliverables
* Contributions/comments received from the reference TBs
* Contributions/comments received from other TBs

Contribution from the STF to ETSI work

* Contributions to TC/WG meetings (number of documents / meetings / participants)
* Contributions to other TBs
* 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 (e.g. on WEB site, mailing lists, etc.)

Quality of deliverables

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

Time recording

For reporting purposes, the STF experts shall fill in the time sheet provided by ETSI with the days spent for the performance of the services

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.

# Document history

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Date** | **Author** | **Status** | **Comments** |
| 0.1 | 31-Jan-2018 | SmartM2M | Draft | First Draft |
| 0.2 | 15-Feb-2018 | SmartM2M | Draft | Updated WI title, scope, scheduling |
| 0.3 | 26-Feb-2018 | SmartM2M | Draft | Improved rationale, harmonized content, |
| 0.4 | 27-Feb-2018 | ETSI Technical Officer | Stable Draft | Prepare for 2nd March ETSI STF Manager consolidation of draft ToRs of TBs |
| 0.5, | 1-Mar-2018 | SmartM2M, ETSI Technical Officer | Stable Draft | Added max number of participants |
| 0.6,0.7 | 9-Mar-2018 | SmartM2M | Stable Draft | Added support statement from Orange |
| 0.8 | 12-Mar-2018 | SmartM2M, ETSI Secretariat CFO/STF Manager and Technical Officer | Draft for TB approval and paralell OCG/Board consult. | Editorial updates and improvement of rationale + update of the list of supporting companies |
| 0.9 | 28-Mar-2018 | SmartM2M | Stable Draft | Taken into account OCG/Board recommendations |
| 1.0 | 29-Mar-2018 | ETSI Secretariat | Editorial revisions | Modifications after OCG/Board validated by ETSI Secretariat |
| 1.1 | 07-May-2018 | Youssouf Sakho | Board Approved | Revisions before CL publication |