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ISO JTC 1 IEC
INFORMATION TECHNOLOGY STANDARDS
SC31 AUTOMATIC IDENTIFICATION & DATA CAPTURE TECHNIQUES

ISO/IEC JTC 1/SC 31 Change in Program of Work

JTC 1/SC 31 has balloted the following scope and title change(s) via the following SC 31 document postings:

1. **SC031-N-2906** - Change in Program of Work - Scope Change of ISO/IEC 29172
2. **SC031-N-2907** - Change in Program of Work - Scope Change of ISO/IEC 29173
3. **SC031-N-2908** - Change in Program of Work - Scope Change of ISO/IEC 29174
4. **SC031-N-2909** - Change in Program of Work - Scope Change of ISO/IEC 29175
5. **SC031-N-2910** - Change in Program of Work - Scope Change of ISO/IEC 29176
6. **SC031-N-2911** - Change in Program of Work - Scope Change of ISO/IEC 29179
7. **SC031-N-2912** - Change in Program of Work - Title Change for ISO/IEC 29173-1
8. **SC031-N-2913** - Change in Program of Work - Title Change for ISO/IEC 29175

The specific changes for each request are attached.

JTC 1/SC 31 requests to add these changes, in the program of work, in an approval ballot at the JTC 1 level.

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Reference Architecture - 29172

From

Mobile AIDC services mean consumer-oriented information services provided via mobile telecommunication networks and triggered by AIDC technologies like RFID and barcode. They consist of two types of Mobile RFID and Mobile ORM services. Mobile RFID services are those triggered by RFID and Mobile ORM services are those triggered by barcode. An example service case is described below.
This work item is intended to be developed as a Technical Report to describe the reference architecture for Mobile AIDC services which provide information contents to consumers via RFID and barcode technologies. For example, a RFID or barcode tag is affixed to a movie poster; a Mobile RFID interrogator or barcode capturing camera, i.e. Mobile ORM reader, is built in a cell phone; a consumer aims or touches his/her cell phone at the ID tag of the movie poster; and then he/she gets a corresponding information content retrieved via Mobile AIDC technologies.
This Technical Report deals with

- Descriptions of Mobile AIDC services;
- Reference architecture and service components for reader-based, tag-based, and P2P-based service models;
- Service operation procedures; and
- Relationship among relevant standards to enable the reference architecture.

To

Consisting of mobile RFID and mobile Optically Readable Media (ORM) services, mobile AIDC services refer to consumer-oriented information services provided via telecommunication networks and triggered by AIDC technologies such as RFID and linear bar codes or two-dimensional (2D) symbols. Although mobile AIDC services are provided mainly to ordinary consumers, they do not limit other types of end-users such as sales persons and repairpersons. The mobile RFID services are those triggered by RFID and the mobile ORM services are those triggered by linear bar codes or 2D symbols.
This Technical Report describes the reference architecture for mobile AIDC services that provide information contents to end-users via RFID and linear bar code or 2D symbol technologies. For example, an RFID tag or a linear bar code or 2D symbol called a *"data carrier"* is affixed to a movie poster; a mobile RFID interrogator or a symbol capturing camera, i.e. a mobile ORM reader, is built into a cell phone; an end-user aims or touches the cell phone to the data carrier on the movie poster; and the corresponding information content is retrieved via the networks.
This Technical Report includes:

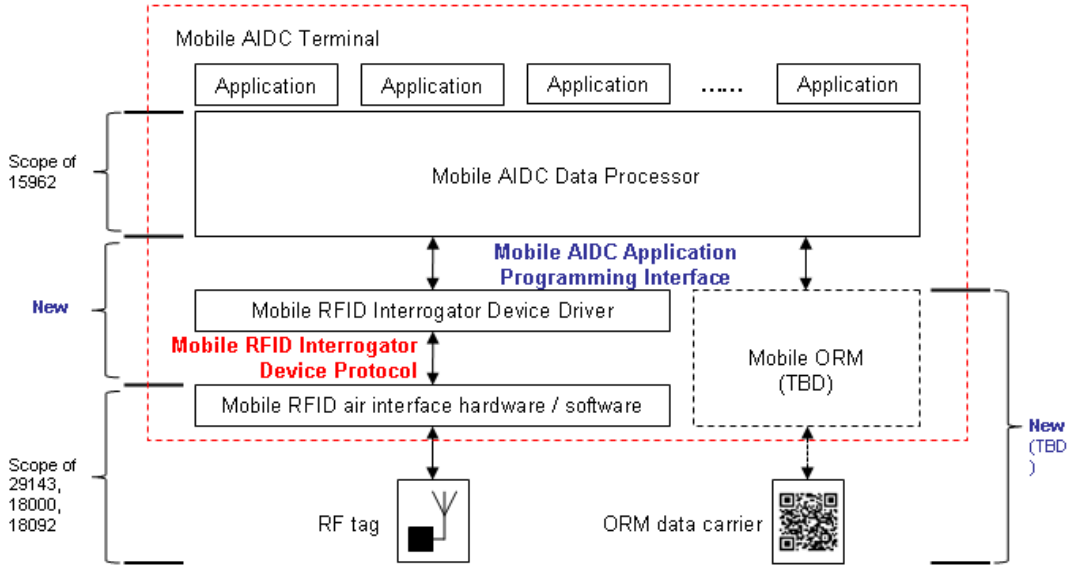
- Descriptions of mobile AIDC services;
- Reference architecture and service components;
- Service operation procedures; and
- Relationship among relevant standards to enable the reference architecture.

Device Driver - 29173

From

This work item defines an interface protocol between “Mobile RFID Interrogator Device Driver” and “Mobile RFID air interface hardware/software” within a Mobile AIDC terminal as shown in the following figure.

The proposed “Mobile RFID Interrogator Device Protocol” is positioned to be implemented in both Mobile RFID Interrogator Device Driver and Mobile RFID Interrogator’s software. Mobile RFID Interrogator Device Driver is the software allowing the higher-level Mobile AIDC Data Processor to interact with the Mobile RFID air interface.



Without the standardized protocol, manufactures of Mobile RFID air interface hardware should develop multiple Mobile RFID Interrogator Device Drivers for different Mobile AIDC terminal platforms. Moreover, they also should develop a proprietary protocol between Mobile RFID Interrogator Device Driver and Mobile RFID air interface hardware. On the other hand, if both Mobile AIDC terminal manufactures and Mobile RFID air interface hardware manufactures follow the standardized Mobile RFID Interrogator Device Protocol, various independent products will be mutually interoperable without extra costs.

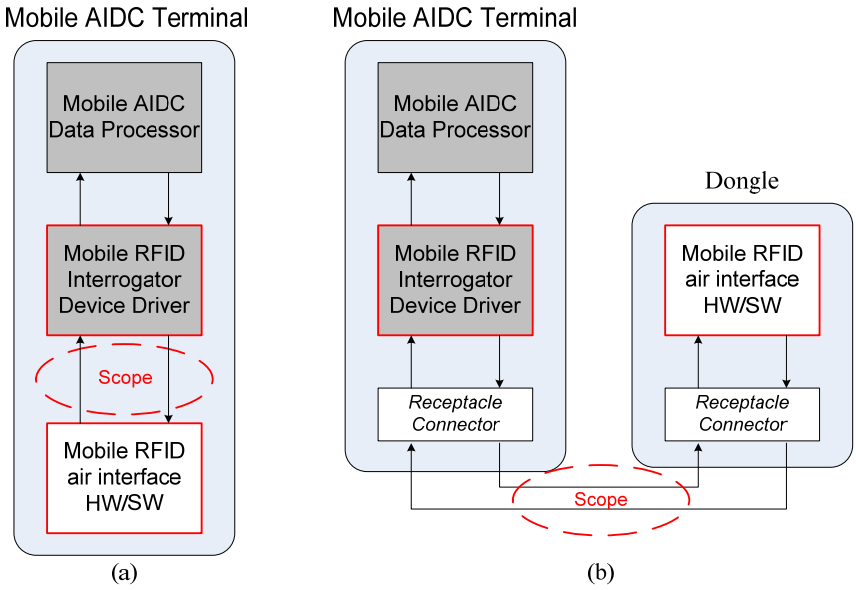
In accordance to the following RFID air interface standards, this work item will be composed of 4 parts:

- Part 1: Mobile RFID Interrogator Device Protocol for ISO/IEC 18000-6B
- Part 2: Mobile RFID Interrogator Device Protocol for ISO/IEC 18000-6C
- Part 3: Mobile RFID Interrogator Device Protocol for ISO/IEC 18000-3
- Part 4: Mobile RFID Interrogator Device Protocol for ISO/IEC 18092

The above multi-part standards will include:

- Types of command / response / notification protocol messages and their usages;
- Protocol message format; and
- Protocol message exchange procedures.

The following diagram shows the scope of this work item in cases where (a) a Mobile RFID air interface hardware is embedded in a Mobile AIDC terminal and (b) a Mobile RFID air interface hardware is connected to a Mobile AIDC terminal as a dongle.



To

This standard defines an interface protocol between a mobile AIDC application platform and a mobile RFID interrogator within a mobile AIDC terminal. This standard is positioned to be implemented in both mobile AIDC application platform and mobile RFID interrogator.

Without this standard protocol, manufactures of mobile RFID interrogator should develop multiple mobile RFID interrogator device drivers for different mobile AIDC application platforms. Moreover, they also should develop a proprietary interface protocol between mobile AIDC terminal platform and mobile RFID interrogator. On the other hand, if both mobile AIDC application terminal platform and mobile RFID interrogator developers follow this standardized mobile RFID interrogator device protocol, various independent products will be mutually interoperable without extra costs.

In accordance to the ISO/IEC 18000-6B/C RFID air interface standards, this standard will include:

Types of command / response / notification protocol messages and their usages;

- Protocol message format; and
- Protocol message exchange procedures.

The following diagram shows the scope of this standard in cases where (a) mobile RFID interrogator hardware is embedded in a mobile AIDC terminal and (b) mobile RFID interrogator hardware is connected to a mobile AIDC terminal as a dongle.

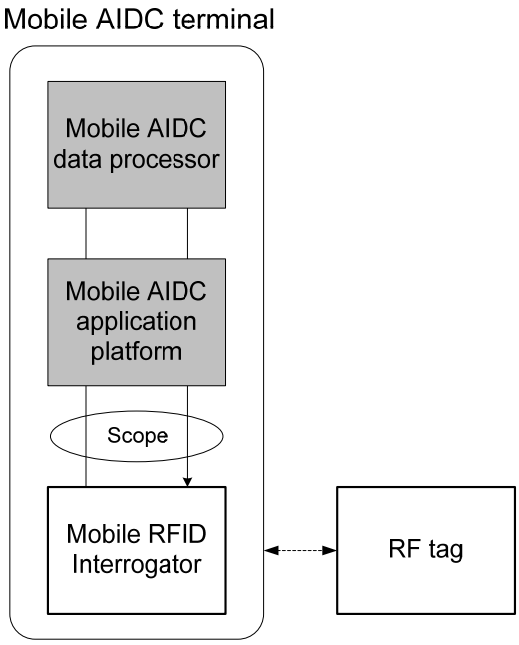


Figure 1

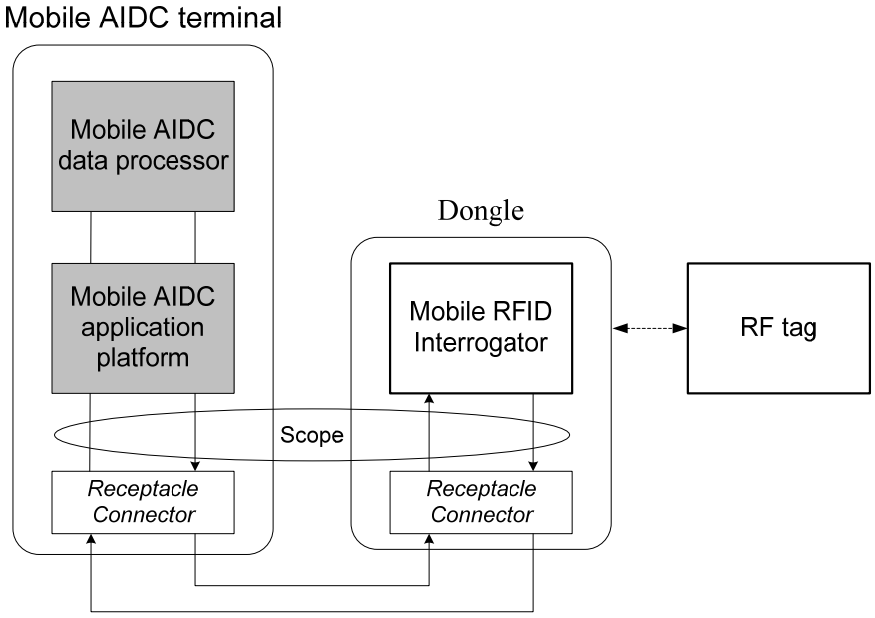


Figure 2

Referring to Fig. 1, a mobile AIDC terminal includes a mobile AIDC application platform and a mobile RFID interrogator. This standard specifies a mobile RFID interrogator device protocol between a mobile AIDC application platform and a mobile RFID interrogator.
Referring to Fig. 2, a mobile AIDC terminal includes a mobile AIDC application platform and a receptacle connector. A dongle includes a mobile RFID interrogator and a receptacle connector. The mobile AIDC terminal is connected to the dongle by the receptacle connectors. The present standard specifies a mobile RFID interrogator device protocol executed between a mobile AIDC application platform and a mobile RFID interrogator.

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MII - 29174

From

This work item defines a UII structure and UII encoding format for Mobile AIDC services. The UII structure is proposed to support unique characteristics of Mobile AIDC services compared to legacy AIDC applications and services. Encoding formats of the proposed UII scheme follow existing encoding standards, ISO/IEC 15962 for RFID and ISO/IEC 15434 for barcode.

This work item deals with:

- UII structure for Mobile AIDC services; and
- UII encoding formats base on ISO/IEC 15962 for RFID tag and ISO/IEC 15434 for barcode tag.

The UII registration procedure is out of scope of this work item.

To

This standard describes an identifier scheme for a Mobile Item Identifier and encoding formats for data carriers for Mobile AIDC services. The Mobile Item Identifier scheme named mCode was developed to support service requirements of an identifier scheme for Mobile AIDC services. The encoding formats of this standard follow ISO/IEC 15962 and 15434 and focus on how to incorporate them to encode an MII into a data carrier.

AD - 29175

From

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.

To

This standard defines the structure encoding format for mobile AIDC Application Data in the user memory/data area of RFID tags, bar codes and two-dimensional symbols. Types of mobile AIDC Application Data are defined in Annex A.

Privacy - 29176

From

Mobile AIDC services aims for consumers and privacy protection is an important issue to be taken into account more. This work item defines a standard for lightweight functions and relevant parameters to provide consumer privacy-protection services, and specifies requirements to provide conformance with ISO/IEC 29143 interrogator and ISO/IEC 18000-6 Type C tag.

This work item focuses on technical solutions for protecting consumer privacy. Interrogator-to-host and host system (back-end enterprise) security issues are out of scope and covered by a variety of other best practices.

The scope of the work includes the followings:

- Requirements of consumer privacy-protection services for Mobile RFID
- Functions and parameters for UII hiding
- Functions and parameters for User memory data confidentiality
- Functions and parameters for access password management

This standard doesn't conflict with ISO/IEC 29143 and ISO/IEC 18000-6 Type C air interface. That is, the consumer privacy-protection services defined in this standard are accomplished by using the existing operation capability, command/response messages and access password.

This standard has to be treated as an optional specification because Mobile RFID services may be provided without privacy protection.

To

This standard provides a technical solution for addressing the privacy concern with tagged items for consumers.

There are many possible concerns regarding the authenticity and integrity of mobile RFID systems. For example, an unauthorized interrogator could can easily read a UII (Unique Item Identifier), TID (Tag Identifier), and the User memory banks of ISO/IEC 18000-6C tags and ISO/IEC 18000-3m3 tags because there is no read-protection for these memory banks. In this case, the unauthorized interrogator could gather the product information by analyzing the UII coding rules. Therefore, a privacy protection function should be included in a mobile RFID system utilizing those tags.

This standard focuses on tag-to-interrogator communications for providing a consumer privacy-protection solution. Interrogator-to-host and host (back-end enterprise) system security issues are not in the scope of this standard, but are covered by a variety of other best practice documents.

API - 29179

From

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.

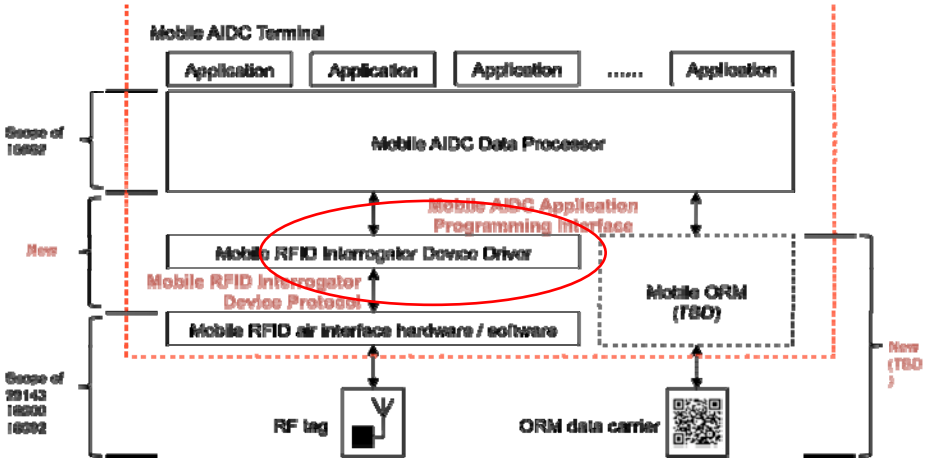

Figure 3 Mobile AIDC standard architecture

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.)

To

A mobile AIDC application is a type of mobile applications, which run on mobile application platforms. A mobile application platform is the development and running environment for mobile applications for the management and coordination of activities and sharing of the limited resources of the mobile terminal. And there exist many kinds of mobile application platforms, which provide different environment for mobile applications. Mobile AIDC applications need to access data carriers such as RF tags, barcodes, etc for reading and/or writing contents. For this purpose, mobile AIDC applications use embedded mobile AIDC devices such as mobile RFID interrogators or barcode readers. To make it possible, mobile application platforms provide appropriate application programming interfaces to mobile applications.

The goal of this standard is to define mobile AIDC application programming interfaces such as *open, close, read, write, lock*, etc. This standard does not specify implementation level interfaces but abstract level interfaces because of the heterogeneity of mobile application platforms. Different mobile application platforms

have their own particular application programming interface sets or data dictionaries. Figure 1 describes where this standard works.

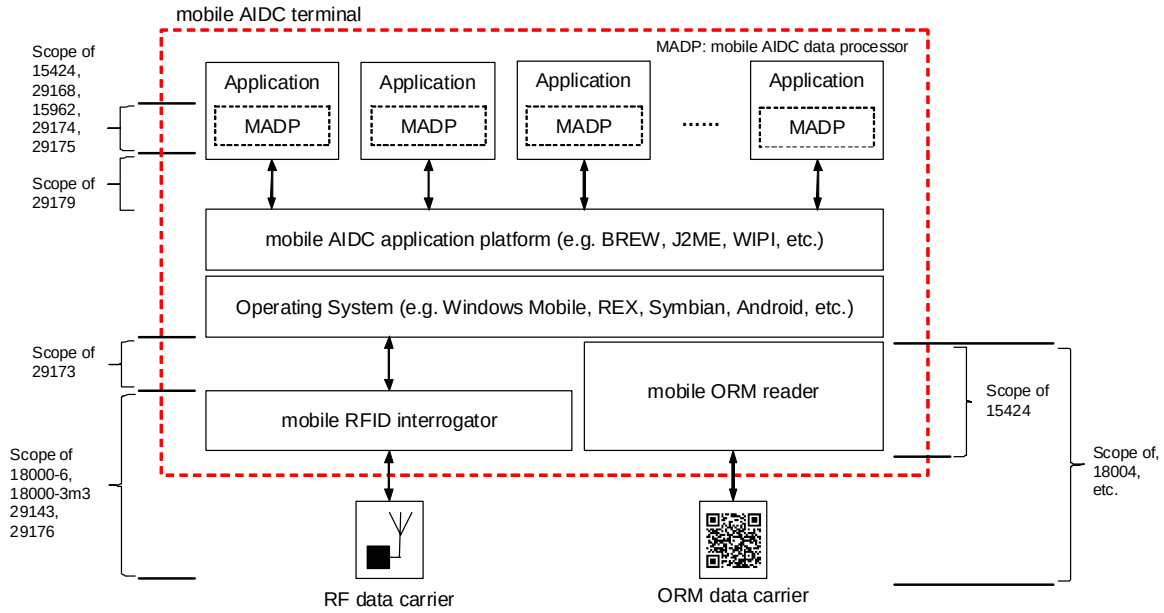

Figure 1 Mobile AIDC standard architecture

The exact data syntax and encoding for the data that are read from or writing to data carriers complies with ISO/IEC 15962.
This standard includes the followings:

— *mobile AIDC applications description*

— *mobile AIDC service scenarios*

— *Functional requirements of the mobile AIDC application interfaces*

— *Abstract mobile AIDC application programming interfaces (open, read, write, lock, etc)*

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29173

From

"Information technology -- Automatic identification and data capture techniques -- Mobile item identification and management -- Part 1: Mobile RFID interrogator device protocol for ISO/IEC 18000-6C"

To

"Information technology -- Automatic identification and data capture techniques -- Mobile item identification and management -- Part 1: Mobile RFID interrogator device protocol for ISO/IEC 18000-6 Type B and Type C"

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ISO JTC 1 IEC
INFORMATION TECHNOLOGY STANDARDS

SC31 AUTOMATIC IDENTIFICATION & DATA CAPTURE TECHNIQUES

29175

From

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

To

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

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