



2005-2010 Strategic Plan

Working Draft

September 1, 2005

Candidate EdNet Value Proposition

The Lean Aerospace Initiative Educational Network (EdNet) creates value for its stakeholders by:

- Elevating the awareness of the importance of lean curriculum to academic, industry and government organizations,
- Enabling academic-industrial interactions for accessing knowledge, and for building sustaining continuous improvement networks,
- Undertaking innovative curriculum deployment,
- Providing opportunities for jointly developing curriculum and sharing pedagogy,
- Offering educational opportunities for learners interested in lean enterprise excellence
- Stimulating interaction amongst academic peers for sharing of knowledge, collaborative work, and mutual recognition.

The principal mechanisms used for this value creation are multiple forms of networking and collective action. EdNet members contribute their time, and support their own financial needs. They can leverage their network connections to develop funding from within their institutions, and through bi/multilateral proposals to industry and/or government sponsors. In return for participating in the EdNet, they receive the knowledge and intellectual property created by the network members.

Executive Summary

EdNet is embarking on a new five-year phase beginning in September 2005. The success of past EdNet projects illustrate the value such a network can deliver to its stakeholders, and the need to evolve and expand the network and its undertakings.

This Strategic Plan is comprised of Strategic Goals with Strategic Objectives supporting the Mission and Vision for the EdNet. In this plan “lean” is used to represent the range of continuous improvement strategies being employed by LAI members, whether they are called by generic names (e.g. six sigma) or tailored names (e.g. ACE, AIRspeed)

Vision:

EdNet is a learning community dedicated to creating, deploying, and continuously improving curriculum for enterprise excellence; noticeably impacting workforce capability; and recognized as a model of collaborative innovation.

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.

Strategic Goal 1: Increase awareness of the value of EdNet for stakeholders

Strategic Objective 1.1: Establish recognition of the value of EdNet

Strategic Objective 1.2: Effective communication, outreach, and alliances

Strategic Goal 2: Create an effective learning community

Strategic Objective 2.1: Build a thriving educational network

Strategic Objective 2.2: Facilitate the sharing of curriculum among members

Strategic Objective 2.3: Encourage active virtual collaboration

Strategic Goal 3: Advance the deployment of EdNet curriculum and products.

Strategic Objective 3.1: Evolve the LAI Lean Academy

Strategic Objective 3.2: Bring the LAI Lean Academy to new audiences

Strategic Objective 3.3: Develop advanced curriculum

These Strategic Goals and Objectives are supported by 25 specific “actions”, each with milestones, responsible owners, and measures of success. To achieve these actions, critical success factors and limitations have been identified. A summary of the above is given in Section 5, starting on page 21.

This plan has been developed with participation of individuals representing the four EdNet stakeholder groups: EdNet members, LAI members, LAI @ MIT, learners. Input from these groups has been used to craft a draft EdNet Value Proposition given on the title page of the Plan. Detailed analysis of the stakeholder value expectations leading to this value proposition are given in an Appendix of this plan.

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Background

At its December 2000 meeting, the Lean Aerospace Initiative (LAI) Executive Board requested that “a curriculum should be developed so that lean principles could be taught at key universities, businesses and military institutions across the country and be used for training new members of the acquisition community.” In response, a LAI Educational Network (EdNet) was proposed and approved at the June 2002 Executive Board meeting. The EdNet is a *knowledge network*, aimed at leveraging the collective efforts and resources of member schools to achieve an outcome greater than the sum of the separate efforts. There is no cost to join the EdNet, nor are any resources distributed to members.

Three years later, the EdNet <http://lean.mit.edu/ednet> is comprised of about 30 schools, 26 of which have signed a No Cost Collaborative Agreement (NCCA) with MIT. The EdNet has developed a “Lean Enterprise 101” curriculum called the LAI Lean Academy™ course <http://lean.mit.edu/leanacademy> and delivered it to over 300 students and trained 30 instructors during 13 week-long sessions. The intended audiences for the LAI Lean Academy courses are interns, coops, new hires and undergraduate or graduate students with little or no prior lean knowledge, although one upcoming event will be delivered to an evening MBA program audience. A Lean Systems Engineering Working Group formed within the EdNet with an interest in merging the bodies of knowledge of lean thinking and systems engineering into a coherent curriculum. Other undertakings include an EdNet website, outreach activities, a faculty sabbatical at MIT, and membership in the NAE Center for the Advancement of Scholarship in Engineering Education (CASEE) <http://www.nae.edu/casee> . Through the EdNet, some of the member schools have developed linkages with LAI member organizations. Collectively, these actions can be viewed as initial steps in forming a distributed, virtual learning community of academic and industry/government members to respond to the LAI Executive Board request.

Lean and other continuous improvement strategies

In this document the term Lean is used as a generic term to represent spectrum of continuous improvement strategies. There are many approaches being adopted for continuous improvement. Three prominent ones are Lean, Six-Sigma, and Theory of Constraints. Most organizations adopt parts or all of these, and tailor them to their own culture and situation. Many organizations now call their program Lean Six-Sigma, recognizing the combined bodies of knowledge being employed. Often an organization will give a special name to their continuous improvement program. Examples include:

LM21	Lockheed Martin Corporation
ACE	United Technologies Corporation
R6 σ	Raytheon Corporation
AIRSpeed	Naval Air Systems Command

The fundamental principles and practices underlying all these program are common, and are the ones of interest to the EdNet.

Furthermore, this strategic plan focuses on applying lean thinking to all enterprise processes. Although many people identify lean with manufacturing, only incremental gains in productivity can be realized if lean thinking is limited to manufacturing in the aerospace sector. Lean thinking is applicable to engineering, supply chain management, order processing, and a myriad of enterprise processes. For example, EdNet interests include the application of lean thinking to systems engineering. *EdNet curriculum encompasses all these domains.*

Strategic Plan Overview

Converging factors point to the need for an EdNet strategic plan to guide its evolution over the next 5 years:

- The LAI Executive Board recognizes the value of the EdNet and wants to see a plan. Specifically, the following action items were outcomes of their March 22-23, 2005 meeting:
 - Need to define strategic direction for this effort going-forward
 - What are targets and plan for 2005? What are measures of merit?
- LAI is embarking on a five year Phase V commencing September 1, 2005. All elements of LAI need a five-year plan.
- Based upon the initial success of the LAI Lean Academy offerings, plans are needed for evolving, expanding and diffusing curriculum offerings to new audiences.
- With a new LAI Education Manager onboard to lead the EdNet, it is an appropriate time to revisit the plans and priorities which guide the activities of this position.

This plan was developed with input and participation by all the EdNet stakeholder groups: EdNet members, LAI members, LAI @ MIT faculty and staff, students. The effort was guided by a core team of six people representing the LAI Executive Board, Network of Champions, LAI @ MIT staff, and EdNet members. Twenty stakeholders participated in a workshop on July 18-19, 2005 in Redmond, WA to develop the strategic options and choices given in this plan. The draft plan was circulated to a wider group of stakeholders for review and comments, as well as presented to the LAI Steering Council. The Strategic plan will be presented to the LAI Executive Board on October 6, and further refined at the annual EdNet meeting on November 11 at USC. The final plan will be posted on the EdNet website.

This Strategic Plan document starts with proposed EdNet Vision and Mission statements, followed by critical success factors and limitations. Then, three strategic goals are established with 2-3 strategic objectives supporting each goal. For each strategic objective, action plans are documented, including responsibilities, target schedules and target success measures. The action plans are listed in priority order, with lower priority items shown at the bottom of the list. Due to resource constraints, not all potential actions will be realized over the next five years. These are still important to note and may help to drive future changes in EdNet resources or potential plans for growth beyond the current phase.

EdNet Vision and Mission

The proposed vision and mission for the EdNet for 2005-2010 are:

Vision:

EdNet is a learning community dedicated to creating, deploying, and continuously improving curriculum for enterprise excellence; noticeably impacting workforce capability; and recognized as a model of collaborative innovation.

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.

Success and Limiting Factors

This strategic plan alone cannot guarantee future success. Other factors both enable and limit a successful outcome during the five year period.

Critical Success Factors

1. LAI Executive Board alignment with vision, mission and plan
2. LAI member engagement, mentorship, and support for EdNet members
3. EdNet member excitement, action, and collaboration
4. LAI@MIT management and team support and approval
5. Dedicated EdNet resources and staff member working for LAI@MIT

Limiting Factors

1. Changing Environment - This plan is meant as an overall guide for the future, based on current conditions and estimates for reaching the EdNet vision. Changes that may take place that would require adjustment to the plan are: stakeholder preferences, new technologies, availability of key personnel, financial changes, formation of other organizations, and new opportunities.
2. Resources – The plan assumes LAI, EdNet members and LAI members pool their resources to achieve the plan; i.e. the plan is not fully funded. If these stakeholder groups do not “vote with their feet”, the plan cannot be implemented.
3. Prioritization – The EdNet cannot be “everything to everybody”. By focusing on actions deemed to be of greatest value to the EdNet stakeholder community, the plan does not address all the actions desired by individual EdNet stakeholders. This could result in lack of engagement by some EdNet stakeholders.

Overview of strategic goals and objectives

Strategic Goal 1: Increase awareness of the value of EdNet for stakeholders

Strategic Objective 1.1: Establish recognition of the value of EdNet

Strategic Objective 1.2: Effective communication, outreach, and alliances

Strategic Goal 2: Create an effective learning community

Strategic Objective 2.1: Build a thriving educational network

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Strategic Objective 3.3: Develop advanced curriculum

Strategic Goal 1: Increase awareness of the value of EdNet for stakeholders

Rationale

EdNet success depends upon collective action of its many stakeholders, whose engagement with the EdNet competes with other demands on their time and resources. Their engagement with the EdNet is determined by the value they expect to receive in return for the value they are expected to contribute. This strategic goal is an enabler for the major goal of developing and deploying curriculum.

Current State

The EdNet has many stakeholders and their value expectations are varied. The excellent value that EdNet provides has not been articulated and communicated in a clear, direct way that is easy to recall.

Brochures about the LAI Lean Academy™ and an overview document about EdNet are being revised. A “first generation” EdNet portion of the LAI website provides introductory material and downloads. Several presentations about EdNet and LAI Lean Academy™ have been given at INCOSE and ASEE meetings. EdNet is a member of CASEE, a National Academy of Engineering organization devoted to advancing the scholarship of engineering education. CASEE has expressed some interest in supporting a post doc at the EdNet, but this has not generated interest. EdNet members have expressed interest in connecting with LAI research and research staff. One example of this is the EdNet Lean Systems Engineering working group. The LAI staff does not have the time for substantive engagement with the EdNet.

Desired state

The value of EdNet is compelling, easy to recognize and widely shared among EdNet stakeholders. Stakeholders realize the benefits of the network and eagerly support its ongoing activities.

EdNet is well known within academic and LAI member organizations and is identified with value added contributions to education. EdNet members actively participate in appropriate professional society events and are networked with other groups that share similar goals.

Strategic Objective 1.1: Establish recognition of the value of EdNet

Action Plan

1. Develop a value proposition that firmly emphasizes the value of EdNet to each stakeholder group.

2. Communicate the value proposition so that all members can easily identify, internalize, and describe it to others.

Tactics and resources

A value proposition has been drafted and is displayed on the cover page of this plan. Appendix 1 gives a detailed analysis of the EdNet stakeholders, their value expectations, and the value proposition.

Circulate the draft EdNet value proposition to the stakeholders in order to get input and alignment. During the fall of 2005 make revisions and communicate the resulting value proposition in ways that stakeholders can appreciate and recall. Disseminate the EdNet value proposition in January 2006.

Use a variety of techniques throughout Phase V to communicate the value of EdNet:

1. Second generation website
2. Updated brochure
3. Elevator speech
4. Ongoing communication strategies such as newsletters, presentations, and meetings

The resources for this action plan will be provided by the LAI@MIT EdNet team, with help from EdNet members as appropriate.

Success measures

The measure of success will be how many LAI members and schools actively participate in the EdNet. Specific metrics to track are:

- Number of current members who renew the No Cost Collaborative Agreement for Phase V
- Number of new members who join the EdNet during each year of Phase V
- Number of attendees at the annual EdNet meeting
- Number of LAI Lean Academy and other EdNet offerings supported by LAI and EdNet members.

Strategic Objective 1.2: Effective communication, outreach, and alliances

Action plan

1. Develop and disseminate a crisp “elevator speech” about the EdNet
2. Participate in professional society meetings
3. Participate in CASEE and other organizations that overlap with the EdNet mission
4. Quarterly e-mail newsletter to EdNet stakeholders to keep them informed.

Lower priority plans

5. Recognize outstanding contributions with awards of fellow designation
6. Annual report to deans, industry, government stakeholders
7. Sponsor competitions for students

Tactics and resources

Develop and use a crisp “elevator speech” about the EdNet in Fall 2005.

LAI Education director will lead this. A draft was prepared at the Redmond meeting.

Participate in professional society meetings

The EdNet advisors and LAI Education Manager will be responsible for promoting this concept within the EdNet community and submitting papers for presentation. This is a high leverage opportunity. Booths would be appropriate if they can be done at no or small cost.

Participate in CASEE and other forums that overlap with the EdNet mission.

The newly formed LEAN (Lean Education Academic Network) has significant synergy with the EdNet. It primarily addresses non-aerospace domains. Participation in such forums is a low resource expenditure and provides linkages between the EdNet and the community of scholars in engineering and lean education. It also gives the EdNet visibility. The responsibility for coordinating this lies with the LAI Education Manager, and will be ongoing

Quarterly e-mail newsletter distributed to EdNet stakeholder to keep them informed. The responsibility for these lies with the LAI Education manager. They are feasible to do if the content comes from other sources and the responsibility is only to communicate with the stakeholder groups.

Success measures

- Metrics for Strategic Objective 1.1, plus
- Participation in professional society meetings and other forums
- Number of instances where EdNet is mentioned in non EdNet or LAI communications.

Strategic Goal 2: Create an a effective learning community

Rationale

EdNet’s success relies on collective action of a large number of geographically distributed academic and LAI member stakeholders. To have an impact on a national scale, a critical mass of academic institutions must be involved, and actively connected to industry and government to form a learning community. Although there is no benefit in “growth for growth’s sake”, engagement by schools that supply the industry and government with graduates is needed for the EdNet to achieve its vision. A prerequisite for the development and deployment of lean related curriculum is a knowledgeable faculty that is connected to the real world practice community.

Current state

Ad hoc peer to peer recruiting is the major current approach for finding new members. Some schools have been recruited by LAI members. Others have initiated the contact. No plan exists to recruit strategically important institutions. Requests from global institutions other than UK LAI schools or Sweden LARP schools have been rejected to this point.

EdNet members value the networking experiences with government and industry members. Among the member schools, there has actually been very limited sharing of curriculum. A customized “instructor to instructor” platform was tried, but faculty seem hesitant to share materials which they have invested considerable time and resources to develop. . Technology provides great potential for curriculum sharing and collaboration. The EdNet website currently does not have LAI Lean Academy™ forums or discussion boards for EdNet members.

Desired state

EdNet schools are important sources of new employees for LAI members and are actively engaged in developing and deploying lean curriculum. EdNet faculty have sustaining working relationships with LAI members and are recognized leaders in the lean transformation movement. The EdNet website has become an environment for active communication that enables EdNet members to collaborate and easily contribute their knowledge for the benefit of many.

Strategic Objective 2.1: Build an thriving educational network

Action plan

1. Develop a set of 1-2 page “EdNet Profiles” of successful EdNet member schools which collectively illustrate different approaches to curriculum, work with LAI members, link to other partners, as well as diversity of types of institutions engaged in the EdNet.

2. Identify a small number – maybe 12-18 – of “nucleus schools” that are important sources of new talent for LAI members and approach them to join the EdNet. The overture should be made by a delegation of LAI, LAI @ MIT, and EdNet members who talk to decision leaders and faculty in these schools about a tailored value proposition to fit the context of that school and its relationship with LAI members. This could include, for example: exchanges of personnel, financial support to host LAI Lean Academy courses on campus, participation of faculty in on-site LAI Lean Academy offerings, development of new courses to prepare students, or joint research.
3. Welcome any school that asks to join the EdNet, with the proviso that some its graduates are employed by LAI members. Such membership need not be limited to US schools. Schools associated with UK LAI, LARP or future LAI partners are eligible to join the EdNet.
4. Develop a simple EdNet Capability Model that could serve as a benchmarking tool for EdNet members to assess their level of engagement with the EdNet and/or their level of capability in developing and deploying lean curriculum.

Lower priority plans

5. Outreach by “nucleus schools” to nearby smaller schools, community colleges, high schools, suppliers, manufacturing extension program centers, or other local industries. This would extend the reach of the EdNet through its membership in a sort of tiered approach.
6. Raising the general awareness of the importance of lean and the need for curriculum through involvement of CEO leadership of LAI members in public forums or press.

Tactics and resources

EdNet profiles

Responsibility for this lies with the LAI Education Manager who will work with appropriate stakeholders to identify 3 or more EdNet members and develop their profiles during the first year of phase V. An additional 2 schools could be profiled in succeeding years of Phase V.

Nucleus schools

Responsibility for this lies with the LAI Executive Board and Network of Champions Sponsors who will work with the Steering Committee, Executive Board, Executive Director and EdNet leadership to identify a list of candidate nucleus schools. Existing EdNet members are eligible candidates for nucleus schools. Once identified, a delegation can be assembled and the school visited. A reasonable target would be to enlist at least 4 nucleus schools in each of the first three years of Phase V.

Other EdNet members

The EdNet advisors, working with the LAI Education Manager, will develop a set of guidelines by Dec 2005 for screening interested schools. The Advisor Board will make decisions on specific applications. There is no target number of schools to have in the EdNet.

EdNet capability model

Responsibility for this will lie with an ad hoc group of EdNet members working with the LAI Education Manager. The model will be developed and tested during the first year of phase V, and be ready for deployment to EdNet members during the second year. At least the first version should be kept “simple.”

Success measures

- Completion and web posting of at least 3 member profiles prior to May 1, 2006.
- Anecdotal stakeholder feedback on the usefulness of these profiles
- Engagement of nucleus schools according to the plan
- Number of linkages between EdNet members and LAI members
- Annual surveys of the member schools of the EdNet capability model rankings reported in non-attributable fashion.

Strategic Objective 2.2: Facilitate the sharing of curriculum among members

Action plan

1. Survey EdNet members to determine who is teaching what, and make the information available on the EdNet website
2. Stimulate sharing of lessons learned and best practices at the annual EdNet meeting and Plenary Conference
3. EdNet special interest groups in focus areas for curriculum development

Lower priority plans

4. Share modules on existing curriculum on the EdNet website
5. Influence the content of new textbooks
6. Develop a Lean 101 primer textbook
7. Research into effectiveness of different curriculum strategies for teaching lean topics

This is a particularly difficult area to prioritize as the required resources are widely distributed amongst the member schools, and faculty have not seen great enough value in sharing curriculum to contribute these resources. The overall strategy is to invest limited resources to enable/encourage open communication and let further developments take place between individual stakeholders. Options 1 and 2 can be done with little expenditure of resources and provide good value to the EdNet stakeholders. Option 3 builds on the

current Lean System Engineering working group and provides a means for multilateral collaboration among EdNet members. Option 4 takes considerable resources to develop the IT infrastructure, and there is not any evidence that faculty would share their modules if the resources were available. Option 5 has uncertain impact and resource liens. Option 6 would have considerable impact, but would take considerable resources to develop. Typically textbooks evolve from course notes. Perhaps as curriculum such as the LAI Lean Academy stabilizes, writers for a textbook will appear and then the book will follow. Option 7 would be to seek a post doc to do research on the effectiveness of different pedagogies for teaching lean topics. It was thought to be too far a field for the EdNet to undertake.

Tactics and resources

Survey EdNet members to determine who is teaching what, and make the information available on the EdNet website

The responsibility for this lies with the LAI Education Manager, with help from interested EdNet members. This activity will take modest resources and could be started during the first year of Phase V. It should be designed for continual update and reuse as much existing material as possible (catalog descriptions, syllabi, etc.).

Stimulate sharing of lessons learned and best practices at the annual EdNet meeting and Plenary Conference

The responsibility for this lies with the LAI Education Manager and EdNet Advisors. It is already underway.

EdNet special interest groups in focus areas for curriculum development

This relies on the “spontaneous interest” of EdNet members, who will form self organized and member led teams. The EdNet leadership can encourage such action, and time will be set aside at the annual EdNet meeting for such groups to form up. EdNet@MIT can provide web assistance for collaboration and distribution of material, if this is needed.

Success measures

The success of this strategic objective will be measured by the

- Number of faculty contributing to the survey of existing course material
- Number of faculty accessing this material, as determined by an annual survey
- Number of contributed talks at EdNet and Plenary meetings
- Number of self organizing special interest groups

Strategic Objective 2.3: Encourage active virtual collaboration

Action plan

1. Increase the availability of downloadable information: EdNet contributed research products, modules, book reviews, meeting information and schedules, best in class LAI Lean Academy presentations
2. Develop projects for asynchronous interaction: On line surveys, feedback, certification
3. Establish forums for real time interaction: distinguished lecture series, web-based meetings or seminars, virtual plant tours, online case studies and modules.

Tactics and resources

Downloadable information

Develop a list of items for the EdNet website and move LAI Lean Academy pages up to the main navigation screen for easy access to academy information. Work with web master to come up with a protected way to store Lean Academy materials online.

Create a list of “best in class” presentations that need to be available online. As opportunities arise, video these presentations and make them available under the Lean Academy materials. These can be used by instructors as a refresher before they teach similar modules.

Create a list of “mini” case studies that can be used as resources and examples for teaching lean principles. Task EdNet members to provide some of these examples and case studies which will be made available as online resource materials.

Solicit research products (papers, presentations) from EdNet members for sharing with peers.

Asynchronous interaction

Surveys and feedback can be prepared for the online environment using survey software. Identify the gaps in EdNet or LAI data so that the feedback collected will be useful and valuable. Investigate technical possibilities and work with LAI team members to prepare these tools.

Asynchronous teams will be arranged for LAI Lean Academy improvement projects. Identify leaders for each team and use the EdNet website to arrange for collaboration. Document management will be a major issue for this project and technology or software solutions must be discussed with LAI team members.

Real time interaction

Create a proposal for a distinguished lecture series. Explore options for hosting this series (MIT, other universities, Microsoft).

Work with industry members to identify possible locations for virtual plant tours. These could add excellent examples for instructors and alumni of the LAI Lean Academy

The Education Manager will be responsible for initiating these projects and engaging EdNet member teams to help facilitate these programs, determine necessary resources, and for prioritizing. Investigation must include possibilities for the EdNet website and other technology resources available.

Success measures

- EdNet will host two distinguished lectures or seminars before June 1, 2006. This web broadcast is expected to attract at least three participating sites. If successful, there will be at least 4 distinguished lectures or seminars in subsequent years in Phase V
- EdNet will sponsor at least one online survey each year. The anticipated participation rate will be at least 20% of the EdNet membership (or targeted audience).
- Increased activity on the website will be measured by system counters that track the number of hits on the EdNet and Lean Academy web pages. Satisfaction with available online materials will be measured through instructor and student surveys.

Strategic Goal 3: Advance the deployment of EdNet curriculum and products.

Rationale

The raison d’etre for the EdNet is to develop and deploy curriculum for lean and related continuous improvement strategies. The previous two strategic goals are enablers for effective execution of this strategic goal.

Current state

The LAI Lean Academy™ was envisioned as a course for summer interns and coop students as an approach to “expand the boundaries” of the campus and deliver curriculum at point-of-use. Most hosts have elected to offer the course to new hires, rather than work with temporary employees. This year the first LAI Lean Academy™ was offered on campus at University of Missouri Rolla. One is planned next January at MIT for undergrads and graduate students, including all new LAI RAs. The University of Iowa sponsored by Rockwell Collins will be delivering the LAI Lean Academy™ as a special course to their evening MBA program next January. Each of the 13 courses offered to date has met or exceeded the expectations of the hosts, instructors and learners.

The University of Alabama Huntsville has proposed the establishment of LAI EdNet Centers at selected universities to allow greater deployment of EdNet products than is possible through a centrally controlled approach from LAI@MIT. Both Purdue and University of Missouri Rolla might be interested in this approach.

Desired state

The LAI Lean Academy will become a high quality living curriculum covering the fundamental principles of lean six sigma knowledge, accessible to on-campus and in-company audiences “on demand”; i.e. without logistical or bureaucratic inhibitors.

EdNet offers a family of curriculum products which build upon the fundamentals taught in the LAI Lean Academy™ course. New course offerings will delve deeper into selected knowledge domains, linking to or aligning with LAI product suites and research findings, and with flexible format.

Desired outcomes are migration of EdNet curriculum elements into on-campus courses and certification of graduates in specific areas.

Strategic Objective 3.1: Evolve the LAI Lean Academy

Action plan

1. Make continuous improvements to the LAI Lean Academy™ curriculum and supporting material, including: better integration of six sigma body of knowledge;

more examples from a wider range of product domains and LAI members; collecting and sharing best practices; reducing demands on host and LAI @ MIT; preparing standard read ahead package for students; tracking of student proficiency during and after LAI Lean Academy™ events.

2. Improve recruiting, training and certifying of LAI Lean Academy instructors to maintain high quality delivery by knowledgeable instructors.
3. Develop strategies for the students' post course experience, including: up front planning to prepare student before taking the course; internship opportunities for on-campus LAI Lean Academy alums; assigning mentors and/or projects to alums; forming a LAI Lean Academy Alumni/ae Association to enable a sustaining community of practice.

Tactics and resources

Continuous improvement of LAI Lean Academy curriculum and material

Responsibility for the coordination of this goal is assigned to the EdNet@MIT team. Responsibility for the execution of the goal is assigned to the LAI Lean Academy instructors and hosts who hold an annual summer workshop to review the year's offerings and plan continuous improvement actions. Resources for this workshop are built into the LAI Lean Academy™ fee. This will be an ongoing activity.

Improve recruiting, training and certification of LAI Lean Academy instructors

Responsibility for this is assigned to the LAI Lean Academy Leadership team who will be charged to develop a plan by the end of 2005, which can be implemented with the 2006 season. The plan must have realistic resource liens on candidate instructors and hosts.

Develop strategies for the students' post course experience

Responsibility for this is assigned to LAI @ MIT, and these actions need to be phased in over time. First priority is to form an alumni/ae association during the next LAI year. A small team of LAI Lean Academy hosts and alums needs to be convened by LAI @ MIT to develop practical strategies for post course undertakings.

Success measures

- Student evaluations of LAI Lean Academy events should continue to average about 1.5 on a -2 to + 2 scale.
- Number of repeat LAI Lean Academy™ hosts should exceed 75%
- Student evaluations of LAI Lean Academy instructors should exceed 1.25 on a -2 to + 2 scale
- LAI Lean Academy Alumni Network is formed with membership exceeding 20% of the alumni population, and active participation reaching a critical mass.

Strategic Objective 3.2: Bring the LAI Lean Academy™ to new Audiences

Action plan

1. Develop strategies to support more on-campus offerings such as University of Missouri Rolla and Iowa State University.
2. Work with prospective LAI member hosts (industry and government) to assure offering aligns with the host needs, including: opportunities for tailoring curriculum to host's interests; more flexibility on when course is offered; better alignment of planning timelines
3. Further investigate the concept of establishing LAI EdNet Centers at selected universities, as proposed by University of Alabama, Huntsville.

Additional possibilities (lower priority)

4. Arranging on campus or Continuing Education Units credit for completing LAI Lean Academy
5. Incorporate into a certificate program
6. Packaging course for non-aerospace audiences
7. Packaging the course so it can be given “out of the box” without major involvement of LAI @ MIT
8. More flexible formats than one-week on-site.

Tactics and resources

Develop strategies to support on-campus offerings such as U of Mo Rolla & Iowa State.

Responsibility for this is assigned to the same team working with developing a strategy for the “nucleus schools”.

Working with prospective LAI member hosts

Responsibility for the coordination of this goal is assigned to the EdNet@MIT team. Responsibility for the execution of the goal is assigned to the LAI Lean Academy instructors and hosts who hold an annual summer workshop to review the year's offerings and plan continuous improvement actions. Resources for this workshop are built into the LAI Lean Academy™ fee. This will be an ongoing activity.

LAI EdNet centers

Responsibility for this will lie with the same group that is working on the nucleus school action. The idea will be explored in the fall of 2005, with an eye to pilot implementation in 2006 if issues can be resolved. Further development would await experience.

Success measures

- The number of on-campus LAI Lean Academy™ offerings at nucleus schools. Actual target numbers await further consideration.
- New LAI industry and government hosts for the LAI Lean Academy
- Establishment of one or more LAI EdNet Centers at EdNet nucleus schools.

Strategic Objective 3.3: Develop advanced curriculum

Action plan

1. Lean Engineering/Lean Product Development/Lean Systems Engineering course
2. Lean Supply Chain Management course
3. Lean Enterprise Value course

Additional possibilities (lower priority)

4. Lean Knowledge Flow course (addressing lean thinking applied to information flow processes such as proposal preparation, supporting functions)
5. Lean Manufacturing course

Options 1-3 have perceived customer demand, and cadres of enthusiastic academic/industry/government members wanting to develop course material, and a deep LAI research knowledge base. Although each is a major undertaking, each is achievable within the upcoming five years. Option 4, the Lean Knowledge Flow course addresses an area of great opportunity for enterprise improvement. However, there is not the research foundation or enthusiastic cadre to support its creation. Option 5 was deemed to be already available with existing campus curriculum and company training programs, and therefore not a wise use of scarce resources.

For each of the above advanced courses, consideration should be given to developing a certification process upon completion of the course.

Tactics and resources

1. Lean Engineering/Lean Product Development/Lean Systems Engineering course
2. Lean Supply Chain Management course
3. Lean Enterprise Value course

The approach for all three of these courses is broadly the same, although individually different due to the current state. Broadly, for each course, a group of dedicated stakeholders needs to be assembled representing one or more “launch customers”, faculty who will develop and deliver the curriculum, someone representing the LAI body of knowledge in each area, and someone from LAI @ MIT who can work with each team. Further work needs to be done to prioritize

these three areas and to develop a “template” for an advance course, and a certification process if there is sufficient stakeholder interest. Responsibility for the next steps resides with the EdNet leadership team.

Success measures

Given the limited resources, only one of these can be done at a time, hopefully within 1-2 years. Therefore, the best outcome that can be expected is that these three courses would become available during the five year phase V.

Five year plan summary

The EdNet Strategic Plan for the five year Phase V period (Sep 2005 to Aug 2010) consists of 3 Strategic Goals comprising 8 Strategic Objectives supported by a total of 25 actions, all of which are aligned with the EdNet Vision and Mission.

Vision:

EdNet is a learning community dedicated to creating, deploying, and continuously improving curriculum for enterprise excellence; noticeably impacting workforce capability; and recognized as a model of collaborative innovation.

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.

Strategic Goal 1: Increase awareness of the value of EdNet for stakeholders

Strategic Objective 1.1: Establish recognition of the value of EdNet

Action: Develop EdNet value proposition

Action: Communicate the EdNet value proposition

Strategic Objective 1.2: Effective communication, outreach, and alliances

Action: Develop/disseminate "elevator speech"

Action: Participate in professional society meetings

Action: Participate in CASEE and other organizations

Action: Quarterly e-mail newsletter

Strategic Goal 2: Create an effective learning community

Strategic Objective 2.1: Build a thriving educational network

Action: Develop set of EdNet "profiles"

Action: Identify and recruit "nucleus schools"

Action: Welcome other schools that align with LAI members

Action: Develop EdNet capability model

Strategic Objective 2.2: Facilitate the sharing of curriculum among members

Action: Gather and disseminate information on courses

Action: Stimulate sharing of "lessons learned"

Action: Support self-organizing special interest groups

Strategic Objective 2.3: Encourage active virtual collaboration

Action: Increase downloadable information

Action: Exploit asynchronous interaction

Action: Establish real time interaction events

Strategic Goal 3: Advance the deployment of EdNet curriculum and products.

Strategic Objective 3.1: Evolve the LAI Lean Academy

Action: Continuously improve curriculum and materials

Action: Improve instructor certification

Action: Improve students' post course experience

Strategic Objective 3.2: Bring the LAI Lean Academy to new audiences

Action: Strategies to support more on-campus offerings

Action: Align course with prospective new hosts' needs

Action: Explore LAI EdNet Centers at selected universities

Strategic Objective 3.3: Develop advanced curriculum

Action: Lean Engineering/Product Development/Systems Engineering course

Action: Lean Supply Chain Management course

Action: Lean Enterprise Value course

Figures 1-3 on the following pages summarize the schedule, responsibilities and measures of success for these actions.

This strategic plan alone cannot guarantee future success. Other factors both enable and limit a successful outcome during the five year period.

Critical success factors

- LAI Executive Board alignment with vision, mission and plan
- LAI member engagement, mentorship, and support for EdNet members
- EdNet member excitement, action, and collaboration
- LAI@MIT management and team support and approval
- Dedicated EdNet resources and staff member working for LAI@MIT

Limiting factors

- Changing Environment - This plan is meant as an overall guide for the future, based on current conditions and estimates for reaching the EdNet vision. Changes that may take place that would require adjustment to the plan are: stakeholder preferences, new technologies, availability of key personnel, financial changes, formation of other organizations, and new opportunities.
- Resources – The plan assumes LAI, EdNet members and LAI members pool their resources to achieve the plan; i.e. the plan is not fully funded. If these stakeholder groups do not “vote with their feet”, the plan cannot be implemented.
- Prioritization – The EdNet cannot be “everything to everybody”. By focusing on actions deemed to be of greatest value to the EdNet stakeholder community, the plan does not address all the actions desired by individual EdNet stakeholders. This could result in lack of engagement by some EdNet stakeholders.

Strategic Goals (SG), Strategic Objectives (SO) and Actions		9/05 - 8/06				9/06 - 8/07				9/07 - 8/08				9/08 - 8/09				9/09 - 8/10			
		1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
SG 1: Increase Awareness of the value of Ednet																					
SO 1.1 Establish recognition of the value of Ednet																					
	Develop value proposition	△																			
	Communicate value proposition		△			△				△				△					△		
SO 1.2 Effective communication, outreach, alliances																					
	Develop/Disseminate elevator speech	△				△				△				△					△		
	Participate in professional society meeting				△				△				△					△			△
	Participate in CASEE and other organizations	△				△				△				△					△		
	Quarterly e-mail newsletter	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△
SG 2: Create an effective learning community																					
SO 2.1 Build a thriving educational network																					
	Develop set of EdNet profiles			△				△				△			△					△	
	Identify and recruit nucleus schools	△	△	△	△	△	△	△	△	△	△	△									
	Welcome other schools that align with LAI members																				
	Develop EdNet Capability Model					△															
SO 2.2 Facilitate the sharing of curriculum among members																					
	Gather, disseminate information on courses				△				△				△					△			△
	Stimulate sharing of lessons learned	△				△				△				△					△		
	Support self organizing special interest groups																				
SO 2.3 Encourage active virtual collaboration																					
	Increase downloadable information			△				△				△				△				△	
	Exploit asynchronous interaction				△				△			△				△				△	
	Establish real time interaction events		△	△		△	△	△		△	△	△		△	△	△		△	△	△	
SG 3: Advance the deployment of EdNet curriculum and products																					
SO 3.1 Evolve the LAI Lean Academy																					
	Continuously improve curriculum and materials	△				△				△				△					△		
	Improve instructor certification		△				△				△				△					△	
	Improve student's post-course experience			△				△				△				△					△
SO 3.2 Bring the LAI Lean Academy to new audiences																					
	Strategies to support more on-campus offerings		△																		
	Align course with prospective new host's needs	△				△				△				△					△		
	Explore LAI EdNet Centers at selected universities		△																		
SO 3.3 Develop advanced curriculum																					
	Lean Engineering/PD/SE course						△														
	Lean Supply Chain Management course										△										
	Lean Enterprise Value course													△							

Figure 1 – Milestones for Strategic Plan actions

Strategic Goals (SG), Strategic Objectives (SO) and Actions		Responsible Stakeholders					
		EdNet @ MIT	Exec Board	EdNet Leaders	EdNet Mems	LA Instructors	LA Hosts
SG 1: Increase Awareness of the value of Ednet							
SO 1.1 Establish recognition of the value of Ednet	Develop value proposition	Lead		Supporting	Supporting		
	Communicate value proposition	Lead		Supporting	Supporting		
SO 1.2 Effective communication, outreach, alliances							
SO 1.2 Effective communication, outreach, alliances	Develop/Disseminate elevator speech	Lead			Supporting		
	Participate in professional society meeting	Lead		Lead			
	Participate in CASEE and other organizations	Lead					
	Quarterly e-mail newsletter	Lead			Supporting		
SG 2: Create an effective learning community							
SO 2.1 Build a thriving educational network							
SO 2.1 Build a thriving educational network	Develop set of EdNet profiles	Lead					
	Identify and recruit nucleus schools	Supporting	Lead	Supporting			Supporting
	Welcome other schools that align with LAI members	Supporting		Supporting			
	Develop EdNet Capability Model	Lead			Lead		
SO 2.2 Facilitate the sharing of curriculum among members							
SO 2.2 Facilitate the sharing of curriculum among members	Gather, disseminate information on courses	Lead			Supporting		
	Stimulate sharing of lessons learned	Lead		Lead			
	Support self organizing special interest groups	Supporting			Lead		
SO 2.3 Encourage active virtual collaboration							
SO 2.3 Encourage active virtual collaboration	Increase downloadable information	Lead			Supporting		
	Exploit asynchronous interaction	Lead			Supporting		
	Establish real time interaction events	Lead			Supporting		
SG 3: Advance the deployment of EdNet curriculum and products							
SO 3.1 Evolve the LAI Lean Academy							
SO 3.1 Evolve the LAI Lean Academy	Continuously improve curriculum and materials	Lead				Lead	Supporting
	Improve instructor certification	Supporting				Lead	
	Improve student's post-course experience	Lead					Supporting
SO 3.2 Bring the LAI Lean Academy to new audiences							
SO 3.2 Bring the LAI Lean Academy to new audiences	Strategies to support more on-campus offerings	Supporting	Lead	Supporting			
	Align course with prospective new host needs	Lead				Lead	
	Explore LAI Centers at selected universities	Supporting	Lead	Supporting			Supporting
SO 3.3 Develop advanced curriculum							
SO 3.3 Develop advanced curriculum	Lean Engineering/PD/SE course	Lead			Supporting		Supporting
	Lean Supply Chain Management course	Lead			Supporting		Supporting
	Lean Enterprise Value course	Lead			Supporting		Supporting

Figure 2 – Responsible stakeholders for Strategic Plan actions

Success Measure	Related Strategic Objectives
Renewals of NCCA for Phase V	SO 1.1 Establish recognition of EdNet value SO 1.2 Effective communication, outreach, alliances
New EdNet members each year	
Annual EdNet meeting attendees	
LAI Lean Academy or other offerings	
Participations in professional society Meetings	SO 1.2 Effective communication, outreach, alliances
Citations of EdNet in non-LAI sources	
EdNet profiles completed and posted on the webpage	SO 2.1 Build a thriving Educational Network
Feedback on profiles	
Nucleus schools engaged in the EdNet	
Linkages of EdNet members with LAI members	
Annual survey of EdNet members capability level	
Faculty contributing to survey of courses being offered	
Faculty accessing information on course material	
Contributed talks at annual meeting	
Special interest groups	
Distinguished lectures or seminars	SO 2.3: Encourage active virtual collaboration
Number of hits on EdNet homepage	
Web site hits	
Student evaluations of course	SO 3.1: Evolve the LAI Lean Academy
Repeat customers for offerings	
Student evaluations of instructors	
Members in alumni network	
On-campus offerings of the LAI Lean Academy	SO 3.2: Bring the LAI Lean Academy™ to new audiences
New industry or government LAI Lean Academy hosts	
On-campus LAI EdNet centers	
3 new courses in Phase V	SO 3.3: Develop advanced curriculum

Figure 3 – Measures of success for Strategic Plan actions

Appendix - The LAI Educational Network Value Proposition

Framing a Value Proposition

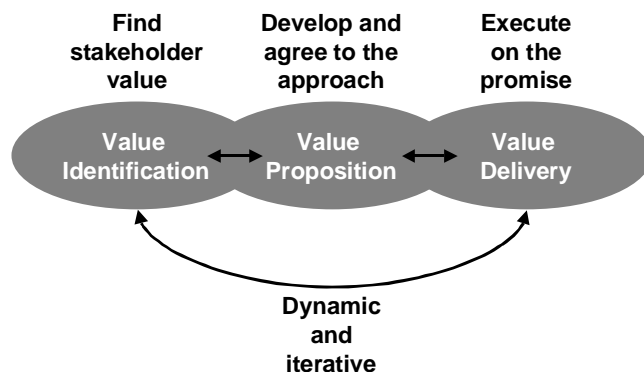


Figure A1 – LAI Value Creation Framework

The EdNet strategic plan formation will be based upon the LAI value creation framework shown in Figure A1. Two interrelated questions the value proposition should address are:

- What is the value in developing and deploying lean curriculum?*
- What is the value in joining or participating in the EdNet?*

In this white paper, “lean” is considered to include six sigma and other continuous improvement activities, and to be applicable across an entire enterprise.

Candidate EdNet Value Proposition

The Lean Aerospace Initiative Educational Network creates value for its stakeholders by:

- Elevating the awareness of the importance of lean curriculum to academic, industry and government organizations,
- Enabling academic-industrial interactions for accessing knowledge, and for building sustaining continuous improvement networks,
- Undertaking innovative curriculum deployment,
- Providing opportunities for jointly developing curriculum and sharing pedagogy
- Offering educational opportunities for learners interested in lean enterprise excellence
- Stimulating interaction amongst academic peers for sharing of knowledge, collaborative work, and mutual recognition.

The principal mechanisms used for this value creation are multiple forms of networking and collective action. EdNet members contribute their time, and support their own financial needs. They can leverage their network connections to develop funding from within their institutions, and through bi/multilateral proposals to industry and/or government sponsors. In return for participating in the EdNet, they receive the knowledge and intellectual property created by the network members.

EdNet Stakeholders

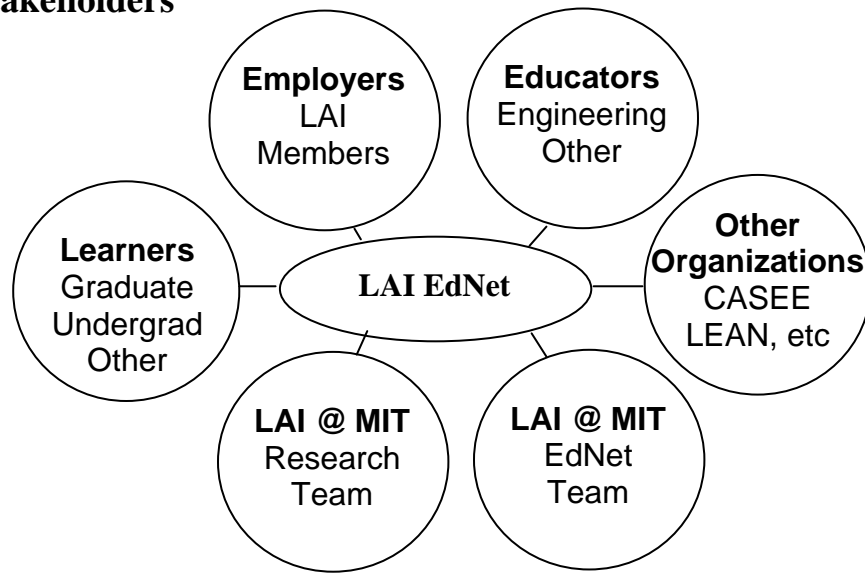


Figure A2 – LAI EdNet Stakeholders

Stakeholder groups relevant to the EdNet illustrated in Figure A2 are:

- *Employers* – The LAI industry and government members who hire EdNet member institution’s graduates. Employers also represent the source of practical knowledge emerging from the application of lean thinking. Employers are customers for academia’s products and suppliers of practical knowledge.
- *Educators* – The faculty and administrations of institutions of higher education that produce graduates for the US aerospace workforce. Broadly speaking, this group of stakeholders can be divided into two subgroups.
 - *Engineering* disciplines whose fields are largely based upon fundamental scientific principles that usually have quantitative descriptions.
 - *Business, management, industrial and systems engineering* and other disciplines whose fields involve more processes and procedures, some of which can be described quantitatively and some of which cannot.
 Educators are suppliers to employers, producing educated members of the workforce and knowledge products, and are customers for practical knowledge.
- *LAI @ MIT* – The group of faculty and research staff comprising the core of the LAI program. They divide into two important subgroups;
 - *EdNet team* comprised of LAI Education Manager and lead faculty
 - *Researchers* representing a significant source of lean knowledge emerging from research, both past and ongoing.
- *Learners* – These stakeholders represent the “end users” of the lean curriculum. As the future workforce, they are the ones who will apply the knowledge gained in education to benefit their employers.
- *Other Organizations* with whom the EdNet might collaborate with or otherwise engage. These include, for example, other networks, funding agencies, and professional societies, and industry associations.

EdNet Stakeholder Value Expectations

Employers

For this stakeholder group, there is a clear answer to the first question. The LAI Executive Board has called for the development of lean curriculum.

Table 1 – Employer value expectations.

Other stakeholders	Value expected by Employers from other stakeholders	Value contributed by Employers to other stakeholders
Educators	<ul style="list-style-type: none"> • Capable students • Lean competent faculty • Recognition of business's needs • Knowledge products (curriculum, tools, case studies) 	<ul style="list-style-type: none"> • In kind support for education (site visits, speakers, case studies) • Access to practice based information • Financial support
EdNet @ MIT	<ul style="list-style-type: none"> • Leadership of the EdNet • Recognition of employer's needs • Curriculum products useful for inhouse training 	<ul style="list-style-type: none"> • Portion of LAI membership fees to support core team • In kind contributions (site visits, speakers, meeting venues, etc.)
Learners	<ul style="list-style-type: none"> • Graduates who will be productive employees with lean skills 	<ul style="list-style-type: none"> • Co-ops and internships • Jobs

The value employers might expect to receive from and contribute to the other core EdNet stakeholder groups is summarized in Table 1. Employers would expect the EdNet to provide greater value for the above than they would realize by working one-on-one with different schools. Through the EdNet their value contributions can be leveraged. They would also look to the EdNet to develop and deploy curriculum that could enable some level of commonality across their many schools of interest¹.

The major value LAI members expect to receive from EdNet participation is graduates educated to some level of proficiency on lean principles and practices, maybe to the same level as in basic subjects in business or engineering. Currently they observe that graduates by and large lack lean understanding and that “remedial” training is required after employment, costing both time and money.

LAI members are accustomed to working with their supply chains on development and implementation of improvement strategies for more effective and efficient delivery of goods or services. Educational institutions are an important element in their knowledge supply chain. LAI members would participate in the EdNet if they perceive students will better meet their needs at a lower investment than it now requires.

¹ Different educational institutions have different objectives in their educational programs. Some emphasize fundamental understanding of concepts, while other emphasize more detailed training on tools or methods. Government and industry look to different institutions for different types of employees. It is expected that the same would be true of lean related curriculum. It is not expected that a “one-size fits all” approach is desired by either employers or educators. But having curriculum based upon a common framework would add value, especially if its content reflects the “real world”.

Educators

With regards to the first question, this group of stakeholder can be divided into:

Business, management, industrial and systems engineering programs. Lean being a process oriented discipline more naturally fits into curriculum in these domains than in engineering. It might be assumed that this stakeholder group is open to develop and deploy lean curriculum², but that it will compete with other curriculum demands.

Engineering programs. A process intensive subject such as lean is not well aligned with the content of many existing engineering programs, which are technically focused. This subgroup of stakeholders will be skeptical as to the value of developing and deploying lean curriculum. Until their questions are answered, they may find limited value in participating in the EdNet. Yet employers are expressing that, *in particular*, engineers need to understand the fundamentals of lean as their upstream decisions drive downstream costs and cycle time in the product lifecycle.

Educators from both subgroups will look to the EdNet to “make the case” for developing and deploying lean curriculum. Without a clear case, resources and recognition will be limited, and faculty will pursue other interests.

Table 2 – Educator value expectations.

Other stakeholders	Value expected by Educators from other stakeholders	Value contributed by Educators to other stakeholders
Employers	<ul style="list-style-type: none"> • Resources, in kind and direct • Access to data and examples • Demand for their students 	<ul style="list-style-type: none"> • Useable knowledge products (curriculum, tools, case studies) • Well prepared students
EdNet @ MIT	<ul style="list-style-type: none"> • Leadership of the EdNet • Curriculum products • Access to research findings • Participation in research 	<ul style="list-style-type: none"> • Knowledge • Curriculum examples • Engagement with the EdNet
Learners	<ul style="list-style-type: none"> • Interest and enthusiasm for lean subjects and studies 	<ul style="list-style-type: none"> • Lean education • Access to employers
Educators	<ul style="list-style-type: none"> • Peer interactions 	<ul style="list-style-type: none"> • Peer interactions

Educators would look to the EdNet as a way to easily gain access and opportunities to interact with many employers. They also look to the EdNet as a learning community by which they can share findings with, and learn from, peers. They would value learning about new pedagogy and ways to develop and deploy curriculum, especially if it enables adding lean content in an already crowded curriculum. Experiments such as the LAI Lean Academy that try new modes of curriculum delivery are of interest. With limited resources available, the EdNet can provide leveraging opportunities for Educators interested in developing and deploying lean curriculum.

² An assessment of existing curriculum done when the EdNet was formed revealed that the vast majority of lean curriculum was narrowly focused on manufacturing.

LAI @ MIT EdNet team

The EdNet team at MIT sees value in developing and deploying lean curriculum, particularly in the context used in this paper as applying across the enterprise and including six sigma and other content. This stakeholder group sees value in getting years of research and practitioner experience embedded in the LAI community infused into curriculum. It also sees great value in trying new pedagogies and strategies for deploying lean curriculum into programs which are maxed out with competing demands for credit hours and resources.

Table 3 – EdNet@MIT value expectations.

Other stakeholders	Value expected by EdNet@MIT from other stakeholders	Value contributed by EdNet @MIT to other stakeholders
Employers	<ul style="list-style-type: none"> • Support from LAI • Inkind contributions (site visits, speakers, venues, etc.) • Engagement with EdNet members beyond EdNet functions 	<ul style="list-style-type: none"> • Connections to EdNet members • Help in developing faculty competency • Curriculum useable for inhouse training
Educators	<ul style="list-style-type: none"> • Participation in curriculum projects like the LAI Lean Academy • Shareable curriculum products • Engagement with the EdNet 	<ul style="list-style-type: none"> • EdNet leadership • Facilitating a distributed virtual learning community • Elevating the importance of lean content in curriculum
Learners	No direct value exchanges	No direct value exchanges

This stakeholder group sees great value from leveraging opportunities among the members through networking, collaboration, and sharing of knowledge and curriculum. For a modest investment of LAI resources, they see large payoffs for both Educators and Employers. The value exchanges with the students come through these two stakeholder groups, not directly from the EdNet team.

The EdNet team also sees significant value in being able to try innovative experiments like the LAI Lean Academy. Rather than injecting lean curriculum directly into programs that are constrained for credit hours, this approach affords a new venue for curriculum delivery – in the environment where it is being applied. Many education leaders are calling for such approaches, but few are happening. The EdNet enables educational experiments on a significant scale.

The EdNet team also sees significant value in developing the EdNet into a distributed virtual community using information technology. Businesses are globalizing, but education continues to localize. The EdNet offers the possibility of establishing communities of practice on a national scale.

Learners

This stakeholder group expects to receive an excellent education in return for their investment of time and financial resources. Value expectations include motivation and excitement about their studies, reinforcement from peers and families, and excellent career opportunities. Once employed, steady career advancement with good pay and personal satisfaction are additional value expectations. If learners perceive that curriculum contributes to these value expectations, they will be satisfied. Excellent and effective educators and eager employers are the best delivers of value to this group of stakeholders.

With regards to the EdNet, this group of stakeholders has expressed enthusiasm for participation in the LAI Lean Academy offerings, and has felt better prepared for their careers. LAI @ MIT is also able to attract highly qualified graduate students, some of whom have been introduced to lean through curriculum offerings.

Graduates of the LAI Lean Academy have expressed an interest in a continuing alumni/ae community of practice. They view that the knowledge and awareness gained during their LAI Lean Academy course is only a beginning of their lean journey. They have asked for more thought on the post-course experience and suggested starting an LAI Lean Academy Alumni/ae organization.

LAI @ MIT Research Team

This other LAI @ MIT stakeholder group generates much of the new knowledge about lean through its research activities, workshops and publications. Some of this knowledge is made explicitly available through publications and presentations. However, much of the knowledge resides in the heads of this group of stakeholders. Educators ascribe value to having access to this group of stakeholders for the tacit knowledge and connection to LAI research studies. However it is not so clear what value the LAI @ MIT stakeholders will receive in return. Given that this group of stakeholders is small and the demands on their time are significant, for them to contribute to the EdNet they must see a significantly greater return in value than they contribute. This group has expressed interest in EdNet developed curriculum as it may serve to offload demands they will face for training supplements to products derived from their research studies. Other possibilities could include leveraging opportunities for their research, access to new knowledge sources, and personal recognition and reward. Further value expectations await definition.

Other organizations

To date, the EdNet has had limited value exchanges with other organizations, yet this stakeholder group should be considered in developing a strategic plan. LAI is a member of the NAE's Center for the Scholarship of Engineering Education (CASEE) which provides a connection to a network of education scholars and implementers. CASEE has expressed interest in funding a post doctoral student to assess the effectiveness of educational delivery like the LAI Lean Academy compared to traditional on campus offerings.

A new organization formed in the summer of 2005 called Lean Education Academic Network (LEAN) is one that the EdNet should interact with. Faculty members of LEAN will focus on university level lean curriculum, often in domains complementing aerospace. The EdNet will proactively seek working relations with LEAN to maximize mutual value.

EdNet members have expressed interest in self-organizing to submit curriculum development proposals to NSF. There are likely other organizations that the EdNet could establish mutually valuable relationships with. At this point, the value expectations and contributions of these opportunities are not well understood.

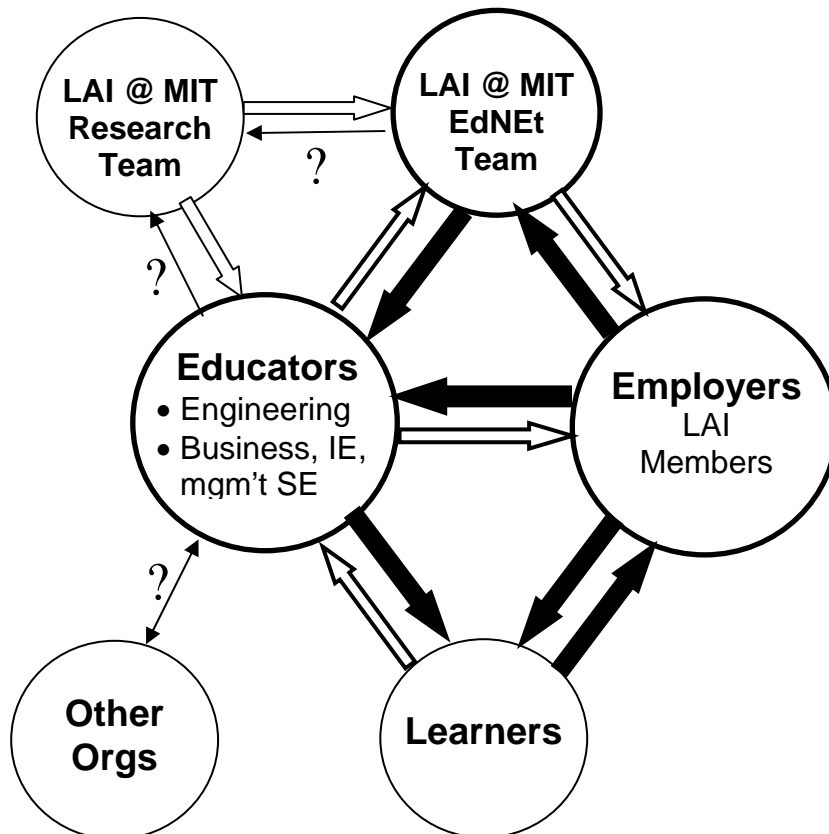


Figure A3 – Notional EdNet stakeholder value exchanges

Summary

The analysis of stakeholder value expectations given in the preceding paragraphs suggests the notional model shown in Figure A3. A core group of EdNet stakeholders – Educators, Employers, EdNet @ MIT, and Learners – have significant two way value exchanges. The other two stakeholder groups have weaker value exchanges at this time.

Bolder arrows indicate a greater expected value to be delivered or received than lighter arrows, within the EdNet context. Some of these stakeholders have other value exchange opportunities beyond the EdNet. Arrows with question marks indicate unknown value expectations at this time.

EdNet Value Proposition Elements

Upon considering the value expectations of the EdNet stakeholders, several elements of a value proposition emerge. In all cases, EdNet value is derived from networking and enabling collective action amongst the LAI and EdNet member stakeholders. Some of these leverage individual stakeholder resources while other create new opportunities beyond the reach of individual stakeholders. Elements of the value proposition are below and the draft value proposition is on the first page of the appendix, and on the title page of the Strategic Plan.

Elevating the awareness of the importance of lean curriculum to academic, industry and government organizations

Both educators and employers see value in raising the level or awareness and importance of incorporating lean into the curriculum of institutions of higher education. This awareness needs to be raised with faculty, academic leaders, industry, and government funding agencies. Employers see value because it will lead to more resources being applied to an area they perceive as critical to their future. Educators see value because it will generate more attention and support for those who pursue developing lean curriculum, and the research that supports it. Education stakeholders who are not yet involved with lean may become interested if they can be convinced of its importance, and its intellectual stimulation. Learners will benefit, as they will have more relevant educational opportunities. LAI @ MIT will benefit from increased attention, and hopefully resources, directed to intellectual pursuits related to lean.

Enabling industrial-academic interactions for accessing knowledge, and for building sustaining continuous improvement networks

Both educators and employers see significant value in linkages between industry and academia. Indeed this is probably the most frequently cited value by the educators. Through the EdNet, faculty can gain access to many industry members, gain access to data and examples, locate potential speakers for classes and seminars, and hopefully develop sustaining relationships with select LAI members who are closely aligned with their interests. Such linkages are very difficult for individual faculty to make on their own. Industry sees benefit in such linkages as they can help stimulate and shape faculty thinking and curriculum so that graduates are better prepared, and hence more valuable. Learners will benefit by having greater contact with industry and relevant curriculum. LAI @ MIT has only marginal benefits from this value exchange.

Undertaking innovative curriculum deployment

The EdNet provides a fertile venue for curriculum innovation, as demonstrated by the LAI Lean Academy course. Many people are suggesting that educators think beyond the

structure of the traditional on campus curriculum and look for education opportunities throughout the entire four or more years a student is enrolled for a degree – that is to think of the extended campus. The LAI Lean Academy was envisioned along these lines by teaching lean curriculum to interns and coops on-site at point-of use. The next logical step taken by University of Missouri Rolla was to offer a special course on campus, but with most the same elements. So far the outcomes seem promising. Indeed, the LAI Lean Academy represents a potentially important example of how lean can be added to undergraduate curriculum in an effective way without displacing other material. The large network of academic and industry partners in the EdNet enable such innovative experiments. Yet to be tapped are those based upon distance learning. Assessment of the effectiveness of such approaches will be needed. In essence, the EdNet can be an experimental test bed for curriculum deployment, using the very same lean principles it is teaching. This has already attracted the attention of one other organization.

Providing opportunities for jointly developing curriculum and sharing pedagogy.

Both educators and employers see significant value in jointly developing curriculum. They also see value in sharing pedagogy and curriculum knowledge. Educators look toward using or adapting the LAI Lean Academy curriculum for on campus venues, and hope that extractions and extensions of this curriculum will be forthcoming. Employers see value in curriculum that can feed into their inhouse training programs. They also will see value in curriculum at different institutions based upon a common set of principles and tools. The core LAI @ MIT EdNet team derives value from seeing successful outcomes for their efforts. LAI @ MIT stakeholders see the curriculum may enrich their research products with supplementary educational material.

Offering educational opportunities for learners interested in lean enterprise excellence

The “payoff” is offering educational opportunities to learners from the collective effort of all the stakeholders. Learners see significant value in relevant and exciting educational offerings, and also in follow up or continuing activities upon completion of the courses.

Stimulating interaction amongst academic peers for sharing of knowledge, collaborative work, and mutual recognition.

Educator stakeholders see significant value in networking, collaborating, and sharing findings with each other. The EdNet provides an alternative venue to professional societies and departmental connections that tend to be more narrowly focused in the type of people involved. The EdNet is one of the few venues where engineering and management faculty can interact.

Footnote

One potential element of an EdNet value proposition not addressed in a central way in the above is opportunities for academic research on lean topics. The educator stakeholders see high value in such opportunities, as would graduate students. Research is the engine that drives many academic institutions. If research opportunities are not enabled by the EdNet, academics may be drawn to other priorities. However, other EdNet stakeholders have not articulated value expectations regarding research. Therefore it is difficult to develop a value proposition element which engages multiple stakeholders. This topic needs further dialog.