New RFID technologies & standards

What does it all mean for your library?

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Presentation outline

- Standards for library RFID
  - RFID standards refresher
  - ISO TC46/SC4/WG11 update
- Ultra High Frequency (UHF) RFID in libraries
  - What is UHF?
  - Why UHF in libraries?
  - UHF frequently asked questions
  - More information

Standards for library RFID

Two ISO standards in common use (HF)

- ISO 15693 - old standard for RFID cards
  Except for part 1 (RFID card physical specification)
- ISO 18000-3 - part of a new family of standards
  - Has two modes - mode 1 & mode 2
  - Libraries use mode 1
  - ISO 15963 is a perfect subset of 18000-3 mode 1

What don't the standards cover?

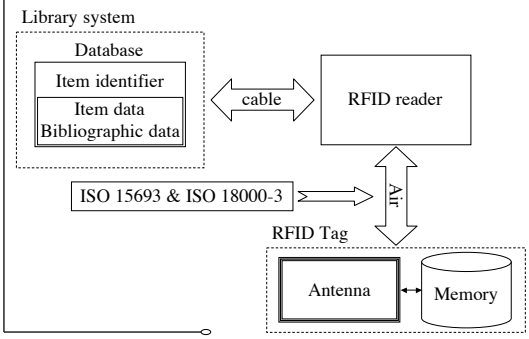
Not prescribed in the standards:

- The Tag Data Model
  - What specific data is written to the tag
  - How the data is arranged on the tag
  - The data encoding standard
  - The item security methodology
- Privacy and data security mechanisms

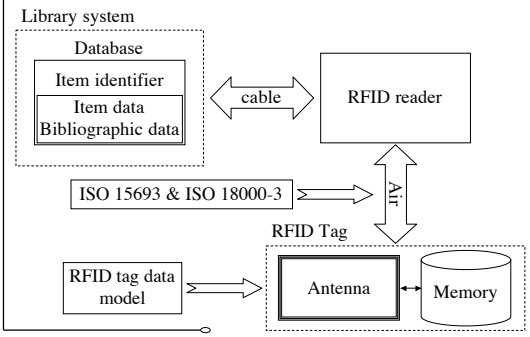
What are the implications?

- No native interoperability between systems
  - Adjacent systems with ISO tags - cannot be read
- Reprogram tags when swapping vendors
  - Tags require reformatting to suit new vendor
- Difficult to mix & match equipment
  - Self serve loans devices
  - Self Serve returns devices
  - Hand held devices

Where do the standards fit?



ISO Working group



ISO working group update

- SA WG submitted a flexible model proposal
- Three ISO working group meetings held
  - December 2006 - Danish Standards, Copenhagen
  - June 2007 - Danish Standards, Copenhagen
  - September 2007 - CILIP, London
- Differences regarding architecture of models
  - Fixed memory model - Denmark, Italy, Japan
  - Flexible model - Aust., UK, USA, the Netherlands
- Compromise position adopted at third meeting

ISO working group update

ISO 28560 to be structured in three parts

- Part 1 - General requirements & data elements
  - Editor - Jaap Ackkermans (NEN)
  - Approximately 25 data elements identified so far
  - The data elements themselves are standardised
  - List can be expanded (essentially unlimited)
  - Could be expanded for use outside libraries
  - Part one is common to both parts two and three

ISO working group update

ISO 28560 to be structured in three parts

- Part 2 - Encoding based on ISO/IEC 15962
  - Editors Alan Butters (SA) Paul Chartier (BSi)
  - Allows for flexibility with data element choice
  - Only item ID mandatory - rest optional
  - Solution proposed by Standards Australia WG
  - Consideration could be given to “data profiles”
    - National, regional, library sector based, contextual etc

ISO working group update

ISO 28560 to be structured in three parts

- Part 3 - Fixed length encoding
  - Editors - Leif Andresen & Tommy Schomacker (DS)
  - Similar to some existing national models
  - Fixed mandatory data set (elements from part one)
  - Additional optional data set (elements from part one)
  - No flexibility within data sets

ISO working group update

More information - project website:

- http://www.bs.dk/standards/rfid/

UHF RFID in libraries

- RFID operates at multiple frequencies
  - Low frequency - animal tagging etc
  - High Frequency - libraries, file tracking etc
  - Ultra High Frequency - supply chain, warehousing
  - Microwave - vehicle tolling systems etc
- Frequency selected to match the application
  - Read speed
  - Read distance etc
  - Other performance criteria

UHF RFID in libraries

- UHF may have advantages for libraries
  - Faster read rates
  - Greater reading distance
  - Cheaper tags & readers
  - Greater immunity to tag masking with stacked items
  - Compatibility with supply chain initiatives.

UHF RFID in libraries

Is HF the wrong technology for libraries?

- UHF RFID as we know it today is relatively new
  - Did not exist in mid 1990's when developers began
  - Is relatively new in the library application
  - Limited number of suppliers
  - HF products are more mature & capable
  - HF can deliver proven benefits to libraries
  - Debate about which technology for the future

UHF RFID in libraries

Are there reasons for not choosing UHF?

- More info is needed regarding UHF in libraries
  - Not much UHF use in "office" environments yet
  - Our application puts people & RFID together closely
  - Need to understand the OH&S implications
  - Need to develop installation guidelines for control
  - Need to quantify the tag life in our application
  - Need to understand the new ISO data model & UHF

UHF RFID in libraries

Do we lose any benefits going to UHF?

- UHF RFID fields are harder to control than HF
- Fine control is needed for some products
- Today, product range is narrower compared to HF
- UHF systems not interoperable with HF systems
- The cheapest UHF tags have little or no user memory
- Many UHF suppliers have no library experience

UHF RFID in libraries

Can we mix HF and UHF in our library?

- Currently, not in any way that is practical
  - Differences go beyond operating frequency
  - Different standards
  - Different communications methodology
  - Different method for powering the tag

UHF RFID in libraries

Which technology represents the future?

- Nobody can know with certainty
  - UHF is growing very fast in the world of RFID
  - Possibility that neither technology may dominate
  - Possibility that a different technology may dominate
    - UHF Near-field tags
    - HF ISO 18000-3 Mode 2 tags
    - HF ISO 18000-3 Mode 3 tags (in development)
    - A completely new technology

UHF RFID in libraries

Should we wait until this is sorted out?

- RFID systems on the market now can deliver
  - Can we build a positive business case?
  - Does RFID contribute to our strategic objectives?
  - Is it about the technology anyway?
  - Choose a system as a means to an end
  - Do the research, if it all adds up - just do it
  - It will always be cheaper, faster, better if you wait

UHF RFID in libraries

More information:

- Civica - *well known ILMS provider*
- Adilam Technologies - *Australian UHF supplier*
- Invengo - *Chinese UHF systems developer*
- Whitepaper - "RFID for Libraries - A comparison of HF and UHF options" - *www.sybis.com.au*

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