



LAI Consortium's Role in Enterprise Transformation: Making It Happen

**Presented By
Prof. Deborah Nightingale**

**LAI Plenary Conference
March 23, 2004**

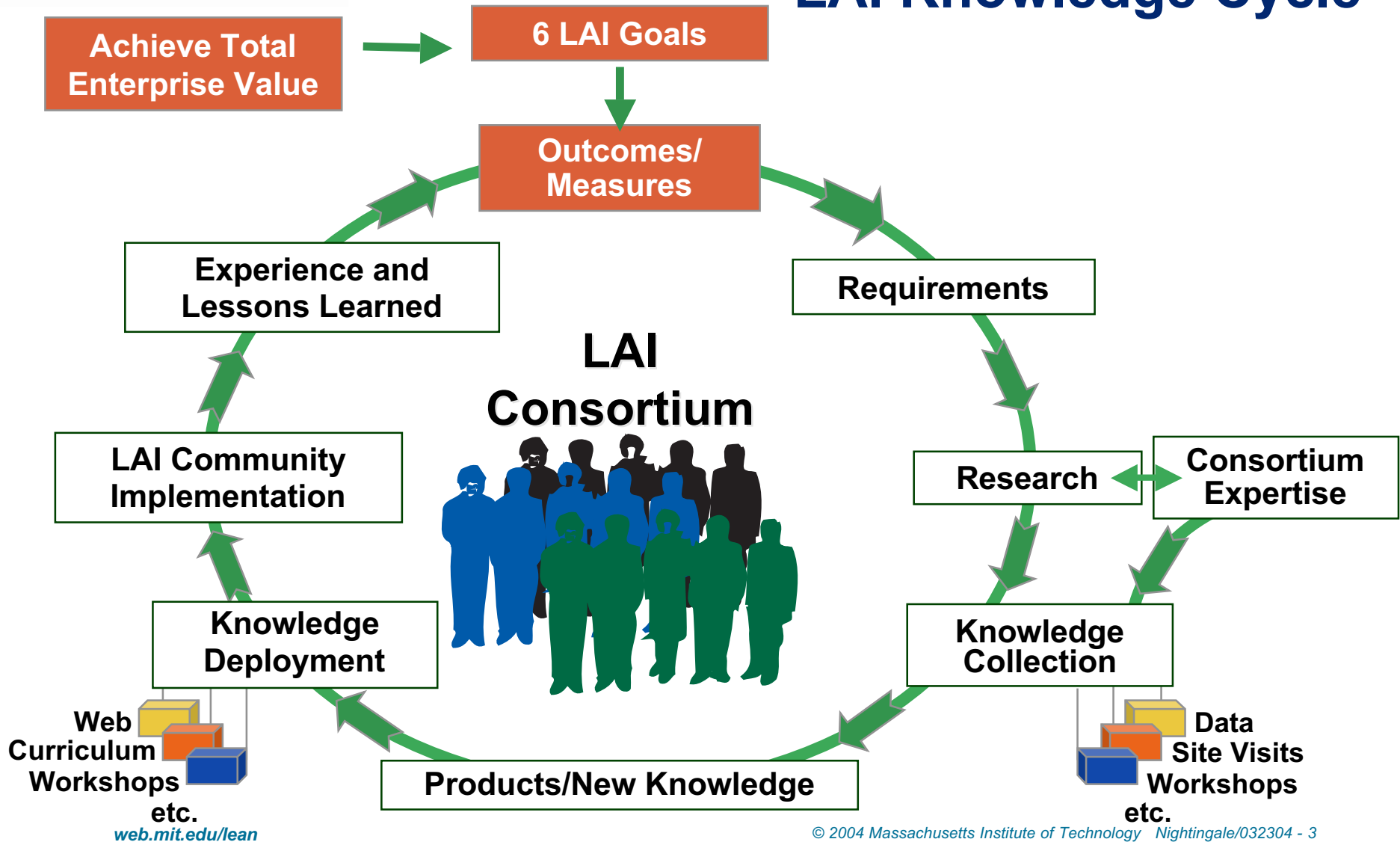


The Journey to Lean Enterprise Transformation

- Let's take a look at where we're headed as a consortium and an industry...
- What we'll need to get there...
- And what you'll see and hear at this Plenary that will get us there...

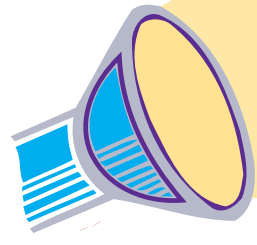


Working Together to Make Transformation Happen Through the LAI Knowledge Cycle





Why Is An Enterprise Focus Important?



Functional Lean Successes
•Manufacturing
•Product Dev.
•Supplier Network

“Islands” of Success

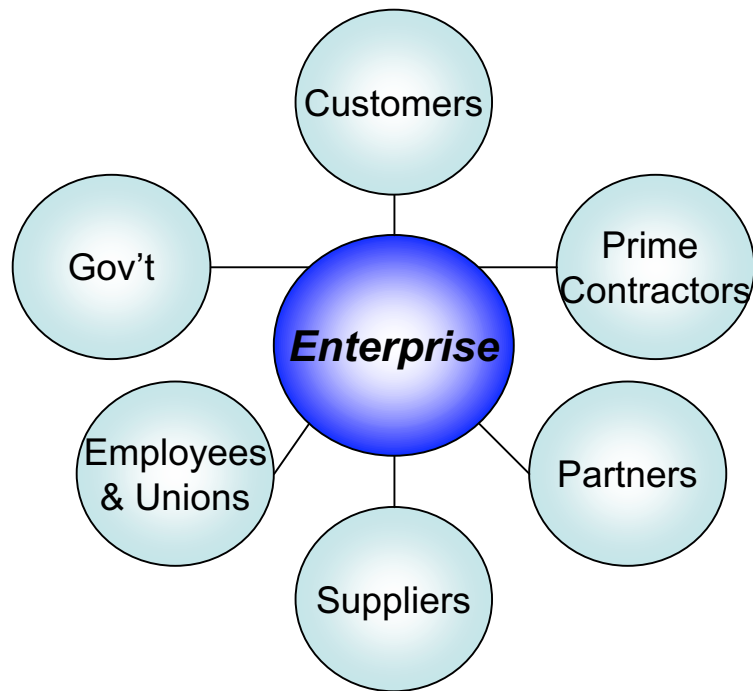
Successes Through Interaction Between Functions

Lean Applied to Enabling Processes
•HR
•IT, etc.

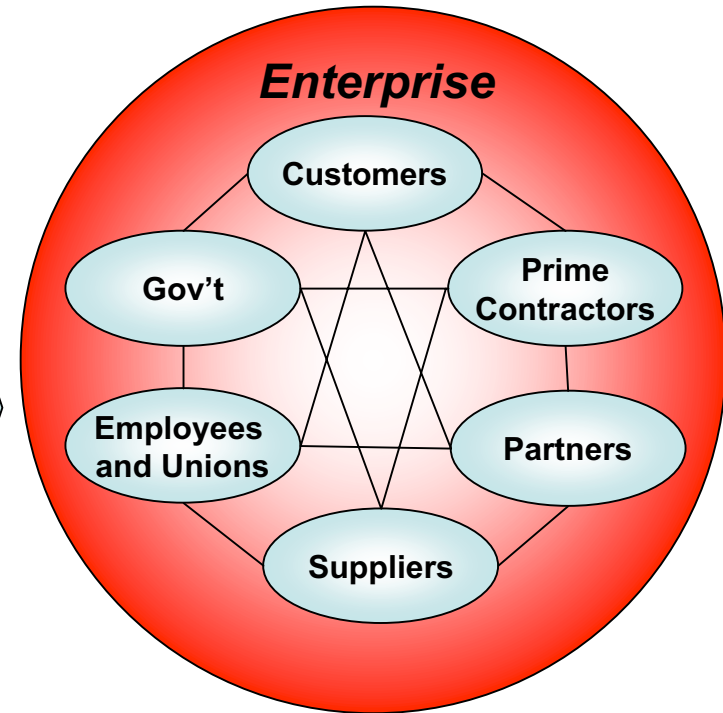
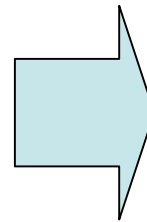
Transition from Waste Minimization to Value Creation
Success Through Enterprise Integration

Success Through Total Enterprise Integration of All Stakeholders
•Industry
•Government
•Suppliers
•Employees

Evolution of Lean: Total Integrated Enterprise



Connected Enterprise



Total Integrated Enterprise

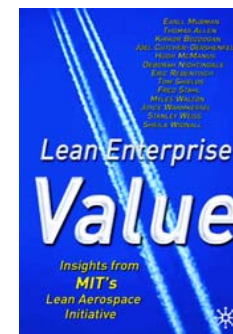
The Journey to a Lean Total Integrated Enterprise is Extremely Challenging



Lean Journey: From the Factory Floor to the Total Enterprise

“A lean enterprise is an integrated entity that efficiently creates value for its multiple stakeholders by employing lean principles and practices.”

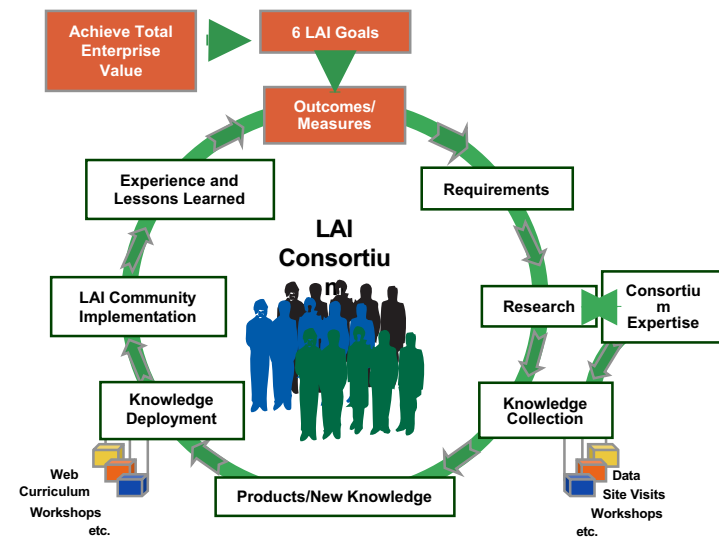
– *Lean Enterprise Value,*
Murman et al.





LAI has a Unique Capability for Addressing Enterprise Transformation Challenges

- Engaged Members Assisting Transformation Efforts
- Knowledge Areas
 - Fact-based neutral-forum
 - Cutting edge enterprise-level research
- Knowledge Teams
 - Communities of practice
 - Tool development
 - Implementation cases
 - Research
- Integrated Enterprise Toolset
 - Enterprise transformation, analysis and assessment
- Education
 - Education Network/Lean Academy
 - Lean enterprise curriculum and training

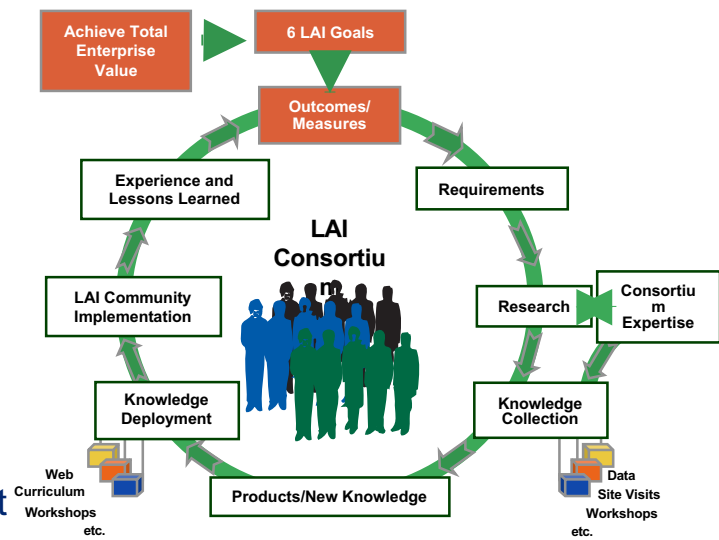




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LAI Has Assisted with Lean Deployment for Enterprise Transformation

“The momentum generated by Lean Programs has resulted in significant gains from lean implementation by prime contractors and LAI Coalition members.”

- Industry and academia contributed experts for lean deployment and training
- Government leadership has been critical to successful engagement
- Prototype projects successful at improving interface processes between industry and government
- Projects reflect best from consortium: training, expertise, and engagement methodology

Contributing LAI Members: Boeing, Lockheed Martin, Northrop Grumman, MIT, Pratt & Whitney, Raytheon, Rockwell Collins, Rolls-Royce, Textron



LEAN AEROSPACE INITIATIVE

Lean Now...A Consortium Success

CTF (F/A-22)

Install reduced from 97 to 46 hours
Team: LAI SME, F/A-22, SPO, MIT, LM Aero, Boeing, Discipline Experts

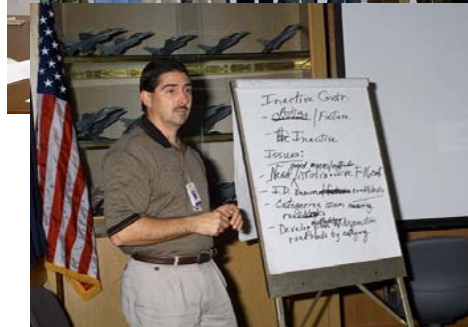


Course Development

Team: LAI SME, MIT, Discipline Experts

Alpha Contracting (Global Hawk)

Alpha Contracting - 37% cycle time reduction
Team: Northrop-Grumman, Raytheon, MIT, Global Hawk SPO



Turbine Engine Test (AEDC)

10 Engine SPO projects underway
Team: LAI SME, MIT, AEDC, AFMC, ASC, AFRL, ALC, AFFTC, NAVAIR, GE, RR, P&W

Procurement Request (Ogden ALC)

Training and PR process
VSM complete
Team: MIT, Discipline Experts

Contract Closeout (F-16)

Audit process reduced from 26+ to 7 weeks
Team: LAI SME, MIT, F-16 SPO, DCMA, DCAA, DFAS, LM Aero

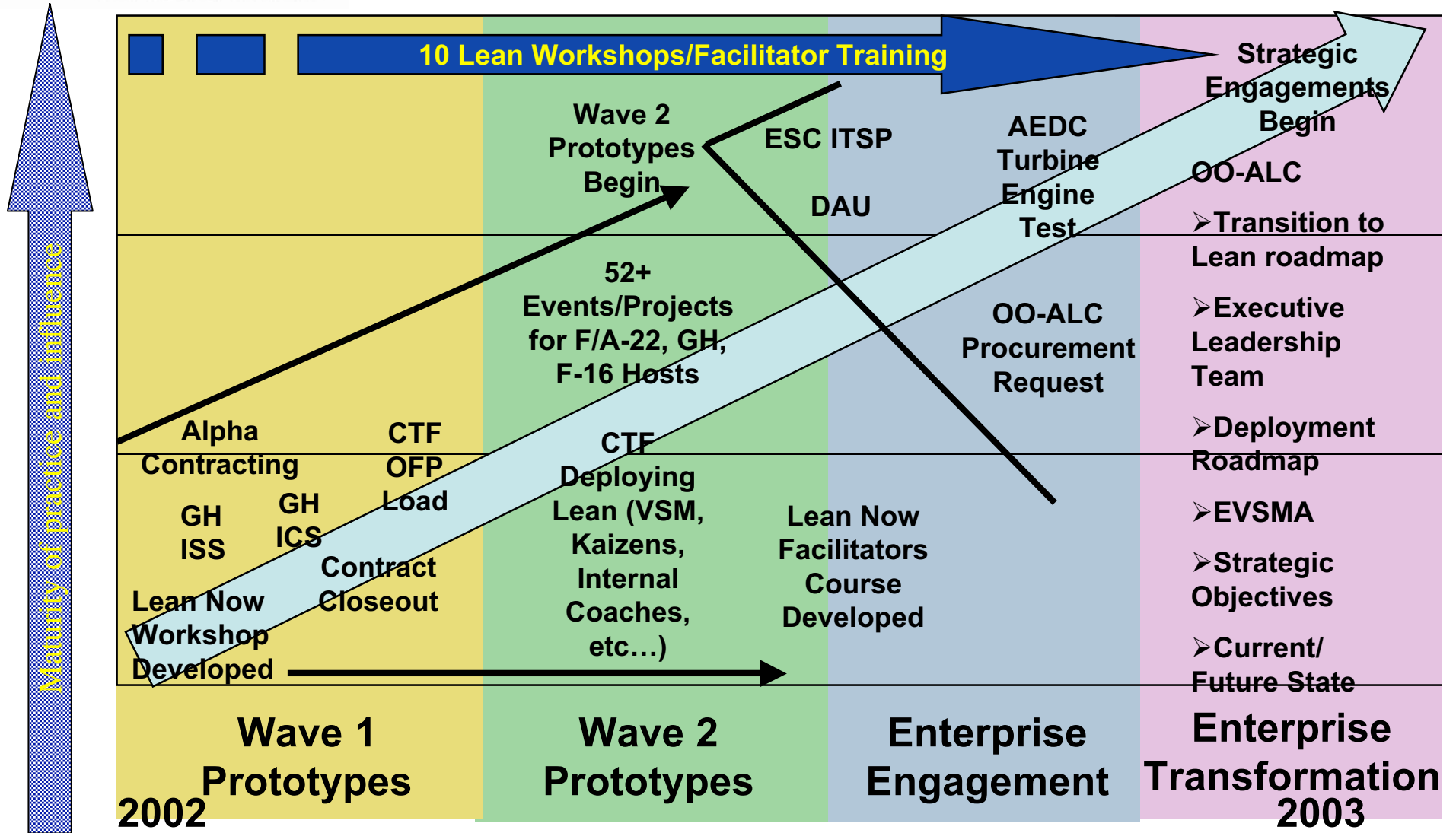


ITSP (ESC)

Team: LAI SME, Discipline Experts



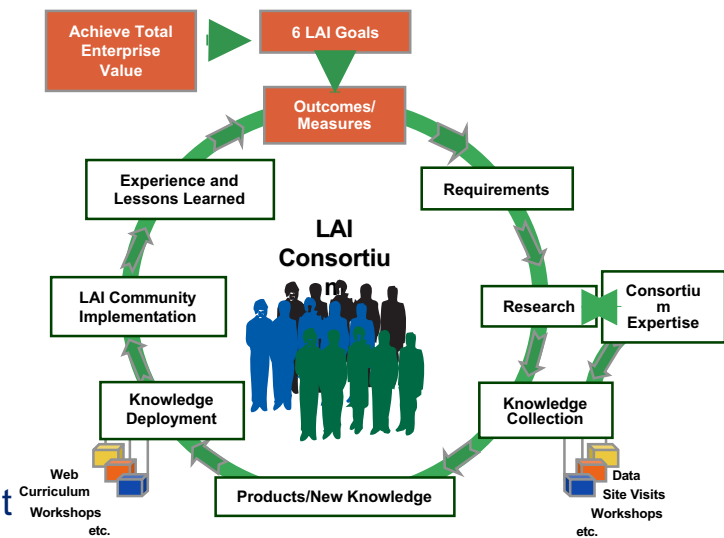
LAI Consortium is Working Together to bring about Enterprise Transformation





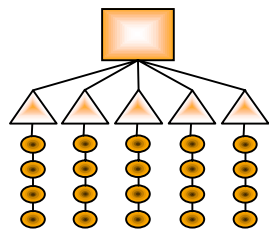
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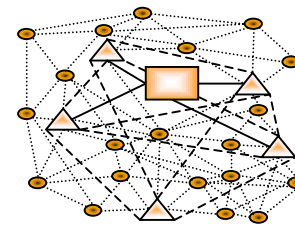


The Challenges of Complex Enterprise Requires a Systems Approach

- New strategic systems perspective
- Viewing enterprises as **holistic** and **highly networked** systems
- Integrating leadership processes, lifecycle processes and enabling infrastructure systems
- Balancing needs of multiple stakeholders working across boundaries



MOVING FROM THE PAST
(hierarchical) enterprise



TOWARDS THE FUTURE
(networked) enterprise



**What are the key issues and
unknowns in moving to enterprise
capability?**



Key Enterprise Questions

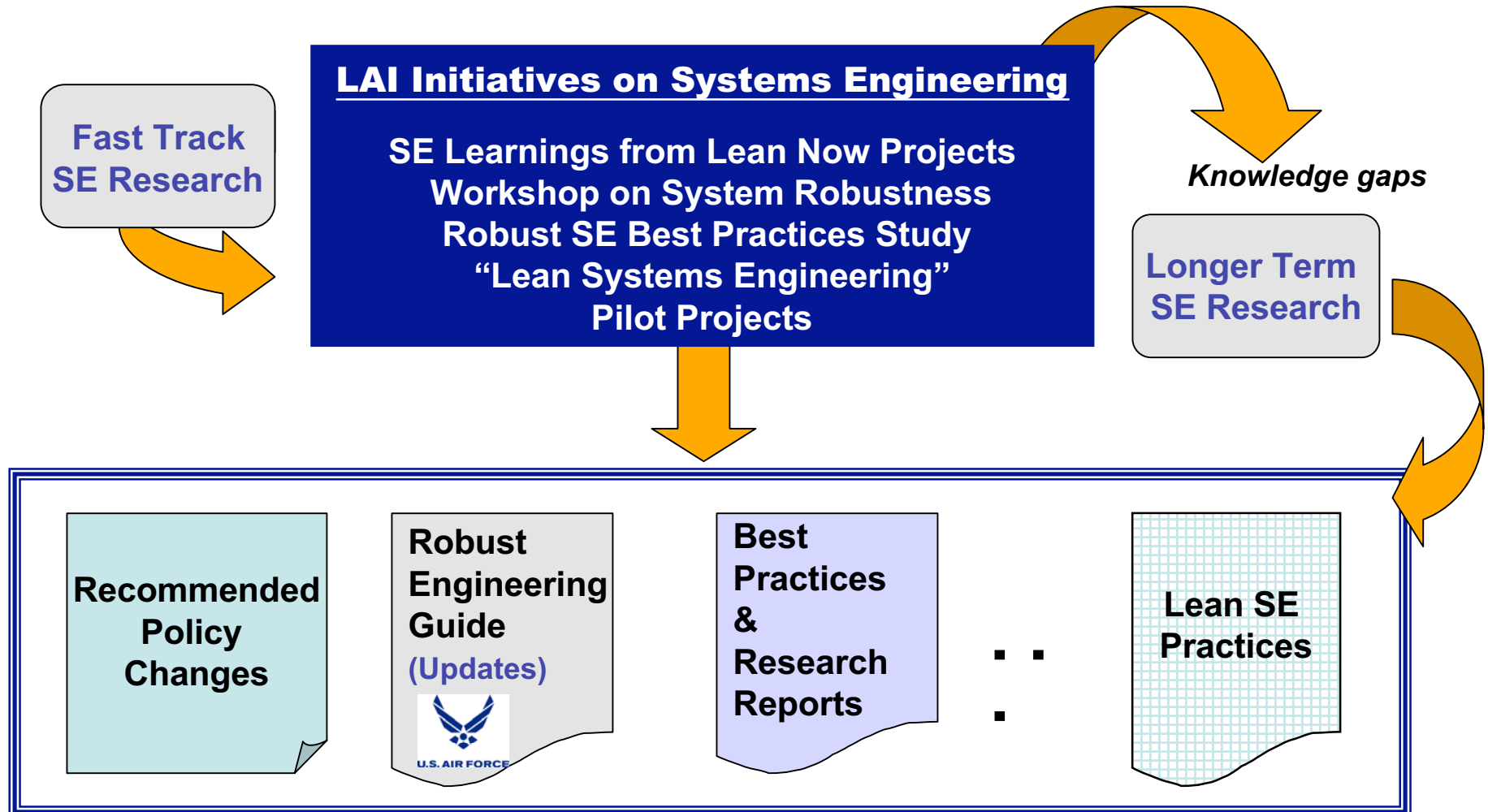
- How to accelerate lean enterprise transformation?
 - Organizational and cultural change
 - Metrics for motivating desired behavior
 - Diffusing and sustaining lean changes
- How to design future lean enterprises?
 - Total value stream and lifecycle value creation perspective
 - Integration strategies for enterprise networks
 - Frameworks and methods for enterprise architecting
- How to evolve adaptive lean enterprises?
 - Evolutionary acquisition and development -- system-of-systems perspective
 - Fostering innovation across acquisition value stream
 - Ensuring flexibility, agility and responsiveness at Internet-speed



Focus on Three Knowledge Areas to Meet Current and Future Challenges

- **Enterprise Change**
 - Strategic, enterprise-level approach to accelerating effective and sustainable improvement and change
- **Enterprise Architecting**
 - Creating a future lean vision and designing an enterprise to support it
 - Incorporate information, organization, process, technology and strategic dimensions
- **Product Lifecycle**
 - “Pushing the envelope” in the area of designing and developing aerospace products in a complex system-of-systems environment to shorten cycle time, reduce cost and increase delivery of best lifecycle value.

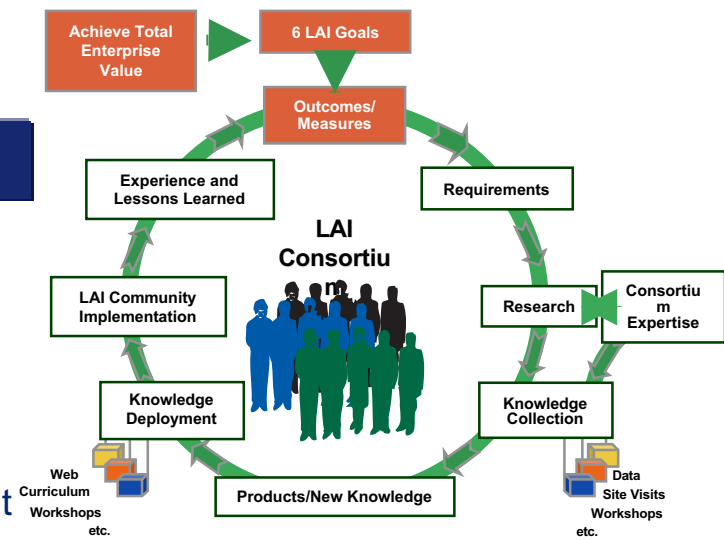
Systems Engineering Revitalization





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Role of Knowledge Teams

- Developing tools based on research, practice and experience
- Sharing knowledge
- Providing guidance to research
- Sponsoring tests/validation of products
- Supporting transformation case studies

Communities of Practice => Leveraging Consortium Knowledge

Knowledge Teams and Communities

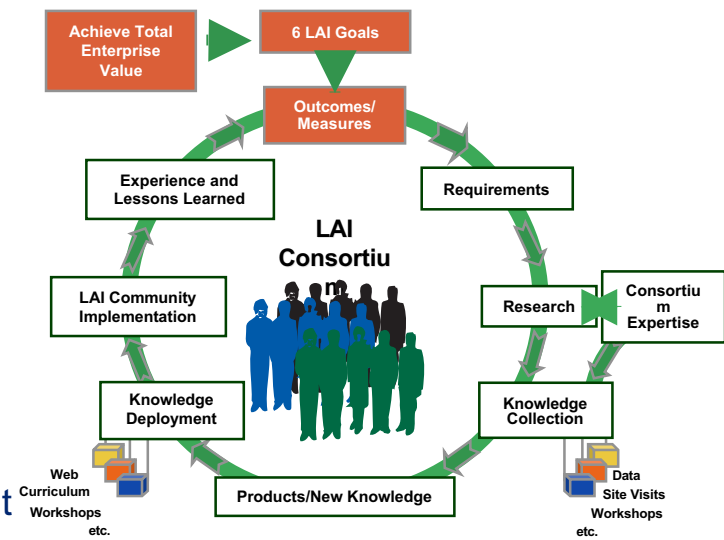
- **Enterprise Change**
 - Lean Now SME network
 - Government LESAT working group
 - Sustaining lean change working group
 - Metrics working group
- **Enterprise Architecting**
 - EVSMA working group
 - Supplier Networks working group
- **Product Lifecycle**
 - Product development team
- **Education and Outreach**
 - Education Network
 - Champions Network





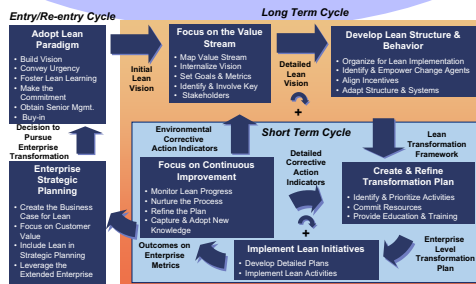
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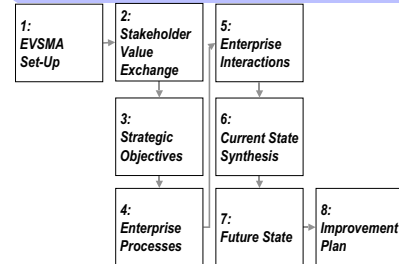
Integrated Enterprise Transformation Toolset

How do I become a Lean Enterprise?



Transition to Lean Roadmap (TTL)

How do I analyze my enterprise and create a Lean Enterprise vision?



Enterprise Value Stream Mapping and Analysis (EV SMA)

How do I assess my progress?

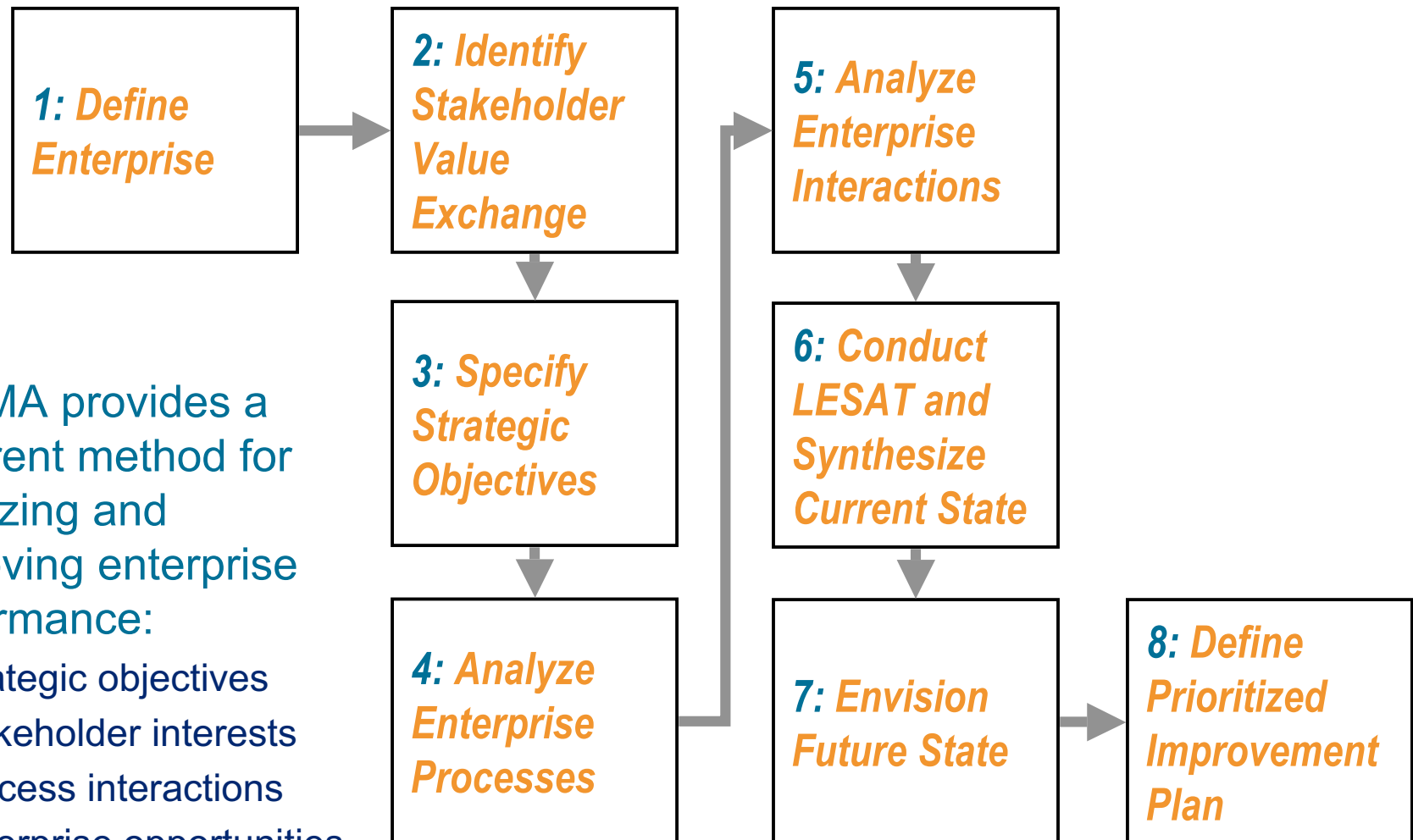


Lean Enterprise Self-Assessment Tools (LESAT and Government LESAT)

Enterprise Value Stream Mapping and Analysis (EVSMA)

EVSMA provides a coherent method for analyzing and improving enterprise performance:

- strategic objectives
- stakeholder interests
- process interactions
- enterprise opportunities





Government Lean Enterprise Self-Assessment Tool



LESAT revised making it more appropriate for government organizational use

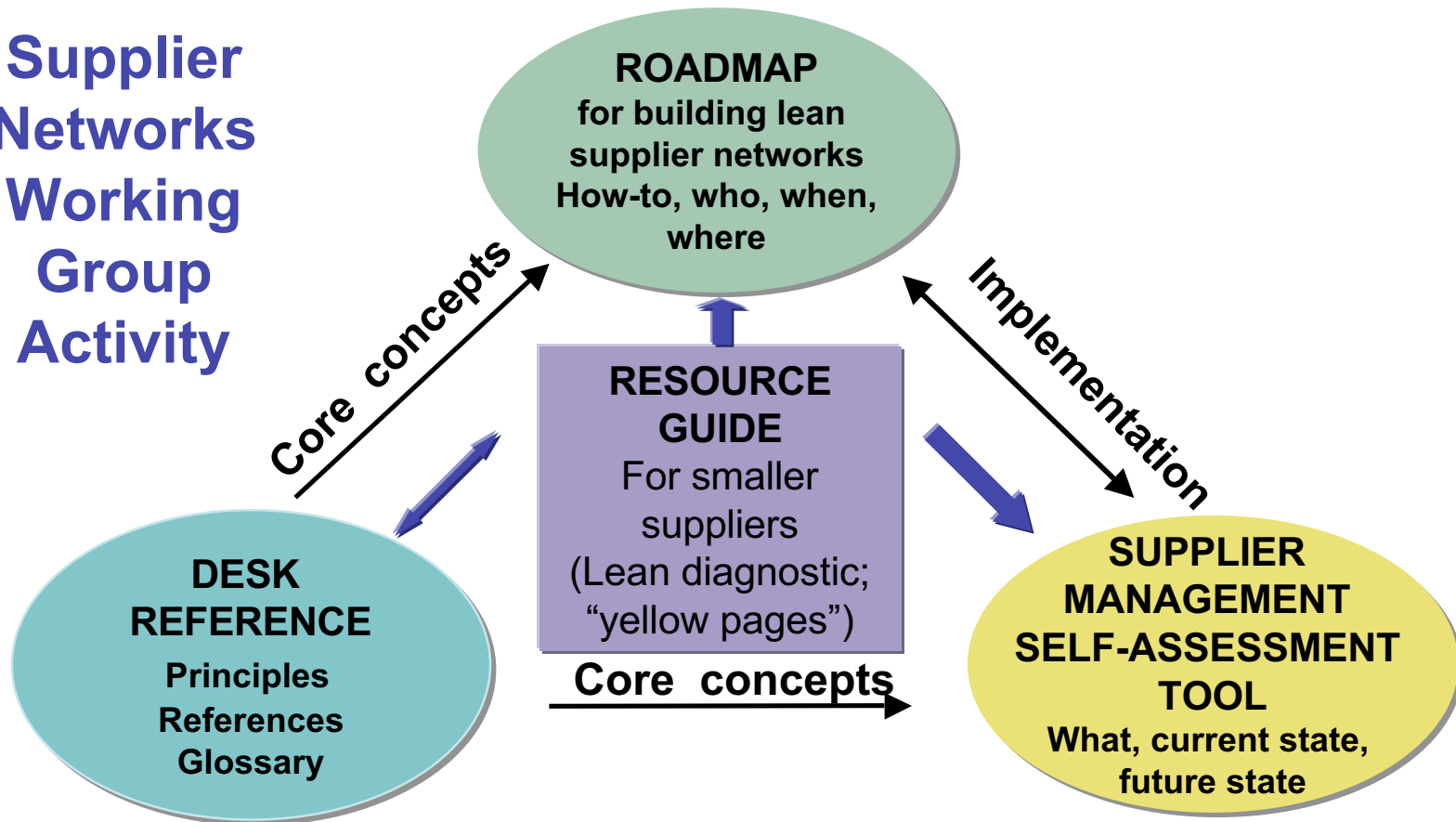
*Source: Lean Aerospace Initiative, MIT © 2001
as modified by MIT on 5/12/03*

- Alpha version complete and in testing
- May go to version 1.0 with only word changes
- Background:
 - Review of LESAT relative to SPO operation indicated 60-70% of LESAT usable in government context
 - Alpha version developed with small team
- Primary focus for use is:
 - SPOs
 - Government organizations with multiple functions needed to fulfill mission

Successfully tested with Global Hawk and C-17 SPOs

Supplier Networks Transformation Toolset can Help Accelerate Industry's Transformation

Supplier Networks Working Group Activity



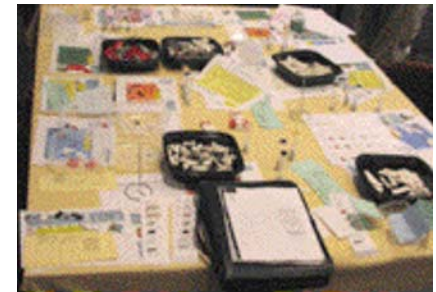
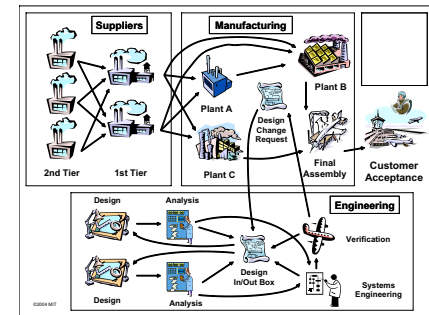
OBJECTIVE: Develop integrated lean supplier networks transformation toolset

Lean Enterprise Value Training Simulation

- A simulation of a complex aerospace enterprise
 - Integrated lecture material and exercises
 - Provides knowledge, tools, and experiential learning
- Version 1.0 released to LAI consortium
 - Refined, validated, and deployed through 20+ events
 - 500-600 practitioners impacted so far...
 - Facilitated deployment and customization to LAI members
- Summer 04 short course planned

“Finally, saw how lean concepts actually function”

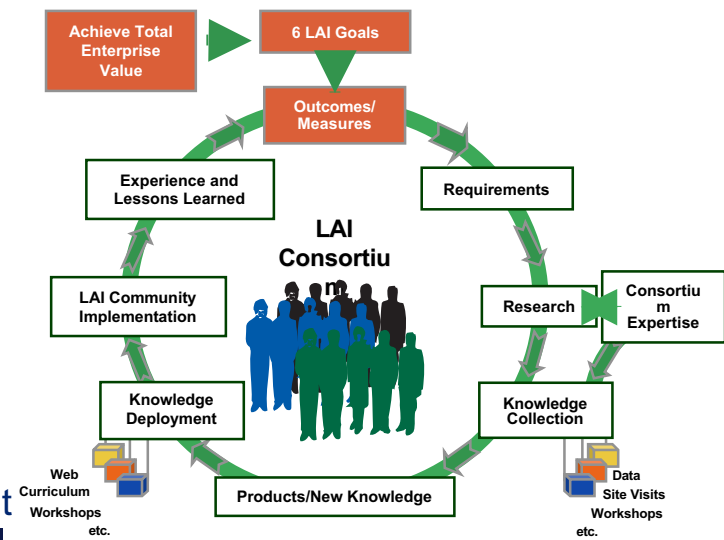
2 day course participant March 2004





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LAI Educational Network

Vision: Active communication and collaboration among member schools supporting the transformation of the greater US aerospace enterprise

Mission: Support continuous learning throughout the US aerospace enterprise by sharing knowledge and curriculum developed by EdNet members



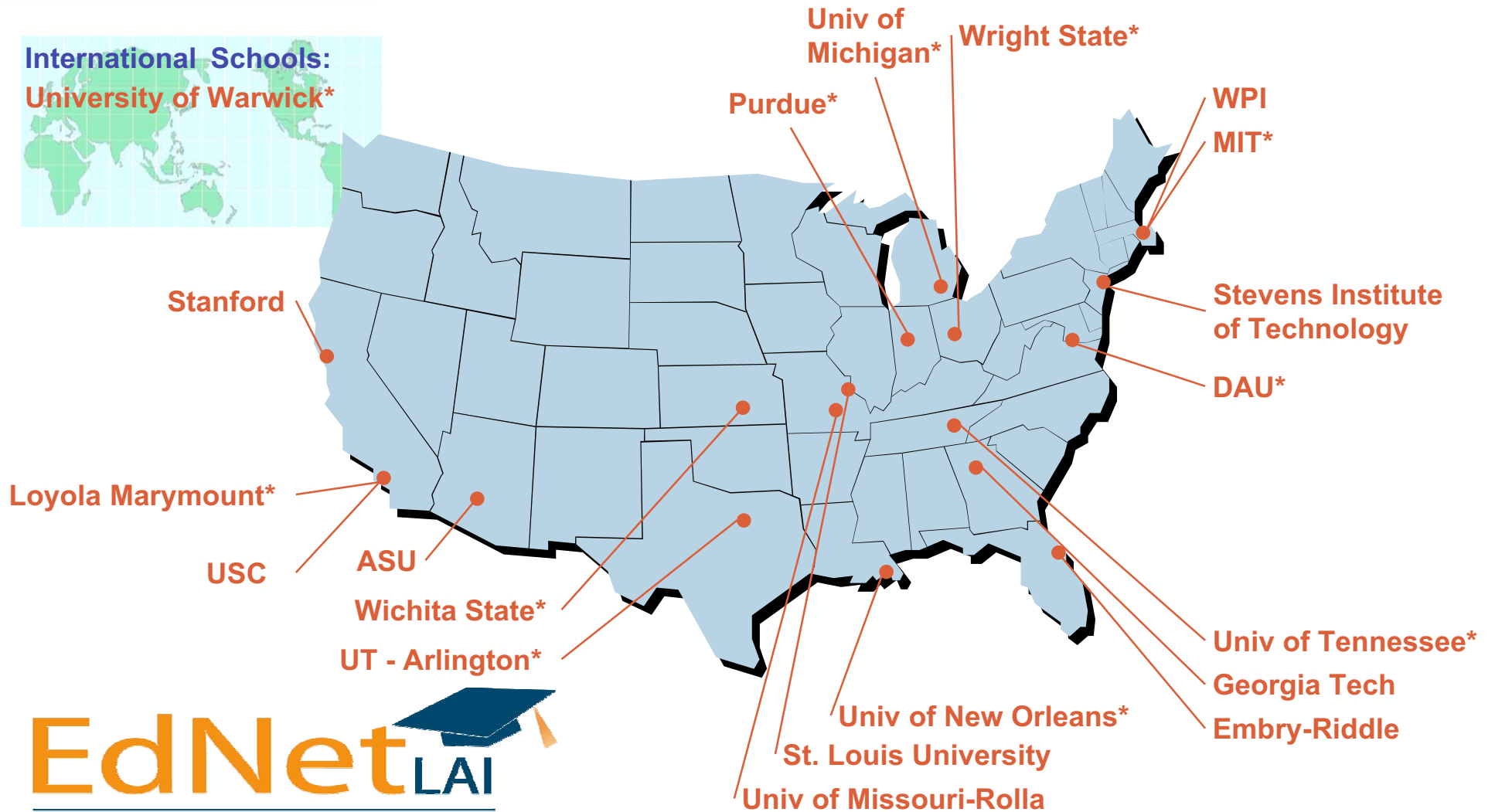
Photo: Judy Snow Nov 2, 2002

Adding Value by Leveraging Efforts Through Networking



Schools Engaged in the EdNet

International Schools:
University of Warwick*



web.mit.edu/lean

* Signed Collaborative Agreement



Lean Academy Objective



- Create industry-academia partnerships
- Combine faculty instruction with practical application through a job experience
- Provide course contact hours roughly equivalent to a semester's course on-campus (approx. 40 hours)
- Provide combination of junior faculty, senior faculty, and experienced practitioner on the instructor team



**Make a meaningful
impact to undergraduate
education**



New Curriculum Development

- 1-week facilitator course
 - “Best of the best” from 5 LAI industry members and MIT
 - Now approved for use within the consortium
 - Course material will be available by June 2004
- DAU on-line “Intro to Lean Enterprise” course
- Lean Academy™ 1-week student course
 - Collaborative project with LAI and EdNet members
 - Curriculum currently under development
 - Course material will be available by September 2004

Course materials will be available for all LAI and EdNet members for non-commercial use



Plenary Roadmap



Plenary Roadmap

Tuesday Morning General Session

Enterprise leaders' perspectives on Enterprise transformation:

- Maj. Gen. Thompson on transformation in the Army Materiel Command
- Dr. Sandford on Boeing Integrated Defense Systems approach to enterprise transformation and results
- Rear Admiral Bachmann on Naval Aviation's transformation initiative *AIRSpeed*
- Dr. Steward on past accomplishments and future direction of Air Force Materiel Command (AFMC) transformation and restructuring



Plenary Roadmap

Breakout Sessions

- Sharing enterprise transformation experiences
 - Enterprise transformation through knowledge transfer
 - Infrastructure systems for enterprise transformation
 - Lean success
 - Industry-government interface
 - Extending lean processes
 - Government enterprises
 - Process approaches for lean success
 - Enterprise transformation perspectives and experiences
- Revitalizing systems engineering
- Individual, team and organizational learning



Plenary Roadmap

Executive Panel Session

- Maj. Gen. Kevin Sullivan on leading a transformation effort at Ogden Air Logistics Center
- Ms. Lisa Kohl on process based organizational transformation
- Mr. Thomas Pinski on partnering with labor unions to facilitate transformation
- Mr. Christopher Cool on charting a journey of enterprise transformation
- Col. William Guinn on the enterprise transformation at Letterkenny Army Depot

Poster Session

- New LAI products
- Ongoing research

Enterprise Transformation: Making it Happen!

