

# RFID FOR LIBRARIES: Towards Greater Standardisation

## Introduction

EDItEUR has a liaison status with the ISO committee JTC1 SC31 WG4 RFID for Item Management, which is responsible for RFID technology standards. Using its liaison status, EDItEUR has applied for a series of RFID features – technically known as data constructs. These are to be assigned to the library community to enable RFID systems to be used both in a standardised way within the library community, and also to protect against systems clashes from other uses as these evolve.

EDItEUR's application has been approved by the relevant committee as the letter from the Dutch National Standards Body (NEN), shows (see last page). Although the letter cautioned that this is a preliminary allocation, the relevant standards are moving forward within the ISO process without any problems.

## The RFID Data Constructs

Four data constructs need to be registered, and a brief explanation of the function of each follows:

- **AFI**  
The AFI is used in RFID systems to select a tag belonging to one particular application, while ignoring all others. The AFI is stored within a special memory on the tag. There are particular RFID radio communication commands that can select tags belonging to one AFI, and ignore others. In addition, some library systems make use of the AFI as part of the security system – more of this later.
- **Data Format**  
The data format is a mechanism used in the RFID tag to truncate (or shorten) some of the encoding on an RFID tag. It is stored as part of a single byte within a special memory on the tag known as the DSFID.
- **Object Identifier for the UII**  
The *UII (Unique Item Identifier)* is a term used in the RFID standards world to define a code that is unique in the domain of the application. In the case of library systems, it is known as the item reference, or accession code, or bar code number. The object identifier is an ISO way of uniquely distinguishing library community UII from all others.
- **Object Identifier Structure for Other Item-attendant Data**  
It is expected that if the standardised system for RFID in libraries is developed, other data will be encoded on the tag that is meaningful to the individual library or for the specific loan item. A dictionary of optional object identifiers will be developed, from which only the relevant object identifiers for the item need to be encoded. Again, to distinguish between these options in a library system and from all other RFID systems, an object identifier structure is necessary. The data format, mentioned above, means that the root-OID defined below does not get encoded on any RFID tag compliant with the system.

When compliant systems are developed and in place, libraries will have the advantage of being able to adopt standardised hardware and software components. They will still have a choice of vendor equipment, performance, and service. Libraries will also have greater flexibility in selecting what data is encoded on the RFID tag and to add new process functions.

The preliminary RFID Data Constructs allocated to EDItEUR are:

<b>AFI</b>	The proposed AFI is C2 (hexadecimal).
<b>Data Format</b>	The proposed data format is 6 (decimal), represented in the DSFID as xxx00110.
<b>Object Identifier for the UII</b>	The library community has requested that this be assigned by SC31 WG4. This is possible using the following proposed OID: 1 0 15961 8 1 This will identify the loan item uniquely within the library system.
<b>Object Identifier Structure for Other Item-attendant Data</b>	Again, the request is for a root-OID to be assigned. The proposed root-OID is: 1 0 15961 8

In addition, another AFI (07 Hexadecimal) is available to the library community to be used in systems where the AFI is part of a security system. More of this later.

## Implications for RFID and Library System Vendors

Now that the data constructs have been formally assigned, library system vendors need to take the following initial steps to migrate their future systems to be compatible with the RFID standards development.

1. RFID tags and readers should be compliant with ISO/IEC 18000-3 Mode 1.
2. The AFI used for library books shall be the value assigned above, namely C2 (Hexadecimal). The use of other AFI codes on loaned items risks causing problems to other RFID systems using the same type of tag.
3. If the AFI is used as part of the security system, the AFI **C2** shall be used for loan items, and the AFI **07** shall be used for items in stock.  
NOTE: There is no requirement to adopt the dual AFI scheme for security purposes. Each library should consider the different security options on offer.
4. If any of the first three requirements is not immediately achievable, then consideration should be given to establishing a migration path for these.
5. Additionally, vendors should liaise with EDItEUR to monitor the progress of other standard-related issues as they evolve. This will include further definitions of how to encode data in a compliant manner.

Existing installations need to migrate with respect to the use of the particular AFI codes (items 1 and 2 immediately above). The migration path for adopting the correct AFIs should be put in place and notified to clients of installed library systems.

Most installed library systems are unlikely to be compliant with all of the data construct requirements and the emerging open systems. They might be viewed as closed systems and operate satisfactorily with none of the changes except to align the use of the AFI code(s). This position will hold for a period of time, but once increased standardisation of other features become available, there will be a need to support the new and established features in the installed base of systems. The need to migrate more or less quickly will depend on a number of factors. These include: the development of new standards for data models for library items, of support services implementing new solutions (such as providing RFID-enabled labels on new purchases), on the ratio of new items to established stock in a particular library, on the extent of inter-library loans, and so forth. The advice at this early stage is to monitor developments, and plan a migration.

## Implications for Library Managers

Managers with installed RFID systems need to establish two features of their system with their supplier:

- Whether the RFID tags and readers are compliant with the ISO/IEC 18000-3 Mode 1 air interface protocol standard.
- Whether the AFI(s) being used are compliant with the allocation to EDI:EUR.

If there are differences, consideration needs to be given for migrating the system to be compliant with the new standards over the medium term. **However there is no immediate risk to the system becoming obsolete and unsupported.** What is required is a sensible review towards a step-by-step migration to a fully standardised system.

For those library managers about to embark on a new RFID system, discussions should take place with vendors to establish their migration plans.

## Updates on this Advice

This is the first information bulletin about the developments of new RFID standards for libraries. As particular milestones are reached, or decisions made, further bulletins will be issued.

EDItEUR  
Attn. Mr. Brian Green  
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**Subject: application for Data Constructs**

Delft, 7 September 2006

Dear Mr. Green,

The Data Constructs Steering Group of ISO/IEC 15961 has reviewed the application of EDItEUR dated 2006-06-29 for the preliminary allocation of RFID Data Constructs according to ISO/IEC WI 15961-3.

The Data Constructs Steering Group of ISO/IEC 15961 has concluded that the application meets the approval criteria set out in ISO/IEC WI 15961-2.

The preliminary RFID Data Constructs allocated to EDItEUR are:

<b>AFI</b>	The proposed AFI is C2 (hexadecimal).
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Please note that, as long as ISO/IEC 15961-2 and ISO/IEC 15961-3 are not published as International Standards, the Data Constructs Steering Group can only allocate preliminary RFID Data Constructs.

Once ISO/IEC 15961-2 and ISO/IEC 15961-3 are published as International Standards, the appointed Registration Authority will be able to change the preliminary status of the allocated RFID Data Constructs to a final allocation. One of the conditions for the final allocation of these RFID Data Constructs is the payment of the requisite fee (ISO/IEC 15961-2 clause 5.2c).

Yours sincerely,

Gertjan van den Akker  
Secretary Data Constructs Steering Group