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| ETSI_logo_Office_Colour_Small | ToR STF CM (SC EMTEL) |
| Version: 0.6 |
| Author: SC EMTEL – Date: 30 October 2017 |
| Last updated by: Thierry Comont – Date: 02 May 2018 |
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Terms of Reference - Specialist Task Force

STF CM (SC EMTEL)

Study of use cases and communications involving IoT devices in emergency situations

Summary information

|  |  |
| --- | --- |
| Approval status | Draft ToR approved by SC EMTEL (doc ref: EMTEL(18)000003)  Approved by Board#117 (20th April) |
| Funding | **Maximum budget: 53 600 € ETSI FWP** |
| Time scale | June 2018 to June 2019 |
| Work Items | DTR/EMTEL-00041  Study of use cases and communications involving IoT devices in emergency situations |
| Board priority | Innovation in mature domains |

Part I – Reason for proposing the STF

# Rationale

The Internet of Things (IoT) is the concept of basically connecting any device with an on and off switch to the Internet (and/or to each other). IoT represents the next step towards digitisation where all objects and people can be interconnected through communication networks, in and across private, public and industrial spaces, report about their status and/or about the status of the surrounding environment and exchange data for intelligent applications and services to be developed. It includes devices in the physical world, as well as sensors within or attached to these devices, together with smart services and applications.

Accordingly, the scope of the IoT is wider than connectivity and communication systems and includes topics such as integration and interoperability, infrastructure deployment, devices and sensor technologies, or security and privacy. Standards are being written to enable the operation of IoT devices in many vertical domains, and when possible, across them, in the so-called horizontal domain. A landscape and gap analysis of these standards has been drawn by former ETSI STF505 and is still under scrutiny by the AIOTI (Alliance for the Internet of Things Innovation) association within its WG3.

As part of the digitalization of the economy and society, the IoT technologies are invading all application domains, including services for emergency support. However, requirements for communications involving IoT devices in emergency situations have not yet been specified to complement the existing requirements for communications involving individuals, authorities/organisations and their devices. The objective of this STF is to prepare the editing work of these specifications by first defining and analysing the use cases belonging to emergency situations. In a second step, the STF plans to derive, from the impact of these use cases, specification proposals to be implemented in existing or future standards.

# Objective

The purpose of this STF is to deliver a Technical Report to prepare the requirements for communications involving IoT devices in all types of emergency situations (e.g. communications of individuals with authorities/organisations, between authorities/organisations, from authorities/organisations to the individuals, amongst individuals).

The deliverable will contain a study of the state of the art across the IoT domain scope. It will include an analysis of use cases for emergency services, taking into account the work already done in other projects, such as oneM2M and 3GPP. Finally, it will conclude with an analysis of the impacts of these use cases on the existing specifications and of what needs to be standardized.

Based on the results of this analysis, existing specifications from EMTEL may be revised to support communications involving IoT devices. Other TB and stakeholders may receive suggestions to revise their specifications in order to support the emergency communications requirements. The next step will be to prepare a new TS on specific requirements for emergency communications involving IoT devices, based on the outcomes of this STF.

# Relation with ETSI strategy and priorities

The objectives of this study are in accordance with the ETSI Long Term strategy as they introduce the IoT innovation in the mature domain of emergency communications. Furthermore, involving IoT devices in emergency communications will have a huge societal impact, as IoT devices have the capability to strongly improve the operation of emergency services.

# Context of the proposal

## ETSI Members support

|  |  |  |
| --- | --- | --- |
| **ETSI Member** | **Supporting delegate** | **Motivation** |
| EENA | Cristina Lumbreras | EENA has made researches about IoT benefits and impacts for Emergency services and we concluded that standardisation work is crucial in this field. |
| NMHH | Miklos Balas | The IoT is the most developing part of telecommunications nowadays, which will touch nearly all fields of life (e.g. traffic, smart cities, e-Health). The sensor networks will give soon the greatest number of telecommunications users. The applications involve emergency cases too, therefore it is important for our Authority in its regulatory work to get acquainted with their use cases. |
| FBConsulting | Michelle Wetterwald | FBConsulting has participated to the development of M2M technologies since their early days. FBConsulting participates to TC SmartM2M and AIOTI WG3. |
| OFCOM / BAKOM | Daniel Voisard | The potential standardisation and regulation of the use of IoT devices for the emergencies are of great importance for the European NRAs in the interest of all. |
| Huawei Sweden | Francisco da Silva | Requirements for communications involving IoT devices in all types of emergency is a key issue and SC EMTEL is a privileged body of guidance for this topic starting from the relevant use cases, in particular in relation with European specificities. And those requirements have yet to be specified to complement the existing requirements for communications involving individuals, authorities/organisations and their devices. Also, it is very important the taking into account what is going in 3GPP (including in SA6) and oneM2M, as it is the objective of this STF. |
| One2many | Peter Sanders | one2many develops systems for public warning and is engaged with a few governments about the possibility to send warning messages to small devices that are placed inside houses, which means that one2many has an interest in the work. |

## Market impact

The IoT market is developing very fast. This domain now faces the challenge of a multiplicity of standards, solutions and platforms, among which many are proprietary. This challenge reflects the fact that IoT is more than a communication technology. Nowadays, ICT services for emergency situations start involving IoT devices. Safety organizations use it internally, e.g. for staff work suit enhanced with IoT (fire fighters, policemen, …) or to report about temperature, location, health risks. Such reports can be sent directly to local as well as to remote control centres. The location of an emergency can be provided directly to the PSAP by monitoring sensors. IoT can enable emergency events prevention, for example forest monitoring, smoke detectors in waste bins, or remote monitoring of patients with chronic diseases. During medical emergencies, patient data can be transferred directly from sensors in the vehicle to medical staff in the hospital. It is thus of utmost importance that in the case of these applications, the IoT communications comply with the additional requirements of emergency services.

## Tasks for which the STF support is necessary

This work should be performed under the guidance of SC EMTEL, in liaison with TC SmartM2M and TC TCCE. An STF is recommended as this study requires a mix of skills on emergency communications and on IoT use cases and communications that cannot be encountered separately in each of these technical bodies.

## Related voluntary activities in the TB

The ETSI Members supporting the creation of the STF are prepared to provide voluntary contribution through participation in a Steering Committee, and/or by the review of documents and drafts produced by the STF, such as the draft 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, emergency services will develop the usage of IoT devices for their communications, either standardized or proprietary, without a guarantee that these devices and communications comply with the stronger requirements of emergency services. Only an STF, pairing experts from both IoT and Emergency communications domains, can achieve the goal of studying the existing status and preparing future efficient specifications. The work planned in this STF will start the work enabling the development of specifications for this emerging market. Relying on SC EMTEL resources only may delay the preparation of these specifications and allow the market to grow without the required quality and methodology with the risk of ending up with a fragmented market.

Part II - Execution of the work

# Technical Bodies and other stakeholders

## Reference TB

The leading TB is SC EMTEL. The contact person will be the SC EMTEL Chairman, Daniel Voisard.

## Other interested ETSI Technical Bodies

TC SmartM2M and TC SmartBAN for consultation about the IoT part of the work. TC TCCE for public safety.

## Other stakeholders

oneM2M for consultation during the definition of the scenarios.

3GPP has activities related to emergency services and IoT in SA6 (critical communications), SA4 and SA1.

# Base documents and deliverables

## Base documents

|  |  |  |  |
| --- | --- | --- | --- |
| **Document** | **Title** | **Current Status** | **Expected date for stable document** |
| ETSI TS 102 181 | Emergency Communications (EMTEL);  Requirements for communication between authorities/organizations during emergencies | Published |  |
| ETSI TS 102 182 | Emergency Communications (EMTEL); Requirements for communications from authorities/organizations to individuals, groups or the general public during emergencies | Published |  |
| ETSI TS 102 410 | Emergency Communications (EMTEL); Basis of requirements for communications between individuals and between individuals and authorities whilst emergencies are in progress | Published |  |
| ETSI TR 103 338 | Satellite Earth Stations and Systems (SES); Satellite Emergency Communications (SatEC); Multiple Alert Message Encapsulation over Satellite (MAMES) deployment guidelines; | Published |  |
| ETSI TS 103 337 | Satellite Earth Stations and Systems (SES); Satellite Emergency Communications; Multiple Alert Message Encapsulation over Satellite (MAMES) | Published |  |
| ETSI TR 118 501 | oneM2M Use Cases selection | Published |  |
| ETSI TR 103 375 | SmartM2M; IoT Standards landscape and future evolutions | Published |  |
| 3GPP TS 22.179 | Technical Specification Group Services and System Aspects; Mission Critical Push To Talk (MCPTT) over LTE; Stage 1 | Published |  |
| 3GPP TS 22.282 | Technical Specification Group Services and System Aspects; Mission Critical Data services over LTE | Published |  |
| 3GPP TS 23.401 | Technical Specification Group Services and System Aspects; General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access | Published |  |
| 3GPP TS 22.261 | Technical Specification Group Services and System Aspects; Service requirements for the 5G system; Stage 1 | Published |  |
| EENA Technical  Committee Document | Public Safety Digital Transformation, The Internet of Things (IoT) and Emergency Services, March 2016 | Published |  |

## Deliverables

|  |  |  |
| --- | --- | --- |
| **Deliv.** | **Work Item code**  **Standard number** | **Working title**  **Scope** |
| D1 | DTR/EMTEL-00041  TR 103 582 | Working title: Study of use cases and communications involving IoT devices in provision of emergency situations  Scope: The purpose of this work item is to prepare the requirements for communications involving IoT devices in all types of emergency situations (e.g. communications of individuals with authorities/organisations, between authorities/organisations, from authorities/organisations to the individuals, amongst individuals). The work will start with a study of the state of the art across the IoT domain scope. It will include an analysis of use cases for emergency services, taking into account the work already done in other projects, such as oneM2M and 3GPP. It will conclude with an analysis of the impacts of these use cases on the existing specifications and of what needs to be standardized. |

## Deliverables schedule:

DTR/EMTEL-00041 Study of use cases and communications involving IoT devices in provision of emergency situations

* Start of work 25-06-2018
* ToC and scope 23-07-2018
* Early draft 03-09-2018
* Stable draft 10-01-2019
* TB approval 03-05-2019
* Publication 17-06-2019

# Work plan, time scale and resources

## Organization of the work

The work can be split into 4 main tasks:

* Task 1: Project Management
* Task 2: State of the art for communications involving IoT devices
* Task 3: Use cases for emergency services involving communications with IoT devices
* Task 4: Impact of use cases on specifications

Milestones:

* Milestone 1 (M0 + 2): Early draft for TB review
* Milestone 2 (M0 + 6): Stable draft for TB review
* Milestone 3 (M0 + 10): Approval of final draft TR
* Milestone 4 (M0 + 11): Approval STF final report and publication

A Steering Committee will be created during the SC EMTEL Plenary meeting following the STF’s preparatory meeting. It shall consist of the SC EMTEL Chairman and Technical Officer and delegates from SC EMTEL 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. Virtual meetings will be organized periodically with the steering committee to report and obtain guidance about the technical progress of the STF results.

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

Other technical bodies from ETSI, 3GPP, and oneM2M will receive the draft version of the TR for comments at each milestone, as indicated in each task of section 7.2 in the paragraph “Interactions”.

## 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 and the steering committee.

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

Resources required: 4 800€

Task 2 – State of the art for communications involving IoT devices

Objectives: Review of the state of the art for communications involving IoT devices

This task will take into account the standardization work already done and the documents referenced in Section 6.1 and, when possible, further input documents. It will prepare a description of the state of the art related to communications involving IoT devices. It will cover the connectivity capabilities, but also other features such as interoperability, devices and sensors, security, …

The methodology for the development of this chapter of the Technical Report will be the following:

* Analysis of the existing material and specifications
* Identification of the main properties of communications involving IoT devices

Input

Documents listed in Section 6.1

Output

An early draft of the TR documenting the results of the state of the art study

Interactions

Steering Committee, ETSI SC EMTEL

In addition, ETSI TC SmartM2M, TC SmartBAN, TC TCCE and if possible, oneM2M, 3GPP SA1, SA4 and SA6 for receiving suggestions and comments.

Resources required: 12 000€

Task 3 – Use cases for emergency services involving communications with IoT devices

Objectives: Definition of the main use cases for emergency services involving communications with IoT devices

The definition of the use cases will take into account the documents referenced in Section 6.1 and outcomes of Task 2 and formalize the description of the main use cases applicable to emergency communications.

The methodology for the development of this chapter of the Technical Report will be the following:

* Analysis of the existing material and specifications
* Identification of the main use cases of emergency situations which may involve communications including IoT devices
* Formal description of the use cases identified

This task will also review and update when necessary the findings of Task 2.

Input

Documents listed in Section 6.1 and results of Task 2

Output

An updated early draft of the TR documenting the main use cases defined

Interactions

Steering Committee, ETSI SC EMTEL

In addition, ETSI TC SmartM2M, ETSI TC TCCE, and if possible, 3GPP SA6, for receiving comments.

Resources required: 12 000€

Task 4 – Impact of use cases on specifications

Objectives: Definition of the impact of use cases on specifications

This task will combine the results of the two previous tasks to analyse the impacts of these use cases on the existing specifications and to identify what needs to be standardized. It will derive global requirements for emergency communications including IoT devices.

The methodology for the development of this chapter of the Technical Report will be the following:

* Identification of the impacts of the use cases defined in Task 3 and global requirements
* Identification of the specification documents where these requirements could be inserted (including potentially new specification documents)
* Presentation of these findings to ETSI SC EMTEL, ETSI TC SmartM2M, and if possible, oneM2M and 3GPP to collect comments and enhance the outcome of this task.

This development will lead to a stable version of the draft TR that will be submitted to SC EMTEL for comments. After integration of comments a final draft will be issued for approval by SC EMTEL.

Input

Results from Tasks 2 and 3

Output

Approved version of the final draft TR documenting the main global requirements to be specified

Interactions

Steering Committee, ETSI SC EMTEL,

In addition, ETSI TC SmartM2M, ETSI TC TCCE, and if possible, oneM2M and 3GPP SA1 for receiving comments

Resources required: 21 000€

## Milestones

Milestone 1 – Early draft for TB review

Draft version of the deliverable including a preliminary table of contents, a pre-stable version of outcome of task 2 (State of the art for communications involving IoT devices)

Milestone 2 – Stable draft for TB review

Draft version of the deliverable including a pre-final version of the outcome of task 2 (State of the art for communications involving IoT devices) and a stable version of the outcomes of task 3 (Use cases for emergency services involving communications with IoT devices) and ask 4 (Impact of use cases on specifications).

Milestone 3 – Approval of final draft TR

Final draft of TR 103 582 approved by SC EMTEL and accepted by the ETSI Secretariat for publication. This draft includes a final version of the outcome of task 2 (State of the art for communications involving IoT devices), task 3 (Use cases for emergency services involving communications with IoT devices) and task 4 (Impact of use cases on specifications).

Milestone 4 – Approval STF final report and publication

STF Final Report approved by SC EMTEL and TR 103 582 published.

## Task summary

|  |  |  |
| --- | --- | --- |
| **N** | **Task / Milestone / Deliverable** | Target date |
| EUR |
| M0 | Start of work | 25-06-2018 |  |
| T1 | Project Management | from 25-06-2018 to  17-06-2019 | 4 800 € |
| T2 | State of the art for communications involving IoT devices | from 25-06-2018 to  01-10-2018 | 12 000 € |
| T3 | Use cases for emergency services involving communications with IoT devices | from 03-09-2018 to  01-12-2018 | 12 000 € |
| M1 | Progress report approved by SC EMTEL by remote consensus and ETSI Secretariat, early draft available for TB review | 03-09-2018 |  |
| T4a | Impact of use cases on specifications (first part) | from 01-11-2018 to  10-01-2019 | 12 000 € |
| M2 | Progress report approved by SC EMTEL by remote consensus and ETSI Secretariat, stable draft provided for TB review and approval | 10-01-2019 |  |
| T4b | Impact of use cases on specifications (finalizing) | from 10-01-2019 to  17-06-2019 | 9 000 € |
| M3 | Approval of final draft TR by SC EMTEL by remote consensus | 03-05-2019 |  |
| M4 | Final report approved by SC EMTEL by remote consensus and ETSI Secretariat, publication of the TR | 17-06-2019 |  |
| **Total** | | | **49 800 €** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Task Milest.** | **Description** | **2018** | | | | | | | **2019** | | | | | |
| **J** | **J** | **A** | **S** | **O** | **N** | **D** | **J** | **F** | **M** | **A** | **M** | **J** |
| T1 | Project Management |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T2 | State of the art for communications involving IoT devices |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T3 | Use cases for emergency services involving communications with IoT devices |  |  |  |  |  |  |  |  |  |  |  |  |  |
| M1 | Progress report approved by SC EMTEL by remote consensus and ETSI Secretariat, early draft available for TB review |  |  |  | X |  |  |  |  |  |  |  |  |  |
| T4 | Impact of use cases on specifications |  |  |  |  |  |  |  |  |  |  |  |  |  |
| M2 | Progress report approved by SC EMTEL by remote consensus and ETSI Secretariat, stable draft provided for TB review and approval |  |  |  |  |  |  |  | X |  |  |  |  |  |
| M3 | Approval of final draft TR by SC EMTEL by remote consensus |  |  |  |  |  |  |  |  |  |  |  | X |  |
| M4 | Final report approved by SC EMTEL by remote consensus and ETSI Secretariat, publication of the TR |  |  |  |  |  |  |  |  |  |  |  |  | X |

## Working methods and travel cost

It is anticipated that the majority of the work will be performed as drafting work remotely and electronically. Monthly virtual meetings will be organized for project management. Furthermore, a few additional face-to-face working sessions will be organized - 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 3 face-to-face working sessions in total (Tasks 2 to 4).

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.

# 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) 3 participants will ensure the following mix of competences:

* Expert knowledge if IoT communications and use cases
* Expert knowledge of emergency services and requirements
* Expert knowledge of existing specifications for emergency communications
* Experience in drafting ETSI Standards
* Experience of working in an international environment

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 | 4 800 € |
| Task 2 | 12 000 € |
| Task 3 | 12 000 € |
| Task 4 | 21 000 € |
| **Total** | **49 800 €** |

## Travel cost

|  |  |
| --- | --- |
| **Expected travels** | **Cost estimate** |
| Reference TB meetings (3 travels) | 1 800 € |
| Other ETSI TB / stakeholders meetings (3 travels) | 2 000 € |
| **Total cost** | **3 800 €** |

## Total cost

|  |  |
| --- | --- |
| **Description** | **Maximum estimated cost (€)** |
| Service Contracts | 49 800 |
| Travels | 3 800 |
| **Total cost** | **53 600** |

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 and stakeholders

Contribution from the STF to ETSI work

* Contributions to TC/WG meetings (number of documents / meetings / participants)
* Contributions to other TBs
* Presentations in 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 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** |
| 0.1 | 24-Oct-2017 | Michelle Wetterwald |  | Draft proposal to SC EMTEL |
| 0.2 | 30-Oct-2017 | Michelle Wetterwald |  | Updated after comments from SC EMTEL (meeting #40) |
| 0.3 | 22-Jan-2018 | Michelle Wetterwald and Chantal Bonardi |  | Few updates for clarification and also corresponding to the fact that the STF ToR won't be submitted before April Board (e.g. dates update). |
| 0.4 | 9-March-2018 | Chantal Bonardi (EMTEL TO) |  | Few updates in order mainly to fit with new planned scheduled if STF approved at board#117 |
| 0.5 | 5-Apr-2018 | Michelle Wetterwald |  | Updates following request from OCG / Board panel review |
| 0.6 | 02-May-2018 | Thierry Comont |  | Updates before CL publication. |