Transformation...

LAI and the Air Force Lean Now Initiative

Presented by: Mr. Terry Bryan
LAI Stakeholder Co-Director

28 January, 2004
Executive Summary of LAI

History

- **1992-1997**
  - Launched by ASC/CC as a catalyst to support transforming US military aircraft industrial base from cold war performance-centric to post-cold war affordability-centric.
  - Government, Industry, Labor, and MIT (as “honest broker”)
  - Lean production in industry was focus…LAI accelerated lean acceptance
    - Common terminology, LEM and launched the TTL & LESAT tools

- **1998-2001**
  - ASC/CC and industry leadership fade; LAI viewed as research-centric
  - Industry-MIT take lean “above the factory floor” and to supply chain
    - Basic Tools Deployed: LEM, TTL and LESAT
  - MIT Book on LAI: “*Lean Enterprise Value*” – true transformation and total solutions require involvement of total, extended enterprise

- **2002-Current**
  - AFMC/CC and SAF/AQX see potential to use LAI venue to support AF transformation of the extended enterprise for life cycle acquisition
  - Collective sense of urgency established via “Lean Now” – positive results!
    - Focus at the interfaces; move methods/tools to government; catalyze government training/communication
Right Consortium Membership
... a venue for collaboration on Aerospace challenges

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<th>Space</th>
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<td>Raytheon Co.</td>
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<td>Curtiss-Wright Flight Systems</td>
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<td>SPOs: F/A-22, C-17</td>
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<td>Warwick, Bath, Cranfield</td>
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Concentration is on Government-Industry Interfaces

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
Transformation… “from what to what??”

- **From What?**
  - Common Threads --- after 5 conflicts in 12 years
  - What Our Enemies Have Learned

- **To What?**
  - Transformation Vectors
  - Results We Desire

- **AFMC/CC Observations**
  - Thought – “Break the Knowledge and Time Barriers”
  - Questions to Consider – “Right Processes and Right Systems?”
Air Force Lean Now Initiative
Established in Collaboration with LAI

- What: Lean Transformation of Air Force Material Command
- Why: Provide On Time, Effects Based Capability to the War Fighter
- Who: Lean Aerospace Initiative Consortium Members Teamed with AFMC within the LAI venue
LAI Has Provided Lean Now Deployment Venue

- AFMC Provided Strong Leadership

- Industry Members Provided Strong Support
  - Eight Members Provide Near “Full time” SMEs at no cost

- Lean Now workshop developed by LAI Industry members, MIT and Air Force Team … The Best of the Best!

- One Week Facilitator Course Developed…LAI Industry members, MIT, Air Force…The Best of the Best!

- LAI Developed tools Deployed
  - LESAT, GLESAT, PDVSMA, LEV Simulation Game, Enterprise TTL
  - MIT Process to develop feedback of tools and methods

Supporting LAI Members
- Boeing, Lockheed Martin, MIT, Northrop Grumman, Pratt and Whitney, Raytheon, Rockwell Collins, Rolls-Royce, Textron
Developed And Deployed Comprehensive Strategy And All Related Tools, Training And Resources For Deployment Of Lean Throughout The AF Material Command, (An Organization Of Approximately 100,000 People)

- Seven Major Projects (F/A-22, F-16, Global Hawk, Arnold Eng.Dev.Ctr., Electronics Systems Center, And Ogden Air Logistics Center), Involving Senior Project Management And DCMA HQ, DCAA And DFAS Regional Offices

- Formed Ogden ALC Strategic Enterprise Partnership

- Developed One Day Lean Now Workshop/40 Hour Training Course
  - Fifteen Lean Now Workshops Conducted Including (Global Hawk, Entire F-16 SPO, All Seven Active Projects)

- Results Oriented SME Cadre… Fourteen Master Experts/Black Belts From 10 LAI Consortium Members

- Lean Now Presented To DoD Senior Management, General Lyles, General Martin, Multiple Industry Conferences And Others (Lean Now Video)
Prototype Focus...the Interfaces

CTF (F/A-22)
LAI SME
F/A-22 SPO
MIT LAI
LM Aero
Boeing
Discipline Experts

Alpha Contracting (Global Hawk)
Northrop-Grumman
Raytheon
MIT LAI
Global Hawk SPO

Turbine Engine Test (AEDC)
LAI SME
MIT/LAI
AEDC, AFMC, ASC, AFRL, ALC, AFFTC, NAVAIR, GE, RR and P&W

Procurement Request (Ogden ALC)
MIT LAI
Discipline Experts

Course Dev. (DAU)
LAI SME
DAU
Discipline Experts

ITSP (ESC)
LAI SME
Discipline Experts
Enabling Capabilities of Lean Enterprise Transformation

10 Lean Workshops/Facilitator Training

Wave 2 Prototypes Begin

ESC ITSP DAU

AEDC Turbine Engine Test

OO-ALC Procurement Request

OO-ALC

Strategic Engagements Begin

Transition to Lean roadmap

Executive Leadership Team

Deployment Roadmap

EVSMA

Strategic Objectives

Current/Future State

Wave 1 Prototypes

Wave 2 Prototypes

Deploying Lean (VSM, Kaizens, Internal Coaches, etc...)

Lean Now Facilitators Course Developed

Contract Closeout

CTF OFP Load

CTF

Contracting GH ISS

GH ICS

Lean Now Workshop Developed

2002

2003

52+ Events/Projects for F/A-22, GH, F-16 Hosts

Alpha

Contracting

OO-ALC/Head2Right

Transition to Lean roadmap

Executive Leadership Team

Deployment Roadmap

EVSMA

Strategic Objectives

Current/Future State

Maturity of practice and influence

Contracting

GH ISS

GH ICS

Lean Now Workshop Developed

2002

2003
Local Results and Behavior Change…
New Capabilities and Skills,

CTF OFP Load (F/A-22)

- Selected improvements within processes:
  - Software Install Time Reduced from 97 hours to 46 hours
    - Provides Additional Test Sorties per Prep & Load
    - Validated on the F/A-22
  - 50-95% Span Time Reduction
  - 56% reduction in non-value added steps
  - 91% reduction in part traveled distance

- Implemented web based spares ordering system

- Process improvements:
  - Parts purging within CTF compound
  - Dedicated parts research

CTF deploying lean (VSM, Kaizens, Internal Coaches, etc…)

Alpha Contracting (Global Hawk)

- 37% Initial cycle time reduction for Alpha Contracting

- Created Enterprise Level Tier I and Production Tier II VSM’s

- Project Plans Ongoing (10 Major Events Completed):
  - ISS $2M savings per ship set / $49M life cycle savings
  - AICS/GICS $33.8M life cycle savings
  - 38% Production delivery cycle time reduction per BL-10
  - Additional $5M Est. Savings for Producibility Initiatives
**Lean Now… Documented Results**

### Inactive Contract Closeout
- **Subcontractor Audit Process**
  - Reduced from 26+ to 7 Weeks
  - Data/Advocacy for “Negotiated Settlement Approach for Irreconcilable Contracts” Submitted to BIC (AM42)
    - Potential to Reduce Cycle Time by 3-7 years

- **Working Toward Abbreviated FAR Process for “Streamlined Closeout of Small Dollar Cost-Type Contracts**
  - Cost Avoidance of $2.4M for F-16 SPO

- **Validated on F-16**
  - ASC, SPO, DCMA, DFAS, DCAA, LM Aero

### Wave 2
**Turbine Engine Development**
- **“A1” Project “Improve Ground Test Throughput**
- **AEDC VSM Event 11/4-6 followed by AFMC VSM 11/11-14 (Both VSM events completed on schedule)**
- **“A4” FETT/CDR Relationship**
  - Possible 4%-7% JSF Program Cost Savings

- **Procurement Request Process**
- Trained 25 facilitators-40 hour LAI class.
- Created PR Process VSM and collected available data
- Created Project Plans - 23 plans, prioritized and staffed
- **Results Expected by 1st Qtr 2004**
  - Pilot process designed and in place
  - 50+% Cycle time reduction in end to end process
  - Planning to extend pilot to other product areas
Where are we headed...The Enterprise View

• Center Leadership supports LAI as Strategic Coach
• Established Enterprise Leadership Team (ELT)
• Revamp and Cellularize New Landing Gear Facility
• Study Cellularizing Aircraft Facility
• “Y-NOT” Culture Change Continues
• Game Of Work (GOW) Training Started
• Refocus Efforts ABOVE Shop Floor
Upcoming Events

- Theme of the 2004 LAI Plenary Conference "Lean Enterprise Transformation: Making it Happen."

- LAI Plenary Conference and the associated meetings week of March 22-25, 2004
  - Registration information forthcoming
  - Dinner on the night of March 24th.

- Other meetings that will be associated with the Plenary Conference are:
  - Lean Now SME and Change Agent Meeting - Monday, March 22nd, all day
  - Supplier Networks Working Group Meeting - Monday afternoon, March 22nd
  - Champion Dinner Meeting - Tuesday night, March 23rd
  - EdNet Meeting - Wednesday evening, March 24th
  - Product Development Team Meeting - Thursday, March 25th, all day
  - Goal 5 Working Group Meeting - Thursday, March 25th, all day
  - LESAT Facilitator Workshop - Thursday, March 25th, all day