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

Document Number:	N111
Date:	2010-11-03
Replace:	
Document Type:	National Body Contribution
Document Title:	NB of Canada comments on the ISO/IEC WD 29182-7, Sensor Networks: Sensor Network Reference Architecture (SNRA) — Part 7: Interoperability guidelines
Document Source:	NB of Canada
Document Status:	For your information.
Action ID:	FYI
Due Date:	
No. of Pages:	7

ISO/IEC JTC 1/WG 7 Convenor:
Dr. Yongjin Kim, Modacom Co., Ltd (Email: cap@modacom.co.kr)
ISO/IEC JTC 1/WG 7 Secretariat:
Ms. Jooran Lee, Korean Standards Association (Email: jooran@kisi.or.kr)

1st Working Draft of ISO/IEC WD 29182-7, Sensor Networks: Sensor Network Reference Architecture (SNRA) — Part 7: Interoperability guidelines

Date: November 15, 2010	Document: **WGSN-N091**

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**	**Secretariat observations** on each comment submitted
CA	General		ge	It is understood that 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.	
CA	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.	
CA	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	Please introduce and use the term "interworking".	

1 **MB** = Member body (enter the ISO 3166 two-letter country code, e.g. CN for China; comments from the ISO/CS editing unit are identified by ******)

2 **Type of comment:** **ge** = general **te** = technical **ed** = editorial

NOTE Columns 1, 2, 4, 5 are compulsory.

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**	**Secretariat observations** on each comment submitted
				PHY layer and thus a software-only solution will not always be sufficient.		
CA	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 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.	Please define gateway.	
CA	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	Please revise this paragraph to make it clearer.	

1 **MB** = Member body (enter the ISO 3166 two-letter country code, e.g. CN for China; comments from the ISO/CS editing unit are identified by ******)

2 **Type of comment:** **ge** = general **te** = technical **ed** = editorial

NOTE Columns 1, 2, 4, 5 are compulsory.

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**	**Secretariat observations** on each comment submitted
				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.		
CA	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.	
CA	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	Do not use the term "layer" except in the OSI sense.	

1 **MB** = Member body (enter the ISO 3166 two-letter country code, e.g. CN for China; comments from the ISO/CS editing unit are identified by ******)

2 **Type of comment:** **ge** = general **te** = technical **ed** = editorial

NOTE Columns 1, 2, 4, 5 are compulsory.

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**	**Secretariat observations** on each comment submitted
				them). In OSI, “layers” are abstract, and are not meant to represent an “exposed” interface as will often be the case in Figure 1.		
CA	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.	
CA	5.3	first para	te & ed	We assumed that this section refers to Figure 3. 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	Please insert an explicit reference to Figure 3 in this section if this was intended. Please provide an explanation of the figure in the text. Please rewrite this section to make it understandable.	

1 **MB** = Member body (enter the ISO 3166 two-letter country code, e.g. CN for China; comments from the ISO/CS editing unit are identified by ******)

2 **Type of comment:** **ge** = general **te** = technical **ed** = editorial

NOTE Columns 1, 2, 4, 5 are compulsory.

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**	**Secretariat observations** on each comment submitted
				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.		
CA	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. 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.)	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.)	
CA	5.5		te	It is understood that Figure 5 is to be replaced and thus we did not review this figure.	Please provide an explicit reference to Figure 5 if this is intended.	

1 **MB** = Member body (enter the ISO 3166 two-letter country code, e.g. CN for China; comments from the ISO/CS editing unit are identified by ******)

2 **Type of comment:** **ge** = general **te** = technical **ed** = editorial

NOTE Columns 1, 2, 4, 5 are compulsory.

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**	**Secretariat observations** on each comment submitted
				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 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.	

1 **MB** = Member body (enter the ISO 3166 two-letter country code, e.g. CN for China; comments from the ISO/CS editing unit are identified by ******)

2 **Type of comment:** **ge** = general **te** = technical **ed** = editorial

NOTE Columns 1, 2, 4, 5 are compulsory.