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Information Technology

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ISO/IEC JTC 1/SC 31

Automatic Identification and Data Capture Techniques

Secretariat: ANSI (USA)

DOC TYPE:	**New Work Item Proposal**
TITLE:	**Information technology -- Automatic identification and data capture techniques -- Mobile item identification and management -- Application data structure and encoding format for Mobile AIDC services**
SOURCE:	**National Body of the Republic of Korea**
PROJECT:	
STATUS:	**Per Resolution 5 of the Seoul Plenary Meeting, P-Members are requested to use the attached form (SC031 - Form 13B Comment Document.doc) for submission of comments on any project ballot.** **P-Members are requested to review the referenced documents and cast a vote via the SC 31 Balloting System (LiveLink) by the due date indicated.**
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NO. OF PAGES:	**22 (including this cover)**

New Work Item Proposal

July 2008

PROPOSAL FOR A NEW WORK ITEM

Date of presentation of proposal: 2008-07-21	Proposer: KATS National Body of Republic of Korea
Secretariat: ANSI	**ISO/IEC JTC 1 N** XXXX ISO/IEC JTC 1/SC 31 N 2592

A proposal for a new work item shall be submitted to the secretariat of the ISO/IEC joint technical committee concerned with a copy to the ISO Central Secretariat.

Presentation of the proposal

Title (subject to be covered and type of standard, e.g. terminology, method of test, performance requirements, etc.)

Information technology - Automatic identification and data capture techniques – Mobile item identification and management - Application data structure and encoding format for Mobile AIDC services

Scope (and field of application)

Typical Mobile AIDC services are provided through network communication such as UII resolution and information content retrieval. Once UII is read by Mobile AIDC terminals, all information and services related to the UII are acquired through network.

But using additional application data stored on RFID tag or barcode enables user to get information or services without network operations. For example, additional application data can be simple product information, service name, URL and so forth.

This work item defines;

- Types of application data in Mobile AIDC services; and
- Application data structure and its encoding format.

Purpose and justification - attach a separate page as annex, if necessary

If user gets information (application data) from the RFID tag itself, user can avoid unnecessary network operations such as UII resolution. Various application data for end-users should be stored in a standardized form at RFID tag or barcode in such cases that:

- When a consumer reads RFID tag-attached objects with his/her Mobile AIDC terminal, Mobile AIDC terminal may detect multiple RFID tags and multiple UIIs will be displayed on its terminal screen. But he/she cannot choose exact one with UII itself because meaningful information can be acquired from UII resolution process. So, before UII resolution process, meaningful information such as title, name should be given to end-users and should be encoded properly at RFID tags;
- User does not get any meaningful information from UII itself. For getting meaningful information, UII has to be resolved into an information resource identifier like URL. This

resolution process can be provided via a set of network operations by various directory services. If the resource identifier is stored on RFID tags, no resolution operation is required.

[Note] For more understanding, a working draft is attached below.

Programme of work

If the proposed new work item is approved, which of the following document(s) is (are) expected to be developed?
__X__ a single International Standard
_____ more than one International Standard (expected number: .....)
_____ a multi-part International Standard consisting of ..... parts
_____ an amendment or amendments to the following International Standard(s) .....
_____ a technical report, type.....

And which standard development track is recommended for the approved new work item?
_X__a. Default Timeframe
_____b. Accelerated Timeframe
_____c. Extended Timeframe

Relevant documents to be considered

ISO/IEC 15961 and 15962

ISO/IEC JTC 1/SC 31/WG 6 N 0035r1

Co-operation and liaison

ISO/IEC JTC 1/SC 31/WG 6

Preparatory work offered with target date(s) :

The Republic of Korea is pleased to be the sponsoring member for this work item and proposes Mr. Sangkeun Yoo as the project leader/editor of this deliverable.

Contact Details: Sangkeun Yoo, ETRI, Gajeongno 138, Yuseong-gu, Daejeon City, 350-700, Republic of Korea; Email: lobbi@etri.re.kr; Tel: +82 42 860 1685; Fax: +82 42 861 5404

Signature: Raymond Delnicki, ISO/IEC JTC 1/SC 31 Secretariat

Will the service of a maintenance agency or registration authority be required? .....No.....
- If yes, have you identified a potential candidate? .....
- If yes, indicate name .....

Are there any known requirements for coding? .....No.....
-If yes, please specify on a separate page

Does the proposed standard concern known patented items? .....No.....
- If yes, please provide full information in an annex

Are there any known accessibility requirements and/or dependencies (see: http://www.jtc1access.org)? .....No.....
-If yes, please specify on a separate page

Are there any known requirements for cultural and linguistic adaptability? .....No.....
-If yes, please specify on a separate page

Comments and recommendations of the JTC 1 or SC 31 Secretariat - attach a separate page as an annex, if necessary

Comments with respect to the proposal in general, and recommendations thereon:
It is proposed to assign this new item to JTC 1/SC 31/WG 6.

Voting on the proposal - Each P-member of the ISO/IEC joint technical committee has an obligation to vote within the time limits laid down (normally three months after the date of circulation).

Date of circulation:	**Closing date for voting:**	**Signature of Secretary:**
2008-07-30	2008-10-30	Lisa Rajchel

NEW WORK ITEM PROPOSAL - PROJECT ACCEPTANCE CRITERIA		
Criterion	**Validity**	**Explanation**
A. Business Requirement		
A.1 Market Requirement	Essential ___ Desirable _X__ Supportive ___	
A.2 Regulatory Context	Essential ___ Desirable ___ Supportive ___ Not Relevant _X_	
B. Related Work		
B.1 Completion/Maintenance of current standards	Yes ___ No__X_	
B.2 Commitment to other organisation	Yes ___ No__X_	
B.3 Other Source of standards	Yes ___ No__X_	
C. Technical Status		
C.1 Mature Technology	Yes ___ No__X_	
C.2 Prospective Technology	Yes _ X __ No___	The work item is expected to contribute on the spread of Mobile AIDC technology, and to make Mobile AIDC technology even more versatile for future applications.

C.3 Models/Tools	Yes ___ No__X_	
D. Conformity Assessment and Interoperability		
D.1 Conformity Assessment	Yes ___ No__X_	
D.2 Interoperability	Yes ___ No__X_	
E. Adaptability to Culture, Language, Human Functioning and Context of Use		
E.1 Cultural and Linguistic Adaptability	**Yes**_____ **No__X__**	
E.2 Adaptability to Human Functioning and Context of Use	**Yes**_____ **No_X__**	
F. Other Justification		

Notes to Proforma

A. Business Relevance. That which identifies market place relevance in terms of what problem is being solved and or need being addressed.

A.1 Market Requirement. When submitting a NP, the proposer shall identify the nature of the Market Requirement, assessing the extent to which it is essential, desirable or merely supportive of some other project.

A.2 Technical Regulation. If a Regulatory requirement is deemed to exist - e.g. for an area of public concern e.g. Information Security, Data protection, potentially leading to regulatory/public interest action based on the use of this voluntary international standard - the proposer shall identify this here.

B. Related Work. Aspects of the relationship of this NP to other areas of standardisation work shall be identified in this section.

B.1 Competition/Maintenance. If this NP is concerned with completing or maintaining existing standards, those concerned shall be identified here.

B.2 External Commitment. Groups, bodies, or for external to JTC 1 to which a commitment has been made by JTC for Co-operation and or collaboration on this NP shall be identified here.

B.3 External Std/Specification. If other activities creating standards or specifications in this topic area are known to exist or be planned, and which might be available to JTC 1 as PAS, they shall be identified here.

C. Technical Status. The proposer shall indicate here an assessment of the extent to which the proposed standard is supported by current technology.

C.1 Mature Technology. Indicate here the extent to which the technology is reasonably stable and ripe for standardisation.

C.2 Prospective Technology. If the NP is anticipatory in nature based on expected or forecasted need, this shall be indicated here.

C.3 Models/Tools. If the NP relates to the creation of supportive reference models or tools, this shall be indicated here.

D. Conformity Assessment and Interoperability Any other aspects of background information justifying this NP shall be indicated here.

D.1 Indicate here if Conformity Assessment is relevant to your project. If so, indicate how it is addressed in your project plan.

D.2 Indicate here if Interoperability is relevant to your project. If so, indicate how it is addressed in your project plan

E. Adaptability to Culture, Language, Human Functioning and Context of Use

NOTE: The following criteria do not mandate any feature for adaptability to culture, language, human functioning or context of use. The following criteria require that if any features are provided for adapting to culture, language, human

functioning or context of use by the new Work Item proposal, then the proposer is required to identify these features.

E.1 Cultural and Linguistic Adaptability. Indicate here if cultural and natural language adaptability is applicable to your project. If so, indicate how it is addressed in your project plan.

ISO/IEC TR 19764 (Guidelines, methodology, and reference criteria for cultural and linguistic adaptability in information technology products) now defines it in a simplified way:

"ability for a product, while keeping its portability and interoperability properties, to:

- be internationalized, that is, be adapted to the special characteristics of natural languages and the commonly accepted rules for their se, or of cultures in a given geographical region;

- take into account the usual needs of any category of users, with the exception of specific needs related to physical constraints"

Examples of characteristics of natural languages are: national characters and associated elements (such as hyphens, dashes, and punctuation marks), writing systems, correct transformation of characters, dates and measures, sorting and searching rules, coding of national entities (such as country and currency codes), presentation of telephone numbers and keyboard layouts. Related terms are localization, jurisdiction and multilingualism.

E.2 Adaptability to Human Functioning and Context of Use. Indicate here whether the proposed standard takes into account diverse human functioning and diverse contexts of use. If so, indicate how it is addressed in your project plan.

NOTE:

1. **Human functioning is defined by the World Health Organization at http://www3.who.int/icf/beginners/bg.pdf as:**
   <<In ICF (*International Classification of Functioning, Disability and Health), the term functioning refers to all body functions, activities and participation.*>>
2. **Content of use is defined in ISO 9241-11:1998 (*Ergonomic requirements for office work with visual display terminals (VDTs) – Part 11: Guidance on usability) as:***
   <<Users, tasks, equipment (hardware, software and materials), and the physical and societal environments in which a product is used.>>

Guidance for Standard Developers to address the needs of older persons and persons with disabilities).

F. Other Justification Any other aspects of background information justifying this NP shall be indicated here.

Annex for this new work item proposal

The following annex is not proposed as a CD for the work item but given for information to help understand what this work item deals with and how it is specified.

Reference number of working document: **ISO/JTC 1/SC 31 N 2592**

Date: 2008-07-30

Reference number of document: **ISO/IEC WD nnn-n**

Committee identification: ISO/IEC/SC 31/WG 6

Secretariat: ANSI

Information technology – Automatic identification and data capture techniques – Mobile item identification and management – Application data structure and encoding format for Mobile AIDC services

Élément introductif — Élément principal — Partie n: Titre de la partie

Warning

This document is not an ISO International Standard. It is distributed for review and comment. It is subject to change without notice and may not be referred to as an International Standard.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Document type: International standard
Document subtype: if applicable
Document stage: (20) Preparation
Document language: E

Copyright notice

Contents

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

Technical Committee ISO/IEC JTC 1, Information technology, Subcommittee SC 31, *Automatic identification and data capture techniques* prepared ISO/IEC XXXX

Introduction

[NOTE] this current draft is covering only the Mobile RFID case but will cover the Mobile ORM case later.

In Mobile RFID service environment, all services are based on network communication. Once UII is read by Mobile AIDC terminal, all information and services which are related to the UII can be acquired through network. In case that many items which have own RFID tags are placed on the shelf, user has a possibility for reading several RFID tags at a same time. The exact information or services that user wants can be acquired after network operation such as UII resolution. UII resolution process should be happened as same times as the number of UIIs that Mobile AIDC terminal read. This situation is not desirable for users. If user get small piece of information (Application Data) from the RFID tag itself, user can avoid unnecessary network operations.

Typical RFID tag such as ISO 18000-6 TYPE B has user data area and UII is stored at user data area in standard encoding format. ISO 18000-6 TYPE C tag has separate user memory area. Application Data can be stored at user data area or user memory area. This standard defines the standard encoding format for Mobile RFID Application Data.

Information technology – Automatic identification and data capture techniques – Mobile item identification and management – Application data structure and encoding format for Mobile AIDC services

1 Scope

This standard defines the standard encoding format for Mobile RFID Application Data in user memory/data area of RFID tags.

[NOTE] this current draft is covering only the Mobile RFID case but will cover the Mobile ORM case later.

2 Conformance

[TBD]

3 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.

[TBD]

4 Terms and definitions and abbreviated terms

For the purposes of this document, the terms and definitions given in ISO/IEC 19762-1, ISO/IEC 19762-3, and the following apply.

4.1 Terms

[TBD]

4.2 Definitions

4.2.1 Application Data

Data stored in user data/memory area of RFID tag by Mobile RFID applications. Mobile RFID applications use this Application Data for specific purposes. Application Data can be acquired directly from RFID tag without any network operations.

4.2.2 UII resolution

It is a process of translating or resolving a UII into an address. It may be provided via directory service operations based on X.500, LDAP, DNS, etc. UII resolution process can be invoked by Mobile AIDC terminal or service broker to UII resolution server.

4.2.3 UII resolution server

It performs UII resolution process according to UII resolution request by Mobile AIDC terminal or service broker.

4.3 Abbreviated terms

[TBD]

5 Necessity of Application Data

In Mobile RFID services, all services are based on network communication called UII resolution process. Once Mobile AIDC terminal reads UII stored in RFID tag, all information and services which are related to the UII can be acquired through network by UII resolution process.

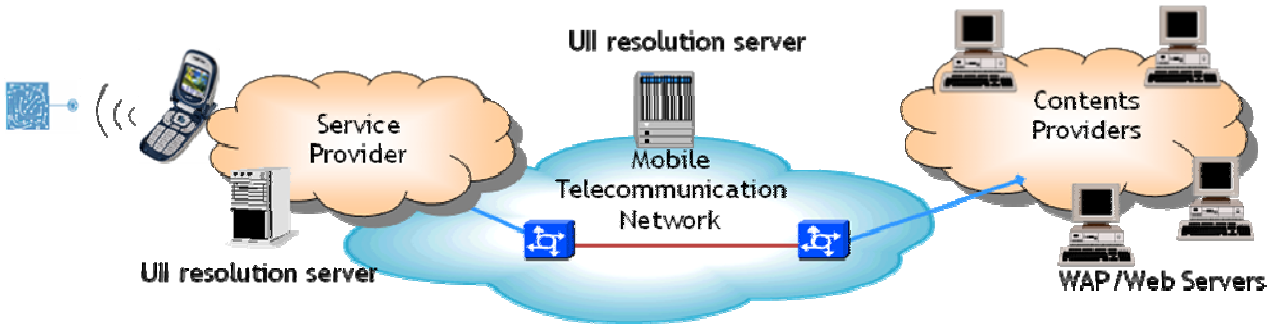

Figure 5-1. Generic service architecture

Generic service architecture is given in Figure 5-1. Mobile AIDC terminal reads UII from RFID tag and sends UII resolution request to UII resolution server. UII resolution server performs UII resolution process and returns UII resolution result. This UII resolution result includes the locations of contents regarding the UII which Mobile AIDC terminal reads from RFID tag. Then Mobile AIDC terminal chooses content from the result and requests contents to the location of the contents.

In case that many items which have own RFID tags are placed on the shelf, user has a possibility for reading several RFID tags at a same time. The exact information or services that user wants can be acquired after network operation such as UII resolution. UII resolution process should be happened as same times as the number of UIIs that Mobile AIDC terminal read. If user get small piece of information (application data) from the RFID tag itself, user can avoid unnecessary network operations or can get necessary information directly from the RFID tag.

Typical RFID tag such as ISO 18000-6 TYPE B has user data area and UII is stored at user data area in standard encoding format. ISO 18000-6 TYPE C tag has separate user memory area. Application Data can be stored at user data area or user memory area in standardized encoding format then Mobile AIDC terminal can acquire useful information from the Application Data without network operation.

6 Transfer syntax

The transfer syntax of this standard is based in the Basic Encoding Rules (BER) of ASN.1, as specified in ISO/IEC 8825-1.

6.1 Structure of the transfer encoding

The structure of the transfer encoding for Application Data follows ISO/IEC 15961.

6.2 Transfer of Application Data

According to ISO/IEC 15961, Application Data is required to be created in form of obejctID and object shown in Table 1 for transfer.

Table 1 – Tabular Format for TransferEncoding conformed to ISO/IEC 15961

ObjectId	Object

Class Tag	Length	ObjectId	Class Tag	Length	Object

6.3 Encoding ObjectId

6.3.1 Encoding the ASN.1 type identifier in ObjectId

Encoding the ASN.1 type identifier in ObjectId for Application Data follows ISO/IEC 15961. Table 2 shows the encoding of ANS.1 Class of Tag. Class of Tag for ObjectId for Application Data uses Universal Class '00_2'.

Table 2 – Encoding of ASN.1 Class of Tag

Class	Bit 8	Bit 7
Universal	0	0
Application	0	1
Context-specific	1	0
Private	1	1

Table 3 shows Universal Types. OBJECT IDENTIFIER (6) is used for type identifier.

Table 3 – Universal Types

Universal Type	Class Tag
BOOLEAN	1
INTEGER	2
OBJECT IDENTIFIER	6
OCTET STRING	4
RELATIVE-OID (reserved for future command)	13
SEQUENCE & SEQUENCE OF	16

6.3.2 Length encoding in ObjectId

Length encoding in ObjectId for Application Data follows ISO/IEC 15961.

6.3.3 Encoding the OBJECT IDENTIFIER value in ObjectId

OBJECT IDENTIFIER value encoding data follows ISO/IEC 15961.

6.3.4 OBJECT IDENTIFIER in ObjectId for Application Data

The OBJECT IDENTIFIER value for Application Data is required to be defined in other International Standard. [TBD]

6.4 Encoding Object (Application Data)

6.4.1 Encoding the ASN.1 type identifier in Object (Application Data)

Table 4 shows the encoding of ANS.1 Class of Tag for Object. Class of Tag for Object uses Application Class '01_2'.

Table 4 – Encoding of ASN.1 Class of Tag for Application Data

Class	Bit 8	Bit 7
Universal	0	0
Application	0	1
Context-specific	1	0
Private	1	1

For encoding ASN.1 type identifier for Application Data.

The leading octet is encoded as follows:

a. bits 8 and 7 are encoded to present Application Class shown in Table 4.

b. bit 6 is a zero or one according to way of encoding, zero for primitive encoding, one for constructed encoding.

c. bits 5 to 1 are encoded as 11111_2.

The last octet is encoded as follows:

a. bit 8 is set to zero to represent that it is the last octet.

b. bits 7 to1 is defined in Annex A.

Table 5 shows TransferEncoding format for Application Data.

Table 5 – Tabular Format for TransferEncoding of Application Data conformed to ISO/IEC 15961

ObjectId			Object									
Class Tag	Length	ObjectId	Class Tag (Two octets)								Length	Object
06_{HEX}		[TBD]	1st octet	0	0	P/C	1	1	1	1		
			2nd octet	0	[TBD]							

6.4.2 Length encoding in Object (Application Data)

Length encoding in Object follows ISO/IEC 15961.

6.4.3 Encoding the Object (Application Data)

[TBD].

Annex A

Application Data Types

Application Data types are presented in 7bits in the last octet in Class Tag for Object. But Type 0 is not used, so total 239 Application Data types can be defined.

Type (Decimal)	bits 7 to 1							Description
0	0	0	0	0	0	0	0	Not Used
1	0	0	0	0	0	0	1	[TBD] (ex. Product name)
2	0	0	0	0	0	1	0	[TBD] (ex. Price)
3	0	0	0	0	0	1	1	[TBD] (ex. Expiry date)
4	0	0	0	0	1	0	0	[TBD] (ex. URL)
.								
.								
.								
.								
239	1	1	1	1	1	1	1	[TBD]

Bibliography

[TBD]

ISO commenting template/Report of voting

Date : 2008/07/31	**Document: SC031-N-XXXX**

MB[1]	**Clause / subclause (e. g. 3.1)**	**Para-graph/ Figure/ Table (e. g. Table 1)**	**Type of com-ment**[2] **(e. g. ed)**	**Comments: Justification for change**	**Proposed change**	***DRAFT – For Comment*** **Observations of the secretariat** on each comment submitted

[1] **MB = Member body (Enter two-letter country code, e. g. CN for China)**
[2] **Type of comment:** **ge** = general **te** = technical **ed** = editorial **NB Columns 1, 2, 4, 5 are compulsory**