Transformation....

LAI and The Air Force “Lean Now” Initiative

Presented By:

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MIT-LAI Stakeholder Co-Director

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Transformation

• Requires evolutionary changes in business culture, institutions and processes

• Rapid response to needs of war-fighter …reduced acquisition and logistics span times

• Budgetary realities focus program managers on total ownership cost
  • Improved life cycle effectiveness and efficiency

• Learn from those who have “done it”
  • Industry based deployment and projects
Lean is a process of eliminating waste with the goal of creating value for enterprise stakeholders.

-Lean Enterprise Value, Murman et al

Lean Transformation is about:

- Customer-focus
- Knowledge-driven
- Eliminating waste
- Creating value
- Dynamic and continuous

The Fundamentals:

- Specify value
- Identify the value stream
- Make value flow continuously
- Let customers pull value
- Pursue perfection
The Boundaries of Enterprise Transformation are Merging... Unified Framework for Fundamental change

<table>
<thead>
<tr>
<th>Total Quality Management</th>
<th>Reengineering</th>
<th>Traditional Six Sigma</th>
<th>Lean</th>
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</thead>
<tbody>
<tr>
<td><strong>Goal</strong></td>
<td><strong>Focus</strong></td>
<td><strong>Change Process</strong></td>
<td><strong>Business Model</strong></td>
</tr>
<tr>
<td>Meet Customer Expectations</td>
<td>Product Quality</td>
<td>Incremental</td>
<td>Improve Efficiency &amp; Shareholder Value</td>
</tr>
<tr>
<td>Breakthrough Solutions</td>
<td>Business Processes</td>
<td>Radical</td>
<td>Increase Enterprise Performance &amp; Customer Value</td>
</tr>
<tr>
<td>Reduce Variation in Enterprise</td>
<td>All Sources of Product Variation</td>
<td>Process-specific; continuous</td>
<td>Minimize Waste &amp; Increase Customer Satisfaction</td>
</tr>
<tr>
<td>Eliminate Waste to Create Value</td>
<td>All Enterprise Processes &amp; People</td>
<td>Evolutionary Systemic</td>
<td>Deliver Value to All Stakeholders</td>
</tr>
</tbody>
</table>
AFMC Commander’s Intent

- Expeditionary mindset and culture
- Innovative, adaptive, and responsive
- Easy to do business with
- Effective and efficient

Deliver effects-based capability to the war fighter

Enabled by capable processes shared by government and industry
LAI: Where We Are Going

Action Oriented, Fact Based . . . Delivering Value to the Total U.S. Aerospace Enterprise

The Total US Aerospace Enterprise
Value Creation
Leveraging Consortium Knowledge to Accelerate Transformation
The “Burning Platform”
- Value Creation

- Value stream focus
  - Create value
  - Eliminate waste
  - Adapt quickly to new challenges

- Get it faster with fewer resources
Lean Now Objectives

• **Purpose:** Accelerate Transformation of Total Enterprise (Government and Industry)
  • Leverage our Collective Knowledge and Efforts
  • Support Elimination of Barriers that Impede Progress
  • Capitalize on Government and Industry Teamwork

• **Result:** Enterprise-wide Capable and Affordable Processes
  • Stimulate an Environment that Quickly Responds to New Challenges and Uncertain Circumstances
Lean Now!

- **Lean Now Background**
  - AF & LAI Concept – Supporting Government Transformation
  - Focus on Government-Industry *Critical* Interfaces
  - LAI Provides Venue, Coaches and Common Methods/Tools
  - “Design for Institutionalization”

- **Status of Prototyping**
  - Wave #1 – 3 prototypes
    - Contract Close Out (F-16)
    - Test and Evaluation (F/A-22)
    - Alpha Contracting (Global Hawk)
  - Wave #2 – Launched

Effective Transformation Involves the **Total** Enterprise

… Lean Now Provides a Mechanism to Catalyze & Speed Transformation
Lean Now Provides a Framework
...for moving from a few prototype illustrations to widely deployed use and achievement of agility?

Critical Processes

- T & E
- Contracting
- Systems Engr
- Risk Mgmt
- Decision Mking
- Issue Escal
- Etc

Stakeholders Involved

- Congress
- Navy, Marines Army
- AF Industry
- Defense Agencies DCMA, DCAA, etc
- OSD

Prototype

- Illustrated on a Few Programs

Validate

- Illustrated on Many Programs in Different Venues

Widely Deployed

- Policies in Place and Training & Measures In Place

DRAFT
Engaging Stakeholders Through the LAI Knowledge Cycle

Achieve Total Enterprise Value

6 LAI Goals

Outcomes/Measures

Experience and Lessons Learned

LAI Community Implementation

Knowledge Deployment

Web Curriculum Workshops etc.

Products/New Knowledge

Knowledge Collection

Research

Consortium Expertise

Data Site Visits Workshops etc.

LAI Consortium

Requirements

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**Transition-To-Lean Roadmap**

**Entry/Re-entry Cycle**

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

- **Initial Lean Vision**

- **Environmental Corrective Action Indicators**

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

- **Outcomes on Enterprise Metrics**

- **Decision to Pursue Enterprise Transformation**

**Long Term Cycle**

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

- **Detailed Lean Vision**

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

- **Short Term Cycle**

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

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

- **Lean Transformation Framework**

**Enterprise Strategic Planning**

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Lean Now...Supporting and Accelerating the Lean Transformation of Government

Lean Now

- A Government Initiative...a Total Enterprise Team Facilitated Through The LAI Venue
- Leverages Collective Knowledge To Eliminate Barriers...capitalize On Government And Industry Teamwork
- Industries Experience In Large Scale Change
- Cadre Of Coaches... Subject Matter Experts
- Spiral Approach

Accelerate Value Creation And Eliminate Non-essential Activity – Apply Lean Principles To Government-industry Critical Processes:

1. User-SPO-industry Program Interfaces
2. AF-industry Business Processes
3. AF-industry Operating Processes

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Lean Now: The Collaborative LAI, AF/DOD, and Industry Initiative

The Process

- Select Candidate Processes
- Select Candidate Programs
- Assign SMEs (Govt/Industry)
- Launch Prototype Projects

Outcome: Rapidly Deliver Capability to War Fighter

1: Leverage Collective knowledge and efforts
2: Eliminate barriers
3: Capitalize government and industry teamwork
4: Leverage prototypes to drive deployment
5: Create environment that quickly responds to new challenges and uncertain circumstances
Applying Lean Principles
...LAI Tools & Methodologies Deployed for Lean Now

Knowledge Deployment
Ten Years of Collaborative Research and Experience Pays Off!

Lean Now Tools & Methods
• LESAT (glesat)/TTL
• Lean Now Workshop
• Prototype Selection Protocol
• Event Planning Template
• Enterprise VSMs
• Root Cause Analysis

LAI venue allows coaches & trainers from all member companies to support Government initiatives
Lean Now Prototypes…Summarized

- **F/A-22**: Operational Flight Program (OFP) install timeline (Lockheed Martin, Boeing)
  - Decreased timeline from 34 to 8 days
  - Aggressively attacking new areas

- **F-16**: Contract closeout (Lockheed Martin, Boeing)
  - Attacking policy constraints blocking efficient and logical contract closeout
  - Leveraging DCMA, DCAA, and DFAS participation
  - Closing contracts with 3000 mods will free up huge resources in manpower and funding ($Bs in Unliquidated Obligations)

- **GLOBAL HAWK**: Alpha Contracting (Northrop-Grumman, Raytheon)
  - First ever enterprise-wide VSM
  - Attacking key cycle times and cost drivers
  - Building better acquisition strategy
Workshops Conducted Throughout Prototype Projects
F/A-22
Combined Test Force (CTF)
F/A-22 CTF OFP Prep & Load Results

- Quantitative:
  - Touch Time - Reduced by 30%
  - Span Time - Reduced by 52%
  - Number of People Involved - Reduced by 43%
  - Rework - Reduced 100%
  - Non-Value Added Steps - Reduced 60%

- Intangibles:
  - Team Members Understand the Complete Process.
  - Team formed for Future Process Improvements

- Similar event ran on production floor in Marietta, in Aug 02, with similar results
Where Are We Headed?

- Perform LESAT in Summer of 03
  - Performed initial LESAT in Spring of 02
  - Measure progress
- Follow-up on many F/A-22 Program identified areas of improvement opportunities
  - Elevate to folks that care & can influence change when necessary
- Begin focusing on development of lean supplier networks
- Compile Lean Now journey lessons learned & observations
  - Communicate & share with wave 2 prototypes
F-16
Inactive Contract Closeout
Contract Close Out Prototype
…F-16 Team & LAI’s Structured Approach

• Lean Now: Objectives of Prototype
  • Reduce Waste: backlog, cycle time, inefficient use of human resources
  • Add Value: Cost avoidance, savings, and reduce cycle time

• Total Enterprise Team Involved
  • SPO & ASC Business Management
  • DCMA (Contract Management Offices, District and HQ)
  • DCAA (Field Support Offices, Regions)
  • DFAS (Columbus, HQ AFMC Client Exec)
  • LM PO & Functional Business Mgmt
  • LM Shared Services

Core Team
• Identified & Prioritized Barriers
• Data Gathering & Analysis
• Root Cause Analysis
• Recommended Solutions

Sr. Level Team
• Reviewed/Shaped Solutions
• Committed to Implementation
  • Within Team’s Control
  • Requiring Elevation

Elevate
Implement
Now
F-16 Contract Closeout Lean Initiative
Current Actions

• Expansion of DCMA Q-Final authority to cost-type contracts
  • Estimated $0.24M cost avoidance on existing F-16 contract backlog

• Develop cost-effective approach to closeout of small value cost-type contracts ($10K or less)
  • Estimated $2.4M cost avoidance on existing F-16 closeout backlog

• Settlement process (versus ACRN bottom-line reconciliation)
  • Estimated three-to-seven year contract closeout cycle time reduction

• Subcontract closure guidelines for assist audits
  • May eliminate need for assist audits if Sub audited under another contract
Global Hawk
Alpha Contracting
Current Actions

- Documenting cost savings
  - Affordability metrics being developed to track and confirm gains

- Evaluating proposals on Integrated Comm Suite for STE and CMS

- Implementing alpha contracting process
  - Event-based vs. schedule-based – exercising Goldblatt’s Theory of Constraints

- Maturing Enterprise VSM beyond Tier I
  - Focused on cycle time reductions for production and development
  - “Speed-to-market” critical for spiral development
Future Plans

- Solidify gains via documentation and metrics
  - New EMD Award Fee language requires contractor to practice lean and document results
- Develop other lean team leaders within program office
  - Facilitates culture change and reduces bottleneck
# The Wave 2 Prototypes

<table>
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<tr>
<th>Process Focus</th>
<th>Prototype</th>
<th>Supporting Industry Member</th>
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<tbody>
<tr>
<td>AEDC</td>
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<tr>
<td>Engine Development</td>
<td>Turbine Engine Development</td>
<td>Rolls Royce (N.A), Pratt &amp; Whitney</td>
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<tr>
<td>ESC</td>
<td></td>
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<tr>
<td>Flight Manual Development</td>
<td>Joint Stars Flight Manuals</td>
<td>Northrop Grumman, Rockwell Collins</td>
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<tr>
<td>OO-ALC</td>
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<tr>
<td>Supply Chain Management</td>
<td>Traveling Wave Tube Repair</td>
<td>Raytheon, Textron</td>
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<tr>
<td>DAU</td>
<td></td>
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</tr>
<tr>
<td>Course Development</td>
<td>Course Development Cycle Time</td>
<td>Raytheon (RLI), MIT</td>
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</tbody>
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Wave 2 Launched…
The Journey Continues

Supporting LAI Members
- Boeing, Lockheed Martin, MIT, Northrop Grumman, Pratt and Whitney, Raytheon, Rockwell Collins, Rolls-Royce, Textron

• Turbine Engine Development /Sustainment
• Flight Manual Development
• Supply Chain Management
• DAU Course Development

Strategic Planning Events
Critical to Success of Lean Now Initiative
- Enterprise Definition/Boundary Conditions
- LAI Interface
- Agile Acquisition and Lean Now

Wave 2 Project SME Conference - Hosted By LM Aeronautics, Marietta, GA
- Orientation for new SMEs
  - Wave 1 project reviews, lessons learned and
  - Wave 2 project introduction
- Initial Engagement with Government teams
The Challenge…Leverage and Institutionalize the Findings

Test and Evaluation (F/A-22)
Lead LAI SME - LM
LAI SME Coaching Team - Boeing

Project Coordination Network

The Challenge!
How to institutionalize the key results?

Contract /Closeout (F-16)
Lead LAI SME - LM
LAI SME Coaching Team - LAI

Alpha Contracting (Global Hawk)
Lead LAI SME - N-G
LAI SME Coaching Team - Raytheon

- Spiral 1
- Spiral 2
- Spiral 3
- Spiral 4

- Spiral 5

Wave 2 Prototypes

- Determine “current reality”
- Compare to LEM practices
- ID Gaps & Set Req’d Outcomes
- Gap Closure Plan
- Implement
- Show Results

• Spiral 4
• Spiral 3
• Spiral 2
• Spiral 1

• Spiral 5

Wave 2 Prototypes

• Spiral 4
• Spiral 3
• Spiral 2
• Spiral 1

Wave 2 Prototypes

• Spiral 4
• Spiral 3
• Spiral 2
• Spiral 1

Wave 2 Prototypes
Summary and Next Steps

- **Lean Now** Provides a Mechanism to Support and Accelerate Transformation Across the *Total* Enterprise
- AF is Using *Lean Now* as one Approach to Identify Improvement Initiatives for AF Corporate Board Escalation to OSD
- Continued HQ DCMA & OSD participation in LAI and *Lean Now* is Requested
  - Lean Now is Focused on “Multi-Organizational Interfaces” and Provides a Path to Institutionalizing
Just Do it

Organic Initiatives

External Consultants

Other Industry Support

Academic Research

LAI