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Working Group on Sensor Networks

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Proposed disposition of comments on ISO/IEC WD 29182-7 (WGSN-Nxxx)

Date: 2011/01/05	Document: **WGSN-Nxxx**

1	2	(3)	4	5	(6)	(7)
MB[1]	**Clause No./ Subclause No./ Annex** (e.g. 3.1)	**Paragraph/ Figure/Table/ Note** (e.g. Table 1)	**Type of com-ment**[2]	**Comment (justification for change) by the MB**	**Proposed change by the MB**	**PE's proposal**
CA1	general		ge	It is understood that this is an early version of Part 7 of the document. We look forward to reviewing a more complete draft in the future.	It is understood that significant more work is planned for this document.	
OG C1	Introduction		ed	This term is in identical to the introduction to part 1. Each part of this standard should have its own specific introduction.	Replace this introduction with one that describes this part of the standard.	**Resolved** Introduction for part 7 is added.
CA2	3.1		te	The definition text is not precise enough. It would be helpful to define the term ""homogeneous network"" as well so that the distinction between them is clear. Although this second term is not used in the current version of the text, it is likely easier to define both terms in conjunction with each other. It should be clarified whether this framework is intended to be applicable to both heterogeneous AND homogeneous sensor networks.	Please expand the definitions (and provide a source for each definition if available). Explain heterogeneous and homogeneous in the context of this document.	**Accepted** See OGC2
OG C2	3.1		te	The term is in singular form while the definition is given in plural form. Here and elsewhere in this standard, it is not clear whether this standard is concerned with heterogeneity within networks or with heterogeneity between networks. In fact, heterogeneity between networks is of concern only when those networks are connected as components of a larger network. This suggests that the term should be defined in singular form describing heterogeneity of components within a network. Another issue is that a definition should include only those essential characteristics of a concept that	Replace the definition with: "sensor network that includes components that are not able to interact with each other." Add a note that says "Inability to interact may be due to differences in radio signal, network protocol, application profile, etc."	**Accepted**

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				distinguish it from other concepts. The causes of heterogeneity essential are not such essential characteristics.		
CA3	3.4		te	Please consider introducing the term "interworking" to identify the functionality required to interconnect dissimilar networks. This term is in common use in many communications sectors for this purpose. The text proposes ""middleware"" as an implementation means to accomplish interworking between dissimilar networks. The term ""middleware"" typically refers to a software layer, for example, ""software that connects two otherwise separate applications"" (see the ISO Concept Database/Vocabulary, cdb.iso.org). Interworking refers to the hardware and software functionality required. For example, in Figure 1, ""Middleware or Functions"" would be better replaced with ""Interworking Function"". The interworking of dissimilar networks may require translation at the PHY layer and thus a software-only solution will not always be sufficient.	Please introduce and use the term "interworking".	**Accepted** Term of "interworking" is defined at 3.2.7.
CA4	3.4+		te	The term ""Gateway"", as used for example in Figure 1, is not defined in the document. Please also refer to our comment with respect to Section 5.4 below. This must be done with care since the base definition of ""gateway"" is ""A functional unit that connects two	Please define gateway.	**Accepted** Term of "sensor network gateway" is defined at 3.2.5.

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				computer networks having different network architectures"" (ISO 2382-18). Since this is similar to the functionality proposed for ""middleware"" in this document, absent a good definition, readers might be confused by Figures 3 and 4 which could be interpreted to place similar functions adjacent to one another.		
KR1	4	First para	ge	Ambiguous expression: "non of interoperability" means what? "Non of interoperability among the heterogeneous sensor networks causes overinvestment and reusability problems when the sensor network applications or services are extended. For example, it will cost overinvestment when upgrading overall system such as application service, middleware, gateway and sensor network area due to non of interoperability system."	Revise expression more clearly. For example, "Not interoperable sensor networks"	**Resolved** See OGC3
KR2	4	Table 1	ge	Layer "Heterogeneous sensor network" is right matching for Table 1? In other words, are they values for Table 1 or titles of each column?	If "Layer"/"Heterogeneous sensor network" are titles of each column, then please make them shaded to differentiate with value-rows. And check they are appropriate title for each column. Or if they are values for the table 1, please check if it is an appropriate matching.	**Resolved** Definition of heterogeneous sensor network is modified at 3.1.3 and Table 1 is deleted to avoid confusion.
KR3	4	Table 1	te	In addition to Network Protocol and PHY/MAC, measuring unit is also diverse point between sensor nodes.	Check if there are other heterogeneity between different sensor networks.	**Not accepted** Interface for measuring unit is out of scope for this standard.

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CA5	5.1	First para	te	The text: "Many types of standards in sensor network, such as, radio signal, network protocol, and application profiles have been widely developed without the concern of interoperability as shown in Table 1." Is poorly stated. Devices conforming to the ""standards"" in each row of the Table can interoperate with themselves. Possibly what was intended was a statement that the protocol standards within each row are not compatible with each other. (Protocol compatibility between standards from differing rows is not expected since they correspond to differing layers of the OSI model. Service compatibility may exist between adjacent layers - ZigBee uses 8802-15-4 for example.) The balance of the text of this paragraph was not understood.	Please revise this paragraph to make it clearer.	**Accepted** See KR2
OG C3	5.1	First para, 2nd sentence		The phrase "non-of-interoperability" occurs here and in several other places in this working draft. The preposition "of" is improperly used in this phrase.	Replace "non-of-interoperability" with "non interoperability".	**Accepted**
OG C4	5.1	Figure 1	te	See out comment on 3.1. Although the caption of this figure refers to "networks" in the plural, the figure seems to show only one network. I assume that, in fact, each of the gateways shown in the figure is intended is intended to represent an interface between the application layer and a sub-network in the sensor device/node layer.	Re-label each Sensor/Device Node box as "Sensor/Device Nodes" and enclose each Gateway and its subordinate Sensor/Device Nodes box in and outer box labelled Sensor Network 1, Sensor Network 2, etc.	**Partly accepted** Figure 1 is exchanged to reflect gateways and sensor nodes are located in sensor network domain. However, term of Sensor

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						Node/Device exchanged to sensor node.
CA6	5.1	Second para	te & ed	We assumed that this paragraph refers to Figure 1. This paragraph speaks to the ""four layer SNRA"". It will be important to distinguish this SNRA from the OSI model. This is because there are many similar terms used but they differ from ISO/IEC 7498. For example the SNRA defines an ""Application Layer"" which is widely different from the OSI Application Layer. Similarly the ""Sensor Network Layer"" widely differs from the OSI Network Layer. It is also noted that Figure 1 appears to be a physical architectural view whereas the OSI model is an abstract view.	Please insert an explicit reference to Figure 1 in this paragraph if this is intended. Please rethink the use of terms similar to those used in the OSI model for differing concepts. If it is essential to use the same terms, please make the differences clearer. A reference to ISO/IEC 7498 will be essential to avoid confusion.	**Accepted** Explicit reference inserted to Figure 1, 2, 3. Term of "Layer" exchanged to "component" from physical architectural point of view.
pCA 7	5.1	Third para	te	The text: "The simplest way for establishing interoperability is to develop standard, which covers every layer from sensor networks to users." This use of ""layer"" will confuse most engineers familiar with communications standards defined in terms of OSI layers (""layer"" in the OSI sense is used in Table 1). Being described are interfaces between subsystem component types (and the desire to standardize them).	Do not use the term ""layer"" except in the OSI sense.	**Accepted** See CA6

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				In OSI, ""layers"" are abstract, and are not meant to represent an ""exposed"" interface as will often be the case in Figure 1.		
CA8	5.2	First para	ed & te	We assumed that this section refers to Figure 2. It is not clear why ""middleware"" (in Figure 2) is at the bottom of the figure and Sensor/Nodes are omitted. There is no explanation of the Figure in the text. This section identifies the need for interoperability ""at the user level"". ""Users"" (human and software) will access many applications (services), not only those related to sensor networks, and their interface is ideally standardized across all the services they use (i.e. not unique to sensor network services). Many existing standards already exist in this space.	Please insert an explicit reference to Figure 2 in this section if this was intended. Please review Figure 2 and provide an explanation of the figure in the text. It is suggested that this section emphasize that this is not a unique environment and that users will typically access a range of services in addition to sensor network services. References to other standards addressing this area would be helpful, although clearly this is a very large subject area.	**Accepted** This standard excludes interoperability between user and service provider component.
KR4	5.2	Sensor data	ge	Usually the term "sensor data" is used for sensing data or sensed data. "sensing data" or "sensed data" means collected sensing values from sensor devices. But in this IS, sensor data is used for sensor properties. Reconsider the use of term "sensor data" for sensor properties.	No proper suggestion.	**Accepted** The term of "sensor data" exchanged to "sensor network sensing data" from the ISO/IEC 29182-2. Its definition includes the value of sensor.
CA9	5.3	First para	te & ed	We assumed that this section refers to Figure 3.	Please insert an explicit reference to Figure 3 in this section if this was intended.	**Accepted** Explanation of

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				The text in this section is confusing and could not be fully understood. For example ""sensor network interface"" is used for the first (and only) time in this section –- referring it is assumed to the "top" interface of the ""Gateway Layer" in Figure 1 –- but this term is easily confused with "sensor network user level interface"" (of Figure 1). What we think is being discussed is the standardization if possible of ""sensor network gateway services"" (and the interface to access them) or, if a standard is not possible, the need for interworking.	Please provide an explanation of the figure in the text. Please rewrite this section to make it understandable.	interoperability between service provider and gateway is added
CA10	5.4		te & ed	We assumed that this section refers to Figure 4. No mention of "middleware" is made in the text although "middleware" is shown in Figure 4. This section begins to provide some insight into why "Gateways" are often an important component of some Sensor Networks. In applications where sensor networks must operate at very low power, must address unusual topology or bandwidth constraints; a Gateway is often bundled with their specification to ensure that a more "normal" interface is provided to external networks. For example, if nodes go to ""sleep"" and wake up from time to time, Gateways can simulate their continual presence to the rest of the network.	Please insert an explicit reference to Figure 4 in this section if this was intended. Please provide an explanation of the figure in the text. Point out that Gateways do not always exist in sensor networks and the ""Gateway Layer"" may not be present. (It is understood that the current text is an early draft.)	**Partly accepted** Explanation of interoperability between gateway and sensor network is added. however, this standard does not consider the case of sensor network without gateway. the reason is explained in 5.1 Term of "gateway layer" exchanged to "gateway component".

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				This is not the case for all sensor networks (unless the authors intended to restrict the SNRA to only such types of sensor networks). Thus in some sensor networks "Gateways" are not bundled with the specification. Thus the SNRA should contemplate the absence of a "Gateway Layer". (Or further restrictions on the definition of ""sensor network"" should be made.)		
CA11	5.5		te	It is understood that Figure 5 is to be replaced and thus we did not review this figure. While we could identify where each of the three previous ""Types"" appear in Figure 1, we were unable to do this for this fourth Type. Would not sensor device/node level interoperability imply that this is a homogeneous network in some cases?	Please provide an explicit reference to Figure 5 if this is intended. Please provide a reference to, and update if necessary, Figure 1 and where this interoperability type is represented in Figure 1. It is understood that this section is still being written.	**resolved** Sensor device/node level interoperability is omitted in this standard.

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