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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 -- Mobile AIDC application programming interface**
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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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/SC31 N 2596

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 - Mobile AIDC application programming interface

Scope (and field of application)

This standard defines the abstract application programming interface for Mobile AIDC applications at Mobile AIDC terminals like cell phone, PDA, or smart phone.

The Mobile AIDC applications are a type of mobile network applications running on an embedded software platform like WIPI (Wireless Internet Platform for Interoperability), Symbian, BREW (Binary Runtime Environment for Wireless), or Windows mobile, at Mobile AIDC terminals. Mobile AIDC applications use Mobile AIDC devices such as Mobile RFID interrogator or Mobile ORM reader, to access the data carriers such as RF tag, barcode, etc.

This standard defines generic access interfaces to AIDC devices such as open, close, read, etc. for Mobile AIDC applications at an abstract level because of heterogeneity of the software platforms. Figure 1 describes where this standard works in.
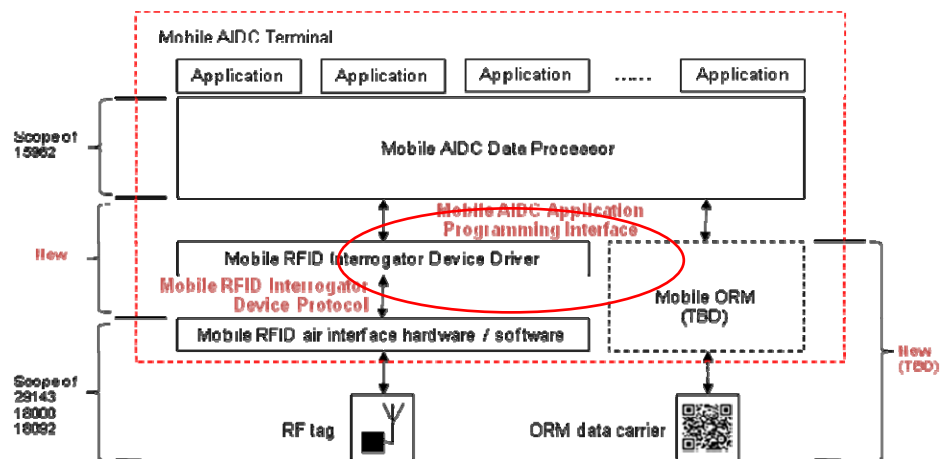

Figure 1 Mobile AIDC standard architecture

The scope of this work item includes the followings:

- Mobile AIDC applications description
- Mobile AIDC service scenarios description
- Functional requirements of the Mobile AIDC application interfaces
- Abstract Mobile AIDC application programming interfaces (open, read, write, lock, etc.)

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

There exist different types of mobile AIDC terminals such as PDA and cell phone, and mobile software platforms such as WIPI, Symbian, BREW and Windows mobile. This diversity makes application implementations dependent on mobile AIDC terminals and mobile software platforms. This dependency causes application developments to be difficult and hinders growth of Mobile AIDC-related industries.

The standardization work about the application programming interface for Mobile AIDC applications defines platform independent interfaces to access Mobile AIDC devices. Due to heterogeneity of the platforms, it is difficult to define implementation-level interfaces. This work item defines an abstract application programming interface to access Mobile AIDC devices and enables application developments easier and more interoperable.

[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 JTC 1/SC 31 MIIM N 0015

ISO/IEC JTC 1/SC 31/WG 6 N 0025

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

ISO/IEC 18000

ISO/IEC 18092

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 Ms. Marie KIM as the project leader/editor of this deliverable.

Contact Details: Marie KIM, ETRI, Gajeongno 138, Yuseong-gu, Daejeon City, 350-700, Republic of Korea; Email: mariekim@etri.re.kr; Tel: +82 42 860 1590; Fax: +82 42 861 5404

Signature: Ray 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: 2008-07-30	Closing date for voting: 2008-10-30	Signature of Secretary: Lisa Rajchel

NEW WORK ITEM PROPOSAL - PROJECT ACCEPTANCE CRITERIA		
Criterion	**Validity**	**Explanation**
A. Business Requirement		
A.1 Market Requirement	Essential _X__ Desirable ___ Supportive ___	There is high demand on the standard interface between mobile application and mobile platform. Application providers want to develop one application for different software platforms.
A.2 Regulatory Context	Essential ___ Desirable ___ Supportive _ X _ Not Relevant _ _	The interface must provide a means to verify and set mobile devices to local regulatory specifications as this device moves around the world.
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___	This work item gives a reference for Mobile AIDC application developments and can prosper AIDC-related industry.

C.3 Models/Tools	Yes ___ No_ X __	
D. Conformity Assessment and Interoperability		
D.1 Conformity Assessment	Yes _ X__ No___	Conformity of interface and use process is a goal of this NP.
D.2 Interoperability	Yes _ X__ No___	Inter-platform Interoperability is a goal of this NP.
E. Cultural and Linguistic Adaptability		
E.1 Cultural and Linguistic Adaptability	**Yes____** **No_X___**	
E.2 Adaptability to Human Functioning and Context of Use	**Yes_ X ___** **No____**	Mobile devices service primarily handheld consumer applications and services. This interface thus needs to take cognisance of Human Functioning requirements of consumer driven mobile applications.
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 fora 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. **Cultural and Linguistic Adaptability** Indiciate here if cultural and linguistic adaptability is applicable to your project. If so, indicate how it is addressed in your project plan.

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

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 2596**

Date: 2008-07-31

Reference number of document: **ISO/CD XXXXXX**

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

Secretariat: ANSI

Information technology – Automatic identification and data capture techniques – Mobile item identification and management – Mobile AIDC application programming interface

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

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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

The Mobile AIDC technology is based on mobile terminals, AIDC devices such as RF interrogator, barcode reader, ORM reader and data carriers such as RF tag, barcode, etc. From a service viewpoint, the Mobile AIDC technology integrates the AIDC technology with the mobile telecommunication technology. The Mobile AIDC service gets necessary data from data carriers around the users by using an AIDC device and/or it uses a mobile telecommunication network to get relevant information from information servers. In Mobile AIDC technology, mobile AIDC devices are embedded in mobile terminals and the access interface to the mobile AIDC devices has to be implemented in software platforms which provide mobile applications with running environment.

By integrating an AIDC technology with a mobile telecommunication technology, new types of the Business to Customer (B2C) services can be created. Genuine wine judgment service, movie information provision service, and tourist information provision service are emerging services using Mobile AIDC technology. If Mobile AIDC service is interconnected with other mobile services such as m-banking service, the convenient one-stop goods purchasing service can be provided.

ISO/WD nnn-n

Information technology – Automatic identification and data capture techniques – Mobile item identification and management – Mobile AIDC application programming interface

1 Scope

The Mobile AIDC applications are a type of mobile applications running on the embedded software platform like WIPI (Wireless Internet Platform for Interoperability), Symbian, BREW (Binary Runtime Environment for Wireless), or Windows mobile, at Mobile AIDC terminals. In case of a Mobile AIDC application, it uses Mobile AIDC devices such as Mobile RFID interrogator or Mobile ORM reader, to access the data carriers such as RF tag, barcode, etc. This standard defines the access interface to AIDC device such as *open, close, read, write, lock*, etc for Mobile AIDC applications at abstract level because of the heterogeneity of the software platform. Figure 2 describes where this standard works in.
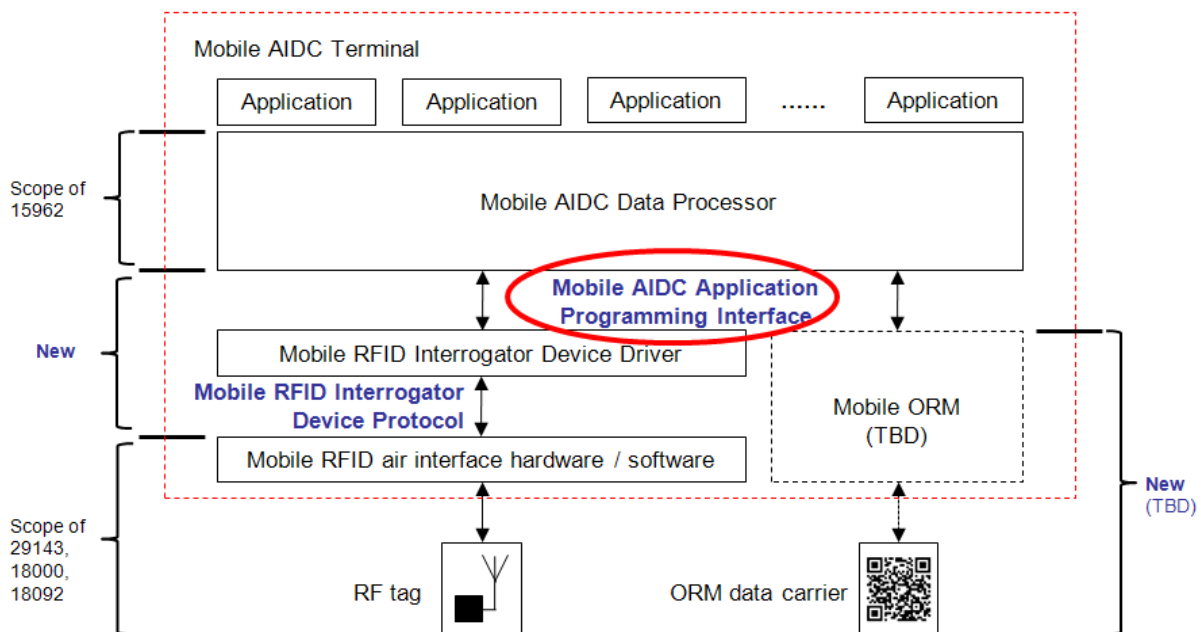

Figure 1 Mobile AIDC standard architecture

This standard includes the followings:

— *Mobile AIDC applications description*

— *Mobile AIDC service scenarios description*

— *Functional requirements of the Mobile AIDC application interface*

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— *Abstract Mobile AIDC application programming interface (open, read, write, lock, etc)*

2   Conformance

To claim conformance with this standard, a software platform shall comply with all relevant clauses of this document, except those marked as "optional."

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

4.1 Terms

 [TBD]

4.2 Definitions

// describes about the RFID system components such as RF tag, reader, back-end system(connectivity?), enterprise system, etc.

access password   access password defined in ISO/IEC 18000-6 written on Reserved memory bank(00_2)

identifier resolution server   server which maps tag identifier into URL of relevant information resource

information resource   resource which contains tag identifier related information

information server   remote server which contains information resources

Mobile AIDC application   mobile application which uses mobile AIDC devices

Mobile AIDC device   device which provides AIDC function. RFID interrogator, barcode reader, ORM reader, etc.

Mobile AIDC terminal   mobile terminal with a Mobile AIDC device

mobile application   application which is running on the mobile terminal such as mobile phone, PDA, etc

mobile device   pocket-sized computing device, typically having a display screen with touch input or miniature keyboard such as PDA, smartphone, etc

mobile terminal   portable electronic device used for mobile voice or data communication over a network of mobile telecommunication network. mobile phone, PDA, etc.

tag identifier   identifier written in UII memory bank(01_2) to identify object

user data   data written in USER memory bank(11_2) for user data

[TBD]

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4.3 Abbreviated terms

AIDC   Automatic identification and data capturing techniques

ORM   Optically Readable Media

RF   Radio Frequency

RFID   Radio Frequency Identification

UII   Unique Item Identifier

WIPI   Wireless Internet Protocol for Interoperability

BREW Binary Runtime Environment for Wireless

[TBD]

5 Overview

5.1 Mobile AIDC applications description

Generally, mobile applications are running on the software platforms which provide running environment for applications at mobile terminals. WIPI, BREW, Symbian and Android are such software platforms. To provide value-added services, mobile applications can use various peripherals attached to the mobile terminals, e.g. camera, Bluetooth, or mp3 player via software platforms. The Mobile AIDC application is a kind of mobile applications and it uses a Mobile AIDC device such as a RFID interrogator, barcode reader or Mobile ORM reader. By using mobile devices, a Mobile AIDC application interacts with data carriers.

If a Mobile RFID interrogator is embedded in a Mobile AIDC terminal, a Mobile AIDC application uses a RFID interrogator to get data from RF tags around the Mobile AIDC terminal user. More specifically, the Mobile AIDC application opens the RFID interrogator to make a RFID interrogator ready to operate, and then it may direct the interrogator to read RF tag data around the mobile terminal, or direct the RFID interrogator to write data in the specific RF tag memory area. After a Mobile AIDC application obtains RF tag identifiers (UIIs) from a RFID interrogator, it may connect to the Internet by using Internet access utility provided by a software platform. By using the Internet, a Mobile ADIC application gets RF tag identifier-related information from an information server.

The Mobile AIDC application is composed of two functional parts. The one is for interacting with a Mobile AIDC devices embedded in mobile terminal. The other part is for getting relevant data via Internet. The latter part uses Internet access utility provided by a software platform.

The typical goal of Mobile AIDC applications is getting information associated with the data read from data carriers such as RF tags, barcodes, or ORM data carriers via Internet. Besides, Mobile AIDC applications may read data (except UII) stored in the data carrier, or write certain data to the data carrier.

The characteristic of the Mobile AIDC applications are that their implementations are highly dependent on the software platforms and the Mobile AIDC devices attached to the mobile terminal. Therefore, it is very difficult to define common application programming interface at implementation level for all Mobile AIDC devices.

5.2 Mobile AIDC service scenarios description

The differential characteristic of a Mobile AIDC service is providing useful information to the Mobile AIDC terminal users by reading data from data carriers. To read data from data carriers, an appropriate mobile AIDC device is attached to the mobile AIDC terminal. Typical Mobile AIDC service provides information to users by accessing the Internet based on the data read by a Mobile AIDC device attached to the Mobile AIDC terminal. In this case, the data read by a Mobile AIDC device indicates a certain location(s) where the relevant information is stored at. In other case, user may read some data from the data carrier except UII. Those data may include user-defined data or object information which the data carrier is affixed to. Or, user may write some data to specific memory area of the data carriers.
[TBD]

5.2.1 Scenario: Obtaining information over the Internet

The Mobile AIDC service is providing useful information to the Mobile AIDC terminal users based on the data read by a Mobile AIDC device. If the Mobile AIDC device is a RFID interrogator, RF tag identifiers read by a RFID interrogator are used to access the Internet to get relevant information. In this case, RF tag identifiers play a role of reference pointers to the relevant information servers. Figure 3 shows the service framework of this service scenario when the RFID interrogator is attached to the Mobile AIDC

terminal. In this case, service framework is composed of a Mobile AIDC terminal, an identifier resolution server and an information server. The Mobile AIDC terminal is equipped with a RFID interrogator. The identifier resolution server contains the addresses of information resources which include tag identifier-related information. The information server contains information resources related with RF tag identifiers. Operation flow is as followings:
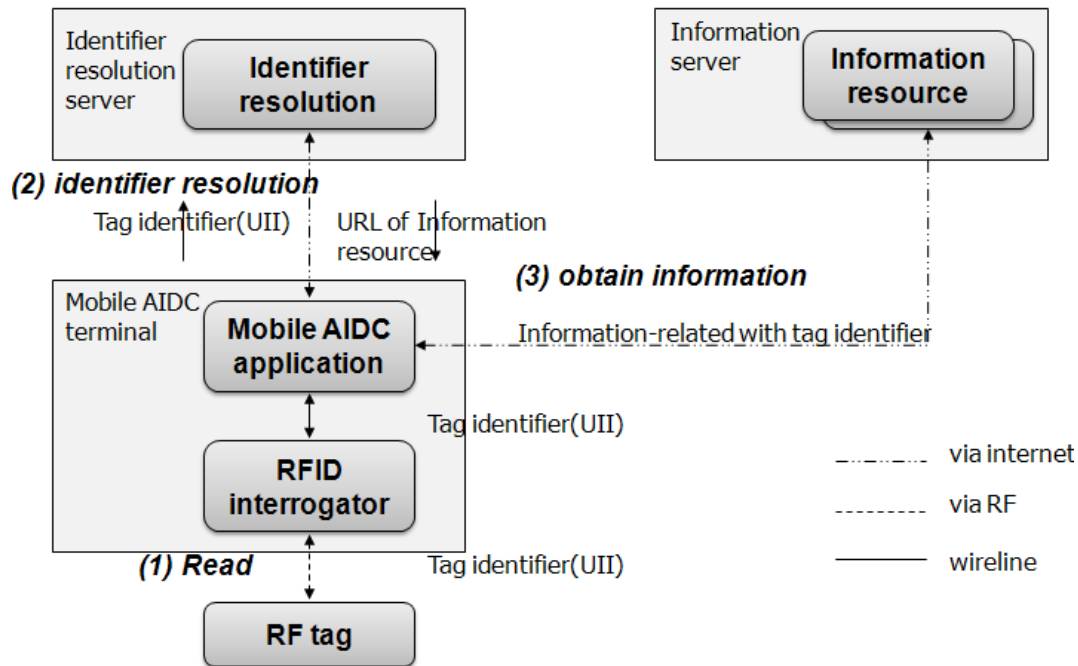

Figure 2 Mobile AIDC service scenario: Obtaining relevant information via Internet

- A Mobile AIDC application directs the RFID interrogator to read RF tag data(UII).
- The RFID interrogator reads RF tag data around the Mobile RFID terminal. Usually, it reads multiple RF tag data from multiple RF tags around the Mobile RFID terminal.
- If RF tag data read are identifiers, then the Mobile AIDC application sends RF tag data to identifier resolution server to get URLs of information resources. The identifier resolution server searches relevant information resource's URLs and returns them back to the Mobile AIDC application.
- The Mobile AIDC application sends information request to the information server(s) to get RF tag identifier-related information.
- Information server returns the information requested to the Mobile AIDC application.

5.2.2 Scenario: Using a data carrier like a user memory

Other possible service using a Mobile AIDC application is to use a data carrier like user storage. This service only can be possible when both Mobile AIDC devices and data carriers are programmed appropriately. In this case, a service framework is consisted of a data carrier and a Mobile AIDC terminal. If the Mobile AIDC device is a RFID interrogator, it needs a capability to handling RF tag's user memory area. At the same time, the RF tags' user memory area has to be programmed to be readable and/or writable. Figure 4 shows the service framework when a RFID interrogator is attached to the Mobile AIDC terminal and it uses RF tags like user data storage.
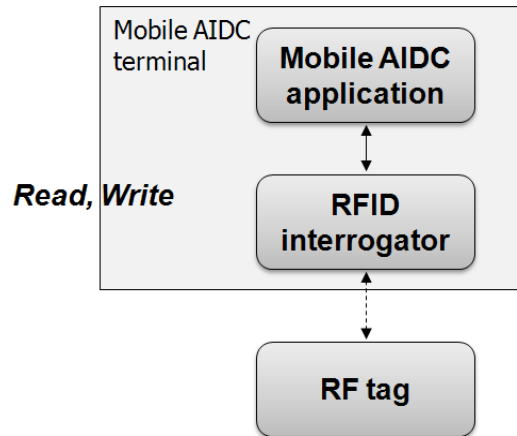
Figure 3 MIIM service scenario: user data storage

- A Mobile ADIC application directs the RFID interrogator to read RF tag data written in the specific RF tag. In this case, a mobile AIDC application has to provide a UII of a target RF tag to read.
- Or, a Mobile AIDC application directs the RFID interrogator to write user data to the specific RF tag memory area. In this case, a mobile AIDC application has to provide a UII of a target RF tag to write and access password if programmed.

5.2.3 Scenario: [TBD]

[TBD]

5.3 Functional requirements of the Mobile AIDC application interface

As mentioned in 5.2, the characteristic of Mobile AIDC applications is that they use appropriate Mobile AIDC devices to interact with data carriers around mobile terminals. To support Mobile AIDC application, there need interface to control Mobile AIDC devices and to process data obtained by Mobile AIDC devices. But there are different types of Mobile AIDC devices and their functions and handling methods are all different. Some Mobile AIDC devices only provide data (UIIs) read from data carriers. Others may provide other functions such as reading user data from data carriers or writing user data to data carriers. Therefore, in this standard all possible operations are enumerated and are marked whether they are mandatory or optional. If a Mobile AIDC device attached supports certain operation, then the software platform should provide interface for that operation.

The main function of Mobile AIDC application is to read UIIs from data carriers by using Mobile AIDC device attached to mobile terminal. And then, it uses UIIs to obtain relevant information via Internet. To support this function of Mobile AIDC applications, the interface to read UII around mobile terminal should be defined. To operate Mobile AIDC device, it is required to be opened first. Therefore, following interface is required to be defined.

— *Open Device (Mobile AIDC device Identifier): To use the Mobile AIDC device, a Mobile AIDC application needs to open the device.*

— *Close Device (Mobile AIDC device Identifier): After using the Mobile AIDC device Identifier, a Mobile AIDC application needs to close the device.*

— *Read UIIs(Mobile AIDC device identifier): Read UIIs from data carriers surrounding.*

Some types of Mobile AIDC devices provide functions such as reading user data written in data carriers, writing user data in certain data carriers, erase data from certain data carriers. To support these functions of Mobile AIDC devices, following interface is required to be defined.

— *Read user data (data carrier identifier): Read user data from certain data carrier.*

— *Write data (data carrier identifier, data [, access password]): Write data to certain data carrier.*

— *Erase user data (data carrier identifier [, access password]): delete user data from certain data carrier.*

Some types of Mobile AIDC devices provide security facility to protect user data from overriding. To provide this function, the following interface is required to be defined.

— *Lock/unlock (data carrier identifier): Protect (or release) data from overwriting.*

Some types of Mobile AIDC devices get multiple UIIs from multiple data carriers around mobile terminal simultaneously. In this case, discarding some UIIs not intended before using Internet reduces the service cost. For these Mobile AIDC devices, following interface is required to be defined.

— *Filtering UIIs(code type, mask): filter UIIs read by Mobile AIDC device using mask.*

[TBD]

5.4   Mobile AIDC application interface

A Mobile AIDC application may be running on various software platforms. There exists several software platforms used in mobile device market such as WIPI, BREW, Symbian, Windows mobile, etc. Each software platform has a different shape of implementation. It results in different sets of application programming interface. Due to this heterogeneity, it is impossible to make mobile application implementation interoperable between different software platforms.

This specification defines abstract Mobile AIDC application interface to give a standardized functional view over different software platforms. Implementation-level application interface should be defined from this abstract Mobile AIDC application interface. Defined application interface satisfies the functional requirements described in 5.3.

Generally, registering a device to the mobile terminal is the first step to use that device. The way to register the device and the name of device are subject to software platform implementation. The registration process is out of scope of this standard.

5.4.1 *Open* (mandatory)

To use a Mobile AIDC device attached to a mobile terminal, a Mobile AIDC application should open the device. *Open* connects Mobile AIDC application to a Mobile AIDC device and then the Mobile AIDC device gets ready to operate.

Exact input parameter(s), data type(s) of input parameter(s), return value(s) and data type(s) of return value(s) are subject to the software platform on which a Mobile AIDC application executes.

- input parameters

- o Mobile AIDC device identifier: a Mobile AIDC device identifier defined at the software platform at registration time
- return value
  - o success/fail

5.4.2 *Close* (mandatory)

After using a Mobile AIDC device, a Mobile AIDC application should close the device because of the energy conservation. *Close* disconnects a Mobile AIDC application from the Mobile AIDC device. At the same time, the software platform instructs the Mobile AIDC device to power down.

Exact input parameter(s), data type(s) of input parameter(s), return value(s) and data type(s) of return value(s) are subject to the software platform on which a Mobile AIDC application executes.

- input parameters
  - o Mobile AIDC device identifier: a Mobile AIDC device identifier defined at the software platform at registration time
- return value
  - o success/fail

5.4.3 *Read* (mandatory)

To get UIIs from surrounding data carriers, a Mobile AIDC application directs a Mobile AIDC device to read UIIs. If user data are written in data carriers and a Mobile AIDC device provides reading function for user data, then a Mobile AIDC application may get both UIIs and user data at the same time.

Exact input parameter(s), data type(s) of input parameter(s), return value(s), data type(s) of return value(s) and response are subject to the software platform on which a Mobile AIDC application executes.

Read operation usually takes time to complete. Therefore, it is recommended to implement in an asynchronous way. A software platform may process other jobs while awaiting a response(s).

- input parameters
  - o read_type: read UIIs only or read both UIIs and user data
- return value
  - o success/fail
- response
  - o data read((UIIs)or (UII and user data)s)

5.4.4 *ReadUserData* (optional)

To get user data from specific data carrier, a Mobile AIDC application requests to read user data from certain data carrier.

Exact input parameter(s), data type(s) of input parameter(s), return value(s), data type(s) of return value(s) and response are subject to the software platform on which a Mobile AIDC application executes.

Read operation usually takes time to complete. Therefore, it is recommended to implement in an asynchronous way. A software platform may process other jobs while awaiting a response(s).

- input parameters
  - o data carrier identifier: UII written in the data carrier
- return value
  - o success/fail
- response

o   user data read

5.4.5 *Write* (optional)

To record user data in the specific data carrier, a Mobile AIDC application directs the Mobile AIDC device to write user data to certain data carrier. *Write* records user data to certain data carrier. *Write* is performed repeat count times for ensuring the operation.

Exact input parameter(s), data type(s) of input parameter(s), return value(s), and data type(s) of return value(s) are subject to the software platform on which a Mobile AIDC application executes.

Write operation usually takes time to complete. Therefore, it is recommended to implement in an asynchronous way. A software platform may process other jobs while awaiting a response(s).

- input parameters
  - data carrier identifier: UII written in the data carrier
  - access password: if programmed, the access password written in the data carrier
  - user data: user data to write
  - new access password: (new) access password to overwrite existing one
  - repeat count: repeat count

- return value
  - success/fail

5.4.6 *Erase* (optional)

To delete user data from a certain data carrier, a Mobile AIDC application directs the Mobile AIDC device to erase data from the specific data carrier.

Exact input parameter(s), data type(s) of input parameter(s), return value(s), and data type(s) of return value(s) are subject to the software platform on which a Mobile AIDC application executes.

Erase operation usually takes time to complete. Therefore, it is recommended to implement in an asynchronous way. A software platform may process other jobs while awaiting a response(s).

- input parameters
  - data carrier identifier: UII written in the data carrier
  - access password: if programmed, the access password written in the data carrier
  - repeat count: repeat count

- return value
  - success/fail

5.4.7 *Lock* (optional)

To protect user data written in the specific data carrier from overwriting, a Mobile AIDC application should lock the data carrier. If the certain data carrier is locked, then write operation is not permitted. If necessary, the data carrier locked before can be unlocked.

Exact input parameters, data types of input parameters, return values and data types of return values are subject to the software platform on which a Mobile AIDC application executes.

Lock operation usually takes time to complete. Therefore, it is recommended to implement in an asynchronous way. A software platform may process other jobs while awaiting a response(s).

- input parameters
    - data carrier identifier: UII written in the data carrier
    - op_type: lock or unlock
    - access password: if programmed, the access password written in the data carrier

- return value
    - success/fail

5.4.8 Filter (optional)

To discard some UIIs not intended, a Mobile AIDC application defines a filtering mask in either way, *inclusive* or *exclusive*.

Exact input parameters, data types of input parameters, return values and data types of return values are subject to the software platform on which a Mobile AIDC application executes.

- input parameters
    - filter_type: inclusive or exclusive
    - mask: mask to filter UIIs
- return value
    - UIIs filtered

5.4.9 [TBD]

Bibliography

[TBD]

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**

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