

## Measure, Assess, Improve, Repeat: Using Library Performance Metrics

[www.niso.org/news/events/2010/performancemetrics](http://www.niso.org/news/events/2010/performancemetrics)



- **Introduction**

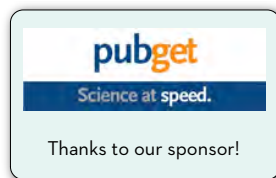
- **Todd Carpenter**, Managing Director, NISO

- **Applying Performance Metrics in Libraries: Current Use**

- **Steve Hiller**, Director, Assessment and Planning, University of Washington Libraries

- **Looking Ahead: The Future of Performance Metrics**

- **Martha Kyrillidou**, Senior Director, Statistics and Service Quality Programs, Association of Research Libraries (ARL)



NISO Webinar • September 8, 2010



## NISO 2010 Events

<http://www.niso.org/news/events/2010/>

- September Two-Part Webinar: Measuring Use, Assessing Success
  - September 8: Measure, Assess, Improve, Repeat: Using Library Performance Metrics
  - September 15: Count Me In: Measuring Individual Item Usage
- September 13 (Teleconference): NISO Open Teleconference
- October 7 (NISO Forum - Chicago, IL): E-Resource Management: From Start to Finish (and Back Again)
- October 13 (Webinar): It's Only as Good as the Metadata: Improving OpenURL and Knowledgebase Quality
- October 18 (Teleconference): I2 (Institutional Identifiers) Working Group Update
- November 8 (Teleconference): DAISY Revision Working Group Update
- November 10 (Webinar): The Case of the Disappearing Journal: Solving the Title Transfer and Online Display Mystery
- December 8 (Webinar): Unprecedented Interaction: Providing Accessibility for the Disabled
- December 13 (Teleconference): IOTA (Improving OpenURLs Through Analytics) Working Group Update

NISO Webinar • September 8, 2010

## Applying Performance Metrics in Libraries: Current Use

**Steve Hiller**  
University of Washington Libraries

NISO Webinar: Measure, Assess, Improve, Repeat:  
Using Library Performance Metrics  
September 8, 2010

## Performance Measurement in Libraries

“Measuring performance is an exercise in measuring the past. It is the use of that data to plan an improved future that is all important.”

– Peter Brophy (2006)

What is easy to measure is not necessarily what is desirable to measure.”

– Martha Kyrillidou (1998)

## Performance Metrics Definitions

Metrics and measures are often used interchangeably

- **Inputs** are resources which contribute to development and delivery of programs and services
- **Outputs** are resources & services produced and their use
- **Processes** are activities that turn inputs into outputs
- **Outcomes** are the effect of the library on the individual or the community
- **Performance indicators/measures** are quantified statements used to evaluate the performance of the library in achieving its objectives
- **Benchmarking** is a measurable performance goal which is a standard of progress for success (or best practices)

## Performance Measurement Drivers

- Accountability (including academic accreditation)
- Advocacy
- Rapid changes in socio-info-techno environments
- Budgetary pressures
- Improvement
- Comparisons

## Performance Metrics and Indicators

- Identify most important measurable indicators of library organizational performance to:
  - Library, user community, stakeholders
- Criteria for performance indicators should be: informative, reliable, valid, appropriate, practical, comparable (ISO 11620)
- Performance metrics and indicators should relate to institutional and library mission, goals and outcomes
- Performance metrics are usually quantifiable
- Performance metrics need context and meaning such as change over time, comparisons with others, other trends

## A Few Good Resources to Consult on Performance Measurement and Metrics

- Brophy, Peter, *Measuring Library Performance: Principles and Techniques* (2006)
- Dugan R., Hernon P., & Nitecki D., *Viewing Library Metrics from Different Perspectives* (2009)
- Mathews, Joseph R., *The Evaluation and Measurement of Library Services* (2007)
- Poll, R. and te Boekhorst, P., *Measuring Quality* (2007)
- Standards and Definitions
  - NISO Z39.7, ISO 11620, COUNTER, ARL, NCES

## **NISO Standard Z39.7 (2004)**

**Information Services and Use: Metrics & statistics for libraries and information providers — Data Dictionary**

[www.niso.org/dictionary](http://www.niso.org/dictionary)

- Reporting unit and primary target population
- Human resources
- Collections
- Infrastructure
- Finances
- Services
- Appendices includes methods of measurement and measuring use of electronic library services

## ***Measuring Quality: Performance Measurement in Libraries***

**40 Performance Indicators. Each includes background, definition, aims, methods, interpretation, use and examples.**

### **Use Indicators**

- |  |  |
|--|--|
| • Market penetration                         | • Collection use (turnover)                  |
| • User satisfaction                          | • % stock not used                           |
| • Library visits per capita                  | • Loans per capita                           |
| • Seat occupancy rate                        | • % loans to external users                  |
| • Number content units downloaded per capita | • Attendance at training sessions per capita |

## **Library Metrics: Inputs**

**Focus on how big/how much**

- Budgets (staff, collections, operations)
- Staff numbers
- Collections sizes
- Facilities
- Other related infrastructure (hours, seats, computers)
- Size of user communities and programs
- Ratios (staff per student)

**ARL “Investment Index” measures inputs related to expenditures and staff numbers**

## **Library Metrics: Outputs**

**Focus on usage**

- Collections (print, electronic, ILL)
- Reference/information services
- Facilities (gate counts)
- Instruction sessions
- Discovery and retrieval
- Other Web sessions
- Ratios (circulation per faculty)

**May indicate if “inputs” are used, but doesn’t measure user impacts/outcomes**

## Library Metrics: Processes

- Time/Efficiency (e.g., time to catalog a book)
- Costs/Economy (cost per article download )
- Quality/Accuracy
- Quantity/Workload
- Infrastructure measures (facilities, computing)

**Covers conversion of inputs into outputs and used for accountability and budget**

## Two Major Trends in Library Assessment and Performance Measurement Since 1995

### Customer-centered library

- All services and activities are viewed through the eyes of the customers
- Customers determine quality
- Library services/resources add value to the customer

### Performance measurement

- Move from inputs/outputs to processes/outcomes
- More extensive range of data sources; systems generated data
- Standardized definitions
- Greater use of benchmarking
- Ties to strategic planning, accountability, advocacy

**Focus on users has led to outcomes-based metrics**

## Enabled by Better Methods, Tools, Data, and Analysis

- Qualitative methods such as focus groups, interviews, user-centered design, and other socio-based approaches
- New standardized library assessment tools such as LibQUAL+®
- Large data sets with standardized data definitions
- Better data analysis and presentation tools emerging
- Stronger institutional commitment to assessment, accountability and performance metrics

## Benchmarking

**Benchmarking is concerned with use of best practices within and between organizations. Often done with peer libraries using input and output data from:**

- Salaries
- Staffing
- Budgets
- Collections
- Services
- Facilities

May express as ratios such as librarians per student, book expenditures per faculty, seats per student etc. Can also set service expectations for users.

## Dashboard Approach: Key Metrics/Measures as Indicators of Organizational Performance

### London School of Economics Library

#### Key Metrics

- IT system availability
- New publication availability
- Queuing at help desk
- Document retrieval from main storage area

#### Latest Month's Performance

- 100% of systems returned to full service after one day
- 100% of daily/weekly receipts available within 2 days
- Average queuing time 3 minutes
- Average retrieval time 15 minutes

Metrics and performance shown on library Web page:  
<http://www.lse.ac.uk/library/about/SLDs/SLDsHome.htm>

## Integrating Metrics with Strategy

A strategy without measures is just a wish and measures that are not aligned with strategy are a waste of time

Joseph R. Matthews (2008)

Some examples:

- Outcomes-based metrics
- Strategic planning
- Organizational performance models such as the Balanced Scorecard

## Performance Metrics: Outcomes

What have library services/programs enabled individuals and communities to do? Focus points are:

- Satisfaction (surveys)
- Application of new skill/ability
- Change in behavior
- Identifying where value is added (e.g., higher productivity)

**Outcome metrics and measures are usually tied to establishing objectives and criteria for success.**

## Example: Learning Outcomes Assessment

**Figure 1:**  
**Assessment Cycle**



Adapted by Gilchrist, 2005 from Pierce College Accreditation/Assessment Teams, Lakewood and Puyallup, Washington, 2005

## Strategic Planning Be S.M.A.R.T. in Writing Goals/Objectives

- **Specific**
  - the desired outcome or result is clearly defined
- **Measurable**
  - accomplishment can be measured and tracked
- **Attainable**
  - achievable, goal is challenging but realistic
- **Relevant**
  - results-oriented, in line with strategic directions and operations
- **Timely**
  - deadlines are set for accomplishment

7\*

## University of Connecticut Strategic Plan Goal 3: Research, Scholarship, and Creative Activity

- Actively support faculty, student and staff research, scholarship and creative endeavors through quality instruction, liaison collaboration, collections, and information access.
- Strategies
  - Facilitate a collaborative and productive research process
  - Develop resources to meet the 21st century needs of our researchers
  - Enhance access to and awareness of research & publication at UConn
  - Develop intuitive, user-centered access to library resources and services
- Series of actions/objectives under each strategy

## UConn Library Metrics for Strategic Goal of Research, Scholarship and Productivity

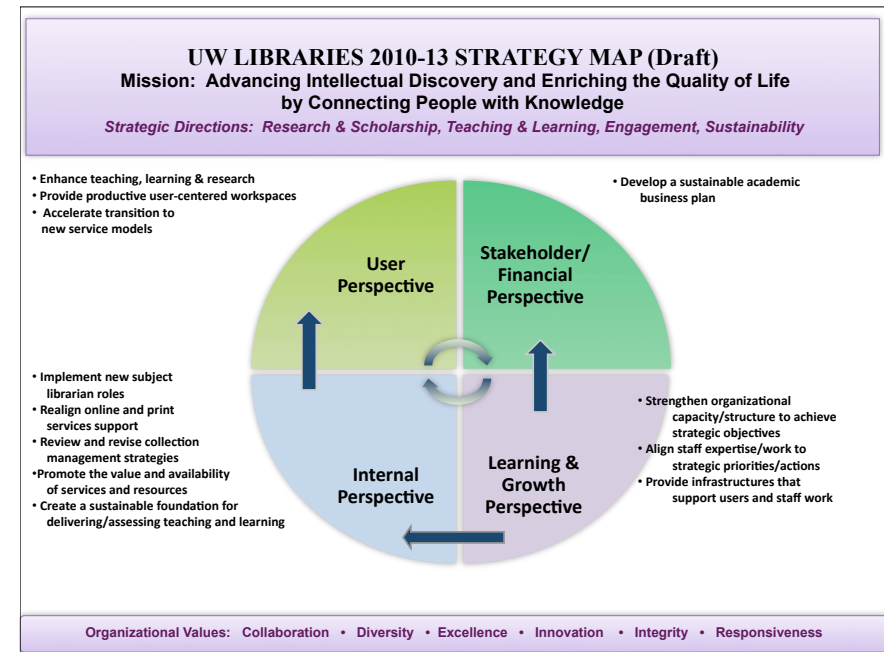
Metric: <b>Input, Output, Outcome, Process</b>	Baseline	2014 Goal
Items in Digital Commons@UConn.edu	4800	7200
Project partnerships between library and other campus, government, private entities	10	14
Increase number of e-journals accessible to users by 4%	17,300	18,000
Increase number of objects digitized by 5% per year	65,800	69,100
Increase usage stats for digitized objects by 10% per year	573,167	630,480
Increase student and faculty use of the liaison program	50%	70%
Increase % of budget spent on digital format resources	80%	90%
Annual number of research consultations by liaisons	1,000	2000
Perceived level of service quality in ranking of “print or electronic journal collections needed” (LibQUAL+® IC-8)	7.21	7.5

## Organizational Performance Models: The Balanced Scorecard

- A model for measuring organizational performance developed in the 1990’s by Kaplan and Norton that:
  - Focuses on key objectives
  - Helps ensure a proper balance between objectives
  - Organizes multiple statistics into an intelligible framework
- Clarifies and communicates the organization’s vision
- Provides a structured metrics framework for aligning assessment with strategic priorities and evaluating progress
- ARL Library Scorecard Pilot in 2009/10 with 4 libraries

## Balanced Scorecard: Perspectives, Objectives, Measures and Targets

- Four perspectives: Customer; Stakeholder/Financial; Internal Processes; Learning and Growth
- Strategy Map identifies key objectives for each of the four perspectives
- Metrics developed to measure progress on achieving objectives
- Targets provide context tying metrics to strategy and articulate the level of success in achieving objectives
- Targets should be realistic but represent a stretch



## University Of Washington Draft Scorecard Examples

### Teaching and Learning

#### • OBJECTIVE

Strengthen library role in undergraduate learning

#### • MEASURE

Percentage of academic programs that have formal library involvement

#### • TARGET

Library instructions sessions given in 70% of academic programs last year

#### • RESULTS (2008-09)

56%

### New subject librarian roles

#### • OBJECTIVE

Librarian liaisons play an active role visible role in academic programs

#### • MEASURE

Visibility and effectiveness of librarian liaisons in Libraries Triennial Survey

#### • TARGET

60% of faculty and graduate students rate satisfaction with librarian liaison; average rating of at least 4.25/5

#### • RESULTS (2010)

Faculty: 62%; 4.37

Grad Students: 59%; 4.23

## University of Virginia Balanced Scorecard<sup>(2007)</sup>: Customer Perspective Objective/Target

**Objective: Easy Access to  
Superb Info & Resources**

**Measure/Target: Circulation of  
New Monographs**

- Customer satisfaction with collections
- Circulation of new monographs
- Use of electronic databases
- Use of reference services -- desk visits, virtual reference transactions
- Use of on-campus delivery service

- *Target1:* 60% of newly cataloged monographs should circulate within two years.
- *Target2:* 50% of new monographs should circulate within two years.
- *Result FY07:* Target 1 Met.  
—62.9% circulated (16,363 out of 26,032)

## Performance Metrics in Libraries: Some Tips . . .

- Fewer metrics are better
- Know what you're measuring
- Select different types of metrics (input, output, process and outcome)
- Use a mix of data sources and frequencies
- Tie them to strategy and use them to improve operations
- Present internally and externally
- Provide context (comparisons, trends)

## . . . And Some Questions

- Are we measuring what is important?
- How do metrics/indicators relate to outcomes?
- How much effort should go into developing metrics, methods and analysis?
- How do we best incorporate customer/stakeholder perspectives?
- How are performance metrics used for improvement?
- Are data management systems adequate?

## Looking Ahead: The Future of Performance Metrics

Martha Kyrillidou  
Senior Director of ARL Statistics and Service Quality Programs  
Association of Research Libraries

NISO Webinar



<http://www.climatequal.org/>



# StatsQUAL+®



StatsQUAL® is a gateway to library assessment tools that describe the role, character, and impact of physical and digital libraries. Through StatsQUAL®, libraries gain access to a number of resources that are used to assess library's effectiveness and contributions to teaching, learning, and research. StatsQUAL® presents these tools in a single powerful interactive framework that integrates and enhances data mining and presentation both within and across institutions.



## ARL Statistics™

ARL Statistics™ is a series of annual publications that describe the collections, expenditures, staffing, and service activities for ARL member libraries.

► Visit ARL Statistics™



## LibQUAL+®

LibQUAL+® is a rigorously tested Web-based survey that libraries use to solicit, track, understand, and act upon users' opinions of service quality.

► Visit LibQUAL+®



## DigiQUAL®

The DigiQUAL® project is modifying and repurposing the existing LibQUAL+® protocol to assess the services provided by digital libraries.

► Visit DigiQUAL®



## MINES for Libraries®

MINES for Libraries® is an online transaction-based survey that collects data on the purpose of use of electronic resources and the demographics of users.

► Visit MINES for Libraries®



## ClimateQUAL®

ClimateQUAL®: Organizational Climate and Diversity Assessment is an assessment of library staff perceptions concerning (a) their library's commitment to the principles of diversity, (b) organizational policies and procedures, and (c) staff attitudes.

► Visit ClimateQUAL®

# ARL Statistics® Interactive Edition

## MINES for Libraries™

- MINES is a transaction-based research methodology consisting of a web-based survey form and *a random moments sampling plan*
- MINES typically measures who is using electronic resources, where users are located at the time of use, and their **purpose of use** *in the least obtrusive way*
- MINES was adopted by the Association of Research Libraries (ARL) as part of the “New Measures” toolkit in May, 2003.



## Organizational Performance Assessment (OPA)

- From 2005-2010, site visits by Jim Self, Steve Hiller, and partially, Martha Kyrillidou through the Effective, Sustainable and Practical Assessment program:  
<http://www.arl.org/stats/initiatives/esp/index.shtml>
  - Organizational Performance Assessment (OPA) will focus on:
    - Integrating Strategy Management
    - Preparing for Institutional Accreditation
    - Understanding User Behaviors for Service Development & Improvement
    - Enhancing Library Assessment
- More information by November ....

## Scenarios

<http://www.arl.org/rtl/plan/scenarios/index.shtml>

- How do we transform our organization(s) to create differential value for future users (individuals, institutions, and beyond), given the external dynamics redefining the research environment over the next 20 years?
- Critical uncertainties:
  - What will be “research” and how will it be done?
  - What will be different about users and their needs?
  - Digitization of content
  - Control of and Access to Information
  - Future of Intellectual Property
  - Technology
  - Viability of Higher Education
  - Funding and Budget Challenges

## Critical Strategic Challenges

<http://www.arl.org/bm~doc/scenarios-data-gathering-summary-082010.pdf>

- Achieving and growing relevancy in the Future
- Ability to change and adapt – How do we transform ourselves?
- Rethinking individual versus collaborative identify
- Leadership and Personnel of the Future

### VISIONS

“Library as legacy responsible for centuries of scholarly work

Library as infrastructure, space with technology expertise

Library as repository for long-term archive

Library as portal, guide to information of relevance and quality

Library as enterprise doing new business development for the academy

Library as public interest, providing advocacy for supportive information policies”

## ARL Profiles: themes

<http://directors.arl.org/wiki/institution-profiles>

- Development/Fund Raising/Grantsmanship - activities/staffing/successes
- Digital publishing (i.e., OJS)
- E-science/Data curation and management
- Collaborations across all levels and on/off campus
- Scholarly communication (open access/author rights, etc.)
- Assessment activities (i.e., data portals, data driven decisions)
- Space utilization (innovative renovations/uses, gate counts, etc)
- 

## ARL profiles: themes (con't)

<http://directors.arl.org/wiki/institution-profiles>

- Use of social networking tools/mobile applications
- Staffing changes (i.e., new or reworked positions, new job titles, degree requirements)
- Collaborative collection building/development
- Warehousing/remote storage (shared/individual, on/offsite, active use/dark archive, etc.)
- Instruction activities - current statistics include actual classroom instruction but do not capture efforts preparing materials for asynchronous instruction or the use of those materials (web guides, podcasts, etc.)
- Digitization efforts beyond or more specific than those already collected in the Supplementary Statistics (IRs, created and converted digital collections, etc.)

## Library Scorecard

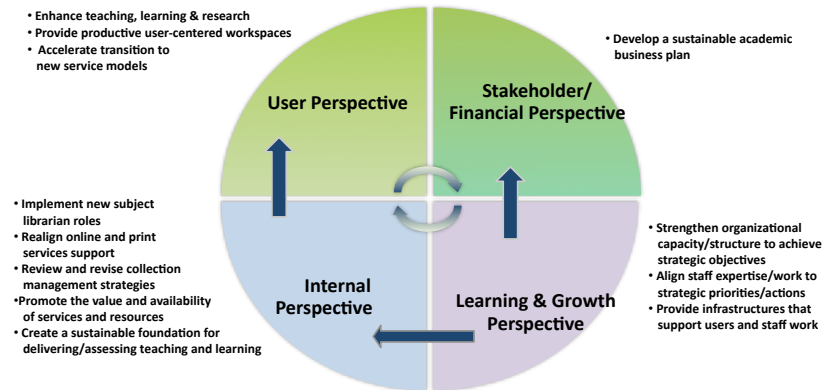
### Assumptions underlying the initiative:

- Leadership involvement is key for linking the library scorecard to strategy
- Measures need to be focused on strategic issues
- Developing a framework/dashboard for implementing a strategy is useful
- Implementing a scorecard will lead to its improvement and refinements
- We do not advocate a single library scorecard but a scorecard appropriate for each library

## UW LIBRARIES 2010-13 STRATEGY MAP (Draft)

**Mission: Advancing Intellectual Discovery and Enriching the Quality of Life  
by Connecting People with Knowledge**

*Strategic Directions: Research & Scholarship, Teaching & Learning, Engagement, Sustainability*



Organizational Values: Collaboration • Diversity • Excellence • Innovation • Integrity • Responsiveness

## Combined Objectives

Customer perspective

Virginia	Easy access to collections, tools, and spaces that support collaboration and study
	Ensure access to collections, tools and spaces for the future
	Be recognized as a leader among research libraries worldwide
Washington	Enhance role in teaching and learning
	Realign and reshape teaching and learning
	Accelerate transition to new service model
JHU	Provide productive user centered workspaces (virtual and physical)
	Integrate and strengthen instructional support services and programs
	Provide and preserve access to information resources and collections for current and future scholars
	Build sustainable data curation infrastructure
McMaster	Improve discover and access to scholarly resources
	Integrate library into the University's teaching, learning, and research mission
	Create world class teaching and learning spaces
	Strive for exemplary service that is responsive to user needs

Source: Donna Tolshon (Uva), Steve Hiller (UW), Liz Mengel (JHU), Vivian Lewis (McMaster)

## Library annual “checkups”

- Diagnostic
- Commonalities
  - Budget
  - Service Quality perceptions/Satisfaction
  - Context (Qualitative) – profiles?
- Revision of the annual ARL Statistics

## ARL Board Task Force: Review Annual Statistics

- review the annual surveys and drop, revise, or add to the survey instruments and the instructions by focusing on issues of strategic importance in terms of describing research libraries and their contributions to research, teaching and learning:
  - ARL Statistics
  - ARL Supplementary Statistics
  - ARL Annual Salary Survey.

## Value & Impact

From feelings, perceptions and behaviors to outcomes, value and impact

*"I like the library because it provides all the resources I need and it helps me find answers to new questions. The library enhances my research/learning, it saves my time & money, and makes me, my colleagues/friends better learners, researcher, professionals .... "*

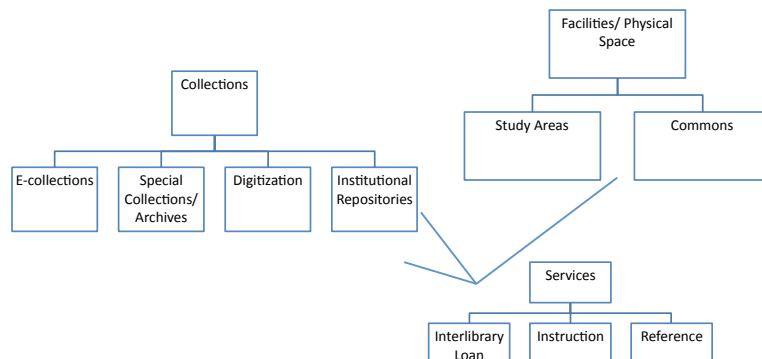
*How do we quantify these elements?*

## Value and ROI studies

- Luther, J. (2008). University investment in the library: What's the return? A case study at the University of Illinois at Urbana-Champaign. Elsevier: Library Connect White Paper #1. <http://libraryconnect.elsevier.com/whitepapers/0108/lcwp010801.html>
- Kaufman, Paula. "The Library as Strategic Investment: Results of the Illinois Return on Investment Study." *Liber Quarterly* 18 (3/4), (December 2008). <http://liber.library.uu.nl/publish/articles/000269/article.pdf>
- Tenopir, C., Love, A., Park, J., Wu, L., Kingma, B., King, D. W., Baer, A. & Mays, R. (2010). Return on investment of the grant process in academic libraries. Elsevier: Library Connect White Paper #2. [http://www.elsevier.com/wps/find/librariansinfo.librarians/lc\\_home#White\\_Paper](http://www.elsevier.com/wps/find/librariansinfo.librarians/lc_home#White_Paper)

## Lib-Value IMLS grant: Potential Areas

<http://libvalue.cci.utk.edu/>



## Lib-Value IMLS: ARL outreach

- video from June event forthcoming
- profiles analysis forthcoming
- exploring linkages between models in development and LibQUAL<sup>®</sup>, ClimateQUAL<sup>®</sup>, and MINES for libraries<sup>®</sup>
- ARL bimonthly report article by Regina Mays, Carol Tenopir and Paula Kaufman in a special issue on measurement
- presentations on value and impact as keynote theme and workshop by Neil Kaske and Roberta Shaffer
- papers on the ACRL value study and Lib-Value grant
- planning San Diego library assessment forum, presentations by Megan Oakleaf and Rachel Fleming-May on lit reviews



## In-depth measurement ...

- “Challenge tests” when needed ....
- Library challenge tests for in-depth information seeking behaviors and specialized services
- Criterion: Purpose & Utility of the assessment information
- Infrastructure:  
<http://www.arl.org/bm~doc/KyrillidouStandardsUseMeasuresDec2005.pdf>

## Data Management Model 1: Central repository

- Central Repository characteristics:
  - Availability of usage statistics (including past statistics) directly from vendors
  - Data extraction and normalization of various data elements into a central database
  - Access rules that define different library and vendor profiles (ultimately this can be extended to end user profiles as well)
  - Ability to query the central database for data retrieval purposes
  - User interface that will generate reports, aggregate usage data, and provide comparisons
  - Ability for libraries to access this resource.

## Data Management Model 2: Decentralized repositories

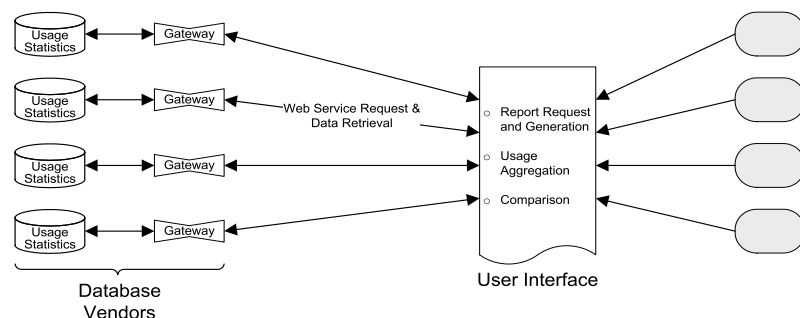
- Provide the ability to develop different databases of vendor usage statistics by focusing on different data elements.
- Enable libraries to subscribe to multiple systems depending on the functionality they want. For example, there may be different requirements for report generation, aggregation, and comparison for members of a consortium like VIVA and OhioLINK, and for national reporting purposes in national policy statistics like the ones provided by ARL, ALA and NCLIS.

## Data Management Model 3: Distributed Access

- Standards-driven access to vendor usage data with no intermediate repository involved. This is a highly dynamic system of highly trusted databases of vendor usage statistics and gateways of access that give library users the ability to query the systems for maximum analytical impact.

## Data management model 3: Distributed

Figure 3. Key Processes for Distributed Access to Vendor Usage Statistics



## Analytical tools

- Web-analytics software, ex. Google Analytics
- Mathematical modeling software, ex. SPSS
- Graphical software, ex. Dundas
- Qualitative Analysis software, ex. Atlas.ti
- Reporting software, ex. Crystal Reports
- Database systems, ex. Oracle
- Programming languages ....

*Need for improved **integrated** analytical tools.*

*The future: integration, XML standards?*

## Analytical principles

- *Analytical tools do not substitute thinking*
- *Know thyself through others, or*
- *Knowing others through yourself*
- *Nothing excessive (everything in moderation)*
- *Ethical approaches to privacy*
- *Ethics are about what is appropriate in a certain context*
- *Ethical considerations need to be legal or challenge legality in an **ethical and legal** way*

## Community of Practice

- ARL Library Assessment Forums held in conjunction with ALA on Friday at 1:30pm
- Qualitative and Quantitative Research Methods in Libraries (QQML)
- Northumbria International Conference on Performance Measurement and Metrics
- Library Assessment Conference by ARL, U of Virginia and U of Washington

## Keynote plenary speakers

<http://www.libraryassessment.org/>

- **Fred Heath**
  - Assessment & Library Service Quality
- **Joe Matthews**
  - Performance Measures and Balanced Scorecard
- **Danuta Nitecki**
  - Assessment of Library Spaces
- **Megan Oakleaf**
  - Learning Outcomes and the Library
- **Stephen Town**
  - Value and Impact



## LIBRARY ASSESSMENT CONFERENCE

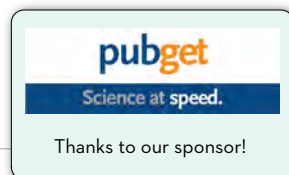
BUILDING EFFECTIVE, SUSTAINABLE, PRACTICAL ASSESSMENT

BALTIMORE MARYLAND  
OCTOBER 25 - 27, 2010

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## Questions?



All questions will be posted with presenter answers on  
the NISO website following the webinar:

[www.niso.org/news/events/2010/performancemetrics](http://www.niso.org/news/events/2010/performancemetrics)