ISO/IEC JTC 1/WG 7
Working Group on Sensor Networks

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JTC 1 WG 7 recommends changes to its project ISO/IEC 29182 (Reference architecture for sensor network applications and services), which has been transferred from JTC 1 SC 6 WG 7. JTC 1/WG 7 plans to use materials from the JTC 1/SGSN Technical Document (JTC 1 N9756) as appropriate for this project.

JTC 1 WG 7 undertakes reference architecture project for sensor network which not only includes sensor network's services and application, but also many other aspects, e.g., requirements, vocabulary/terminology, multiple architectural views, etc. This sensor network reference architecture (SNRA) should provide generic solutions for sensor networks and application-oriented sensor network within the overall scope of JTC 1. Additionally, it should support and apply to technical work of all relevant JTC 1 entities and to other standards organizations as stated in JTC 1 WG 7 Terms of Reference.

The SNRA will also support both horizontal (general and generic) and vertical (application-oriented, service-oriented) sensor network applications. Thus, the SNRA should address and describe:

- Generic and generalized system and functional requirements and system-level performance specifications;
- Business, operational, system, and technical architecture views which may be expressed as conceptual, functional, logical, and/or physical architecture;
- sensor network technologies;
- System interfaces among architecture entity models (building blocks for systems, subsystems, components, including description of models and construct of models)
- Applications and services

The current ISO/IEC 29182 project's title and scope do not fully represent the reference architecture (RA) that JTC 1 WG 7 should carry out. Furthermore, due to the multiple aspects associated with the SNRA, a multi-part International Standard (IS) is more suitable than a single IS. Therefore, JTC 1 WG 7 recommends the changes in: (1) Project Title; (2) Project Scope; and (3) Program of Work.

(1) Project Title

JTC 1 WG 7 proposes the change of Project ISO/IEC 29182 title from "Reference architecture for sensor networks applications and services" to "Sensor Network Reference Architecture (SNRA)."

(2) Project Scope

JTC 1 WG 7 proposes the change of Project ISO/IEC 29182 scope to:

"This multi-part International Standard specifies a generic and generalized reference architecture for sensor networks. It guides both horizontal and vertical applications of sensor networks providing an ability to be tailored to meet specific requirements."

(3) Program of Work

JTC 1 WG 7 proposes the program of work changes from a single International Standard (IS) to a multi-part IS for project ISO/IEC 29182. The proposed structure is:

ISO/IEC designation #	Title	Volunteers for Proposed Project Editors (subject to NBs approval)
ISO/IEC 29182 Part 1	General overview and requirements	Sangkeun Yoo (Korea) Nigel Rix (UK) Howard Choe (US) Alexander Pflaum (Germany) Tao Xing (China)
ISO/IEC 29182 Part 2	Vocabulary/Terminology	Nan Guo (China) Howard Choe (US) Alexander Pflaum (Germany) Tao Xing (China) Kate Grant (UK)
ISO/IEC 29182 Part 3	Reference architecture views	Howard Choe (US) Alexander Pflaum (Germany) Tao Xing (China) Sukkeun Cha (Korea)
ISO/IEC 29182 Part 4	Entity models	Sangkeun Yoo (Korea) Howard Choe (US) Alexander Pflaum (Germany) Tao Xing (China)
ISO/IEC 29182 Part 5	Interface definitions	Howard Choe (US) Alexander Pflaum (Germany) Tao Xing (China) Gwanghoon Kwark (Korea)
ISO/IEC 29182 Part 6	Application Profiles	Howard Choe (US) Alexander Pflaum (Germany) Tao Xing (China)
ISO/IEC 29182 Part 7	Interoperability guidelines	Howard Choe (US) Alexander Pflaum (Germany) Tao Xing (China) Seungmin Lee (Korea)

Scope of the parts:

Part 1 – This part provides the project's general overview and the requirements identified for reference architecture during the development of this multi-part IS.
Part 2 – This part provides the definitions of all the terminology and vocabulary used in the sensor network reference architecture.
Part 3 – This part provides the reference architecture views, e.g., business, operational, systems, technical as well as different presentation of the architecture, e.g., functional, logical, etc.
Part 4 – This part provides the description of entity models, e.g., system, subsystem, component models, with their interfaces, functional descriptions, and how they are used in the reference architecture and for implementation.
Part 5 – This part provides detailed, supportive information on the interfaces among the entity models in the reference architecture. The interface definitions include the data/information descriptions, system level specifications, and so on.
Part 6 – This part provides the application profiles that are derived from studies of use cases, scenarios, etc., for sensor network based applications and services. Examples of representative architecture for specific application profiles may be developed.
Part 7 – This part provides the design principles for interoperability based on the reference architecture which is developed with interoperability requirements. Additionally, guidance on tailoring methods to produce application-oriented architecture while maintaining the interoperability is presented.

Justification and Benefits

JTC 1 WG 7 Sensor Network Reference Architecture (SNRA) project should produce the SNRA IS that fits the following criteria:

- Generic in nature covering multiple aspects of sensor networks;
- Flexible and dynamic to reflect current and emerging technologies;
- Easy to be used and tailored by stakeholders (e.g., sensor network designers, developers, and implementers);
- Applicable across the JTC 1 SCs and other SDOs; and
- Proper in guiding sensor network related standardization activities.

Due to the challenges in carrying out this project, JTC 1 WG 7 believes that this ISO/IEC 29182 will be greatly benefited by moving to a multi-part International Standard (IS) rather than being a single IS. The expected benefits are:

- Inclusion of an introductory Part 1 which will meet the criteria for cost-free availability of JTC 1 standards;
- Logical organization of a work plan – time and resources, etc.;
- Focused participation by subject matter experts in each part's topic;
- Better effectiveness in collecting contributions and comments not only from JTC 1 NBs but also from liaison SDOs;

- Ability to allow the parts to progress independently on their own schedule;
- Simpler revision or update of the IS as new technologies and new applications/services emerge (e.g., update only the part that is affected);
- Selection of only a part or parts needed by stakeholders for their sensor network development