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| ***ToR STF 653 (SAREF PATTERNS)*** ***(TC SmartM2M)*** |
| Version: 1.1 |
| Author: Enrico Scarrone – Date: 2022-07-29 |
| Last updated by: ETSI Secretariat – Date: 2022-10-17 |
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**Terms of Reference –Specialist Task Force Proposal**

**STF 653 (Ref. Body TC SmartM2M)**

**SAREF PATTERNS**

**Summary information**

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| Approval status | This version is based on content previously approved by SmartM2M, postponed due to the need to fit multiple ETSI proposals in the EU financed framework in recent EISMEA submission. Approved by TC SmartM2M (doc ref: SmartM2M(22)063013) | **YES** |
| Approved by Board#139 (06-08 September 2022) | **YES** |
| Reference Body | Ref. Body TC SmartM2M |
| ETSI Funding | **Maximum budget: 78 000 EUR 74 000  EUR + 4 000 EUR of travels** |
| Minimum of 4 ETSI Members Support | **YES** |
| Time scale | **From** | 2023-02-01 |
| **To** | 2024-07-31 |
| Work Items | * D1: [RTS/SmartM2M-103548v121](https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=63055) SAREF reference ontology patterns
* D2: [RTS/SmartM2M-103673v121](https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=63054) SAREF Development Framework and Workflow, Streamlining the Development of SAREF and its Extensions
* D3: [RTS/SmartM2M-103410-5v211](https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=63061) Extension to SAREF; Part 5, Industry & manufacturing Domain, SAREF4INMA
* D4: [RTS/SmartM2M-103410-7v211](https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=63063) Extension to SAREF; Part 7, Automotive Domain, SAREF4AUTO
* D5: [RTS/SmartM2M-103410-8v211](https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=63064) Extension to SAREF; Part 8, E-Health and Ageing Well, SAREF4EHAW
* D6: [RTS/SmartM2M-103410-9v211](https://portal.etsi.org/webapp/WorkProgram/Report_WorkItem.asp?WKI_ID=63065) Extension to SAREF; Part 9, Wearable, SAREF4WEAR
 |
| Board priority | [ETSI STF funding criteria](https://portal.etsi.org/STF/STFs/Funding/ETSIbudget.aspx)

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| --- | --- |
| **Priority Criteria** |  |
| Maintenance of standards in mature domains |  |
| Innovation in mature domains |  |
| Emerging domains for ETSI | X |
| Horizontal activities (quality, security, etc.) |  |
| Societal good / environmental |  |

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**Part I – STF Technical Proposal**

# Rationale & Objectives

## 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 and food, smart city, automotive, wearables, eHealth and Ageing-well, water, lifts. The SAREF development framework and continuous integration and deployment pipeline were released in September 2020, together with the SAREF public documentation portal https://saref.etsi.org/. SAREF and its different extensions were developed quite independently by different teams of experts, sometimes in parallel. Sometimes different modelling decisions were made, with the result that SAREF extensions having important discrepancies. TC SmartM2M started to identify ontology patterns that may be used to homogenise the structure of SAREF extensions.

While in the research and in the academic areas SAREF is well established, its practical use is still at the beginning, even some industrial and business sector have start to use it, in a context where the number of ontology and semantic experts is still limited. To enlarge the SAREF community of users, it is important to make it simple to understand and use, allowing an easy and direct mapping of the current and future industry solutions. One goal of this STF is to consolidate and homogenise the TC SmartM2M SAREF suite using ontology patterns to shorten the learning.

IoT is currently experiencing a period of evolution and adoption in the different sectors and the SAREF specification are deemed to evolve quickly with the evolution of the IoT solutions. As a consequence, the SAREF Technical Specification suite is expected to evolve dynamically to timely accommodate new needs and contributions coming from all the interested stakeholders (from the same or from different domains). This requires the development of an effective SAREF methodology integrated with the SAREF portal capable to streamline the evolution of SAREF extension.

Please note that the specification and the pattern tooling produced by T2 are essential to progress the harmonization work foreseen in the approved EU financed/EISMEA STF ”Consolidation of SAREF for Cloud-Edge IoT and Urban Digital Twins”.

## Objectives of the work to be executed

The macro-objective of this proposal is to support the usability and adoption of SAREF, in particular to homogenize and facilitate the use of SAREF by:

* SAREF harmonization
* SAREF ontology patterns definition
* SAREF Portal automatization for ontologies + Patterns in the portal

The technical work is organized in two technical tasks as summarized in the following:

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| --- | --- |
| ***Task*** |  |
| *T2: SAREF reference ontology pattern Specification and development framework*  | *D1* | *RTS/SmartM2M-103548v121* *TS 103 548 V1.2.1*  | *SmartM2M; SAREF reference ontology patterns****D1: SAREF reference ontology patterns v121***  |
| *D2* | *RTS/SmartM2M-103673v121* *TS 103 673 V1.2.1* | *SmartM2M; SAREF Development Framework and Workflow, Streamlining the Development of SAREF and its Extensions****D2: SAREF Development Framework and Workflow v121***  |
| *T3: SAREF reference ontology patterns: Completion of the consolidation of the SmartM2M TC SAREF suite* | *D3* | *RTS/SmartM2M-103410-5v211* *Revision of TS 103 410 part 5* | SmartM2M; Extension to SAREF; Part 5: Industry & manufacturing Domain**D3: SAREF4INMAv211** |
| *D4* | *RTS/SmartM2M-103410-7v211 Revision of TS 103 410 part 7* | SmartM2M; Extension to SAREF; Part 7: Automotive Domain**D4: SAREF4AUTOv211** |
| *D5* | *RTS/SmartM2M-103410-8v211* *Revision of TS 103 410 part 8* | SmartM2M; Extension to SAREF; Part 8: e-Health and Ageing-well Domain, **D5: SAREF4EHAWv211** |
| *D6* | *RTS/SmartM2M-103410-9v211* *Revision of TS 103 410 part 9* | SmartM2M; Extension to SAREF; Part 9: Wearable Domain**D6: SAREF4WEARv211** |

## Previous funded activities in the same domain

*A study (January 2014 - March 2015) was commissioned by the European Commission to bring together semantics and data from smart appliances in buildings and households. These smart appliances all communicate in a different manner and the information they exchange differs. From the smart appliances the approach was generalized and extended to multiple business domains.*

*The first version of SAREF (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, automotive, wearables, eHealth/ageing-well, water, lifts.*

*The SAREF development framework and continuous integration and deployment pipeline were released in September 2020, together with the SAREF public portal* [*https://saref.etsi.org/*](https://saref.etsi.org/)*, to facilitate the direct contribution to SAREF to all the stakeholders.*

*The value of SAREF is strongly correlated with the size of its community of users, and also to the simplicity of understanding and usage. One goal of this STF is to consolidate and homogenise the TC SmartM2M SAREF suite and shorten the learning curve of SAREF for ontology users and industry actors.*

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

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## Market impact

SAREF expected impact is well known in terms of development of the digital market and engagement of stakeholders from the different business domains. Cross-sector semantic interoperability is a key to assure the evolution of the IoT and the related services to human markets. This STF will amplify the SAREF impact working on the general usability of the standardized ontology (SAREF).

More relevantly, we are in a moment of consolidation of the SAREF framework and workflow: ETSI has just published a new version of the TC SmartM2M SAREF suite and has just published the first version of the SAREF Portal. It is crucial to continue to support the exploitation of SAREF to the stakeholder’s market to assure a proper adoption of the ETSI standard ontology via the SAREF Portal.

SAREF and more in general ontologies are still a knowledge domain for experts, on the border between industry and university expertise. With this STF this work, it would be possible to empower the EU know-how and leadership in this sector, especially in the ontology-AI-Digital Twins integration,

Additionally, SAREF is increasingly recognized as the reference approach in the industrial sector, being developed in a compatible way with W3C semantic web approach, but at the same time being much closer to the different business sector solutions, from industry to smart city verticals.

While making its adoption easier and its processes clearer, the market will be provided with a powerful tool to enable semantic interoperability and to complete the EU digitalization towards IoT. Furthermore, it will allow to support the diffusion of SAREF in emerging extra-European markets with potential benefits for the EU technology leadership in this sector and potential positive effects of adoption of EU technology.

## Consequences if not agreed

The SAREF portal will remain incomplete and the harmonization of SAREF extension will be delayed. Leadership of ETSI on semantic interoperability and ontologies will remain incomplete and suspended, integration with W3C will be also delayed,

Please note that the specification and the pattern tooling produced by T2 are essential to progress the harmonization work foreseen in the approved EU/EISMEA financed STF ”Consolidation of SAREF for Cloud-Edge IoT and Urban Digital Twins”.

# Relation with ETSI strategy and priorities

Identify the relation between the objectives of the proposed activity and the Priority Criteria and provide a rationale [BOARD(19)123\_014]:

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| --- | --- |
| **Priority Criteria** | **Rationale** |
| Maintenance of standards in mature domains |  |
| Innovation in mature domains |  |
| Emerging domains for ETSI | Yes: Digital Twins are an essential component in the development of digitalization in the industry and in the society, with strong relation with IoT and with the adoption of AI technologies. |
| Horizontal activities (quality, security, etc.) |  |
| Societal good / environmental |  |

# ETSI Members Support

|  |  |  |
| --- | --- | --- |
| **#** | **ETSI Member** | **Supporting delegate** |
| 1 | TELECOM ITALIA S.p.A. | Enrico Scarrone |
| 2 | SBS aisbl | Marco Cogliati |
| 3 | Facultad de Informatica | Raul Garcia Castro (UPM) |
| 4 | FBK | Mauro Dragoni (Fondazione Bruno Kessler) |
| 5 | Exacta | Bob Flynn (Associated member) |
| 6 | HUAWEI Technologies Sweden AB | Francisco da Silva |
| 7 | Deutsche Telekom AG | Thomas Kessler |
| 8 | JK Consulting and Projects  | Joachim Koss |
| 9 | Institute Mines Telecom | Maxime Lefrançois |
| 10 | TNO | Laura Daniele |
| 11 | Digital SME | Massimo Vanetti |

# Deliverables

## Base documents

|  |  |  |
| --- | --- | --- |
| **Document** | **Title** | **Status** |
| *ETSI TS 103 264* | *SmartM2M; Smart Applications;**Reference Ontology and oneM2M Mapping**See also* [*https://saref.etsi.org/core/*](https://saref.etsi.org/core/) *.* | *Published*  |
| *ETSI TS 103 410 parts 1-11* | *The entire SmartM2M SAREF extension suite for smart IoT:**Energy: SAREF4ENER,* *Environment: SAREF4ENV,* *Building; SAREF4BLDG,* *City: SAREF4CITY**Industry & manufacturing: SAREF4INMA* *Agriculture and Food: SAREF4AGRI,* *Automotive SAREF4AUTO,* *e-Health and Ageing-well: SAREF4EHAW,* *Wearable; SAREF4WEAR,**Water: SAREF4WATR,**Lifts: SAREF4LIFT.**See also* [*https://saref.etsi.org*](https://saref.etsi.org) | *Published* |
| *ETSI TR 103 549* | *Guidelines for consolidating SAREF with new reference ontology patterns, based on the experience from the ITEA SEAS project.**See also* [*https://saref.etsi.org*](https://saref.etsi.org) | *Published* |
| *ETSI TS 103 548* | *SAREF consolidation with new reference ontology patterns, based on the experience from the SEAS project See also* [*https://saref.etsi.org*](https://saref.etsi.org) | *Published* |
| *ETSI TS 103 673* | *SAREF Development Framework and Workflow, Streamlining the Development of SAREF and its Extensions.* [*https://saref.etsi.org*](https://saref.etsi.org) | *Published* |
| *TR 103 781* | *SmartM2M; Study for SAREF ontology patterns and usage guidelines* | *Output of approved EU financed STF ”* *Consolidation of SAREF for Cloud-Edge IoT and Urban Digital Twins”* |

## New deliverables

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| --- | --- | --- | --- |
| **Deliv.** | **Work Item code****Standard number** | **Working title****Scope** | **Expected date for publication** |
| *D1* | *RTS/SmartM2M-103548v121* *TS 103 548 V1.2.1*  | ***SmartM2M; SAREF reference ontology patterns******D1: SAREF reference ontology patterns v121*** ***Scope:**** *to specify the set of SAREF reference ontology patterns for the modelling and the description of any kind of applications-related data/information/systems. The SAREF reference ontology patterns can be instantiated in different verticals to provide the SAREF suite of ontologies a homogeneous and predictable structure, and achieve higher semantic interoperability. They extend and are aligned with 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).*
 | 31/07/2024 |
| *D2* | *RTS/SmartM2M-103673v121* *TS 103 673 V1.2.1* | SmartM2M; SAREF Development Framework and Workflow, Streamlining the Development of SAREF and its Extensions***D2: SAREF Development Framework and Workflow v121*** ***Scope:**** *a revision of TS 103 673 (DTS/SmartM2M-103673) with additional clauses that specify the development workflow of SAREF project versions instantiating the SAREF reference ontology patterns.*
* *Revision of the SAREF pipeline software to support the SAREF ontology patterns.*
* *Revision of the SAREF public portal to document patterns, and to enable the browsing of SAREF terms by looking for pattern instantiations.*
 | 31/07/2024 |
| D3 | Revision of TS 103 410 Parts 5,7,8,9 | D3: SAREF4INMAv211 (RTS/SmartM2M-103410-5v211)D4: SAREF4AUTOv211 (RTS/SmartM2M-103410-7v211)D5: SAREF4EHAWv211 (RTS/SmartM2M-103410-8v211)D6: SAREF4WEARv211 (RTS/SmartM2M-103410-9v211)**Scope**: * major revision of each SAREF ontology extensions, using the reference ontology patterns specified in D1 with the development framework and tools defined in Task 2 (D2).
 | 31/07/2024 |
| D4 |
| D5 |
| D6 |

# Maximum budget

## Task summary/Manpower Budget

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| **Task short description** | **Budget (EUR)** |
|
| Task 1: **Project Management**  | 6 000 |
| *Task 2:* ***SAREF reference ontology pattern Specification and development framework*** | 40 000 |
| *Task 3:* ***SAREF reference ontology patterns: Completion of the consolidation of the SmartM2M TC SAREF suite*** | 28 000 |
|  | 74 000 |

## Travel budget

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.

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| **Expected travels** | **Cost estimate** |
| Reference TB meetings (6 travels) | 4 000 € |
| **Total cost** | **4 000 €** |

**Part II – Details on STF Technical Proposal**

# Tasks, Technical Bodies and other stakeholders

## Organization of the work

The technical work is developed in one light management task (T1) and 2 technical tasks covering respectively:

-(T2) Pattern specification, SAREF process specification update and all the corresponding sw tooling inside the portal:

-(T3) The harmonization of the 4 extension not covered by the of approved EU financed STF ”Consolidation of SAREF for Cloud-Edge IoT and Urban Digital Twins”

The specification and the pattern tooling produced by T2 are essential to progress the harmonization work foreseen in the approved EU/EISMEA financed STF ”Consolidation of SAREF for Cloud-Edge IoT and Urban Digital Twins”.

It is also anticipated that the majority of the work will be performed as drafting work remotely and electronically. Virtual meetings will be organized periodically for project management. Furthermore, a few additional face-to-face working sessions will be organized (Covid-19 permits), especially for clarification purposes with regard to the alignment of the various information sources and coordination of the technical results. It is planned to have around 3 face-to-face working sessions in total.

This STF should be performed under the guidance of TC SmartM2M, in liaison with oneM2M and other groups as required. The STF will take benefit of a Steering Group that is composed by the TC SmartM2M attendees, with the exception of the STF experts, but including the STF leader, and will meet during the regular TC SmartM2M meetings.

The Steering Group will be composed by the SmartM2M members and will correspond to the regular TC SmartM2M meeting (4 per year)

## Tasks for which the STF support is necessary

The offer of an harmonized and stable set of SAREF, together with the openness of the SAREF portal and a proper Software and specification support capable to easy the use of SAREF are of extreme benefit for all the stakeholders engaged in the digital transformation. These tasks require deep SAREF expertise and the ability to evolve the ETSI SAREF portal.

## Other interested ETSI Technical Bodies

ETSI ISG MEC, ETSI TC ITS, ETSI TC SmartBAN, ETSI TC eHEALTH, ETSI ISG SAI, ETSI ISG CIM, oneM2M Partnership Project

## Other stakeholders

EU commission, other interested SDOs and Fora (e.g. W3C, CEN/CENELEC); AIOTI (the Alliance for the Internet of Things Innovation http://www.aioti.eu) and in particular AIOTI WG on IoT Standardization and AIOTI WG on IoT Policy; Sector Business associations (eg. Efesme, ELA) and industry associations (e.g. Digital SME).

**Part III: Execution of Work**

# Work plan, time scale and resources

## Task description

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| --- | --- |
| **Task #1** | **Project Management and coordination with other organizations** |
| **Objectives** | Provide appropriate development of the work in term of quality and timely delivery to ETSI TC SmartM2M. |
| **Input** | ETSI secretariat for STF management, TC SmartM2M to steer, review and approve the technical work, relations with other organizations inside / outside of ETSI, as described in section 6. |
| **Output** | STF progress reports, reports to TC SmartM2M (which is also the Steering Group), management of the STF activities and priorities, quality review. |
| **Interactions** | ETSI CTI, EC, ETSI secretariat, TC SmartM2M, other interested ETSI technical groups and interested organizations outside ETSI (as described in section 6), including stakeholders from the identified vertical extensions |
| **Resources required** | * STF management skills
* Technical management skills and expertise in STF
* Relation management skills
* Good knowledge of SAREF, ontologies, ETSI oneM2M IoT related specifications.
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| **Task #2** | **SAREF reference ontology pattern Specification and development framework** |
| **Objectives** | *- Although the TS 103 578 defines a development framework for developing SAREF and its extensions using the best practices, the SAREF ontologies have been developed by various ontology engineers with specific style of modelling and background, leading to a variety of design choices. This leads to potential confusion and ambiguity for the SAREF users that want to use the SAREF extensions or create/submit their additional extensions to SAREF. Ontology patterns are like design patterns in object-oriented programming. They describe structural, logical, naming, or documentation best practices that one can consider when building an ontology. TS 103 548 currently specifies one ontology pattern: SAREF4SYST for systems and their interconnections.**TR 103 549 provides an analysis of the potential of modularization and factorization of the SAREF core ontology (V2.1.1) as patterns. The first goal of Task 2 is to specify (in TS 103 548) the ontology patterns identified in TR 103.549**- TS 103 673 specifies the SAREF development framework and workflow, streamlining the development of SAREF and its extensions. The SAREF pipeline software automatically checks the conformance of SAREF project versions to clauses in TS 103 673, and automatically generates the SAREF public portal from the sources of the TC SmartM2M SAREF suite in the SAREF Forge.* *Grounding the development of SAREF projects on the SAREF reference ontology patterns as specified in Task 2 represents a significant improvement of the way SAREF project versions are developed, and opens opportunities for new user interactions on the SAREF public portal.**The second goal of this task is threefold: (1) to update the development framework to account for a pattern-centric modelling of the TC SmartM2M SAREF suite; (2) to update the SAREF pipeline software to check the SAREF ontologies against the patterns, or to generate the SAREF ontologies from the patterns; and (3) to design and develop new interaction capabilities centred on the notion of ontology patterns on the SAREF public portal.* |
| **Input** | ETSI TS 103 264: SmartM2M; Smart Applications; Reference Ontology and oneM2M MappingETSI TS 103 410 parts 1-11: SmartM2M; Smart Applications; -The entire SmartM2M SAREF extension suite for smart IoTETSI TR 103 549: SmartM2M; Guidelines for consolidating SAREF with new reference ontology patterns, based on the experience from the ITEA SEAS projectETSI TS 103 548: SmartM2M; SAREF consolidation with new reference ontology patterns, based on the experience from the SEAS project ETSI TR 103 781: SmartM2M; Study for SAREF ontology patterns and usage guidelinesETSI TS 103 673: SAREF Development Framework and Workflow, Streamlining the Development of SAREF and its ExtensionsETSI TR 103 781: Study for SAREF ontology patterns and usage guidelinesSee also https://saref.etsi.org |
| **Output** | D1: RTS/SmartM2M-103548v121, TS 103 548 V1.2.1, SmartM2M; SAREF reference ontology patternsD2: RTS/SmartM2M-103673v121, TS 103 673 V1.2.1, SmartM2M; SAREF Development Framework and Workflow, Streamlining the Development of SAREF and its Extensions |
| **Interactions** | ETSI CTI, all the SAREF developers, EC, ETSI secretariat, TC SmartM2M, other interested ETSI technical groups and interested organizations outside ETSI (as described in section 6), including stakeholders from the identified vertical extensions |
| **Resources required** | * Knowledge of SAREF and ontologies
* Knowledge of the SAREF portal
* Knowledge on IoT
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| **Task #3** | **SAREF reference ontology patterns: Completion of the consolidation of the SmartM2M TC SAREF suite** |
| **Objectives** | The aim of this task is to release an updated harmonized version of selected SAREF ontology extension, using the development framework and tools defined in Task 2. This work is complementary to the corresponding harmonization work on the SAREF Core and the remaining SAREF extensions that is part of the activities of approved EU/EISMEA financed STF ” Consolidation of SAREF for Cloud-Edge IoT and Urban Digital Twins” |
| **Input** | ETSI TS 103 548: SAREF consolidation with new reference ontology patterns, based on the experience from the SEAS project. ETSI TS 103 673: SAREF Development Framework and Workflow, Streamlining the Development of SAREF and its Extensions. https://saref.etsi.orgETSI TR 103 781: Study for SAREF ontology patterns and usage guidelinesD1: RTS/SmartM2M-103548v121, TS 103 548 V1.2.1, SmartM2M; SAREF reference ontology patterns (Output of Task 2)D2: RTS/SmartM2M-103673v121, TS 103 673 V1.2.1, SmartM2M; SAREF Development Framework and Workflow, Streamlining the Development of SAREF and its Extensions (Output of Task 2) |
| **Output** | Major revision of selected SAREF ontology extensions, using the reference ontology patterns specified in D1 with the development framework and tools defined in Task 2 (D2). This work is complementary to the corresponding harmonization work on the SAREF Core and the remaining SAREF extensions that is part of the activities of approved EU/EISMEA financed STF ” Consolidation of SAREF for Cloud-Edge IoT and Urban Digital Twins”.D3: SAREF4INMAv211 (RTS/SmartM2M-103410-5v211) “SmartM2M; Extension to SAREF; Part 5: Industry and Manufacturing Domains”D4: SAREF4AUTOv211 (RTS/SmartM2M-103410-7v211) “SmartM2M; Extension to SAREF; Part 7: Automotive Domain”D5: SAREF4EHAWv211 (RTS/SmartM2M-103410-8v211) “SmartM2M; Extension to SAREF; Part 8: eHealth/ and Ageing-well Domain”D6: SAREF4WEARv211 (RTS/SmartM2M-103410-9v211) “SmartM2M; Extension to SAREF; Part 9: Wearables Domain” |
| **Interactions** | *EC,**ETSI secretariat, TC SmartM2M, other interested ETSI technical groups and interested organizations outside ETSI (as described in section 6), including stakeholders from the identified vertical extensions* |
| **Resources required** | * Knowledge of SAREF and ontologies
* Knowledge of the SAREF portal
* Knowledge on IoT, especially in the sectors targeted by the task deliverables
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## Milestones

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| **Milestone** | **Description** | **Cut-Off Date** |
| **S** | Start of work | 2023-02-01 |

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| **Milestone** | **Description** | **Cut-Off Date** |
| **A** | Stable of D1 availableEarly draft of D2 available | 2023-05-31 |
| D1D2 | Stable draft availableEarly draft previously agreed by SmartM2M |
| Progress Report | Progress Report#1 approved by SmartM2M |
|  |  |  |
| **Milestone** | **Description** | **Cut-Off Date** |
| **B** | Final D1Stable D2Early draft D3,D4,D5,D6 | 2023-09-30 |
| D1D2D3,D4,D5,D6 | Final draft version approved by TC SmartM2MStable draft version agreed by TC SmartM2MEarly draft agreed by TC SmartM2M |
| Progress Report | Progress Report#2 approved by TC SmartM2M |

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| **Milestone** | **Description** | **Cut-Off Date** |
| **C** | Final D2 | 2023-12-31 |
| D2 | Final version approved by TC SmartM2M |
| Progress Report | Progress Report#3 approved by TC SmartM2M |

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| **Milestone** | **Description** | **Cut-Off Date** |
| **D** | Stable Extensions | 2024-03-30 |
| D3,D4,D5,D6 | Stable version agreed by TC SmartM2M |
| Progress Report | Progress Report#4 approved by SmartM2M |

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| **Milestone** | **Description** | **Cut-Off Date** |
| **E** | Final Extensions | 2024-06-17 |
| D3,D4,D5,D6 | Final version approved by TC SmartM2M |
| Progress Report | Final Report approved by SmartM2M |

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| **Milestone** | **Description** | **Cut-Off Date** |
| **F** | Closure of STF, all deliverables published | 2024-07-31 |

## Task summary

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| --- | --- | --- | --- |
| **Code** | **Task / Milestone**  | **Target Date** | **Estimated Cost (EUR)** |
| **From** | **To** |
| Milestone S | Start of work | 2023-02-01 |  |  |
| T1 | Project management | 2023-02-01 | 2024-07-31 | 6 000 |
| T2 | SAREF reference ontology pattern Specification and development framework | 2023-02-01 | 2023-12-31 | 40 000 |
| T3 | SAREF reference ontology patterns: Completion of the consolidation of the SmartM2M TC SAREF suite | 2023-09-01 | 2024-07-31 | 28 000 |
| Milestone A | Stable of D1 availableEarly draft of D2 availableProgress Report#1 approved by SmartM2M |  | 2023-05-31 |  |
| Milestone B | Final draft D1 approved by SmartM2MStable draft D2 available,Early drafts D3, D4, D5, D6 availableProgress Report#2 approved by SmartM2M |  | 2024-09-30 |  |
| Milestone C | Final draft D2 approved by SmartM2MProgress Report#3 approved by SmartM2M |  | 2023-12-31 |  |
| Milestone D | Stable draft D3, D4, D5, D6 availableProgress Report#4 approved by SmartM2M |  | 2024-03-30 |  |
| Milestone E | Final draft D3, D4, D5, D6 and,Final Report approved by SmartM2M |  | 2024-06-17 |  |
| Milestone F | Closure of STF, all deliverables published |  | 2024-07-31 |  |
|  | **72 000**  |

 Expected Travel Expenses: **4 000€**

**Workplan**

|  |  |
| --- | --- |
| **Task** | **Year 2023 - Year 2024** |
| **Calendar month** | **F** | **M** | **A** | **M** | **J** | **J** | **A** | **S** | **O** | **N** | **D** | **J** | **F** | **M** | **A** | **M** | **J** | **J** |
| **STF\_month#** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** |
|  MilestoneT1: Project management | **S** |  |  | ASMR |  |  |  | BSMR |  |  | **C**SMR |  |  | DSMR |  |  | EFSMR | **F** |
| T2: SAREF reference ontology pattern Specification and development framework |  | D1E |  | D1SD2E |  | D1F |  | D2S |  |  | D2F |  |  |  |  |  |  |  |
| T3: SAREF reference ontology patterns: Completion of the consolidation of the SmartM2M TC SAREF suite |  |  |  |  |  |  |  | D3EtoD6E |  |  |  |  |  | D3StoD6S |  |  | D3FtoD6F |  |

Status of deliverables: E= Early Draft, S= Stable Draft, F= final.

FSMR= Final SmartM2M Progress Report; SMR= SmartM2M Progress Report

The months marked in **bold** correspond to the expected allocation of the SmartM2M plenary meetings, dedicated meeting will be set according to the STF needs.

The milestones marked in **bold** are the proposed STF payment-related ones.

# Expertise required

## Team structure

3 providers are expected to ensure the following mix of competences:

|  |  |
| --- | --- |
| **Priority** | **Qualifications and competences** |
| High | Knowledge of SAREF |
| High | Knowledge of Ontologies |
| High | Knowledge of SAREF Portal |
| High | Knowledge of IoT |
| High | Knowledge of Vertical sectors |
| Low | Knowledge of oneM2M |
| Low |  Knowledge of Semantic interoperability |

**Part IV: STF performance evaluation criteria**

# Performance Indicators

|  |
| --- |
| ***Select relevant Performance indicators applicable for these ToR (X)*** |
| **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)* | *X* |
| *Steering Group meetings (number of meetings / participants / duration)* |  |
| *Number of delegates directly involved in the review of the deliverables* | *X* |
| *Contributions/comments received from the Reference Bodies* | *X* |
| *Contributions/comments received from other Reference Bodies* | *X* |
|  |  |
| **Contribution from the STF to ETSI work** |
| *Contributions to Reference Body meetings (number of documents / meetings / participants)* | *X* |
| *Contributions to other Reference Bodies* |  |
| *Presentations in workshops, conferences, stakeholder meetings* | *X* |
|  |  |
| **Liaison with other stakeholders** |
| *Stakeholder participation in the project (category, business area)* |  |
| *Cooperation with other standardization bodies* | *X* |
| *Potential interest of new members to join ETSI* |  |
| *Liaison to identify requirements and raise awareness on ETSI deliverables*  | *X* |
| *Comments received on drafts (e.g. on WEB site, mailing lists, etc.)* | *X* |
|  |  |
| **Quality of deliverables** |
| *Approval of deliverables according to schedule* | *X* |
| *Respect of time scale, with reference to start/end dates in the approved ToR* | *X* |
| *Comments from Quality review by Reference Body* | *X* |
| *Comments from Quality review by ETSI Secretariat* | *X* |
|  |  |

**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

During the activity, the STF Leader shall 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** |
| 1.0 | 2022-07-29 | TC SmartM2M | Final | Resubmission of proposal (based on previously approved full SAREF STF proposal) and Technical Officer review |
| 1.1 | 2022-10-17 | ETSI Secretariat | Final | Update before CL publication |

Annex I Response to the Request for Proposals
CfE – STF 653 (REFERENCE BODY SMARTM2M)

Deadline: 22 November 2022

**If you are an ETSI Member \***

**ETSI membership status (Indicate your status):**

 Full

 Associate

 Observer

**If you are not an ETSI Member \***

Please indicate:

**Full name of the ETSI member supporting the application (list of ETSI members on etsi.org):**

-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Official contact name of the ETSI member supporting the application:**

-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Note: A formal confirmation of the support from the Official contact is required (e.g. by e-mail sent to STFLINK@etsi.org) and an “ETSI Member Support Letter” will be required if you are selected.*

|  |
| --- |
| **Contractor information \*** |
|  |
| **Contractor name \*:***Indicate the Company/Organization Name* |  |
|  |
| **Contact person for the technical aspects** | **Contact person for Decision on ETSI financial offer to this project (if any)** |
| Title |  | Title |  |
| First name |  | First name |  |
| Last name  |  | Last name  |  |
| Role |  | Role |  |
| e-mail |  | e-mail |  |
| Phone |  | Phone |  |
|  |
|  | **Yes** | **No** |
| Do you or any employee of your Company/Organization hold an elected or appointed position in the Reference Body requesting the STF 653 creation? | oIndicate in which position:----------------------------------- | o |
| **If you are self-employed candidate:**Do you currently have other contracts in progress with ETSI? | o | o  |

All fields marked with an asterix (\*) are mandatory

**1.1 Introduction**

A short presentation of the technical structure responsible for this activity, e.g.:

* Business area, number of employees, link to WEB site,
* Department(s)/team(s)/experts in charge of the technical activities related to this Project,
* Reference to products/services of your Company/Organization or supporting Member to which the standards developed by this Project will apply,
* Motivation for your Company/Organization or supporting Member to participate in this Project.

**1.2 Proposed approach**

**Proposed contribution to tasks & related cost**

Identify the tasks to which your Company/Organization is proposing to contribute by filling-in the table below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tasks\_No** | **Tasks\_Description** | **Max\_Budget\_Allocated\_in\_Euro** | **Amount\_in\_Euro\_(mandatory)** | **%\_of\_whole\_Task\_(mandatory)** |
| 00 | Project Management | 6 000 | . | . |
| 01 | SAREF reference ontology pattern Specification and development framework | 40 000 | . | . |
| 02 | SAREF reference ontology patterns: Completion of the consolidation of the SmartM2M TC SAREF suite | 28 000 | . | . |
| **TOTAL** | **74 000** |  |  |

**Amount in Euro (mandatory)**: Indicate the price offered for your contribution to the task(s)

**% of whole task (mandatory)**: Indicate to which percentage of the execution of the whole task your offer corresponds

Provide a description of the proposed approach, competences, reference to related activities:

* Explain which part of the task is corresponding to the requested percentage that your Company/Organization will handle,
* Explain the scope that your Company/Organization will cover,
* Explain your approach to the management of the quality and,
* Explain your approach to the management of the risks and their mitigation,
* Describe and justify the proposed costs to achieve this project objectives.

Annex II Terms and Conditions
CfE – STF 653 (REFERENCE BODY SMARTM2M)

Deadline: 22 December 2022

**2.1 Submission of Proposals**

All proposals in response to this CfE shall be submitted before the deadline indicated in thisCollective Letter, using exclusively the WEB application on the ETSI Portal at the following address: <https://portal.etsi.org/cfe>.

Proposals shall be composed of Curriculum Vitae of the proposed service providers’ personnel and the Annex I of this CfE duly filled-out.

Proposals that will be partial or incomplete at the deadline will not be accepted.

The Terms and Conditions in this Annex will apply.

**2.2 Modification and Withdrawal of Proposals**

Applicants may, without prejudice to themselves, modify or withdraw their proposal by written request, provided that the request is received by ETSI prior to the due date and time, at the address to which their proposal was submitted. The applicant may submit a new proposal provided that such new proposal is received prior to the deadline for responding which is specified in this Collective Letter.

**2.3 Assessment of Proposals**

The ETSI Director-General, in consultation with the Reference Body Chairman, is responsible for the selection of the service providers that will be contracted to perform this Project work. The ETSI Director-General and the Reference Body Chairman may be assisted by a Selection Panel to assess the applications received and make the final decision.

As per article 1.10.4 of the ETSI Directives, the Director-General may discard proposals that could be identified as creating potential conflict of interest.

The ETSI Secretariat will only communicate to the applicants the result of the selection (accepted or not accepted). Should applicants need more information on the rationale for the selection, they must address a formal request to the ETSI Director-General.

The following evaluation criteria will be applied to all proposals, in order of priority:

* Evidence that the applicant has the necessary structure and expertise to ensure delivery
* Reference to current or previous activities in the specific technical domain of this project
* Critical review of the most efficient way to achieve the objectives in this Project ToR
* Effective proposed approach/methodology for the execution of the tasks
* Implementation schedule
* Clear pricing policy

Compliance with the first two (2) criteria is mandatory.

Proposals that are not considered compliant with these criteria will be discarded.

Priority will be given to technical quality of the proposals. Pricing considerations will be taken into account to ensure that the best value for money is achieved. Compatibility with the maximum budget allocated to this Project will be verified before placing a Service Contract.

Following the assessment process, ETSI reserves the right to grant contracts to other than the cheapest proposals, to accept or reject any offer completely or in part, or to reject all proposals, without providing the reasons. If no offer is accepted, ETSI may decide to abandon the work or proceed in any other manner ETSI may select.

**2.4 IPR and confidentiality Agreements**

The information provided in this CfE, as well as the fact that the applicant has received the CfE, is considered confidential and protected under copyright laws. The applicant may not discuss, share, or use the information in this CfE for any purpose other than the response to this CfE.

ETSI will not disclose the content of any proposals to other applicants or any other party, with the exception of the persons involved in the assessment process described in §2.3 above.

However, ETSI reserves the right to make use of the information provided in this proposal to improve this project definition for the purpose of this CfE or any other manner in which ETSI may decide to proceed to select the service providers.

If successful, the applicant will be required to sign a Service Contract, which includes IPR and Confidentiality clauses aligned with the relevant policies in the ETSI Directives.

**2.5 Preparation cost**

ETSI will not be responsible for any costs or expenses that the applicant may incur in preparing and/or submitting the proposal.

**2.6 Service Contract**

A Service Contract will be proposed to the applicants that will be selected to perform the work.

Details on the Terms and Conditions of this contract can be found on the ETSI Portal, at the following address: <https://portal.etsi.org/STF/STFs/Contracts.aspx>