Value Stream Mapping for Process Optimization

Foundational Roadmap
To
Transformational Change

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What We Will Cover...

- What is a Value Stream?
- Why Mapping the Stream is Beneficial
- When and Who Uses This Tool
- Fundamentals & Methods
- Q&A
What is A Value Stream?

“Sequence of activities **required** to design, produce, and provide a specific good or service, and along which information, materials, and resource **flows**.”
Value and Wastes

- **Value**
  - Whatever the Customer is Willing to Pay For.

- **Business Value**
  - Does not add value, but is necessary for legal or regulatory reasons.
Value and Wastes

- Waste
  - Anything or activity that does NOT add value, either actively or passively
  - Uneven Demand
  - Overburdened People or Machines
  - Excess Inventory, Underutilized Capacity
  - Information Wastes
Examples of Types of Information Wastes

- “Gold Plating” system design or performance
- Sending attachments rather than links
- Multiple reports with similar data
- Assuming customer needs/requirements or asking for the wrong information
- Waiting for a specialist working on another project
- Making and locking into decisions too early
- Producing code much earlier than needed
Why Value Stream Map?

- To make systemic changes and lessen negative interactive effects
- To draw our attention to comparative bottlenecks
- Discover and **Eliminate** hidden wastes and non-value added activity
- Guided activity to collectively problem solve and establish universal metrics
Moment Of Truth

- Is it possible that our organization conducts tasks that do not add value to the customer?
  - Yes ::> Proceed
  - No ::> Think Again
A Value Stream Map

- Information
- Material & Inventory
- Resources & Rework
- Push or Pull
- Time
  - Cycle, Waiting
  - Process

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Not A Process Map

- Not Tactical, But Strategic
- Not Process Level, But High Level
- No Decisions, But Data
- Not Within Silos, Across Systems and Silos
How Do You Know You Need To Map?

- When Customer Demand is Greater Than Capacity
How Do You Know You Need To Map?

- When Product Families Cross Departments
How Do You Know You Need To Map?

- When Quality and/or Supplier Issues Repeat Often
How Do You Know You Need To Map?

- Processes Have Never Been Optimized
Value Stream Case Study

- Maersk’s IT Department
- Annual Budget of $150M
- High Demand, Slow to Market
- Reduce Cycle Time
- Reviewed 4,674 Requirements
- “…more value, faster flow, better quality.”
Value Stream Case Study

- Create a Value Stream Map of Requirements Processing
- More than 2/3 were “in the fuzzy front end”...Waiting
- In One Case...
  - 82 hours To Develop, 46 weeks To Deliver End to End
  - 38 Weeks of Waiting Time
- Get to Initial Prioritization Faster
- Cost of Delay
- At $210,000 per week, Cost of Delay for 1 feature $8M
Value Stream Case Study: OMTM

- The One Metric That Matters
  - Clarity in Cross-Functional Decision Making
  - Took Time to Apply and Calculate a New Metric
  - Rates and Ratios vs Averages and Totals
  - Link the Most Pressing Issue to Your Overall Experiment
Value Stream Case Study: Results

- Created a Dynamic Priority List
- Cost of Delay Divided by Duration (CD3)
  - Two Features with the Same COD
  - Led to Breaking Work Down Into Smaller Pieces
- Reduced the Median Cycle Time by 50%
  - Increased Urgency Due to Cost of Delay Calculations
  - Reduced Batch Sizes
And It Started With a Value Stream Map!
Where Do We Start?

- Identifying Value Streams
  - Product Families
  - 80/20 Rule
  - Pain Points
  - Cost, Quality & Delivery
Who Should Create A Map?

- Remember Strategic, Not Tactical
- Charting the Course
- Upper Management
- Mid Level Management
- Frontline Team
Get Into A Room

- Form a Team of Mid to Upper Management
- Get Insight and Buy-in Front Line Workers
- Take 2 Days, Order In Lunch
- Whiteboard or Butcher Paper and A Lot of Markers
- Prepare with Process Data Beforehand
- Gemba = Get Out of the Room and “Go See” For Yourself
Get Into A Room

- **Day 1**
  - Team Formation
  - Data Gathering
  - Mapping The Current State

- **Day 2**
  - Identifying Improvement Opportunities
  - Mapping the Future State
  - Finalize Improvement Plan and Schedule
Building the Map

- **Step 1 – Select A Value Stream**
- **Step 2 – Pen To Paper**
  - Approach 1
    - Start with a process map, add data and adjust
  - Approach 2
    - “Be the Product and See Where You End Up”
Building the Map

- Step 3 – “Walk the Process”
  - Include Reality
  - Record Rework, Inspections and Information Flows

- Step 4 – Verification
  - Gemba and Data Verification
  - Ask The Right Questions
Asking the Right Questions

- Value Added
- Business Value Added
- Non-Value Added
Asking the Right Questions

- **Value Added**
  - Does the process step add a feature to the product or service?
  - Does the process step add form to the product or service?
  - Would the customer be willing to pay extra?
  - Would the customer prefer us over the competition if they knew executing this process step?
Asking the Right Questions

- **Business Value Added**
  - Is this process step required by law or regulation?
  - Does this process step reduce the financial risk of the owner(s)?
  - Does this process step support financial reporting requirements?
  - Would the process break down if this step were removed?
Asking the Right Questions

- Non-Value Added
  - Does this process step include any of the following:
    - Counting
    - Handling
    - Inspecting
    - Moving
    - Delaying
    - Storing
    - Rework
    - Expediting
    - Redundancy
    - Multiple Signatures
Building the Map

- **Step 5 – Analyze Your Map**
- **Step 6 – Highlight Improvement Areas**
  - Apply Kaizen Bursts and Notes
  - Create a Future State Map
- **Step 7 – List and Prioritize**
  - Improvement Kaizen Events for Implementation
  - Schedule Events and Resources
Value Stream Map Data, Metrics & Symbols

- Symbols
  - Process
  - Resources
  - Information Flows
- Time
  - Process, Lead, TAKT, Wait
- Quality
Value Stream Map Symbols

- Customer or Supplier

- Process

- Production Control

- Process Box w/ IT
Value Stream Map Symbols

- **Data Table**
  - Select shape and type text. Yellow handle adjusts line spacing.

- **Kanban**

- **Batch Kanban**

- **Database**
Value Stream Map Symbols

- Physical Pull
- Inventory
- Supermarket/Safety Stock
- Frontline Team Member
Value Stream Map Symbols

- Push Arrow
- FIFO Lane
- Pull Arrow
- Manual/Electronic Info Flow
Value Stream Map Symbols

- **Phone**
  ![Phone Symbol]

- **Gemba/Go See**
  ![Gemba Symbol]

- **Kaizen Burst**
  ![Kaizen Burst Symbol]

- **Signal Kanban**
  ![Signal Kanban Symbol]
A Note About Maps and IT

- Don’t Get Hung Up on Symbols
- Everyone should agree on symbols and the map should be clear
- Maps may be non-traditional but relevant with data
- Start with Pen and Paper
Quick Picture of a Value Stream Map
Value Stream Map Data: Time

- **TAKT Time**

\[
TAKT\ Time = \frac{Total\ Work\ Time\ Available}{Customer\ Demand}
\]

- Work Time = Total Available Time – Breaks, Meetings, etc.
- Customer Demand = Demand For That Production Period
Value Stream Map Data: Time

- **Process Time**
  - Time spent doing actual work within the process step

- **Wait Time**
  - Any time that the product or service path has spent in delay, waiting
Value Stream Map Data: Time

- **Lead Time**
  - The moment the product or service is handed off to one process step until it is handed off to the next.

- **Process Time + Wait Time = Lead Time**
Value Stream Map Data: Quality

- %C&A
  - Percentage of transactions or interactions per process step that are **Complete and Accurate** on the first pass.
  - Email Requests, Heat Tickets, Help Desk Calls
  - Correct, Add or Clarify Information

- Track Error Rate, Defects, etc.
Examples of Value Stream Data

- Inventory, Work In Process
- Changeover time (from last good piece to next)
- Up-time (on-demand equipment utilization)
- Number of team members
- Shifts worked
- Scrap rate
- Number of features delivered
- Batch Size
Value Stream Map Metrics: Summary

- Cycle Efficiency
- Summary of Time

**Process Cycle Efficiency** = \( \frac{Value\,Added\,Time}{Total\,Lead\,Time} \)

<table>
<thead>
<tr>
<th>Application</th>
<th>Typical Cycle Efficiency</th>
<th>World Class Cycle Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transactional Business Processes</td>
<td>10%</td>
<td>50%</td>
</tr>
<tr>
<td>Creative/Cognitive Business Processes</td>
<td>5%</td>
<td>25%</td>
</tr>
</tbody>
</table>
Value Stream Map Metrics: Summary

- Throughput Yield or “ Rolled First Pass Yield”
  - Summary of Quality
  - The percent of “smooth” value stream output that requires no rework

- TPY or RFPY = %C&A * %C&A * %C&A...
IT Value Stream Map Example
Analyzing Your Value Stream Map

1. Look For Bottlenecks

2. Question Long Delays or Lead Times

3. Look for The Typical Wastes
   - Information Relay, Transport, Transfer
   - Inventory and Waiting
   - Overproduction, Overprocessing, Complexity
Important Considerations

- Don’t Neglect to Go On the Gemba

- Seek Cross-Functional Consensus at Each Stage of Map Creation

- Be Bold and Beware of “Perceived Limitations” and Imagined Barriers

- The Goal is Never to Fire Anyone...Eliminate Wastes, Unevenness and Overburden
Identify Improvement

- Highlight Improvement Areas With Bursts
- Don’t Brainstorm Solutions
- Do Brainstorm Metrics That Matter
- List and Prioritize Improvement Opportunities That Will Bring You To The Future State
- Schedule Future Events
  - At Least the Next Two Events
  - Keep The Momentum
Q & A

Thank you for your attention!