Lean Enablers for Managing Engineering Programs

Results from a Joint Study by PMI, International Council on Systems Engineering and MIT’s Lean Advancement Initiative

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Agenda

- The Lean in Program Management Community of Practice
- History of the Effort
- Result of the Effort: The Guide
  - Structure of the Guide
  - Suggested Application
  - Where to find it
- The Road Ahead: What’s Next
Partnering Organizations

- Project Management Institute
- Lean Advancement Initiative (MIT)
- International Council on Systems Engineering
- Pratt & Whitney
- Raytheon
- Boeing
- BAE Systems
- Siemens
- Rockwell Collins
- United Launch Alliance
- Sikorsky
- CEAGA

Contact Information: [Contact Information Details]
The whole community: From 0 to ... 180+ current members representing 35+ organizations
HISTORY OF THE EFFORT
The Goal

- Conduct a study within 1 year, that
  - Identifies the key challenges in managing engineering programs and
  - Identifies and documents best practices to overcome these challenges
- Ensure highest possible degree of applicability and practicality by
  - Focusing on needs of program managers from industry and government,
  - Develop the results through a group of subject matter experts and
  - Validate the results extensively.
Developed by group of 15 subject matter experts through year-long, weekly meetings

Feedback through wider community of practice (150+ members)

Discussed at 4 large and very successful workshops, involving both PMI and INCOSE members

Backed-up by two validation surveys
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RESULT OF THE EFFORT
Contents of the Guide

- Introduction
- Lean Thinking
- Integrating PM and SE
- Top 10 Challenges in Managing Engineering Programs
- The Lean Enablers
- Complementary Approaches
- How to use the Lean Enablers – Some Suggestions
- Barriers to Implementation
- Appendices
The CoP identified 160 PM challenges
Prioritized them based upon a cross-industry survey of 120 programs
The top 60 are summarized in 10 major themes

All Lean Enablers are mapped to one or more Challenges
The 10 Challenges

1. Reactive Program Execution
2. Lack of stability, clarity and completeness of requirements
3. Insufficient alignment and coordination of the extended enterprise
4. Value stream not optimized throughout the entire enterprise
5. Unclear roles, responsibilities and accountability
6. Insufficient team skills, unproductive behavior and culture
7. Insufficient Program Planning
8. Improper metrics, metric systems and KPIs
9. Lack of proactive management of program uncertainties and risks
10. Poor program acquisition and contracting practices
The Lean Enablers (Ch 5)

- 43 Lean Enablers
- 286 Sub-enablers
- “sorted” by the six Lean Principles

An example in a moment…
Lean Principles and Lean Enablers

1. Value
2. Map the Value Stream
3. Flow
4. Pull
5. Perfection
6. Respect for People

1. Treat people as your Most Important Asset
2. Maximize Program Value
3. Optimize the Value Stream
4. Create Program Flow
5. Create Pull in the Program
6. Pursue Program
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Lean Principles and Lean Enablers
Maximize Program Value

- Establish the value and benefit of the program to the stakeholders
- Focus all program activities on the benefits that the program intends to deliver
- Frequently engage the stakeholders throughout the program lifecycle
- Develop high quality program requirements among customer stakeholders before bidding and execution process begins
- Clarify, derive and prioritize requirements early, often, and proactively
- Actively minimize the bureaucratic, regulator, and compliance burden on the program and subprojects
Frequently engage the stakeholders throughout the program lifecycle

- Everyone involved in the program have a customer-first spirit, focusing on the clearly defined program value and requirements.
- Structure communication among stakeholders (who, how often and what).
- Communicate accomplishments and major obstacles with stakeholders regularly and with transparency.
- Listen to the stakeholders’ comments and concerns patiently, and value their views and inputs.
The Whole Enchilada

6 Categories, 43 Lean Enablers, 286 Sub-Enablers = A whole lot of best practices!
How to Use the LEs (Ch 7)

- When starting a new program
- Guiding strategic program enterprise transformation
- Improving engineering program management (troubleshooting)
Appendix A.5.1 – Mapping of LEs to the 10 PM Challenges

CONSIDER: I realize my program has drifted into “firefighting mode” (more reactive than proactive efforts)

This aligns with Challenge #1, so…
There are 100 sub-enablers associated with this challenge.

Look them all over, choose some that you believe will help and can be implemented quickly (or easily, or…)

Such as…
Using the LEs to “troubleshoot”

- Build a culture of mutual trust and support (there is no shame in asking for help) (1.1.7)
- Invest in workforce development (1.4.2)
- Proactively manage trade-offs and resolve conflicts of interest among stakeholders. Do not ignore or try to gloss them over (4.5.10)
- Promote excellence under “normal” circumstances and reward proactive management of risks, instead of rewarding “hero” behavior in crisis situations. (6.3.3)
- Create mechanisms to capture, communicate and apply experience (6.4.1)
- Develop sufficient risk management skills in the program and provide adequate resources (6.6.6)
Using the LEs to “troubleshoot”

- Implement
- Assess results
- Iterate…
This approach can be used at any time, by anyone, formally or not.

So what are YOUR challenges?
Get the book!

http://www.lean-program-management.org/downloads-resources/
Most popular vs rarely used enablers

<table>
<thead>
<tr>
<th>Almost always found</th>
<th>Rarely found</th>
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<tbody>
<tr>
<td>Build a program culture based on respect for people</td>
<td>Pull tasks and outputs based on need, and reject others as waste</td>
</tr>
<tr>
<td>For every program, use a program manager role to lead and integrate program from start to finish</td>
<td>Pursue Lean for the long term</td>
</tr>
<tr>
<td>Frequently engage the stakeholders throughout the program lifecycle</td>
<td>Use probabilistic estimates in program planning</td>
</tr>
<tr>
<td>Develop a Communications Plan</td>
<td></td>
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</tbody>
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Some Thoughts

- Lean does not contradict other improvement approaches
- It is not necessary (or advisable) to implement all Lean Enablers at once
- The enablers are applicable to other types of programs
  - Organizational change efforts
  - Social transformation programs
THE ROAD AHEAD
Implementing Lean Enablers: Year 2 Plan

- Communication and Marketing
  - Company and organization specific
  - Implementation pilots (at your organization?)

- Training and teaching material
  - Extended Documentation (knowledge portal)
  - Methods/Workshops
  - Smart metrics

Other suggestions?
And beyond…

- Establish Lean Engineering Program Success Stories
- Make Lean Thinking “part of program management DNA”
Sign up for monthly e-mail and updates
Join us as a Subject Matter Expert
Sponsor a research project for a pilot implementation at your organization

contact Josef Oehmen, oehmen@mit.edu

Follow us at
www.lean-program-management.org
Thank you!

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QUESTIONS?
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