Lean Six Sigma and Project Management – triangles and (virtuous) circles

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Introduction

Broad Agenda and Approach

Purpose:
• To understand and stimulate interest in how LSS and Project Management can make each other more effective

Agenda:
• What do you know already? (Introduction & interaction)
• An overview of Lean Six Sigma - and the triangle (Presentation)
• Lean Six Sigma as part of Project Management (Interaction)
• Opportunities for Lean Six Sigma and Project Management – the virtuous circle (Presentation and conclusions)
Introduction

Who we are

• **Ex-Pharmaceutical:**
  – R&D (Elisabeth)
  – Manufacturing (John)

• **Consultants, trainers, facilitators**

• **Practitioners of:**
  – Process Improvement: Lean Six Sigma (Green Belts)
  – Knowledge management
  – Change management
  – Project management
Where are you on your continuous improvement journey?

1. Place dots on the brown paper chart to indicate your organisations’ current understanding / experience of LSS

   - Don’t know much about it
   - One or two days’ instruction or experience
   - Something I / we have actively explored
   - It’s part of how I / we work

2. Place post it notes with name & company to show your individual understanding / experience
Your knowledge and experience of Lean Six Sigma tools?

In your tables:

1. Discuss and capture on post-it notes the main tools encountered (1-3 only per person) for effective implementation of either PM or LSS – identifying whether in PM or LSS

2. Capture at a very high level
   a) What has been particularly useful & why/ how
   b) Any issues encountered in their use

Be prepared to feedback on any common themes, good examples and key issues

Facilitators will cluster what has been useful and issues as a record from the meeting
An introduction to Lean and Six Sigma

2 topics:

1. How LSS relates to the PM triangle
   • Lean (Time / Cost) and Six Sigma (Quality)

2. DMAIC: the structured approach to LSS
   • With examples of one or two tools per step
1. The triangle

Lean optimises processes by eliminating wasted time and money

Six Sigma optimises quality of what is delivered to customers by reducing variation

LSS Principles:
- Customers define the ‘quality’ of products & services
- Quality & speed of work are optimised
- Flow & speed are determined by customer ‘pull’
- Those doing the work have the best knowledge to improve the way they do it
- “Operational Excellence” is a continuous journey
2. DMAIC

- Definition of goals and approach to achieve them
- Information on current state (also helps to inform goals)
- Analysis of issues and their root causes
- Identification and evaluation of solutions, recommendations for review with management, change management plans
- Visual measures to ensure that anticipated benefits (goals) are being realised; identification of new goals
DMAIC – a structured approach to process improvement projects

<table>
<thead>
<tr>
<th>Define</th>
<th>Improve</th>
<th>Control</th>
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</thead>
<tbody>
<tr>
<td>• SIPOC (and IPO)</td>
<td>• Visual management</td>
<td>• Process Control Charts</td>
</tr>
<tr>
<td>• Knowledge Based Management and “Show me the data”</td>
<td>• 5S Workplace Organisation</td>
<td>• Run Charts</td>
</tr>
<tr>
<td>• PF/CE/CNX/SOP</td>
<td>• Work Cell Design / Standard Work</td>
<td>• (AAR)</td>
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<td>• Kanban</td>
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<td>• SMED / Poke Yoke</td>
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<td>• DoE</td>
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<table>
<thead>
<tr>
<th>Measure</th>
<th>Analyse</th>
<th></th>
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<tbody>
<tr>
<td>• Physical Process Map</td>
<td>• Cause and Effect Diagram</td>
<td>• Process Control Charts</td>
</tr>
<tr>
<td>• Process Flow Chart / Process Observation / Gemba</td>
<td>• 5 whys</td>
<td>• Run Charts</td>
</tr>
<tr>
<td>• Time Value Map</td>
<td>• FMEA</td>
<td>• (AAR)</td>
</tr>
<tr>
<td>• Waste Analysis</td>
<td>• Pareto Chart</td>
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<td></td>
<td>• Force Field Analysis</td>
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</table>
Definition of goals and how to achieve them

**SIPOC**

<table>
<thead>
<tr>
<th>Suppliers</th>
<th>Inputs</th>
<th>Process</th>
<th>Outputs</th>
<th>Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who are our suppliers?</td>
<td>What do we need to carry out our process effectively and efficiently?</td>
<td>What are the steps involved to produce what the customers want?</td>
<td>What do our clients want in terms of products, services and quality?</td>
<td>Who are our customers?</td>
</tr>
</tbody>
</table>

**Define**

- SIPOC (and IPO)
- Kano
- Knowledge Based Management and “Show me the data”
- PF/CE/CNX/SOP

**Kano model**

- VERY SATISFIED
- PRESENT
- NENTRAL
- PERFORMANCE
- BASIC NEEDS
- DISSATISFIED
- ABSENT

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Information on current state (also helps to inform goals)

**Ohno’s wastes**

<table>
<thead>
<tr>
<th>Type of waste</th>
<th>Potential Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defects</td>
<td>Quality that does not meet customer requirements</td>
</tr>
<tr>
<td>Overproduction</td>
<td>Delivery is too fast or there is too much product/service for needs</td>
</tr>
<tr>
<td>Transport</td>
<td>Unnecessary ‘transport’ during production (go for cellular layout)</td>
</tr>
<tr>
<td>Waiting</td>
<td>Waiting between steps for things to happen (batching vs. 1-piece flow)</td>
</tr>
<tr>
<td>Inventory</td>
<td>Products or services (including work in process) piling up prior to use</td>
</tr>
<tr>
<td>Motion</td>
<td>Unnecessary movement of individuals during production</td>
</tr>
<tr>
<td>Processing</td>
<td>More work than is needed e.g. for review or to meet customer needs</td>
</tr>
<tr>
<td>Creativity</td>
<td>Staff creativity / potential not being used</td>
</tr>
</tbody>
</table>

**Measure**

- Physical Process Map
- Process Flow Chart / Process Observation / Gemba
- Time Value Map
- Waste Analysis

**Process map**

**Addition value activities**

**Time Value map**

**Non-added value activities (and ‘white’ space)**
Analysis of issues and their root causes

5 Why's
- Undesirable effect or issue
  - Why?
  - Cause
    - Why?
    - Cause
      - Why?
      - Cause
        - Why?
        - Cause
          - Why?
          - PRIMARY CAUSE

Cause & Effect Diagram
- People
- Systems
- Materials
- Measures
- Methods
- Environment
- Undesirable effect

Pareto Analysis
- Frequency
- Cumulative frequency
- Individual issues
- 80%

- Cause and Effect Diagram
- 5 whys
- FMEA
- Pareto Chart
- Force Field Analysis

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Identification and evaluation of solutions, recommendations, change management plans

- Visual management
- 5S Workplace Organisation
- Work Cell Design / Standard Work
- Kanban
- SMED / Poke Yoke
- DoE

**5Ss**

- **S**ort
- **S**hine
- **S**tandarD
- **S**ustain
- **S**hould

**Cellular layout**

**Poke Yoke**

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Some examples of 5S in action!
More about Visual Management

Information

Control

Failsafe

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Visual measures to ensure that anticipated benefits are being realised

Control

- Process Control Charts
- Run Charts
- (AAR)

Examples of Run Charts
- Hospital patient temperature chart
- Sales per month
- Number of late trains per day
- Analytical test results by batch
- Number of people per APM Seminar

After Action Review – simple format
- What were the original goals?
- What actually happened:
  - What went well?
  - What could have been improved (how)?
- What have we learnt?
  - What can we share?
  - With whom (and how)?

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LSS as part of Project Management

Work in tables. Explore one of two questions:

• Q1. Can LSS enhance the delivery of projects and if so how?
• Q2. What is the role for project managers in introducing and embedding LSS tools

Discuss for 15 minutes and be prepared to feedback
Virtuous Circles

LSS

Define

Concept

Measure

PM Definition

Analysis

Implementation

Handover, Closeout & Operation

Improve

Control

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Our view of LSS / PM opportunities

- **Define**
  - IPO to confirm objectives, starting point and approach
  - Ensure sponsorship in place and stakeholders managed

- **Measure**
  - Data (process observation) and root cause analysis of current state clarifies and confirms issues and goals
  - Determine business case, success criteria and benefits

- **Analyse**
  - Potential solutions evaluated against root causes and goals
  - Developing and tracking an implementation plan
  - Project manager to lead and be accountable

- **Improve**
  - Visual management to monitor progress & Identify opportunities for continuous improvement
  - Handover, closeout and review to release resource and gain knowledge

- **Control**

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Thank you for your participation!

*Please leave us your details for slides & notes from today.*

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