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Using Lean to teach the technical services value stream: An Online continuing education course

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Using lean to teach the technical services value stream: an online continuing education course

Tamera Hanken
Director, Logistics & Resource Distribution Services
UNLV Libraries

9th Northumbria International Conference on Performance Measurement in Libraries and Information Services -- *Providing Value in Challenging Times* August 22-26, 2011

LEAN

According to the Lean Enterprise Institute's Website, "The core idea [of Lean] is to maximize customer value while minimizing waste. Simply, lean means creating more value for customers with less resources" (2010).

"A value stream represents all the things we do to create value for the customer. The first principle of lean thinking relates to customer value… The second principle of lean thinking is that we always work by the value stream" – Maskell & Baggaley (2004)

Lean Principles

- Identify steps in the process that add customer defined value
- Identify waste in transportation, wait, overproduction, defect, inventory, motion, or extra processing
- Eliminate the steps in the process that don’t add value or are unnecessary
- Make sure the steps flow in an efficient sequence
- Establish pull, i.e., make sure the steps in the sequence don’t create bottlenecks
- Continue to improve the process

Education and Training

- MLS from Texas Woman's University (1998)
- Graduate Certificate in Supply Chain Management/Logistics from University of Alaska (2010)
  - Lean Operations
- MPA from Troy University (2011)
- Certificate in Operational Excellence (2011)

RESOLVING A LONG-TIME LIBRARY TECHNICAL SERVICES PROCESS PROBLEM USING LEAN, LOGISTICS, AND A LITTLE SUPPLY CHAIN MANAGEMENT

(A PARADIGM SHIFT)

By Tamera Hanken

LOGISTICS A609

SUPPLY CHAIN QUALITY CAPSTONE

PROFESSOR OLIVER HEDGEPETH

Technical Services Work Environments

- Director of Logistics & Information Distribution Services (Technical Services) -- UNLV
- Manager of Library Operations & Technology -- Tacoma Community College
- Assistant Director of Support Services -- Mid-Columbia Library District
- TechPro Supervisor at OCLC, Inc.
- Technical Services Librarian -- American University of Sharjah
- Senior Librarian -- Washington State Librarian
- Adjunct Library Technician Instructor -- Highline Community College

Frustrations

- Backlogs, blame, black holes
  - Bibliographic chicken[3] & the MARC Record Marketplace, 2009[1]
- Rules, regulations, traditions
  - Crisis in Cataloging[4] (1941)
- Mystery procedures and practices

Solutions

- Outsource, automate, mandate
- Implement business practices!
- TQM, Lean, Six Sigma, Continuous Improvement
- Eliminate the department
- Hire new staff or new leadership

Reframing the old problems

- Supply Chain Management
  - Book industry supply chain
  - The Library's focal supply chain
- Logistics
  - Inventory management
- Lean
  - From Ranganathan to the Toyota Production System

The course

- Overview

The course reconsiders technical services functions with a focus on continuous improvement. Achieved through application of lean techniques and statistical tools to help staff build competencies in the areas of adaptability, customer service, critical thinking and problem solving.

An important outcome of the course is staff acquiring the ability to articulate and demonstrate how the processes in technical services create the value stream libraries depend on to deliver quality services and achieve the organizational values stated in their mission statements.

- Audience
- Format/Structure

The course

1. **The role and value of technical services**
2. **Technical services within the information supply chain**
3. Logistics of technical services
4. Introduction to lean
5. **Process mapping 1**
6. **Metrics and Measurement**
7. **Process mapping 2**
8. Quality at the source/Root cause analysis
9. Process mapping 3 Redesign
10. The technical services value stream

Unit 1: The role and value of Technical Services

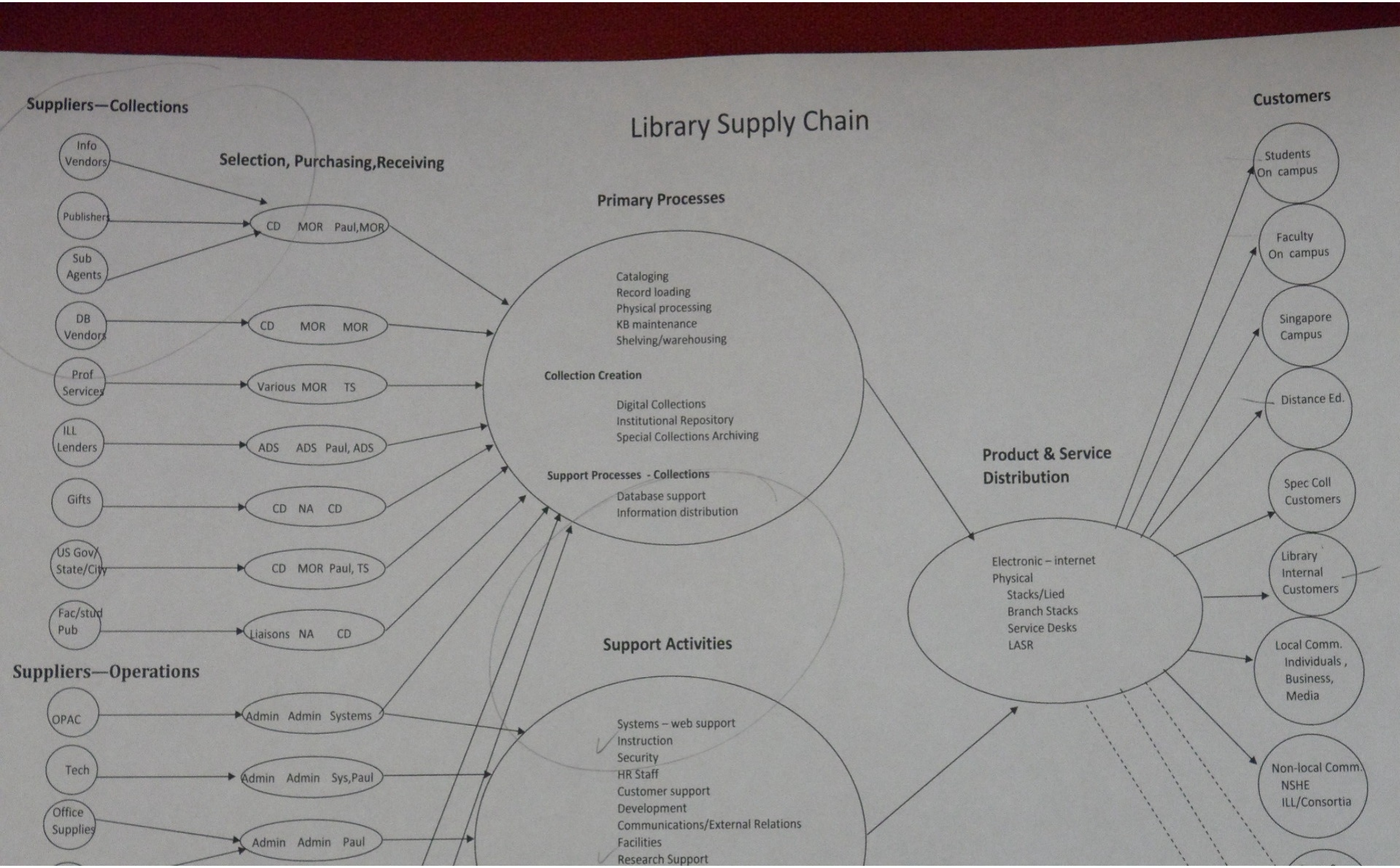
- Objective
  - Articulate and demonstrate through the use of process data how technical services functions help a library achieve its role, vision and mission
- Discussion
  - Making the value connection
- References, readings: 1-4
- Case assignment: choose process & describe how outcomes support library mission, initiatives, goals…

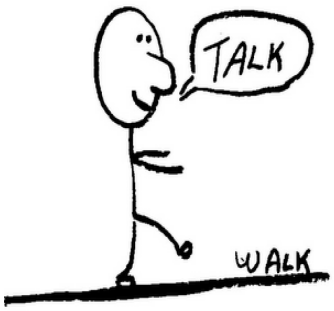
Unit 2: Technical Services within the Information Supply Chain

- Objectives
  - Describe the information supply chain and the role of the library and of technical services within the overall supply chain
  - Identify the various customers and stakeholders within the supply chain

Unit 2: Technical Services within the Information Supply Chain

- Discussion
  - External and internal supply chains
- References, readings: 5-9
- Case assignments
  - Create a library supply chain map that depicts the supply chain (or value stream) of your library
  - Identify and describe the customers and suppliers involved with your process, internal and external
  - Begin a routine of ‘walking the process’, observe and ask questions


Library Supply Chain
Suppliers—Collections
Selection, Purchasing,Receiving
Info Vendors
Publishers
Sub Agents
DB Vendors
Prof Services
ILL Lenders
Gifts
US Gov/ State/City
Fac/stud Pub
CD MOR Paul,MOR
CD MOR MOR
Various MOR TS
ADS ADS Paul, ADS
CD NA CD
CD MOR Paul, TS
Liaisons NA CD
Suppliers—Operations
OPAC
Tech
Office Supplies
Admin Admin Systems
Admin Admin Sys,Paul
Admin Admin Paul
Primary Processes
Cataloging
Record loading
Physical processing
KB maintenance
Shelving/warehousing
Collection Creation
Digital Collections
Institutional Repository
Special Collections Archiving
Support Processes - Collections
Database support
Information distribution
Support Activities
Systems – web support
Instruction
Security
HR Staff
Customer support
Development
Communications/External Relations
Facilities
Research Support
Product & Service Distribution
Electronic – internet
Physical
Stacks/Lied
Branch Stacks
Service Desks
LASR
Customers
Students On campus
Faculty On campus
Singapore Campus
Distance Ed.
Spec Coll Customers
Library Internal Customers
Local Comm. Individuals , Business, Media
Non-local Comm. NSHE ILL/Consortia



Unit 2: The Go See

- Who -- anyone
- Where – start at the begin/end of supply chain and follow the process
- When – one day per week
- What – focus on a topic
- Why – visible continuous improvement

Unit 3: Logistics of Technical Services

- Objectives
  - Understand the various logistical concepts that relate to technical services: types of inventory, (JIT, JIC), Work in Process
  - How to utilize logistics … to describe, quantify, and measure inventories
- Discussion
  - Types of inventory
  - Inventory as indicator of organizational culture
  - References, readings: 10-11
- Case assignment—identify and describe the inventory your process manages

Unit 4: Introduction to Lean

- Objectives
  - Learn the similarities and differences of some of the more common process improvement methods, I.e., Lean, Six Sigma, Total Quality Management
  - Knowledge of Lean principles, tools & techniques and use of to diagnose problems
    - Seven wastes, process mapping, customer report card, traveler, visual management, value stream management
  - Recognize lean techniques already existent in the past and current technical services

Lean Tools

- Discussion
  - Process mapping (flow charting)
  - Value stream mapping
  - Metrics
    - Tools to gather and apply
    - Pareto charts, fishbone diagrams
  - Visual management
  - Go See (Gemba Walk)
  - Recognition of 7 wastes
  - Recognition of the symptoms of a broken process
- References, readings: 12-18

Units 5-7: Mapping, Metrics and Measurement

Unit 5: Process Mapping 1

Unit 6: Metrics and Measurement

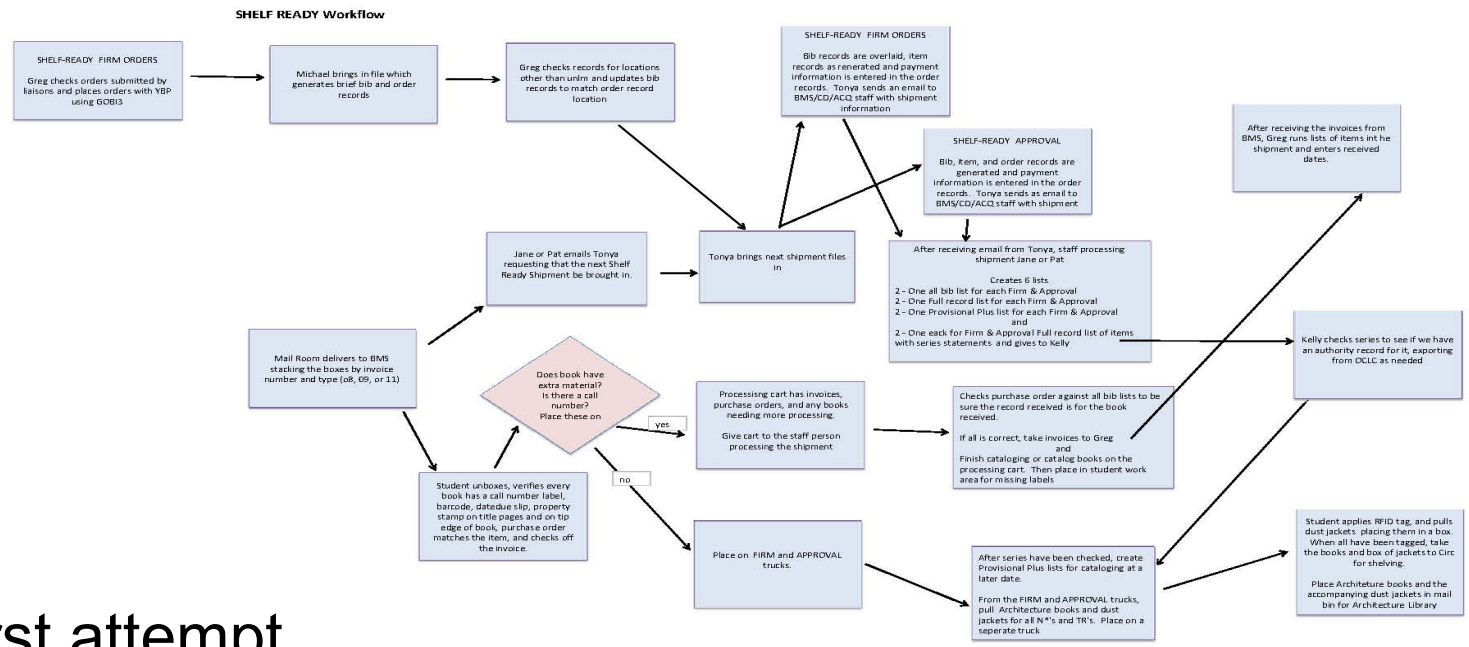
Unit 7: Process Mapping 2

- Objectives
  - Learn and apply the techniques and stages of process mapping
    - Macro, Functional-Activity, Task-Procedure, Value Stream Mapping
  - Determine the metrics that enable measurement of processes and understand the options available for gathering process related data

Units 5-7: Mapping, Metrics and Measurement

- Discussion
  - Select a process and consider outcomes
  - Identify customers (internal and external)
  - Select team (include customers)
  - Map the current state
  - Implement travelers (method of data collection
  - Implement customer report card (determine process goals)
- References, readings: 19-24
- Case assignments: mapping and data collection

Units 5-7: Mapping, Metrics and Measurement



First attempt, summer 2009

Units 5-7: Mapping, Metrics and Measurement

- What data will you gather about your process?
  - Processing times
  - Lead times
  - Batch sizes
  - Flow rates
  - Customer expectations
  - Percentage Complete and Accurate
  - Unit cost

Units 5-7: Mapping, Metrics and Measurement

- How will you gather data?
  - Traveler
  - Cycle time sheet
  - Go See
  - Customer Report Card
  - ILS reports

Units 5-7: Mapping, Metrics and Measurement

Traveler Time Sheet -

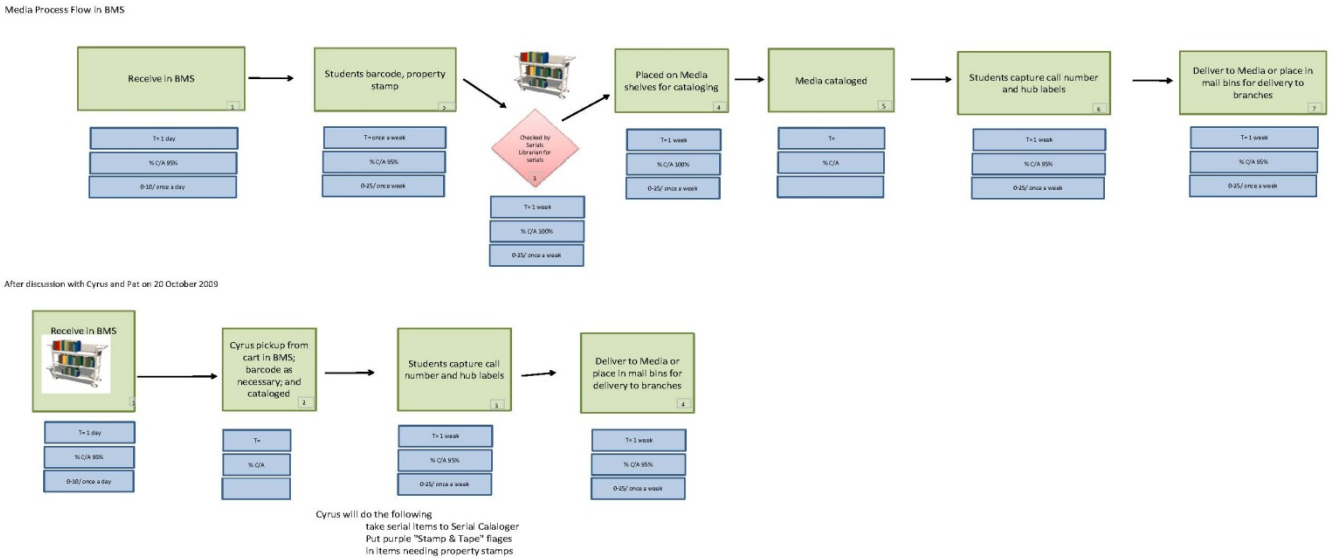
Foreign language software Music Media Arch CML

	Activity	Date	Start time	End time	Date & Time sent for label	Comments	
1	Received in BMS						
2	Catalog						
3	Labeling						
4	Deliver to Media or place in Mail Bin					Cost of item	

Sample Traveler Data

	Date received in BMS	Date Started Cataloging	Time to Catalog in minutes	Date Sent for Labeling	Date started labeling	Time to label in minutes	Music Media Arch CML	Cost of item	Number of working days in Cataloging	Comments	Cost to catalog -- .50 cents a minute	Cost per label -- 8.50 hr/60 = .14 a minute	Total Labor Cost	Total Unit Cost except time to decide what to order, place order, and receive item
1	23-Mar	24-Mar	27	30-Mar	7-Apr	10	media	$195.00	12		13.50	1.4	14.90	209.90
2	23-Mar	25-Mar	40	30-Mar	7-Apr	1	music	$25.99	11		20.00	0.14	20.14	46.13
3	23-Mar	25-Mar	42	30-Mar	7-Apr	2	media	$269.93	11	original	21.00	0.28	21.28	291.21
4	23-Mar	25-Mar	24	30-Mar	7-Apr	2	media	$149.93	11		12.00	0.28	12.28	162.21
5	23-Mar	25-Mar	26	30-Mar	7-Apr	2	media	$254.93	11		13.00	0.28	13.28	268.21
6	23-Mar	25-Mar	29	30-Mar	7-Apr	5	arch	$295.00	11		14.50	0.7	15.20	310.20
7	23-Mar	25-Mar	25	30-Mar	7-Apr	2	media	$149.93	11		12.50	0.28	12.78	162.71
8	23-Mar	26-Mar	24	30-Mar	7-Apr	2	media	$12.50	10		12.00	0.28	12.28	24.78
9	23-Mar	26-Mar	23	30-Mar	7-Apr	2	media	$24.95	10		11.50	0.28	11.78	36.73
10	23-Mar	26-Mar	28	30-Mar	7-Apr	2	media	$29.99	10		14.00	0.28	14.28	44.27
11	23-Mar	26-Mar	34	30-Mar	7-Apr	1	music	$89.00	10		17.00	0.14	17.14	106.14
12	23-Mar	26-Mar	32	30-Mar	7-Apr	1	music	$24.25	10		16.00	0.14	16.14	40.39
13	23-Mar	26-Mar	41	30-Mar	7-Apr	1	music	$17.95	10		20.50	0.14	20.64	38.59
14	23-Mar	26-Mar	27	30-Mar	7-Apr	1	music	$22.45	10		13.50	0.14	13.64	36.09
15	23-Mar	27-Mar	54	27-Mar	7-Apr	1	music	$17.95	9	original	27.00	0.14	27.14	45.09
16	23-Mar	27-Mar	26	27-Mar	7-Apr	1	music	$19.98	9		13.00	0.14	13.14	33.12
17	23-Mar	27-Mar	33	27-Mar	7-Apr	1	music	$25.99	9		16.50	0.14	16.64	42.63
18	23-Mar	27-Mar	22	27-Mar	7-Apr	3	music	$107.95	9	8 items	11.00	0.42	11.42	119.37
19	23-Mar	27-Mar	21	27-Mar	7-Apr	1	music	$0.00	9		10.50	0.14	10.64	10.64
20	23-Mar	27-Mar	25	27-Mar	7-Apr	1	music	$0.00	9		12.50	0.14	12.64	12.64
21	23-Mar	30-Mar	21	30-Mar	7-Apr	1	music	$0.00	7		10.50	0.14	10.64	10.64
22	23-Mar	30-Mar	19	30-Mar	7-Apr	1	music	$0.00	7		9.50	0.14	9.64	9.64
23	23-Mar	30-Mar	20	30-Mar	7-Apr	1	music	$0.00	7		10.00	0.14	10.14	10.14

Units 5-7: Mapping, Metrics and Measurement



Second attempt, fall 2009

Sample Report Card from The Government Documents Process Review Team

Grade	Goal
C	User search terms (key words) result in a short, direct list and if we have the item, it shows up on the list.
D	Find fast, be able to find in under two minutes on the shelf or the link opens.
B	Preferred format whenever possible is electronic for material available electronically and print for maps and long books.
B+	Item is where catalog says it is, call number is correct, shelved correctly, electronic link is in catalog record.
B	Catalog as much as possible with Library of Congress call numbers like the rest of our collection.

As per your request, I spoke to the liaison librarians on Thursday, October 15, about the recommendations from your Shelf Ready Work Review task force. Here are the results of our discussion.

The liaisons unanimously approve of the recommendation to switch to OCLC records and to accept these records into the catalog as is with no editing. They believe that this change will increase discovery of and access to our collection.

To be specific, we discussed the summary notes field, the foreign subject headings field and the genre heading fields in particular as being useful additions to the bib record. We also discussed the fact that the uniform title field is currently changed from the 240 field to the 730 field here at the UNLV Libraries. Liaisons believe that this is not necessary.

In addition, the liaison librarians would like to see keyword searching of the summary notes field (520) and subject searching of MESH.

The liaison librarians would like to convey to you their support of future efforts that might improve access to our collections. They look forward to developing a more collaborative working relationship with Technical Services to accomplish our common goals.

Unit 8: Quality at the Source/Root Cause Analysis

- Objectives
  - Redesign a process based on lean process design principles
  - Calculate process data to benchmark and continuously improve
  - Use advanced lean techniques to address process problems

Unit 8: Quality at the Source/Root Cause Analysis

- Discussion

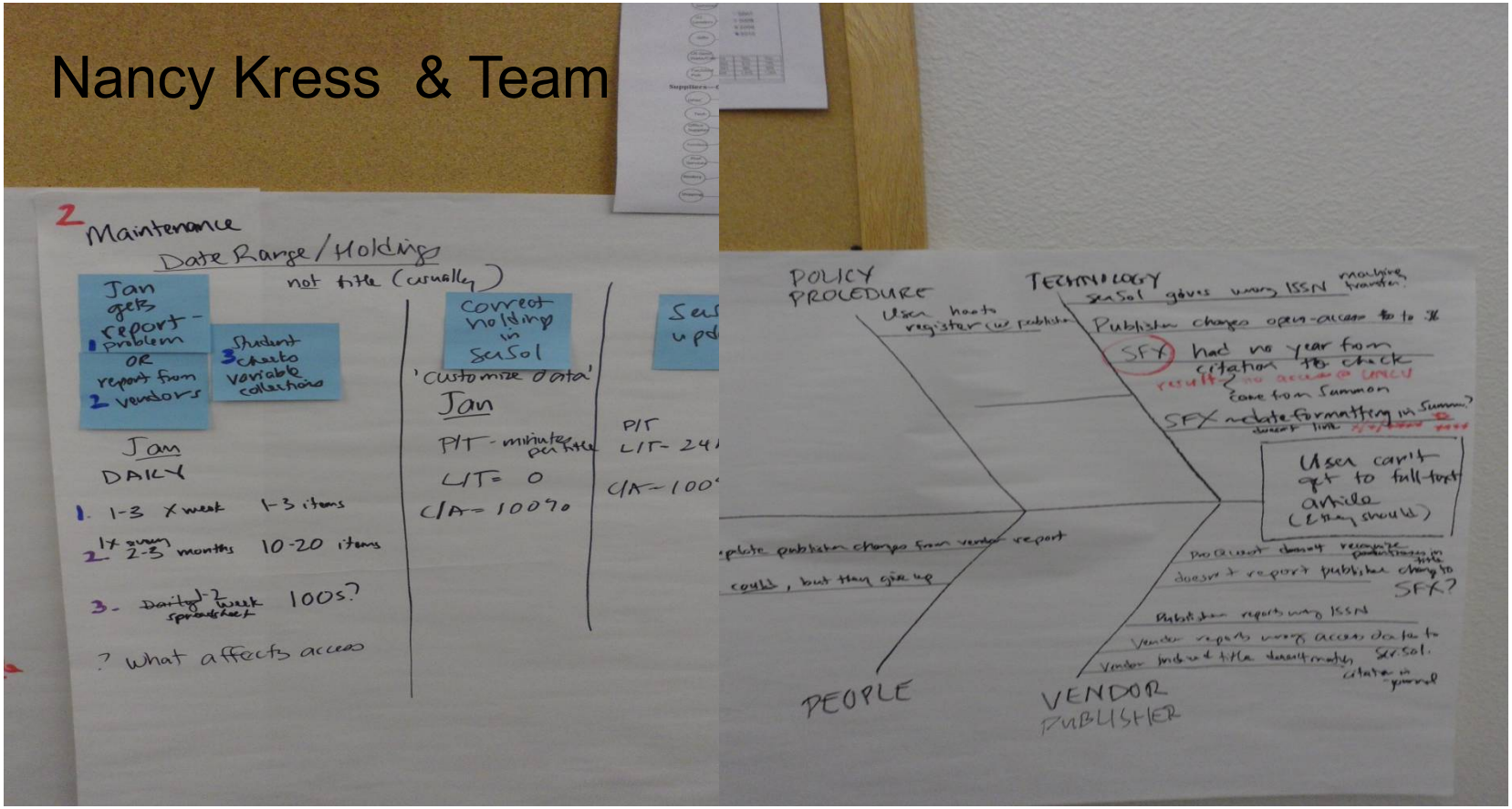
Lean Analysis Techniques:

  - The ‘5-whys’, a series of questions to get to the root cause of the problem
  - Fishbone (Ishikawa) diagram as a method of illustrating cause and effect
  - Pareto chart (80/20) to help review which few factors are causing most of the problems

- References, readings: 25

Unit 8: Quality at the Source/Root Cause Analysis

Nancy Kress & Team



Unit 9: Process Mapping 3, Redesign

- Objectives
  - Redesign a process based on lean process redesign principles
  - Calculate process data to benchmark and continuously improve
  - Use advanced lean techniques to address process problems

Unit 9: Process Mapping 3, Redesign

- Discussion

Redesign principles best suited to improve work structure:

  - Design the process around the value-adding activities
  - Work is performed where it makes the most sense
  - Reduce waiting, moving, and rework time
  - Perform process steps in their natural order
  - Reduce checks and reviews
  - Push decision making down to the lowest reasonable level
  - Build quality in to reduce inspection and rework
  - Simplify steps

- References, readings: 26
- Case assignment: redesign the process using the design principles

ILL ILLiad Lending - Loans
10/21/10 Requests

Requests = 25
Sent = 13
Cancelled = 12

Lending Request for UNLV Book

Other Library

PROCESS			PAGE	PROCESS	SHIP
Open Request ILLiad	Search Catalog	Print Search Slip Printer	Page Book Bookstacks	Check out Item ILLiad	Package & Ship Mailroom
P/T = 1 minute 30 seconds %C/%A = 100% Requests = 25	%C/%A = 52% Requests = 13	Requests = 13	P/T = 20 minutes %C/%A = 77% Requests = 10	P/T = 50 seconds %C/%A = 100% Requests = 10	P/T = 2 minutes %C/%A = 100% Requests = 10

Process Time: 1 minute 30 seconds | 20 minutes | 50 seconds | 2 minutes

Lead Time: 2 hours

Metrics
Process Time = 24 minutes 10 seconds
Lead Time = 2 hours
Percent Complete & Accurate = 86%

Nancy Kress

Unit 10: The Technical Services Value Stream

- Objective
  - Create a value stream map that illustrates the sum calculation of all related/integrated processes
  - Understand the concept of value stream management and the framework that links technical services process goals to the goals, mission, and vision of the library and/or larger organization.
  - An awareness of the different performance measurements for a single process versus the overall value stream

Unit 10: The Technical Services Value Stream

- Discussion

To answer performance measurement questions, metrics are established at the single process level and at the value stream level (sum of all related processes) to monitor the effectiveness of the value stream(s) in achieving organizational initiatives and related goals.

- At the single process level the metrics are monitored daily to meet current demand or process goals
- At the value stream level metrics are monitored less frequently, but routinely and gauge progress towards larger organizational initiatives

Unit 10: The Technical Services Value Stream

- Discussion
  - List strategic objectives or goals that relate to selected value stream
  - Define critical success factors within the value stream that are related to the goals (what must we be good at to achieve goals)
  - Define goals of the value stream
  - Create list of performance measurements that support the goals (purpose: continuous improvement)
- References, readings: 27

Questions?

Tamera.Hanken@UNLV.EDU

Units 1-10: Discussion References

Unit 1

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Unit 2

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Unit 3

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Unit 4

14. Kumi, S. & Morrow, J. (2006). Improving self service the Six Sigma way at Newcastle University Library. *Program: Electronic Library and Information System*, 40 (2), 123-136.
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18. Voyles, J.F., Dols, L. & Knight, E. (2009). Interlibrary loan meets Six Sigma: The University of Arizona Library's success applying process improvement. *Journal of Interlibrary Loan.* 19 (1), 75-94.

Units 1-10: Discussion References

Unit 5

19. Madison, D. (2005). *Process Mapping, Process Improvement, and Process Management: A Practical Guide to Enhancing Work and Information Flow*. Chico, CA: Baton Professional. [Chapters 2-8]

Unit 6

20. Madison, D. (2005). *Process Mapping, Process Improvement, and Process Management: A Practical Guide to Enhancing Work and Information Flow*. Chico, CA: Baton Professional. [Chapters 2-8]

21. Maskell, B. & Baggaley, B. (2004). *Practical lean accounting: A Proven method for measuring and managing the lean enterprise*. New York, NY: Productivity Press. [Chapters 3, 7-8]

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Unit 7

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Units 1-10: Discussion References

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Unit 9

26. Madison, D. (2005). *Process Mapping, Process Improvement, and Process Management: A Practical Guide to Enhancing Work and Information Flow*. Chico, CA: Baton Professional. [Chapters 9-12]

Unit 10

27. Maskell, B. & Baggaley, B. (2004). *Practical lean accounting: A Proven method for measuring and managing the lean enterprise*. New York, NY: Productivity Press. [Chapters 3, 7-8, 19]