Broadening Interoperability of Library Systems

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Changing Environment

• Users coming to the library indirectly
  – Via University portals, e-learning systems
• Library not first port of call for information
  – Google & Yahoo
• Custodial role – Institutional repository
• Increasing inter-dependence of dissimilar systems
Unmediated user requests

• Growing – NCC 40% loans, 20% copies
• Consortial borrowing profile of NCIP
• Important ingredients of unmediated
  – Reduction of refused requests
    • determination of rights = Directory
    • Actual availability = NCIP item lookup, Z39.50 or SRU
      holdings enquiry, hold
• http://www.niso.org/standards/standard_detail.cfm
  ?std_id=728
Nederlandse Catalogus
Centralus NCC ILLFigures

![Chart showing figures for ILL, End User, and DD for 2000, 2001, and 2002.]
Who’ll come a Waltzing Matilda with me?

‘Waltzing Matilda’ is Australia’s best known and much loved national song. It is recognised by every Australian, and has attained international status as the nation’s unofficial national anthem.

This song, however, has long been the subject of controversy; how and where did it originate, why are there different versions, what does it mean, and why has a song become an Australian icon?

This site aims to reveal some of the important primary and secondary sources that have informed the stories, myths and interpretations behind the song.

Enter this space to explore the original sources that tell the multiple stories of ‘Waltzing Matilda’
Levels of Inter-operability

• Full system inter-operability
  – Inter-operability of a whole process
    • e.g. Self checking loans (NCIP)
  – Process can extend over > one session
    • e.g. ILL ( ISO 10161), acquisitions (EDIFACT)
  – Maintenance of state
  – Symbiosis
Levels of Inter-operability

• Medium level
  – Z39.50 – session based – multiple tasks
  – Maintenance of state
  – Like systems Bibliographic system to Bibliographic system
  – Emergence of multi-protocol portals
Levels of Inter-operability

• Partial inter-operability
  – Single task only rather than session
    • One message; one response
  – SRW/SRU for enquiry
  – NCIP or LDAP for authentication
• Referral, linking to another system
  – openURL
New Environment; New Requirements

- Increase of lower level inter-operability
- Increasing inter-operability with dissimilar systems
- Need to interoperate with existing authentication and authorisation architectures
  - Shibboleth; Athens; A-Select
### Industry Standards as the Base

<table>
<thead>
<tr>
<th>• http &amp; ldap protocol</th>
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</thead>
<tbody>
<tr>
<td>• URL (http GET)</td>
</tr>
<tr>
<td>• Web services (http POST)</td>
</tr>
<tr>
<td>• XML data format with customised schemas</td>
</tr>
</tbody>
</table>

| • Protocols with their own TCP/IP port |
| • Stateful protocols |
| • EDIFACT & BER encoding, ISO 2709 |
Web Services

- Small services – not whole system, small parts
- Advertised in Directories, e.g. UDDI
- Described by WDSL
  - Systems can configure automatically
- Machine to machine; remote procedure call
Library oriented web services

- From portals, e-learning systems
  - Search and Retrieve
- For repositories
  - Dewey classification service
  - Metadata extraction
  - Authority control
  - Record enrichment
- For union catalogues & other user contributed databases, e.g. local history, genealogical databases
  - update
More examples

- Record converter, e.g. DC to MARC21
- Classification conversion
- Record validation
OCLC Evolving Web Services

- ILL – Replaces screen scraping
- OpenWorldCat “library locater”
- Bibliography Generator
- XISBN (FRBR)
  - For OP titles – find in a library (at work level)
- OCLC PICA /U Tilburg – P server project
  - Library user information for diverse systems
  - Middleware, “Portlet”
Open WorldCat

Gulbadan, portrait of a rose princess at the Mughal court
- By: Rumer Godden, Gulbadan, Begam, Babur, Emperor of Hindustan, Abu al-Fadl ibn Mubarak
- ISBN: 0570357551

ONLINE COMPUTER LIBR CTR, INC Services:
- Request item

Find libraries with the item
Enter a postal code, state, province or country 43212 Go

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Libraries in the ancient world
by Cassen, Lionel, 1914-


Call #: 027.09

# of Copies: 1

# of Holds: 0

Subject Topic: Libraries—History—To 400.

Description: xii, 177 p. : ill., maps ; 22 cm.

ISBN: 0300088084 (alk. paper)

Location | Status | Collection | Call No.
-------- | ------ | ---------- | --------
Main     | IN     | Adult Non-fiction | 027.09
Bringing Standards up to Date

• Don’t throw the baby out with the bath water
• Examples:
  – SRW / SRU
  – Update
– Started in 2001; Version 1.1 November 2003

– Simplified, modernized protocol, grown up Z39.50
  • Generic platform

– http://lcweb.loc.gov/z3950/agency/zing/srw/specifications.html
- Evolution of Z39.50; Inherits best bits
- More extensible than Z39.50
  - Access points, data schemas, extra data
  - Extendable operations
- Industry standard platform – HTTP; web services
  - Easier fit with other developments
  - Easier to find developers
  - Less to maintain and optimize
  - Fewer firewall problems
- Simplicity
  - People don’t need a diploma to start
- Performance
  - SRU re-uses data in cache – less load on server
- Cross Domain interoperability
  - Easier to promote
Keeps best bits of Z39.50

- Abstract indexes
  - DC
  - Bath profile mapped
- Precise searching
- Result set concept
- Improves Explain – machine configurable
  - really
- Extensibility
  - better: other info at message & record level
Zed’s best bits continued

• Multi-target searching
  – One user interface; one search
  – different platforms (UNIX, NT, IBM etc.)
  – different database systems (relational, network)
  – different database models
• Searching based on abstract concepts
  – “Title”, i.e. not database columns
• Can combine results from diverse dbases
  – Common record syntax (XML; in Z39.50 is ISO 2709)
• Reuse of results
• Facilitates follow on delivery – electronic & physical
Main Differences from Z39.50

- “Stateless” and “connection-less”, with continuity maintained by:
  - result set (server named)
  - Authentication token
- Only one database
- Only one record syntax & encoding – XML (not ASN.1)
- CQL (CCL inspired) not RPN
- Explain – XML document (eye & machine readable)
More Differences

• Search & present use same request mechanism

• Services:
  – Search
  – Sort (part of search request)
  – Scan (v. 1.1)
  – Explain
When to stay with Zed

- No problems with firewall
- System needs zero maintenance / enhancements / optimization
- System needs no new targets or clients
- System needs no external interoperation with dissimilar systems and portals
## Implementations

- **TEL**
- **OCLC PICA**
- **ONESAC**
- **BIBSYS**
- **LC**
- **OCLC – OR – IMS**

* Test server

- **Low cost**
- **Technically compatibility**
- **Compatibility with TEL**
- **Easier; want to promote**
- **YAZ facilitates**
- **Z39.50 not acceptable to IMS**
Tools

- Cheshire II – database
- Index Data – gateway to/from Z39.50
- LC – MARC to MARCXML
- CQL parsing tools
- Explain stylesheet
- SOAP tools are SRW tools
- Browsers are SRU tools
- Portlet?
• **SRW** WEB service
  – HTTP POST, SOAP wrapper, XML encoding, WSDL
  – Client / server (machine to machine)
  – For long query strings, complex queries
  – For protected servers

• **SRU**
  – HTTP GET (URL) with XSLT
  – thin client – (browser to machine) - Stylesheets
  – Full function but simple implementation & take up Simple
  – URLs for documents, browser bookmarks
    • Mozilla: saved URL, multiple search, tab presentations from multiple servers
Explain Response

<?xml version="1.0" encoding="iso-8859-1" ?>
- <explain id="OCLC PICA Test" authoritative="true">
  - <serverInfo protocol="sru" version="1.0">
    - <host>greta.pica.nl</host>
    - <port>1080</port>
    - <database>/sru/</database>
  </serverInfo>
  - <databaseInfo>
    - <title lang="en" primary="true">SRU Test Database</title>
    - <description lang="en" primary="true">OCLC PICA SRU Test Database</description>
    - <contact>j.gatenby@oclcpiac.org</contact>
    - <extent>Test database, contents may vary</extent>
  </databaseInfo>
  - <metaInfo>
    - <dateModified>27-03-2003</dateModified>
  </metaInfo>
- <indexInfo>
  - <indexSet name="pica" />
  - <index>
    - <title>Title (keywords)</title>
  </index>
</explain>
Simple Query

- http://greta.pica.nl:1080/sru/?query=dc.creator+%3d%22frank%22+and+dc.date+%3d%221986%22&recSchema=dc
ZING Update

For: simple update of a record from a result set, addition of holdings, addition of links, annotations, reviews, etc.

• UCP as Z39.50 extended service – too complicated to implement; so
  – Limit to online only; single record
  – Inherit from UCP:
    • Data structures, diagnostics, version control
    – Separate operations for insert, replace, delete
• new standard SRW inspired, interoperable
Why ZING update?

• Interactive update
  – Immediate diagnostics
  – Server supplied record identifier for later reference, synchronisation

• Batch based update FTP or OAI
  – Not immediate; jobs can be infrequent
  – Best suited to addition only
Standards Interoperability

- ISO TC46 SC4 WG7 Data elements
  - Consolidating 5 parts of ISO 8459
    - Mapping to protocol standards
    - Tool for the creation of standards
    - Database envisaged
  - Library Directory ISO 2146
    - Collection description
    - Service description
      - ILL & DD
      - Reference
    - Australian libraries gateway
Thank you.