LAI Integrated Product Suite

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LAI / Metis Design

LAI Plenary Meeting
April 20 2006
LAI Value Delivery System

Products & Tools

Research Ideas & Analysis

Sharing Knowledge & Experience

Communication & Coordination

LAI Mission

Transformations

Education of Leaders & Doers

Networking & Partnering

Enabling action

Building supportive relationships

Products and Tools Enable the LAI Mission
Product Suite Overview

• Overview of *Wide Range* of Products
  • Frameworks - Assessments - Training

• Product Communication
  • LAI Web site - (Draft) Brochure

• Product Impact, Effort, and Transfer
  • Story to date - transfer and *ownership* effective

• Future directions
  • Plans and emergent trends
Broad Coverage of Product Suite

Transformation Frameworks
- TTL Roadmap 1.0
- LEM Wall Chart 1.0
- Production Ops TTL 1.0
- PDTTL β
- Supplier Networks Toolset Roadmap Tool 1.0

Value Stream Analysis
- EVSMA 1.0
- PDVSM 1.0

Assessment
- LESAT 1.0
- Systems Engineering Leading Indicators
- GLESAT 1.0
- Supplier Networks Toolset Supplier Mgmt Self Assessment 1.0
- Supplier Networks Toolset Desk Reference 1.0
- Manufacturing System Design Framework

Reference Material
- LEV Book
- TTL Guides 1.0
- LEM Online 2.0
- Incentive Strategies for Defense Acquisitions
- Supplier Networks Toolset Resource Guide 1.0

Education/Training
- LEV Short Course 2.0
- LEV Simulation Game 2.0
- Intro to Lean Enterprise Course 1.0
- SME 40 hr Facilitator Course 1.0
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Transition-To-Lean Roadmap: a Guide to Enterprise Transformation

**Entry/Re-entry Cycle**

**Long Term Cycle**

**Short Term Cycle**

**Environmental Corrective Action Indicators**

**Focus on Continuous Improvement**
- Monitor Lean Progress
- Nurture the Process
- Refine the Plan
- Capture & Adopt New Knowledge

**Develop Lean Structure & Behavior**
- Organize for Lean Implementation
- Identify & Empower Change Agents
- Align Incentives
- Adapt Structure & Systems

**Create & Refine Transformation Plan**
- Identify & Prioritize Activities
- Commit Resources
- Provide Education & Training

**Outcomes on Enterprise Metrics**

**Implement Lean Initiatives**
- Develop Detailed Plans
- Implement Lean Activities

**Focus on the Value Stream**
- Map Value Stream
- Internalize Vision
- Set Goals & Metrics
- Identify & Involve Key Stakeholders

**Detailed Lean Vision**

**Decision to Pursue Enterprise Transformation**

**Adopt Lean Paradigm**
- Build Vision
- Convey Urgency
- Foster Lean Learning
- Make the Commitment
- Obtain Senior Mgmt. Buy-in

**Enterprise Strategic Planning**
- Create the Business Case for Lean
- Focus on Customer Value
- Include Lean in Strategic Planning
- Leverage the Extended Enterprise

**Detailed Corrective Action Indicators**

**Transition-To-Lean Roadmap**

- Develop Vision
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Functional TTLs apply concept tactically

TTL roadmap charts backed by captured consortium knowledge and implementation guides
Enterprise Value Stream Mapping and Analysis (EVSMA)

1. Define the Enterprise
   - Enterprise Commitment
   - EVSMA Team
   - Facilitators
   - Enterprise Lean Training
   - Current Enterprise Goals

2. Collect Data
   - Team Charter
   - Enterprise Description: Boundaries, Stakeholders, Processes

3. Construct Current State Perspectives
   - Stakeholder Values Analysis
   - Current State Process Map
   - Process Interactions

4. Identify Enterprise Opportunities
   - Prioritized Stakeholder Values
   - LESAT Scores
   - Enterprise Resource Allocation Based on Processes
   - Current Metric Values
   - Alignment of Goals, Values, Processes, Metrics
   - List of Wastes
   - List of Opportunities

5. Describe Future State Vision
   - 5 - 15 yr Goal
   - Focus Areas
   - Milestone Goals

6. Create Transformation Plans
   - Strategic Transformation Plan
   - Governance Model
   - Revised System of Metrics
   - Communication Plan

Strategic guide to capturing and organizing Enterprise-level value stream knowledge

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Product Development Value Stream Mapping (PDVSM)

Tactical guide to applying value stream mapping techniques to PD, engineering, and other “off-the-floor” processes

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Self-Assessment Tools

- LESAT: Enterprise-level self-assessment of lean capabilities and practices
- GLESAT revised making it more appropriate for government organizational use
- Supplier Network SAT a more tactical tool
Reference Materials Capture LAI Consortium Knowledge

Website also contains 10+ years of LAI theses and papers for in-depth study
Lean Enterprise Value (LEV)
Business Simulation and Shortcourse

- A Modular Simulation of a Complex Aerospace Enterprise
  - Manufacturing, Engineering, Supply Network and Service and Support Modules
- A Mature (v2.0) High-level Course
  - Teaches the application of lean tools through active participatory learning
  - Develops enterprise thinking and analysis skills
  - Accelerates transition to productive work in lean interventions (e.g., value stream mapping events)
  - Builds stronger relationships in the value stream with customers, partners, and suppliers

Key component of Lean Engineering and Lean Academy training
Industry and multi-university academic partnership

- One-week basic course in the Lean Enterprise
- MIT, other academic, industry and government instructors
- Employee, intern, graduate, and undergraduate audiences
- Actively maintained curriculum
- Used in undergraduate and graduate curriculum at several universities
Product Communication

- **LAI Website**
  - Descriptions
  - Most tools available for download
- **Catalogue (in development)**
  - Descriptions, uses, benefits
  - Suggested kits
  - Success stories
Tool Kits (examples)
Multiple synergistic LAI products applied to solve member problems

- SN Toolset (shown)
- Enterprise Transformation
  - TTL
  - LESAT
  - EVSMA
- Engineering
  - PDTTL
  - PDVSM
- Lean Engineering Training

Cooperatively developed “in the field”
Success Stories: Learning for LAI, templates for future users

- C-17 EVSMA
- Global Hawk PDVSM
- LESAT and GLESAT (multiple sites)
- LEV Training customization and internalization (multiple sites)
- SFW and EC-130 Program Transformation with LEV training and Lean Now!
- Lean Academy curriculum diffusion
- Rockwell Collins Engineering transformation
- Etc, etc.

Captured in Value of Membership and Catalogue documents
Tool Impacts and Costs

- Very rough estimate of effectiveness of tools (based on internal survey)
- Experience-based facilitation costs, with emphasis on LAI@MIT resources
- Trend - high-impact products are heavily facilitated and customized
- Future trend - Internalized, customized products continue to have high impact without further use of LAI@MIT resources
Impacts by Color (green = high)

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Costs by Box Color (red = high)
Transitions to Internal Facilitation

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**Strong trend - Maximum Value!**
Future Directions: Emergent Products

Enterprise Financial Model and Metrics - spin off from LEV seminar

• A quantitative, semi-predictive model of enterprise material and money flows, queues and wastes
Future Directions: Understanding Enterprise-level realities

Enterprise Metrics - lean at the enterprise level

Quality — how well do the processes used perform (e.g., reliability, consistency, accuracy, etc.)?

Capability — how effectively do the processes used (in aggregate) deliver what is needed?

Capacity — is there enough capacity to deliver what is needed when it is needed?

Continuity — is what is requested being delivered when and where it is needed?

Compatibility — is what is being requested compatible with the receiving entity/process?

Alignment — are enterprise interests aligned?

Metrics you saw used in the simulation:
- Capacity
- Utilization
- Cycle time
- Stability
Future Directions: Vertical Integration

Handling several layers at once
Concentrating on the “white space” at interfaces

From “Lean Supply Chain Now!” presentation, Kirk Bozdogan

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Future Directions: Field Refinements

EVSMA refinements

- EVSMA Team
- Facilitators
- Enterprise Lean Training
- Current Enterprise Goals

Define the Enterprise

- Description: Boundaries, Stakeholders, Processes

Collect Data

- Prioritized Stakeholder Values
- LESAT Scores
- Enterprise Resource Allocation Based on Processes
- Current Metric Values

What works and what doesn’t
Filling the framework with applicable tools
On track for planned release of EVSMA 2.0

- Stakeholder Values Analysis
- Current State Process Map
- Process Interactions

Construct Current State Perspectives

- Alignment of Goals, Values, Processes, Metrics
- List of Wastes
- List of Opportunities

Identify Enterprise Opportunities

- 5 - 10-yr Goal

Strategic
Future Directions: Paperless, Executable Tools

Will happen with user pull, partnering
Future Directions: Planned Phase V Roadmap

Emphasis on **Enterprise Architecting Toolset, Tool Integration**
Mixing and Matching LAI Products and Tools with Corporate Lean Six Sigma Programs

Continuing Challenge

Local Optimization vs. The Big Picture
Waste Minimization vs. Value Creation

Lean Six Sigma Awareness, Acceleration & Transformation

Green Belts Practices
Black Belts Projects
Master BBs Workshops
Coaches Events
Sensei Culture
Champions Education
Consultants Research

Example from Textron Systems Principle is General!