D6.4 Final Report on Standardisation and Dissemination plan

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Document History

Revison	Date	Author	Details of Change
0.1	July 2013	Institut Mines-Telecom	Initial document organization
0.2	July 2014	Institut Mines-Telecom	New text, figures, document reorganization, updated dissemination activities
1.0	Sep 2014	Gemalto	Updated standardization information
2.0	Sep 2015	Institut Mines-Telecom	Final report on standardization and dissemination Updated standardization information Updated dissemination activities
2.0	Oct 2015	Gemalto	Update standardization report

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Executive Summary

Deliverable 6.4 is the final report of the standardization and dissemination report for the SITAC project. It provides a stable plan for SITAC dissemination and standardisation activities to be achieved during the project progress, as well as the dissemination results obtained during the first half of the project.

The objective of this document, which is structured in two main sections, is to describe the planned dissemination and standardization activities of the SITAC consortium partners. Besides being advertised by means of many dissemination channels, the work in SITAC is bound to be directly useful to the partners operation, with relevance to the ones with industrial activities. The consortium will also master the challenge of adhere to and push standardization efforts wherever applicable with particular emphasis on the Internet of things, Social Networks, Data Analysis, and Communication Protocols aspects. Being standard and compliant to already available guidelines is definitely a major goal of SITAC.

After having completed the first half of the project, the consortium activities include a number of publications in reputed conferences and journals, as well as initial contributions to the standardization organisms.

1. Introduction

1.1. SITAC background and objectives

1.1.1. Context and focus of research

Internet of Things is a vibrant paradigm that has shaken up the world of ubiquitous computing, making devices, applications and services available for anybody, at any time, from anywhere. On the other hand, Social Networks enable the connection and interaction of people, allowing advanced information exchange.

When combining Internet of Things and Social Networks, new challenges arise, and new technological paradigms and developments come into play. Integration techniques that allow the correct interoperation between devices and users, new interaction methodologies, a huge amount of data, new services and applications, etc., are only some examples of the challenges that this new paradigms should face in the next years.

1.1.2. Objectives and expected results

The main goal of SITAC is to provide a new ecosystem for managing a huge number and connected smart objects through the use of Social Networks paradigms.

This goal can be divided into several partial objectives:

- Provide a platform which enables the development of Social IoT and crowd-based applications with its relevant business-wise ecosystem.
- Provide a new multi-device collaborative application creation and composition framework.
- Facilitate seamless connection and cooperation among devices and users through the use of social networks and crowd-based applications.
- Provide straight forward management of security and privacy for users.
- Address technical challenges related to data analysis and recommendation techniques when leveraging the social network and crowd based paradigms.

SITAC shall provide a clear added-value in use cases involving Internet of Things and Social Networking, such as advanced management of home appliances, solar energy production managed by users, network identity and subscription management, and a crowd-based building management expert system.

1.2. WP6 Scope

The objectives of WP6 are to ensure the dissemination of the results achieved during the project's life and to coordinate its visibility at an international level through publications, contributions to standards and other industrial forums, participation or arrangement of specific events.

In general terms, WP6 manages the exploitation plan, coordinates and arranges all activities related to the dissemination of the SITAC project results within the research community, standardization bodies and towards markets players.

1.3. Scope of deliverable D6.4

Deliverable D6.4 is the final report of the standardisation and dissemination activities of the SITAC project. It presents results achieved internally and externally and support use of solutions provided. A business planning based on the results of the project will be set up. For the industrial partners, the obtained results will allow extending and securing the economic activities and market shares in developing new products or/and improving existing solutions. For university partners, the exploitation will include improvement of teaching linked with all SITAC-related technologies, at undergraduate, graduate and post-graduate levels as well as for continuous training.

2. Dissemination Strategy

SITAC project continuously provides an extensive large-spectrum dissemination work, oriented to increase the visibility of the project activities and results, including:

- Contributions with technical papers, demonstrations, or talks at relevant international conferences, symposiums, workshops, ICT initiatives, technical events, industrial forums, and cooperation with European stakeholders.

- Production of leading-edge research material suitable for publication in international journals (ACM, IEEE, Wiley, Elsevier, etc.).

- Updates of SITAC project to be published at the website, providing the latest information on project activities and achievements.

- Cooperation with other projects in related areas

- Standardisation of suitable developments

Other activities are being (have been) started and different channels are exploited to communicate the SITAC project objectives and to disseminate its outcomes:

- SITAC website: it is a key dissemination channel, providing the project description and public details.

- Leaflets, flyers and brochures: they are printed to be available at events and conferences. They can also be retrieved from the SITAC website.

- Public deliverables: they are available in the SITAC website, providing advanced documentation with the project information and achievements.

- Participation in conferences and events: national and international conferences organised by institutions, universities and research organisations are important opportunities to share project results with other experts in the field. Such participation consists in delivering presentations and/or in having a stand with posters. Presentations allow reaching a large audience whereas posters can be used as a support for more individualized and in-depth exchanges.

- Publications in journals and magazines: high-quality results will be published in top journals and magazines, so ensuring the visibility of the project achievements.

The next sections detail each one of these dissemination activities.

2.1. SITAC website

The website is the first step to facilitate the dissemination of the project.

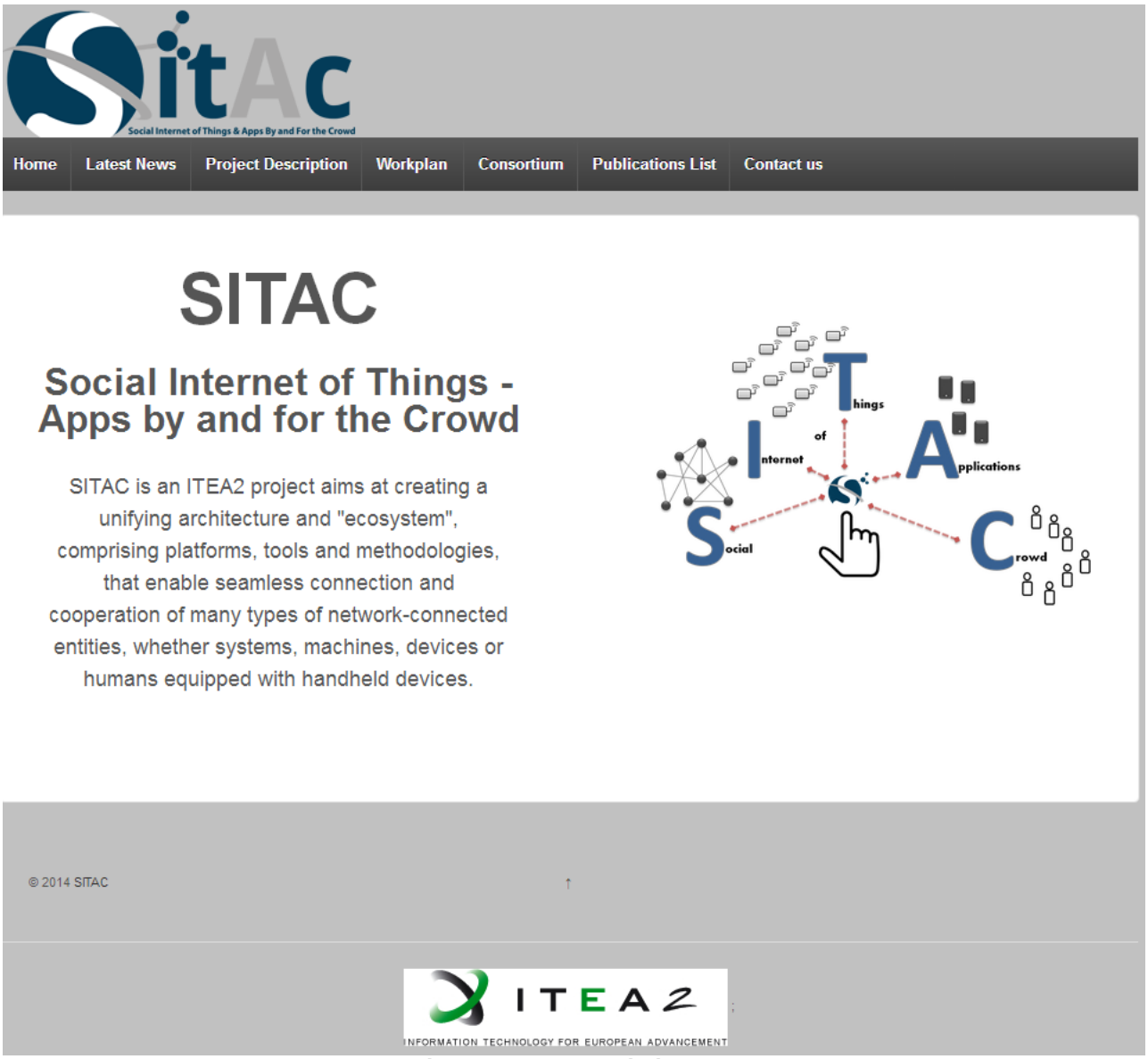

Figure 1. SITAC website

The SITAC website (see Figure 1. SITAC website) provides at a first glance, a high-level description of the project. It also includes a section to announce the latest news related to the project. The one-page project description is available, to allow readers to understand the main scope of the project.

After the first introductory sections, related to the project description and objectives, more detailed information is available, such as the work plan, the partners that compose the consortium, and the publications made as a result of the work carried out by SITAC partners. Finally, the “contact us” section provides the contact details to serve as a bridge between any person interested in the project and the SITAC consortium.

The public website is maintained regularly as the project produces results, as papers are published, as deliverables are released or whenever there is news to report.

2.2. Leaflets, flyers and brochures

The SITAC project has produced leaflet, flyer and brochures with the purpose of communicating its main objectives and outcomes. Leaflets, flyers and brochures are available in printed form at conferences and events, as well as on the SITAC website.

Figure 2. SITAC leaflet shows the first leaflet that is already available for downloading.

Figure 2. SITAC leaflet

2.3. Public deliverables

Detailed information related to the project progress can be found in the public deliverables. The following table details the current public deliverables of the SITAC project.

Deliverable	***Deliverable name***	***Nature (R - Report; O - Other)***	***Delivery date***
D2.1	*SITAC State of the Art*	*R*	*15/01/2014*
D6.1	*Initial Standardisation and dissemination plan*	*R*	*15/01/2014*
D6.4	*Final Standardisation and dissemination plan*	*R*	*12/10/2015*

2.4. Targeted conferences, events, journals and magazines

The main challenges of the SITAC project are oriented to be solved by new technical developments. Thus, it is desirable to report on both the experience learnt within the project and the solutions proposed to different problems with the scientific research community. This is done in two possible ways: contributions in international journals, conferences, or other events, as well as organizing scientific events on topics related to SITAC.

SITAC consortium aims at publishing its results in leading, high-level international conference proceedings and journals. Additionally, the achieved results will be the basis of books and/or book chapters. Timely publications will improve the project's visibility and enable exploitation of its results.

Additionally, special issues of international journals that include SITAC-related research will further increase the visibility of SITAC worldwide as well as provide a suitable forum to discuss SITAC ideas with the research community.

Table depicts the main conferences and journals targeted to disseminate the SITAC contributions.

Table 1. Targeted conferences and journals

Conferences	Journals
IECON: Annual Conference of the IEEE Industrial Electronics Society **IEEE MASS:** International Conference on Mobile Ad-hoc and Sensor Systems **IEEE ICC:** International Conference on Communications **IEEE GLOBECOM:** Global Telecommunications Conference **Mobiquitous:** International Conference on Mobile and Ubiquitous Systems: Networks and Services **ACM SIGCOMM:** Conference on Applications, Technologies, Architectures, and Protocols for Computer Communications **IEEE PiMRC:** International Symposium on Personal and Indoor Mobile Radio Conference **IEEE WCNC:** Wireless Communications and Networking Conference **ACM MobiWac:** International Workshop on	**IEEE:** Communications Magazine, Network Magazine, Wireless Communications Magazine, Intelligent Systems, Transactions on Wireless Communications, Transactions on Vehicular Technologies, IoT Journal, Transactions on Industrial Electronics, Transactions on Mobile computing , Sensors **Elsevier:** Computer Networks, Computer Communications, Ad hoc Networks, JNCA, Pervasive and Mobile Computing Journal **Springer:** Telecommunication Systems **ACM/Wiley:** Wireless Communications and Mobile Computing Journal, Expert Systems **INDERSCIENCE:** International Journal of Ad Hoc and Ubiquitous Computing

Mobility Management and Wireless Access **IEEE INFOCOM:** Conference on Computer Communications **IEEE CCNC:** Consumer Communications and Networking Conference **IEEE NOMS:** Network Operations and Management Symposium **IEEE WF-IoT:** World Forum on Internet of Things **IEEE SECON:** Conference on Sensor, Mesh and Ad Hoc Communications and Networks **DCIS: International** Conference on *Design of Circuits and Integrated Systems* ***EWSN**:* European Conference on Wireless Sensor Networks **Wireless Days** Conference **IEEE WiMob:** International Conference on Wireless and Mobile Computing, Networking and Communications **IEEE GIIS:** Global Information Infrastructure Symposium **ACM IWCMC:** International Wireless Communications and Mobile Computing Conference **IFIP Networking** **AAMAS:** International Conference on Autonomous Agents and Multiagent Systems **IEEE CBI:** Conference on Business Informatics	

3. Standardisation

This section focuses in the planning of SITAC project in the standardization area. SITAC has two objectives here: to exploit the latest developments from the standardisation bodies that are relevant for the project, and to actively contribute to standards to promote SITAC's technical outcomes.

There are many standardisation bodies that impact IoT or can be associated with it. SITAC concentrates on the IoT service layer more than the concrete low level communication protocols between devices. We will naturally observe and contribute in these standards in the context of the SITAC project. It is still important to list a representative list of standards that can be used in the context of the project, while also providing more information on those standards that are directly linked to SITAC innovation domains and in which SITAC members are contributing. The following tables summarize the main standardisation bodies for the different domains.

3.1. Standard bodies for communications area

The SITAC demonstrators and concrete implementations will rely on existing standards depending on the relevant domains of application. These are enabling standards that we will watch on their evolution.

Table 2. Target standard bodies for communications area

Domain	sub-domain	Standard body	standards or activities
Wan	Operator managed	3GPP	Cellular networks
		GSMA	M2M remote Subscription management
		BBF	Fixed line networks management
		ETSI	TETRA, E2NA, ATTM (Cellular & fixed line networks)
		WiMAX Forum	
Lan (behind gateway)		Zigbee	Zigbee flavors
		Bluetooth	Bluetooth
		USB forum	Wireless USB
		IEEE	802.xx
		ETSI	PLT, others
		ETSI Smart M2M	Technology abstraction
		IETF	6LoWPAN: Lower layers
			CORE
			CoAP
			ROLL
			HOMENET
			IRTF IoT WG

3.2. Standard bodies for M2M services

The M2M service layer and its relevant associated protocols and standards fall within the main focus of SITAC. Several members contribute directly in these standard bodies and the SITAC project may have a direct impact on the evolution of these standards. More details on these standards are provided in the chapters below.

Table 3. Target standard bodies for M2M services

Domain	sub-domain	Standard body	standards or activities
Service oriented		ETSI Smart M2M	TS 102 689, TS 102 921
		oneM2M Partnership project	In development, expected H2 2014
		GSMA Embedded Mobile	
		OMA	• OMA M2M Device Classification • OMA Lightweight M2M protocol • OMA Converged Personal Network Services
		ITU	• Focus Group M2M • GSI (Global Standards Initiative) on IoT
Device Management		BBF	TR-069
		OMA	DM 1.3, DM 2.0, LWM2M
Security oriented		ETSI M2M	TS 102 690, TS 102 921
		ISO/IEC JTC 1	
Semantics		Initiative EEBUS	

3.3. Standard bodies for application domains

These are M2M & IoT application domains for which standards already exist or are created. They are considered as vertical applications that can rely on the SITAC architecture and standardized M2M Service layers. We may watch on their evolution and fitness with the SITAC proposed solutions depending on the selected SITAC demonstrators.

Table 4. Target standard bodies for applications domain

Domain	sub-domain	Standard body	standards or activities
Energy	Smart Metering		
		MODBUS	MODBUS
		M-BUS	M-BUS and Wireless M-BUS : EN 13757-2 ,EN 13757-3
		DLMS	DLMS/COSEM
		SMCG	Smart Metering Coordination Group (between ETSI, CEN and CENELEC) for EC M/441
	Substations	IEC	
		IEEE	
	SCADA	IEC	IEC 62351
	Smart Grid	IEEE	
		SGCG	Smart Grid Coordination Group (between ETSI, CEN and CENELEC) for EC M/490
Health		Continua Health Alliance	
		ETSI	e-Health
Transport		ETSI	TC ITS: Intelligent Transport System managed by roadside infrastructure, see ETSI ITS site
		ISO	ISO 15118
		IEEE	IEEE 1609 (lower layers)
Industrial Control		IEC	IEC 62443

3.4. Standard bodies for Internet of things area

These standards fall within the main focus of SITAC. Several members contribute directly to these standard bodies and the SITAC project may have a direct impact on the evolution of these standards. More details on these standards are provided in the chapters below.

Table 5. Target standard bodies for Internet of things area

Domain	sub-domain	Standard body	standards or activities
Identity		ITU IoT-GSI	Object identification definition and management
Non Functional Requirements	Security	ISO/IEC JTC 1	
	Privacy	ISO/IEC JTC 1	
	Accessibility	ISO/IEC JTC 1	
	Interoperability	ISO/IEC JTC 1	
	User-friendly interfaces	ISO/IEC JTC 1	
	System performance	ISO/IEC JTC 1	

3.5. Contributions to Standards

Members in the SITAC consortium are involved in standardisation activities and contribute actively to the evolution of certain standards. More details on these standards bodies are given below and the related indications about relevant achievements or evolutions are provided in the reports on standardisation.

In SITAC we actively participate and contribute in the following standards committees:

- ETSI Smart M2M
- OneM2M partnership project
- OMA device management
- OMA LWM2M
- ISO/IEC JTC 1
- ITU IoT-GSI
- GSMA - M2M remote Subscription management
- User-Managed Access (UMA)

3.5.1. ETSI Smart M2M

ETSI Smart M2M and OneM2M are engaged in standardizing a world-wide M2M service layer that can guarantee the interoperability between the different lower layer standards. This M2M service layer will provide the needed services like data transport, security, devices management and device discovery in a harmonized manner to the application layer. These services will be independent from the underlying communication infrastructure and the deployed standards. In addition to these basic services, a cross vertical semantic support should be included into the service layer capabilities (e.g. data models translations).

ETSI Technical Committee M2M Machine to Machine Communications was created in 2007 to develop a horizontal approach to M2M communication that could be implemented as an overlay to a telecommunication network. The group aimed to provide a cross vertical end-to-end view of Machine to Machine standardization, and co-operated

closely with ETSI's activities on Next Generation Networks, and also with the work of the 3GPP standards initiative for mobile communication technologies. Its Technical Specifications are divided in 3 stages:

1) Stage 1: Definition of the M2M Service Requirements in ETSI TS 102 689.

2) Stage 2: Definition of the M2M Functional Architecture in ETSI TS 102 690.

3) Stage 3: Specification of technical aspects of M2M Communications (*mIa, dIa* and *mId* interfaces) in ETSI TS 102 921.

A first release was published at the end of 2011 and is no longer maintained. The last deliverables of the second release were just published beginning 2014. Release 2 adds cross service providers communication, enhancements for lightweight (i.e. constrained) devices, and security interoperability including smart-card (UICC) based implementation, optionally with secure channel to trusted device environment, including OTA remote administration capabilities.

The Stage 3 specification includes a description of RESTful-based procedures in order to define how M2M Applications in Device, Gateway or Network (DA, GA, NA) and M2M SCL exchange information with each other. RESTful procedures can then be mapped on standard IETF protocols such as HTTP or CoAP.

Several Technical Reports support the main deliverables in several areas such as Threat Analysis, Interworking with M2M Areas Networks (i.e. deployed MAN/HAN/LAN technologies) or the support of interoperable semantics.

The security may rely on the Access Network provided mechanisms when trusted, on secure channel establishment at the M2M Service Layer (e.g. using TLS), or on data security provided at the object level.
The bootstrapping of security credentials to a multitude of objects across various environments with potentially different constraints in terms of computing resources is addressed in M2M release 1 by offering several options suitable for different scenarios.

The integration of existing protocols for Device Management, i.e. OMA DM 1.x (dominant for mobile networks) and BBF TR 069 (dominant for fixed network) into the M2M platform is also addressed (cf. ETSI TS 101 404 and ETS TS 101 405).

In ETSI SmartM2M the focus is still on Semantics and Ontologies to support an EU Smart Appliances label (Smart appliance = any device that produces or consumes energy). A Specialist Task Force was also created to support the standardization package of the AIOTI framework targeting large-scale IoT pilot deployments in EU countries

3.5.2. OneM2M partnership project

ETSI TC M2M specifications set the ground for international consolidation efforts in M2M standardization within the "OneM2M" partnership formed by ETSI (Europe), ARIB and TTC (Japan), ATIS and TIA (USA), TTA (Korea) and CCSA (China), started at the end of 2012 in an effort to consolidate the horizontal approach to M2M standardization initiated by ETSI at an international level. The organization of the partnership is quite similar to 3GPP.

The oneM2M Partnership Project gathers huge attendance and supports heavy activity with 6 meetings a year and weekly conference calls for its 5 technical working groups:

1. Requirements,
2. Architecture,
3. Protocols,
4. Security
5. Management, Abstraction and Semantics.

A special “Partner Type 2” status enables vertical specification organizations such as industry fora to participate to the effort, though the success in doing so beyond telecom industry dominated organizations is currently limited. Beyond OMA and BBF which are not M2M focused, the Continua Health Alliance and the Home Gateway Initiative

are the major oneM2M Type 2 partners. Political issues have not yet enabled this initiative to receive an ITU endorsement.

In the publications of release 1 in January 2015 (set of 10 technical specifications), the focus in 2015 was on defining new Work Items for Release 2 and deriving the high level requirements corresponding to the new features. The focus areas for the new release include:

- Establishing oneM2M as a federating platform for existing M2M / IoT protocols, via the definition of Interworking functionalities with OMA LwM2M, AllJoyn, OIC, etc.
- Enhanced interface between oneM2M Service Layer and 3GPP underlying networks, following inclusion of Machine-type communication functionalities in the latest 3GPP release
- Support for data semantics and ontologies
- On the security side:
    - enhancing the authorization mechanisms to address increased complexity due to migration from centralized industrial M2M predictable “one to many” deployments to dynamically evolving distributed “many to many” IoT scenarios
    - Development of an interoperable API enabling applications on M2M Devices to make abstraction of locally supported security technologies (e.g. presence of a UICC or other embedded Secure Element or TEE or whatever)

3.5.3. ISO/IEC JTC 1

JTC 1 is joint technical committee of ISO and IEC, and the standards development environment where experts come together to develop worldwide Information and Communication Technology (ICT) standards for business and consumer applications. Additionally, JTC 1 provides the standards approval environment for integrating diverse and complex ICT technologies. These standards rely upon the core infrastructure technologies developed by JTC 1 centers of expertise complemented by specifications developed in other organizations.

Main mission:
Develop, maintain, promote and facilitate IT standards required by global markets meeting business and user requirements concerning:

- Design and development of IT systems and tools
- Performance and quality of IT products and systems
- Security of IT systems and information
- Portability of application programs
- Interoperability of IT products and systems
- Unified tools and environments
- Harmonized IT vocabulary
- User friendly and ergonomically designed user interfaces

In the context of SITAC we will follow the **ISO/IEC JTC 1/WG 7 Sensor networks** working group.
The Electronic Engineering Group of the University of Seville belongs to the AEN/CTN 71 which is the Spanish mirror group to the ISO/IEC JTC 1/WG 7. This group studies the advances developed by the international group in the field of sensor networks and provides feedback according to their experience and expertise.
WG7 activities are three-fold and comprised of:

Activities in sensor networks such as

- Standardization of terminology.
- Development of a taxonomy.
- Standardization of reference architectures.

Development of guidelines for interoperability. Identification of gaps and commonalities as they may impact standardization activities within the scope of JTC1.

Liaison relationships with other organizations outside JTC 1 including but not limited to: relevant ISO TCs, IEC TCs and ITU-T SGs, IEEE 1451, IEEE 1588, IEEE P2030, IEEE 802.15, Open Geospatial Consortium, ZigBee Alliance, IETF 6LoWPAN, ETSI, IPSO Alliance, etc.

According its liaison statement (N035:2010), the programme of work of WG7 consists of ISO/IEC 29182 “Reference architecture for sensor networks” which supports generic standardization of reference architectures and Sensor Network and its Interface for Smart Grid System.

In the context of SITAC we will also watch and participate in the new IoT activity:

JTC 1 approves the revised Terms of Reference for the Special Working Group on Internet of Things (IoT) as follows:

1. Identify market requirements and standardization gaps for IoT;
2. Encourage JTC 1 SCs and WGs to address the need for ISO/IEC standards for IoT;
3. Facilitate cooperation across JTC 1 entities;
4. Promote JTC 1 developed standards relevant to IoT and encourage them to be recognized and utilized by industry and other standards setting organizations;
5. Facilitate the coordination of JTC 1 IoT activities with IEC, ISO, ITU and other organizations that are developing standards for IoT;
6. Periodically report results and recommendations to JTC 1/SWG on Planning;
7. Provide a written report of activities and recommendations to JTC 1 in advance of each JTC 1 Plenary meeting; and
8. Study IoT Reference Architectures/Frameworks and provide a study report. This study report should be written so it could be referenced in a possible JTC 1 New Work Item Proposal on IoT. The report shall be made available to JTC 1 no later than the 2014 JTC 1 Plenary.

3.5.4. OMA device management

Device Management refers to the management of device configuration and other managed objects of devices from the point of view of the DM Authorities. DM includes, but is not restricted to setting initial configuration information in devices, subsequent updates of persistent information in devices, retrieval of management information from devices, execute primitives on devices, and processing events and alarms generated by devices.
DM allows network operators, Service Providers or corporate information management departments to carry out the procedures of configuring devices on behalf of the End User (Customer).

OMA DM 2.0 is the next generation of the OMA DM 1.x Protocol, and provides the interface between the DM Server and the DM Client to manage the device. OMA DM 2.0 leverages a RESTful architecture for scalability and management performance, and is also designed to work efficiently on less capable devices.
OMA DM (1.X and DM2.0) is one of three external Device Management technologies referenced by oneM2M (others are OMA LWM2M and BBF-TR069).

3.5.5. OMA LWM2M (Lightweight M2M)

This enabler defines the application layer communication protocol between a LWM2M Server and a LWM2M Client, which is located in a LWM2M Device. The OMA Lightweight M2M enabler includes device management and service enablement for LWM2M Devices. The target LWM2M Devices for this enabler are mainly resource constrained devices. Therefore, this enabler makes use of a light and compact protocol as well as an efficient resource data model.
A Client-Server architecture is introduced for the LWM2M Enabler, where the LWM2M Device acts as LWM2M Client and the LWM2M service, platform or application acts as the LWM2M Server.
LWM2M is one of three external Device Management technologies referenced by oneM2M (others are OMA DM and BBF-TR069).
Moreover LWM2M Interworking specification for oneM2M will be part of the oneM2M package delivery (Mid 2016), This specification aims at enabling LWM2M Applications to interact within the oneM2M framework.

3.5.6. ITU IoT-GSI

ITU's Telecommunication Standardization Sector (ITU-T) and its membership are at the forefront of standards development and coordination of the Internet of Things, with activities across all domains of the IoT.

The Global Standards Initiative on Internet of Things (IoT-GSI) promotes a unified approach in ITU-T for development of technical standards (Recommendations) enabling the Internet of Things in a global scale. ITU-T

Recommendations developed under the IoT-GSI by the various ITU-T questions –in collaboration with other standards developing organizations (SDOs)- will enable worldwide service providers to offer the wide range of services expected by this technology. IoT-GSI also aims to act as an umbrella for IoT standards development worldwide.

The IoT-GSI aims to accomplish the following objectives through meetings and related activities involving groupings of rapporteur groups working on the IoT:

- Develop a definition of “Internet of Things (IoT)”.
- Provide a common working platform by collocating meetings of IoT-related rapporteur groups.
- Develop the detailed standards necessary for IoT deployment, taking into account the work done in other standards development organizations (SDOs).

The main ITU-T Study Groups oriented to IoT developments are as follows:

- SG2 (Operational aspects of service provision and telecommunications management). Application of numbering, naming, addressing and identification plans for fixed and mobile telecommunication services.
- SG3 (Tariff and accounting principles including related telecommunication economic and policy issues). Development of charging and accounting/settlement mechanisms for international telecommunications services using the Next Generation Networks (NGNs) and any possible future development, including adaptation of existing D-series Recommendations to the evolving user needs.
- SG11 (Signaling, requirements, protocols and test specifications). Internet of Things test specifications; signaling and protocol architectures in emerging telecommunication environments; signaling requirements and protocols for service and application in emerging telecommunication environments; signaling requirements and protocols for Bearer and Resource control in emerging telecommunication environments; guidelines for implementation of signaling requirements and protocols; signaling and control requirements and protocols for network attachment supporting multi-screen service, future networks and M2M; monitoring parameters for protocols and emerging networks; service and networks benchmarking measurements.
- SG13 (Future networks including mobile and NGN). Service scenarios, deployment models and migration issues based on convergence services; requirements for NGN evolution (NGN-e) and its capabilities including support of IoT and use of software-defined networking; functional architecture for NGN evolution (NGN-e) including support of IoT and use of software-defined networks; evolution of user-centric networking, services, and interworking with networks of the future including Software-Defined Networking; requirements and mechanisms for network QoS enablement including support for software-defined networks.
- SG17 (Security). Security aspects of ubiquitous telecommunication services; identity management architecture and mechanisms.

3.5.7. GSMA - M2M remote Subscription management

The GSMA’s Embedded SIM delivers a technical specification to enable the remote provisioning and management of Embedded SIMs to allow the “over the air” provisioning of an initial operator subscription and the subsequent change of subscription from one operator to another.

Key to the commercial success of this new SIM is for the entire ecosystem to adhere to one common industry standard to achieve economies of scale. To achieve this the GSMA, the mobile network operators and SIM manufacturers are working on the delivery of a common, secure, interoperable architecture, elements of which will be certified to guarantee the secure encryption and transportation of operator credentials.

Through the GSMA, mobile network operators and SIM manufacturers from around the world have come together to establish a globally accepted specification.

Participating companies are the main SIM/UICC manufacturers:

- Gemalto
- Giesecke & Devrient
- Morpho

- Oberthur Technologies

and Mobile Network Operators such as T&T, China Mobile, China Unicom, Deutsche Telekom, NTT DOCOMO, Orange, Telecom Italia, Telefonica, Telenor, Vodafone, Verizon, ...

It is not the intention for the Embedded SIM to replace the removable SIM currently used, as it still offers many benefits to users and operators in a number of different ways

The Embedded SIM solution shall be designed to enable new business opportunities, e.g. in M2M segments, while keeping the proven benefits of the current UICC.

Any function, feature or service which is possible on a current UICC shall be possible on the eUICC.

- The Embedded SIM architecture is described in GSMA 'Remote Provisioning Architecture for Embedded eUICCC' Version 1.1.

- The Embedded SIM technical specification is described in GSMA 'Remote Provisioning Architecture for Embedded UICC Technical Specification' Version 3.0.

The initial release of the GSMA technical specifications were issued in December 2013 integrating the contributions from the above partners. A second release and a third release had been issued respectively in October 2014 and June 2015 to clarify some points and also to complete the initial specification with the profile interoperability that was missing and preventing a full interoperability of the eco-system.

Since Summer 2014, The GSMA put in place a dedicated task force involving card / eUICC manufacturers, Mobile Network Operators and also Consumer Electronic OEMs in order to develop a Remote Provisioning solution for the consumer market. After an initial definition of a referenced architecture agreed by GSMA board on 14th July 2015, a process is on-going to draft a technical specification focus on the consumer market. A first draft is planned for the end of 2015.

In SITAC we intend to experiment with several variants of the M2M specification and use this learnt experience in the next phases of a possible standard publication.

3.5.8. User-Managed Access (UMA)

User-Managed Access (UMA)[1] is a profile of OAuth 2.0[2] designed to allow users to authorize arbitrary third parties to access their resources (personal data, content, services, etc.) defining who and what can get access to them. The UMA process relies on the use of three tokens.

The protocol specifications are being developed by a working group of the "Kantara Initiative"[3] with the intent to contribute the draft work to the Internet Engineering Task Force (IETF)[1].

The first designs and implementations of the authorization functionalities in the SITAC project were based in the OAuth protocol [2]. Through the project development phase, the UMA 0.9 draft specification was published, and after analyzing it, it offered the requirements for access control within the project. It was selected as the base technology for authorization and access control because it allowed to support a specific standard for these tasks. Moreover, the UMA specification is particularly suitable for IoT environments. UAH has focused in develop a custom implementation of the standard, in order to develop a SITAC Authorization Server oriented to IoT.
The SITAC implementation is updated to the current version of UMA (1.0) [1].

The UMA specifications have undergone a "patch release" process, and have been published as candidate Draft Recommendations (UMA Core[4], OAuth Resource Set Registration[5]) for public review (comment period closes 2 Nov 2015).

[1] https://tools.ietf.org/html/draft-hardjono-oauth-umacore-13
[2] http://tools.ietf.org/html/rfc6749
[3] https://docs.kantarainitiative.org/uma/rec-uma-core-v1_0.html
[4] https://docs.kantarainitiative.org/uma/draft-uma-core-v1_0_1.html
[5] https://docs.kantarainitiative.org/uma/draft-oauth-resource-reg-v1_0_1.html"

4. Dissemination activities achieved during the duration of the project

The following tables show the contributions to conferences, journals, standardization activities, and presentations and other events during the first half of the project.

Table 6. Contributions to conferences and journals during the duration of the project

Partner	Authors	Title	Published on (journal, conference...)	Date	Complementary information (number, issue, publisher, pages...)
IMT	Dina Hussein, Son N. Han, G. M. Lee, Noel Crespi	Social Cloud-based Situational Reasoning for Task-oriented Recommendation in the Social Internet of Things	IEEE Cloud Computing Journal	October 2015	Submitted
ALU , IMT	Jose J. García Aranda, Dina Hussein	Coreset sizing using K-clustering algorithms for big and high dimensional datasets	IET communications Journal	October 2015	Submitted
UPEM	Sylvain Cherrier, Yacine Ghamri-Doudane	The "Object-as-a-Service" paradigm	Global Information Infrastructure and Networking Symposium	September 2014	
Institut Mines-Telecom	Khan, R. Jafrin, F. Zahra Errounda, R. Glitho, N. Crespi,M. Morrow and P. Polakos	A Data Annotation Architecture for Semantic Applications in Virtualized Wireless Sensor Networks	IM 2015	May 2015	
Institut Mines-Telecom	Noel Crespi	Alike people, alike interests? Inferring interest similarity in online social networks	Guanxi for Guanxi Studies Conference	June 2015	
Institut Mines-Telecom	Yuanfang Chen, Noel Crespi, Lin Lv, Mingchu Li, Antonio M. Ortiz, and Lei Shu	Locating using Prior Information: Wireless Indoor Localization Algorithm	ACM SIGCOMM	August 2013	
Institut Mines-Telecom	Antonio M. Ortiz, Fernando Royo, Teresa Olivares, Noel Crespi, and Luis Orozco-Barbosa	Smart Wireless Design SchemeL: Fuzzy-Logic Routing and TDMA MAC Protocol Integration	ACM MobiWac	November 2013	
Institut Mines-Telecom	Teresa Olivares, Fernando Royo, and Antonio M. Ortiz	An Experimental Tesbed for Smart Cities Applications	ACM MobiWac	November 2013	
Institut Mines-Telecom	Yuanfang Chen, Antonio M. Ortiz, Noel Crespi, Lei Shu, and Lin Lv	Reality Mining: Digging the Impact of Friendship and Location on Crowd Behavior	Mobiquitous	December 2013	
UAH	Susel Fernandez, Ivan Marsa-Maestre, Juan R. Velasco and Bernardo Alarcos	Ontology Alignment Architecture for Semantic Sensor Web Integration	Sensors	September 2013	

Partner	Authors	Title	Published on (journal, conference...)	Date	Complementary information (number, issue, publisher, pages...)
Institut Mines-Telecom	Victoria Beltrán, Antonio M. Ortiz. Dina Hussein, and Noel Crespi	A Semantic Service Creation Platform for Social IoT	IEEE WF-IoT	March 2014	
Institut Mines-Telecom	Antonio M. Ortiz, Dina Hussein, Soochang Park, Son N. Han, and Noel Crespi	The Cluster Between Internet of Things and Social Networks: Review and Research Challenges	IEEE IoT Journal	April 2014	

Table 7. Presentations and other events during the first half of the project

Name of conference / workshop/ event / other	Type (article/event/journal/presentation/ other)	Title	Participant/author	Date	Place/country
SOCA(Service Oriented Computing & Applications) 2015 - KASTLES Workshop	Workshop	Applying an unified access control for IoT-based Intelligent Agent Systems	Diego Rivera, Luis Cruz-Piris, Germán Lopez-Civera, Enrique de la Hoz, Iván Marsa-Maestre	19-21 October , 2015	Rome, Italy
University of Valladolid. Master universitario de investigación en TIC	Speech	Development of big-data applications deployed in the cloud	Jose Javier Garcia Aranda	25 March 2015	Valladolid - Spain
4th ETSI M2M WORKSHOP	Workshop	Minimum security requirements for M2M gateway	Pierre Girard, Gemalto	6 November 2013	France
XIII Science Week	Event	Creation of Social Apps for IoT	UAH	5,6,12 and 13 November 2013	Alcalá de Henares, Spain
X Technology Entrepreneurs Week	Event	Creation of Social Apps for IoT Workshop	UAH	15 November 2013	Alcalá de Henares, Spain
FUSECO Forum ASIA 2014 (Future	Forum, session chair	Internet of Things / M2M as Backbone for Smart Cities	T. Magedanz, N. Crespi, IMT-TSP	June 2014	Nusa Dua, Indonesia

Name of conference / workshop/ event / other	Type (article/event/journal/presentation/ other)	Title	Participant/author	Date	Place/country
Telco Ecosystems within Smart Cities and Beyond)					
University Andres Bello	SITAC Presentation	End-User Service Compositions in the IoT	Victoria Torres (UPV)	May 2014	Santiago (Chile)
XIV Science Week	Event	Internet of Things Workshop	UAH	November 2014	Alcalá de Henares, Spain
INNDEA foundation workshop	Workshop	Sustainable Urban Mobility in Smart Cities	Prodevelop	October 2014	Valencia, Spain
II Conference on Security and Cyberdefense, CIBERSEG	Workshop	Dissecting the Venn of Access Control: a hands-on approach	UAH	30 January 2015	Alcala de Henares, Spain

5. Conclusions

Deliverable D6.4 is the final release of the standardisation and dissemination plan for the SITAC project. It details the main objectives and expected results within the project, as well as the scope of the WP6 and the presentation of its deliverables.

The dissemination strategy is then described, detailing several elements such as the SITAC website, leaflet, flyers and brochures, public deliverables, and targeted conferences, journals and other events.

Furthermore, the standardisation plan is also described, as well as the target standard bodies and the contributions regarding standardisation.

Finally, a complete list of achieved dissemination activities is given, detailing published works on conferences, events, journals, magazines, and standardization activities.

All the dissemination activities are reported on a regular basis in the SITAC website, as well as in the final report on standardisation and dissemination (this report).