Lean Six Sigma
White Belt Training

July 28, 2019

Catherine Larson
Lean Six Sigma Black Belt

Patty Rubstello, P.E.
Lean Six Sigma Green Belt

Patricia Michaud
Lean Six Sigma Green Belt
Introductions

1. Name
2. What, if anything, have you heard about Lean Six Sigma?
3. Why you signed up for this class?
Thoughts?
Lean Six Sigma is a fact-based, data-driven philosophy of improvement that values defect prevention over defect detection. It drives customer satisfaction and bottom-line results by reducing variation, waste, and cycle time, while promoting the use of work standardization and flow, thereby creating a competitive advantage. It applies anywhere variation and waste exist.

- Requires the *active* and *continual* participation of all employees in an environment supportive of innovation and teamwork.
Lessons from Previous Eras of Operational Improvement

Source: IBM Institute for Business Value, Driving Operational Innovation Using Lean Six Sigma
Lean Six Sigma Belting

- White Belt—typically line staff and managers who may be tasked with participating in or supporting teams using the Lean Six Sigma process. White Belts primarily assist in problem identification, analysis, and solution implementation.
- Green Belt—well versed in Lean Six Sigma methodologies and are able to implement Lean Six Sigma at a high level of proficiency.
- Black Belt—well trained Lean Six Sigma professionals who provide project management, meeting facilitation and project prioritization for the organization. The typical Black Belt knows how to define a problem in order to quickly drive towards a solution.
Introduction

1. Purpose and Need
2. The Lean Office
Lean Six Sigma Helps:

• Eliminate wasted time, effort, and material
• Standardize and improve processes
• Provide a strong organizational culture that is team oriented and empowered
• Provide a structure for change and adaptability
• Provide metrics to know if the change is working
If we all know we need to improve, the question becomes:

Why don’t we?
Purpose and Need

Some of the challenges include:

- Outdated Management Philosophies
- Lack of Knowledge
- Organizational Culture Resistant to Change
- In-bred Complexity

“I am all for progress – it’s the change I can’t stand.”

- Mark Twain
Purpose and Need

It’s a journey, not an end state!

Where we are today

Current Value Stream

How are we going to get there?

Lean Six Sigma

Future Value Stream

Shared vision
But what about non-manufacturing organizations?
• Any organization that delivers something to a customer can benefit
• As long as it has processes involving people and activities
The Lean Office

A lean office consists of processes that
- eliminate waste
- minimize non-value added activities
- correct performance issues
- integrate previously disjointed processes
- automate required activities

The only real differences is that instead of actual material being processed, its information.
The Lean Office

• A video about the Lean Office
  https://www.youtube.com/watch?v=cLys-mCSHFQ
The Basics

1. Lean Tools
2. Brainstorming Exercise
Basic Lean Tools

• DMAIC
• Brainstorming
• Affinity Diagrams
• Multi-voting
• Process Flow
• Value Stream Mapping

• Spaghetti Map
• Fishbone
• PICK Chart
• 5 Why’s
• 5 S’s
DMAIC

• Borrowed from Six Sigma.
• Used by a project teams to improve an existing process.
• Provides structure; each phase contains tasks and tools that lead the team to find the solution(s).
• A systematic and fact-based approach using data.
Brainstorming

• Creativity technique by which efforts are made to find a conclusion for a specific problem by gathering a list of ideas spontaneously contributed by its member(s).

• The term was popularized in the 1953 book *Applied Imagination*. Claimed that brainstorming was more effective than individuals working alone in generating ideas.
Brainstorming

• Group members record their own ideas using Post-It Notes.
• One idea or thought per Post-It.
  – Start
  – Improve
  – Stop
• Group members stick their Post-Its in a visible place.
Affinity Diagrams

• Allows large numbers of ideas stemming from brainstorming to be sorted into groups, based on their natural relationships, for review and analysis.
• Group collectively decides how to organize the various ideas.
• Once grouped, a brief group description should be developed.
Multi-voting

• Narrows a large list of possibilities to a small list of the top priorities or to a final selection.
• Preferred over straight voting because it allows an item that is favored by all, but not the top choice of any, to rise to the top.
• Decide how many votes each team member will get.
• That number should be at least one-third the total number of items on the list.
• Each member indicates which groups he or she votes for by placing a tick mark by each group.
• Once each member has voted, tally all votes.
• Prioritize or reduce the list by the votes received.
Process Flow

- A method of visually documenting the stages involved in performing a certain business procedure.
Spaghetti Map

• Detail the actual physical flow and distances involved in a work process.
• A spaghetti map often traces the walking patterns of workers in a process.
• Processes that have not been streamlined frequently are poorly laid out.
• Result looks like a mass of cooked spaghetti.
• Serves as an illustration of a system's inefficiency.
Spaghetti Map
PICK Chart

• Possible
• Implement
• Challenge
• Kill

The Contenders
“The Sweet Spot”
Implement

Parking Lot
Challenge

Parking Lot
Possible

Forget About It
Kill
5 Why’s

- Iterative question-asking technique used to explore the cause-and-effect relationships underlying a particular problem.
- Primary goal of the technique is to determine the root cause of a defect or problem.
- The "5" in the name derives from an empirical observation on the number of iterations typically required to resolve the problem.
5 Why’s

Got caught speeding

Why?

Late for Work

Why?

Got up late

Why?

Alarm clock didn’t work

Why?

Batteries were flat

Why?

Forgot to replace them

Countermeasure

Get an alarm clock that plugs into the mains or even replace the batteries at set intervals before they run out.
5 Why’s

- A 5 Why cartoon

http://youtu.be/P6ysWvIl0t8
• A system to reduce waste and optimize productivity through maintaining an orderly workplace and using visual cues to achieve more consistent operational results.

• This method organizes the workplace in its existing configuration, and is often the first Lean method which organizations implement.
5 S’s

• What does it stand for?
5 S’s

• A few examples:

Before

After
5 S’s

Before 5S...

After 5S...
Group Exercise

• We are all going to dinner.
• Pat Jones is buying.
• Where should we go?
  – Brainstorm
  – Affinity Diagram
  – Multivoting
Process Flow

1. Process Flow
2. Process Flow Exercise
3. Types of Flow
4. Push vs Flow Process Exercise
Process Flow

• A method of visually documenting the stages involved in performing a certain business procedure.

• Constructing a flow chart is often one of the first activities of a process improvement effort.

• Process flow charting provides the following benefits:
  – Gives everyone a clear understanding of the process
  – Helps to identify non-value-added operations
  – Facilitates teamwork and communication
  – Keeps everyone on the same page
Simple Flowchart

Making Coffee

1. Turn on Keurig
2. Add creamer to mug
3. Place mug on drip tray
4. Open pod compartment
5. Determine coffee flavor
   - Breakfast Blend
   - French Roast
6. Select appropriate brew size
7. Press brew button
8. Enjoy coffee
9. Close pod compartment
10. Place Breakfast Blend pod in Keurig
11. Place Decaf pod in Keurig
12. Place French Roast pod in Keurig
Common Symbols

• The basic flowchart symbols are:

- Start/End
- Process
- Decision
- Document
- Data
- Database
- On-Page Reference
- Off-Page Reference
Procedure

1. Define the process to be diagrammed. Write its title at the top of the work surface.
2. Discuss and decide on the boundaries of your process: Where or when does the process start? Where or when does it end? Discuss and decide on the level of detail to be included in the diagram.
3. Brainstorm the activities that take place. Write each on a sticky note. Sequence is not important at this point, although thinking in sequence may help people remember all the steps.
4. Arrange the activities in proper sequence.
5. When all activities are included and everyone agrees that the sequence is correct, draw arrows to show the flow of the process.
6. Review the flowchart with others involved in the process (workers, supervisors, suppliers, customers) to see if they agree that the process is drawn accurately.
Considerations

• Don’t worry too much about drawing the flowchart the “right way.” The right way is the way that helps those involved understand the process.
• Identify and involve all key people involved with the process.
• Do not assign a “technical expert” to draw the flowchart. People who actually perform the process should do it.
• Computer software is available for drawing flowcharts. Software is useful for drawing a neat final diagram, but the method given here works better for the messy initial stages of creating the flowchart.
Bill Cramer wants to make muffins. He has three muffin mixes in his pantry — Blueberry, Chocolate Chip, Banana Nut. Bill has never made muffins before. He has all the ingredients and supplies available.
**Value/Non-Value**

**Value added activities** change the form, fit or function of a product or service.

*These are things the customer would be willing to pay for.*

**Non-value added activities** do not contribute to the product or the process and should therefore be eliminated, reduced or simplified.

*Something for which the customer would be unwilling to pay for.*
Examples of Non-value added

• Waiting for materials
• Spending time searching for materials, tools, supplies, information, etc. that are not in their proper location
• Arriving at a meeting on time and then waiting for the meeting to start
• Equipment failures causing idle time
• Bottlenecks that create dead time (manufacturing, distribution, administration, etc.)
• Waiting for approvals or direction from leadership
• Waiting for assistance from various support functions
• Correcting inaccurate information provided by others
• Performing a task (and performing it efficiently) that does not need to be done
• Engaging in rework... this one is huge
Process Improvement

• Bill’s muffin
  – Evaluate current state
  – Identify value/non-value activities
  – Propose future state
Bill’s Current Process Flow

1. Remove blueberry muffin mix from pantry
2. Accept call from friend regarding golf later that day
3. Take out small mixing bowl and most other supplies
4. Add muffin mix to bowl
5. Measure 2/3 cup of water
6. Add water to bowl
7. Measure 1/3 cup of oil
8. Add oil to bowl
9. Add two eggs
10. Remove shell from mix
11. Open and drain blueberries
12. Resilve bowl is too small
13. Take out larger bowl
14. Transfer mix to larger bowl
15. Place small bowls in sink
16. Thoroughly beat mix
17. Gently fold blueberries into mix
18. Preheat oven
19. Take muffin tin out
20. Grease muffin tin
21. Pour mix evenly in muffin tin
22. Set timer for 15 minutes
23. Place muffin tin in oven
24. Play Candy Crush on iPhone
25. Timer sounds
26. Check doneness with toothpick
27. Take muffin tin out of oven
28. Turn oven off
29. Let muffin tin cool 5 minutes
30. Facebook with friends
31. Remove muffins from tin to cool further
32. Place dirty dishes in sink
33. Read paper until muffins are ready to eat
34. Eat a muffin
35. Clean dirty dishes
36. Put clean dishes and left over muffins away
Process Improvement

• Bill’s muffin improvement results
  – Eliminated 9 NVA steps
  – Resulting in an efficiency improvement of 25%
Types of Flow

Batching vs. Single Piece Flow

- **Batching**—focus on an individual step of an operation without regard for the effect on the overall process.
- **Single-piece flow**—processes are moved through operations from step-to-step with no work in process in between. Once work on a product begins it never stops moving until it is a finished product.
Theory of Constraints

• A methodology for identifying the most important limiting factor (i.e. constraint) that stands in the way of achieving a goal and then systematically improving that constraint until it is no longer the limiting factor.

• Constraints are often referred to as a bottlenecks.
The Key

Every process has constraints and focusing improvement efforts on the constraints is the fastest and most effective path to improved performance.
Push vs Flow Process Exercise
Failed Flow Process

https://www.youtube.com/watch?v=8NPzLBSBzPI
A Few Words of Caution

• The Red Bead Experiment
• Why Lean Fails
Red Bead Experiment

https://www.youtube.com/watch?v=L_2EFTQy_v0
Red Bead Lessons

• Management alone won’t improve performance if the process is flawed.
• This is why we perform continuous improvement. Lean is finding what is wrong and fixing it.
• In order to do that, you need to understand the root cause for the problem.
• If you fail to grasp cause and effect, you will always have the problem.
Disheartening Fact

80% of Lean projects fail!
Why Lean Fails

• Poor deployment.
• People are set in their ways.
• Everyone’s busy putting out fires.
• Fear of job loss.
• Unrealistic expectations.
• Management doesn’t engage.
• Management panics when issues are found and brought to light.
• Management desire for a “quick fix”, without allowing the team to work through the process.
• Outside influences dampen staff enthusiasm.
Change Acceleration Process

Creating A Shared Need
Shaping A Vision
Mobilizing Commitment
Making Change Last
Monitoring Progress

Leading Change

Current State
Transition State
Improved State

Changing Systems And Structures
The biggest reason for implementing Lean Six Sigma in an organization is its astonishing success at dramatically improving an organization’s bottom-line... and fast.

• Increased profit
• Decreased costs
• Improved efficiency and effectiveness
• Develops Effective People & Teams
• Fosters happier customers
New thoughts?
Charter

• A statement of the scope, objectives, and participants of a project.

• It provides:
  – A preliminary delineation of roles and responsibilities;
  – Outlines the project objectives;
  – Identifies the main stakeholders; and
  – Defines the authority of the project manager.

• It serves as a reference of authority for the project.
Charter

• The three main uses of the project charter are to:
  – Authorize and define the project
  – Serve as a reference document throughout the project’s lifecycle
  – Improve communication between the project team and stakeholders
Example Simple Charter

**Lean Review Project Report**

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process</strong></td>
<td>Name of process to be improved.</td>
<td></td>
</tr>
<tr>
<td><strong>Project Description</strong></td>
<td>What practical problem will be solved? What is project’s purpose?</td>
<td>Metric</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>What metric will be improved, what is the current performance for that metric and how much improvement is targeted?</td>
<td></td>
</tr>
<tr>
<td><strong>Process Scope</strong></td>
<td>Which process steps will be considered in this project? What is the first step and what is the last step?</td>
<td></td>
</tr>
<tr>
<td><strong>Business Case</strong></td>
<td>Justification for this project. Why is it important? Why is it critical to business success?</td>
<td></td>
</tr>
<tr>
<td><strong>Benefit to Internal and External Customers</strong></td>
<td>How will internal or external customers benefit from this project? How does improvement in the metrics that you have selected help them improve their performance?</td>
<td></td>
</tr>
<tr>
<td><strong>Assumptions</strong></td>
<td>What assumptions or constraints are being considered for this project?</td>
<td></td>
</tr>
<tr>
<td><strong>Risks</strong></td>
<td>What are the risks inherent with this analysis?</td>
<td></td>
</tr>
<tr>
<td><strong>Team members</strong></td>
<td>Names and roles of team members.</td>
<td></td>
</tr>
<tr>
<td><strong>Schedule</strong></td>
<td>Project Start</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Project Completion</td>
<td></td>
</tr>
<tr>
<td><strong>Support Required</strong></td>
<td>What resources, people, departments are required?</td>
<td></td>
</tr>
<tr>
<td><strong>Approved By</strong></td>
<td>Name of the Executive Sponsor approving this document.</td>
<td>Signature: [Name], [Title]</td>
</tr>
</tbody>
</table>

V1.0 Page 1
# Charter

## Basic Project Information

<table>
<thead>
<tr>
<th>Lean Review Project Report</th>
<th>[DATE]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product/Service Impacted</strong></td>
<td>Project Lead (PL)</td>
</tr>
<tr>
<td><strong>Business Unit</strong></td>
<td>PL Contact Info</td>
</tr>
<tr>
<td><strong>Champion</strong></td>
<td>Initial Charter Completed</td>
</tr>
</tbody>
</table>
## Charter

### Process, Description, Objective, Scope

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Process</td>
<td>Name of process to be improved.</td>
<td></td>
</tr>
<tr>
<td>2. Project Description</td>
<td>What practical problem will be solved? What is project’s purpose?</td>
<td></td>
</tr>
<tr>
<td>3. Objective</td>
<td>What metric will be improved, what is the current performance for that metric and how much improvement is targeted?</td>
<td>Metric</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Current</td>
</tr>
<tr>
<td>4. Process Scope</td>
<td>Which process steps will be considered in this project? What is the first step and what is the last step?</td>
<td></td>
</tr>
</tbody>
</table>
# Charter

## Business Case, Benefits, Assumptions, Risks

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td><strong>Business Case</strong>&lt;br&gt;Justification for this project. Why is it important? Why is it critical to business success?</td>
</tr>
<tr>
<td>6.</td>
<td><strong>Benefit to Internal and External Customers</strong>&lt;br&gt;How will internal or external customers benefit from this project? How does improvement in the metrics that you have selected help them improve their performance?</td>
</tr>
<tr>
<td>7.</td>
<td><strong>Assumptions</strong>&lt;br&gt;What assumptions or constraints are being considered for this project?</td>
</tr>
<tr>
<td>8.</td>
<td><strong>Risks</strong>&lt;br&gt;What are the risks inherent with this analysis?</td>
</tr>
</tbody>
</table>
# Charter

Members, Schedule, Support, Approval

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Team members</td>
<td>Names and roles of team members.</td>
</tr>
<tr>
<td>10. Schedule</td>
<td>Project Start</td>
</tr>
<tr>
<td></td>
<td>Project Completion</td>
</tr>
<tr>
<td>11. Support Required</td>
<td>What resources, people, departments are required?</td>
</tr>
<tr>
<td>12. Approved By</td>
<td>Name of the Executive Sponsor approving this document.</td>
</tr>
</tbody>
</table>

Signature:

[Name], [Title]
## Charter

Members, Schedule, Support, Approval

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>9. Team members</strong></td>
<td>Names and roles of team members.</td>
</tr>
<tr>
<td><strong>10. Schedule</strong></td>
<td>Project Start</td>
</tr>
<tr>
<td></td>
<td>Project Completion</td>
</tr>
<tr>
<td><strong>11. Support Required</strong></td>
<td>What resources, people, departments are required?</td>
</tr>
<tr>
<td><strong>12. Approved By</strong></td>
<td>Name of the Executive Sponsor approving this document.</td>
</tr>
<tr>
<td></td>
<td>Signature:</td>
</tr>
</tbody>
</table>

[Name], [Title]
Project Identification

• Brainstorm project ideas
  – What one process would you like to change, about the work you do?
  – Consider projects that could improve customer service or improve customer satisfaction

• Projects should be something that could be completed in 3 to 4 months

• Look for cross-functional opportunities
Lean Six Sigma in Practice

Customer Escalations

Transponder Fulfillment
PROBLEM STATEMENT

Referrals/escalations in many cases are the last resort for a customer to have their problem resolved. It is essential that the escalation practices achieve high levels of resolution. This review project focuses on reducing the effort and time spent on drafting a response for the assistant secretary or director.
OBJECTIVE STATEMENT

Reduce the delivery time and improve the quality of the final draft submitted to the assistant secretary or director by 20 percent.
Immediate improvement...
A few years later...
PROBLEM STATEMENT

Currently there is a fulfillment backlog of approximately 26,000 transponders. The CSC has added a second shift and staff are processing online orders from 6 a.m. to 10 p.m., Monday through Friday. Each CSR processes between 200 and 250 pass orders per day, resulting in a total output of 1,300 orders per day. This output is insufficient to address the backlog in a timely manner. Any efficiency improvements or time savings will make a difference.
OBJECTIVE STATEMENT

Reduce the transponder fulfillment backlog and accelerate the delivery time to customers.
Transponder Fulfilment

☐ Moderate improvement...
A few years later...
## Project Prioritization

### Lean Six Sigma Pay By Mail Planning PICK/Project Prioritization

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th>PICK</th>
<th>BENEFIT TO CUSTOMER</th>
<th>PUBLIC PERCEPTION</th>
<th>BENEFITS TO THE TOLL PROGRAM</th>
<th>ACCEPTANCE BY WSTC/LEG</th>
<th>VALUE ANALYSIS</th>
<th>RESOURCES REQUIRED</th>
<th>TOTAL PROJECT PRIORITY</th>
<th>IMPLEMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Eliminate billing gaps</td>
<td>C</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>26</td>
<td>Long-term</td>
</tr>
<tr>
<td>2) Online Improvements</td>
<td>C</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>21</td>
<td>Long-term</td>
</tr>
<tr>
<td>3) Returned Mail</td>
<td>I</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>25</td>
<td>Short-term</td>
</tr>
<tr>
<td>4) Improved Customer Contact (post card, email, etc)</td>
<td>I</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>25</td>
<td>Short-term</td>
</tr>
<tr>
<td>5) Toll Bill Re-design</td>
<td>C</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>22</td>
<td>Mid-term</td>
</tr>
<tr>
<td>6) Billing Due Dates</td>
<td>I</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>25</td>
<td>Short-term</td>
</tr>
<tr>
<td>7) Payment Order</td>
<td>C</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>22</td>
<td>Long-term</td>
</tr>
<tr>
<td>8) NOCP Generation Criteria</td>
<td>I</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>28</td>
<td>Short-term</td>
</tr>
<tr>
<td>- Threshold for NOCP</td>
<td>I</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>28</td>
<td>Short-term</td>
</tr>
<tr>
<td>- Threshold for # of Transactions moving to NOCP</td>
<td>I</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>28</td>
<td>Short-term</td>
</tr>
<tr>
<td>9) $ Amount Threshold to write-off</td>
<td>I</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>25</td>
<td>Short-term</td>
</tr>
</tbody>
</table>
Lean Six Sigma

Questions?
Lean Six Sigma Support

Catherine Larson, LSS Black Belt
206.979.7974
catherine@Larson.consulting
The Other Basic Lean Tools

• Value Stream Mapping
• Fishbone
Value Stream Mapping

• Technique used to analyze and design the flow of materials and information required to bring a product or service to a consumer.
• Takes a process flow chart and adds cycle times and lead times to each step.
• Additionally, suppliers and customers are shown.
Value Stream Mapping
Fishbone

• Also known as cause and effect diagram.
• Used for quality defect prevention by identifying potential factors causing an overall effect.
• Each cause or reason for imperfection is a source of variation.
• Causes are usually grouped into major categories to identify these sources of variation.
Fishbone

Measurement
- Faulty testing equipment
- Incorrect specifications
- Improper methods

Human
- Poor supervision
- Lack of concentration
- Inadequate training

Machines
- Out of adjustment
- Tooling problems
- Old / worn

Environment
- Inaccurate temperature control
- Dust and dirt

Materials
- Defective from vendor
- Not to specifications
- Material-handling problems

Process
- Poor process design
- Ineffective quality management
- Deficiencies in product design

Quality Problem
Lean Six Sigma in Practice

• Task Order Generation and Execution Case Study
• Cash Management System
Case Study 1

GTC Task Order Generation and Execution Process
Define

• Purpose is to streamline the process of task order development, review process, approvals and execution.
• Project will start with the determination of the need and end with the final execution of the task order.
• Currently too many people are involved in successful execution of a task order.
• This is a result of inconsistent processes between various groups.
Measure

- Actual timelines were tracked for the previous 6 months:
  - Total number of days elapsed range is 19-44 days (excluding the weekends and holidays).
  - The average number of days for a task order generation, approvals and final execution is 33 days.
- Goal is to reduce the number of days by 25 percent or 8.5 days.
### GTC Task Orders Previously Executed Timelines

<table>
<thead>
<tr>
<th>Process Task</th>
<th>BL Calendar Days</th>
<th>BN Calendar Days</th>
<th>BP Calendar Days</th>
<th>BQ Calendar Days</th>
<th>BR Calendar Days</th>
<th>BJ Calendar Days</th>
<th>BT Calendar Days</th>
<th>AL-08 Calendar Days</th>
<th>BA Calendar Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agency PM request for scope from GTC PM</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>GTC submits draft scope for review to Agency</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>0</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>GTC resolves comments for final draft scope</td>
<td>6</td>
<td>12</td>
<td>5</td>
<td>21</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>GTC submits estimate template and submits to Agency</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Independent Estimates prepared by GTC and Agency</td>
<td>19</td>
<td>2</td>
<td>8</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CSO issues estimate comparison</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Negotiated hours agreed by GTC and Agency</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>CSO sends final Task Order to GTC</td>
<td>1</td>
<td>16</td>
<td>2</td>
<td>8</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Task Order Executed by all parties</td>
<td>8</td>
<td>3</td>
<td>9</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Total Number of Working days to execute the Task Order</td>
<td>43</td>
<td>44</td>
<td>32</td>
<td>40</td>
<td>27</td>
<td>27</td>
<td>19</td>
<td>43</td>
<td>22</td>
</tr>
</tbody>
</table>
Analyze

• The main reasons for the longer timeline was:
  • Unclear understanding of the scope of the task order.
  • Additional steps needed to obtain initial approval from Agency Consultant Services Organization (CSO) Director.
  • Additional time taken to get through the negotiations for the task order between Agency, GTC and CSO.
  • Time taken to obtain approvals from the funding stakeholders (Project Office or Toll Finance group).
Analyze

- Non-value added tasks were identified and the following improvements were proposed:
  - Eliminate the initial approval from the CSO Director
  - Conduct a meeting for the development of initial scope after the need for the task order arises.
  - Conduct a review workshop for the page turn and review of the draft scope.
  - Agency PM to include all stakeholders of the task order throughout the process to minimize the response time.
Improve

- A new process for task order generation, approval and final execution was developed.
- SOPs were created for approval by the Agency Toll Division Project Management Office (PMO).
- The project team sought concurrence from
  - Agency Consultant Services Office (CSO)
  - Agency Headquarters Contracts Office
- The new process was implemented two months after charter approval.
Control

- Potential unintended consequences of improvements:
  - May be pushback from stakeholders and resistance for change.
  - Check compliance with Administrative Codes and Agency Consultant Services Manual.
Control

• Control measures include:
  • Implement the SOPs for all new GTC task orders across the Toll Division.
  • Continue to monitor number of days taken for the task order generation, approval and execution.
  • Monitor the timelines for the 5 steps identified in the new process.
Lean Review Project: GTC Task Order Generation and Execution Process

**Objectives**

To streamline the process of the General Toll Consultant Task Order (GTC) development, review process, approvals, and execution:

- This timeline is critical to the execution of a general toll consultant task order and would add significant time and could delay the work to be performed by the consultant.
- This project will evaluate the task order process from the determination of need to the final execution and improve the efficiency of the process.

**Where Things Stand Today:**

- There are several people involved in successful execution of a GTC task order from the Project Manager at GTC to the Director of Operations at the WSDOT Toll Devices, and multiple interdependencies would add unnecessary time to the process.
- Team members report that the current process is a result of inconsistent processes/policies between various groups and multiple review/changes, causing additional delays.

**Analysis**

The team discussed the main reasons for the longer timeline for the GTC task order generation, approval, and execution are listed below:

1. Clear understanding of the scope of the task order
2. Additional steps needed to obtain initial approval from WSDOT Consultant Services Organization (CSO) Director
3. Additional time taken to get through the negotiations for the task order between WSDOT, GTC and CSO.
4. Time taken to obtain approval from the funding stakeholders (Project Office for ITS projects or Toll Finance group)

After brainstorming several improvements to the current process and analyzing the data for the current trends, the lean project team identified the value added and non-value added tasks in the current process and proposed the following improvements to this process:

- Eliminate the initial approval from the CSO Director, instead using CSO staff involved in the process of task order generation, scope development to eliminate additional delays.
- Conduct a meeting between various parties involved for the development of initial scope after the need for the task order arises. This meeting agenda involves initial scope development, setting expectations, and identifying next steps.
- Conduct a review workshop between various parties involved for the page turn and review of the draft scope.
- WSDOT PM to include various stakeholders approval of the scope/briefing to the task order to minimize the response time from them.

**Improvements**

- The new process for the GTC task order generation, approval, and final execution is shown above. It would create a Standard Operating Procedure under the guidance of the team project team and would be proposed for approval to the WSDOT Toll Division Project Management Office (PMO).
- Subsequent to the approval of the SIP from the Project Sponsor, the project team will seek approvals from the WSDOT Consultant Services Office (CSO) Director and WSDOT Headquarters Contracts Office.
- The new process will be implemented, subsequent to the PMO approval by October 1, 2014.
Case Study 2

Cash Management System
Define

• Walk-in Center CSRs are not provided with a change drawer at the start of their shift.
• Staff expressed concern about the time spent trying to break change for a customer.
• There are concerns about the accuracy of the drawer balances at the end of each shift.
• The goal was to ensure CSRs have the necessary change to process cash customer payments and transactions are processed faster & more accurately.
Define

Current State
Measure

- Actual times for cash handling were tracked.
- We were unable to determine revenue losses due to shortages.
Improve

- Fix the receipt machines so both CSR terminal machines are functional.
- Develop WIC cash handling procedures.
- Obtain six locking cash drawers.
- Develop “Cash Drawer Audit Slip”.
- Obtain petty cash for daily use for WIC cash drawers and to make change for larger bills.
- Develop disciplinary policy for overages/shortages.
Control

**Monitoring Approach:** The improvements will be monitored for three months after implementation and then quarterly for one year. Adjustments will be made as necessary, to ensure the improvements are meeting the intended goals.
**PROJECT DESCRIPTION**

The Walk-in Center cash management system lacks formal processes, documentation, and accountability. The team wanted to start each day with enough change in drawers to ensure faster and more accurate customer service and accuracy in drawer balances at the end of each day.

**ANALYZE**

- **Non-value added analysis:** Review of the current state highlighted potential opportunities for errors, delays in customer service, lack of accountability, and rework.
- **Process Flow Diagram:** Current State: The team documented the current state using a process flow diagram. See "Cash Drawer Process Flow - Current State".
- **Voice of the Customer:** Walk-in Center customer service representatives and Finance Department staff were interviewed to understand key issues and business concerns associated with the cash management system.

**DEFINE**

- **Process Flow Diagram - Current State:**
  
**MEASURE**

Current operations include one hour, thirty minutes of non-value added activities each day. Improvements suggest a daily savings of one hour, fifteen minutes, at an annual cost savings of $20,000.

**IMPROVE**

- **Lead:**
  - John Morgan-Jones
  - John Morgan-Jones
  - John Morgan-Jones
  - Kimberly Rehco

- **Action:**
  - Hire the right people to avoid CM terminal machines being overwhelmed
  - Obtain copies of WIC cash handling procedures from other Kern locations
  - Develop Express Lane WIC cash handling procedures
  - Develop "Cash Drawer Audit Form"

- **Due:**
  - 1/3/16
  - 1/3/16
  - 1/3/16
  - 12/31/15

**CONTROL**

- **Monitoring Approach:** The improvements will be monitored for three months after implementation and then quarterly through June 2017. Adjustments will be made as necessary, to ensure the improvements are meeting the intended goals.