LAI and Enterprise Excellence:
Presented to Lean Flight Initiative 4
Four Seasons Hotel, Atlanta, Georgia, US

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Massachusetts Institute of Technology
May 11, 2011
In 1990, an MIT Press book by Womack, Jones, and Roos on the automobile industry introduces Lean Production as a new industrial paradigm.

MIT wondered:

- Does Lean apply to an industry with significantly different products and customers?
- Will Lean principles and practices be extended beyond the Toyota Production System?

In 1992 US Air Force asked: Can the concepts, principles and practices of the Toyota Production System be applied to the military aircraft industry?
First Major Publication by LAI on the Value Creation Framework

Value Phases

“Dynamic and Iterative”

Value Identification
Identify the stakeholders and their value expectations

Value Proposition
Develop a robust value proposition to meet the expectations

Value Delivery
Deliver on the promise with good technical and program performance

* Source: Murman et al., Lean Enterprise Value, Palgrave 2002

“How various stakeholders find particular worth, utility, benefit, or reward in exchange for their respective contributions to the enterprise.***
### The Current LAI Vision and Mission

**Vision**

The Lean Advancement Initiative (LAI) at MIT enables enterprises to effectively, efficiently, and reliably create value in complex and rapidly changing environments.

**Mission**

LAI enables the focused and accelerated transformation of complex enterprises through collaborative stakeholder engagement in developing and institutionalizing principles, processes, behaviors, and tools for enterprise excellence.
E. gave me a call this morning .... They are currently going through a change to their management structure.... he DEFINITELY sees the value of doing an enterprise transformation .... He talked about feeling like he is over a “holding company of 15 silos” (that’s his 15 departments).

When he was doing “local lean” as head of the ED, he would see an improvement, but then would notice that it would not be aligned with the rest of the enterprise. Now as Interim President, he sees this problem “magnified.”

Conversation with a healthcare executive in May 2011
An enterprise is “a complex, integrated, and interdependent system of people, processes, and technology that creates value as determined by its key stakeholders.

An enterprise typically consists of multiple organizations (e.g., suppliers, partners, regulators) rather than a single corporation, division, or government unit.”

An enterprise has achieved excellence when “it effectively, efficiently, and reliably creates sustained value as determined by its key stakeholders (including comparisons with relevant benchmarks) over time and changing circumstances.”
Enterprise Transformation Framework

7 Enterprise Principles

Enterprise Transformation Roadmap

**STRATEGIC CYCLE**
- Determine Strategic Imperative
- ESAT and EA Framework
- Assessment of Current State and Design of Future State

**EXECUTION CYCLE**
- Create Transformation Plan
- LESAT

**PLANNING CYCLE**
- Understand Current State
- Envision & Design Future Enterprise
- Align Enterprise Infrastructure

ESAT Methodology for Developing Transformation Plan
7 Principles of Lean Enterprise Transformation

1. Adopt a holistic approach to enterprise transformation.
2. Secure leadership commitment to drive and institutionalize enterprise behaviors.
3. Identify relevant stakeholders and determine their value propositions.
4. Focus on enterprise effectiveness before efficiency.
5. Address internal and external enterprise interdependencies.
6. Ensure stability and flow within and across the enterprise.

Source: D. Nightingale and J. Srinivasan, MIT 2010
Determine Strategic Imperative

- Articulate the Case for Transformation & Convey Urgency
- Focus on Stakeholder Value
- Leverage Transformation Gains
PTSD: A Significant Pathology of War
A Major Concern Being Addressed by LAI

- Challenges with Access to and Quality of Care
- Challenges with Culture and Stigma
- Consideration of Families

5% to 20% prevalence

Over $2 Billion Invested

Over 125 psychological health programs

Resources: RAND, 2008 Invisible Wounds of War
“The current system is insufficient to meet the needs of today’s forces and their beneficiaries and will not be sufficient to meet the needs of the future.”

- DoD Task Force on Mental Health, 2007

4-Star Speaks Out on Struggle with PTSD

“This isn’t just a debt of gratitude. This is a debt that must be repaid because they have sacrificed so much. They have done exactly what this country has asked. They have fought and suffered and their lives have been affected forever.”

Admiral Michael Mullen, Chairman of the Joint Chiefs of Staff
Army Times, 11-26-2008
Engage Leadership in Transformation

- Cultivate Enterprise Thinking
- Obtain Executive Buy-In
- Establish Executive Transformation Council

A Committed Leadership Team
Engage Senior Leadership

**NAVY**

Admiral Jonathan Greenert, Vice-Chief of Naval Operations  
and  
VADM Adam Robinson, Navy Surgeon General

**AIR FORCE**

General Howie Chandler, Vice Chief of U.S. Air Force  
and  
LT. General Bruce Green, Air Force Surgeon General

**ARMY**

General Peter Chiarelli, Vice-Chief of U.S. Army  
and  
VADM Adam Robinson, Army Surgeon General

**ADVISORS**

Dr. James B. Peake, Lt. Gen.(ret), Former Secretary of Veterans Affairs  
and  
Honorable Togo West, Former Secretary of the Army

**MARINE CORPS**

General James Amos, Assistant Commandant of the Marine Corps
Enterprise Transformation Roadmap

STRATEGIC CYCLE
- Determine Strategic Imperative
  - Pursue & Sustain Enterprise Transformation
  - Engage Leadership in Transformation

PLANNING CYCLE
- Assessed Leadership Cycle
  - Long-Term Corrective Action
  - Understand Current State

Understand Current State
- Perform Stakeholder Analysis
- Analyze Processes & Interactions
- Perform Enterprise Maturity Assessment
- Assess Current Performance Measurement System

Capabilities & Deficiencies Identified
**Measure and Analyze the Current Operating Model**

- **Identify the Enterprise Core Value and Map Critical Processes**
- **Analyze the Critical Processes for Waste, Opportunities and Gaps**

*(Analysis Tools will vary – depending on the Application)*

- **LESAT Tool Measures the Effectiveness and Lean Maturity of the Enterprise**
- **X-Matrix is used to validate / identify gaps between Strategy, Value Delivered, Processes, and Metrics**

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**Lean Flight Initiative, Atlanta, GA, May 11, 2011**

[http://lean.mit.edu](http://lean.mit.edu)

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Envision & Design Future Enterprise

- Create Vision of Future State
- Perform Gap Analysis Between Current and Future States
- Architect “To-Be” Enterprise
Enterprise Architecture Framework
Reduce Time to Market Imperative

**Policy / External Factors**

- Global product development and manufacturing: ITAR restrictions
- Modular and platform product architectures to promote reuse, standardization, technology insertions, etc.

**Strategy**

- Reduce time to market for new product Introduction

**Process**

- Streamlined Integrated Product/Process Development Process; Design standardization and reuse

**Organization**

- IPD teams with representatives from engineering design, manufacturing and suppliers; collaborative team members with holistic perspective
- IPD members must understand critical dimensions of product life cycle

**Knowledge**

- Modular and platform product architectures to promote reuse, standardization, technology insertions, etc.

**Products / Services**

- Responsive support structure, enabled by standardized components and reliable products

**Information Technology**

- Engineering Data Management System to support new process
Align Enterprise Structure and Behaviors

- Reconcile Systems, Policies & Vision
- Align Performance Measurement System
- Align Incentives
- Empower Change Agents
## Aligning Performance Measures to Goals for Army Materiel Enterprise

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<thead>
<tr>
<th>Strategic Goal</th>
<th>Equip units to 100% of materiel requirements on time, every time, with a 33% cost reduction</th>
<th>Reduce cycle time by 50%</th>
<th>Reduce Operations and Maintenance costs by 50%</th>
<th>Achieve 100% data transparency and asset visibility</th>
<th>Be a credible organization respected by all</th>
<th>Develop a skilled, professional, continuously improving workforce and be recognized among the top places to work</th>
<th>Become the ME that serves as the benchmark for delivering fully integrated Acquisition, Logistics &amp; Technology capabilities to line</th>
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Create Transformation Plan

- Identify Improvement Focus Areas
- Determine Impact on Enterprise Performance
- Prioritize, Select and Sequence Project Areas
- Develop and Synchronize Detailed Implementation Plans
Execution of Army Materiel Enterprise Transformation Plan

Example:

ME Project 2.5 – Reduce Operating and Support Costs of Fielded and Future Systems

22 Descendants Such As:
- Operating Support Cost Reduction (DMAIC\textsuperscript{1})
- Value Engineering Program (DMAIC\textsuperscript{1})
- Engineering Support to Depot (DMEDI\textsuperscript{2})

Notes:
1. Five-phased methodology for improving existing processes; Define-Measure-Analyze-Improve-Control
2. Five-phased methodology for developing new processes; Define-Measure-Explore-Develop-Implement
Implementation Results

Implement & Coordinate Transformation Plan

- Communicate Transformation Plan
- Commit Resources
- Provide Education & Training
- Implement Projects and Track Progress
Status of 42 Army Materiel Enterprise Parent Projects

Project Prioritization Categories

- 1) Start Now
- 2) Just Do it
- 3) Follow On

21 projects making significant progress

Note: Start Now Projects were 62% Complete

Data current as of 3 March 2010

Follow On
Just Do It
Start Now

0% Not Started
1 - 20% Define
26 - 40% Measure
41 - 60% Analyze
61 - 80% Improve
81 - 99% Control
100% Completed
Enterprise Transformation Roadmap

STRATEGIC CYCLE
Determine Strategic Imperative
Pursue & Sustain Enterprise Transformation
Engage Leadership in Transformation

PLANNING CYCLE
A Committed Leadership Team
Understand Current State

Strategic Implications
Nurture, Process & Embed Lean Enterprise Thinking

Strategic Implications of Transformation

Nurture Transformation & Embed Enterprise Thinking

- Monitor & Measure the Outcomes
- Nurture Transformation
- Embed Enterprise Thinking
- Capture & Diffuse Lessons Learned
- Synchronize Strategic Planning & Execution Cycles
Summertime Enterprise Thinking

June 6-8, 2011
Value-Driven Tradespace Exploration for System Design Future Enterprise
Donna Rhodes, Ph.D
Adam Ross, Ph.D

June 9-10, 2011
Epoch-Based Thinking: Anticipating System and Enterprise Strategies for Dynamic Futures
Donna Rhodes, Ph.D.
Adam Ross, Ph.D.

June 13-14, 2011
Architecting the Future Enterprise
Prof. Debbie Nightingale
Donna Rhodes, Ph.D.

June 20-21, 2011
Principles of Enterprise Transformation
Prof. Debbie Nightingale
Jayakanth Srinivasan, Ph.D

New Course

July 18-20 or July 18-22, 2011
LAI Lean Academies: Enterprise, Healthcare, and Product Development
Enterprise Track
July 18-20
Eric Dickson, M.D.
Hugh McManus, Ph.D.
Prof. Earl Murman
Healthcare Track
July 18-20
Eric Rebentisch, Ph.D.
Julie Vannerson, M.D.
Prof. Annalisa Weigel
PD Track
July 21-22

http://web.mit.edu/professional/
Thank You!

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