Roadmap for Enterprise Transformation

IIE Enterprise Transformation Conference

Prof. Deborah Nightingale
Massachusetts Institute of Technology
April 3, 2012
Atlanta, Georgia
“Everybody wants to transform, but nobody wants to change.”

- Frederica Mathewes-Green
VISION
SSRC is a vibrant, expanding intellectual community of faculty, researchers, and students with a shared interest in analyzing complex systems from a sociotechnical systems perspective. SSRC’s efforts lead to the discovery of new insights and solutions to the challenges our global community faces.

MISSION
SSRC seeks collaborative, holistic, systems-based solutions to complex sociotechnical challenges.
Lean Advancement Initiative (LAI)

• Founded in 1993, LAI has evolved from a focus on lean processes and tools to holistic enterprise transformation and architecting

• Enables enterprises to effectively, efficiently, and reliably create value in complex and rapidly changing environments

• Works with international enterprises in multiple domains, including: automotive, aerospace, manufacturing, health care, and financial services

• International Educational Network (EdNet) with more than 70 member educational institutions around the world
Value Phases

**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

**LEAN ENTERPRISE:**
A lean enterprise is an integrated entity that effectively and efficiently creates value for its multiple stakeholders.

Source: *Lean Enterprise Value: Insights from MIT’s Lean Aerospace Initiative*, Murman, et. al, 2002
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.”

Creating a Holistic Approach to Enterprise Transformation

Transformation Issue

How do I motivate and sustain enterprise transformation?
How do I transform my enterprise?
What analytical tools can I use to support my decision making?
How do I design my future enterprise?

Enterprise Methodology

7 Principles of Enterprise Thinking
Enterprise Transformation Roadmap
LAI Enterprise Self-Assessment Tool (LESAT)
Enterprise Architecting Framework
7 Principles of 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
Enterprise Transformation Issues

• Why do most lean transformation activities fail?
• What are the key success factors in implementing lean enterprise wide?
• How can we better assure that lean will impact bottom line results?
• Are there certain activities that are ideally performed before others?
• What is the role of senior leadership in assuring success?

Issues Motivated Development of Enterprise Transformation Roadmap
Creating a Holistic Approach to Enterprise Transformation

Transformation Issue

How do I motivate and sustain enterprise transformation?

How do I transform my enterprise?

What analytical tools can I use to support my decision making?

How do I design my future enterprise?

Enterprise Methodology

7 Principles of Enterprise Thinking

Enterprise Transformation Roadmap

LAI Enterprise Self-Assessment Tool (LESAT)

Enterprise Architecting Framework
Motivating an Enterprise Level Transformation Roadmap

- Improve the quality of thinking and awareness of Leaders on the challenge of transforming their enterprises
- Framework for cultural, organizational & change management considerations
- Provide enterprise leaders with a balanced decision aid to:
  - Identify barriers to the creation/delivery of value to each stakeholder
  - Specify a vision of their future lean enterprise
  - Determine significant gaps between current and future states
  - Prioritize opportunities for eliminating waste and increasing value deliver for the maximum benefit of the total enterprise
- Guidance in making the transition process itself a ‘lean’ process
Determine Strategic Imperative

- Articulate the Case for Transformation & Convey Urgency
- Focus on Stakeholder Value
- Leverage Transformation Gains

Engage Leadership in Transformation

Pursue & Sustain Enterprise Transformation
ChipDesign Imperative for Change

• Create an enterprise agile enough to address the immediate needs of customers and also meet future needs in a changing environment
  • Challenges due to changes in core technology
  • Maximize utilization of its production capabilities over the next ten years
  • Culture that assumes that change takes a long time
• Achievable through a combination of investment in people, process, and technology
Engage Leadership in Transformation

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

A Committed Leadership Team
“A stakeholder is any group or individual who can affect or is affected by the achievement of the organization's objectives”

Source: R. Edward Freeman

“The enterprise is a network of stakeholders configured by the flow of value, which moves between the enterprise and its stakeholders”

Source: D. Nightingale, and J. Srinivasan
“Beyond the Lean Revolution: Achieving Successful and Sustainable Enterprise Transformation”, AMACOM, 2011
Classic Stakeholder Map

- Customers
- End Users
- Employees
- Partners
- Suppliers
- Society
- Unions
Stakeholder Analysis

• Process for aligning the enterprise with its stakeholders
• Brings to the forefront the disconnects and misalignments in the enterprise value proposition
• Structured means of reflecting on the enterprise value proposition as a whole.
## Value Exchange Data Collection

<table>
<thead>
<tr>
<th>Value expected from the enterprise</th>
<th>Stakeholder: Suppliers</th>
<th>Value contributed to the enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Fair and equitable treatment</td>
<td></td>
<td>• Products (parts/ raw materials)</td>
</tr>
<tr>
<td>• Reasonable return on investment</td>
<td></td>
<td>• Design input</td>
</tr>
<tr>
<td>• Timely payment</td>
<td></td>
<td>• Ideas/ innovation</td>
</tr>
<tr>
<td>• Long-term relationships</td>
<td></td>
<td>• On-time delivery</td>
</tr>
<tr>
<td>• Joint forecasting</td>
<td></td>
<td>• High quality</td>
</tr>
<tr>
<td>• Early and accurate requirements identification</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Value Exchange Assessment

**Stakeholder Group:** Supplier  
**Stakeholder Name:** XYZ Company

## Questions to guide stakeholder conversation:

- What does the stakeholder value?
- What does the stakeholder expect from its involvement with the enterprise?
- What are the things that would make the enterprise be highly thought of by the stakeholder?

<table>
<thead>
<tr>
<th></th>
<th>How important is this value for the stakeholder?</th>
<th>How well is the enterprise delivering this value?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fair and equitable treatment</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Reasonable return on investment</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Long-term relationship</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Timely payment</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Joint forecasting</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Early and accurate requirements</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

1 = low   5 = high
Stakeholder: Supplier

<table>
<thead>
<tr>
<th>Current Performance</th>
<th>Relative Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

- **Fair and Equitable Treatment**
- **Timely Payment**
- **Reasonable return on investment**
- **Long Term Relationships**
- **Early/Accurate Req. ID**
- **Joint Forecasting**
Employee Value Exchange

- Fair Wages Benefits
- Job Satisfaction
- Rewards
- Career Growth
- Training
- Facilities
- Tools to Do Job
- Security
Customer Value Exchange

Current performance of the enterprise in delivering value

Relative Importance of the value to the stakeholder

- Integrity, Credibility
- Innovation
- Cost Effectiveness
- Timely Delivery
- Support Service
- Product Quality
- Attention to Customer Needs
Creating a Holistic Approach to Enterprise Transformation

Transformation Issue

How do I motivate and sustain enterprise transformation?

How do I transform my enterprise?

What analytical tools can I use to support my decision making?

How do I design my future enterprise?

Enterprise Methodology

7 Principles of Enterprise Thinking

Enterprise Transformation Roadmap

LAI Enterprise Self-Assessment Tool (LESAT)

Enterprise Architecting Framework
LAI Enterprise Self Assessment Tool (LESAT)

Tool for executive self-assessment of the current process maturity of an enterprise and its readiness to change

World Class

Assessment Matrix

Capability maturity model

Supporting materials

1 2 3 4 5
Enterprise Practices

• There are **68 lean enterprise** practices in the assessment, divided amongst the three major sections
  • Section 1 **Leadership/Transformation** (30 practices)
  • Section 2 **Lifecycle Processes** (30 Practices)
  • Section 3 **Enabling Infrastructure** (8 Practices)
• Each practice is assessed on a capability maturity scale of 1 to 5
• There is a practice maturity definition for every maturity level in every practice, provided on a maturity matrix assessment sheet
Suggested Methodology for Employing LESAT

Step 1: Facilitated meeting to introduce tool
- Enterprise leader champions

Step 2: Enterprise leaders and staff conduct LESAT assessment

Step 3: Leadership reconvenes to jointly determine present maturity level

Step 4: Leadership determines desired level and measures gap

Step 5: Develop action plan and prioritize resources
LESAT Desired Score Can be Tailored for Each Process Area

A Company’s Strategic Plan for a Tailored Capability Goal matched to the business objectives.
X-Matrix as a systems tool for enterprise alignment
Envision & Design Future Enterprise

- Create Vision of Future State
- Perform Gap Analysis Between Current and Future States
- Architect “To-Be” Enterprise
“A leader without a vision is a stamped letter without address; it can never reach its destination”

- Mehmet Murat Ildan
Strategic Goal:

Become the Materiel Enterprise that serves as the benchmark for delivering fully integrated Acquisition, Logistics & Technology capabilities to America’s warfighters.*

• Equip units to 100% of ARFORGEN materiel requirements on time, every time, with a 33% cost reduction
• Reduce delivery cycle time for requirements by 50%
• Reduce Operations and Maintenance costs for systems by 50% through innovative RDT&E investments (which increase reliability and reduce logistics, energy, and total life cycle costs)
• Achieve 100% data transparency and asset visibility
• Be a credible organization respected by all
• Develop a skilled, professional, continually improving workforce and be recognized in the Top 10 Places to Work

*Extracted from Materiel Enterprise Transformation Plan 2.0, dtd 1 May 09
Align Enterprise Structure and Behaviors

- Reconcile Systems, Policies & Vision
- Align Performance Measurement System
- Align Incentives
- Empower Change Agents
<table>
<thead>
<tr>
<th>Strategic Goal</th>
<th>Equip units to 100% of ARFORGEN 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 for systems 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, continually 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 America’s warfighters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal #1: Roles and Responsibilities</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Goal #2: Industrial Base</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Goal #3: Leadership</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Goal #4: Human Capital Strategy</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Goal #5: Bus. Processes &amp; Info Tech</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>
Create Transformation Plan

- Identify Improvement Focus Areas
- Determine Impact on Enterprise Performance
- Prioritize, Select and Sequence Project Areas
- Communicate transformation plan
### ChipDesign Enterprise Projects

<table>
<thead>
<tr>
<th>Growth</th>
<th>People</th>
<th>Operational Excellence</th>
<th>Information Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define growth strategy &amp; technology roadmap</td>
<td>Increase awareness of transformation through communication</td>
<td>Develop a standard maintenance process</td>
<td>Develop new means of sharing information – both visual and internet-based</td>
</tr>
<tr>
<td>Develop a human capital growth program</td>
<td>Educate all employees on our transformation approach and tools</td>
<td>Establish a common process for managing test wafers</td>
<td>Harmonize legacy systems to create an integrated system</td>
</tr>
<tr>
<td>Create a cross-functional organization</td>
<td>Define common metrics across functional groups</td>
<td>Establish a knowledge sharing process across shifts</td>
<td>Develop a new performance measurement system</td>
</tr>
</tbody>
</table>
ChipDesign Project Dependencies

Growth
- Define growth strategy & technology roadmap
- Develop a human capital growth program
- Create a cross-functional organization
- Increase awareness of transformation through communication
- Educate all employees on our transformation approach and tools
- Define common metrics across functional groups
- Define growth strategy & technology roadmap
- Develop a human capital growth program
- Create a cross-functional organization
- Establish a common process for managing test wafers
- Establish a knowledge sharing process across shifts

People
- Develop a standard maintenance process
- Establish a common process for managing test wafers
- Establish a knowledge sharing process across shifts
- Develop a standard maintenance process
- Establish a common process for managing test wafers
- Establish a knowledge sharing process across shifts

Operational Excellence
- Develop new means of sharing information – both visual and internet-based
- Harmonize legacy systems to create an integrated system
- Develop a new performance measurement system
- Develop new means of sharing information – both visual and internet-based
- Harmonize legacy systems to create an integrated system
- Develop a new performance measurement system

Information Technology
- Develop new means of sharing information – both visual and internet-based
- Harmonize legacy systems to create an integrated system
- Develop a new performance measurement system
- Develop new means of sharing information – both visual and internet-based
- Harmonize legacy systems to create an integrated system
- Develop a new performance measurement system
Implement & Coordinate Transformation Plan

- Develop Detailed Project Implementation Plans
- Synchronize Detailed Plans
- Commit Resources
- Provide Education & Training
- Implement Projects and Track Progress
Strategic Implications of Transformation

- Nurture Transformation
- Embed Enterprise Thinking

- Monitor Transformation Progress
- Nurture Transformation
- Embed Enterprise Thinking
- Capture & Diffuse Lessons Learned
- Adjust and Align Planning & Execution Cycles
Understand Current State
• Perform Stakeholder Analysis
• Analyze Processes & Interactions
• Perform Enterprise Maturity Assessment
• Assess Current Performance Measurement System

Identify Improvement Focus Areas
• Determine Impact on Enterprise Performance
• Prioritize, Select and Sequence Project Areas
• Communicate transformation plan

Create Transformation Plan

Determine Strategic Imperative
• Articulate the Case for Transformation & Convey Urgency
• Focus on Stakeholder Value
• Leverage Transformation Gains

Perform Stakeholder Analysis
• Obtain Executive Buy-In
• Establish Executive Transformation Council

PLANNING CYCLE
A Committed Leadership Team

Envision & Design Future Enterprise
• Create Vision of Future State
• Perform Gap Analysis Between Current and Future States
• Architect “To-Be” Enterprise

Align Enterprise Structure and Behaviors
• Reconcile Systems, Policies & Vision
• Align Performance Measurement System
• Align Incentives
• Empower Change Agents

Execution Cycle

Transformation Plan

Implement & Coordinate Transformation Plan
• Develop Detailed Project Implementation Plans
• Synchronize Detailed Plans
• Commit Resources
• Provide Education & Training
• Implement Projects and Track Progress

Engage Leadership in Transformation

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

Capabilities & Deficiencies Identified

Enterprise Vision

Envision & Design Future Enterprise
• Create Vision of Future State
• Perform Gap Analysis Between Current and Future States
• Architect “To-Be” Enterprise

Align Enterprise Structure and Behaviors
• Reconcile Systems, Policies & Vision
• Align Performance Measurement System
• Align Incentives
• Empower Change Agents

Short-Term Corrective Action

Long-Term Corrective Action

A Committed Leadership Team

Nurture Transformation & Embed Enterprise Thinking
• Monitor Transformation Progress
• Nurture Transformation
• Embed Enterprise Thinking
• Capture & Diffuse Lessons Learned
• Adjust and Align Planning & Execution Cycles

Implement & Coordinate Transformation Plan


Benefits of Lean Enterprise Transformation Roadmap

• Facilitates enterprise focus
• Provides “sequence” for enterprise transformation
• Increases understanding of “what went wrong” in previous transformation attempts
• Focuses on people/leadership issues
• Provides an organizing framework for enterprise-wide transformation
Creating a Holistic Approach to Enterprise Transformation

Transformation Issue

- How do I motivate and sustain enterprise transformation?
- How do I transform my enterprise?
- What analytical tools can I use to support my decision making?
- How do I design my future enterprise?

Enterprise Methodology

- 7 Principles of Enterprise Thinking
- Enterprise Transformation Roadmap
- LAI Enterprise Self-Assessment Tool (LESAT)
- Enterprise Architecting Framework
Motivation for Enterprise Architecting

• In order to transform an enterprise we need to know not only where we are, but more importantly where we want to be (future state)

• In enterprise value analysis how do we define the “future state” of the enterprise?

• Once we define the future “vision” how do we design the enterprise?

• How do we incorporate the multiple dimensions or “views” at the enterprise level?
Enterprise Architecting:

“Applying holistic thinking to design, evaluate, and select a preferred structure for a future state enterprise to realize its value proposition and desired behaviors”

Nightingale and Rhodes, 2007
Enterprise Transformation:
Provides successful strategies and implementation approaches for transformation of an enterprise from ‘as is’ to ‘to be’ state.

Enterprise Architecting:
Provides strategies/approaches to ensure time is spent developing and evaluating ‘could be’ states, and selecting the best alternative given a set of desired properties and criteria for the future enterprise.
Enterprise Architecting
Eight “View” Elements

Architectural View: a perspective on an enterprise describing a related set of attributes

- Effective integration – managing complex interdependencies
- System optimization, not local optimization
- Achieving desired future state characteristics
  - Agility
  - Flexibility
  - Reconfigurability
Enterprise Architecting Ten Elements

ECOSYSTEM

STAKEHOLDERS

8 VIEW ELEMENTS

Processes
Infrastructure
Information
Knowledge
Services
Products
Organization
Strategy
PTSD: A Significant Pathology of War

- 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 enterprise comprises numerous stakeholders and their interactions, increasing the complexity to which effective psychological health care is delivered.
Challenge:
Develop innovative recommendations for transforming the military enterprise to better manage post-traumatic stress, and related conditions, in support of our service members and their families.
Top Leadership Sponsors

**NAVY**
- Admiral Mark E. Ferguson III
  - Vice-Chief of Naval Operations
- VADM Matthew L. Nathan
  - Navy Surgeon General

**AIR FORCE**
- General Philip M. Breedlove
  - Vice Chief of U.S. Air Force
- LT. Gen. Charles B. Green
  - Air Force Surgeon General

**ARMY**
- Gen. Lloyd J. Austin III
  - Vice-Chief of U.S. Army
- LTG Patricia Horoho
  - Army Surgeon General

**MARINE CORPS**
  - Assistant Commandant of the Marine Corp

General Martin Dempsey
- Chairman of the Joint Chiefs of Staff

Jonathan Woodson, M.D.
- Asst. Secretary of Defense for Health Affairs
PTSI Overview and Initial Recommendations

1. **Create** standard telemental health policies and practices across the enterprise
2. **Assess** effectiveness and scalability of the Warrior Ohana Covenant
3. **Create** standard and effective gateway for information about distributed services to reach different populations of families
4. **Explore** a consistent design for behavioral health service provision
5. **Combine** existing disparate data sources to improve behavioral health care across the enterprise
6. **Develop** consistent service member health risk assessments across the lifecycle
7. **Design** informative process and outcome measures to track system effectiveness
8. **Streamline** hiring, credentialing, and privileging processes across the enterprise
9. **Maximize** evidence based practice through standardized metrics and accountability
10. **Dedicate** resources and training for Rear Detachment commanders and staff
Future Work: Enterprise Architecting

Approach

As-Is Enterprise Architecture
- Understand Enterprise Landscape
- Understand Stakeholder Value
- Capture AS-IS Architecture
- Create Holistic Vision
- Generate Concepts

To-Be Enterprise Architecture and Transform Enterprise
- Derive Candidate Architectures
- Evaluate and Select TO-BE Architecture
- Detail and Validate TO-BE Architecture
- Formulate Transformation Plan

Next Steps

Survey Research
- Cross-Organizational Integration

Case Studies
- PH delivery models
- Performance measurement systems
- Policy formulation and deployment

- Site Interventions
- Action Research
- Quantitative Modeling
Enterprise Transformation Publications

- **Strategic Context** (4 chapters)
- **Lenses of Current State Analysis** (5 chapters)
- **Achieving Transformation** (3 chapters)

Journal of Enterprise Transformation
Vol. 1, Issue 4:

“Enterprise Transformation in Action”

In collaboration with IIE and INCOSE

Hardcover and Kindle discounts at Amazon.com
MIT Professional Education Courses on Enterprise Transformation

MIT Campus, Cambridge, Massachusetts, USA

July 16-17, 2012
Principles of Enterprise Transformation
Prof. Debbie Nightingale
Jayakanth Srinivasan, Ph.D.

This course highlights the importance of **going beyond classical lean thinking** to truly embracing the enterprise paradigm to achieve successful and sustainable transformation. Over two days, we provide a set of enterprise principles and a transformation roadmap that serve as the foundation for the holistic analysis framework that captures the current state, envisions the future state, and determines actions needed for transformation.

web.mit.edu/professional/index.html

July 30 to Aug. 1, 2012
Architecting the Future Enterprise
Prof. Debbie Nightingale
Donna Rhodes, Ph.D.

Enterprises often evolve in an ad-hoc, suboptimal manner, without viewing the enterprise as a whole system. This course looks at the enterprise as a holistic and highly networked structure wherein planning and decisions must be accomplished by applying a systems perspective and architecting principles, considering all facets of the enterprise.
“Everybody wants to transform, but nobody wants to change.”

- Frederica Mathewes-Green
Thank You!

Professor Deborah J. Nightingale
Director, MIT Sociotechnical Systems Research Center (SSRC)
Co-Director, Lean Advancement Initiative (LAI)
Professor of the Practice, Department of Aeronautics and Astronautics and Engineering Systems Division,

Massachusetts Institute of Technology
77 Massachusetts Avenue
E38-670
Cambridge, MA 02139-4307
dnight@mit.edu
617-253-7339