Lean Enablers for Managing Engineering Programs

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

NDIA Systems Engineering Conference
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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

LEAN IN PROGRAM MANAGEMENT COMMUNITY OF PRACTICE

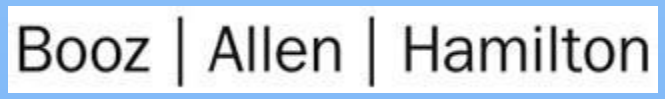
Partnering Organizations

Project Management Institute

LAI MIT
LEAN ADVANCEMENT INITIATIVE ™

INCOSE
International Council on Systems Engineering

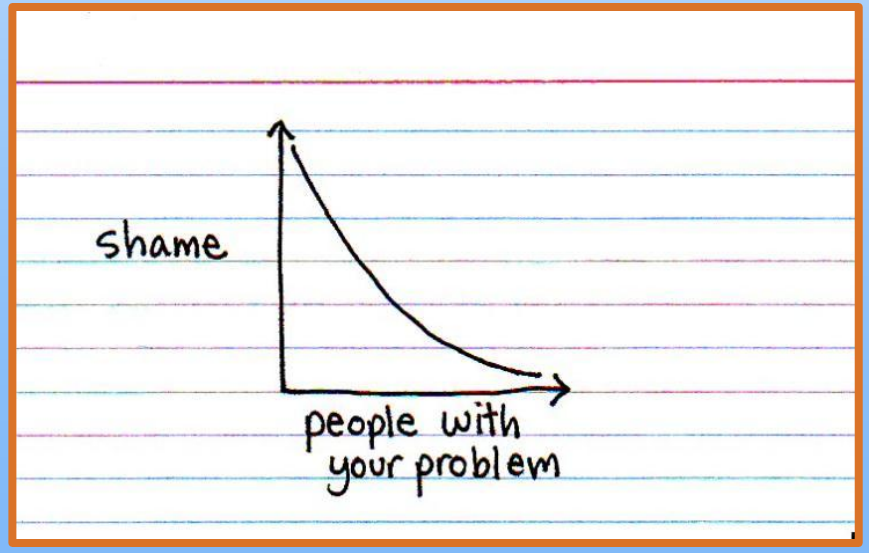
The whole community: From 0 to …
180+ current members representing 35+ organizations



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.



Jan 2011- March 2012

- 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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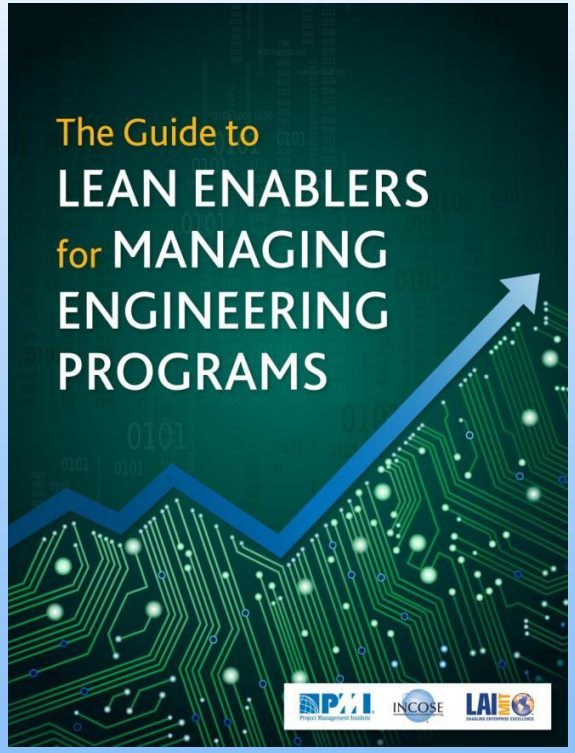

RESULT OF THE EFFORT

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 10 Challenges (Ch 4)

- 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

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 Enabler 2

- 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

LE 2.3

- 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

WHAT

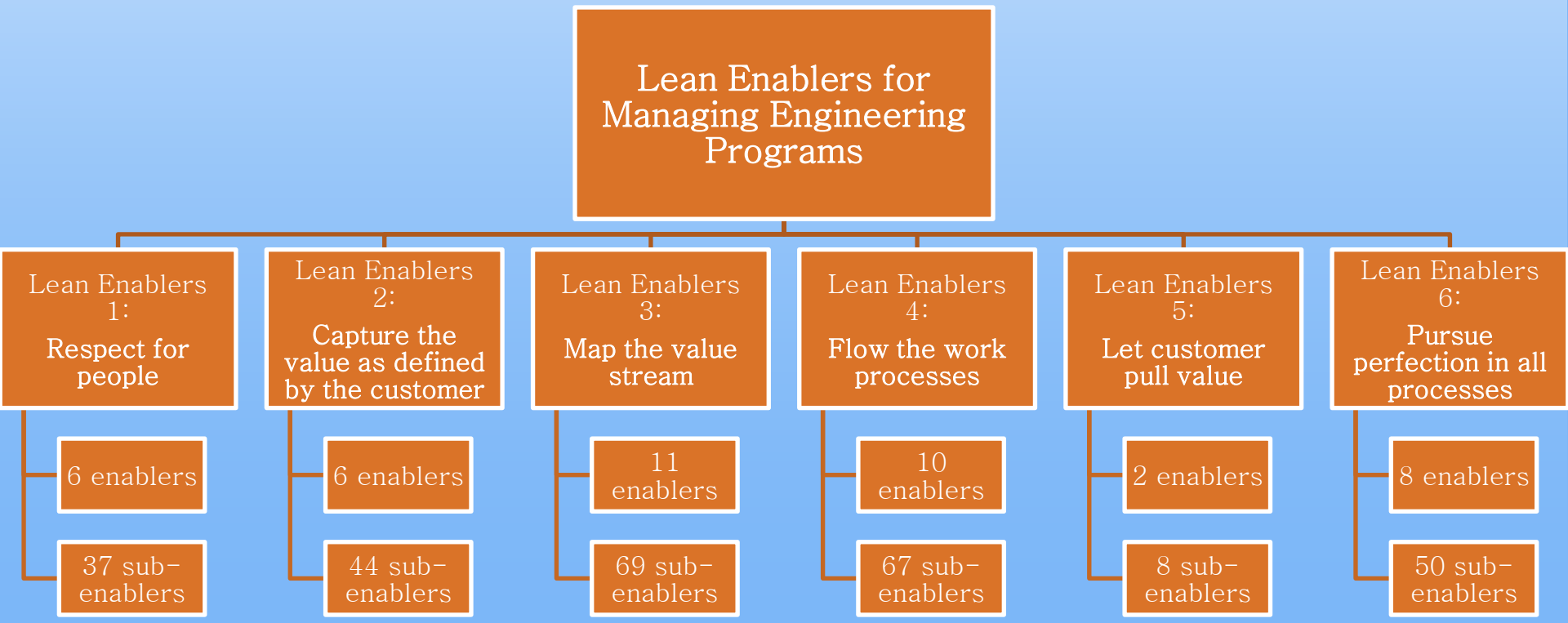
HOW

HOW

HOW

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)

Using the LEs to "troubleshoot"

- 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…

Using the LEs to "troubleshoot"

- 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"

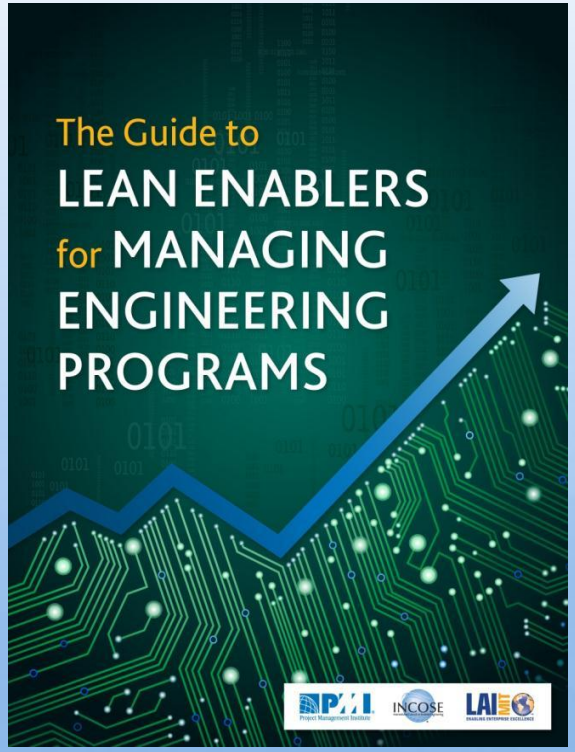
- Implement
- Assess results
- Iterate…

Using the LEs to "troubleshoot"

- 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

Almost always found

- Build a program culture based on respect for people
- For every program, use a program manager role to lead and integrate program from start to finish
- Frequently engage the stakeholders throughout the program lifecycle
- Develop a Communications Plan

Rarely found

- Pull tasks and outputs based on need, and reject others as waste
- Pursue Lean for the long term
- Use probabilistic estimates in program planning

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”

After today…

- 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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And the CoP

QUESTIONS?

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