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US NB Proposed Changes to Program of Work, Title, and Scope of the JTC 1 WG7SN's transferred project from SC 6:

ISO/IEC 29182 – Reference model for sensor network applications and services

1 The Evolution of the Scope of ISO/IEC 29182

The initial scope of the project ISO/IEC 29182, a single International Standard (IS), in ISO/IEC JTC 1/SC 06 N 13662 (a new project proposal), dated 28 July 2008, was:

> This standard covers:
>
> - Description of sensor network applications and services to be supported by this reference architecture model;
> - Classification of sensor network applications and services from a viewpoint of common characteristics;
> - Clarification of sensor network functionalities in terms of networking and application functions; and
> - Reference architecture model to show interface relationship among a variety of sensor network functionalities.
>
> There have been a number of sensor network applications so far, such as burglar alarming, fire alarming, structural health monitoring, meteorological information gathering, etc. But sensor network applications are being evolved by new technical achievements such as wireless sensor networking, context-based processing, sensor networking solutions standardized globally, open service environment, nationwide integration of various sensor network applications, etc., which means that sensor network applications and services have to be involved with a variety of sophisticated functionalities. A reference architecture model for sensor network applications and services can give an overall understanding of various architecture instances of lots of sensor network applications/services and relationship among relevant functionalities.

The above scope was revised at the JTC 1 SC 6 / WG 7 Tokyo meeting, 1-5 June 2009, by the contributions from sensor networks experts. Document SC 6 N14017, dated 22 June 2009, was circulated for National Bodies' comments per the SC 6 Tokyo Resolution 6.7.10. In this document, the revised scope was stated as:

> This International Standard specifies the reference architecture for sensor network applications and service and covers the following in network and transport layer:
>
> - Requirements analysis of sensor network applications and services
> - Identification of the network functionalities required by different sensor network applications
> - Reference architecture for sensor networks functionalities supporting various sensor network applications and services

- Specification of interfaces for sensor network functionalities supporting sensor networks

The above revised scope is also found in WGSN document WGSN-N008, which is the transferred project's most recent document as a working draft. This document is to be considered at the 1st JTC 1 WG 7 meeting, 8-12 March 2010, London, UK. The consideration will include the review of the scope, the document's contents, etc.

2 The US NB New Project Proposal for WGSN

The US National Body (NB) proposed a new project entitled, "Technical Report on Sensor Network Reference Architecture," for the formation of the JTC 1 WG on Sensor Networks. This new project proposal was submitted for consideration at the JTC 1 Plenary in Israel, October 2009. In this proposal, the scope of the proposed project was stated:

> Technical Report on Sensor Network Reference Architecture (SNRA) specifies generic and generalized reference architecture (RA) for sensor networks (SN). The purpose of developing TR on SNRA is to benefit all JTC 1 SCs for horizontal applications, but also support vertical applications when SNRA is tailored by the stakeholders.
>
> The SNRA guides SN-related standardization and also is used by SN developers and implementers. Technical Report details generic and generalized (1) SN models, entities, and components and (2) SN requirements and interfaces, directly or via reference the:
>
> a. Business (conceptual), system (logical), and technology (physical) models and configuration;
> b. Data, function, network, organization, and motivation;
> c. Generic and generalized system and functional requirements as well as their performance requirements; and
> d. Interfaces among the models and their entities;
>
> Implementation (e.g., hardware and software), installation, and conformance requirements are outside the scope of this Technical Report, and need to be covered by other standards or by developing such standards. However, information given by this Technical Report may be of assistance.

3 Proposal to Change the Current Scope of the Project ISO/IEC 29182

3.1 Purpose and Justification for the Scope Change

Based on Technical Document (TD) from JTC 1 Study Group on Sensor Networks (SGSN) which is one of the major results of SGSN activities over the past 2 years (2008 and 2009), transitioning the TD to a Technical Report (TR) is a logical step forward. The two-year study in SGSN by the multiple NB personnel has gathered and analyzed the comprehensive information

about Sensor Networks (SN). This study was focused on several key domains of the SN technology and also on SN industry/market needs. The TD can be transformed into multiple TRs addressing the key SN domains. Therefore, the US NB proposes to develop a TR for Sensor Network Reference Architecture (SNRA) as the first transformation of the SGSN TD's Architecture section to the WG 7 on SN's first TR of its series.

Technical Report (TR) on Sensor Network Reference Architecture (SNRA) provides and specifies generic and generalized reference architecture for sensor networks (SN). This TR has two main purposes.

- SNRA is to guide the SN-related standardization activities, and SNRA is evolving reference architecture as new technologies emerge. SNRA is the foundational information store where existing standards can be leveraged and where new standardization need domains are identified.
- SNRA is to provide SN developers and implementers with fundamental understanding of essential SN building blocks (e.g., models of components, entities, and subsystems), the connectivity among those building blocks, and the basic functions provided by the essential building blocks. The developers and implementers use the SNRA as an initial SN blueprint or layout to design and build sensor network system, hardware, and/or software architectures to meet their SN products' requirements and market needs.

The SNRA TR will enable JTC 1 WG 7 on SN to identify gaps and commonalities in sensor network technologies and standards. The SNRA TR is to help developing international standards for SN allowing data, sensors, and networks interoperability. Furthermore, SNRA is to benefit developers by reducing cost and schedule risk.

Based on the results and findings from developing SNRA TR, a multi-part International Standard (IS) for sensor networks can be then developed for general and genetic architectures and application-oriented architectures, and service-based architectures.

3.2 Proposed Work Program and Scope for Project ISO/IEC 29182

In this section, the US NB proposes the work program and scope changes for the transferred Project ISO/IEC 29182.

3.2.1 Proposed Change of Program of Work and Title

US NB proposes that the program of work of Project ISO/IEC 29182 consists of a multi-part International Standard (IS) on Sensor Network Reference Architectures (SNRA).

US NB proposes that the project's standard development track to be reset so that Project ISO/IEC 29182 will have adequate time duration under JTC 1 WG 7 for completion.

US NB also proposes that the change of Project ISO/IEC 29182's title to "Sensor Network Reference Architecture (SNRA)."

3.2.2 Proposed Change of Scope

US NB proposes that the scope of Project ISO/IEC 29182 to be changed to:

> A multi-part (including Technical Report) International Standard on Sensor Network Reference Architecture (SNRA) specify generic and generalized reference architecture (RA) for sensor networks (SN). The purpose of developing TR on SNRA is to benefit all JTC 1 SCs for horizontal applications, and also support vertical SN applications by tailoring SNRA for target applications and services desired by stakeholders.
>
> The SNRA guides SN-related standardization which will lead to the multi-part International Standard (IS) for SN architectures. Both SNRA TR and the SN architecture multi-part IS are used by SN developers and implementers. Technical Report details generic and generalized (1) SN models, entities, and components and (2) SN requirements and interfaces. The SN architecture multi-part IS will address both horizontal (general and generic) and vertical (application-oriented, service-oriented) SN architecture standards. Both SNRA TR and the SN architecture multi-part IS establish SN technologies, models, entities, components, requirements, interfaces, data & system descriptions by developing SN architecture descriptions in:
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> a. Business, system, and technology (conceptual, functional, logical, and/or physical) models, connectivity, and configuration;
> b. Data, function, network, organization, and motivation;
> c. Generic and generalized system and functional requirements as well as their system-level performance requirements;
> d. System interfaces among the models and their entities;
> e. Applications and services
>
> Implementation (e.g., hardware and software), installation, and conformance architectures and/or requirements can be a part of the SN architecture multi-part IS.