Lean Aerospace Initiative (LAI)
Formed in 1993

- Industry
  - Airframe, engine, avionics, missile and space companies
- Government
  - Air Force agencies, system program offices, and headquarters
  - NASA, Army, Navy
  - Department of Defense
- Academia
  - MIT - Schools of Engineering and Management

A national consortium for research, implementation and diffusion of lean practices
EdNet Vision & Mission

**Vision:** EdNet success means that the current and future workforces have passion and capability in lean continuous improvement.

**Mission:** EdNet will leverage member’s expertise and resources through collaboration and networking to accelerate the development and deployment of curriculum for achieving enterprise excellence.
LAI Lean Academy Strategy

- Build industry-academia partnerships
- Educate learners new to lean principles at “point of use”
- Develop university faculty capability to teach lean
- Develop & deploy innovative curriculum
- Stimulate diffusion of curriculum into on-campus courses

Short and long term value for multiple stakeholders!
LAI Lean Academy® Course

**Pedagogy**
- Learner-centered philosophy
- Lego® Simulation
- Lean operations tour
- Video
- Hands-on activities
- Case study

**Curriculum**
- Lean Enterprise Fundamentals
- Intense one week format
- Before and after leaner proficiency measured
Expanded Audiences

28 Successful Courses Delivered to:

- Summer interns, coops, new hires
- On campus undergrads and graduate students
- Industry employees with little lean knowledge
- Experienced industry employees, suppliers
- USAF enlisted and officer personnel
- Evening MBA students
- USC senior capstone ISE design subject
- Industry and government professionals in open classes

Robust course adaptable to varied audiences
<table>
<thead>
<tr>
<th>Time</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00</td>
<td>Continental breakfast and opener - 45 min</td>
<td>Icebreaker &amp; Day 1 Recap</td>
<td>Icebreaker &amp; Day 2 Recap</td>
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<tr>
<td>8:30</td>
<td></td>
<td>Enterprise Simulation Segment I - 90 min</td>
<td>Accounts Payable II: VSM - 60 min</td>
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<tr>
<td>9:00</td>
<td>Break - 15 min</td>
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<td>Break - 15 min</td>
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<tr>
<td>9:30</td>
<td>Why Am I Here? - 60 min</td>
<td>Break 15 min</td>
<td>Variability Simulation - 45 min</td>
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<tr>
<td>10:00</td>
<td>Break - 15 min</td>
<td>Enterprise Supply Chain Basics</td>
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<tr>
<td>10:30</td>
<td>Enterprise Leaders’ Talk - 45 min</td>
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<td>Break - 15 min</td>
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<tr>
<td>11:00</td>
<td>Break - 15 min</td>
<td>Enterprise Simulation Segment II - Lean</td>
<td>Quality Tools Part 1 - 45 min</td>
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<tr>
<td>11:30</td>
<td>Lean Thinking - 60 min</td>
<td>Thinking Refresh and Change Planning- 75 min</td>
<td>Break - 15 min</td>
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<tr>
<td>12:00</td>
<td>Lunch - 45 min</td>
<td>Lunch - 45 min</td>
<td>Quality Tools Part 2 - 45 min</td>
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<td>12:30</td>
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<tr>
<td>1:00</td>
<td>Office Lean AMA Video - 30 min</td>
<td>Enterprise Simulation Segment II - 60 min</td>
<td>Host talk on Lean Eng’g for Office application - 30 min</td>
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<tr>
<td>1:30</td>
<td>Break - 15 min</td>
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<td>Break - 15 min</td>
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<tr>
<td>2:00</td>
<td>Value Stream Mapping (VSM) Fundamentals - 45 min</td>
<td>Lean Engineering Basics - 60 min</td>
<td>People - 75 min</td>
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<tr>
<td>2:30</td>
<td>Break - 15 min</td>
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<tr>
<td>3:00</td>
<td>Plant Tour &amp; Debrief (includes travel time) - 120 min</td>
<td>Enterprise Simulation Segment III - Refresh and Change Planning- 60 min</td>
<td>Break - 15 min</td>
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<tr>
<td>3:30</td>
<td></td>
<td>Enterprise Simulation Segment III - 45 min</td>
<td>Lean Implementation - 90 min</td>
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<tr>
<td>4:00</td>
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<td>Accounts Payable I - 15 min</td>
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<tr>
<td>4:30</td>
<td>Wrap up - 15 min</td>
<td>Wrap up - 15 min</td>
<td>Wrap up - 15 min</td>
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<tr>
<td>5:00</td>
<td>Social TBD</td>
<td>Case Study Homework</td>
<td>Graduation celebration</td>
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</table>
Linkage of Learning Objectives To Academy Content

1. At the end of this week, students will be able to:
2. Recognize the need for lean and its value to an organization
3. Explain why lean is important for my career
4. Describe opportunities for applying lean in my work
5. Contribute to an improvement implementation project
6. List resources within my organization for next steps/follow-up

Day 1: Context
Day 2: Basic Principles
Day 3: Application Domains
Day 4: Implementation
Day 5: Wrap-up
Results

LAI Lean Academy® Course

Number of Academies
(26 Total)

Number of Graduates
(350 Total)

Number of EdNet Facilitators
(84 Instructors & Hosts)

Before/After Student Proficiency

2005 VALUE Scores

lean.mit.edu/ednet
Student Comments

“The interview gave us more real world exposure to the lean process and how it is actually being put to use.”

“The game segments were awesome. It definitely helped to clarify the idea of LEAN.”

“Really liked the segment on Lean Engineering”

“Everything was of value to my learning. I tried to absorb as much as possible so I can begin to apply lean principles to my career”
University Offerings

Modules from the LAI Lean Academy® Class have been incorporated into EdNet schools everywhere!

Full Course Offerings:
- University of Missouri, Rolla
- University of Iowa
- USC (semester long version)
- Jacksonville University (Spring 2007)
- University of South Florida (Planned for 2007)
- MIT (summer 2007)
Impacting Campus Curriculum: Some Examples

Stanford Univ.
“The new Stanford Certificate program in systems engineering incorporates elements of Lean in its core courses and is developing a Lean Principles and Practices elective.”

Saint Louis Univ.
“Ed Thoms [Boeing] to give a couple of lectures on ‘what is LEAN’ and ‘LEAN and CAD/CAM’ to junior ME students.”

Purdue University
“The EdNet helped me personally with improving the pedagogy in our MBA-level Lean Enterprises course.”

Embry-Riddle
“I now discuss the LAI, lean engineering, & lean manufacturing in my senior Aircraft Detail Design class”

Loyola Marymount
“30% of my graduate Lean course … is stimulated …by the LAI Work”
“Involvement has led to very unique Mission Assurance curriculum”

Arizona State Univ.
“I have used the [LAI Lean Academy] Quality module as an introduction in an MBA course in SCM that I teach.”

U of Louisiana, Lafayette
“With the help of Ednet and the LAI workshop that I attended at Daytona Beach, I have started a new Lean Manufacturing and Lean Enterprise course this spring.”

U of New Orleans
“Two of our team members…attended LAI Lean Academy in January and they are now …helping me to develop the curriculum for the Fall course.”
New for 2007

New Series of Offerings

• LAI Lean Academy® Course
  • Full 5-day offering with lean facilities tours and student summary presentations

• LAI Lean Academy® Short Course
  • 3-day version of the course with optional add-on modules or seminars for a full week

• LAI Lean Academy® Seminars
  • Lean Engineering, Lean SCM, Lean Accounting, Advanced VSM, A3 Project Implementation
LAI Lean Academy®
Course Operations

LAI EdNet@MIT
• Curriculum development
• Instructor certification and selection
• Course schedule management
• Annual academy review

LAI EdNet Center@UAH
• LAI Satellite Center West at LMU/USC
• LAI Satellite Center East at MIT
  • Course administration and setup
  • Instructor kit maintenance
  • Feedback collection & summaries