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Information technology — Sensor Networks: Sensor Network and its Interfaces for Smart Grid System

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO/IEC 30101 was prepared by Working Group ISO/IEC JTC 1/WG 7.

Introduction

Editor's Note: Introduction is developed based on the contribution received.

Information technology — Sensor Networks: Sensor Network and its Interfaces for Smart Grid System

Editor's Note: Preliminary section headings are contained in this document. The section headings may be revised based on the contributions received. Section 1 (Scope) is from the revised project scope from the JTC 1 WG 7's 2nd meeting held in National Institute of Standards and Technology (NIST) of the United States (Gaithersburg, Maryland), 23-27 August 2010.

1 Scope

This International Standard (IS) specifies:

- Interface between the sensor networks and other networks,
- sensor network architecture to support smart grid systems,
- interface between sensor networks with smart grid systems,
- sensor network based emerging applications and services to support smart grid systems, and
- visualization of sensors/devices status and data/information flow in large scalable heterogeneous network systems, for example, geospatial information systems.

This International Standard (IS) is for sensor networks in order to support Smart Grid technologies for power generation, distribution, networks, energy storage, load efficiency, control and communications and associated environmental challenges. This standard characterizes the requirements for sensor networks to support the aforementioned applications and challenges. Data from sensors in Smart Grid systems is collected, transmitted, published and acted upon to ensure efficient coordination of the various systems and subsystems. The intelligence derived through the sensor networks supports synchronization, monitoring and responding, command and control, data/information processing, security, information routing, and human-grid display/graphical interfaces.

2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Document Number *Document Name*

Editor's Note: Normative References are expected from IEC, ISO, IEEE, and other SDOs involved in Smart Grid standardization activities.

3 Terms and Definitions

Editor's Note: Terms and definitions will be listed here. If adopted from other document(s), the reference will be also provided.

4 Symbols (and abbreviated terms)

Editor's Note: Symbols and Abbreviated Terms will be listed in this section.

5 Smart Grid Reference Models and Architectures

Editor's Note: Smart Grid Reference Models and Architectures from SDOs are introduced in this section. The purpose of this section is to develop the sensor network for smart grid system that can be used across the smart grid systems that are being developed and also are being envisioned.

6 Sensors in Smart Grid Domains

Editor's Note: Based on the models and architectures introduced in Section 5, the major stakeholder domains, e.g., Generation, Transmission, Distribution, Customer, Service Provider, and Operations, are identified, and the sensors deployed in each domain are also identified. Additionally, the sensors that may become available in future can also be listed in this section under each domain.

6.1 TBD Domain

7 Networks in Smart Grid Domains

Editor's Note: Based on the models and architectures introduced in Section 5, the representative networks in Smart Grid System are identified and introduced in this section. The networks that have connectivity to sensors are of interests. Another purpose of this section is to identify the networks that will interface with Sensor Network for Smart Grid System.

7.1 TBD Network

8 Sensor Network Architecture Supporting Smart Grid System

Editor's Note: A top level sensor network architecture supporting smart grid system is presented in this section. This sensor network architecture depicts high-level interoperability and interconnectivity: (1) between sensor network and other networks and (2) between sensor networks and smart grid system. Items (1) and (2) may be described further in detail if become necessary.

9 Sensor Network Applications and Services for Smart Grid System

Editor's Note: Sensor network and its capability in data/information processing and automated decision-making, for some cases, makes the network smart enabling power grid system smart – "Smart" Grid System. In this section, current and future sensor network applications and services for smart grid systems are defined.

10 Visualization of Smart Grid by Sensor Network Data and Information

Editor's Note: It is very important to visualize sensors/devices status and data/information flow in large scalable heterogeneous network systems, such as Smart Grid System. Visualizing Smart Grid Ssytem using the sensor network data and information is effective ways to inform the stakeholders at various levels of authority. In this section, the visualization of data/information in sensor network for smart grid system is specified.

Bibliography