Lean Aerospace Initiative

Progress Report: IMPLEMENTATION TOOLSET For Building Lean Supplier Networks

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NOTE: Work-in-progress; this material represents the work product of the Lean Enterprise Initiative (LAI) Supplier Networks Research Team; prepared for review and comment only



Emphasis at this workshop: on FRAMEWORK & ROADMAP





- FRAMEWORK self-assessment ("What")
 - Tool for gauging current state in lean journey in the supplier network design and management domain
 - Links up with Lean Enterprise Self-Assessment Tool (LESAT)
 - Encompasses key lean practices & lean capability levels
 - Self-scoring framework
- **ROADMAP** for building lean supplier networks ("How")
 - Implementation guide defining major building blocks & specific implementation steps -- sequence & relationships
 - Maps out process template -- inputs, outputs, barriers, enablers, metrics, tools & methods, references

OBJECTIVE: Develop integrated lean implementation toolset



Status

• FRAMEWORK

- Draft version developed by Steering Group (Sept 20-21, 01 -- Boeing Long Beach) & subsequent work in conjunction with LESAT
- Ready for review & further refinement to develop ALPHA version
- ROADMAP
 - ALPHA version developed through effort of entire team at workshops on-going work by subteams & consolidation by Steering Group Workshop Jan 13-14, 00 WPAFB, OH
 - Team meeting, LAI Plenary Conference, March 29-30,00 Cambridge, MA
 - Workshop June 21-22,00 CMTC, Torrance, CA
 - Steering Group, Aug 10-11, IAMS, Cincinnati, OH; Sept 21-22,00 Boeing Long Beach)
 - Maps out process template -- inputs, outputs, barriers, enablers, metrics, tools & methods, references
 - Ready for further refinement & testing

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FRAMEWORK

(SUMMARY for Enterprise-Level Self-Assessment)

DEFINITION: Develop and manage the lean enterprise supplier network to provide best value to the customer over the entire product lifecycle, in order to optimize dynamic sustainable competitive advantage

Input: Enterprise-level supplier network design and management system, structure, processes, activities and metrics

Output: Assessment of the level of leanness of the enterprise in the supplier network design and management domain

OVERARCHING LEAN PRACTICES

1.0

Develop and manage supplier network strategy linked to corporate strategy: Design of the supplier network -- its structure, composition, and definition of differentiated roles and responsibilities -reflects core corporate strategic thrust to ensure long-term success

2.0

Supplier relationships focus on optimizing the value stream: The supplier network is managed to create and deliver best value to the customer over the entire product lifecycle; major suppliers are viewed as full partners in the success of an integrated value network; emphasis on fostering continuous network-wide learning, knowledge-sharing and innovation



FRAMEWORK: Lean Practices

(For Sub-Enterprise Level Self-Assessment)

1.0	Develop and manage supplier network strategy linked to
	corporate strategy



Integrate product and process knowledge, and foster innovation, over the entire supplier network



Maximize flexibility and responsiveness of the supplier network



Establish long-term cooperative relationships with suppliers to maximize mutual benefits throughout the value stream Contender



Establish process of continuous performance improvement throughout the supplier network

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FRAMEWORK: Capability Maturity Levels*

Level I

Traditional -- No awareness of lean supplier network design and management principles, practices, processes, activities or metrics



Learner - Limited awareness, but evidencing early stages of largely informal and piecemeal lean implementation deployed in one or a few areas

Level III

Performer - Systematic approach to lean implementation; deployed in all appropriate areas, functions and processes, with some still in relatively early stages

Level IV

Contender - Mastery of lean principles and implementation; deployed in all appropriate areas; on-going refinement and continuous improvement

Level V

Leader - Exceptional command and implementation of lean principles; well-defined and innovative approach; lean fully deployed in all appropriate areas; recognized as world-class best practice

*Note: Levels are cumulative; each higher level represents the achievement of the prior levels KB013001 - 7 © 2001 Massachusetts Institute of Technology



FRAMEWORK: "Straw-Man" Capability Maturity Levels

Supplier relationships focus on optimizing the value stream



Large and hierarchical supplier base; arm's length & adversarial relationships; build-to-print; supply chain management concentrated in purchasing department; no alignment of supply chain design with corporate core competencies; no visibility into supplier capabilities

Level II

Supplier base rationalized; some teaming/partnering with suppliers with high impact on strategic objectives; long term purchase agreements are introduced to focus on affordability & cost reduction; limited visibility into supplier business processes

Level III

Long-term relationships established with limited number of certified suppliers; early involvement of suppliers in design process;synchronization of production flow over supplier network; delegation of greater responsibility to key suppliers; effective supplier development program in place

Level IV

Cooperative relationships with suppliers, including strategic partnerships and alliances, are in place, emphasizing a high level of information sharing, risk sharin benefit sharing, and knowledge-sharing; differentiated supplier strategy



Dynamically optimizing the value stream, through electronic integration of the supplier network, to achieve long term sustainable competitive advantage

Enterprise-Level Transition-to-Lean Roadmap



ROADMAP for Building Lean Supplier Networks



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ROADMAP for Building Lean Supplier Networks

1.0 Define Vision

- 1.1 Develop working knowledge of basic lean principles for building lean supplier networks
- 1.2 Ensure stakeholder commitment & align expectations
 - 1.2.1 Secure leadership commitment
 - 1.2.2 Engage key stakeholders
 - 1.2.3 Align mutual expectations
- 1.3 Define enterprise vision for supplier integration
- 1.4 Establish guiding principles driving strategic plan development process
- 1.4.1 Define dynamic sustainable competitive advantage
- 1.4.2 Define enterprise core competencies and future trajectory
- 1.4.3 Provide strategic rationale guiding make-buy decisions

2.0 Develop Strategic Plan

- 2.1 Develop detailed knowledge of lean principles for building lean supplier networks
- 2.2 Develop basic elements of strategic plan to achieve vision 2.2.1 Define goals, objectives and metrics
 - 2.2.2 Perform strategic map of value creation processes: Identify own core competencies & complementary supplier capabilities (high-level; "as-is"; "to-be"; gap analysis; define compelling case for change)
 - 2.2.3 Define make-buy decision process
 - 2.2.4 Design supplier network to optimize dynamic competitive advantage
 - 2.2.5 Define major change strategies (e.g., strategic alliances; e-business; knowledge management; fostering innovation)
- 2.3 Define principal roles and responsibilities, relationships, governing principles and rules of behavior
- 2.4 Define infrastructure support requirements
- 2.5 Develop resource plan for executing strategic plan

3.0 Establish Lean Infrastructure

- 3.1 Refine infrastructure support requirements
 - 3.1.1 Define key elements, interfaces and coordination & control mechanisms
 - 3.1.2 Define and create organizational structure and process
- 3.2 Define requirements and create implementation plan
- 3.2.1 Define key elements of the implementation plan
- 3.2.2 Create implementation plan (enterprise, site, program)
- 3.3 Develop supporting infrastructure systems
 - 3.3.1 Define data/information requirements
 - 3.3.2 Define information technology (IT) & information systems (IS) requirements
- 3.3.3 Build IT/IS system and communication network
- 3.4 Define training requirements and develop training tools
- 3.4.1 Research and select lean tools
- 3.4.2 Develop training modules & tools (for internal & external organizations)

6.0 Strive for Continuous Improvement

- 6.1 Modify and refine implementation strategy based on supplier network performance
 - 6.1.1 Measure progress (metrics)
 - 6.1.2 Report metrics (ROI, "lean dividend")
 - 6.1.3 Define areas for further improvement
 - 6.1.4 Recognize achievements
 - 6.1.5 Transfer ownership of lean process to suppliers
- 6.2 Nurture the process of continuous improvement (internal, external)
- 6.3 Capture, adopt and share new knowledge
- 6.4 Communicate needed changes in vision,
- strategy, support infrastructure, implementation plan, and implementation strategy

NOTE: Based on September 21-22, 2000 meeting of the Steering Group of the Lean Aerospace Initiative (LAI) Supplier Networks Research Team; work-in-progress; for review and comment only within the Lean Aerospace Initiative (LAI)



5.0 Implement Lean Initiatives

- 5.1 Refine, operationalize and communicate goals, objectives and metrics throughout the supplier value stream
- 5.2 Implement lean transition initiatives (on-going)
 - 5.2.1 Select suppliers
 - 5.2.2 Perform supplier gualification and certification
 - 5.2.3 Deploy supplier development & mutual improvement initiatives
 - 5.2.4 Initiate targeted change models (internal, external) -- Radical,
 - incremental; pilots (pilot-evaluate-scale up) 5.2.5 Implement procurement plan (e-business) & collaborative design initiatives with suppliers within digital environment
 - 5.2.6 Implement performance based contractual relationships (e.g.,long-term relationships; partnerships; strategic alliances; mutual gainsharing arrangements)
 - 5.2.7 Conduct internal and external training as appropriate to achieve lean implementation objectives
- 5.3 Implement steps for managing knowledge & fostering innovation over supplier network

4.0 Create Lean Implementation Plan

- 4.1 Define prerequisites for developing an implementation plan
 - 4.1.1 Refine requirements for implementation plan
 - 4.1.2 Refine lean principles, practices, processes & metrics guiding the implementation plan
 - 4.1.3 Define & map supplier value stream (current state, future state), identify gaps and major opportunities
- 4.2 Develop framework for implementation
 - 4.2.1 Develop framework for supplier segmentation & differentiated set of "must do" steps at different levels
 - 4.2.2 Develop supplier selection criteria
 - 4.2.3 Assess capability and lean competency of suppliers
- 4.2.4 Identify and prioritize supplier development initiatives
- 4.2.5 Develop supplier qualification and certification process
- 4.2.6 Assemble implementation toolset
- 4.3 Create relationship-management plan with suppliers 4.3.1 Procurement plan (including e-business)
 - 4.3.2 Long-term relationships: partnerships:strategic alliances
 - 4.3.3 Contract design (strategies, incentives, gainsharing)
 - 4.3.4 Target costing
 - 4.3.5 Information-sharing, cost-sharing, risk-sharing
- 4.4 Create plan for knowledge management & fostering innovation 4.5 Commit resources for lean implementation

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"Straw-Man" Schedule (for discussion)

- Further refine & develop the FRAMEWORK & ROADMAP modules; develop GUIDEBOOK; integrate toolset (est. Aug 01)
- Beta test the integrated toolset -- host companies using the toolset and providing feedback on its usefulness (est. Sept-Oct 01)
- Complete and provide Beta Version of the toolset (est. Dec 01- Jan 02)