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| ETSI_logo_Office_Colour_Small | ToR STF BL (TC SmartM2M) |
| Version: 1.4.1 |
| Author: SmartM2M – Date: 18 April 2017  |
| Last updated by: Y. Sakho – Date: 24 November 2017 |
| page 1 of  |

Terms of Reference – Specialist Task Force

STF BL (TC SmartM2M)

Test plan for interfacing oneM2M platform with Agriculture machines and standards

Summary information

|  |  |
| --- | --- |
| Approval status | Draft ToR approved by TC SmartM2M To be approved by Board#114 (20-21/09/2017) |
| Funding | **Maximum budget: 57 400 € ETSI FWP** |
| Time scale | From December 2017 to September 2018 |
| Work Item  | DTR/SmartM2M-103545Test Definition and guidelines for testing cooperation between oneM2M and Ag equipment standards |
| Board priority  | [ETSI STF funding criteria](https://portal.etsi.org/STF/STFs/Funding/ETSIbudget.aspx) |

Part I – Reason for proposing the STF

# Rationale

In many cases, the definition proposed by horizontal sectors is not correlated to the needs of the end-users in vertical applications. It is thus necessary to collect the real needs from the end-users or at the level of the data machine producers’ level. In the agricultural domain, the soil definition, the certification of the pulled equipment, all these KPIs are developed at the level of the vertical sector and an alignment of the sector with the main stakeholders of the industry already exists.

Without a consolidation between the vertical domain and the horizontal domain, the KPIs can hardly be considered as benefits from the sector, and silos will remain. The Agricultural Industry Electronics Foundation (AEF, www.aef-online.org) provides already a gateway as a starting point to exchange information between all the platforms from the agriculture industry. The AEF is an organization established by agricultural equipment manufacturers and associations, aiming at providing resources and know-how for the increased use of electronic and electrical systems in farming. It works on solutions and an interface to exchange data between different machines producers.

Agricultural equipment manufacturers around the world have agreed on ISOBUS (standard ISO 11783) as the universal protocol for electronic communication between implements (e.g. trailers), tractors and computers. The ISOBUS standard, or ISO 11783, is a family of 14 standards that specify the communication taking place between tractors and implements while ensuring full compatibility of data transfer between the mobile systems and the office software used on the farm. It covers all layers of the protocol stack, from the physical layer to the application layer, together with network management, system data interchange and data dictionary. An implement is an agricultural machine that complements the tractor in order to execute a specific farming task, for example a crop thresher or a plough.

Security and safety would also need to be addressed across sectors as trust is a vital requirement between the different sectors.

The objective of this STF is to prepare a Technical Report in order to provide the necessary input for a Plugtest® event to validate the possible cooperation between the oneM2M platform and AEF ISOBUS standards implemented between a tractor and its implement (e.g. a trailer). ETSI TC ITS standards, such as EN 302 637-3 (Decentralized Environmental Notification Basic Service) are also expected to be part of this cooperation in the use case to be demonstrated.

The benefit for ETSI is the definition of new interfaces between the oneM2M platform and ETSI TC ITS standards on the one hand and the ISOBUS standard developed by AEF in the agriculture vertical sector on the other hand. It will make a step forward in the progress to enable the interoperability between vertical sectors, which is one of the main gaps identified by STF505.

The planned work will involve relationship to ETSI internal groups such as TC ITS and TC Cyber, and external groups such as CEMA (European Agricultural Machinery) or AEF.

# Objective

AEF should be the “consolidated hub” for the agriculture industry where you validate through some real demonstration that it is possible to make the other sectors exchange with the agriculture industry. Collaboration with ETSI is expected, as the SDO in charge of the standardization when CEMA manages the input from the different actors of the market, including its SMEs.

The STF shall, by making use of oneM2M standards, study and produce a Technical Report defining the parameters and measurement methods that can be used for a Plugtest event to ensure cooperation between the AEF ISOBUS standard and ETSI oneM2M standards. The STF will also make recommendations on the changes or new specifications that could be done to oneM2M standards to enable the cooperation mechanism.

The main scenario envisioned for the Plugtest event consists in the dissemination of a warning message to vehicles passing-by, after the tractor from the fields has been detected to exit on the road. The coordination between the detection of this event and the sending of the notification message will be done using a oneM2M gateway in the tractor.



# Relation with ETSI strategy and priorities

The legacy from the agriculture sector with the ISOBUS developments is important and shall be considered as a starting point for future standards to be developed as well with other sectors.

This test will demonstrate the applicability of the horizontal oneM2M architecture to a vertical sector, in this case, the agriculture vertical sector.

# Context of the proposal

## ETSI Members support

|  |  |  |
| --- | --- | --- |
| **ETSI Member** | **Supporting delegate** | **Motivation** |
| Telecom Italia | Enrico Scarrone | The objective of this STF is in line with the development of oneM2M and its interfacing with vertical technologies |
| FBConsulting | Michelle Wetterwald | FBConsulting is interested in developing the cooperation between ITS, M2M technologies and new verticals applications. FBConsulting participates in both TC SmartM2M and TC ITS committees. |
| Huawei Technologies Sweden AB | Francisco Da Silva | Huawei in interested in supporting this use case. |
| BnetzA | Markus Maas | This is a good use case for connecting vehicles and tractors to infrastructure, which will be a big topic in the near future. Using oneM2M as platform gives cities the opportunity to become smarter on a standardized solution. |
| John Deere | Christophe Gossard | Its objective is to show with this pilot the convergence between the Agriculture standards and existing M2M standards |
|  |  |  |

In addition to ETSI members’ support, this STF is supported by AEF and CEMA. John Deere is also a Member of AEF and CEMA.

|  |  |  |
| --- | --- | --- |
| **AEF / CEMA Member** | **Supporting delegate** | **Motivation** |
| AEF | Norbert Schlingmann | General Manager of AEF, supporting this effort to have an eco-system developed for Ag manufacturers worldwide. |
| CEMA | Ivo Hostens | CEMA Technical Director, supporting this pilot to collect needs from the agriculture machinery industry and be the interface with the telecommunication industry. |

## Market impact

In addition to the ISOBUS standard (ISO 11783), AEF publishes a set of guidelines (functional safety, implementation, etc.) and conformance tests. The ISOBUS standard, together with these AEF guidelines and documents applied for the exchange of data between a tractor and an implement are a good candidate to provide the basis to develop the IoT technical specifications for all Ag equipment in the context of IoT.

## Tasks for which the STF support is necessary

ETSI TC SmartM2M is the group responsible for the standardisation in the area of M2M communications, making the link with the oneM2M partnership. However the committee does not have the necessary resources to perform the detailed technical study necessary to specify the requirements for a Plugtest event.

This work is jointly supported by M2M, AEF and CEMA members, as necessary to provide technical expertise on both technologies. Support from TC ITS members is also expected.

## Related voluntary activities in the TB

The ETSI Members supporting the creation of the STF are prepared to provide voluntary contributions through participation in a Steering Committee, and by the review of documents and drafts produced by the STF, such as the draft(s) of the TR.

## Previous funded activities in the same domain

Not applicable. This is the first STF on this subject.

## Consequences if not agreed

If not agreed, the activities for incorporating the agricultural-specific communications and in particular the ISOBUS AEF standards, in the existing ICT sets of standards will be delayed and may remain at a proprietary or vertical sector level.

Part II – Execution of the work

# Technical Bodies and other stakeholders

## Reference TB

The leading TB is TC SmartM2M. The contact person will be the TC SmartM2M Chairman, Enrico Scarrone.

A Steering Committee will be created during the TC SmartM2M Plenary meeting following the STF’s preparatory meeting. It shall consist of the TC SmartM2M Chairman and Technical Officer and delegates from TC SmartM2M to be determined. The Steering Committee shall provide guidance to the STF and allow ETSI members who could not provide expertise for the STF to monitor and contribute to the progress of the work.

The steering committee will act in parallel with the members of TC SmartM2M where the steering committee shall address issues related to scope and dissemination of the results whereas the technical direction shall be from the wider TC SmartM2M membership.

## Other interested ETSI Technical Bodies

ETSI TC ITS and ETSI TC CYBER

ETSI CTI: the Technical Report written by the proposed STF aims at preparing the initial step of a CTI Plugtests™ event expected to be organized late Q4 2018. The cooperation with the CTI team has already been established. It will proceed for the whole duration of the STF, to ensure that the quality of the deliverable meets the requirements of ETSI CTI and enables the preparation of a Plugtests™. Moreover, a second phase of the present STF is envisioned after the publication of the TR, in order to provide support to the CTI team during the execution of the Plugtests™ event and to contribute to the Plugtests™ final report.

## Other stakeholders

AEF, CEMA

oneM2M

# Base documents and deliverables

## Base documents

|  |  |  |  |
| --- | --- | --- | --- |
| **Document** | **Title** | **Current Status** | **Expected date for stable document** |
| ETSI TS 118 101  | oneM2M ; Functional Architecture | Published |  |
| ETSI TS 118 103 | oneM2M ; Security solutions | Published |  |
| ETSI EN 302 637-2 | Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Part 2: Specification of Cooperative Awareness Basic Service. | Published |  |
| ETSI EN 302 637-3 | Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Part 3: Specifications of Decentralized Environmental Notification Basic Service. | Published |  |
| ISO 11783 (ISOBUS) | Tractors and machinery for agriculture and forestry – Serial control and communications data network (family of 14 standards, from ISO 11783-1 to ISO11783-14) | Published |  |

## Deliverables

|  |  |  |
| --- | --- | --- |
| **Deliv.** | **Work Item code****Standard number** | **Working title****Scope** |
| D1 | DTR/SmartM2M-103545 | Smart M2M; Test Definition and guidelines for testing cooperation between oneM2M and Ag equipment standards  |

## Deliverables schedule:

DTR/SmartM2M-103545 Test Definition and guidelines for testing cooperation between oneM2M and Ag equipment standards

* Start of work Dec. 2017
* ToC and scope 31-12-2017
* Early draft 05-02-2018
* Stable draft 28-04-2018
* Draft for approval 30-06-2018
* TB approval 01-08-2018
* Publication 15-09-2018

# Work plan, time scale and resources

## Organization of the work

The work can be separated into 3 main tasks:

* Task T1: Project Management
* Task T2: Scenario definition and collection of requirements
* Task T3: Production of the test definition and guidelines

## Task description

Task 1 – Project Management and coordination with other organizations

Objectives: Coordination, communication, reporting and leading of the STF team activities, in collaboration with the ETSI secretariat (including ETSI CTI) and the steering committee.

Interactions: ETSI secretariat, SmartM2M Steering Committee and other organizations inside / outside of ETSI, as described in sections 5.2 and 5.3.

Maximum Budget Allocated: 6 000€

Task 2 – Scenario definition and collection of requirements

Objectives: Scenario definition and collection of requirements

This task will refine the definition of the scenario associated to the use case to be demonstrated. The use case will include a tractor entering a road from the fields. The collaboration of Agriculture vertical IoT and the oneM2M Horizontal IoT platform will enable to trigger the transmission of an alarm to the cars on the road. ETSI TC ITS standards, such as EN 302 637-3 (Decentralized Environmental Notification Basic Service) are also expected to be part of this cooperation in the use case to be demonstrated.

The use case to be defined will result in the broadcast of an event notification in a range of 1000 m for all vehicles in the area. The type of connection to be used and data transport will include one-2-one and one-2-many communications. The constraint of safety and security will be of prime importance during this phase.

Based on this scenario, requirements for the test to be performed at the Plugtest event will be derived and asserted.

Input:

- Base standard documents as described in Section 6.1

Output:

An early draft of the TR with a refined description of the scenario and its requirements.

Interactions: SmartM2M Steering Committee, ETSI CTI

Maximum Budget Allocated: 18 000€

Task 3 – Production of the test definition and guidelines

Objectives: Production of the test definition and guidelines

This task will take the result of Task 2 and prepare the technical description of the test to be performed, including the selected parts and functions of the collaborating ISOBUS / oneM2M / ITS architectures, the message flows and their parameters.

It will finalize a Technical Report containing:

- the data model to be used in the test,

- the protocols to be used and their interfaces, parametrization,

- the data management for the exchange of information,

- the data security and safety.

Input:

- Result from Task 1

- Base documents as described in Section 6.1

Output:

An approved TR containing the result of Task 1, as well as the definition and guidelines for running the Plugtest event.

Interactions: SmartM2M Steering Committee, ETSI CTI

Maximum Budget Allocated: 30 000€

## Milestones

Milestone 1 – Early draft for TB review (Task 1: preliminary report)

Milestone 2 – Stable draft for TB review (Task 2: test definition and guidelines)

Milestone 3 – Approval of final draft TR (Task 2: test definition and guidelines)

Milestone 4 – Approval STF final report and publication

## Task summary

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Task / Milestone / Deliverable** | Target date | Max. Budget Allocated |
| M0 | Start of work | 11-12-2017 |  |
| T1 | Project Management | from 11-12-2017 to 15-09-2018 | 6 000 € |
| T2 | Scenario definition and collection of requirements | from 11-12-2017 to  05-02-2018 | 18 000 € |
| M1 | Progress report & Early draft for TB review approval (Remote Consensus) | 05-02-2018 |  |
| T3 | Production of the test definition and guidelines (first part) | from 05-02-2018 to  28-04-2018 | 15 000 € |
| M2 | Progress report & stable draft for TB review approval (Remote Consensus) | 28-04-2018 |  |
| T3 | Production of the test definition and guidelines (second part) | from 28-04-2018 to  01-08-2018 | 9 000 € |
| M3 | Approval of final draft TR (Remote Consensus) | 01-08-2018 |  |
| T3 | Production of the test definition and guidelines (finalization) | from 01-08-2018 to  15-09-2018 | 6 000 € |
| M4 | Approval STF final report and publication of the TR, STF closed | 15-09-2018 |  |
| **Total** | **54 000 €** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Task Milest.** | **Description** | **2017** | **2018** |
| **D** | **J** | **F** | **M** | **A** | **M** | **J** | **J** | **A** | **S** |
| T1 | Project Management |  |  |  |  |  |  |  |  |  |  |
| T2 | Scenario definition and collection of requirements |  |  |  |  |  |  |  |  |  |  |
| M1 | Early draft for TB review |  |  | X |  |  |  |  |  |  |  |
| T3 | Production of the test definition and guidelines |  |  |  |  |  |  |  |  |  |  |
| M2 | Stable draft for TB review |  |  |  |  | X |  |  |  |  |  |
| M3 | Approval of final draft TR |  |  |  |  |  |  |  |  | X |  |
| M4 | Deliverable 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

The STF will consist of providers, which must be prepared to work in close cooperation to share the tasks under the guidance of the steering committee.

One of the providers will act as STF Leader and will be responsible for the consolidation of the documentation, coordination of the STF activities and the provision of the required progress reports to the steering committee.

The STF Leader as well as other providers must be able to perform the specific tasks defined in Section 7.2.

The STF team of (up to) 2 participants will ensure the following mix of competences:

* Expert knowledge of oneM2M architecture
* Expert knowledge of oneM2M security framework
* Expert knowledge of relevant ETSI TC ITS standards
* Good experience of CTI testing procedures and preparation of test scenarios

The ETSI STF will be recruited following the issuing of an ETSI Collective Letter and this will also be available from the ETSI STF page on the ETSI Portal via the ETSI website.

Part III: Financial conditions

# Maximum budget

## Manpower cost

|  |  |
| --- | --- |
| Task 1  |  6 000 € |
| Task 2  |  18 000 € |
| Task 3  |  30 000 € |
| **Total**  |  **54 000 €** |

## Travel cost

|  |  |
| --- | --- |
| **Expected travels** | **Cost estimate** |
| Reference TB meetings (3 travels) | 1 800 € |
| Other meetings (2 travels) | 1 600 € |
| **Total cost** | **3 400 €** |

## Total cost

|  |  |
| --- | --- |
| **Description** | **Maximum estimated cost (€)** |
| Service Contracts  | 54 000 |
| Travels | 3 400 |
| **Total cost** | **57 400** |

Part IV: STF performance evaluation criteria

# Key Performance Indicators

Contribution from ETSI Members to STF work

* 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 TB
* Contributions/comments received from other TBs

Contribution from the STF to ETSI work

* Contributions presented to TC meetings (number of documents / meetings / participants)
* Contributions to other TBs

Liaison with other stakeholders

* Stakeholder participation in the project (especially agricultural actors)
* Cooperation with other bodies (EAF, CEMA) and ETSI TCs
* 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 (especially CTI)

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 | 13-Apr-2017 | Christophe Gossard  |  | Early proposal |
| 0.2 | 14-Apr-2017 | Michelle Wetterwald |  | Draft proposal to TC SmartM2M and ETSI officials |
| 0.3 | 20-Apr-2017 | Gavin Craik |  | FPO comments |
| 0.4 | 21-Apr-2017 | Michelle Wetterwald |  | Update answering FPO comments |
| 0.5 | 28-Apr-2017 | Michelle Wetterwald |  | Update answering remaining FPO comments |
| V1 | 3-May-2017 | Gavin Craik |  | Acceptance of comments plus further comments. |
| 1.1 | 11-May-2017 | Michelle Wetterwald |  | Update according to further comments |
| 1.2 | 12-June-2017 | Michelle Wetterwald |  | Update due to budget and starting date changes |
| 1.3 | 31 Aug-2017 | G Craik |  | Update following Review Panel call |
| 1.4 | 11 Oct-2017 | Y. Sakho |  | Update for CL publication |
| 1.4.1 | 24 Nov-2017 | Y. Sakho |  | Editorials |