Standards for RFID Systems in Australian Libraries

What does it all mean and why should you care?

ALIA Conference - Perth WA, September 2006

Discussion outline

- Introduction to RFID standards & Benefits
- What the RFID standards don't cover
- What is being done to close the gaps
- Goals of the Standards Australia working group
- Progress to date and next steps

Standards Bodies

- Standards may be set at many levels
  - International
  - National
  - Industry or trade association
  - Individual organisation
- Two areas of standards activity in RFID
  1. International Standards Organisation (ISO)
  2. EPC Global / GS1 - GDSN
     - Global Electronic Product Code for consumer goods
     - The "Internet of things"

ISO Standards in Libraries

ISO 15693

3 Part standard defining parameters for vicinity RFID cards

- Started in 1995 - first published in 2000
- Three parts:
  - Physical Characteristics
  - Air Interface
  - Communication Protocol

ISO Standards in Libraries

ISO 15693

3 Part standard defining parameters for vicinity RFID cards

- Started in 1995 - first published in 2000
- Three parts:
  - Physical Characteristics
  - Air Interface
  - Communication Protocol
- Established standard - received broad acceptance
- Some experts felt it didn't address all the issues

ISO Standards in Libraries

ISO 18000 family

Parameters for air interface communications

- ISO 18000 family has multiple parts
- Each part corresponds to a particular frequency range

ISO Standards in Libraries

ISO 18000 family

Parameters for air interface communications (builds on 15693)

ISO 18000 - Part 1 Generic Parameters
ISO 18000 - Part 2 Communications below 135Khz
ISO 18000 - Part 3 Communications at 13.56 MHz
ISO 18000 - Part 4 Communications at 2.45 GHz
ISO 18000 - Part 5 Communications at 5.8 GHz
ISO 18000 - Part 6 Communications at 860-930 MHz
ISO 18000 - Part 7 Communications at 433.92 MHz

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ISO Standards in Libraries

Benefits of HF (13.56 MHz) for the library application

- Widely adopted by libraries already
- Operates at 13.56 MHz internationally - global solution
- Excellent immunity to environmental noise & interference
- Reliability of bulk tag reading
- Less affected by human body shielding - used for EAS security
- Small tag size
- Appropriate reading range
- Low cost tags and readers
- Harmonised regulatory environment - global application
- Ideal for item level tracking
- Supported by many suppliers of RFID tags and readers

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ISO Standards in Libraries

Review

- ISO 15693
  - Except for part 1 (smart card physical specification)
- ISO 18000-3 (communicates at 13.56 MHz)
  - Libraries use Mode 1
  - Mode 1 compatible with ISO 15693

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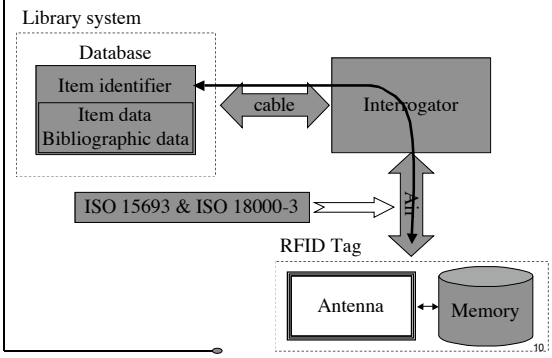
Where do the standards fit?



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What are the benefits?

- Purchasing
  - ISO tags are available from a range of suppliers
  - Not locked into purchasing from a single supplier
  - Cooperative purchasing possible

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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

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What are the implications?

- No 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

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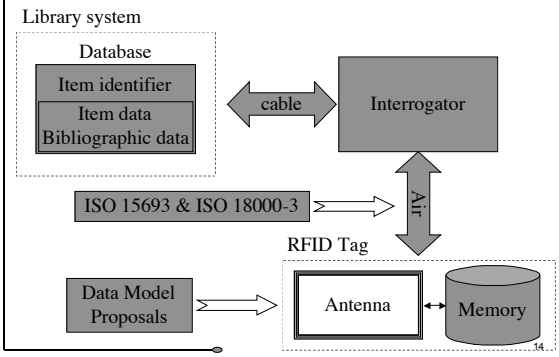
RFID system for libraries



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RFID Data Model for Libraries

- Provides a structure in which to place data
  - The format of the data fields
  - The arrangement of the data fields
- Specifies how the data will be encoded
- Specifies the methodology for item security
- Specifies what is mandatory vs optional

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Danish Data Model

RFID Data Model for Libraries

Proposal for a Data Model

RFID Data Model for Libraries Working Group
Affiliated to Danish Standard S24/u4

Final document - July 2005
Status: Public

Wolfgang Friedrichs, 3M Germany.
Anders Bjurnemark, Axiell Bibliotek AB.
Gregor Hotz, Bibliotheca RFID Library Systems AG.
Henrik K. Jensen, Bibliotheca RFID Library Systems AG.
Henrik Dahl, Dantek A/S.
Carsten H. Andersen, DBC medier.
Kaj Frøling, Draupnir.
Jan Didriksen, Codeco.
Ian Koch, Codeco.
Dennis Sørensen, FKI Logistex A/S.
Ivar Thyssen, P.V. Supa Oy Ltd.
Pierre Matignon, Tagsys.
Alastair McArthur, Tagsys.
Ole Sundø, TagVision.
Henrik Wendt, Tårnby Kommunebiblioteker.
Morten Hein, Hein Information Tools (chair)

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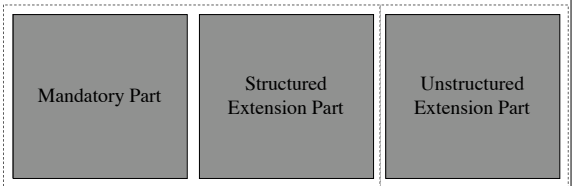
Danish Data Model

Three part prescriptive data model



All applications can read this part

Some applications can read this part

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Danish Data Model

	Mandatory Part	Structured Extension Part	Unstructured Extension Part
Metadata elements	AFI CRC Standard Version Type of Usage	CRC	Not Defined
Item data elements	Primary item ID Number of parts Ordinal part no.	Alternate item ID	Not Defined
Library data elements	Country of owner library Owner library	Extended owner library	Not Defined
Application data elements	None	Media format	Not Defined
Supplier data elements	None	Item identification Order number Invoice number	Not Defined

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Prescriptive models - problems

- Difficult to gain agreement about data elements
- Very limited flexibility
- More appropriate for local needs than international use
- Large mandatory part may not suit all libraries
- Can be inefficient in some applications
- Truism: prescription begets more prescription

Finnish Data Model

	Mandatory Part	Structured Extension Part	Unstructured Extension Part
Metadata elements	AFI CRC Standard Version Type of Usage	CRC	Not Defined
Item data elements	Primary item ID Number of parts Ordinal part no.	Alternate item ID	Not Defined
Library data elements	Country of owner library Owner library	Extended owner library	Not Defined
Application data elements	None	Media format	MARC Media Type
Supplier data elements	None	Item identification Order number Invoice number	Not Defined

RFID Standards Project - Working Group Members

Name	Institution	Position	Address	Contact
Alan Butters	Sybis	Principal Consultant	PO Box 52, Nunawading VIC 3131	(p) 03 9878 6447 (m) 0438 755 512 alan@sybis.com.au
Brian Dunne	3M Australia	Senior Technical Specialist	3M Australia Pty Ltd, 950 Pacific Hwy, Pymble NSW 2073	(p) 02 9498 9363 bwdunne@mmm.com
Jan Wild	DA Library Technologies	Sales Manager - ANZ	DA Library Technologies 648 Whitehorse Road Mitcham 3132	(p) 03 9210 7801 jwild@dalibtech.com.au
Peter Dart	Pearson Australia Group	Information Services Director	Pearson Australia Group 250 Camberwell Road, Camberwell VIC 3124	(p) 03 9811 2448 (f) 03 9811 2322 (m) 0419 544 271 peter.dart@pearson.com.au
Craig Anderson	RMIT	Director, University Library	RMIT Swanston Library, Building 8, level 5	(p) 03 9925 2077 craig.anderson@rmit.edu.au
Christine Mackenzie	Yarra Plenty Regional Library	Chief Executive Officer	Yarra Plenty Regional Library Bag 65 Bundoora VIC 3083	(p) 03 9401 0710 cmackenzie@yprl.vic.gov.au
Lynn Regan	Baulkham Hills Shire Council	Manager, Library Services	Baulkham Hills Shire Library PO Box 75 Castle Hill NSW 1765	(p) 02 9761 4511 LREGAN@bhsc.nsw.gov.au
Leona Jennings	Gold Coast City Council	Coordinator, Library Services Management Projects	PO Box 5042 GCMC Bundall QLD 9729	(p) 07 5581 5214 (m) 0414 180 304 ljennings@goldcoast.qld.gov.au
Janifer Gatenby	OCLC PICA	New Business Development Manager	Schipholweg 99 P.O.Box 876 2300 AW Leiden The Netherlands	(p) +31 71 524 6516 (m) +31 6 1710 2867 j.gatenby@oclcpica.org

Goals of the Working Group

- To articulate the issues involved
- To understand what is being done internationally
- To study the Danish Data Model proposal
- To isolate any unique Australian factors
- To provide feedback & proposal through IT-019
- To act as a resource within the library community

RFID for Libraries

Standards Australia Working Group IT-19-01-02

Proposal for a Library RFID Data Model

Standards Australia WG IT-19-01-02
Contact: Alan Butters (Chair)
Sybis
PO Box 52
Nunawading, Victoria 3131
Australia
Phone: +613 9878 6447
Fax: +613 9877 0748
Email: alan@sybis.com.au

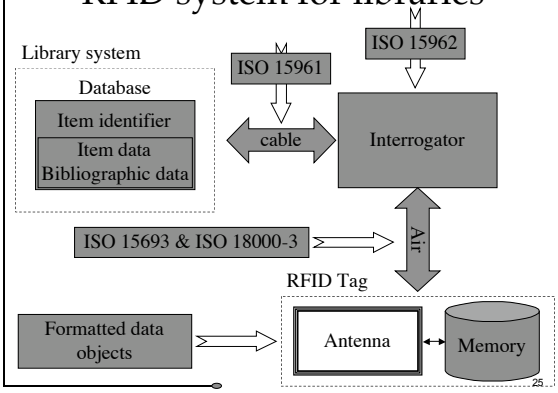
Status: Draft 06 September 2006

Conclusions & recommendations of the working group are about to be submitted to ISO

Working Group Proposal

- To create a data model with maximum flexibility
- To lay a foundation for full interoperability
- To present a realistic project for vendor implementation
- To use existing standards where possible
- To mandate the minimum of data
- To allow for future technology or market changes

RFID system for libraries



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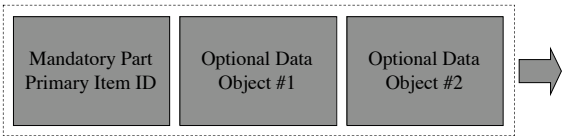
Australian Data Model

Multi part data model



All applications can read all parts

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Proposal advantages

- Creates a standardised Data Model
- Provides great flexibility for library customisation
- Provides a path towards open RFID systems
- Enables vendors to stage the implementation
- Mandates a minimum of data (item ID & security)
- Easily upgradeable - new objects may be added
- Allows for technology changes

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Next Steps

- ISO ballot close October 12th - International project
- Standards Australia to submit working group's doc.
- Standards Australia have nominated a National Expert
- First ISO meeting - Copenhagen December 1st 2006
- International standard for a data model to be developed
- Australia will decide if it is suitable for national use

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To obtain a copy of the handouts from this presentation visit www.sybis.com.au

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