Process Improvement Measurement

Minnesota Office of Continuous Improvement

Agenda

• Welcome and introductions
• Process overview
• Why measure?
• How do I measure?
• Data Collection Plan
• Tools and Resources
• Your questions
Introductions

• Name
• Organization

Learning Objectives

• Understand where measures fit in the improvement cycle
• Describe the importance of process measurement
• Understand how to use data to guide and sustain improvements
• Identify tools for collecting and displaying data to use for continuous improvement
The Reality: Where are we now?

- A series of steps or tasks to achieve an end or result.
- Processes have a beginning, an end and clearly identified inputs and outputs.
Examples of work activities that are processes:

- Issue licenses
- House offenders
- Review grant applications
- Hire staff
- Purchase supplies
- Conduct compliance reviews
- Determine client eligibility
- Test specimens
- Train staff

Your processes...
Why measure? To.....

- understand the process
- identify problems/waste
- inform solutions
- assess if improvement occurred
- verify assumptions
- determine if customer needs are met
- communicate progress
- sustain work

Measurement answers many questions:

- How do I know I have a problem?
- What does the problem look like? How severe is it?
- What do I want to achieve? What does “better” look like?
And...Is improvement occurring?

“You can’t manage what you don’t measure.”

W. Edwards Deming
Process Improvement Measures...

relate to the performance of your processes and have a client/customer focus.

Example: Inspect worksites

- Time to complete an inspection
- Cost per worksite inspection
- Value (to the customer)
- Accuracy (error rate)
- Completion Rates
Process Improvement Measures

are not population indicators, such as:

- Obesity rates
- Unemployment rates
- Poverty rates
- Crime rates
- Per capita income
- Graduation rates

Link to Results Based Accountability (RBA)

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much did we do?</td>
<td>How well did we do it?</td>
</tr>
<tr>
<td>Effort: How hard did we try?</td>
<td>Effect: Is anyone better off?</td>
</tr>
</tbody>
</table>

Is your customer better off?
### Example:

<table>
<thead>
<tr>
<th>Effort</th>
<th>Quantity</th>
<th>How much did we do?</th>
<th>How well did we do it?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td># of trainees</td>
<td>% of trainees satisfied with training</td>
</tr>
<tr>
<td></td>
<td></td>
<td># of trainings</td>
<td>% of trainees reporting taking action after training</td>
</tr>
</tbody>
</table>

**Is your customer better off?**

% of agencies achieving performance goals

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### Plan – Do – Study – Act (PDSA)

- **Act**
- **Plan**
- **Study**
- **Do**
Where and how does measurement begin?

Baseline Data

What Makes a Good Measure?

- Easy to Understand
- Important to the Customer
- Moves People to Act
- Is Strategic – Relates to Goals
- Is Robust - Meaningful
- Provides Quick Feedback for Ease of Use
Data Sources

- Voice of the Customer
- Program Data
- Process Data

Data Sources...another view

Measure

Input
- Information
- Customer requests

Process
- Staff
- Technology
- Time

Output
- Customers
Voice of the Customer:

- Who are our customers?
- What do they need and want?
- Are we meeting their requirements?

How do you know if you are meeting customer requirements?
Critical to Quality (CTQ) Tree

CTQ trees deconstruct your customer’s needs into measurable requirements.

They align improvement efforts with customer requirements.

Customer: “I want good coffee.”

- Taste
  - Not acidic
  - Rich
- Temperature
  - Above 155°
  - Below 175°
- Cost
  - <$4.00
Example: Refund Request Process

- **Process:** Training staff
- **Customer Need:** To learn CI methods and tools
- **Requirements:**
  - **Measurable Requirements:**
Learn CI methods and tools

CTQ Tree for CI Training

Customer Need

Major Requirements

Measurable Requirements

Effective

90% of trainees report they learned something

90% of trainees report using what they learned

Convenient

100% of trainings in the metro or on site at trainee location

90% of trainings have <5 people on the waiting list

Efficient

90% of trainees report the training took the right amount of time

Table Exercise #1:

Critical to Quality Tree
Example: Training staff

Percent Reporting Gaining New Knowledge or Skills
(Lean 101 / Intro to CI)

Program Data
Program Data

Historical data
Tends to be lagging
Important but has limits

Example: Program Data

CI Training Attendance

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Kaizen Facilitation</th>
<th>Lean 101</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>0</td>
<td>200</td>
</tr>
<tr>
<td>2009</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>2010</td>
<td>200</td>
<td>300</td>
</tr>
<tr>
<td>2011</td>
<td>300</td>
<td>400</td>
</tr>
<tr>
<td>2012</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td>2013</td>
<td>500</td>
<td>600</td>
</tr>
<tr>
<td>2014</td>
<td>600</td>
<td>700</td>
</tr>
</tbody>
</table>

Fiscal Year
Process Data

Describes the efficiency and effectiveness of the process itself.
Process Data – Types of Measures

- **Cost**
  - What is the cost per unit?

- **Cycle/Time**
  - How long does the process take?

- **Complexity**
  - How many steps or handoffs occur in the process?

- **Production**
  - How many units are produced?

- **Quality**
  - What is the error rate?
  - What is the customer satisfaction rate?

- **Value**
  - What is the percent of value-added time or steps in the process?

Potential sources of data about your process:

- Process Maps
- Financial Reports
- Time or Observational Studies
- Data Base/System Reports
- Audits/Quality Assurance Data
- Voice of the Customer
- Check Sheets
Example: Swim Lane Map

Swim Lane Map Metrics

<table>
<thead>
<tr>
<th>Worksite Inspection Process</th>
<th>Current</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tasks</td>
<td>85</td>
<td>16 hrs</td>
</tr>
<tr>
<td>Waits</td>
<td>22</td>
<td>57 days</td>
</tr>
<tr>
<td>Handoffs</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Decisions</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>File/stores</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Total time</td>
<td>59 days</td>
<td></td>
</tr>
</tbody>
</table>
Example: Check Sheet

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Number</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact absent</td>
<td>///</td>
<td>8</td>
<td>27%</td>
</tr>
<tr>
<td>Contact busy</td>
<td>///</td>
<td>13</td>
<td>43%</td>
</tr>
<tr>
<td>Wrong address</td>
<td>//</td>
<td>2</td>
<td>7%</td>
</tr>
<tr>
<td>Vehicle problems</td>
<td>///</td>
<td>4</td>
<td>13%</td>
</tr>
<tr>
<td>Weather issues</td>
<td>/</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Business closed</td>
<td>//</td>
<td>2</td>
<td>7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

Example: Data for CI Training

**Quality Measure:**
Overall rating of training by trainees in post-training surveys

**Production Measure:**
Number of trainees per month

**Cost Measure:**
Staff hours per training
Example: Flu Specimen Testing

Time Measure:
Percent of specimens that take > 6 days to verify

Quality Measure:
Testing errors

Process Complexity Measure:
Number of handoffs

What Makes a Good Measure?

- Easy to Understand
- Important to the Customer
- Move People to Act
- Is Strategic – Relates to Goals
- Is Robust - Meaningful
- Provides Quick Feedback for Ease of Use
Questions?

10 Minutes
Group Exercise #2:

Understanding Process Performance

Fine Tuning Data Collection
The Data Collection Plan

A document that defines all the data collection details, including how much and what type of data collection is required and when and how it should be collected.

<table>
<thead>
<tr>
<th>Attributes for Data Collection Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title</strong></td>
</tr>
<tr>
<td><strong>Operational Definition</strong></td>
</tr>
<tr>
<td><strong>Purpose</strong></td>
</tr>
<tr>
<td><strong>Target</strong> (or when do we expect the curve to turn?)</td>
</tr>
<tr>
<td><strong>Formula/Calculation</strong></td>
</tr>
<tr>
<td><strong>Frequency</strong></td>
</tr>
<tr>
<td><strong>Source</strong></td>
</tr>
<tr>
<td><strong>Responsibility</strong></td>
</tr>
<tr>
<td><strong>Example: CI Training — Trainees use what they learned</strong></td>
</tr>
<tr>
<td>----------------------------------</td>
</tr>
<tr>
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<td><strong>Source</strong></td>
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<tr>
<td><strong>Responsibility</strong></td>
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**Data Collection Plan Exercise**
You now have a better understanding of your process. You realize there are performance gaps. Now what?

PDSA

Act

Plan

Study

Do
DO Phase: CI Training

Example: Measures showed training attendance dropping off in 2014, got customer feedback, decided to add additional courses to meet new training needs.

STUDY Phase: What are the measures telling us?
Act: Monitor and Sustain Work

- Use your data collection plan. Be intentional.
- Post Charts on the Wall
- Have check-ins! How is it going?
Use the visualization that makes the most sense for your data and audience!

- Box & Whisker Plot
- Check Sheet
- Control Chart
- Histogram
- Pareto Chart
- Run Chart
- Scatter Plot (Scatter Diagram)
Displaying Measures - Guidelines

- Simplify, simplify, simplify
- Consider when charts or tables are more appropriate
- Include a title and label both the x and y axis
- Do not use 3D
- Use the right chart for the right message
- Charts should be self-explanatory – test them!

Tips for Successful Measurement

- Be intentional about selecting measures.
- Measures should focus on the process, not people
- Engage process owners
Tips for Successful Measurement

- Share data with the group
- Define the measure
- Analyze and use the data

Customer requirements need to be considered.
Understand your process

- What does the process look like?
- What are the steps?
- How long is it taking?
- Where is the waste?
- What are my customer requirements?

Use data throughout the PDSA cycle

- Collect baseline data on your process.
- Use data to make, assess, & sustain improvements.
What Makes a Good Measure?

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- Important to the Customer
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Resources

MDH Office of Performance Improvement (OPI):
QI Toolbox - [http://www.health.state.mn.us/divs/opi/qi/](http://www.health.state.mn.us/divs/opi/qi/)

American Society for Quality (ASQ): Tools

MN Office of Continuous Improvement:
[http://mn.gov/admin/lean/resources/index.jsp](http://mn.gov/admin/lean/resources/index.jsp)

State of Maine – Department of Health & Human Services
Questions?

KEEP GOING
YOU CAN DO THIS!
THANK YOU!

Cathy Beil

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