

ISO 28560-2 -- The Basics

Introduction

There is a lot of misunderstanding – sometimes even misrepresentation – about ISO 28560-2. This tutorial provides an overview of what some RFID vendors in the library community call the "flexible model". At one level, this flexibility might prove to be daunting but it does offer significant opportunities to select and organise data on the tag for optimal benefit.

It differs from some of the fixed encoding models such as ISO 28560-3 and some of the national data models, which that standard supersedes. It also differs from many of the proprietary solutions that generally support an identifier and possibly other data, using proprietary encoding rules.

The tutorial will use software features and products available from Convergent Software Limited (CSL) to illustrate various points. However, major RFID vendors should be able to provide similar flexibility for their library customers.

Selective Encoding

ISO 28560 Part1 currently defines up to 25 data elements, with a further 6 reserved for future use. These data elements apply equally to Part 2 (the flexible model) and Part 3 (the fixed structure model).

ISO 28560-2 specifies one data element, the Primary Item Identifier, as mandatory and this is always located in the first positions in memory. Another data element, Content Parameter (or OID Index) is recommended if other data is encoded on the tag. The OID Index acts as a "mini-directory" of other data elements on the tag. It can be used as a strong indicator of what is encoded on the tag. If all the encoding is done in-house, then it can be a perfect record of what is encoded on the tag.

The CSL Template Builder (see Figure 1) is used to create a template for the specific data elements that a library wants to see encoded on the tag. It is possible to select the data elements and re-order their sequence to manage the encoding.

In this tutorial, we only provide a high level explanation of ISO 28560-2. A future tutorial will describe the flexibility that is possible using the CSL Template Builder.

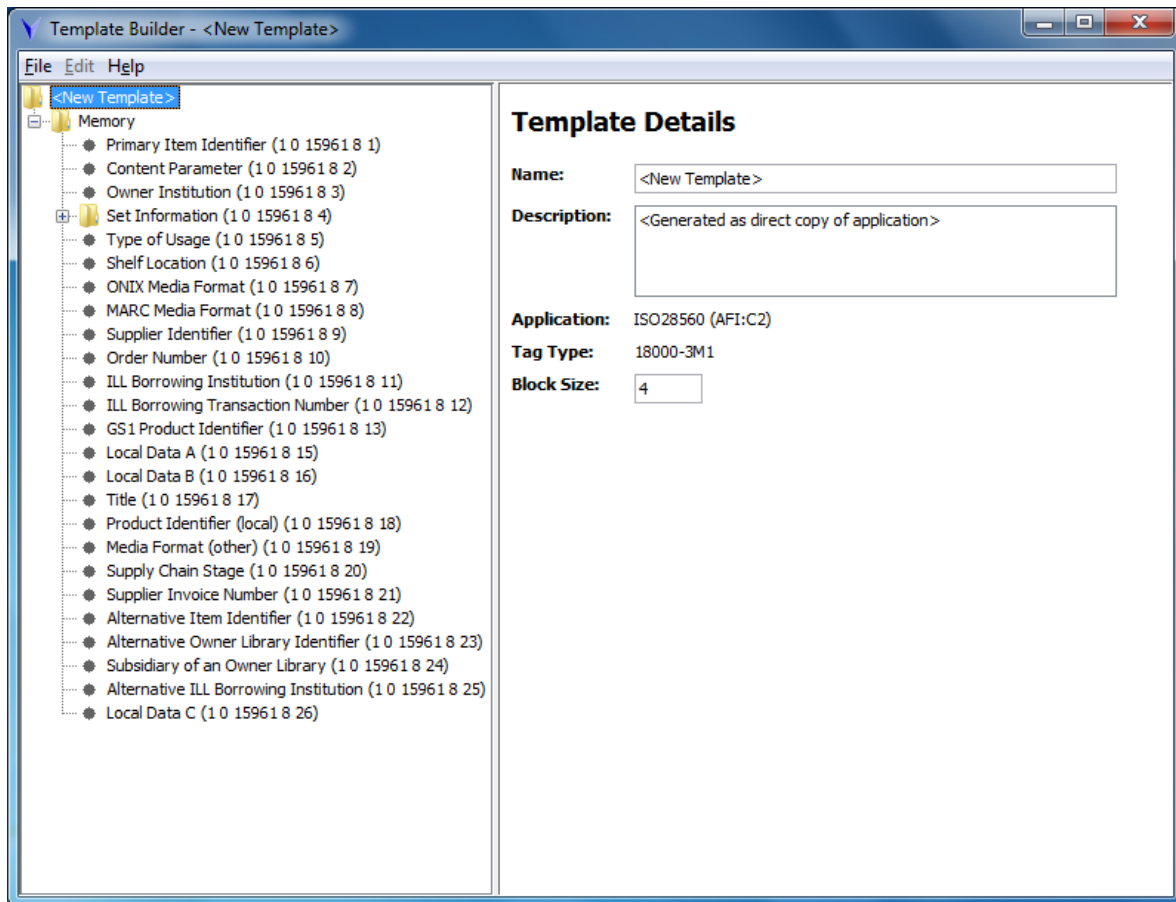


Figure 1: Initial State of the Template Builder

Selective Locking

ISO 28560-2 is the only standardised library data model that supports selective locking of data elements. Once data is locked, it cannot be changed but if data is left unlocked, then it might be accidentally – or deliberately – changed. So thought needs to be given to what data is permanently locked and recommendations of this are provided in the standard. An obvious example is permanently locking the primary item identifier because this is the prime key to link to the LMS (or ILS). It also makes sense to lock other immutable data. This might be something like the ISIL. It should also be remembered that the standard allows for an interspersing of locked and unlocked data elements.

The CSL Data Builder calls up an appropriate template, as shown in Figure 2. Note that the order of the data elements is no longer as presented in the sequence of Relative-OID values and that there are options to lock or even unlock the data on the tag. In this particular case, the only two data elements marked to be locked are the Primary Item Identifier and the Owner Institution (based on the ISIL). This allows the values for the unlocked data elements to be changed some time in the future.

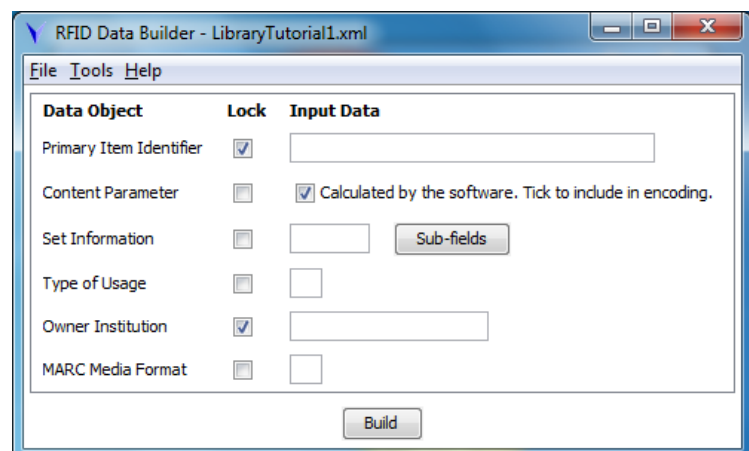


Figure 2: A Typical Template for Building Data

None of this should be a challenge to any RFID vendor whose system is fully compliant with ISO 28560-2. All that a library should need to do is specify that a particular data element is to be locked or left unlocked. The encoding software should do all the 'juggling around' of the bytes to ensure that only the intended data elements are locked before transferring the encoding to the RFID tag. In the CSL software, all of this processing is performed by the Data Builder.

Selective Reading

There are other important things to recognise about the potential power of ISO 28560-2. The first is that all the data on the tag does not need to be read to be meaningful for a given transaction. Populating the tag with a number of data elements does not necessarily slow transactions. The basic idea is to put the primary item identifier in the first position followed by the OID Index.

RFID technology has been designed to enable selective reading. This is a point that has sometimes been missed in other library data models, because an RFID tag is not an electronic bar code. There should be advice provided by the RFID vendor about the support in standards for reading the first object(s) and even for other selective reading.

Ideally, data should be encoded on the tag in the sequence based on the likelihood of use – again supported by the flexibility of ISO 28560-2. So, if a library decides that the return shelf location is more important than, say, set information then it should be encoded before the set information on the tag. It does require some understanding of the current and potential library functions and operations associated with RFID.

Encoding Is Not Forever

Each RFID tag has a specified memory capacity that is determined by the structure of the integrated circuit or "chip". While it is impossible to increase the size of that memory for a given tag, the encoding on the tag can range from the minimum required up to the full encoding capacity of the tag. So all the time that there is memory on the tag, it is possible to write other data elements to the tag in addition to those already encoded. Not only is it possible to add new data elements, it is also possible to modify existing data elements (for example shelf location) and even to delete data elements.

When the three Parts of ISO 28560 were developed, no-one on the committee expected all the features to be implemented at once. But if you look at the data elements there some associated with the supply chain, which are probably only relevant at the time of the initial purchase of the loan item. Therefore, once received into the library stock, these data elements could be deleted. There is also another set associated with inter-library loans. Some of this is true transactional data which, when combined with other data on the tag, makes the tag itself a mini-database of attributes associated with the loan item. When the loan item is returned to the owner library, this transaction data could be deleted or simply ignored by using selective reading.

This tutorial is part of a series being prepared by Convergent Software Limited and is available free of charge by registering at this web page: <http://www.convergent-software.co.uk/libraries.htm>, under the heading 'Tutorials and Newsletters'.