“Lean Agile” for Project and Portfolio Management (PPM) Efficiency

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Abstract

Innovation in today’s fast paced business environment is driven by the critical need to ‘learn’ and ‘respond’ to Customer requirements ‘rapidly’. Organizations continuously try to increase focus on the Customer and Market and stay competitive by exploring and implementing Software development methodologies and principles that deliver continuous ‘value’ and vigorously ‘eliminate’ anything that is not adding value.

The new age Software development has been transformed by ‘Agile’ development methods. In Agile methods, instead of building the whole product, a smallest possible useful part is built and given to users in two to four weeks leading to rapid feedback, testing and adjustments. In addition, functional software is available much sooner compared to traditional development cycles. Agile has much similarity with ‘Lean’ which comes from Lean Manufacturing and is a set of principles for achieving quality, speed & customer alignment. Lean says to relentlessly eliminate anything that isn’t adding value and only work on what we absolutely need to be doing at this moment in time.

This white paper provides an insight to how we can adapt the Lean and Agile principles successfully to increase the efficiency of Project and Portfolio Management (PPM) processes within the Organization. We discuss the implementation approach, the challenges and the lessons learnt. The paper also provides guidelines and recommendations on the Lean and Agile tools that can be used by organizations to improve their approach to implement IT PPM solutions and enhance their success.

Introduction

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1 Second Editions are previously published papers that have continued relevance in today’s project management world, or which were originally published in conference proceedings or in a language other than English. Original publication acknowledged; authors retain copyright. This paper was originally presented at the 7th Annual UT Dallas Project Management Symposium in Richardson, Texas, USA in August 2013. It is republished here with the permission of the author and UT Dallas.
implementing Software development methodologies and principles that deliver continuous ‘value’ and vigorously ‘eliminate’ anything that is not adding value.

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This white paper provides an insight to how we adapted the Lean Six Sigma and Agile principles successfully to increase the efficiency of Project and Portfolio Management (PPM) processes within the Organization in our case. We discuss the implementation approach, the challenges and the lessons learnt. The paper also provides thoughts and recommendations how the Lean and Agile tools that can be used by organizations to improve their approach to implement IT PPM solutions and enhance their success.

### Agile Adoption increases and influences the PPM market

The PPM (Project and Portfolio Management) market has been deeply influenced by the adoption of lean governance in support of agile development. Organizational adoption of agile methods has shown an increasing trend in the past few years.

- Agile Software Development permanently changes Project Execution and Governance
- Over 40% of companies have adopted Agile, but less than 20% have scaled Agile across the Enterprise
- Demand for business agility fuels adoption of Agile development techniques that can deliver differentiating business technology (BT) solutions within accelerated time frames
- Traditional PPM tooling is in a stage of change and renewal to support “Agile”
- PPM market segmentation has much clearer delineation of ‘above-the-line’ and ‘below-the-line’ PPM, based on changes driven in large part by the adoption of lean governance in support of “Agile” development
The Agile Manifesto

This helps in understanding of the Agile thinking.

We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

**Individuals and interactions over processes and tools**

**Working software over comprehensive documentation**

**Customer collaboration over contract negotiation**

**Responding to change over following a plan**

That is, while there is value in the items on the right, we value the items on the left more.
Principles behind the Agile Manifesto

1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
2. Welcome changing requirements, even late in development. Agile processes harness change for the customer’s competitive advantage.
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.
4. Business people and developers must work together daily throughout the project.
5. Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
6. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
7. Working software is the primary measure of progress.
8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
9. Continuous attention to technical excellence and good design enhances agility.
10. Simplicity—the art of maximizing the amount of work not done—is essential.
11. The best architectures, requirements, and designs emerge from self-organizing teams.
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

Lean Thinking

Lean is a set of thinking principles that focuses on continuous optimization of work and the way of work. Lean (or lean thinking) is the English name—popularized by MIT researchers—to describe the system now known as the ‘Toyota Way’ inside the company that created it.

The Lean Thinking House

The figure below summarizes the modern Toyota Way in a “lean thinking house” diagram.

The following are the major elements of the house.

1. Goal
2. Foundation
3. Pillar – Respect for People
4. Pillar – Continuous Improvement
5. 14 principles
6. Lean product development
Lean Six Sigma

Six Sigma is a set of tools and strategies for process improvement developed by Motorola in the mid 80’s. Though it was initially associated a lot with the manufacturing processes, today it is used across multiple industries. Six Sigma seeks to improve the quality of process outputs by identifying and removing the causes of defects (errors) and minimizing variability in manufacturing and business processes.

Lean Six Sigma is a managerial concept combining Lean and Six Sigma that results in the elimination of wastes and provision of goods and service at the best quality. The Lean Six Sigma projects comprise the Lean’s waste elimination projects and the Six Sigma projects based on the critical to quality characteristics.

Lean, Six Sigma and Agile can be a powerful combination

Scrum as an Agile framework for development of complex products and has distinct practices that match the Lean principles well. We infer that Agile Scrum and Lean complement each other. Six Sigma is a well-known methodology to identify root causes.
and fix defects. These 3 methods can co-exist to deliver a powerful methodology to implement PPM (Project and Portfolio Management) Solutions.

**Background – Our Case**

PMO was investigating the ability to track Project Financial data for the IT Organization. There is an inability to track near real time Project Financial Forecast vs. Actual Cost data for project and this lead to

- Manual effort in data collection
- Inability to track accurate and real time portfolio/program costs
- Lack of data driven management decisions

There was a need to streamline project budget, forecast and actual cost tracking process to provide real time project cost visibility.

We were tasked with this initiative to streamline the project financial management processes. We believed that adopting a hybrid approach using Lean Six Sigma and Agile Scrum principles would allow us to investigate the process from a holistic perspective rather than focusing our energy on just the need at hand.
Hybrid Approach

We developed a high level phased plan based on the decided approach.

**1. Leverage Lean Six Sigma**
- Capture voice of customer, gather current state information (process metrics, lead times, pain points)
- Develop future state vision, Quantify and clearly articulate benefits
- Develop solution, implementation plan
- Monitor the improvement

**2. Tool enablement using Agile practices**
- Phased implementation
- Continuous value delivery by 2-3 week sprints

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**Step 1**
Review existing material + Gap Analysis

**Step 2**
Proposal to fulfill gaps

**Step 3**
Development and Documentation

**Step 4**
Pilot Implementation and Workshops

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- **Define**
- **Measure**
- **Analyze**
- **Improve**
- **Control**

- Focus Interviews
- Workshops
- As-Is process Reviews

- Identify Key focus areas
- Deep dive into specific problem areas
- Data collection
- Value Stream Mapping As-Is
- Develop a foundation of understanding about the problem at hand

- Challenge pre-existing models
- Design and discuss potential solutions and approaches
- Perform gap analysis and provide recommendations

- Design solution components
- Integrate designs into a comprehensive To-Be process
- Define the work schedule and then pursue development
- Implement solution in Pilot groups with in IT
- Implement Change management processes (Training and Communication)

- Data collection for control phase
- Monitor process capability
Gathering Voice of the Customer

We identified the 30 key individuals from different teams as key stakeholders of the process based on initial knowledge of the as-is process. To facilitate gathering of the Voice of the Customer (VOC) we finalized the use of the following tools.

- Individual interviews
- Focus interviews
- Brainstorming sessions
- Affinity Diagrams
- Workshops

The brainstorming sessions provided key insight on pain areas within key as-is processes and sub-processes. Based on 20 individual interviews, 4 brainstorming sessions, 25 focus interviews and 2 workshops, the key focus areas were identified.
The next step was mapping the as-is processes using SIPOC based on inputs from the various interviews and brainstorming sessions with the key stakeholders. The as-is
process maps provided a powerful visual story of the process steps and the key actors involved.

Value Stream Analysis

To measure the as-is process and to understand it better we chose to use the value stream map.

Value stream mapping is a lean manufacturing technique used to analyze and design the flow of materials and information required to bring a product or service to a consumer.

The team defined the data collection questionnaire. We conducted focus interviews with a sample of key stakeholders and available systems to gather data on the as-is process.

The value Stream Map for as-is process was developed based on the data collection.
The analysis highlighted several pain areas in the overall process and we were able to group them in to the following logical groups.
Based on these logical areas, several streams of work were identified to be part of the overall backlog for this initiative. For the purposes of this paper, as an example, we will discuss further on the project financial tracking stream briefly.

The data analysis for the stream is shown below. Clearly the process cycle time was well outside the specification limits and needed further analysis.

The significant ‘X’s

The analysis uncovered the driving factors that were causing the challenges.
Challenges

- How do we track Project Burn Rate today?
- Do we have all the resources track time?
- How can we track Plan vs. Actual Effort?
- How can we track Estimated Cost vs. Actual Cost?
- Could we avoid manual work to summarize Project/Program Financial status by utilizing a PPM tool?

Project Financial Data - Challenges

<table>
<thead>
<tr>
<th>Tool</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Central tool to track project financials</td>
<td>All resources do not track time in a central tool</td>
</tr>
<tr>
<td>Automated tracking of Forecast vs. Actual is not present</td>
<td>Financial reporting to PMs not available</td>
</tr>
<tr>
<td>Financial tracking processes are not established</td>
<td>Resource rates are not tracked in a central tool</td>
</tr>
<tr>
<td>Project forecast not tracked in a central tool</td>
<td>Methodology</td>
</tr>
<tr>
<td>Project forecasting processes not established</td>
<td>Resource Rate</td>
</tr>
</tbody>
</table>

Driving Xs

- All resources to enter time in a tool
- Use a tool to forecast project cost in $ on a monthly basis
- Refine forecasts periodically
- Track plan vs. actual using a tool
Solution Alternatives

The potential solutions were brainstormed to evaluate which one would best eliminate the root causes and meet the need. We defined multiple solution selection criteria that included

- Ease of use
- User Interface
- Accuracy of Data
- Real time Data
- Ease of Reporting

There was a weight and scoring scale established for comparing the solution alternatives. (Illustrative example below)

<table>
<thead>
<tr>
<th>Project Description (Project financial)</th>
<th>Ease of use</th>
<th>User Interface</th>
<th>Accuracy of Data</th>
<th>Real time Data</th>
<th>Ease of Reporting</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance weight&gt;&gt;</td>
<td>10</td>
<td>8</td>
<td>10</td>
<td>6</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Solution 1</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>138</td>
</tr>
<tr>
<td>Solution 2</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>9</td>
<td>3</td>
<td>222</td>
</tr>
<tr>
<td>Solution 3</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>3</td>
<td>330</td>
</tr>
</tbody>
</table>

Summary:
- Solution 3 – is the best solution option to address the root causes and with the maximum score.

Implementation

We used the Agile Scrum methodology for implementation. Based on the selected solution, the product backlog was created and updated with user stories from the various streams. The scrum onsite and offshore teams worked in sync to deliver the releases in 3 week sprint cycles.
Effective Change Management:

The success of the solution and its adoption depended upon an effective change management strategy. The focus was to Align- People, Process, and Tools to achieve maximized value.

- Adopt industry best practices in defining processes
- Leverage market leading PPM tool to enable processes
- Improve user maturity by providing tool training in line with standard processes
Rollout and Monitoring

The solution was implemented to a pilot group of 400 resources and 500 projects. Key data elements were established and metrics to be tracked were identified. Audit plan was established with weekly tracking on compliance to the new processes. Compliance reports were reviewed weekly with senior management team.
Data was gathered to evaluate process capability after the rollout.

**To-Be Process Goal:** Target mean cycle time was to be less than 40 minutes.

**Final Result:** Actual mean cycle time was 8.78 minutes, which was well within the target.

**Conclusion**

The hybrid approach that we used by combining Lean, Six Sigma and Agile thought processes, provided us with an advantage of clearly identifying the broken areas in the as-is processes and investigate them in detail to identify, quantify and eliminate root causes for delay. Once the solution and approach were finalized, we were able to implement the solution in an accelerated timeframe using Agile principles.

Organizations are moving towards agile development methodologies to achieve an accelerated time to market, high deliverable quality and increased customer...
participation. Combining Agile methods with Lean and Six Sigma tools can provide a significant advantage.

We have seen several challenges with the traditional software development methodologies:

- Slow Time to Market
- Low Software Quality
- Low visibility into the development progress
- Slow response to change
- Poor ability to manage risk and changing priorities
- End user isolated from the process till the very end

The Agile methodologies offer significant advantages:

- High deliverable quality – Business involved throughout the agile process, testing and validating the components.
- Accelerated time to market – Multiple deliveries in short increments.
- Improved project visibility – Daily status meeting and updates to business.
- Adapts to changing requirements and priorities
- Increased customer participation – No surprises when the end-product is released

Lean Six Sigma tools like focus interviews, brainstorming, workshops, VOC and SIPOC assisted us in understanding the problem areas and writing user stories. Data gathering, value stream mapping, process capability analysis provide us with a clear insight on the as-is process and identify value added vs. non-value added activities. 5 why analysis, Pareto analysis and Fishbone analysis assist in getting to the driving root causes. Use of the solution selection matrix, future-state process maps, and pilot implementation drives us towards the right solution and minimizes risk. Audit plans with compliance checks, drive user adoption and track ongoing progress. Following the Scrum roles, ceremonies and artifacts is critical to successful Agile implementations.
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