Public Library Technologies: Challenges in times of Council Amalgamations

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Workshop for NSW Public Library Services
Explore the technologies able to help public libraries meet the challenges they face in fulfilling their missions. Describe the current state of the art in library technologies available today.

A view into the future. What is the outlook for libraries and what technologies are needed to meet these aspirations?
Library Technology Guides provides comprehensive and objective information surrounding the many different types of technology products and services used by libraries. It covers the organizations that develop and support library-oriented software and systems. The site offers extensive databases and document repositories to assist libraries as they consider new systems and is an essential resource for professionals in the field to stay current with new developments and trends. Relevant news items are posted daily on Twitter:

GuidePosts
Perspective and commentary by Marshall Breeding

Blog Archive

Come see Marshall Breeding at Computers in Libraries 2015

I'll be in Washington, DC soon for the annual Computers in Libraries conference, speaking on a variety of topics. I'm looking forward to seeing lots of friends and colleagues. Please feel free to track me down and introduce yourself or follow me through Twitter (@mbreeding). Here is my speaking schedule for the conference:


Preconference Workshop, Sunday April 26, 2015 9:00 AM – 12:00 Noon

Library collections today have become more complex than ever, with proportions of electronic and digital resources increasing relative to print and other physical materials. To manage these complex, multi-format collections...
Library Technology Industry Reports

**American Libraries**
- 2014: Strategic Competition and Cooperation
- 2015: Operationalizing Innovation
- 2016: Power Plays

**Library Journal**
- 2013: Rush to Innovate
- 2012: Agents of Change
- 2011: New Frontier
- 2010: New Models, Core Systems
- 2009: Investing in the Future
- 2008: Opportunity out of turmoil
- 2007: An industry redefined
- 2006: Reshuffling the deck
- 2005: Gradual evolution
- 2004: Migration down, innovation up
- 2003: The competition heats up
- 2002: Capturing the migrating customer
Library Systems Report 2016

“Power Plays”

https://americanlibrariesmagazine.org/2016/05/02/library-systems-report-2016/
International Perceptions Report

- http://librarytechnology.org/perceptions/2015/
- Based on a series of annual surveys addressed to libraries
- Probes levels of satisfaction with their automation systems
- 3,453 responses to 2015 survey
- 1,050 narrative comments
- Conducted since 2007: view trends over time
- Data collected Nov-Dec, published early the following year
- Linked to entries in libraries.org
Perspective

- Increasing divergence among library types regarding requirements for supporting technical infrastructure: Academic, Public, National, School, Special
- Approaches to library service vary according to international region
- Broad range of economic capacity or support across countries and regions and even within some countries. (especially United States)
Each library type distinctive:

- Academic libraries: ever increasing proportions of electronic content, print diminishing rapidly
- National libraries: large unique collections of historical and cultural materials
- Public Libraries: Mostly print collections to meet the reading and research needs of diverse patrons
Size matters

- Large libraries tend to have more resources and better access to technologies
- Small libraries are not well served by current technical and business environment
- Important to focus on ways to make collections, electronic content, and technology available to under-resourced libraries
The Minister has announced that he will proceed with the formation of the following councils:

- **Armidale Regional Council**: The merger of Armidale Dumaesq and Guyra Shire councils
- **Bayside Council**: The merger of City of Botany Bay and Rockdale City councils
- **Canterbury-Bankstown Council**: The merger of Bankstown City and Canterbury City councils
- **Central Coast Council**: The merger of Gosford City and Wyong Shire councils
- **City of Parramatta Council**: The merger of Parramatta City*, The Hills Shire*, Auburn City*, Holroyd City* and Hornsby Shire* councils
- **Cumberland Council**: The merger of Parramatta City*, Auburn City* and Holroyd City* councils
- **Edward River Council**: The merger of Conargo Shire and Deniliquin councils
- **Federation Council**: The merger of Corowa Shire and Urana Shire councils
- **Georges River Council**: The merger of Hurstville City and Kogarah City councils
- **Cootamundra-Gundagai Regional Council**: The merger of Cootamundra Shire and Gundagai Shire councils
- **Hilltops Council**: The merger of Boorowa, Harden Shire and Young Shire councils
- **Inner West Council**: The merger of Ashfield, Leichhardt Municipal and Marrickville councils
- **Mid-Coast Council**: The merger of Gloucester Shire, Great Lakes and Greater Taree City councils
- **Murray River Council**: The merger of Murray Shire and Wakool Shire councils
- **Murrumbidgee Council**: The merger of Jerilderie Shire and Murrumbidgee Shire councils
- **Northern Beaches Council**: The merger of Manly, Pittwater and Warringah councils
- **Queanbeyan-Palerang Regional Council**: The merger of Palerang and Queanbeyan City councils
- **Snowy Monaro Regional Council**: The merger of Bombala, Cooma-Monaro Shire and Snowy River Shire councils
- **Snowy Valleys Council**: The merger of Tumbarumba Shire and Tumut Shire councils
- **Dubbo Regional Council**: The merger of Dubbo City and Wellington councils
Amalgamation of Councils

- Many mergers involve incumbent councils with different library management systems
- Interim strategy to operate multiple systems while selecting new
- Need to assess strategic priorities and find best fit
Organizational consolidation

- Stronger Councils is an example

- Libraries can also gain more impact as they cooperate

- Even the amalgamated councils are well below the potential cooperative levels of libraries.
Considerations beyond current council boundaries

- Possibilities of consortia that span more broadly than new council arrangements
- Full range of options between state-wide one-card systems (South Australia) to individual council implementations
- Current round of forced migrations provide an opportunity to consider other strategies
Consortial benefits

- Larger implementations usually mean more leverage with LMS vendors
- Less burden on library or council IT departments to implement and maintain LMS
- General trend toward collaborative automation infrastructure
- Larger aggregate collections with more resources for customers
Ability to review strategic priorities.

- Management and Circulation of print resources is an essential service
- Very little differentiation among competing LMS products
- Commoditizing print management enables libraries to focus on other services with more impact
Changing models of Resource Sharing
Integrated Library System

Model: Multi-branch Independent Library System

Patrons use Circulation features to request items from other branches.

Floating Collections may reduce workload for Inter-branch transfers.
Consortial Resource Sharing System

Discovery and Request Management Routines

Bibliographic Database

Inter-System Communications

Staff Fulfillment Tools

Resource Sharing Application

NCIP  SIP  ISO  ILL  Z39.50

Library System A

Library System B

Library System C

Library System D

Library System E

Library System F
Model: Multiple independent libraries in a Consortium Share an ILS

Shared Consortial ILS

ILS configured To support Direct consortial Borrowing through Circulation Module
Levels of Collaboration

- **Buying club**: libraries agree to use the same system
  - Price leverage, similar training, etc
  - Each collection managed in a separate Local Zone
  - Can implement unified discovery

- **System-wide infrastructure**
  - Most collections managed in Network Zone
  - Collaborative collection development
  - More efficient direct consortial borrowing

- **Global resource sharing**
  - Manage collections in Community Zone
  - Similar to OCLC WorldShare Management System model
Benefits of shared infrastructure

- Increased cooperation and resource sharing
- Collaborative collection management
- Lower costs per institution
- Greater universe of content readily available to patrons
- Avoid add-on components for union catalog and resource requests and routing
Increased interest in shared infrastructure

- Single-institution ILS may not be the most efficient automation model
- Increased cooperation and resource sharing
- Collaborative collection management
- Lower costs per institution
- Greater universe of content readily available to patrons
- Avoid add-on components for union catalog and resource requests and routing
Shared infrastructure projects (academic)

- Orbis Cascade
- WHELF (Wales)
- JULAC (Hong Kong)
- California State University
- University System of Georgia
- Complete Florida Plus Program
- University of Wisconsin system
Shared infrastructure Projects (Public)

- Ireland
- Iceland (all types)
- Slovenia (all types)
- Denmark
- Chile
- South Australia
- Illinois Heartland (~600 libraries)
Key Trends in Library Technology
Web-based Interfaces

- Deliver all functionality for staff and patrons through a Web browser
- Eliminate the need for software to be installed on computers of library service desks and those use by library personnel
- Greatly reduces the difficulty of maintaining systems
Hosted Services

- Server software hosted by vendor or other provider
- Eliminates servers and software managed within the library
- Allows a library’s technical staff to concentrate on creating or deploying services with more impact
Emphasis on Mobile

- Ever increasing proportions of access by smartphones
- Sales of desktop and laptop computers falling
- Essential for library services to be mobile-friendly:
  - Mobile Apps
  - Responsive Web Design
Multi-tenant Platforms

- Globally distributed environments supporting multiple institutional implementations
- **Example: Library Services Platforms**
  - Currently oriented to academic libraries
  - Ex Libris Alma; OCLC WorldShare Management Services
- Expected architecture for any newly-developed software
- Multi-tenant platforms not yet created for public libraries
Tech Infrastructure Investments

- Web-based services minimize need for locally owned computers
- Computer equipment becomes obsolete quickly
- Invest in fast and reliable Internet connectivity
  - Benefits libraries
  - Benefits the community
Open Source vs Proprietary Software

- Library software available under both models
- Proprietary software adopted in libraries with more reliable budgets
- Open source software very popular in Latin America
- Commercial support of open source represents a growing portion of ILS implementations in the US
Public Library Perspective
Key Issues for Public Libraries

- Ongoing reliance on print collections
  - Majority of collection budgets allocated for print
  - Minority on electronic materials
- Circulation of physical materials continues at vigorous levels
- Steady if not rising circulation statistics
- New services for e-book lending
Public Library Trends

- Operational strategies distinct from academics
- Vigorous lending services of physical materials
- Emphasis on customer engagement
- Lending of downloadable e-books and audiobooks; streaming of digital content
- Requirements for organically integrated environments which promote the brand and services of the library
Evolutionary Development

- Observation that public libraries continue to rely on evolved ILS products
- Lack of systems built anew for public libraries
Reliance on Integrated Library Systems

- Evolution of traditional ILS viable for public libraries
- Library services platforms not currently optimized for public library business needs
- Public libraries seek more modern technology
  - Many moving to vendor-hosted implementations
  - Interest in fully web-based interfaces
  - Concern for support of high volume transactions
ILS reigns in public libraries

- No re-designed platforms for public libraries
  - Axiell recently announced a library services platform for public libraries (initially for France and Norway): Queria
- ILS model remains in place
- Evolving toward modern platforms
- Integration of e-book functionality
Public Library ILS expectations

- Strong functionality for circulation
  - Far beyond check-outs and returns
  - Maximize the impact of the collection
  - A single collection distributed among multiple facilities
  - Floating collections
  - Manage access to high-demand items
Two vectors of Technology

- Enhance experience within physical facilities
- Deliver library services and collections virtually
- Common goals of customer delight and engagement
Emphasis on Digital Lending Services

- Most public libraries offer some type of e-book lending service
- Ongoing reliance on content provided by OverDrive, Recorded Books, Bibliotheca, Odilo and others
- Interest in library centered e-book lending solutions
  - NYPL: SimplyE App (created as part of the Library Simplified initiative)
Support for Service Delivery

- Better tools for all aspects of public service
  - Circulation, Reference, Interlibrary Loan, etc
- Follow a customer relationship management approach
- Ability to measure, assess, and improve service quality
- Tailored to the profile of the patron
Maximize use of Physical Collections

- Provide efficient support for lending materials
- Find the right balance of high-tech versus personal service
- Balance depends on cultural and economic context
Public Library Discovery

- Beyond simple search and retrieval
- Multiple discovery scenarios
  - Serious research: find all relevant materials on a topic
  - Serendipity: Help patrons come across interesting items to read
  - Virtual experience of browsing library shelves
    - Random points of entry
    - Related materials gathered together
Global Public Library LMS Vendors

- Innovative Interfaces: Sierra, Polaris, VTLS (international)
- SirsiDynix: Symphony or Horizon + BLUEcloud (international)
- Civica (international, esp. Australia, Asia, UK)
- Global academic library vendors: ProQuest/Ex Libris, OCLC
Regional / Local Public Library LMS Vendors

- The Library Corporation (US, Singapore)
- Axiell (Scandinavia, UK)
- Baratz (Spain, Latin America)
- Infor (International, esp Europe, Canada)
- Aurora Information Technologies (Australia)
- Insight Informatics (Australia)
Public Library Discovery Strategies

- Emphasis on engagement and user experience
- Key providers
  - BiblioCommons: BiblioCore, BiblioCMS
  - AIT: Montage
  - Axiell: Arena
  - Infor: Iguana
  - Innovative: Encore
  - SirsiDynix: Enterprise
The Virtual Branch

- More than a Web site, but a vehicle for remote delivery of services and fulfillment of content

- Requirements for organically integrated environments which promote the brand and services of the library
Emphasis on Digital Lending Services

- Most public libraries offer some type of e-book lending service
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E-book integration

1. link to provider’s platform
2. Load bibliographic records in catalog
3. API integration to enable full discovery, search, and download from library catalog
4. Full library-based digital lending platform
Connecting e-books to readers

Authors

Publishers

E-Book Services

Many others...

amazon.com

Readers
E-Book Integration Model

Search:

Library Catalog

Search Results

ILS Data

Web Site Content

Digital Collections

Local E-book Repository

Aggregated Content packages

Index

Authentication

Checkout - Download

Discovery

External E-Book Lending Service

OverDrive

3M™ Cloud Library
Support for small libraries

- Significant differences in tech needs for small libraries
- Most lack resources for full range of technology
- Pricing of commercial systems does not scale downward
- Cooperative networks can help elevate capacity
Public Libraries will Thrive

- No expectation that public libraries will eventually decline
- Shape of library collections will evolve
- Public libraries continue to be loved by their communities
- Funding will see peaks and valleys, but communities will not tolerate the demise of libraries
Missions must accommodate societal needs:

- Leisure reading,
- Education
- Promotion of Literacy
- Life skills: especially technology
- Points of creativity and collaboration
- Moderate the impact of poverty and societal disruptions
Future of public library Technology

- Fulfillment of many of the emerging tech trends in play today
- Modernized platforms that go beyond the current ILS products
- Designed for the Web, not ported from earlier architectures
- More emphasis on user experience
Personalized Services

- More sophisticated approach to patron services
- Enrich patron profiles many types of data which can become the basis of customized services
- Anticipate needs based on previous interactions
- Collect and leverage use data (Opt-in?)
- Recognizing that patrons have multiple simultaneous roles and interests
Integration of collections and services

- Break out of the mode of the traditional catalog
- Scope of discovery with broader scope:
  - Physical materials
  - Electronic content
  - Programs and services
  - Community content
Incorporation of Social concepts

- Bring some of the paradigm of social networks to library interfaces
- Patrons guide each other to items of interest
- Create and share reading lists
- Concern with protecting privacy
Future of e-book lending

- Ever improving technologies for discovery, lending, and fulfillment of e-books, audiobooks and other digital content
- Optimistic about better business terms between publishers and libraries
- Library-managed e-book platforms will moderate position of vendor-provided platforms
Future of ILS in Public Libraries

- Ongoing mix of proprietary and open source options
- Number of proprietary systems will narrow
  - New platforms will emerge to compete with current slate of evolved legacy systems
  - Some legacy systems will see dramatic improvement
  - Costs unlikely to drop: challenge for libraries with limited funds
- Sophistication of open source systems will increase incrementally
Future of public library discovery

- Online catalogs will morph into discovery services
- Challenge to carry forward advanced online catalog features into new discovery paradigm
- Discovery services will morph into comprehensive portals
- More cohesive environment not fragmented into traditional service interfaces
Future of in-library technologies

- More efficient circulation and fulfillment
- More sophisticated self-service:
  - Comprehensive customer service kiosk
  - Convergence of physical and e-book services
- Technologies to gather data about use to assess and improve services and design spaces
- Beacons and other mechanisms to feature services
Functionality Trends
Legacy: Fragmented Environment

- Integrated Library System for management of (mostly) print
- Duplicative financial systems between library and parent institution
- Electronic Resource Management
- Events Management
- Web Content Management System
- A-Z e-journal lists and other finding aids
- Interlibrary loan (borrowing and lending)
- Digital Collections Management platforms (CONTENTdm, DigiTool, etc.)
- Separate systems for archival materials and special collections
- Discovery-layer services for broader access to library collections
- No effective integration services / interoperability among disconnected systems, non-aligned metadata schemes
Cycles of fragmentation > unification

- Early Phase: Modular automation
- Integrated Library Systems
- Proliferation of systems to manage electronic resources and digital collections
- Current unification phase: library services platforms bring together print and electronic resource management
- Portal products bring together discovery and web site
- Next phase? Bring archival and digital assets under common management platform
Library Services Platform

- **Library**-specific software. Technical infrastructure to help libraries automate their internal operations, manage collections, fulfillment requests, and deliver services.

- **Services**
  - Services-oriented architecture
  - Exposes Web services and other API’s
  - Facilitates the services libraries offer to their users

- **Platform**
  - General infrastructure for library automation
  - Consistent with the concept of Platform as a Service
  - Library programmers address the APIs of the platform to extend functionality, create connections with other systems, dynamically interact with data
Library Services Platforms – Functional

- Manages electronic and print formats of materials
- Replaces multiple incumbent products
- Extensive Metadata Management
- Multiple procurement workflows
- Knowledgebases
- Built-in collection analytics
- Decision support for collection development
Integrated Discovery?

- The concept of Library Services Platform does not necessarily encompass discovery or patron-facing interfaces
- Focuses on Resource Management
- Some Library Services bundle discovery service with built-in integration
- Many libraries prefer providing discovery separately
Library Services Platforms – Technical

- Beyond Client/Server Computing
- Multi-tenant platforms
- Web-based interfaces
- Services-oriented architecture
- Exposes APIs for extensibility and interoperability
- Interoperable
Actionable analytics

- Previous generation of ILS offered reports
- Libraries now expect sophisticated analytics
- Make data-driven collection decisions
  - Anticipate interest and use levels
  - Cost per use
## Resource Management Models

<table>
<thead>
<tr>
<th>Category</th>
<th>Integrated Library System</th>
<th>Progressive integrated library System</th>
<th>Library Services Platform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources managed</td>
<td>Physical</td>
<td>Print, electronic</td>
<td>Electronic, Physical</td>
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<td>Technology platform</td>
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<td>Multi-tenant SaaS</td>
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<td>e-holdings, bibliographic</td>
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<td>Patron interfaces</td>
<td>Browser-based</td>
<td>Browser-based</td>
<td>Browser-based</td>
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<td>Staff interfaces</td>
<td>Graphical Desktop (Java Swing, Windows, Mac OS)</td>
<td>Browser-based</td>
<td>Browser-based</td>
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<td>Procurement models</td>
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<td>Saas Only</td>
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<td>Interoperability</td>
<td>Batch transfer, proprietary API</td>
<td>Batch transfer, RESTful APIs,</td>
<td>APIs (mostly RESTful)</td>
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<td>Products</td>
<td>SirsiDynix Symphony, Millennium, Polaris</td>
<td>Sierra, SirsiDynix Symphony/BLUEcloud, Polaris, Apollo</td>
<td>WorldShare Management Services, Alma, ProQuest Intota, Sierra, Kuali OLE</td>
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<td>Development strategy</td>
<td>Brownfield</td>
<td>Brownfield</td>
<td>Brownfield</td>
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</table>
Resource Discovery Trends
Web-scale Index-based Discovery
(2009- present)

Search: □

Search Results

Usage-generated Data
Customer Profile

Consolidated Index

Pre-built harvesting and indexing

ILS Data
Digital Collections
Web Site Content
Institutional Repositories
Aggregated Content packages
Open Access
E-Journals
Reference Sources
Bento Box Discovery Model

Search: __________

VuFind / Blacklight

Search Results

Consolidated Index

Pre-built harvesting and indexing

Aggregated Content packages

Open Access

E-Journals

ILS Data

Web Site Content

Digital Collections

Institutional Repositories
Trends in Open Source

- Open source now a routine segment of strategic library automation

- Implementation models:
  - Commercial support
  - Independent with community support
  - Support through governmental organizations

- Development models
  - Mostly centralized within a commercial community
  - Distributed community
Open source ILS available since 1999
- Continuous development
- Widespread deployment in all regions and library types
- Small to mid-sized libraries; some large implementations
Evergreen

- Open source ILS originally developed for PINES consortium in Georgia
- Optimized for large consortia comprised of small to mid-sized public libraries
- Mostly implemented within United States and Canada
FOLIO (Future of the library is Open)

- New open source library services platform sponsored by EBSCO
- Early in development phase; developer’s framework expected to be available in October 2016
- Taps into community created via Kuali OLE
VuFind

- Open source discovery interface
- Based on Apache SOLR with PHP programming framework
- Relevancy-based retrieval, faceted navigation
- Widespread implementations globally
- Several variants and customizations
Blacklight

- Open source discovery interface
- Based on Apache SOLR and Ruby on Rails programming framework
- Relevancy based retrieval, faceted navigation
- Allied with Project Hydra
- More tightly-knit development community
Observations and Conclusions

- Narrowing Budgets drive need for Strategic Tech
- Industry consolidation has narrowed Product Options
- Remaining options increasingly powerful
- Targeted Innovation: Libraries must focus on technology services with the most customer impact
Public Library Shared Automation

- South Australia (SirsiDynix Symphony)
- Northern Territory: OCLC WorldShare
- New Zealand (SirsiDynix Symphony)
- Ireland: (Innovative Sierra)
Vendors
NSW LMS Market share

ILS implementations in Public Libraries in New South Wales by Library Facilities:

- Libero -- 151 (34%)
- Spydus -- 137 (31%)
- Symphony -- 43 (10%)
- Amlib -- 38 (9%)
- Aurora -- 30 (7%)
- Horizon -- 17 (4%)
- Sierra -- 9 (2%)
- Liberty3 -- 8 (2%)
- Millennium -- 5 (1%)
- WorldShare Management Services -- 2 (0%)
- Bookmark Library Management System -- 1...
- None -- 1 (0%)

LMS Selection Priorities

- Most systems continue to be viable and see ongoing development
- Points of differentiation are subtle in regard to traditional functionality
- Look for strengths in other strategic priorities
  - Digital lending
  - Other virtual services
  - Strategic cooperative arrangements
SirsiDynix

- Global LMS Vendor
  - Strong presence in Australia / NZ
  - All types of libraries: public, academic, special
- Owned by ICV private equity firm
- Key Products
  - Symphony
  - Horizon
  - BLUEcloud
Symphony

Satisfaction Scores by Year for Symphony

- General Satisfaction
- Company
- Loyalty
- Support

<table>
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<tr>
<th>Year</th>
<th>General Satisfaction</th>
<th>Company</th>
<th>Loyalty</th>
<th>Support</th>
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<td>2007</td>
<td>7.50 (288)</td>
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<tr>
<td>2015</td>
<td>(459)</td>
<td></td>
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</table>
Aurora Information Technology

- Australian LMS Vendor
- Key Products
  - Aurora
  - Montage
Innovative

- Global Vendor
  - All types of libraries: public, academic, special
- Owned by to private equity firms: HGGC and JMI
- Key Products
  - Sierra
    - Millennium (legacy LMS)
  - Polaris
  - Encore
Satisfaction Scores by Year for Sierra

- General Satisfaction
- Company
- Loyalty
- Support

Yearly scores from 2012 to 2015, with data points for each year and the number of responses.
Millennium

Satisfaction Scores by Year for Millennium

- General Satisfaction
- Company
- Loyalty
- Support

Year:
- 2007 (329)
- 2008 (302)
- 2009 (350)
- 2010 (395)
- 2011 (458)
- 2012 (399)
- 2013 (254)
- 2014 (216)
- 2015 (178)
Insight Informatics

- Regional vendor
- Key Products
  - Libero
Civica

- Global vendor of local government tech
  - LMS varies by region: UK, Asia, Australia/NZ
- Mostly public libraries
- Key products
  - Spydus 10 (and previous versions)
OCLC

- Global non-profit library services organization

- Key Products
  - WorldShare Management Services (mostly academic so far)
  - Amlib: legacy: public, schools
Amlib

Satisfaction Scores by Year for Amlib

- General Satisfaction
- Company
- Loyalty
- Support

Year: 2009 (7), 2010 (10), 2011 (12), 2012 (22), 2013 (16), 2014 (15), 2015 (20)
Tech for the Physical Library
Many patrons prefer self-service options

Enables the library to reallocate personnel

Pro: Shift from routine tasks at circulation desk to more meaningful services

Con: Missed opportunities for positive interactions with patrons

A good fit for libraries with high personnel costs with
Role of RFID?

- More functionality than barcodes
- Tags more expensive
- Appropriate for very high volume operations
- Additional layer of automation to increase efficiency and reduce human resources
Sorting Automated Material Handling

- Especially oriented to very high-volume libraries
- Reduces manual involvement with check-ins and sorting
- Can use Barcodes or RFID
- Must assess cost effectiveness
Automated return and sorting
Questions and discussion