Lean Enterprise Self-Assessment Tool (LESAT)
Case Studies for Enterprise Transformation Training

CASE 2 - Electronic Systems Incorporated

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Cases are constructed from data and information obtained while researching U.S. aerospace firms within MIT's Lean Aerospace Initiative consortium. The exact data and corporate information do not in any way reflect a single U.S. aerospace firm that participated in the MIT research. Each case is constructed from data from multiple participants, and appropriately modified in order to demonstrate a particular management issue associated with Lean Enterprise Transformation.

Introduction

Electronic Systems Incorporated (ESI) is an electronics systems company with facilities in California, New Jersey, Pennsylvania, and Texas. ESI has four primary business units, namely Radar (commercial and military), Data Bus Design and Integration (commercial and military), Electronic Warfare System Integration Services, and Fire Control System Development. The company runs each business unit as a separate enterprise serving individual customers, but share common support services such as Finance, Human Resources (HR), Business Development, and Procurement, each of which functions as a cost center for the company. ESI employs 11 000 people, has annual revenues of $1.9 billion US dollars, and has over 450 suppliers.

ESI has been a member of MIT's Lean Aerospace Initiative (LAI) consortium for two years, and has sent their business unit executives to the annual LAI plenary conference, Executive Board meetings and some of the LAI lean workshops. The president of ESI, Ray Leblanc, is convinced that the changing landscape of the aerospace industry is creating a need for ESI to find a new source of competitive advantage in the commercial side of its businesses, while making itself more attractive to its military customers in its defense contracts. In Ray's opinion, the future of ESI is to create a lean enterprise. He is banking on the fact that transforming to a lean enterprise will reduce overall operating

costs, increase profitability, make the company more competitive on government contracts, and provide better returns to their shareholders. While Ray wants to transform quickly, he is unsure of the state of leanness of his company. He knows that the business units have some very good managers, but overall is uncertain about the understanding or use of lean principles within the organization.

In the past 3 months, Ray Leblanc promoted Allison Hughes from VP of the Radar business unit to VP of Lean for ESI as a means to orchestrate his lean goals across the enterprise. Working closely with Allison, and the executive committee comprised of the business unit and cost center leaders, Ray has initiated a strategic planning process with Lean at the core of the operations philosophy for the company. Guided by LAI's Transition to Lean (TTL) Roadmap, Allison has helped coordinate the lean transformation planning and decided that an assessment was necessary to establish a baseline understanding of the strengths and weaknesses of ESI with respect to becoming a lean Enterprise. Within days of the strategic planning sessions, Allison began preparing to use LAI's Lean Enterprise Self-Assessment Tool (LESAT) with the business unit and cost center leaders as a means to understand the current state of leanness in each of these groups at ESI.

LESAT Sessions

The first LESAT introductory session was planned and executed within a month's time. Dr. Deborah Nightingale, Dr. Joe Mize, and Cory Hallam from the Massachusetts Institute of Technology were present for the first LESAT introduction session. Dr. Nightingale provided an overview of the tool, and then Allison described how the assessment would be performed. It was her intention that the executives would take the assessment back to their respective business unit or support function and perform the assessment with their respective senior management committees. She would then collect all of the results and compile them to get an overall picture of the state of leanness of ESI. Ray Leblanc asked that the executives make this assessment a priority for themselves and their senior staff. Specifically, Ray said:

"Folks, it is my opinion that the move towards a lean enterprise is at the core of our future success. I am considering the work that Allison is doing in this assessment a priority for all of us, as it will establish a better understanding of where we are and where we need to go as a lean enterprise."

The ESI executives left the meeting with their LESAT books in hand, and with instructions to get their results to Allison within two week's time. While there were some questions for Allison to field during the assessment period, all of the results were in within two weeks. Using a spreadsheet, Allison compiled all of the results and began preparing for the report-out session. It took some effort to coordinate schedules, but the executives at ESI were able to find a common time to meet the following week.

LESAT Results

Allison began the report-out session by reviewing the purpose of the LESAT with the executives. She then reminded them of the generic definitions associated with the capability maturity model used in the assessment (Appendix A). Allison presented the general results shown in Table 1 as her high-level summary and commented on the fact that their overall assessment of about a level 2 indicated that there was a general awareness of lean with informal approaches deployed in a few areas with varying degrees of effectiveness.

Section I – Lean Transformation/Leadership	Average = 2.2
I.A Enterprise Strategic Planning	2.8
I.B Adopt Lean Paradigm	2.7
I.C Focus on the Value Stream	1.7
I.D Develop Lean Structure and Behavior	2.2
I.E Create and Refine Transformation Plan	2.3
I.F Implement Lean Initiatives	1.6
I.G Focus on Continuing Improvement	1.9
Section II – Life-Cycle Processes	**Average = 2.2**
II.A Business Acquisition and Program Management	2.5
II.B Requirements Definition	2.4
II.C Develop Product and Process	2.9
II.D Manage Supply Chain	1.7

II.E Produce Product	1.8
II.F Distribute and Service Product	1.8
Section III – Enabling Infrastructure	**Average = 1.7**
III.A Lean Organizational Enablers	1.9
III.B Lean Process Enablers	1.5

Table 1 - Level X.X Average LESAT Results

Additionally, it was pointed out that their enabling infrastructure was averaging below a level 2 in the assessment. The full list of current-state LESAT results is provided in Appendix B, including the average LESAT practice values based on all eight respondents and the ranges[*] in responses. Seeing these results, the director of Data Bus Design and Integration, Sandra Evans, had several questions:

"How does this compare to our competitors in industry? Are we scoring too low? What does this score mean to us?"

Allison reminded the executives that the assessment was an internal perception of their maturity, and not an industry standard tool for comparing multiple companies. She continued by saying that the meaning of the results is a statement of their current leanness as per the description of the 54 LESAT measures. Ray Leblanc then said:

"I think we have to realize that we are only just starting this transformation process. We are obviously doing better in some areas than others. The areas where we are not doing as well should be an indication of a need we have to address."

The discussion in the meeting then centered on a review of each of the LESAT X.X-level averages provided in Table 1. The executives reviewed each result, then discussed the impact the result would have on their lean transformation plan. While this seemed to sit well with the business unit leaders, some of the support function executives were having

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[*] The range is a measure of the variability in responses and is calculated as the highest maturity level - the lowest maturity level for the set of responses to a given LESAT practice.

some difficulty understanding their role in the whole value stream process. James Devans, the director of Finance, spoke up:

> *"I can understand that we have to improve in areas like focusing on the value stream, where we scored a 1.7, or managing the supply chain, where we also scored a 1.7, but I am unclear of how the Finance department provides value to the end customer. I would like to figure this out"*

This point raised several further questions about how the value stream was defined and from whose perspective. Was it solely the customer's perspective, or did each function deliver a product/service to the business units via a separate value stream? Also, some of the executives were wondering how they would allocate resources to act on some of the transformation plans that they were going to develop. How would they prioritize their actions, since the effort required for the number of actions would most likely be greater than the available resources? The discussions were enthusiastic and the participants seemed to have a common desire to figure out how they would enable the transformation of the enterprise. With time running out in the meeting, Ray Leblanc decided to wrap up the meeting with some final comments and actions:

> *"I think we have uncovered some good insights into our current leanness. We should not be worried about our exact score, but rather what the individual LESAT levels are telling us about ESI's current lean maturity. We have already identified some actionable issues, and can incorporate them in our strategic plans. Since Allison is the VP of lean, I suggest we task her with helping us prioritize actions identified from this assessment and we should then reconvene in about a month to coordinate and agree upon our transformation plans, both for this fiscal year and for the long term as well."*

The executive committee applauded Allison's effort for orchestrating the assessment process and were excited about the next steps. Allison went to lunch and spent several hours reviewing the LESAT data.

Questions for Discussion

1. What is management's apparent understanding of lean?

2. Is ESI a lean enterprise?

3. What is the data saying? Does it support leadership's view?

4. What does the variability within the scores (Range) indicate?

5. Are the goals set by the president realistic or even achievable?

6. What is right/wrong with management's means of setting goals for becoming a lean enterprise?

7. Are Allison's next steps clear? What are they?

Appendix A – Generic Capability Maturity Levels

Capability Maturity Level	Generic Definition
Level 1	Some awareness of this practice; sporadic improvement activities may be underway in a few areas.
Level 2	General awareness; informal approach deployed in a few areas with varying degrees of effectiveness and sustainment.
Level 3	A systematic approach /methodology deployed in varying stages across most areas; facilitated with metrics; good sustainment.
Level 4	On-going refinement and continuous improvement across the enterprise; improvement gains are sustained.
Level 5	Exceptional, well-defined, innovative approach is fully deployed across the extended enterprise (across internal and external value streams); recognized as best practice.

Appendix B – Current State LESAT Results

SECTION 1 - LEAN TRANSFORMATION/LEADERSHIP				
TTL LINK	Lean Practice	**State**	**Mean**	**Range**
I.A Enterprise strategic planning	I.A.1. Integration of lean in strategic planning process	Current	3.5	1
	I.A.2. Focus on customer value	Current	2.0	2
	I.A.3. Leveraging the extended enterprise	Current	3.0	1
I.B Adopt Lean Paradigm	I.B.1. Learning and education in 'lean' for enterprise leaders	Current	2.5	1
	I.B.2. Senior management commitment	Current	3.5	1
	I.B.3 Lean Enterprise Vision	Current	2.2	1
	I.B.4. A sense of urgency	Current	2.4	1
I.C Focus on the Value Stream	I.C.1. Understanding the current value stream	Current	1.7	2
	I.C.2. Enterprise flow	Current	2.0	1
	I.C.3. Designing the future value stream	Current	1.5	1
	I.C.4. Performance measures	Current	1.6	2
I.D Develop lean Structure and Behavior	I.D.1. Enterprise organizational orientation	Current	2.0	2
	I.D.2. Relationships based on mutual trust	Current	2.2	1
	I.D.3. Open and timely communications	Current	2.0	1
	I.D.4. Employee empowerment	Current	2.5	1
	I.D.5. Incentive alignment	Current	1.4	2
	I.D.6. Innovation encouragement	Current	2.8	1
	I.D.7. Lean change agents	Current	2.2	1
I.E Create and Refine Implementation Plan	I.E.1. Enterprise level lean implementation plan	Current	1.9	1
	I.E.2. Commit resources for lean improvements	Current	3.0	1
	I.E.3. Provide education and training	Current	1.9	1
I.F Implement Lean Initiatives	I.F.1. Development of detailed plans based on enterprise plan	Current	1.2	1
	I.F.2. Tracking detailed implementation	Current	2.0	1
I.G Focus on Continuous Improvement	I.G.1. Structured continuous improvement process	Current	1.6	2
	I.G.2. Monitoring lean progress	Current	2.0	2
	I.G.3. Nurturing the process	Current	2.0	1
	I.G.4. Capturing lessons learned	Current	2.0	1
	I.G.5. Impacting enterprise strategic planning	Current	2.0	2

SECTION II - LIFE CYCLE PROCESSES				
TTL LINK	Lean Practice	**State**	**Mean**	**Range**
II.A. Business Acquisition and Program Management	II.A.1. Leverage lean capability for business growth	Current	1.9	1
	II.A.2. Optimize the capability and utilization of assets	Current	2.4	1
	II.A.3. Provide capability to manage risk, cost, schedule and performance	Current	3.0	1
	II.A.4. Resource and empower program development efforts	Current	2.8	2
II. B. Requirements Definition	II.B.1. Establish a requirements definition process to optimize lifecycle value	Current	2.4	1
	II.B.2. Utilize data from the extended enterprise to optimize future requirement definitions	Current	2.4	1
II.C. Develop Product and Process	II.C.1. Incorporate customer value into design of products and processes	Current	3.0	2
	II.C.2. Incorporate downstream stakeholder values into products and processes	Current	3.2	1
	II.C.3. Integrate product and process development	Current	2.4	1
II.D. Supply Chain Management	II.D.1. Define and develop supplier network	Current	1.4	1
	II.D.2. Optimize network-wide performance	Current	1.8	1
	II.D.3. Foster innovation and knowledge-sharing throughout the supplier network	Current	1.9	1
II.E. Produce Product	II.E.1. Utilize production knowledge and capabilities for competitive advantage	Current	2.0	1
	II.E.2. Establish and maintain a lean production system	Current	1.5	2
II.F. Distribute and Service Product	II.F.1. Align sales and marketing to production	Current	2.0	1
	II.F.2. Distribute product in lean fashion	Current	1.5	1
	II.F.3. Enhance value of delivered products and services to customers and the enterprise	Current	2.0	1
	II.F.4. Provide post delivery service, support and sustainability	Current	2.3	2

SECTION III - ENABLING INFRASTRUCTURE				
TTL LINK	Lean Practice	**State**	**Mean**	**Range**
III.A. Lean Organizational Enablers	III.A.1. Financial system supports lean transformation	Current	1.1	1
	III.A.2. Enterprise stakeholders pull required financial information	Current	2.0	1
	III.A.3. Promulgate the learning organization	Current	1.5	1
	III.A.4. Enable the lean enterprise with information systems and tools	Current	1.8	2
	III.A.5. Integration of environmental protection, heath and safety into the business	Current	2.9	1
III.B. Lean Process Enablers	III.B.1. Process standardization	Current	1.4	1
	III.B.2. Common tools and systems	Current	1.2	1
	III.B.3. Variation reduction	Current	2.0	2