

# **Transitioning to A Lean Enterprise: A Guide for Leaders**

## **Volume III Roadmap Explorations**

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# TABLE OF CONTENTS

## Volume III Roadmap Explorations

Introduction to Volume III .....	1
Roadmap Background Materials.....	7
Adopt Lean Paradigm .....	11
Build Vision .....	11
Convey Urgency .....	19
Foster Lean Learning .....	23
Make the Commitment .....	27
Obtain Senior Management Buy-in .....	31
Focus on the Value Stream .....	39
Map Value Stream .....	41
Internalize Vision .....	49
Set Goals and Metrics .....	53
Identify & Involve Key Stakeholders.....	57
Develop Lean Structure and Behavior .....	63
Organize for Lean Implementation .....	65
Identify and Empower Change Agents .....	69
Align Incentives .....	73
Adapt Structure and Systems .....	77
Create and Refine Implementation Plan .....	85
Identify and Prioritize Lean Activities .....	87
Commit Resources .....	91
Provide Education and Training .....	95
Implement Lean Initiatives .....	101
Develop Detailed Plans .....	103
Implement Lean Activities .....	109
Focus on Continuous Improvement .....	117
Monitor Lean Progress .....	119
Nurture the Process .....	123
Refine the Plan .....	127
Capture and Adopt New Knowledge .....	131
Collected References .....	135

# INTRODUCTION TO VOLUME III: ROADMAP EXPLORATIONS

## Purpose of Volume III

Volume III of this Guide may be used as an in-depth reference source for acquiring deep knowledge about many of the aspects of transitioning to Lean. Lean Change Agents and Lean Implementation Leaders should find this volume especially valuable in preparing their organizations for the lean transformation and in developing and implementing an Enterprise Level Lean Implementation Plan. The richness and depth of the discussions in this volume should be helpful in charting a course, avoiding pitfalls, and making in-course corrections during implementation.

We assume that the reader of Volume III is familiar with the history and general principles of the Lean paradigm that are presented in Volume I, Executive Overview. A review of Volume II, Transition to Lean Roadmap may be helpful prior to launching into Volume III. For those readers most heavily involved in the Lean transformation, all three volumes should be understood and referenced frequently.

The following four sections entitled **Background**, **Transition-to-Lean Guide**, **Guide's Perspective**, and **Looking Ahead** are reproduced from Volume I and II for completeness and for the convenience of those readers beginning with this Volume.

## Background

The Lean Aerospace Initiative (LAI) is a collaborative effort among major elements of the United States Air Force, leading companies within the aerospace defense industry, and the Massachusetts Institute of Technology. LAI was formed to identify and implement Lean principles and practices throughout the military aerospace systems' acquisition, development, and production processes.

Early in its existence, LAI brought together an Integrated Product Team (IPT) comprising government, industry, and academic representatives to develop a tool that could logically and effectively integrate the consortium's extensive research findings in Lean principles and practices. That tool evolved as the Lean Enterprise Model (LEM), which was released to all consortium members at the end of LAI's first three-year phase in 1996. During LAI's second three-year phase, the LEM's database was expanded to include both MIT and non-MIT research and was made available to LAI consortium members in a Web version.

In providing a powerful taxonomy of Lean principles and practices, the LEM addressed the issue of the "whats" of lean, but did not attempt to address the "hows" of implementation. While much had been documented about the implementation of specific Lean practices, especially on the factory floor, little had been developed regarding the greater issue of Lean implementation as a holistic process — especially at the Enterprise level. Enterprise, in this context, refers to every element of the organization, extending forward to the Customer and reaching back into its supply chain. In response to a clear need

to provide this “how” guidance, the LAI executive board challenged the LEM IPT to expand its efforts to develop a product to address the issue of broad and extensive Enterprise implementation.

In response to this challenge, this “Enterprise Transition-To-Lean (TTL) Guide” has been developed.. The heart of this Guide is the TTL Roadmap, which describes a logical sequence of several *Primary Activities* and the *Major Tasks* required to complete each of these *Primary Activities*. There is an extensive set of background material for each *Major Task* that expands upon the **issues, tensions, and barriers** that are likely to be confronted at each task stage. This material also describes the **enablers, tools, related references, and case studies** that can be accessed to promote successful completion of each task.

## **Transition-To-Lean Guide**

The “Enterprise TTL Guide” comprises three volumes that provide a set of materials allowing the user to understand and navigate through the Roadmap at increasingly deeper levels of detail.

**Volume I: Executive Overview** invites the Enterprise Leader and Lean Change Agents to understand the compelling “whats and whys” of Lean. It offers a history of the evolution of Lean thinking and principles, and introduces the concept of the top-level Transition-to-Lean Roadmap as an overarching guide to transforming an organization into a Lean-thinking and -behaving organization. This “Top-Level” view of the Roadmap consists of six Primary Activities and the Major Tasks that must be addressed within each Primary Activity. These tasks flow in a logical, sequential process that evolve into natural “cycles” of both short- and long-term activities as the Continuous Improvement process progresses.

**Volume II: Transition-to-Lean Roadmap** provides the next level of description and detail in understanding the nature and scope of the tasks required to complete each of the primary activities that make up the dynamic roadmap.

Finally, **Volume III: Roadmap Explorations** provides an in-depth exposition — using a common template — of each of the twenty-two tasks identified within the roadmap addressing

the primary issues,  
the tensions likely to emerge,  
the barriers that will be encountered, and  
the enablers that can be applied to overcome these barriers.

This template, titled the “six tensions,” reminds Guide users that it is imperative to address continually the questions of “**Who, What, Where, When, Why, and How**” involved in any transformation undertaking. Where appropriate, the Guide suggests and describes tools that can help in navigating successfully through the task at hand. For those interested in exploring a particular issue more fully, we Identify relevant references for the several task areas.

## **Guide’s Perspective**

It is important to understand that this Guide is for all of the leaders vital to the modern-day “Extended Enterprise.” These leaders — “Stakeholder Leaders” — are found within each of the array of constituencies that together define this new competitive entity. Their individual and collective success depends upon their ability to further, simultaneously, their individual goals and those of the “Enterprise” that binds them together. Without this collaborative behavior, these “Stakeholder Leaders” will fail to optimize their collective capacity and capability.

In this Guide for Leaders, then, we use this terminology of “Stakeholder Leaders” to reinforce the reality that “leadership” can and must be found along at least two dimensions in the “organizational” framework of the Enterprise. Leadership must be demonstrated by the organizational leaders of each of the constituencies that are crucial to the Extended Enterprise, including company management, union management (if present), supplier management, and even customer management. While each of these leaders has different responsibilities, different perspectives, and a different array of goals and objectives, they must, to be successful as a group, collectively develop at least one subset of common goals and objectives around which they can work together and which can simultaneously support the pursuit of their individual unshared goals.

We reserve the singular reference of “Enterprise Leader” to the senior manager of the company who is at the center of the “Extended Enterprise,” but generally we use the term “Senior Managers” to refer to the key personnel who support any of the “Stakeholder Leaders.” This general reference acknowledges that leadership must also be demonstrated by the “change agents” within each of these groups who provide guidance, direction, and encouragement for change wherever they exist within the organizational layering of their respective constituencies. We direct this “Transition-To-Lean Roadmap and Guide,” then, to every one of this diverse set of “Leaders” — because we have found that they encounter many of the same issues, barriers, enablers, and challenges in managing and leading change. This applies whether they are acting at the managerial level, within the bowels of the organization, or at the boundaries of the alliances that make up this extended association. While each of their situations may differ in the details or terminology, the principles and overarching practices that define the essence of Lean thinking are — at their root — one and the same.

We also have observed that “leadership” in the Lean transformation process can emanate from and/or be sustained within any part of the organization. Company management, unions, a major supplier, or even the customer can play an initial or sustaining role. What is most important is not where the transformation begins nor who sustains it, but that with Enterprise leadership the critical mass of involvement and commitment necessary to change the culture of the Enterprise into one where Lean thinking and behavior are the norm in times of stability and crisis can be achieved. For an Enterprise to make the successful journey of transitioning to Lean the creative and dedicated leadership of many different participants will be required. We hope this Guide is useful as a common map for all the pilgrims on this quest.

## **Looking Ahead**

Every day brings new discoveries and insights into more effective ways for eliminating waste and reducing the cycle time from customer want to customer satisfaction. While the basic principles of Lean thinking are simple, transforming that thinking into behavior — and especially action — within differing circumstances that result in consistent Lean performance is complex and far from fully understood. Fortunately, the cadre of Lean believers has grown substantially over the past several years; their collective experiences provide substantial evidence and lessons from which to advance the Lean process everywhere.

With this in mind, this Guide is meant to be just that: a guide, not a dictate. Every journey has its own unique circumstances, demanding individual choices and decisions that ultimately set it apart from any other journey ever attempted. If you are the change agent and/or the transformation leader, your decisions and circumstances will ultimately shape the journey and determine its degree of success or frustration.

Finally, this Guide does not purport to provide every answer to the demanding problem of Lean transformation in complex organizations. It does, however, aggregate in a structured framework much of what has been learned by recent Lean pioneers and practitioners. As important, it looks ahead at the Lean journey and helps the transformation agent ask the relevant questions that must be addressed to minimize the surprises, setbacks, and barriers that will inevitably appear. This guide can help you understand the terrain, prepare you for some of the previously discovered obstacles, arm you with the tools needed to reach your destination with greater ease, and help you shape the creation of your own memorable and rewarding journey. You have but one obligation in return: to add to the wealth of knowledge that you find in this guide by capturing and sharing your own discoveries, your own tool developments, your hard-earned insights and findings. Other pilgrims are not far behind. Let the journey begin!

# Development of Enterprise Transition-to-Lean Roadmap: Enterprise Level

The Enterprise Transition-to-Lean (TTL) Team was established by LAI to develop a process for assisting companies in their efforts to transform themselves into a Lean enterprise. The TTL Team worked for over a year in developing this process.

The initial effort was directed to constructing a framework that portrays the overall “flow” of the action steps necessary to initiate, sustain, and continuously refine an enterprise transformation that would result in the implementation of Lean principles and practices. This framework was developed from an Enterprise perspective, paying particular attention to strategic issues, internal and external relations with all key stakeholders, and structural issues that must be addressed before and during a significant change initiative.

The framework that was developed consists of six “Primary Activities”, under each of which are several “Major Tasks”. There are twenty-two Major Tasks.

The TTL Team, over a six-month period, engaged in extensive and intensive in-depth brainstorming sessions on each of the twenty-two Major Tasks. A standard format was developed to provide focus and consistency in the team's efforts to acquire an in-depth understanding of each action item (Major Task) on the TTL Roadmap diagram. It was developed to provide an easily navigable format for the user to explore each of these tasks. The general format for each of the 22 Major Tasks is:

- I. Overview and Discussion - (General issues and factors associated with this task)
- II. Tensions – (The Six Basic Questions and the associated tensions arising from asking these questions)
  - Why
  - What
  - Who
  - How
  - Where
  - When
- III. Barriers
- IV. Enablers
- V. Case Studies/Research Questions
- VI. References/Linkages

The results of these sessions were recorded in real time. After editing, they became the “raw material” that was used in developing this three volume set, entitled “Transitioning to a Lean Enterprise: A Guide for Leaders.”

In the following six sections (each of the Primary Activities on the Roadmap), the recorded results of the TTL Team’s brainstorming sessions for each of the twenty-two Major Tasks are presented.



This material is still in raw form, with many questions raised but not answered. The Team believes, however, that by noting these questions, Lean implementers will be alerted to issues that could be important in their own efforts.

The material presented does not purport to be validated as yet in the traditional research sense. In any event, it is considered neither possible nor desirable to suggest a prescriptive, generic framework that attempts to fit every situation. Nonetheless, since the principal benefit of any model is to raise the quality of thinking and knowledge about an area of interest, we believe that the release of this material in its present form could be valuable in assisting those engaged in the Lean transition initiatives of their companies.

# ROADMAP BACKGROUND MATERIALS

## **Adopt Lean Paradigm**

- Build Vision
- Convey Urgency
- Foster Lean Learning
- Make the Commitment
- Obtain Senior Management Buy-in

## **Focus on the Value Stream**

- Map Value Stream
- Internalize Vision
- Set Goals and Metrics
- Identify & Involve Key Stakeholders

## **Develop Lean Structure & Behavior**

- Organize for Lean Implementation
- Identify & Empower Change Agents
- Align Incentives
- Adapt Structure & Systems

## **Create and Refine Implementation Plan**

- Identify & Prioritize Activities
- Commit Resources
- Provide Education & Training

## **Implement Lean Initiatives**

- Develop Detailed Plans
- Implement Lean Activities

## **Focus on Continuous Improvement**

- Monitor Lean Progress
- Nurture the Process
- Refine the Plan
- Capture & Adopt New Knowledge



**CYCLE:**

*Entry/Re-entry*

**PRIMARY ACTIVITY:**

*Adopt Lean Paradigm*

**MAJOR TASKS:**

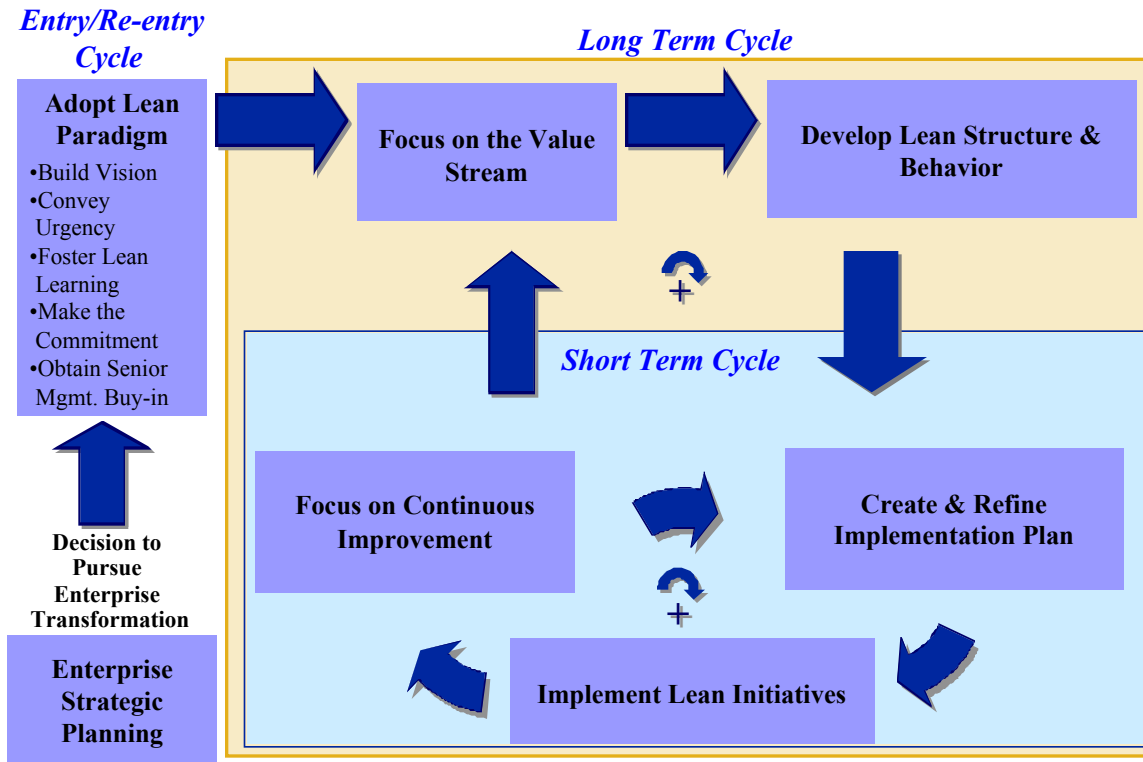
- *Build Vision*
- *Convey Urgency*
- *Foster Lean Learning*
- *Make the Commitment*
- *Obtain Senior Management Buy-in*



Figure 1

## Enterprise Level Roadmap

### Major Tasks within “ADOPT LEAN PARADIGM”



### ADOPT LEAN PARADIGM

The Lean paradigm consists of many concepts, principles, and practices that are counter-intuitive and diametrically opposed to those of mass production. Most of today’s business leaders climbed the ladder of success while following the same mass-production practices they are now being asked to abandon.

A large number of “movements” and initiatives have been pushed on managers over the past several years, including re-engineering, TQM, and others. While it is tempting to believe that the sum of all these initiatives add up to Lean, that is not the case. In fact, some of these initiatives may require modification to be compatible with Lean principles.

Lean requires a deep understanding of the fundamental aspects of an Enterprise and its interactions with the rest of the world. This segment of the Roadmap provides a framework for acquiring an in-depth understanding of Lean and for obtaining full commitment from Senior Managers to launch a Lean transformation, or to elevate local Lean initiatives to the Enterprise level.

Adopting the Lean paradigm is an issue of *passion* as well as logic. One must have an absolute and abiding belief that the implementation of Lean principles and practices is of essential importance to the Enterprise. Lean is not just the way things are done, but is the way the Enterprise thinks, what it believes, how it behaves, and what it values.

## **MAJOR TASKS WITHIN “ADOPT LEAN PARADIGM”**

### **Build Vision**

- Create a new mental model of how the enterprise would function if it acts and behaves according to Lean principles and practices.
- Extend the vision of Lean to all aspects of the Enterprise.
- Make the Lean vision an integral part of the company’s strategic business plan.

### **Convey Urgency**

- Identify the strategic imperative, the forcing function for transitioning to Lean.
- Understand the long-term competitive threats.
- Establish that Lean is the most promising alternative for addressing the strategic imperative.

### **Foster Lean Learning**

- Have all senior managers acquire an in-depth understanding of the Lean paradigm and make site visits to successful Lean companies.
- Understand the full implications of transitioning to Lean.
- Learn that lean is about “behavior”, not just practices and activities.

### **Make the Commitment**

- Enterprise Leader must make the final decision to transition the company to Lean.
- Make the commitment irrevocable.
- Commit the significant resources required (primarily time, energy, and personal capital).

### **Obtain Senior Management Buy-in**

- Full buy-in is required from all senior managers.
- In-depth education and training is required.
- Managers who are unwilling or unable to change must be replaced.

## **Transition to Lean Roadmap Background Materials**

**CYCLE:** Entry/Re-entry  
**PRIMARY ACTIVITY:** Adopt Lean Paradigm  
**MAJOR TASK:** Build Vision

### **I. OVERVIEW and DISCUSSION:**

- Develop an understanding of the Lean paradigm.
- Interpret the underlying principles and practices as they apply to this company.
- Create a portrayal of how the company should look and behave after adopting the Lean paradigm.
  - Need to integrate the Lean vision statement with the classic vision statement (from Enterprise Strategic Planning block).
  - Need to provide guidance that Lean is not an "end state" but an ongoing process and a new way of thinking.
  - Explore discussion of first looking for "existing vision" within the Enterprise resources as a source for Enterprise level articulation. (The vision does not have to come from specifically the CEO, it can originate from anywhere within the organization.)
- Recognize that leadership style has an impact on building a vision.
  - Directive vs Consensus approach and their implications.
  - Transformational vs Transactional leadership.
- Emphasize the LEM's reference to leadership as being the most important interactive element to successful Lean practices implementation.



• **TENSIONS:**

Answer the question

list the Tensions

<p><b>Why: "Why do we need a new Vision?"</b></p> <ul style="list-style-type: none"> <li>• To communicate a consistent message/vision throughout the organization.</li> <li>• To enable alignment and attunement.</li> <li>• To convey what this company can become.</li> <li>• Because of the paradigm shift from mass to Lean principles and practices. Lean is a fundamentally new approach to running an enterprise. Focus shifts from short-term profit to <u>value to the customer</u>, which is expected to return larger profit by eliminating waste and attaining superior customer satisfaction.</li> </ul>	<ul style="list-style-type: none"> <li>• Why not make a small correction as opposed to a massive change within the Enterprise?</li> <li>• What has caused the organization to change?</li> <li>• It is difficult to align to a new vision without denigrating the old existing vision, but we should do so if possible.</li> <li>• Can we adopt a new Lean vision without changing the Enterprise vision?</li> <li>• How do you change a vision that the culture has been successful with in the past? Will it be successful in the future?</li> </ul>
<p><b>What: "What does Build Vision mean?"</b></p> <ul style="list-style-type: none"> <li>• Build a shared vision of how the company would look and behave if it became Lean.</li> </ul>	<ul style="list-style-type: none"> <li>• How explicit does the vision need to be?</li> <li>• How much do you allow the Enterprise to flesh out a "skeleton"? (May be directly related to a style of leadership issue – directive/consensus.)</li> <li>• Recognize that the end of the vision creating process is not the end of the work, but just the beginning. (The vision is not the product, the implementation of the vision is the product!)</li> </ul>
<p><b>Who: "Who Builds the Vision?"</b></p> <ul style="list-style-type: none"> <li>• Enterprise Leader and other Senior Managers.</li> </ul>	<ul style="list-style-type: none"> <li>• How do you decide on who is allowed to participate in the development of new vision?</li> <li>• How do you achieve support from those not included?</li> <li>• There is no likely consensus (total agreement) in an Enterprise.</li> <li>• Should this be an internal only or externally influenced process (to avoid an insular view of the world)?</li> </ul>
<p><b>How: "How is the Vision Built?"</b></p> <ul style="list-style-type: none"> <li>• Visit successful Lean companies, attend seminars, conferences, workshops, and management exchanges; read, read, read.</li> <li>• See LAI Implementation Team recommended tools.</li> </ul>	<ul style="list-style-type: none"> <li>• How do you overcome not invented here (NIH) resistance to new ideas, especially those externally generated?</li> <li>• How do you assess the applicability to your Enterprise of other successful implementations?</li> <li>• Is this a public or private process? Are there circumstances which make one or the other approach critical for success?</li> <li>• "How" may influence the "Who" question.</li> <li>• Is this an activity that demands one day or one year of the Enterprise Leader's time and commitment? (Interactions with education of the organization, experience etc.)</li> </ul>

<p><b>Where: "Where is the Vision Built?"</b></p> <ul style="list-style-type: none"> <li>• Scope: Enterprise wide.</li> <li>• Vision takes on detail, consistent with the higher level Enterprise vision, as it flows down into the organization.</li> <li>• At the Enterprise level with consideration of all levels.</li> </ul>	<ul style="list-style-type: none"> <li>• Must a Lean vision be promulgated only at the Enterprise level?</li> <li>• Does it make sense to have a Lean vision below the level of Senior Leaders?</li> <li>• How does the Lean vision at the Enterprise level tie into the other levels of the Enterprise?</li> <li>• Why make a Lean vision for the Enterprise and only implement locally?</li> <li>• Is it a dichotomy to have bought into the Lean paradigm but only be willing to do pilot transformations within the Enterprise?</li> </ul>
<p><b>When: "When is the Vision Built?"</b></p> <ul style="list-style-type: none"> <li>• The very first step in the transition to Lean.</li> <li>• An iterative process that begins with a broad brush framework which is progressively enriched and refined.</li> <li>• Is the discussion without answers, in itself, still of value?</li> </ul>	<ul style="list-style-type: none"> <li>• How can you have a fully developed vision of Lean without having experienced a Lean environment?</li> <li>• Is the adoption of a Lean vision by necessity an evolutionary process (i.e. broad Lean vision can only be detailed as Leaning evolves) or a revolutionary one?</li> <li>• What is the timeline necessary that allows the senior leadership education process to get them to the point where Lean implementation is rational for the Enterprise?</li> </ul>

### III. BARRIERS:

- How do you portray a new vision into an existing corporate culture that may not respond well to "new change"?
- Tradition: Mass production mind set.
- Lean is counter-intuitive in some ways.
- Vision is seen as the company's, and not the employees', future.
- Fear of the unknown.
- Uncertainty of the outcome.
- Communication always creates a certain level of distortion.
- Lack of knowledge of the Lean principles and practices.
- Vision statements carry "program of the month" baggage: Skepticism of the management.
- Malicious compliance.
- While there are a lot of tools that exist on creating vision statements, there are not a lot of tools available to help build a Lean vision.

### IV. ENABLERS:

- People inherently like to be creative and want to have ownership.
- Tapping into peoples' readiness in wanting to create a vision.
- People like to be viewed as progressive thinkers.
- Can be viewed as creating opportunity for people.
- Competitive environment.
- "Shadow of the Guillotine", "Burning platform"
- Expertise in Lean can be acquired.
- Visiting successful implementation sites.
- There are a lot of fundamental thinking books on Lean principles and practices.

### V. CASE STUDIES/RESEARCH:

- Articles on vision builders.
- Detailed examples from successful Lean implementation initiatives.
- Research Question: “How important is Executive leadership in the success of Lean initiatives?”
- "Is this an area of needed research?"
  - "Is having a vision a necessary requisite of company transformation?"
  - "Is one style of leadership more effective than another?"
  - "And, if so, what are the key elements or drivers of leadership?"
  - "Review the work of the consortium's alliances in this area".
  - Non-MIT research: Vision creation as part of change management.
- We need to develop a template to help the Enterprise Leader articulate what could be in the Lean spectrum (attributes of the "end state" of Lean)?
- Is there a relationship/correlation between vision and culture?
- We need to provide a tool to guide the development of a Lean vision - dimensions, aspects and elements.
- Have examples of successful Enterprise implementations of Lean, especially those that have enriched the workforce.
- What constitutes a Lean vision?

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## **Transition to Lean Roadmap Background Materials**

**CYCLE:** Entry/Re-Entry  
**PRIMARY ACTIVITY:** Adopt Lean Paradigm  
**MAJOR TASK:** Convey Urgency

### **I. OVERVIEW and DISCUSSION:**

- The need to adopt Leanness flows from the integrative strategic planning process, is driven by a business crisis, or emerges from internally inspired change efforts (see Enterprise Strategic Planning block in the Roadmap).
- Change of this magnitude is likely to be very difficult in the absence of a perceived major threat.
- The organization must explicitly define “urgency” in the context of its strategic competitive position.
- Are there some characteristics of the "urgency" that are essential to drive Lean implementation (i.e., belief that the competition is or will soon be more capable in terms of quality, delivery speed, cost, value, etc.)?
- Are there both an array and a hierarchy of "urgency" that need to be developed - if there are, do they need to be linked? (Does each of the stakeholders need a different forcing function?)
- There is a tendency to believe that all levels of the organization understand the top-level financial and competitive concerns of the Enterprise, but this is likely not the case.
- How do you best make this "need" real (communicate)?
- You must pay attention to establishing "urgency" up the chain as well. (If you don't establish the "buy-in" of the corporate organization they become barriers to the process.)
- Identify the consequences of "creating this monster". In a sense this is the challenge of properly packaging the forcing function (the compelling need) to the organization to prevent any negative effects.
- Lean is one element of the vision that was created higher in the "food chain". As a warning to Enterprise Leader, do not simply adopt Lean as your vision; it only makes sense to use it as a contributor to achieving the overall corporate mission.
- Is Lean in and of itself a justifiable goal, or does it only make sense in the context of the company's strategic directions? Without ultimately being tied to corporate strategic direction, it is likely to falter.
- Is the fundamental premise here that the adoption of Lean in a company is a given? If so, the only question then is how best to align stakeholders to support implementation.
- The answer may be that the organization does not have enough resources to do Lean, as well as sustain other functional units in the Enterprise. Need to convince the organization to go to Lean. Need to demonstrate that Lean supports, and may be a prerequisite to achieving, other goals of the functional units.

## II. TENSIONS:

Answer the question

list the Tensions

<p><b>Why: "Why do we Convey Urgency?"</b></p> <ul style="list-style-type: none"> <li>• Must have a forcing function, a compelling reason to completely transform the organization to a new and very different paradigm.</li> </ul>	<ul style="list-style-type: none"> <li>• How to draw the balance between “challenging threat versus “despair”.</li> <li>• Making the "Why" adaptive to each stakeholders "hot button".</li> </ul>
<p><b>What: "What is the Urgency?"</b></p> <ul style="list-style-type: none"> <li>• The urgency or need is the most critical issue facing the long-term survival and prosperity of the company. Decision to transition to Lean is the result of assessing alternative paradigms for the overarching organizing principles of an Enterprise.</li> </ul>	<ul style="list-style-type: none"> <li>• How do you know you are fighting the right monster?</li> <li>• Is the need you have the need you want? (The need you may have might not generate enough force to gain the motivation of the organization.)</li> <li>• Is the need you want the need you have? (Caution: Back to leadership style and background issue, influence and potential traps.)</li> <li>• How internalized must the need be described to be effective?</li> </ul>
<p><b>Who: " Who Conveys the Urgency?"</b></p> <ul style="list-style-type: none"> <li>• Enterprise Leader and Stakeholder Leaders.</li> </ul>	<ul style="list-style-type: none"> <li>• How do you get "buy-in" from elements who never thought they had a problem initially?</li> <li>• How do you reflect the totality of the need if you do not ask everyone involved to express their fears?</li> <li>• How do you filter out the vested interests in identifying the real need?</li> <li>• How do you obtain concurrence from higher levels in the organization?</li> <li>• Can you obtain a realistic picture without external input (including: customer, marketplace, corporation)</li> <li>• Looking for where it has already happened (search for “closet believers” and solicit their advice).</li> </ul>
<p><b>How: "How to Convey the Urgency?"</b></p> <ul style="list-style-type: none"> <li>• Through widespread communication of alternative paradigms and their consequences for the overarching organizing principles of an Enterprise.</li> </ul>	<ul style="list-style-type: none"> <li>• In the span of consensus, where do you tap to evolve your position?</li> <li>• How do you assess investment in Lean as the solution vs. investment in other alternatives?</li> <li>• Implicit vs. explicit decision models.</li> <li>• Balancing off the interests of competing stakeholders</li> <li>• Why it will be so valuable to reduce the Lean turnaround cycle to help achieve good return on investment and not a reduction or total depletion of cash flow (helps convince the stakeholders of buy-in)</li> </ul>

**When: "When is the Urgency Conveyed?"**

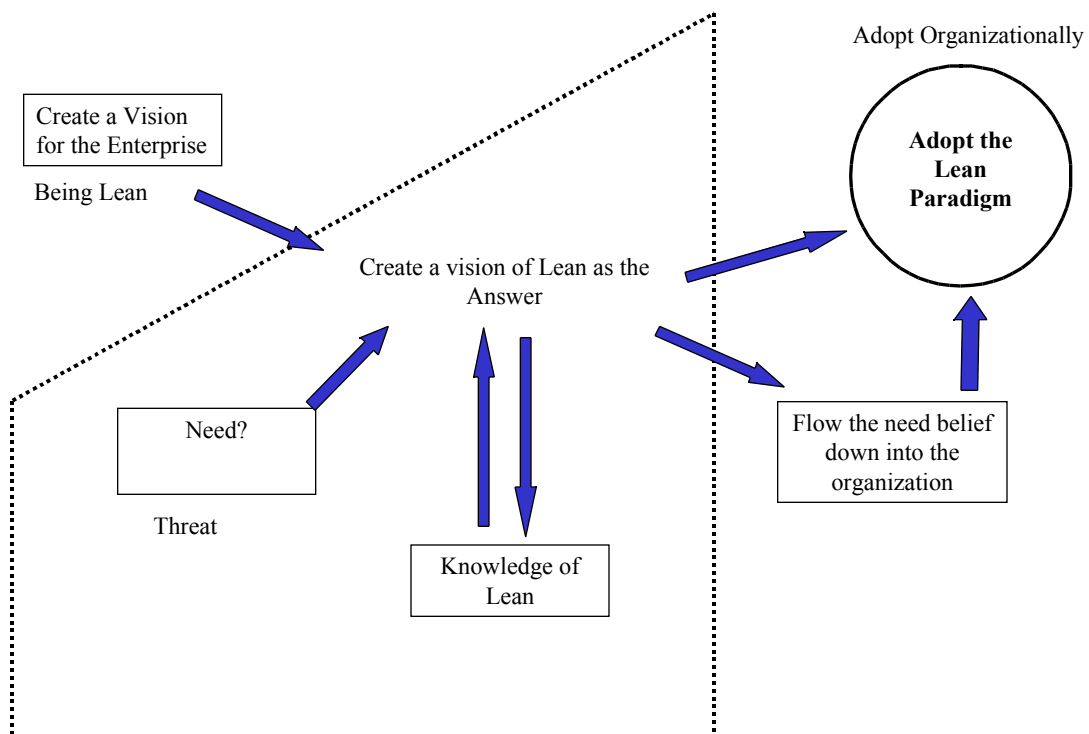
- At the beginning in conjunction with "build vision".
- The challenge of conveying urgency to players who may not be part of the plan.
- The urgency and knowledge are not necessarily sequential.
- Do you convey the urgency before or after you create the vision?

**III. BARRIERS:**

- The biggest barrier is the alternative vested interests for the resources required to implement Lean. (Resources: money, time, energy levels, etc.)
- Similar to the barriers in "Build Vision".

**IV. ENABLERS:**

**Concept of Establish the Need**





## V. CASE STUDIES/RESEARCH QUESTIONS

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## Transition to Lean Roadmap Background Materials

**CYCLE:** Entry/Re-Entry  
**PRIMARY ACTIVITY:** Adopt Lean Paradigm  
**MAJOR TASK:** Foster Lean Learning

### I. OVERVIEW and DISCUSSION:

- This is an area for learning by Enterprise Leader, Stakeholder Leaders and other Senior Managers.
- There may be a “chicken or egg first” question here: does a person typically learn about Lean first and then adopt it, or does he/she commit to Lean first (as a leap of faith) and then learn all about it? We need some how to be able to recognize that the learning process can be before or after recognition of the need.
- How do I make certain decisions about Leanness vs “regular” investment decisions?
- Must understand the costs of Lean and the rewards of Lean.
  - Is Leanness “free”, in the same way that quality is said to be free?
  - Quality is “free” until you reach the point of no return.
- Requires the leaders to own and not pass off their responsibility to lower levels.
- How does Lean fit in the whole enterprise structure?

### II. TENSIONS:

Answer the question

list the Tensions

<p><b>Why: “Why Foster Lean Learning?”</b></p> <ul style="list-style-type: none"> <li>• Lean thinking must be <u>learned</u>; mass production thinking must be <u>unlearned</u>.</li> </ul>	<ul style="list-style-type: none"> <li>• Lean does carry some negative connotations for the enterprise and these issues need to be addressed up front. (The dark side of Lean.)</li> </ul>
<p><b>What: “What does Foster Lean Learning entail?”</b></p> <ul style="list-style-type: none"> <li>• Extensive education of all key leaders.</li> </ul>	<ul style="list-style-type: none"> <li>• Understanding that this is a paradigm shift. It fundamentally change the way an enterprise acts and behaves (how it learns; how it organizes itself; how it changes/adapts to its environment).</li> <li>• Illustrate what those fundamental changes are.</li> <li>• Refer to previous box.</li> <li>• Understanding what "Lean" learning involves?</li> <li>• Understanding that learning individual pieces does not assure understanding the concept of "Lean", particularly at the Enterprise level</li> </ul>
<p><b>Who: “Who Fosters Lean Learning?”</b></p> <ul style="list-style-type: none"> <li>• Enterprise Leader has to initiate.</li> <li>• Who is the subject of "Lean learning"?</li> <li>• Lean learning subjects are the entire leadership team and not just the operations people.</li> <li>• Enterprise Leader and his/her direct staff. (Must it also include at this stage the change agents?)</li> </ul>	<ul style="list-style-type: none"> <li>• Experts can support/assist Lean learning by Senior Managers.</li> <li>• Need to create a mapping of various leadership characteristics of successful "Lean" managers.</li> <li>• Formation of a Lean transition team and inclusion of change agents</li> <li>• Identify, and embed a "Lean Enterprise" gene.</li> <li>• To what extent is "Lean learning" up the organization also necessary and how is it achieved?</li> </ul>
<p><b>How: “How to Foster Lean</b></p>	

<p><b>Learning?"</b></p> <ul style="list-style-type: none"> <li>• Plant visits to Lean sites; in-house education; attendance at Lean workshops and conferences; read-read, discuss-discuss.</li> <li>• Develop a framework to foster the Lean learning.</li> </ul>	<ul style="list-style-type: none"> <li>• Change agents should be minimum "black-belts" in Lean.</li> <li>• What are the incentives that need to be created at this level for fostering Lean learning? Incentives for enterprise as a whole as well as for individual managers involved.</li> <li>• Internalize Lean thinking through people/teams to learn, read, innovate and create an environment for Lean thinking.</li> <li>• It must be a primary not a secondary focus to happen.</li> <li>• Seek out your peers who have experience with Lean.</li> <li>• Should the transformation be explicit or implicit (i.e. heralded or brought in at night)?</li> <li>• Outside consultants and Lean experts can play a major role.</li> <li>• Comprehensive cohesive executive education plan needs to be mapped out. (What is the difference in syllabus for executive versus rest of the organization?)</li> <li>• Do we customize the "Lean" principles to the organization?</li> <li>• Are pilots a necessary implementation tool of how to foster Lean learning in this organization?</li> </ul>
<p><b>Where: "Where do we Foster Lean Learning?"</b></p> <ul style="list-style-type: none"> <li>• Do it localized or globally? Learn together or learn sequentially?</li> </ul>	<ul style="list-style-type: none"> <li>• Do you need to do some team building prior to engaging in Lean learning?</li> <li>• "Design shops", i.e. where group learning is fostered and creates a consensus on fundamental change, understanding and a shared vision, e.g. personality matching.</li> <li>• Must there be a foundation first established to make Lean learning most effective?</li> </ul>
<p><b>When: "When to Foster Lean Learning?"</b></p> <ul style="list-style-type: none"> <li>• At the beginning and continuing indefinitely.</li> </ul>	<ul style="list-style-type: none"> <li>• Should the learning at this level be structured in stages (should the management team expect to learn with the organization as they "proceed", should it be subjective or objective).</li> <li>• How will you structure a long term as well as short-term syllabus (e.g. 3 months vs 5 years of learning)?</li> <li>• Can we structure hands on learning experiences for the executives/teams? (Is a hands-on, in reality, a must for the impact which is necessary?)</li> </ul>

### III. BARRIERS:

- Traditional mindset is a barrier.
- Mass production thinking.
- Belief that they understand "Lean" but that is not the case.
- Tendency to view "Lean" as being applicable only to production operations.
- Natural argument of "don't have time" ("to do it right the first time!")
- Understanding the idea of multiple sessions/time consuming procedure.
- Time lag of return within the organization.
- Existing "flavor of the month" experiences and ongoing initiatives.
- The team in place may be incapable of the learning transformation.
- Managers who will feel threatened.
- "Silo" mentality.

- People may not like to acknowledge not knowing/understanding the subject.
- Going through the motions for political purposes. Doing nothing is seen to be passive so people only buy time.

#### **IV. ENABLERS:**

- People inherently like to learn and to be knowledgeable.
- People like to be perceived as being progressive.
- Install incentives to reward learning, e.g. salary raises for learning certain skills.
- Note to Enterprise Leader: lead by example.
- Making the learning experience fun.
- Relate the outcome of learning to address the threat perceived.
- Apply the learning to a key issue/problem.
- Lean learning to get positive feedback (need to design a learning process).

#### **V. CASE STUDIES/RESEARCH:**

- How did John Deere go through teaching the organization about benefits and principles of Lean?
- How did Chrysler and Ford get there and GM not? (Look at who failed and why.)
- Will the Chrysler/Daimler merger lead to infusion of Lean into Daimler-Benz or stall Chrysler's progress?
- "Lean" has not been defined in the LEM in terms of ROA.
- How are we going to take a position on what is the basic constitution of Lean learning?
- Central core of knowledge that is required to become Lean.
- What is learning in a Lean fashion?
- Idea on funding the LEM to tie up with other sources of "Lean" knowledge and validating their research (e.g. Univ. of Kentucky).
- Establish a curriculum of Executive Education of "Lean" organized by MIT/LAI. Pilot that in Phase-III as a service to the consortium.
- How does leader's style and vision of role affect the success of Lean implementation?
- Conceive some way to utilize simulations and other methods to help Sr. Managers understand the Enterprise as a dynamic system.
- Provide robust and simple evidence of the benefits of "Lean", e.g. , success stories.
- It would be lovely to have a "flight simulator" for teaching Lean principles and practices.
- How can we get access to existing simulation techniques such as "Helicopter" games, e.g. games allowing varying assumptions and strategies? Games/simulation on enterprise level. Allow for alternative views.
- "Lean" Laboratory idea.
- Simulation might be the key to articulate the "Lean" learning. Might be through the "Lean" lab or some other method.
- What should the syllabus be for a "Lean" enterprise curriculum?
- How does an organization deal with the implementation of Lean relative to existing initiatives?

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## **Transition to Lean Roadmap Background Materials**

**CYCLE:** Entry/Re-Entry  
**PRIMARY ACTIVITY:** Adopt Lean Paradigm  
**MAJOR TASK:** Make the Commitment

### **I. OVERVIEW and DISCUSSION:**

**The challenge facing the Enterprise Leader is how to transform the thinking, behavior and attitude of every person in the organization toward Lean principles and practices. Given the enormity of this effort, it is hard to imagine it being successful without it becoming an issue of passion for the Enterprise Leader.**

- There is a compelling argument, but no definitive research, that conversion to Lean requires "whole hog" approach; should not be implemented selectively. Yet, some leaders will want to start with a pilot program.
- Commitment must be personalized and must be sustained. It is an irrevocable decision.
- The enterprise leadership group should recognize that significant resources will be required.
- Does making the commitment imply 'burning the bridges'?
- Is there any metric to knowing that a manager is committed? What is a measure of knowing that a person has bought-in to the decision? (Some may understand the concept but are unwilling to fully commit.)
  - One indicator is that Lean is a subject of discussion at every venue for the Enterprise Leader and Stakeholder Leaders thereafter.
  - Success or failure of the division's goals rests on the success of the commitment.
  - Whether the corporate strategic plan explicitly includes the Lean transition.
  - Is this a part of incentive/comp or tied to management by objectives?
  - What is the evidence of a commitment? Should it be advertised or made visible? What would various levels of the organization say in regards to the degree of a manager's commitment, given what is happening in that manager's area of responsibility?
  - You have put the anticipated savings into next year's budget.
  - You have included anticipated savings in your pricing.
- The Enterprise Leader must make the commitment happen before asking Senior Managers to buy-in; it is the prerequisite.
- The degree and reality of a leader's commitment is the driver of the degree and reality of his direct reports' commitment. (The EL may want to test the reality of his/her commitment by assessing the perception of this commitment by each Senior Manager.)
- In making the commitment before adopting the Lean paradigm, you need to know if your team will follow through with the decision to go Lean. If not, then there may need to be changes in the team.

• **TENSIONS:**

Answer the question	list the Tensions
<p><b>Why: "Why Make the Commitment?"</b></p> <ul style="list-style-type: none"> <li>Without total commitment the Lean initiative will likely fail and the company may be worse off than before.</li> </ul>	<ul style="list-style-type: none"> <li>Provide some evidence that this cannot be half-hearted.</li> <li>How does the concept of pilot introduction projects support or conflict with this concept of total commitment?</li> <li>Does total commitment translate into frontal, all encompassing radical change toward Lean?</li> <li>Because half the cure may be worse than none at all.</li> </ul>
<p><b>What: "What does Make the Commitment mean?"</b></p> <ul style="list-style-type: none"> <li>Cross the point of no return; burn mass production mental bridges behind you; prepare to enter a new world.</li> </ul>	<ul style="list-style-type: none"> <li>No pain, no gain.</li> <li>NOTE: (indicators of commitment in the discussion area.)</li> <li>Not for the faint of heart.</li> <li>From above: What the commitment means is that there is something at risk, so it is embedded in your MBO's, message and its strands are running through the important aspects of your business.</li> <li>One metric of the level of commitment is the extent to which Lean practices have been adopted in or throughout the Enterprise.</li> <li>How do you change a tire on a moving car?</li> <li>What does "adopting Lean" mean? If it is a transformation in the organization in behaviors, knowledge, and commitment then it can be successful. It is not simply the organization's actions. From here the process is ongoing and continuous.</li> </ul>
<p><b>Who "Who Makes the Commitment?"</b></p> <ul style="list-style-type: none"> <li>It has to be the Enterprise Leader.</li> </ul>	<ul style="list-style-type: none"> <li>The core message is the singular and sustained involvement expected of the Enterprise Leader and Stakeholder Leaders.</li> <li>Does the Enterprise Leader need his/her boss's buy-in to make the commitment? Considerations?</li> </ul>
<p><b>How: "How to Make the Commitment?"</b></p> <ul style="list-style-type: none"> <li>Acquire deep understanding of Lean paradigm; become logically convinced that Lean is superior to all other known approaches. Accept that the risk/reward is better for Lean.</li> </ul>	<ul style="list-style-type: none"> <li>It addresses the question of can it be commitment if it is only internal? Must it need an external position to be valid?</li> <li>Lean is not religion; Lean is real. Leap of faith is too much of leaping over a bridge; seems to be unrealistic. Objectives must be realistic, but goals should stretch the organization.</li> <li>Better if it can be demonstrated that the commitment you make will result in no harm done, that it only benefits the organization.</li> </ul>
<p><b>Where: "Where is the Commitment Made?"</b></p> <ul style="list-style-type: none"> <li>It is a mental and organizational commitment – a new mental model for the organization.</li> </ul>	<ul style="list-style-type: none"> <li>It's in the mind, in the heart and in the gut.</li> </ul>

<p><b>When: "When to Make the Commitment?"</b></p> <ul style="list-style-type: none"> <li>Whenever the Enterprise Leader, Stakeholder Leaders and senior managers are mentally prepared to cross the river of no return.</li> </ul>	<ul style="list-style-type: none"> <li>There needs to be a discussion about whether there is a leadership style issue associated with making the commitment singularly or by consensus.</li> <li>What to do when there is nothing to gain or lose by making this decision.</li> <li>Use the mechanism of feedback to gain your buy-in.</li> </ul>
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**III. BARRIERS:**

- Making the commitment to Lean may be difficult for the Enterprise Leader to accomplish due to the possible image of his/her being behind the times and not being uniquely creative.
- Fear of failure; fear of inadequacy.
- Potential lack of support from higher levels.
- Potential lack of support from senior staff.
- “If I can’t get this done in 3-4 years then why should I attempt it?”
- Competition for resources and attention.
- “If I just wait long enough, I may catch the next wave and it could be better than Lean.”
- Advocacy vs. Contribution; The TTL team is providing a tool for an organization to transition to Lean. In our review, we need to examine to what extent we have created an advocacy for Lean implementation vs. an implementation of Lean.

**IV. ENABLERS:**

- Evidence of others’ successes.
- Networking with other enterprise leaders who have been successful.
- No alternatives.
- Shadow of the Guillotine.
- Forcing functions: Globalization along with unrelenting customer demands for better cheaper faster things.
- Natural desire to be successful.
- Clear vision of Lean benefits.

**V. CASE STUDIES/RESEARCH:**

- Jack Welch's commitment to change GE
- Chrysler commitment
- John Deere



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## Transition to Lean Roadmap Background Materials

**CYCLE:** Entry/Re-Entry  
**PRIMARY ACTIVITY:** Adopt Lean Paradigm  
**MAJOR TASK:** Obtain Senior Management Buy-In

### I. OVERVIEW and DISCUSSION:

- What is the leadership buying into, the comprehensive approach or the step-wise approach? (Refer to “Make the Commitment”, which stated that Lean should not be implemented selectively.)
- Full buy-in of all Senior Managers and Stakeholder Leaders is mandatory.
- Senior leaders set the tone for the entire organization as it moves forward in its Lean transformation.
- Leaps of faith may be required at certain times. (But remember, Lean is not a religion; it is comprehensible.)
- Describe the behavior of a senior manager that has bought into Lean that is different from their previous behavior. How do they behave differently and what are the different signs?
- Can we describe some of the behavioral signs of buy-in?
- What would you look for in a Senior Manager?
- Typical way for a leadership buy-in, in time and metrics of implementation. Lean material suggests that we not tie wages to Lean implementation?
- For senior managers, successful implementation of Lean initiatives should be part of their incentive compensation plan.
- Survey senior executives?
  - Why is incentive pay ok for VP but not for a shop floor person?
  - Whether it is good, bad, or ok?
- Measuring and pay studies have been done.
- A danger in organizations is not having an Enterprise view.
- Managers who understand the concepts of Lean but are unable or unwilling to make a full commitment must be replaced.
  - This is the decision point of who stays and who goes.
  - This is the step where the Womack book states to move people out of the way.
  - If there is no change in Senior Mgmt, is that a signal that there is no change in the organization?
  - It’s possible that there is no change and it is a question to be asked.
- The challenge could be made more directive. If the organization is going to be Lean, then the attributes of key people will be different from those who are not successful. Can you convince yourself that your current people have the set of attributes needed to handle the new jobs? Might require new talents added from outside.
- Take one level down and highlight whether the elements are the same or different ones.
- What is needed is a team of complementary players?

- Characteristics of teams as opposed to individuals. Balance of a team should be taken into consideration.
- Issue of clarifying roles versus attributes. Boston Celtics have always fielded a team of complementary players.
- Transactional versus transformational leadership. Multiple dimensions to this. Someone who can carry out a vision is as important as someone who can create it.
- People's assessment of Lean is very short sighted and shallow; they often take some action and state that they are Lean. Extreme transformational behavior of what is fundamental to the company. Requires stepping up and cannot be done through minimal time being spent.
- Leadership needs to be committed and strong hearted.
- Value creation in relationship to "Lean" has to be seen and "Lean" itself might be one way of creating value. The enterprise leader thinks only about a part of what he/she is responsible for. The whole of Toyota should be studied. It is a vessel of philosophies, unifying principles and enterprise principles.
- There is a danger that Lean becomes a TQM and loses focus.
- The concept of "Lean" might be getting stretched too far and may not be able to cover everything.
- Part of Lean is understanding core competencies and how they are linked to become core capabilities. It will help you understand how to create value.
- Describe a company focused on value creation and bringing value to the market place.
- Is it important that there exists Senior Management buy-in or that the organization sees the buy-in?
- Communicating and demonstrating the buy-in.
- The half-life phenomenon: People will start off the initiative gung-ho but eventually will die down and need to be recharged prior to the slowdown. How often does this process need attention? Is it a one time event or cyclical? What are the enablers needed to recharge the organization?
- The initiative needs to outlive the tenure of the Senior Management.
- How do you deal with the infusion of new blood in a transition that has already been undertaken?
- What are the signals of lagging commitment or danger signs to the buy-in?

## II. TENSIONS:

Answer the question

list the Tensions

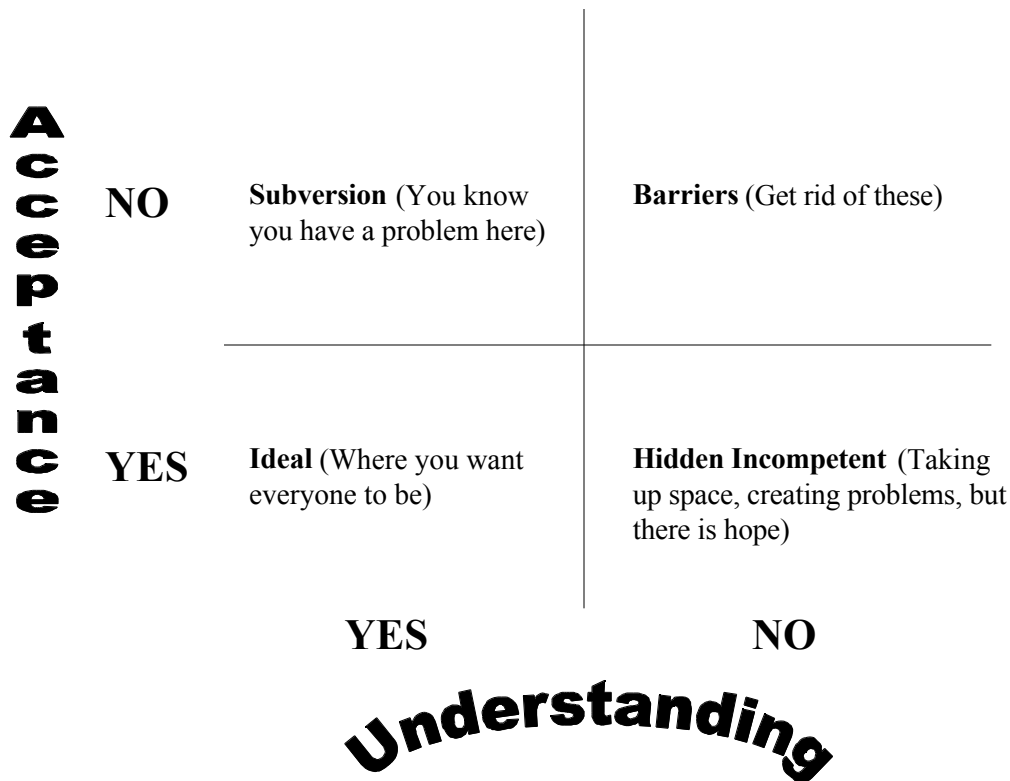
<b>Why: "Why Obtain Senior Management</b>	
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<p><b>Buy-In?”</b></p> <ul style="list-style-type: none"> <li>• The success of the Lean transition depends critically upon full buy-in of Senior Managers.</li> <li>• They are the key link between the Enterprise Leadership and the workforce.</li> </ul>	<ul style="list-style-type: none"> <li>• Is adherence without belief acceptable?</li> <li>• How does this affect flow down of the vision to the organization?</li> </ul>
<p><b>What: “What is Senior Management Buy-In?”</b></p> <ul style="list-style-type: none"> <li>• Buy-in involves acquiring an understanding of Lean and an acceptance of the Lean paradigm as the best way forward.</li> <li>• For Senior Managers, buy-in involves the above plus a willingness and eagerness to exercise the necessary leadership to assure a successful implementation.</li> </ul>	<ul style="list-style-type: none"> <li>• How are you going to know if your Senior Managers are truly bought in?</li> <li>• Are they bought in to full transformational change or just couple of practices?</li> <li>• Understanding that the Lean transformation impacts the entire Enterprise, not just the factory floor.</li> <li>• At this stage, is the commitment that is sought limited to : commitment to be open to the opportunities that Lean ma bring?</li> <li>• The team needs to be in an open type of framework where each member will be able to help out others in the implementation efforts.</li> </ul>
<p><b>Who: “Who obtains Senior Management Buy-In?”</b></p> <ul style="list-style-type: none"> <li>• The Enterprise Leader must obtain this buy-in and an unconstrained commitment from all Senior Managers and Stakeholder Leaders.</li> </ul>	<ul style="list-style-type: none"> <li>• Are Senior Managers only direct reports?</li> <li>• How far down in an organization does Senior Management go?</li> <li>• The Enterprise Leader needs to determine whose absolute commitment he needs in order to have management buy-in.</li> <li>• There is an inference that Senior Management has an allegiance to the Enterprise Leader and maybe they should have an allegiance to the organization instead.</li> <li>• What are some of the ways in which an Enterprise Leader can get the commitment to the organization instead of just to him/her self as an individual?</li> <li>• Is union representation a part of Sr. Leadership?</li> </ul>
<p><b>How: “How to Obtain Senior Management Buy-In?”</b></p> <ul style="list-style-type: none"> <li>• By acquiring deep understanding of Lean and becoming convinced that implementing Lean represents the company’s best chance of attaining and/or sustaining the desired level of competitiveness.</li> <li>• Showing the association of the transformation to company survival, growth and competitiveness.</li> </ul>	<ul style="list-style-type: none"> <li>• Is it necessary to burn bridges to be successful?</li> <li>• Even if you are willing to burn bridges do you burn them the first day? There is a need to keep the organization going during the transformational process.</li> <li>• Is there a period of adjustment? How do you allow Senior Management to internalize the commitment?</li> <li>• Is an experiential event a prerequisite? (approach of the Sensei)</li> <li>• Should financial incentives be used to encourage buy-in? <ul style="list-style-type: none"> <li>• Should incentive compensation be employed?</li> <li>• Stock options?</li> <li>• Job security or survival?</li> </ul> </li> <li>• Does the general acceptance of Lean over time diminish the need for shock tactic introductions?</li> </ul>

<p><b>Where: “Where to Obtain Senior Management Buy-In?”</b></p> <ul style="list-style-type: none"> <li>At the Enterprise level.</li> </ul>	<ul style="list-style-type: none"> <li>Is this buy-in only internal? What about critical customer and supplier management?</li> <li>Is there a correlation between the extent of implementation and buy-in?</li> <li>Are there different levels of buy-in required at different times during the transformation?</li> </ul>
<p><b>When: “When to Obtain Senior Management Buy-In?”</b></p> <ul style="list-style-type: none"> <li>Immediately following the formal act of making the commitment.</li> </ul>	<ul style="list-style-type: none"> <li>Depends on the Enterprise Leader’s management style.</li> </ul>

**III. BARRIERS:**

- Difficulty of perceiving a total complex organization in the Lean context.
- Lingering doubts and concerns.
- Scarcity of abundant success stories, particularly in the aerospace industry.
- Legacy of prior initiative failures.
- Turf protection, silo mentality.
- Some Sr. Management will question the sincerity of the Enterprise Leader and his continuing commitment.
- People who just don’t get it.
- Understanding without acceptance; acceptance without understanding



**Potential exercise:** Have Enterprise Leader assess his/her Senior Managers and Stakeholder Leaders among these dimensions.

#### **IV. ENABLERS:**

- Existence of a crisis.
- The recognition of the overall transition to the new paradigm.
- The pressure from the customer.
- Assistance from prime customers.
- Correlation of individual success with initiative success.
- Analogous success stories.
- Desire to continuously improve.
- Alignment of reward structure to the outcome of the initiative.
- Viewed as fair.
- Evidence that the transformation will improve corporate performance.
- Continuing Education and Training (all kinds).
- Peer endorsement.

#### **V. CASE STUDIES/RESEARCH:**

- Need to develop a table on attributes of Lean managers vs mass production managers leaders.
- What are effective ways of obtaining/assessing Sr. Management Leadership buy-in?
- Is the shock approach the only successful approach to change? Or are there any examples of companies using a 'gentler' Lean thinking' approach in a Lean transformation?
- Is this fleshing out a complete set of levels of use to the Enterprise Leader and Stakeholder Leaders?

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**CYCLE:**

*Long Term*

**PRIMARY ACTIVITY:**

*Focus on Value Stream*

**MAJOR TASKS:**

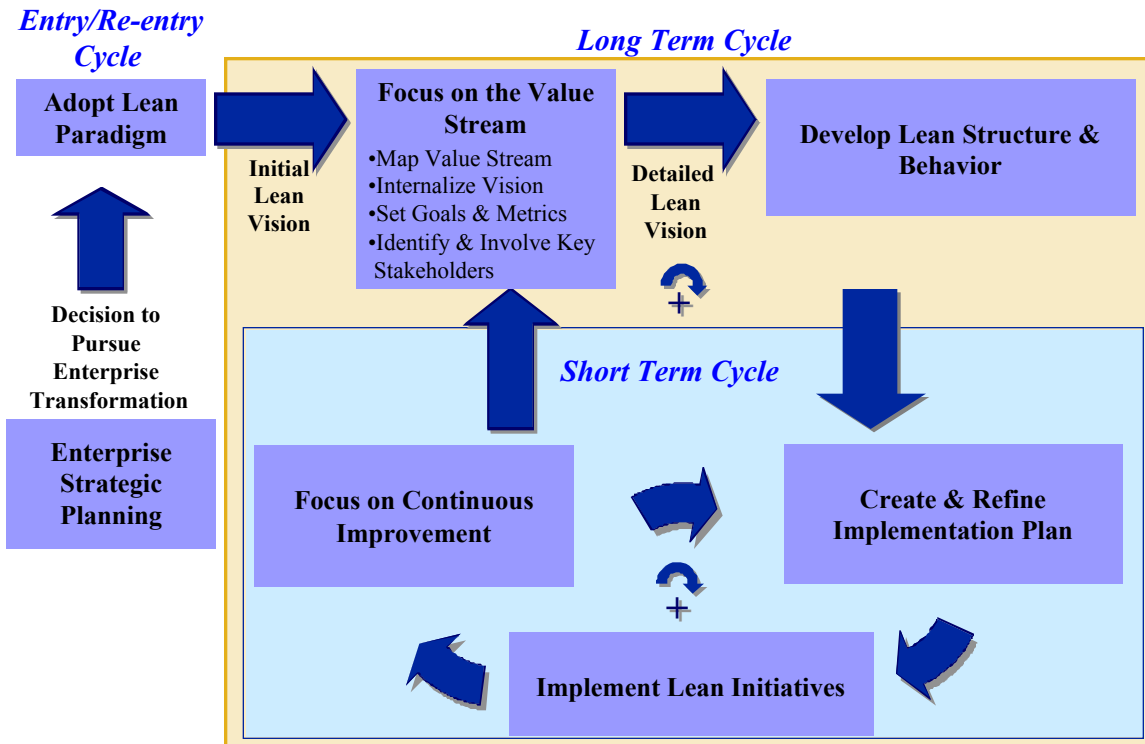
- *Map Value Stream*
- *Internalize Vision*
- *Set Goals and Metrics*
- *Identify and Involve Key Stakeholders*





**Figure 2**

## Enterprise Level Roadmap Major Tasks within “FOCUS ON VALUE STREAM”



### FOCUS ON THE VALUE STREAM

A primary concept of Lean thinking is that all actions and resources of a firm should be focused on *creating value for its customers*. Any action or resource expenditure that cannot be associated with this goal is regarded as *waste* and should be eliminated.

It is helpful to visualize customers “pulling” value from the company, resulting in cascaded pulling actions back upstream across all Enterprise functions: product design, marketing, business systems, accounting, information/communications systems, human resource management, and so on. The pulling action naturally extends beyond the Enterprise to suppliers and other external agencies.

The *vision* of the company operating and behaving in this manner must be created and communicated across the Enterprise and to important external constituents.

Enterprise goals and metrics should also be expressed in terms of value added, thereby better defining for the Enterprise how to capture the customer’s perception of value.

Lean transformation initiatives will have a significant impact on all stakeholders. At a minimum, consideration must be made for: customers, employees, union (if any), corporate entity, management and supervision at all levels, suppliers, partners, stockholders, community, and regulators.

In a complex Enterprise, it is useful to visualize and consider the balance of the primary value streams that flow to all of the primary “stakeholders”. It is important to optimize across these value streams by taking a global systems view.

## **MAJOR TASKS WITHIN** **“FOCUS ON THE VALUE STREAM”**

### **Map Value Stream**

- Elicit definition of *value* from the end customer.
- Move from customer inward to Enterprise core processes; continue externally to suppliers.
- Realize that the end-to-end chain of actions, resources, and decisions required to deliver defined value is the customer's *value stream*.
- Optimize the value stream by eliminating non-value-adding actions (waste); continuous improvement efforts never end.
- Realize that the Enterprise must optimize across multiple stakeholder value streams (customer, employees, shareholders, and suppliers).

### **Internalize the Vision**

- Create a characterization of how *customers pull value from the value stream*; communicate this vision across the Enterprise.
- Organize the internal value stream such that downstream units “pull” value from preceding upstream units; cascade the process backwards, extending to the supply chain.
- Focus upon continuous improvement process to achieve ongoing waste elimination.
- Provide extensive education, training, and coaching.

### **Set Goals and Metrics**

- Derive goals & metrics directly from identified strategic needs.
- Determine baseline measures of how the Enterprise brings value to the customer.
- From the Lean vision, specify target measures of anticipated gains based upon adoption of Lean principles and practices.
- Tie goals and metrics to improvements in value-adding activities and elimination of waste; these are the key Enterprise-level measures of progress in transitioning to Lean.

### **Identify and Involve Key Stakeholders**

- Recognize the key stakeholders: customers, employees, stockholders, union (if any), management, suppliers, and community.
- Give special consideration to the workforce in implementing Lean initiatives.
- Make stakeholders who are potentially affected by Lean initiatives especially aware and involved in their development.

## **Transition to Lean Roadmap Background Materials**

**CYCLE:** Long Term  
**PRIMARY ACTIVITY:** Focus on Value Stream  
**MAJOR TASK:** Map Value Stream

### **I. OVERVIEW and DISCUSSION:**

#### “Textbook” view of mapping value stream:

- For each product family obtain from customer a definition of delivered value (product and service).
- Work back through the value stream stage by stage, defining actions required, resources utilized, information required, decisions required.
- Categorize each action:
  - adds value
  - does not add value but is necessary
  - waste
- Eliminate waste and minimize non value-adding actions.
- Through continuous improvement efforts, continue indefinitely to eliminate waste and reduce non value-adding actions.
- Although most value stream mapping (VSM) exercises to date have been conducted at the operations level, some writers mention that the same process should be followed for all enterprise functions: product design, marketing, human resource management, accounting, business systems, information/communication systems, etc.

#### Considerations of Value Stream Mapping at Enterprise Level:

- It is not clear that anyone has actually performed value stream mapping at the Enterprise level.
- A key question is, what level of detail and complexity should be attempted at the Enterprise level? (May be able to learn from Allied Signal exercise, which mapped processes and identified value-added and non value-added steps.)
- At Enterprise level, perhaps we should map bundled products and services (product/service families), rather than individual products/services.
- Another possible approach: perform mapping at a high aggregate level. The high level mapping might help identify key issues and areas, and prioritize where to focus. But, too high a mapping might not get down to a level where action can be taken. At the highest level, nothing is considered waste because it is too high. At what level do we need to get down to, such that a block of activity could be eliminated? Blocks to be eliminated require driving down.

#### General questions/comments regarding value stream mapping:

- What do we want the value stream map to do for us at the Enterprise level?
- How would one define value other than by starting with the delivered product/service?
- Who coined the term “value stream”? (Michael Porter coined the term “value chain”.)
- Economic and non-economic context of value stream analysis is a dilemma. How can you define value when the customer himself does not have a crisp definition or concept of what value is to him? (Boeing analyzes the fundamental needs of its customers, the airline industry, before deciding its own strategic directions; thus, Boeing was implicitly defining its customer’s value.)
- How does “re-engineering” relate to value stream analysis? What tools do those re-engineering people use? Largely, re-engineering was being used to make unnecessary processes efficient; or to develop new processes, many of which are non value-adding.
- Most case studies do not show the actual value stream maps. In Lean Thinking, the statement is made that in most implementations of Lean the value stream was not mapped, but that it should be done. The case studies in Becoming Lean also do not show value stream mapping, but it is mentioned in an implicit way.
- Where do the LEM OAPs show up in the value stream map? (e.g., Seamless Information Flow. What works on the shop floor may not work at the Enterprise level.)
- What tools are available for mapping value stream?
  - IE 101: IE/OR community: numerous process oriented models
  - Input/output analysis
  - Fish bone diagram with product design at beginning and delivered product at the end; every action/activity on the diagram is challenged - is this value-added or not?

#### Orthogonal view of value stream:

- All the writings on value stream mapping have focused on value from the customer’s view.
- Traditionally, companies have focused on maximizing value to themselves.
- It is perhaps useful to consider that there are two value streams operating concurrently: the customer’s value stream and the Enterprise’s value stream. The two are orthogonal.
- From the customer’s view, there may be activities and steps within the Enterprise that he does not care about; they do not flow in his value stream but in the value stream of the Enterprise. If the Enterprise has only optimized its own value stream, the customer’s value stream will likely be sub-optimized.
- It is important to optimize across both value streams. Both deserve equal attention and one cannot be seen as non value-added. Tradeoffs may be required in order to achieve joint optimization of the two value streams.
- From the customer’s view, value is flowing perpendicular to the organizational structure. Eliminating silos and integrating across product streams is one way of optimizing across the two value streams.

- As an Enterprise Leader, we must change from only our company's view and also look at the customer's view; mapping the process to get what the customer wants, while still being cognizant of the company's value stream.
- Do we map by product family or not? Customer may worry about product i,j,k. For the company to deliver the best value to all its customers, the value stream has to be optimized. By using a common process for product i,j,k, the overall (Enterprise) optimization is achieved, even though using a unique process for each product separately may make one of the products cheaper.
- Minimizing a process for a product family is a value addition. Value stream analysis from different perspectives will give different steps/outputs. Only by looking through the eyes of a customer can one arrive at the overall process where there is dispersion of cost diversity.

Challenge the value stream mapping concept:

- Is there any evidence that Lean companies actually perform detailed value stream mapping in the manner recommended in the literature?
- Clearly, successful companies have gotten rid of unnecessary activities (waste). But it is not clear that this was achieved via value stream mapping.
- The TTL Team must develop an in-depth understanding of value stream mapping.
- Can we develop a meaningful tutorial? Are there methodologies and tools that can be taught?

Other discussion:

- In order to set the framework for the rest of the organization, the value stream analysis has to be linked starting at the top. If this framework is not established, people at all levels will be doing "value added steps, but by their own definition.
- How do you organize the Enterprise to adopt the value stream awareness? This is essential because, wherever you are, you are supposed to be aware of the end result of your efforts: how many are value-added, how many of those activities are non value-added, and then improve and/or eliminate each of those activities. Realize that there is a relationship between the specificity of value stream mapping and the detail of the process being taken. Specificity of the mapping process is much greater than how do I develop strategy.
- LAI Product Development Research Team is doing value stream mapping in Phase-III.
- Multiple Product/Multiple Customer; Single-Product/Multiple Customer; Single Product/Single Customer.
- Many executives have never given thought about the linkage of the value stream and understanding where key issues lie. Tweaking on the high structure level makes a big impact.
- Maybe you only need to go and do it rather than perform simulations, or other exercises.
- Understanding the enterprise to a level that you can understand and know the key stakeholders.
- How does a CEO or Senior Manager define the value they themselves give to the customer?

- How does he examine which of his activities is adding value or not ?
- Does the person understand the customer's value stream ?
- People are already using steps that are part of value stream mapping. What is a technique, which is adding value from the Enterprise level?
- The customer pulling value from a "value stream".
- Value is a shadow to the costs. Multi-attribute models.
- What is the minimum effort it takes ?
- Does VSM seek to optimize beyond that which the customer values? What is a Lean organization?

## II. TENSIONS:

Answer the question

list the Tensions

<p><b>Why: "Why Map the Value Stream?"</b></p> <ul style="list-style-type: none"> <li>• In order to determine the minimal set of resources (of all types) required to deliver value to the customer.</li> <li>• Helps to figure out where you want to focus.</li> </ul>	<ul style="list-style-type: none"> <li>• There is going to be a perception that this is another paper exercise done before.</li> <li>• Reality is that waste cannot be eliminated without first being exposed.</li> <li>• Reducing the resources as highlighted might not create customer value. To maximize customer's utility function you might have to minimize cost.</li> </ul>
<p><b>What: "What is the Value Stream"?</b></p> <ul style="list-style-type: none"> <li>• Explicit stage-by-stage mapping of the conversion of resources into delivered customer value.</li> <li>• It might have to be limited at the Enterprise level to developing a high level framework for value stream mapping. It may not lead to removal of waste but may prioritize which areas to focus on.</li> </ul>	<ul style="list-style-type: none"> <li>• It is necessary to focus on the customer value stream and enterprise value stream and they might be orthogonal. E.g. Strategic Planning.</li> <li>• The customer may not care if the company lives or not. Debatable! Is it value to the customer that the company survives? (Depends on product.)</li> <li>• Permanence of structures is becoming very shaky. Depends on the switching cost to customers, e.g. Coke vs. F-22.</li> <li>• Customer might value the existence of a company.</li> <li>• Are the value streams orthogonal or parallel?</li> <li>• What is an objective measure of value added?</li> </ul>
<p><b>Who: "Who Maps the Value Stream?"</b></p> <ul style="list-style-type: none"> <li>• The Integrated Product/Process Development teams. The ippd is the customer of the orthogonal value stream in the value stream of the enterprise. Value stream flow to my customer can be given by allocating resources to internal customers.</li> <li>• Who is involved in value stream mapping ?</li> <li>• Management</li> <li>• Workforce, union</li> <li>• External experts</li> <li>• Combination</li> </ul>	<ul style="list-style-type: none"> <li>• How do you get people to get engaged into the process if they are concerned that their activity has no value?</li> <li>• Everybody believes that what they do is essential. Top management develops that supports an individual thinking on same lines.</li> <li>• Trade off of the value of being involved in doing it versus the time/expertise required to do a value stream analysis.</li> <li>• No expertise exists in senior leadership to develop the value stream.</li> </ul>

<p><b>How: “How is the Value Stream Mapped?”</b></p> <ul style="list-style-type: none"> <li>• Map flows across several dimensions; physical processes, mgmt systems, and human resources.</li> </ul>	<ul style="list-style-type: none"> <li>• Providing the direction on the detail level is going to be difficult. (Maybe this is a trap! i.e., it may be a difficult thing to do, and therefore it might only be talked of in the form of : roadmap methodology or attitude behavior rather than doing the mapping). Maybe VSM is not a process but a perspective. Relates to “What?”</li> <li>• What criteria should be chosen for the value stream mapping</li> <li>• What is the metric of how do you measure value?</li> </ul>
<p><b>Where: “Where does Value Stream Mapping occur?”</b></p> <ul style="list-style-type: none"> <li>• Beginning at customer site, work back through the entire enterprise, all the way back to and through the supply chain.</li> </ul>	<ul style="list-style-type: none"> <li>• The implementation of the process from asking questions to formal mapping exercises. Depending upon the linearity of the process being questioned</li> <li>• There is a probably not a one-size fits all answer.</li> </ul>
<p><b>When: “When to Map the Value Stream?”</b></p> <ul style="list-style-type: none"> <li>• This is the first action item of the formal launch of the Lean Transformation Initiative (LTI).</li> </ul>	<ul style="list-style-type: none"> <li>• It’s an iterative process: Questions need to be asked even if things change.</li> <li>• Multi-Level</li> <li>• How do you implement VSM before people learn to recognize value?</li> </ul>

### III. BARRIERS:

- Prior mapping processes have created a view of this being a futile activity.
- Difficulty in getting people to think this way.
- Who is going to want to acknowledge that their activity has no value?
- No one really seems to know what this is.
- Difficulty of measuring value-added.
- Traditional functional groups will feel threatened and resist.

### IV. ENABLERS:

- Involve some expertise that has no vested interest in outcomes.
- Make the process simple with clear objectives and payoff.
- Consider using a facilitator.

### V. CASE STUDIES/RESEARCH:

- Develop a case study with internal data.
- What does it mean to map the value stream at the Enterprise level?
- Does value stream mapping seek to optimize beyond that which the customer values?
- Is there any evidence that so called Lean companies actually performed value stream mapping?



- How do you organize the Enterprise to adopt value stream awareness?
- How does reengineering relate to value stream analysis?
- What tools are available/required to map the value stream?

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**LEM Links:**

OAP 1 (External): Nascate Industries



## **Transition to Lean Roadmap Background Materials**

**CYCLE:** Long Term  
**PRIMARY ACTIVITY:** Focus on the Value Stream  
**MAJOR TASK:** Internalize Vision

### **I. OVERVIEW and DISCUSSION:**

- The Transition to Lean process, and a convincing characterization of how the future company will look and behave, must be communicated to the entire organization.
- What does “minimize waste” mean in our organization that will enable us to work and behave differently in our job functions?
- Principles and theories need to be made concrete and they need to be internalized within the organization.
- What does internalization mean? It is the combination of information transferred including feedback loops.
- Have to go through the process of flow-down. How does manufacturing, product development and other Enterprise functions become Lean?
- Everywhere in the flow down process there has to be a check on whether the flow-down steps are in sequence or in parallel. Whether they are in lock step or not.
- Possible barriers: 1) everybody buys into the vision but not in their own division, 2) people may think the vision is too high level or too low level for them to implement.
- The issue of top-down and bottom-up transformation will impact how the vision is internalized.
- If a firm chooses to begin with pilot programs rather than a “whole-hog” approach, at what point in pilot implementation is it appropriate to move to total conversion? Mapping the value stream at the enterprise level may be the appropriate way to determine appropriate areas for pilot transitions.
- Part of the vision is the phasing of the transformation (prioritizing and scheduling).
- Internalizing the vision can establish the high level road map for the organization. What will it look like, how would it look and when will it achieve the characteristics of a Lean Enterprise as proposed by the Lean Aerospace Initiative?
- An important element is setting the high-level time lines for implementation.
- It is very important to do this because success of a pilot project can be determined through the support or lack of support it gets from the rest of the organization.

### **II. TENSIONS:**

Answer the question

list the Tensions

<p><b>Why: "Why do we need to Internalize Vision?"</b></p> <ul style="list-style-type: none"> <li>• People are willing to change when they can see and understand something worth changing to.</li> </ul>	<ul style="list-style-type: none"> <li>• Exception framework, concurrence that it is good for the company but will not fit my framework. It's good for everybody else but not for me.</li> <li>• Making sure that the need has been addressed at all of the layers that you are exposing to Lean.</li> </ul>
<p><b>What: "What is an Internalized Vision?"</b></p> <ul style="list-style-type: none"> <li>• A vividly portrayed 'story' describing the future company, including behavior as well as activity.</li> <li>• Includes the high level transformation map.</li> </ul>	<ul style="list-style-type: none"> <li>• It is unlikely that peoples' mental models will be aligned with the internal vision. Feedback routes need to be implemented here in order to balance the process.</li> <li>• How much are you going to allow the overriding vision to be changed in this iterative process? You can't satisfy everyone's needs; there is a balancing act involved to maintain satisfaction.</li> </ul>
<p><b>Who: "Who Internalizes the Vision?"</b></p> <ul style="list-style-type: none"> <li>• Led by Senior Managers, with technical assistance by consultants/experts on visioning and organizational story telling.</li> <li>• Should each level of the organization internalize the vision to reflect that level's role?</li> <li>• (Maybe want to change the answer to 'Why')</li> </ul>	<ul style="list-style-type: none"> <li>• What does each person in the organization have to do to help contribute to the vision?</li> <li>• Need to align each of the workforce's intentions as to what the enterprise will look like when it's Lean.</li> <li>• The Enterprise Leader should recognize success of the organization. In each of the areas the vision is internalized by education, training and mentoring of the work force.</li> </ul>
<p><b>How: "How to Internalize the Vision?"</b></p> <ul style="list-style-type: none"> <li>• Prepare extensive graphical portrayals, videos, story –lines, success stories, web sites, newsletters, executive led briefings.</li> <li>• Story lines "like Goldratt-type stories" – not as much of a novel. Short story examples.</li> <li>• Which iteration are you in, within the top level architecture?</li> </ul>	<ul style="list-style-type: none"> <li>• Some areas will get it faster than others; it is very hard to get it to be a smooth process.</li> <li>• Raising expectations that are a long way from the implementation. Time phasing of the implementation should be made clear, to avoid raising unrealistic expectations regarding those elements of the plan that are scheduled for later.</li> </ul>
<p><b>Where: "Where Internalize the Vision?"</b></p> <ul style="list-style-type: none"> <li>• Eventually, throughout the entire organization.</li> <li>• The "vision" should permeate the entire enterprise, independent of where implementation starts.</li> </ul>	<ul style="list-style-type: none"> <li>• If Lean is to be implemented in phases, choose an area of high visibility, high probability of success, and high payoff.</li> </ul>
<p><b>When: "When is the Vision Internalized?"</b></p> <ul style="list-style-type: none"> <li>• Should begin ASAP after commitment has been made; must be carefully orchestrated and staged so as to</li> </ul>	<ul style="list-style-type: none"> <li>• How and where do you deal with the different viewpoints of the vision? For example, the first vision</li> </ul>

<p>introduce concepts, principles, techniques in proper sequence.</p> <ul style="list-style-type: none"> <li>You don't have to tell everybody everything at once. Need to let the factory floor level see the benefits of Lean for themselves.</li> </ul>	<p>of Lean may be to reduce waste and the factory floor guy wonders if he is going to lose his job. Are there parts of the vision that you need to know immediately, and are there parts that you just learn over time?</p> <ul style="list-style-type: none"> <li>Is there a concern that there has to be a certain amount of the vision to be revealed immediately to get the truth on the table?</li> <li>In willingness to train and support, the position of the more the people know the more buy-in to the vision, then why is the vision not always communicated fully?</li> <li>It would be ideal to answer all of the questions up front and provide the caveat of gaining the help of the workforce to help shape the vision, with the objective of the common good of the company. This should be done as broadly and individually as possible from the get-go.</li> </ul>
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### III. BARRIERS:

- Employees' fear of change, fear of job loss.
- Mistrust, cynicism from past "movements" and broken promises.
- Resistance to taking on greater scope of responsibility.
- Prefer traditional way of organizing work.

### IV. ENABLERS

### V. CASE STUDIES/RESEARCH QUESTIONS:

- Company / employees contract is changing: what is the new meaning of loyalty?

### VI. REFERENCES/LINKAGES:

- Branscomb, Lewis and Kodama, Fumio, *Japanese Innovation Strategy: Technical Support for Business Visions*, (Lanham, MD: University Press of America, 1993).
- Kouzes, J.M., and Posner, B.Z., *The Leadership Challenge: How to Get Extraordinary Things Done in Organizations*, (San Francisco: Jossey-Bass, 1987).
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## **Transition to Lean Roadmap Background Materials**

**CYCLE:** Long Term  
**PRIMARY ACTIVITY:** Focus on the Value Stream  
**MAJOR TASK:** Set Goals and Metrics

### **I. OVERVIEW and DISCUSSION:**

- Goals and metrics at this level flow naturally from the prior processes of understanding how the enterprise currently brings value to the customer; and how it has internalized the vision of new and improved ways of bringing value to the customer by adopting Lean principles and practices. Therefore, the goals and metrics are measures of improvements in value-added that have been internally visualized.
- Capturing the goals and metrics is important in order to better define to the enterprise how to capture the customer's value.
- It is appropriate that the goals and metrics are seen in the customer's eyes.
- Need to focus on doing the right things to get the right metrics.
- Consider Balanced Scorecard as a means for providing balanced consideration to all key stakeholders.
- Goals and metrics should be aligned with business strategy as well.
- Meaningful measures for the outputs/results of each link in the value chain must be defined.
- Baseline values must be determined.
- Time-phased improvement targets must be mapped out; targets should stretch the organization but should be attainable.
- Measures across the enterprise should be rationalized such that they lead the organization to its aspiration level of performance, and then to ever-higher levels of performance through continuous improvement.
- Goals and metrics clearly would be more powerful if they were also aligned with corporate goals and objectives as well.



## II. TENSIONS:

Answer the question

list the Tensions

<p><b>Why: “Why Set Goals and Metrics?”</b></p> <ul style="list-style-type: none"> <li>You can’t manage what you can’t measure.</li> <li>You do it to demonstrate progress toward your objectives.</li> </ul>	<ul style="list-style-type: none"> <li>Finding goals and metrics that are a measure of a single variable is difficult.</li> <li>Most metrics are passive rather than active metrics – thus have limited applicability.</li> <li>Metrics should be used to guide action, not to record history</li> </ul>
<p><b>What: “What Goals and Metrics should be Set?”</b></p> <ul style="list-style-type: none"> <li>Must be consistent with and supportive of the long-term, strategic directions of the Enterprise.</li> <li>They should be closely tied to the added value of Lean implementation activities.</li> <li>They should strive to address all stakeholders’ concerns and interests.</li> </ul>	<ul style="list-style-type: none"> <li>The tendency is to have the trivial many as opposed to the important few.</li> <li>Watch out for creeping goals.</li> <li>Metrics need to be on-line and real time.</li> </ul>
<p><b>Who: “Who Sets Goals and Metrics at this level?”</b></p> <ul style="list-style-type: none"> <li>Enterprise Leader and Senior Managers.</li> <li>Goals and metrics must be fundamentally sound such that they transcend the current Enterprise Leader’s term in office.</li> </ul>	<ul style="list-style-type: none"> <li>In the corporate world, compensation is tied to goals and metrics that are short term based, and could be incompatible with the goals and horizons of the Lean transformation.</li> <li>Goals and metrics have to be aligned with incentive system.</li> <li>Want somebody out there who is setting challenging goals and trying to achieve them. They are setting their own self-measure; it takes a powerful leader to challenge his/herself with challenging goals.</li> <li>Who is the honest broker?</li> </ul>
<p><b>How: “How are Goals and Metrics Set?”</b></p> <ul style="list-style-type: none"> <li>See above, in terms of Balanced Scorecard along with alignment to value-added initiatives.</li> </ul>	<ul style="list-style-type: none"> <li>Maybe can provide guidance to sources of benchmarking data to help set aggressive goals and metric alternatives. For example, Industry Week data.</li> </ul>
<p><b>Where: “Where are Goals and Metrics Set?”</b></p> <ul style="list-style-type: none"> <li>At the Enterprise level and then flowed out across the Enterprise.</li> </ul>	<ul style="list-style-type: none"> <li>Stretch goals may be threatening to those at any level.</li> <li>Encourages thinking out of the box to convert threats into opportunities to achieve quantum leaps in performance.</li> </ul>
<p><b>When: “When are the Goals and Metrics Set?”</b></p> <ul style="list-style-type: none"> <li>After the Lean vision has been internalized.</li> </ul>	<ul style="list-style-type: none"> <li>Should the goals and metrics be allowed to change with the changing environment? Is that reinforcing or a negative attribute?</li> </ul>

## III. BARRIERS:

- Cadre of bean counters who have a huge organization and framework of traditional measures and reporting processes; they will crank out non-Lean data.
- Existing history or corporate culture having been exposed to meaningless exercises in the past.
- Identifying metrics that have a direct linkage to value-added activities is sometimes difficult.
- The accounting system may not lend itself to the metric.
- Measuring Lean activities with non-Lean processes.

#### **IV. ENABLERS:**

- Tying reward system to same goals and metrics provides alignment and leverage of focus.
- People like to know what the hurdle is and where the goal line is.
- Enterprise level visual controls.
- It provides the foundation for linkage of goals and metrics that flow down through the enterprise.

#### **V. CASE STUDIES/RESEARCH:**

- It would be valuable to provide examples of how goals and metrics can be linked to value to make this concept more concrete.
- How are “Goals and Metrics” linked to value within an organization?
- How can Lean be defined in the LEM in terms of Return on Assets (ROA)?

#### **VI. REFERENCES/LINKAGES:**

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- Tayntor, Christine B., “Partners in Excellence: Metrics and Productivity Programs,” *Information Systems Management*, Winter 1994, pp. 81-83.

#### **LEM Links:**

OAP 7 (LAI): “Percent of Supplier Shipments Received on Time by the Responding Customer Companies”

OAP 7 (LAI): “Percent On-Time Completion/Delivery”

OAP 10 (External): “Training Hours per Employee”

OAP 11 (LAI): “Percent of Direct Production Suppliers That Are Certified By Business Units”

OAP 11 (LAI): “Quality Information in Selected Airframe Part Fabrications”

OAP 11 (LAI): “Asia’s Best Practices”, 1998.

## **Transition to Lean Roadmap Background Materials**

**CYCLE:** Long Term  
**PRIMARY ACTIVITY:** Focus on the Value Stream  
**MAJOR TASK:** Identify and Involve Key Stakeholders

### **I. OVERVIEW and DISCUSSION:**

- Raise awareness to think about the constituencies affected by a Lean initiative that are not so obvious but need to be considered while putting a plan together. At a minimum we want to think about the following: employees, enterprise entity, management, corporate, union, suppliers, community, stockholders, regulators, customers, agencies.
- It would be good to develop a list of the pros and cons to each of these constituencies toward the initiation of a Lean activity. (The pros and cons could be barriers, enablers, tensions etc. Can take the tension matrix and address each of these constituencies vs. each stakeholder. Then can follow up with specific problems or solutions.)
- The end product is a plan for the engagement of each stakeholder group in a planned fashion.
- There will be some clear examples of companies that have done well at doing this: i.e., John Deere etc.
- How do you involve each stakeholder? This falls out of applying the matrix to each stakeholder.
- There is no cross talk among/across the stakeholders; therefore one of the messages here may be a call to address how to develop that networking of relationships. (The concept of multiple, orthogonal value streams may be an appropriate framework.)
- Can we create some examples of “he said, she said” type scenarios. For example, management thinks this, while the workforce given the same statement may think something else.
- There is a different value stream at the enterprise level: Need to recognize Company, Customer, and Society as having different value streams. We have orthogonality in three dimensions. (See discussion of orthogonality in “Map Value Stream” block.)
- What guidance can we give in those circumstances where a key stakeholder does not wish to participate? What do you do with rejection in this area?

### **II. TENSIONS:**

Answer the question	list the Tensions
<p><b>Why: "Why do we need to Identify and Involve Key Stakeholders?"</b></p> <ul style="list-style-type: none"> <li>Because they are implementers, or they represent either enablers or barriers to the process.</li> </ul>	<ul style="list-style-type: none"> <li>Every stakeholder group has something perceptively to lose by Lean implementation.</li> <li>Can you make everyone better off without making anyone worse off?</li> <li>What is the revealed objective of every one of the stakeholders? After this is determined, then can you make everyone better off without making anyone worse off.</li> </ul>
<p><b>What: "What is Key Stakeholder Involvement?"</b></p> <ul style="list-style-type: none"> <li>Informing, dialoging and rationalizing differences.</li> <li>Describing how the stakeholder is going to play.</li> </ul>	<ul style="list-style-type: none"> <li>Not all of the stakeholders want to play.</li> </ul>
<p><b>Who: "Who are the Key Stakeholders?"</b></p> <ul style="list-style-type: none"> <li>See discussion.</li> </ul>	<ul style="list-style-type: none"> <li>Tendency is to want to deny all of the stakeholders, because acknowledging them means we have to deal with them.</li> </ul>
<p><b>How: "How do you Identify and Involve Key Stakeholders?"</b></p> <ul style="list-style-type: none"> <li>Is this an outcome to be noted from the value stream process?</li> </ul>	<ul style="list-style-type: none"> <li>Do all stakeholders add value?</li> <li>How do I change stakeholder roles and involvement so they do add value? Implicit to this, there is value to safety to workforce.</li> </ul>
<p><b>Where: "Where are Key Stakeholders Identified and Involved?"</b></p> <ul style="list-style-type: none"> <li>At the Enterprise level and below.</li> <li>Where are the appropriate stakeholder connectors in the enterprise?</li> <li>At what levels in the organization does the enterprise leader make the first connections?</li> </ul>	<ul style="list-style-type: none"> <li>Picking the right level can be very tricky. If you go too low, may not support a 'buy-in' to the implementation effort.</li> <li>This has political implications.</li> </ul>
<p><b>When: "When are Key Stakeholders Identified and Involved?"</b></p> <ul style="list-style-type: none"> <li>Refer to "Where" section: Where and When are linked.</li> </ul>	

### III. BARRIERS:

- Starting attitude that no else is needed to implement.
- The initiative will take too much time.

- There is no need to study this; everybody knows what is important.
- Perception of loss of power, or admission of weakness or just weakness by itself.
- Lack of knowledge about Lean by the stakeholders.
- Lack of understanding of “connectivity” of the overall system.

#### **IV. ENABLERS:**

- Education and training of stakeholders as part of the Lean implementation process.
- Need a different kind of balanced scorecard to stakeholders to show the benefits of Lean to everyone.
- Sharing the total win-win matrix for all stakeholders can establish confidence in the fairness and potential for the activity. This will contribute to building cohesion and ‘oneness’ within the enterprise.

#### **V. CASE STUDIES/RESEARCH:**

- Are there any case studies involving customers, suppliers and the external community involved with a Lean transformation?

#### **VI. REFERENCES/LINKAGES:**

Birkner, Lawrence and Birkner, Ruth, K., “Managing Change-A Strategy,” *Occupational Hazards*, Dec, 1997, p. 55.

Hines, Peter, Nick Rich and Anne Esain, “Creating a Lean Supplier Network: A Distribution Industry Case,” Proceedings of the Logistics Research Network Conference, (Huddersfield, U.K.: University of Huddersfield, 1997).

Wiggenhorn, William, “Motorola U: When Training Becomes an Education,” *Harvard Business Review*, vol. 90, no.4, July/August 1990, pp. 71-83.

#### **LEM Links:**

OAP 2 (External): “Lockheed Martin Tactical Aircraft Systems – Ft. Worth, Texas: Best Practice: Supplier Relations,” 1998.

OAP 6 (LAI): “Percent of Total Dollar Value of Direct Production Materials Purchased By Responding Business Units Under Long Term Supplier Agreements, by Sector,” 1993.

OAP 6 (LAI): “Example of a Labor-Management Partnership,” 1996.

OAP 7 (LAI): “Percent of IPT’s with Customers as Full or Part Time Team Members,” 1996.

OAP 9 (LAI): “Customer Business Units That Regularly Help Improve The Manufacturing Processes and Technologies of Direct Production Suppliers,” 1994/1995.



**CYCLE:**

*Long Term*

**PRIMARY ACTIVITY:**

*Develop Lean Structure and Behavior*

**MAJOR TASKS:**

- *Organize for Lean Implementation*
- *Identify and Empower Change Agents*
- *Align Incentives*
- *Adapt Structure and Systems*

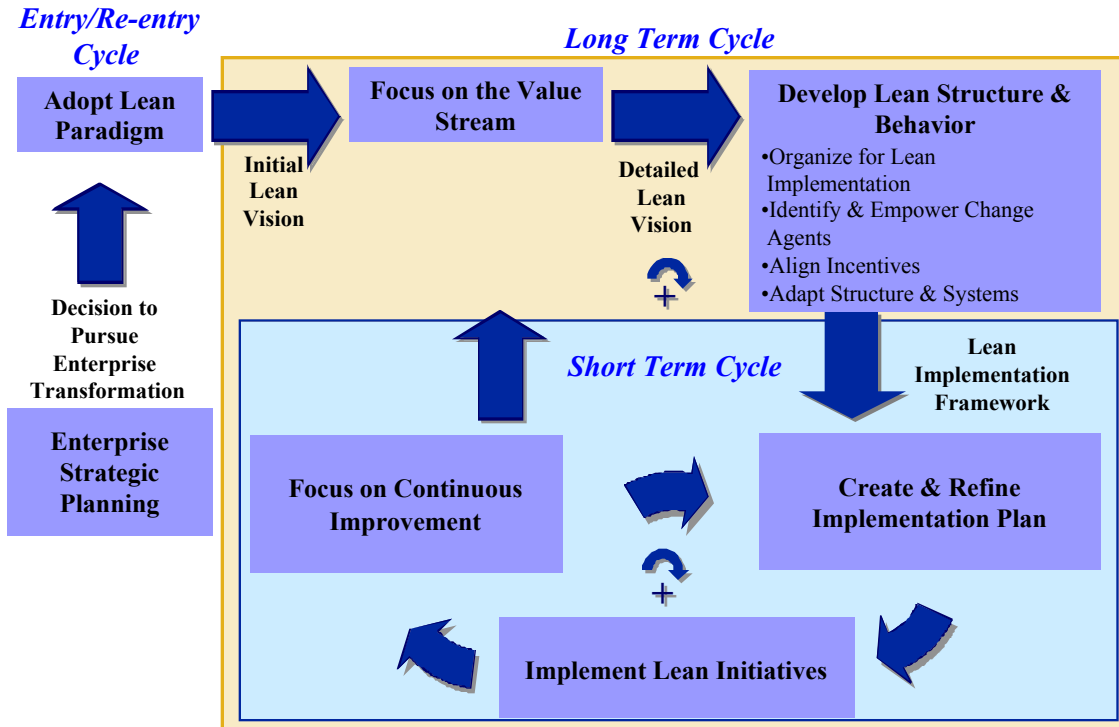




**Figure 3**

## Enterprise Level Roadmap

### Major Tasks within “DEVELOP LEAN STRUCTURE & BEHAVIOR”



### DEVELOP LEAN STRUCTURE AND BEHAVIOR

This section of the Roadmap deals with creating the mental model and conditions within the Enterprise that will enhance the successful implementation of Lean principles and practices.

Both the *structure* and the *behavior* of Lean organizations are significantly different from those of mass-production organizations. The mass-production mentality, so firmly embedded in the organization’s collective mindset, must be relentlessly rooted out and banished. Mass-production principles and practices must be unlearned. Lean principles and practices must be learned, practiced, and perfected through continuous improvement efforts. An extensive re-education effort will likely be required for the entire Enterprise.

Lean may have an impact on organizational structure. Incentives must be rationalized with the new behavior desired. There will be an impact on most business systems, processes, and policies. Systems Dynamics modeling has demonstrated that structure drives behavior and that behavior, in turn, drives results.

*An Enterprise transformation of this magnitude will require careful planning, phasing and execution.* The change process itself must be carefully monitored, managed, and modified as required in light of actual outcomes.

## **MAJOR TASKS WITHIN “DEVELOP LEAN STRUCTURE AND BEHAVIOR”**

### **Organize for Lean Implementation**

- Shift the organizational structure from a vertical focus (that supports the mass-production mentality) to a horizontal focus (that supports a Lean mindset).
- Establish Integrated Product/Process Development (IPPD) teams, aligned horizontally with the customer value chain.
- Eliminate unnecessary layers of management; decentralize decision-making.
- Establish and empower a Lean Focus Office for facilitating the Lean initiative.

### **Identify and Empower Change Agents**

- Identify those in the organization who can effect positive transformational change.
- Recognize the need to act at both the Enterprise and local levels.
- Enlist the “best and brightest” who are most likely to develop a passion for the Lean transformation.
- Communicate a common Lean vision and coordinated approach.

### **Align Incentives**

- Structure incentives to reward Lean behavior.
- Remove disincentives.
- Consider both monetary and non-monetary incentives.
- Consider both individual and group (team) incentives.
- Tie incentives to Lean metrics through visual scorecards.
- Tie executive compensation to Lean performance metrics.

### **Adapt Structure and Systems**

- Apply Lean principles to redesign all Enterprise systems and processes.
- Use the inherently simpler requirements of a Lean organization to reduce the complexity of information/communication systems.
- Redesign financial/accounting systems to be compatible with the Lean paradigm and to be aligned with appropriate Lean metrics.
- Bring policies and procedures into compliance with Lean.

## **Transition to Lean Roadmap Background Materials**

**CYCLE:** Long Term  
**PRIMARY ACTIVITY:** Develop Lean Structure and Behavior  
**MAJOR TASK:** Organize for Lean Implementation

### **I. OVERVIEW and DISCUSSION:**

- It is probable that the existing organization has to be modified to support Lean implementation.
- It is the responsibility of the Enterprise Leader to prepare the organization for Lean implementation.
- There are two levels: readiness and willingness.
- Here is the first opportunity for the Enterprise Leader and other Senior Managers to behave in a Lean fashion, to demonstrate their commitment to the Lean philosophy, and to demonstrate what it looks and feels like (e.g., automatic data capture on Lean metrics and other things). This is a great enabler because it lessens the burden on people to implement the plan.
- It is likely that there will be a number of existing, on going “movements” and “initiatives” (e.g. re-engineering, TQM, etc.). Each of these will need to be challenged in regard to their impact on and compatibility with the Lean transformation: keep them/kill them/modify them/integrate them.
- We are thinking more of structure than people issues.
- Three questions: 1) nature of structure; 2) roles and responsibilities; and 3) filling the roles with specific people.

### **Structure Issues**

- Questions that you might ask of the organization:
  - Does it support a team environment?
  - Is it Lean in its hierarchical structure?
  - Does it support the value stream flow and analysis of its efficiency?
  - Does it support Lean implementation?
- There are needs that organization structure satisfies: supporting roles and responsibilities; providing a path for recognizing advancement; mechanism for determining salary advancement; for nurturing the technical competence. The organizational structure plays a major role in the organization. When implementing a Lean transition, what does it do to the original structure of the organization?
- It's possible that getting the organization structure right is one of the critical enabling activities at the front end of the process.
- Must ensure that re-engineering and re-organization are done along “Lean” principles.
- Too many organizational layers may mean trouble.

### **Roles and Responsibilities**

- Organizational roles and responsibilities must be revisited (and possibly revised) in order to support the Lean vision and its implementation.
- This can be a challenge to “experienced” line management and union leaders who have succeeded in the past applying old knowledge and who have a mental model of management that is passe.
- Do not assume that people know what is expected of them in the new Lean enterprise. An organization manual including charters and job descriptions for key leaders can become an effective communication tool.

**People**

- Part of the getting ready is the Enterprise Leadership having to decide what parts of the organization have to change in terms of its faces (ability/willingness referenced in first box of model).
- There are three facets to this issue: the process of making sure that you have an entire team to field including internal change agents; external change agents; and complete team. It asks who do you have on board who are “Lean” zealots, who must you enlist to fill identified needs, and finally who must you bring in as external help to fill the gaps?

**II. TENSIONS:**

Answer the question

list the Tensions

<p><b>Why: “Why Organize for Lean Implementation?”</b></p> <ul style="list-style-type: none"> <li>• System Dynamics states that structure drives behavior and behavior drives results.</li> </ul>	<ul style="list-style-type: none"> <li>• People do not like change. (In any promotion you only have one very happy person and many unhappy people – In a Lean org. You may have many unhappy people.)</li> <li>• One of the most powerful ways to deliver a message to the workforce is who you put in charge of what.</li> <li>• Organization restructuring takes a lot of energy and effort – so there is a lot of reluctance to take it on.</li> </ul>
<p><b>What: “What is Organizing for Lean Implementation?”</b></p> <ul style="list-style-type: none"> <li>• It’s whatever most powerfully aligns the organization with the value it is bringing to its customers.</li> </ul>	<ul style="list-style-type: none"> <li>• Customers may not see the Lean structure as beneficial at first</li> </ul>
<p><b>Who: “Who Organizes for Lean Implementation?”</b></p> <ul style="list-style-type: none"> <li>• The EL is the organization’s architect.</li> <li>• May require assistance from Org. Development experts.</li> </ul>	<ul style="list-style-type: none"> <li>• Not seen by most Enterprise Leaders as their thing, is not in their background, and is not of great interest.</li> </ul>
<p><b>How: “How to Organize for Lean Implementation?”</b></p> <ul style="list-style-type: none"> <li>• Through careful study of successful approaches to achieving comprehensive organizational change, particularly those that have been effective in transitioning to Lean.</li> </ul>	<ul style="list-style-type: none"> <li>• Many models can be effective, provided that they adhere to fostering the Lean principles among which are: minimizing interaction waste; fostering commonality of information; and reducing cycle time of decision processes, etc.</li> </ul>
<p><b>Where: “Where to Organize for Lean Implementation?”</b></p>	<ul style="list-style-type: none"> <li>• Every organization has its “sacred cows” who claim to be exceptions to these reexamination processes. They represent an opportunity/threat to deliver the message to the Enterprise</li> </ul>

<ul style="list-style-type: none"> <li>• A totality issue - it is everywhere in the organization.</li> <li>• Throughout the transformational domain.</li> </ul>	<p>on the seriousness of your intent to change the company in fundamental ways.</p>
<p><b>When: “When to Organize for Lean Implementation?”</b></p> <ul style="list-style-type: none"> <li>• Requires careful preparation and thought prior to creating the implementation plan.</li> </ul>	<ul style="list-style-type: none"> <li>• How to phase the introduction.</li> <li>• There is a discussion that is needed here under the tension of doing it all at once so that the initial activities can reinforce the change initiative. Trying to organize incrementally is not recommended.</li> <li>• Some will want to “just do it”.</li> </ul>

### III. BARRIERS:

- Can expect strong (sometimes silent) resistance from managers of traditional functions and from some labor leaders whose roles and perceived power may be greatly diminished.
- It can be disruptive, expensive and energy sapping if not managed properly.

### IV. ENABLERS:

- It can reinforce and be consistent with the vision.
- Can signal “enthusiasm” from the winners.
- Winners provide a motivator role.
- Gives an opportunity to fix some past organization dysfunctional problems.
- It puts the Enterprise Leader in a positive proactive light.

### V. CASE STUDIES/RESEARCH QUESTIONS:

- **Can a set of questions be created that will enable an Enterprise Leader to evaluate his or her organization as a test of readiness?**

### VI. REFERENCES/LINKAGES:

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**LEM Links:**

OAP 12 (LAI): "Number of Program Re-Baselines by Program Phase"

OAP 12 (LAI): "Program Schedule Changes by Program Phase"

## **Transition to Lean Roadmap Background Materials**

**CYCLE:** Long Term  
**PRIMARY ACTIVITY:** Develop Lean Structures & Behavior  
**MAJOR TASK:** Identify and Empower Change Agents

### **I. OVERVIEW and DISCUSSION:**

- This is the launch of the Lean initiative.
- If this is a journey across the ocean, then this is the launch out of the harbor. Doing this right is critical to success of the journey. Don't attempt to cross the Atlantic in a canoe.
- There are two separate sets of change agents that need to be addressed: The internal set of people who know the embedded culture of the organization; and, a second set of people that you may bring in from the outside with only the power of their title. It is this power that they use to effect change.
- The concept of change agents should not be too narrowly or formally chosen. It is important to identify who the major change agents are in the organization. It is a group that represents embers that will start the fires for change in the organization. Change agents that are not involved can represent huge barriers.
- Change agents need to be the organization's best and brightest employees.
- Do you have the change agents affect change through their normal job function or do they go into a full time position to do this? (It is likely that there will be some of both.)
- Here we are talking about people to whom we are looking to implement Lean in their normal job roles as examples and initiators of change. Need to look in entire organization to recognize the right people that will be able to lead the change.
- The local management will have vested interest in helping the change agent perform his/her functions, because the Enterprise Leader will have created a safety zone for the change agent to operate in.
- First look within the organization, then move outward based on various circumstances of the organization. The external change agents brought into the organization will shake up the organization quite a bit. Internal change agents will be less disruptive.
- Using internal change agents is a much more smooth and trusting process; bringing in change agents from the outside is a much more fearful process.
- The organization will need to address its own situation and determine which change agency approach is best to follow through with.
- Some existing proponents of change may be pushing another agenda (re-engineering, TQM, etc.) and may not understand or support the Lean paradigm. Need to align these activities to support the Lean initiative.

### **II. TENSIONS:**

Answer the question

list the Tensions



<p><b>Why: “Why do we Identify and Empower Change Agents?”</b></p> <ul style="list-style-type: none"> <li>• Change of this magnitude and scope needs to be carefully orchestrated, motivated, and continuously energized.</li> <li>• Change agents are true ‘champions’ of change and may be in various parts of the organization; they need to be located and utilized.</li> </ul>	<ul style="list-style-type: none"> <li>• Empowering a change agent means giving up some control. Some people may not like this.</li> <li>• You want the Enterprise Leader to empower without abdicating responsibility.</li> <li>• The hierarchical management structure is threatened.</li> <li>• Conflict of available time (change agents are typically busy people).</li> <li>• If change agents are not assigned to this full time, they could be caught in an awkward position; this may help recognize the need for change.</li> </ul>
<p><b>What: “What does Identify and Empower Change Agents mean?”</b></p> <ul style="list-style-type: none"> <li>• A change agent is a person who possesses the knowledge, interpersonal skills, has the passion, and commands respect from his/her peers required to effect a transformational change.</li> <li>• Sustained and visible support to lead a Lean transformation activity.</li> </ul>	<ul style="list-style-type: none"> <li>• It can be a lonely and risky existence.</li> <li>• Former peers of change agents may feel diminished and have resentment toward the person. In fact everyone who is an opponent to the change is an enemy.</li> <li>• Line managers may have the perception that their authority has been encroached upon.</li> <li>• Are change agents ‘home grown’ to an organization?</li> </ul>
<p><b>Who: “Who Identifies and Empowers Change Agents?”</b></p> <ul style="list-style-type: none"> <li>• The Enterprise Leader with inputs from senior managers.</li> <li>• The people working at the lower levels know who the best candidates for change agents are. Look to the organization to help identify who they respect as change agents.</li> </ul>	<ul style="list-style-type: none"> <li>• The more that you flow down the “leader” role, the weaker the empowerment gets.</li> <li>• Chain of command will feel threatened.</li> <li>• Good Enterprise Leaders can minimize the feeling of threat by communication and informing before and why discuss it and listen to help minimize the feeling of being threatened.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>How: “How do you Identify and Empower Change Agents?”</b></li> <li>• <b>Identification</b></li> <li>• Assume it to be a top down leadership process.</li> <li>• Change agents are not developed; they are simply identified.</li> <li>• Find them by defining certain attributes and soliciting these attributes.</li> <li>• If they don’t exist, have to go to the outside and bring them in.</li> <li>• Change agency may also be applicable to the supply chain, customer and other pieces of the extended enterprise.</li> <li>• Empowerment</li> <li>• The change agents should be chartered, with clearly articulated authority and responsibilities. They need extensive E&amp;T in change management techniques.</li> </ul>	<ul style="list-style-type: none"> <li>• Some who are pushing other agendas will view themselves as “change agents”. Alignment is critical.</li> <li>• It is critical that the change agents involved in the Lean initiative fully comprehend and support the Lean paradigm.</li> </ul>

<p><b>Where: “Where are Change Agents Identified and Empowered?”</b></p> <ul style="list-style-type: none"> <li>• Need to be assigned at several key points within the transformational domain.</li> <li>• Need to first identify within the enterprise where there is free help – people willing, able and prepared to do the work from all levels of the organization. This will provide instantaneous connectivity to the Lean transformation.</li> <li>• We will need enterprise and local level change agents to perform the transformation.</li> </ul>	<ul style="list-style-type: none"> <li>• Too often, the need for identifying change among all the stakeholders is overlooked.</li> </ul>
<p><b>When: “When do you Identify and Empower Change Agents?”</b></p> <ul style="list-style-type: none"> <li>• The assignments and initial E&amp;T need to be accomplished prior to the formal launch of the Lean transition.</li> <li>• First identify the change agents and where they are.</li> <li>• Define the organizational gaps that may need to be addressed – fix by outsourcing talent.</li> <li>• This may be the process of just structuring the Lean implementation team.</li> <li>• Process of implementation staffing effort.</li> <li>• First need enterprise level change agents to help create the Lean transformation plan.</li> </ul>	<ul style="list-style-type: none"> <li>• Timing issue of the integration of the change agent activity of the enterprise level change process.</li> <li>• If they are true change agents they are not going to wait to wait for the slow organization to give them the go ahead.</li> <li>• Must you have a critical mass of change agents to succeed?</li> <li>• May want to differentiate the functions of the change agents.</li> </ul>

### **III. BARRIERS:**

- Organizational change, and the methods for accomplishing it, is not well understood. All aspects of change (technical as well as sociological) must be reorganized and accommodated.
- Implementing change with half-hearted believers. You may only get small increments of change instead of a full transition.
- You cannot teach/train a person to be a passionate driven change leader.
- Need to focus on the organizational architecture to be successful.
- Change agents may not be apparent or visible to the organization.
- Not knowing what to look for in a change agent.

### **IV. ENABLERS:**

- Change agents are naturally looking to do something – feeding into their desires and strengths.

### **V. CASE STUDIES/RESEARCH QUESTIONS:**

- How effective have external change agents been in the implementation of Lean?

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## **Transition to Lean Roadmap Background Materials**

**CYCLE:** Long Term  
**PRIMARY ACTIVITY:** Develop Lean Structures & Environment  
**MAJOR TASK:** Align Incentives

### **I. OVERVIEW and DISCUSSION:**

- Human nature dictates that people will always respond to whatever incentives and rewards are in place. You “get what you pay for” (you get what you incentivize). It’s not always obvious what incentives are in play. We need to understand what incentives are now in place and what new incentives need to be put into place.
- Some research suggests that pay is not a particularly effective incentive. In fact, at best, simply prevent it from becoming a barrier.
- How significant is the monetary reward? Incentivization should not be equated only to money.
- Here we are concerned with the mindset of the individual instead of the organization. Should we also consider incentives to stakeholders; Management team; Suppliers; Stockholders?
- We need to provide a more generalized overview rather than being specific and provide a literature review on this subject.
- We also need to consider work teams, and their incentive structures.
- Incentives need to be tailored to both individuals and teams. This is not a “one size fits all” situation. Individuals are motivated through different things.
- Contingent compensation is another consideration: Compensation based on the overall Enterprise performance. It helps people focus on optimizing the whole and not the sub-elements.
- Monetary reward is often seen as an objective measure of how people are valued within the organization.
- You would want to know your incentives and set them before the Lean initiative kick-off takes place. They might be time-phased.
- Individual incentives need to be linked to performance measures. Proper metrics must be set in place.
- Feedback loop needs to be developed.
- Lean behavior does not guarantee success: Lean is one element of the success of a company. It is part of an integrated strategy. “Lean” is necessary but not sufficient.
- Top down approach is necessary, especially if “Lean” stands for something apart from what the company is currently doing.
- Breakthrough innovation is sometimes viewed as being absent from the thinking of “Lean”. “Lean” is erroneously seen as continuous incremental improvement only. Innovation is a critical element of a sustaining company.
- Aligning incentives across the Enterprise, in light of Enterprise objectives.

## II. TENSIONS:

Answer the question

list the Tensions

<p><b>Why: “Why do we Align Incentives?”</b></p> <ul style="list-style-type: none"> <li>• People want and have the right to know what is expected of them and the consequences of varying degrees of achievement.</li> <li>• Desired behavior needs to be incentivized.</li> <li>• Harmonize the respective individual and group behaviors so that the results amount to a positive sum gain.</li> </ul>	<ul style="list-style-type: none"> <li>• How do we incentivize an organization’s behavior?</li> <li>• Create an environment in which people want to do the right thing, rather than do something that they ordinarily don’t want to do.</li> <li>• Importance of a set of values and the form of communication.</li> <li>• Challenge is how to develop an integrated set of incentives that reach across the value chain and get a corporate wide view.</li> </ul>
<p><b>What: “What are Incentives?”</b></p> <ul style="list-style-type: none"> <li>• Clear, simple, transparent rewards/incentives that are aligned directly to the behavior desired.</li> </ul>	<ul style="list-style-type: none"> <li>• Challenge of going beyond believing that money is the answer to everything.</li> <li>• What rewards to be developed to incentivize the behavior?</li> <li>• Too few or too many incentives: the essential few vs. the trivial many.</li> <li>• Avoid or modify conflicting incentives.</li> <li>• Consistency in the application of the incentive set.</li> <li>• Importance of communicating expected behaviors and goals.</li> <li>• Peer pressure as an incentive.</li> </ul>
<p><b>Who: “Who Aligns the Incentives?”</b></p> <ul style="list-style-type: none"> <li>• Senior Managers, HR management, and union officers (if applicable).</li> </ul>	<ul style="list-style-type: none"> <li>• Joint incentives and shared rewards can only be developed jointly.</li> <li>• Senior Managers have difficulty in asking the right question and finding out what are the true incentives with which they are trying to get aligned.</li> </ul>
<p><b>How: “How do you Align Incentives?”</b></p> <ul style="list-style-type: none"> <li>• Decide on and attain agreement on a meaningful scorecard. Should include both financial and non-financial performance measures; should be traceable to the ultimate objective of creating value for the customer.</li> </ul>	<ul style="list-style-type: none"> <li>• How to incentivize individuals to contribute to continuous improvement efforts?</li> <li>• How do you incentivize “Lean” behavior when most of our corporate measures are financial in nature?</li> <li>• Align the incentives with the visual balanced scorecard.</li> </ul>
<p><b>Where: “Where do you Align Incentives?”</b></p> <ul style="list-style-type: none"> <li>• It is preferable for all stakeholders to have positive incentives for superior performance; includes individual and group incentives.</li> <li>• Align incentives throughout the Enterprise.</li> </ul>	<ul style="list-style-type: none"> <li>• It is a challenge to get everybody aligned with a simple set of incentives.</li> <li>• Concept of short term vs. long term benefit. Successful schema of you winning short term and me winning long term.</li> </ul>

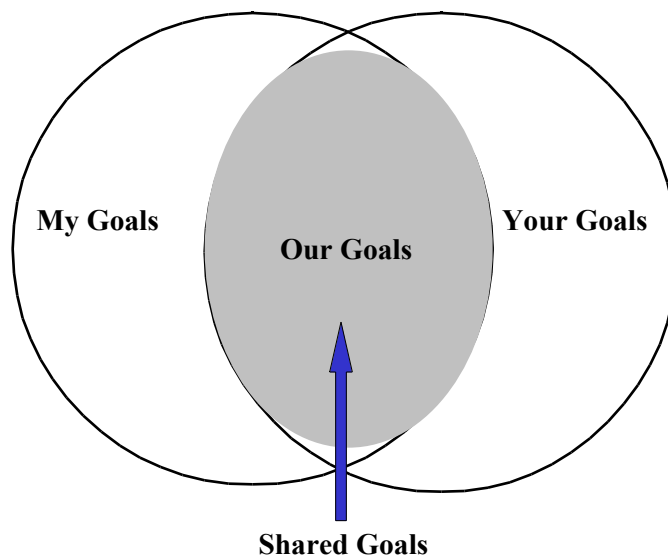
<p><b>When: “When are the Incentives Aligned?”</b></p> <ul style="list-style-type: none"> <li>• ASAP, within constraints of labor contracts, existing employment agreements; may require phased implementation.</li> <li>• Introduced progressively, interwoven with the overall Lean transition plan. A piece of that is an essential starting point.</li> </ul>	<ul style="list-style-type: none"> <li>• When is it necessary to change the incentive structure and how do you recognize when that time comes?</li> <li>• When the organization starts and what is required for it to sustain might be different.</li> <li>• Keep the incentive set ahead of the behavior that has become internalized.</li> <li>• How to pay attention to retaining the reinforcement value when the incentive is finally removed.</li> <li>• To understand the essential few incentives initially, to get those in place, and envision the plan of what is yet to come.</li> <li>• Anticipate the transitions that will be necessary.</li> <li>• Discipline required to have a plan in place.</li> </ul>
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**III. BARRIERS:**

- Possible resistance of organized labor.
- Some states/countries have laws relative to employee compensation and benefits.
- Reality is that not all stakeholders’ objectives can be easily incentivized. Employees desire job security. Each stakeholder wants certain guarantees and this is going to be an incomplete satisfaction.
- Incentive area is one that is never going to be totally satisfactory to everyone.

**IV. ENABLERS:**

- Progressive frameworks for labor-management relations, e.g. High Performance Work Organization.
- The following model is offered as one approach to visualizing the concept of sharing individual and common goals synergistically.



## V. CASE STUDIES/RESEARCH:

- Need to develop a 2 or 3 day workshop for Enterprise Leader and Senior Managers. This would serve as a forcing function to frame what has been done. Engage them in small group activities and also guide them into doing some of the exercises that are worthwhile. This involves intense immersion into the issue of span, scope and challenges of the enterprise. Might present this as a Phase-III Knowledge Deployment effort. (This applies to entire TTL Roadmap.)
- How significant are monetary rewards to the workforce?
- What other types of incentivization methods are employed?

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## **Transition to Lean Roadmap Background Materials**

**CYCLE:** Long Term  
**PRIMARY ACTIVITY:** Develop Lean Structures & Environment  
**MAJOR TASK:** Adapt Structures and Systems

### **I. OVERVIEW and DISCUSSION:**

- Extensive modifications will probably be required in the various systems, structures and policies of the organization to bring them into compliance with the Lean paradigm.
- Need to look at systems to support seamless information flow across the enterprise. This is true but only after applying Lean principles to the information systems themselves; the tendency is to design extremely complex information systems (which were needed under Mass paradigm but not under Lean).
- You may have to transition your information system. You may need to take some transitional actions during your transition to Lean. It is anticipated that with Lean principles and practices in place, the complexity of all resource planning systems (scheduling, MRP, ERP, etc.) will be reduced significantly.
- Prior to doing anything, this is an opportunity to understand and apply your Lean vision and make sure that the systems to be put into place will satisfy your vision and not something else.
- This is an area in which the challenge of incremental transformation really butts up against traditional practice that is the tendency is to try to pilot an initiative somewhere in the organization with policies and procedures for a specific functional unit. When applied to the enterprise, it may cause additional challenges due to the rest of the systems and structures not yet being in place.
- Systems Dynamics suggests that this is where you would start.
- It is just as important to practice configuration management of your information systems as it is to other functions in the organization, i.e., product development/design. Is ISO 9000 compatible with Lean?
- Metrics for the Lean initiative should be established in such a way that the monitoring and collection of these metrics become “business as usual”. (As Lean becomes business as usual, the Lean Focus Office, if any, may go away, or merge into the Continuous Improvement function.)
- This is really one of the most challenging areas in the Lean transition, since no one really likes change and this is the most highly visible part of the initiative to the workforce. It is important to understand that this is highly sensitive to the people area in the transition. Some people will always be unsatisfied in a change initiative.



## II. TENSIONS:

Answer the question

list the Tensions

<p><b>Why? “Why do we Adapt Structures and Systems?”</b></p> <ul style="list-style-type: none"> <li>Legacy systems, structures and policies evolved under a mass production mind-set and may be inconsistent with Lean paradigm.</li> </ul>	<ul style="list-style-type: none"> <li>There will be people who will view the change in structures and systems negative to their own personal interests. (Some people do not want to be held to specific performance metrics, etc.)</li> <li>No one really has mastered this problem yet. There are not any standards or benchmarks out in industry for Lean systems and structures at the integrated (Enterprise) level; there are only islands of excellence available.</li> <li>How do you get functional excellence and team behavior in one fell swoop?</li> <li>The devil we know is always better than the devil we don't know.</li> </ul>
<p><b>What: “What are the Structures and Systems?”</b></p> <ul style="list-style-type: none"> <li>Adapt all systems, structures and policies to fit the Lean transformation vision (e.g., integrated work team structure).</li> <li>Note: Examples of the systems, structures and policies are provided below:</li> </ul> <p><b>Structures:</b></p> <ul style="list-style-type: none"> <li>Form of organization (internal)</li> <li>Process of interface approach to externalities (labor relations, suppliers, customers, regulators)</li> <li>The issue of how do you deal with standardization vs. empowerment. (i.e., in software, the organization wants to standardize the platforms, however some individuals want their own types of software other than the norm.)</li> </ul> <p><b>Systems:</b></p> <ul style="list-style-type: none"> <li>Information systems</li> <li>Financial</li> <li>Accounting</li> <li>HR (focus on rewards, hire/fire, training/development, promotion)</li> <li>Information/communication systems (hardware, software support, management control, engineering info systems, technology)</li> </ul> <p><b>Policies:</b></p> <ul style="list-style-type: none"> <li>Decision authority</li> <li>Employment continuity</li> <li>HR</li> <li>etc.</li> </ul>	<ul style="list-style-type: none"> <li>A tendency to avoid the fundamental changes because they are seen as too painful; certain systems and structures are perceived as untouchables.</li> <li>Some of the systems and structures derive from higher level or external agencies, which inhibits your opportunities to modify.</li> <li>Have to decide from an enterprise standpoint what functions can handle the information either “loosely” or “tightly”. In structures and systems, there is tension that whatever you bring closer is always at the expense of having something else fall apart.</li> <li>There is no optimal solution to any of this (loose/tight); there is only a combination (compromise) solution that is always moving.</li> <li>This might suggest an exercise to understand the tightening and loosening tradeoffs that are being made in any structural and system changes.</li> <li>In the enterprise integration piece, what are the information, people and teaming, process, and technology issues? This thought process should be implemented prior to the development of the enterprise structures and systems. This is analogous to: There are some things that the enterprise needs to share and should be accessible to all, and there are other things that should not be shared and therefore access is restricted to only those with a legitimate need.</li> </ul>

<p><b>Who: “Who Adapts the Structures &amp; Systems?”</b></p> <ul style="list-style-type: none"> <li>This may be a two stage iterative process (flow-down and flow-back) where the Enterprise Leader states the framework and the boundary’s ground rules, and details are done throughout the various organizational levels and entities. (There are too many details to be done at a high level, so really need a flow-down/flow-up effect to get it right.)</li> </ul>	<ul style="list-style-type: none"> <li>You must overcome the tendency to hand off this task completely to consultants. There has to be an ownership issue here.</li> <li>Structures and systems are powerful drivers to the organization. Changing them normally requires a substantial investment in time and energy, and thus cannot be changed easily. This is an area where “doing it right the first time” is very important.</li> <li>It’s hard to keep the organization focused as you spread the knowledge of change coming because you are involving large segments of the organization in the development of the plan.</li> <li>Who has to do this job? It is most likely the one who is ultimately going to own it (who is also the one who is likely too busy to do it now).</li> </ul>
<p><b>How: “How do you Adapt Structures &amp; Systems?”</b></p> <ul style="list-style-type: none"> <li>Apply value stream analysis to all structures, systems and policies. Start with “deliver value to the customer” and work back up stream across several dimensions. Minimize waste.</li> <li>It is a response to the vision statement that establishes the general requirements for which the systems, structures and policies support.</li> </ul>	<ul style="list-style-type: none"> <li>There are no good examples to follow at the enterprise level.</li> <li>How do you focus on the critical enablers?</li> <li>Because this takes a series of discrete events to initiate, it is a very long cycle and can potentially outlive the implementers. (Find a way to do it fast and have it become a part of the culture before someone unravels it.)</li> <li>Be very thorough in the up-front planning to ensure that the structures and systems are exactly what you need in order to do it right the first time.</li> <li>Implement fast and burn the bridges.</li> </ul>
<p><b>Where: “Where do you Adapt Structures &amp; Systems?”</b></p> <ul style="list-style-type: none"> <li>Throughout the transformation domain (across the enterprise).</li> </ul>	<ul style="list-style-type: none"> <li>There is a lot of interplay between the structures, systems and policies and you normally cannot get the benefits of doing a limited or pilot application as an example. Here is an area where the “whole-hog” approach has clear advantages over the pilot project approach.</li> <li>You have to set as a caution: Look out for where your structures and systems have ties outside your organization (i.e., suppliers, customers or corporate).</li> </ul>
<p><b>When: “When do you Adapt Structures &amp; Systems?”</b></p> <ul style="list-style-type: none"> <li>See “Who” above. (Careful detailed analysis and planning of the adaptation followed by quick implementation).</li> </ul>	

### **III. BARRIERS:**

- All legacy structures, systems and policies are deeply imbedded within the traditions, cultures, and self-interests of the organization. Can expect widespread opposition, skepticism.
- Changes here take a lot of time, energy and attention.
- No good role models (enterprise wide).
- Companies with unions really haven't figured out the shared benefits/incentives diagram (drafted in Align the Incentives description).

### **IV. ENABLERS:**

- There are some people who will support this since it represents opportunity for them.
- Assuming that there is a sense of crisis: visible substantive change can be viewed as a positive response to the danger that has been identified. (This is true from the viewpoint of employees and customers, as well as to corporate.)
- An advantage is that it gives you an opportunity to realign your organizational capability with new assignments.

### **V. CASE STUDIES/RESEACH QUESTIONS:**

- Is ISO 9000 an enabler or a barrier? What is the relationship between ISO 9000 and Lean?
- In terms of the organization.
- Which parts of ERP enhance, are neutral to, or are counter to Lean? Or all of the above?
- Which pieces are and which are not?
- Lean financial, accounting and HR systems.
- Are there any organizational principles that we can identify as being universally successful in Lean implementation?
- What impact (if any) does a Lean implementation have on the traditional tradeoff issues between "loosely coupled" and "tightly coupled" functions in information systems?
- Develop an initial outline or template for guiding users in finding starting points for adapting structures and systems.

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**LEM Links:**

- OAP 2 (External): "Lockheed Martin Tactical Aircraft Systems – Ft Worth, TX – Best Practice: Design Integration with COMOK"
- OAP 3 (LAI): "Training Hours per Employee at 26 LAI Plants"
- OAP 3 (External): "McDonnell/Douglas Aerospace's Experience in Training for Integrated Product Development"
- OAP 3 (External): "Informal Worker Training Pays Off"
- OAP 3 (External): "Lockheed Martin-Pike County-One of Industry Weeks Best Plants"
- OAP 3 (External): "Haliburton Energy Services, Inc., - One of Industry Weeks Best Plants"
- OAP 6 (External): "Lockheed Martin Tactical Aircraft Systems – Ft. Worth, TX – Best Practice: Modified Requirements Contracts"
- OAP 7 (External): "Lockheed Martin, Government Electronic Systems- Moorestown, N.J. – Best Practice: Sourcing Systems"
- OAP 11 (External): "Lockheed Martin, Government Electronic Systems- Moorestown, N.J. – Best Practice: Process Improvement Road Map"
- OAP 11 (External): "Mason & Hanger-Silas Mason Co., Inc. – Middletown, IA- Best Practice: Cost of Quality"
- OAP 11 (External): "Lockheed Martin Tactical Aircraft Systems-Ft. Worth, TX- Best Practice: Supplier Statistical Process Control"



**CYCLE:**

*Short Term*

**PRIMARY ACTIVITY:**

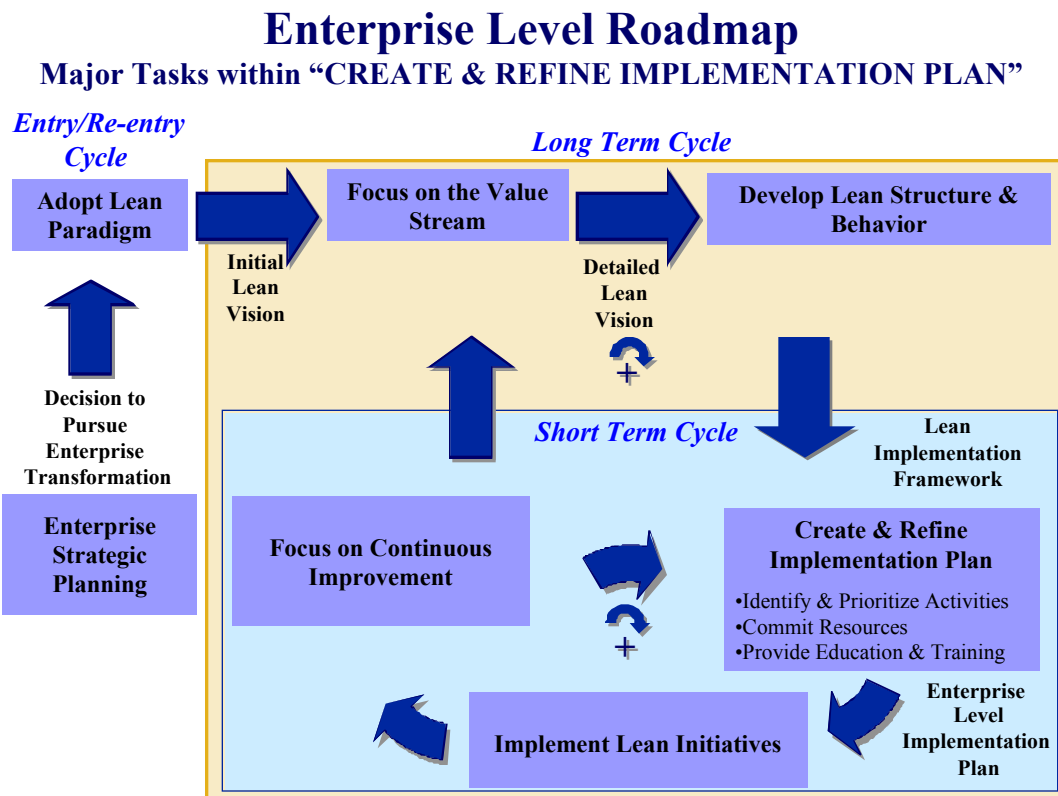
*Create and Refine Implementation Plan*

**MAJOR TASKS:**

- *Identify and Prioritize Activities*
- *Commit Resources*
- *Provide Education and Training*



**Figure 4**



### CREATE & REFINE IMPLEMENTATION PLAN

We are now transitioning from the *Long Term Cycle* to the *Short Term Cycle* of the Roadmap. Having prepared the organization for implementing the Lean paradigm in the *Long Term Cycle*, we are now in a position to develop, implement, and monitor a comprehensive *Enterprise-Level Plan* to achieve the desired transformation.

In the “Adopt Lean Paradigm” block, the “need” to transition to the Lean paradigm comes from the relentless pressures to deliver value to customers who demand ever lower costs, ever shorter response cycles, ever higher quality, and ever higher service after the sale. The Enterprise -Level Plan must be designed to address the explicit “need” previously established, thereby aligning the strategic and Lean visions. It will also draw heavily from the eEnterprise-level value-stream mapping performed in the “Focus on Value Stream” block.

Organizations embarking upon a Lean transformation initiative should consider establishing and chartering a Lean Focus Office (or an office with a similar name and function) to facilitate and coordinate the extensive set of projects, programs, and activities that will be required. The Lean Focus Office, reporting directly to the Enterprise Leader, is responsible for exercising configuration control of the Enterprise -Level Plan.



## **MAJOR TASKS WITHIN** **“CREATE & REFINE IMPLEMENTATION PLAN”**

### **Identify and Prioritize Lean Initiatives**

- Develop/refine descriptions of current state.
- Develop/refine characteristics of the desired future state.
- Create an Enterprise-level transition path based upon gap analysis.
- Extend/translate needs (from gap analysis) to Enterprise-level activities.
- Prioritize and sequence the activities.
- Develop a time-phased schedule for the collective set of Enterprise Lean initiatives, with due consideration to resource limitations.
- Critically review all ongoing “movements” and initiatives for compatibility with Lean.

### **Commit Resources**

- Recognize that the primary resource required is the *time* of all individuals in the Enterprise.
- Plan to meet all production commitments during the Lean transformation.
- Allocate special resources as needed to accommodate increased workloads due to the Lean initiative.
- Make a firm commitment to all resource needs.

### **Provide Education and Training**

- Establish a comprehensive, cohesive program of education and training for the entire Enterprise. Pay attention to its careful phasing.
- Follow “just-in-time” principles in scheduling education and training events.
- Modify the program and provide re-training as needed, based upon feedback.

## **Transition to Lean Roadmap Background Materials**

**CYCLE:** Short Term  
**PRIMARY ACTIVITY:** Create and Refine Implementation Plan  
**MAJOR TASK:** Identify and Prioritize Lean Initiatives

### **I. OVERVIEW and DISCUSSION:**

- Note: We now transition from the Long Term Cycle (create the environment) to the Short Term Cycle (detailed implementation) of the roadmap.
- Based on value stream analysis, select the launch initiatives that must be conducted in order to achieve the desired transformation. All these must be prioritized and sequenced.
- Strategic considerations are important in the selection of initiatives and their phasing. It is especially important to achieve early, short term “wins” in order to build and sustain momentum.
- Need to figure out what is going on (as-is), define issues and where you want to be (to-be).
- One of the challenges here is how you organize the flow-down so that the detailed initiatives that you develop integrate compatibly with the overall enterprise plan.
- How do you keep the balance of using the local areas for their knowledge, but keeping all of that activity consistent with the enterprise vision?
- What do we say about the requirement for documentation of the plan for common accessibility to all of the plans and to the necessity vs. effort to update the plans? Is this a configuration control issue?
- How much of the plan should be transparent to everybody? The goals, metrics and the plan should all be visible to the enterprise.
- Who are involved with this process?
- Must exercise sound management to prevent the approach from degenerating into “controlled mayhem”.
- Communicating the plan to the entire enterprise is critically important. The gain of information sharing far outweighs any potential competitive loss due to disclosure.
- Deciding on an approach to managing change.
- Consider whether all other on going “improvement initiatives” (re-engineering, TQM, etc.) should be killed, allowed to continue in parallel, or brought into alignment with the Lean initiative.
- The best plan will recognize that instability and external environment changes will happen and the plan will provide mechanisms of flexibility and adaptability that will allow it to continue in the main despite the changing environment.
- Note: this is probably the very heart of this whole activity. The decision of where you focus is the core question to the Enterprise Leader.

## II. TENSIONS:

Answer the question

list the Tensions

<p><b>Why: “Why Identify and Prioritize Lean Initiatives?”</b></p> <ul style="list-style-type: none"> <li>To translate the transformational vision into Lean initiatives.</li> </ul>	<ul style="list-style-type: none"> <li>There is always a lot more to do than there is time or money.</li> <li>There is often a conflict between the best thing to do and political consequences. These are not always pure decisions. (Do you settle for the marginal changes or do you go for the 'jugular vein'?)</li> <li>It is important to communicate the basis of your prioritization to the organization. (To the extent possible, it is also preferable to indicate when everyone else's turn will come.)</li> </ul>
<p><b>What: “What does "Identify and Prioritize Lean Initiatives" involve?”</b></p> <ul style="list-style-type: none"> <li>Identification, specification, and prioritization of the Enterprise level initiatives that must be conducted in order to achieve the desired transformation.</li> <li>It presumes an unbiased view of the organization's state and the ability to appreciate the elements that can be leveraged within the operation.</li> </ul>	<ul style="list-style-type: none"> <li>Even as you prioritize in certain areas it would seem ideal to in some way initially engage everyone (a form of hybrid approach).</li> <li>Any leader is going to be biased to the areas of his/her expertise.</li> <li>How to deal with focusing initiatives without implying favoritism.</li> <li>Ongoing "projects" and “initiatives” may have to be terminated. Sacred cows may need to be slaughtered.</li> </ul>
<p><b>Who: “Who Identifies and Prioritizes Lean Initiatives?”</b></p> <ul style="list-style-type: none"> <li>The EL frames the focus and oversees the hand-off and puts it into action. This is an iterative process among the Senior leadership – this is how the flow-down starts.</li> <li>It is important that the EL recognizes what they do not know and surround themselves with experts who do know the answers.</li> </ul>	<ul style="list-style-type: none"> <li>How you maintain that balance of providing the guidance and yet get the buy-in. (Having your prints all over something and making each person feel like they have done it themselves.)</li> <li>How to deal with focusing initiatives without implying favoritism (there may be political reasons on putting someone in charge) - (Here is also an opportunity for elevating and identifying potential leaders.)</li> </ul>
<p><b>How: “How are Lean Initiatives Identified and Prioritized?”</b></p> <ul style="list-style-type: none"> <li>Use the value stream assessment as the first guiding light.</li> <li>Use logical reasoning.</li> <li>Based on "establish need" in the Adopt Lean Paradigm block.</li> <li>What are the present opportunities facing the organization? The SWOT (strengths, weaknesses, opportunities, threats) diagram from strategic planning.</li> </ul>	<ul style="list-style-type: none"> <li>Are there different potential objectives that therefore would change how you prioritize initiatives? (Are you being driven by short term vs. long-term objectives?) Are there “barbarians at the door” and you need to do something to justify your existence? Is there a “change or die scenario” for the organization?)</li> <li>Is it by consensus? Directed consensus? - It’s through active leadership that creates enthusiastic participation.</li> <li>How you approach the implementation is critical. (Is the ‘buy-in’ or ‘buy-out’ mentality required for a Lean implementation? Certainly is indicated by ‘Ohno’ approach.)</li> <li>With a certain amount of obsession.</li> </ul>
<p><b>Where: “Where are Lean Initiatives Identified</b></p>	

<p><b>and Prioritized?”</b></p> <ul style="list-style-type: none"> <li>Anywhere in the organization where the highest leverage exists.</li> <li>Reflect on the established strategic need that originated the process.</li> </ul>	<ul style="list-style-type: none"> <li>Internal politics are often an enemy to the best selection</li> <li>Compromise is probably the most formidable enemy to a rapid and most effective transition to Lean.</li> <li>The entrenched brokers throughout the organization will see it as a threat and will seek middle of the road action</li> <li>Too many people will split the difference instead of taking the hard path.</li> </ul>
<p><b>When: “When are Lean Initiatives Identified and Prioritized?”</b></p> <ul style="list-style-type: none"> <li>Only after you have addressed and created the proper environment. (Don’t leap to the answer until you’ve done the work.)</li> </ul>	<ul style="list-style-type: none"> <li>Management pressure for quick results - short-circuiting the process.</li> <li>Do this with all due deliberate speed (need to incorporate this thought in the "Adopt Lean Paradigm" block).</li> <li>How do you manage to do it quick and completely? (The answer may be by providing this framework [TTL Roadmap] as the key enabler for completeness.)</li> <li>This can perhaps be done by concurrent engineering principles. Plugging them into a DSM tool and determining the interdependencies between each node.</li> </ul>

### III. BARRIERS:

- Lack of methodologies.
- Competition for scarce resources.
- Unwillingness to release key employees for work on projects.
- The pressure for quick, visible, and "braggable" results.
- It requires leadership instead of management talent; lack of leadership can be a barrier.
- Individual agendas tend to get in the way. (There are a lot of peripheral things going on that does not add value to the organization.)

### IV. ENABLERS:

- The change agents in the organization do like change, so they are interested in helping the transformation.
- The compelling need for change (the more directly the initiative response can be tied to the identified need, the better).
- Global drivers (i.e., in the Next Generation Manufacturing (NGM) report - the impact on the workforce, etc.)
- The organization embraces a clear direction and identification of priorities.
- Applying principles of concurrent engineering, and Design Structure Matrices (DSM) tool methodologies for example. There are other effective methodologies available.
- There is a body of literature that will help in the phasing or pacing of different elements in this process.
- Scott Sink's wall chart (see references)
- Principles of Structured Systems Analysis.
- Enterprise simulation tools.
- Create an Enterprise TTL game, much like the beer game.

### V. CASE STUDIES/RESEARCH:

- Is there a criterion that we should be suggesting as the basis for the selection and prioritization of the launch initiative? (This should be tied to what was identified in "Focus on the Value Stream" block.) Also this ties to what issues were identified in the organization through the use of the change cube assessment tool.
- What is the evidence on the success of different implementation approaches? Is it an issue of personal choice vs. probability of success? Can we discuss the pros and cons of each of the models - How would an enterprise leader describe their approach to transitioning to Lean?
- Do we need to do a Design Structure Matrices as a guide for the synergy or interdependencies between the set of tasks used in the Enterprise roadmap?
- Is there a cost/benefit analysis or approach that can provide guidance on what to prioritize or include in the transition? (Should this be quantified, or is this a waste of time and resources?)

## **VI. REFERENCES/LINKAGES:**

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- Collins, J., and Porras, J., *Built to Last: Successful Habits of Visionary Companies*, (New York: Harper Business, 1994).
- Henderson, Rebecca, and Clark, K., "Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms," *Administrative Science Quarterly*, volume 35, 1990, pp. 9-30.
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- Markides, Constantinos, "Strategic Innovation in Established Companies," *Sloan Management Review*, Spring 1998, pp. 31-42.
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- Womack, James and Daniel Jones, *Lean Thinking*, (New York: Simon & Schuster, 1996).

## **LEM Links:**

OAP 4 (LAI): "Number of Organizational Levels at 39 Plants"

## **Transition to Lean Roadmap Background Materials**

**CYCLE:** Short Term  
**PRIMARY ACTIVITY:** Create and Refine Implementation Plan  
**MAJOR TASK:** Commit Resources

### **I. OVERVIEW and DISCUSSION:**

- Align resource deployment mechanisms in accordance with the enterprise plan consistent with the philosophy and principles underlying the Lean paradigm. (Don't assume this means adding resources; it may be the first opportunity to point to and realize the savings from Lean implementations; at best it may be a reallocation of existing assets.)
- This is a real challenge to commit resources 'honestly' because a tendency is to 'strap it on' to existing workloads; that is, seldom do we ask what existing assignment someone will not do because of a new assignment we just gave them. (How do you stop doing some things to create workspace to initiate and sustain the initiative?)
- Have to fit the work elements of the plan with the available labor resources over time. Have to be careful not to over constrain the resources.
- If we believe in doing it Lean, requires concurrency of the diagram. That implies that over a period of time resources may conflict with each other proving to be inefficient to the process. It carries the JIT penalties of being late.
- A key issue here is "what has the Enterprise Leader done regarding his/her commitments and planned activities to make him/her self appropriately available to support the plan?"
- If after the Enterprise Leader announces the Lean initiative, his/her actions are not consistent with the goals of the enterprise plan, then his/her credibility and the whole Lean initiative is called into question.
- Here is where you have to make a judgment to the spectrum of resources that makes the best sense. Including: existing internal; acquired internal; related external; and, external. (Need a plan on how to bundle these resources together efficiently.)
- Look to suppliers and customers as sources of support, since some of the initiatives lie at the boundaries.

## II. TENSIONS:

Answer the question

list the Tensions

<p><b>Why: “Why Commit Resources?”</b></p> <ul style="list-style-type: none"> <li>Eliminate uncertainties regarding legitimate resource requirements; avoid start/stop disruptions.</li> <li>It’s the true indicator to the organization that you are serious.</li> <li>Because there is real work to be done.</li> </ul>	<ul style="list-style-type: none"> <li>Resources currently deployed to existing programs and movements.</li> <li>There is a contradiction here, that is: Isn't it by necessity that the Lean implementation has to be done by the people doing the work and not by someone else? By saying this, committing resources has to be thought of as accepting the penalty of time being spent by the employees in improvement of the process and the addition of people to do support tasks.</li> <li>Two elements: 1) free up time to workers &amp; 2) bring on people to integrate the Lean principles and practices to the organization.</li> <li>Here is the beginning of the support of the Lean visionary leader by the organization.</li> </ul>
<p><b>What: “What does Commit Resources mean?”</b></p> <ul style="list-style-type: none"> <li>Make firm commitment of resources necessary to implement the array of Lean initiatives included in the enterprise level plan.</li> <li>Assure sustained resource provision.</li> </ul>	<ul style="list-style-type: none"> <li>Unexpected things happen; therefore a resource reservoir is almost mandatory to prevent committed resources from disappearing. How are you going to respond to the possible depletion of resources? Going to need some flexibility in the planning of resources.</li> <li>Resist the urge to simply assign people who have nothing else to do.</li> </ul>
<p><b>Who: “Who Commits the Resources?”</b></p> <ul style="list-style-type: none"> <li>The EL in conjunction with Sr Management commits the resource plan. Key people, impact of key budgets – development of Lean Office etc.</li> <li>May also be suppliers and customers as well as other external agencies. May have to turn to corporate to get a key person.</li> </ul>	<ul style="list-style-type: none"> <li>What do you do if you don’t have the inherent competence within the organization to lead this type of change?</li> <li>When you borrow resources you need to avoid the ancillary fallout of the creation of problems.</li> <li>There is a tendency to rob Peter to pay Paul: avoid this</li> <li>The organization losing employees may object.</li> </ul>
<p><b>How: “How are Resources Committed?”</b></p> <ul style="list-style-type: none"> <li>Employ resource-leveling techniques to generate a time-phased plan that achieves objectives within available resource levels.</li> <li>With great fanfare, with absolute conviction, and with clear communication of purpose.</li> </ul>	<ul style="list-style-type: none"> <li>The tensions beg for the solution to be one in which the Lean Office resources are fully assigned and all other resources are simply the same people doing their job in new ways. (This applies to both the workforce and management.)</li> </ul>
<p><b>Where: “Where are the Resources located that are being Committed?”</b></p> <ul style="list-style-type: none"> <li>These are the resources necessary at the enterprise level. If the model is the Lean Office, then this is at the Sr Management level. If you don’t have a Lean Office then it may be infused at lower levels in the organization. It is a direct response to the "How".</li> <li>In support of prioritized Lean initiatives.</li> </ul>	<ul style="list-style-type: none"> <li>Being able to develop a tight knit Lean team, but yet touch every facet and nook of the organization.</li> <li>The perception of fairness among the group from which resources are drawn and to which resources are assigned.</li> </ul>

<p><b>When: “When are Resources Committed?”</b></p> <ul style="list-style-type: none"> <li>• In accordance with the phasing of the enterprise plan.</li> </ul>	<ul style="list-style-type: none"> <li>• The pressures to withdraw committed resources in response to short term urgencies.</li> <li>• There is never a good time - there are always near term urgencies.</li> </ul>
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### III. BARRIERS:

- The people you want are typically the busiest people in the organization.
- From an organizational health perspective, this is generally a bootstrap action and much of what the organization is doing is non value-added activities; people are already working 120%.
- The pressures of meeting the ongoing requirements while you are doing this.
- Having the wrong people - Don't want to use them - Don't have anyone else to use.

### IV. ENABLERS:

- "If you can get to prime the pump", as you become Lean, you free up resources to help you become Lean faster.
- In committing resources, people like new challenges.
- It is sometimes useful to people to provide a conduit for slack resources.
- The hope of a better tomorrow. You will suffer through tough times today for a better tomorrow.
- It provides the opportunity for people to demonstrably show their support for the organization.

### V. CASE STUDIES/RESEARCH:

- There are organizations in the LAI consortium and elsewhere that have established Lean offices and we should identify the models, lessons learned and experiences of these entities.
- How effective is a Lean Implementation Office within an organization?

### VI. REFERENCES/LINKAGES:

- LaPlante, Alice, “Starting an IS Organization from Scratch Requires Strict Cost Control,” *Infoworld*, June 29, 1992, p. 54.
- Miller, Ian, “Manufacturing Flexibility in a build-to-order Environment,” *Logistics Information Management*, 1995, pp. 40-41.
- Turner, Ian, “Strategy and Organization,” *Manager Update*, Autumn 1994, pp. 1-9.

### LEM Links:

OAP 12 (LAI): “Government Programs and Acquisition Management Continuity”





## Transition to Lean Roadmap Background Materials

**CYCLE:** Short Term  
**PRIMARY ACTIVITY:** Create and Refine Implementation Plan  
**MAJOR TASK:** Provide Education and Training

### I. OVERVIEW and DISCUSSION:

- The Transition to Lean transformation involves the most extensive changes the company has ever encountered. Every employee and every job will be dramatically impacted. Successful Transition to Lean will require a deep understanding of Lean principles and practices. Extensive education and training at all levels will be required.
- This will bridge "Create Enterprise Level Plan" with "Implement Lean Initiatives" blocks of the TTL Roadmap.
- Provide E&T at three levels: 1) at the enterprise level, 2) throughout the enterprise where detailed implementation will happen, and 3) everyone else in the organization. (Note: these three levels also reflect the decreasing intensity of the material covered.)
- This is where you put your E&T plan together on how to develop these three levels and what content should be included in each one.
- The focus really has to be on changing beliefs, behavior and attitudes of the organization to ultimately sustain the Transition to Lean initiative.
- Education and Training are two different things. We want to educate into Lean thinking and train into Lean practices and behavior.
- The sequence is education, training and challenge. (Education in Lean thinking), (Training in Lean practices and behaviors), and (Challenge in targets or goals). Metaphorically, E = roots, T= stalk, C= bloom.
- Often it is difficult to assess how effectively we have educated and trained the entire organization.

### II. TENSIONS:

Answer the question

list the Tensions

<p><b>Why: “Why Provide E&amp;T?”</b></p> <ul style="list-style-type: none"> <li>• The Lean paradigm is substantively counter-intuitive.</li> <li>• Few if any of the company's employees will understand Lean principles and practices.</li> <li>• The lessons, habits and beliefs of 'Mass' production have to be unlearned.</li> </ul>	<ul style="list-style-type: none"> <li>• There are some misconceptions and preconceptions that have to be undone.</li> <li>• It will take time away from ongoing responsibilities to do the training.</li> <li>• There may have to be a sequencing of education to remove the barriers of ignorance. To do a flow-down first may help break down this barrier.</li> </ul>
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<p><b>What: “What E&amp;T should be Provided?”</b></p> <ul style="list-style-type: none"> <li>• Time phased education and training for every employee at every level. A comprehensive, multi-year program must be designed.</li> <li>• You need to provide both E&amp;T.</li> <li>• See the difference between E&amp;T above; ultimately the goal is to get people to embrace the understanding and principles of Lean. (Don’t lose sight of the fact that E&amp;T is not just teaching an employee how to reduce inventory per se, it is the knowledge of the Lean principles that will ultimately help the org. overall.)</li> </ul>	<ul style="list-style-type: none"> <li>• You need to tailor for at least three different audiences (see above discussion).</li> <li>• The scarcity of E&amp;T materials that efficiently capture the Lean concepts.</li> <li>• It is difficult to truly convey the passion piece of Lean behavior.</li> </ul>
<p><b>Who: “Who Provides E&amp;T?”</b></p> <ul style="list-style-type: none"> <li>• Sanctioned and fully supported by the Enterprise Leader; combination of in-house and external trainers.</li> </ul>	<ul style="list-style-type: none"> <li>• What are we going to say about the source of training (This is where the issue of consultancy collaborative and alliances may come into play.)</li> </ul>
<p><b>How: “How is E&amp;T Provided?”</b></p> <ul style="list-style-type: none"> <li>• Determine specific education and training elements needed in proper sequence at each level.</li> <li>• Visit Lean enterprises.</li> <li>• Read, dialogue.</li> <li>• Factory floor demo.</li> <li>• Simulations and other training devices.</li> <li>• Classroom training.</li> <li>• Tap into the E&amp;T materials of the consortium and other universities and alliances (NIST).</li> </ul>	<ul style="list-style-type: none"> <li>• Can you truly internalize what Lean behavior is like without witnessing it explained and demonstrated by a true believer and practitioner?</li> <li>• Can you truly internalize what Lean behavior is like without ever doing it?</li> <li>• Intellectual property rights on E&amp;T materials.</li> <li>• General demand for quid pro quo.</li> </ul>
<p><b>Where: “Where is E&amp;T Provided?”</b></p> <ul style="list-style-type: none"> <li>• Much education is away from the work site, while most training will be at operations level.</li> <li>• Education can happen anywhere, but training has the most value as OJT.</li> <li>• Simulation experiences can also be powerful. (Simulation can either be virtual or someone else's factory.)</li> <li>• Lean demonstration laboratories.</li> </ul>	<ul style="list-style-type: none"> <li>• Typically people are afraid of allowing you to change the as-is and calling it a "practice". (Argument for simulation.)</li> </ul>
<p><b>When: “When is E&amp;T Provided?”</b></p> <ul style="list-style-type: none"> <li>• JIT and consistent with the detail of knowledge required.</li> <li>• Continuous: on going, comprehensive, time-phased program.</li> </ul>	<ul style="list-style-type: none"> <li>• Sometimes training budgets are not aligned with the required training schedule.</li> <li>• Training budgets are the first to be cut in a down turn.</li> <li>• We often train people in the wrong things.</li> <li>• We often train people in the wrong sequence, which can result in unrealistic expectations and disappointments.</li> </ul>

### III. BARRIERS:

- Requires considerable time away from 'normal' duties; can be very expensive.
- The scarcity of E&T materials that efficiently capture the Lean concept, particularly at the Enterprise level.
- The lack of commonly accepted terminology.
- Insufficient background to understand and absorb the concepts.
- Not everyone cares.

### IV. ENABLERS:

- Most people are willing and want to learn new things.
- People want to be associated with anything that looks progressive.
- Personal development is seen as part of the new employee/company contract (implies that participation will prepare them for advancements in this org or another org).  
This trend may become stronger with time, even though there is little evidence of this being an “acceptable contract basis” by the industry employee.

### V. CASE STUDIES/RESEARCH:

- We need to look at the companies that are successful Lean implementers to see how they did E&T within their organization: key enablers and barriers.
- Look at Joe’s maturity matrix of Lean learning.
- Note: We need to develop E&T materials for the Lean Enterprise Initiative. (Why couldn’t our executive overview or summary serve the level 3 purpose above.)
- Things we have to do: Review the training materials already developed by the AF and Consortium member companies and NIST.
- TTL team needs to develop appropriate E & T materials. (Enterprises do not have resources to develop them.) Need concurrent E & T materials. Need consistent “Lean” E & T, and make E & T Lean. Simulation would be very useful if pertinent.

### VI. REFERENCES/LINKAGES:

- Argyris, C., “Double Loop Learning in Organizations,” *Organizational Psychology: Readings on Human Behavior in Organizations*, (Englewood Cliffs, N.J.: Prentice Hall, 1977), pp. 45-58.
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Gilbert, Emily and Kleiner, Brian H., “Learning to Love Change,” *Leadership & Organization Development Journal*, 1993.

Kolb, D., *Experiential Learning: Experience as the Source of Learning and Development*, (Englewood Cliffs, N.J.: Prentice Hall, 1984).

Shoemaker, Paul J. H., “Scenario Planning: A Tool For Strategic Thinking,” *Sloan Management Review*, Winter 1995, pp. 25-40.

Sineta, Marsh, “The Informal Discussion Group – A Powerful Agent for Change,” *Sloan Management Review*, Spring 1988, pp. 61-65.

**LEM Links:**

OAP 3 (LAI): “Training Hours Per Employee at 26 Plants”

OAP 3 (External): “McDonnell/Douglas Aerospace’s Experience in Training for Integrated Product Development”

OAP 3 (External): “Informal Worker Training Pays Off”

OAP 3 (External): “ Lockheed Martin Pike County – One of Industry Weeks Best Plants”

OAP 3 (External): “Haliburton Energy Services, Inc., - One of Industry Weeks Best Plants”

OAP 3 (External): “McDonnell /Douglas Aerospace – St. Louis (Boeing Aircraft and Missiles) – Best Practice: Integrated Product Definition Process”

OAP 3 (External): “Kurt Manufacturing Company – Minneapolis, MN. –Best Practice: Employee Involvement”

**CYCLE:**

*Short Cycle*

**PRIMARY ACTIVITY:**

*Implement Lean Initiatives*

**MAJOR TASKS:**

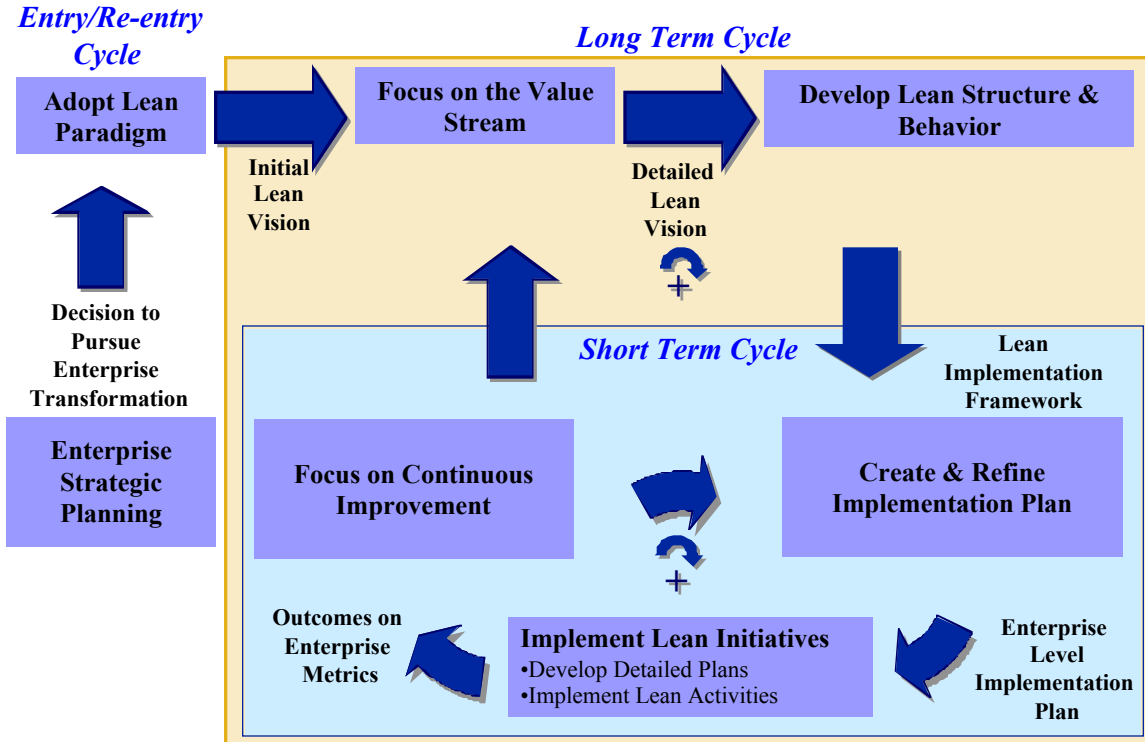
- *Develop Detailed Plans*
- *Implement Lean Activities*



**Figure 5**

## Enterprise Level Roadmap

### Major Tasks within “IMPLEMENT LEAN INITIATIVES”



### IMPLEMENT LEAN INITIATIVES

The second segment of the *Short Term Cycle* is where the process implementation and transformation begins. All previous stages have focused on setting the stage and preparing the organization for the changes in the value -stream activities that will now be affected.

The Enterprise -Level Plan created in the previous segment provides the broad parameters and directions for achieving the changes required to respond to the identified critical needs. Within these parameters and overall schedule, specific short -term action plans and programs are now developed. Detailed plans at the Enterprise level are linked to lower -level plans. The lower -level plans are prioritized and time -phased resources are provided within the framework of a comprehensive schedule. These plans are executed and monitored. Short-term corrective action is determined and incorporated as necessary.

As we iterate through the *Short Term Cycle*, sub-level decomposition of the Enterprise-Level Plan will change as the organization moves more and more toward a Lean state.



## **MAJOR TASKS WITHIN** **“IMPLEMENT LEAN INITIATIVES”**

### **Develop Detailed Plans**

- Map appropriate elements of Enterprise-Level Implementation Plan to core processes (horizontal organizational orientation).
- Structure short-term action plans/projects that are detailed and specific.
- Estimate time-phased resource requirements for each detailed plan.
- Integrate the several detailed plans, generate prioritized schedule.
- Provide resources.
- Assign responsibility and accountability.
- Incorporate needed education and training into the plans.

### **Implement Lean Activities**

- Launch detailed action plans, with coordination and facilitation provided by Lean Focus Office.
- Challenge change agents and senior managers to identify and remove barriers to implementation.
- Track progress against schedule milestones, display outcomes visibly, and broadcast successes.
- Determine and implement short-term corrective action as required and modify overall plan as appropriate.
- Resolve conflicts.
- Provide “just-in-time” education and training.

## **Transition to Lean Roadmap Background Materials**

**CYCLE:** Short Term  
**PRIMARY ACTIVITY:** Implement Lean Initiatives  
**MAJOR TASK:** Develop Detailed Plans

### **I. OVERVIEW and DISCUSSION:**

- As a flow-down from Enterprise Level Plan, define the specific actions, programs and projects that must be conducted within each organizational area as required by the enterprise level plan. All these must be prioritized and sequenced (this is an internal process). Therefore, one has to anticipate a reiteration and further refinement of the enterprise level plan based upon the results of the flow-down detailed planning process, especially with regard to interaction issues.
- Need to know how to provide guidance on the linkage from the prior activities and how to further drill down into the organization.
- We need to show the relationship between the detail groups and possible cross-function initiatives.
- There are different ways of approaching the Transition-to-Lean initiative:
  - The Enterprise Leaders could have arrived at this point in the model having decided to focus on a certain functional area (e.g., manufacturing) and the rest of the organization would then support the change initiative at particular linkage points.
  - Or, the Enterprise Leaders could implement in the same order of detail a change initiative across the organization.
  - So, there still is a wide range of ways to pursue the initiative and these need to be addressed.
- The first step in developing a detailed plan is to define the concept of operations (CONOPS) for the initiative. Before drilling down internally with the initiative, each organizational group has to communicate and match their CONOPS plans with each other.
- Recognize that this is probably where a lot of the surprises or problem areas first surface that differentiate the ideal vision from the practical reality of implementation. It is worth taking the time to get a well-integrated enterprise plan done.
- The interface integration points will be critical in the implementation and the EL will need to understand this.
- The EL has to deal with the hard issues as soon as possible in order to minimize problems in the implementation of the initiative.
- The need for organizational discipline is essential in the success of the initiative.
- As the plans are being developed, executed, and refined, continuous coordination among the detailed plans is necessary.

## II. TENSIONS:

Answer the question

list the Tensions

<p><b>Why: “Why Develop Detailed Plans?”</b></p> <ul style="list-style-type: none"> <li>• To translate Enterprise Plan goals/objectives into explicit actionable tasks, activities and projects.</li> <li>• It’s a way of gaining an early assurance that the organization really understands what it is buying into and what the paradigm is.</li> </ul>	<ul style="list-style-type: none"> <li>• In all likelihood, the resource requirements for the aggregated detailed plan will exceed the original estimate of resource requirements of the individual detailed level plans. (People typically want more money and time than what was given to proceed with the implementation.)</li> <li>• Many people view detailed planning as a waste of time. Results oriented people want to “just get it done”.</li> </ul>
<p><b>What: “What does “Develop Detailed Plans involve?”</b></p> <ul style="list-style-type: none"> <li>• Development of specific, detailed plans (including appropriate E&amp;T) for each Lean initiative, observing the parameters and overall schedule of the Enterprise Level Plan.</li> <li>• Lean implementations need to be focused in areas of the organization’s strategic importance.</li> <li>• The plan should include a schedule, time phased resource commitments, and assigned responsibilities and metrics for tracking implementation progress.</li> <li>• The plan has to include all of the issues involved (i.e., people, technology &amp; tools, information, processes).</li> <li>• Must determine how you are going to cut across the enterprise in identifying the way in which you are going to push the Lean fronts (organization, process, Lean principles - see the view of the world by the cube as one potential way of making that decision).</li> </ul>	<ul style="list-style-type: none"> <li>• In any organization, there is a great deal of disparity between what different people think is “detailed”, so driving to a common framework is essential.</li> <li>• Once you create detailed plans, it involves the monitoring and oversight of implementation as a strict discipline.</li> <li>• The better the plan, the more reluctant the management is to share it due to competitive concerns.</li> <li>• How do you share a detailed plan that outlines the elimination and/or dramatic modification of certain jobs, roles and functions?</li> </ul>
<p><b>Who: “Who Develops Detailed Plans?”</b></p> <ul style="list-style-type: none"> <li>• The people in charge, it is not to be delegated down.</li> <li>• It could involve inputs from cross-functional areas.</li> <li>• If a Lean Focus Office is part of the new structure, it should be a resource in the development of the plans but not the sole source and creator.</li> <li>• The Lean Focus Office should be responsible for setting up the framework and strawman and the organization fills in their core competencies into the frameworks.</li> <li>• Alternatively, rather than have a Lean Focus Office, establish acting operational responsibilities to free management to make Lean implementation their focus. (Under this approach, it is especially critical to obtain corporate buy-in and appreciation of what you are doing.)</li> </ul>	<ul style="list-style-type: none"> <li>• If what you get is “I’m too busy to do this”, or “This is not my role”, then you know that you are not going to have a successful implementation.</li> <li>• You need to have your antenna out, to guard against the planning being used to satisfy another agenda.</li> </ul>

<p><b>How: “How are Detailed Plans Develop?”</b></p> <ul style="list-style-type: none"> <li>• Detailed work breakdown structures; cost/benefit analyses; project management techniques.</li> <li>• Provide/assign resources.</li> <li>• Must include all needed Education and Training.</li> <li>• Map the value stream at the detail level. (Value stream mapping is like Lean, a belief in focusing on getting down to the minimal set to get to a set of requirements.)</li> <li>• DFM, DFA among others are tools to use in mapping value stream.</li> <li>• Recognize that value stream mapping is as much an attitude or belief as it is a methodology. It is the discipline of focusing on the minimum set of value added steps to meet customer needs and is enabled by a whole toolkit of activities that identify the value added elements, including such things as DFM, DFA, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Everyone wants to view themselves as being different; getting buy-in to a common framework will have barriers both perceived and real.</li> <li>• There can be a tendency to get too detailed too quickly and build inflexibility into the Lean implementation process. It important to stay aware that this is a discovery process and we will not know everything at the outset.</li> <li>• The focus always needs to be on where we are trying to arrive as opposed to what road we are traveling on.</li> <li>• The detailed planning process here is the job of the responsible management (even if delegated) and not to be left to someone else to do.</li> <li>• Remember that the enterprise is a total system and whatever is implemented must be internally consistent and structured to drive the Lean paradigm in a positively reinforcing manner. Inconsistencies will work to unravel the Lean organization. (Over time, the failure to deal with peoples’ needs for identity, progress and contribution will undermine the process.)</li> <li>• The detailed plan has to account for the total system effects of the enterprise.</li> </ul>
<p><b>Where: “Where are Detailed Plans Developed?”</b></p> <ul style="list-style-type: none"> <li>• Under coordination of Lean Office (if it exists), at point of action/implementation. But must be created by the management responsible for the implementation.</li> </ul>	<ul style="list-style-type: none"> <li>• The “Where” is very close to the “Who”; who creates the plans can be seen as upsetting the political balance.</li> </ul>
<p><b>When: “When are Detailed Plans Developed?”</b></p> <ul style="list-style-type: none"> <li>• Initially upon entering the Implement Lean Initiatives block, detailed plans are developed for the early portions of the Enterprise Level Plan.</li> <li>• Subsequently, detailed plans are developed and added to the master schedule in accordance with logical progression through the Enterprise Plan, and in recognition of lessons learned through phased implementation.</li> <li>• We should consider whether we want to recommend that this activity be accomplished by a multi-day offsite.</li> </ul>	<ul style="list-style-type: none"> <li>• Detailed planning does take time; this is a juncture point in which you could lose momentum. You have to move quickly so this does not happen. (A suggestion would be to orchestrate some interim status reviews of the detailed planning effort to emphasize the Sr. Leadership effort as we as to promote and encourage Sr. Leadership involvement.)</li> </ul>

### **III. BARRIERS:**

- A lot of people do not like to do planning and consider it a stall to avoid doing the work.
- As a result of the planning process, fundamental unresolved issues in the organization will need to be confronted and so taking on this activity will raise some unintended consequences (people will try to avoid it).
- People throughout the organization are going to know that something is being planned. There is tension about what can and can't be shared and the timing of it.
- Silo organizations can be a barrier to cross-functional planning.
- Most of the successful implementation examples we have of the Toyota Production System model did not appear to involve any detailed planning what so ever. So, the stories we have seen may be the exact opposite of what we are advocating here. However, when dealing at the Enterprise level, we believe that detailed planning is essential for such a complex undertaking.

### **IV. ENABLERS:**

- Lean Focus Office.
- People inherently want to have a picture of where they are going and the detailed planning process provides this type of mechanism.
- Providing a framework for the detailed plan would be an enabler itself.
- The detailed planning period provides an opportunity for people to raise problems and express concerns that can be addressed and de-fused.
- Detailed work breakdown structures; cost/benefit analyses; project management techniques.

### **V. CASE STUDIES/RESEARCH:**

- Question: Should we be recommending that a common format be prescribed for the detailed plans? If so, should we suggest a model for their consideration (i.e., a checklist, etc.)?
- Survey companies that have implemented Lean and which ones have used the equivalent of a Lean Focus Office. Is there a correlation of success of the initiative to the help of a Lean Focus Office and how does this affect the speed of the initiative and quality of results?
- We may simply be reflecting our own experiences here and may be absolutely wrong about the role of detailed planning in Lean implementation success; we need to get on firmer ground here.

### **VI. REFERENCES/LINKAGES:**

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Bergstrom, Robin Yale, "Toward Lean Success," *Production*, Jul 1995, pp. 58-60.

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- Sekine, K., *One Piece Flow: Cell Design for Transforming the Production Process*, (Cambridge, MA: Productivity Press, 1990).
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- Workplace Management*, (Cambridge, MA: Productivity Press, 1988).

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- OAP 12 (External): “JLG Industries, Inc., McConnellsburg, PA – Best Practice: Rate Based Purchasing”

## **Transition to Lean Roadmap Background Materials**

**CYCLE:** Short Term  
**PRIMARY ACTIVITY:** Implement Lean Initiatives  
**MAJOR TASK:** Implement Lean Activities

### **I. OVERVIEW and DISCUSSION:**

- The detailed action plans are executed, according to prescribed sequence and schedule.
- Coordination is provided by Lean Office.
- A key element is to remember what we are implementing - a change in how we view life, manifested by the things we do.
- Recognize that when planning stops and when doing starts, the total energy of the organization needs to be focused on the implementation.
- In implementing Lean activities in a focused area, need to pay attention to involving everyone and challenging everyone in how they contribute to the change management process.
- Communication is a critical part of this process, including the visibility of change/progress metrics.
- "Visual workplace" is an example of best practice in this area.
- It's really important to incorporate the demonstration of results for reinforcement and moving further along.
- Remember that providing "top cover" is a critical enabler to successful innovation.
- A critical Senior Leadership role is to remove barriers during implementation.
- Look to the LEM for best practice ideas at the supporting practice level.
- Utilize available workshops to strengthen and reinforce implementation activities within a company.
- Training needs to be provided at critical points during the implementation. Consider the validity of "just-in-time training" as a key Lean practice.
- Remember that Systems Dynamics theory suggests that the most powerful improvement process typically results in initially degraded performance by normal metrics. (So don't despair if performance degrades in early phase.)
- Make sure that you have thought of who are the available *sensei* at this level of implementation.
- Needs to include monitoring, and corrective action of detailed plans (short term corrective action).



## II. TENSIONS:

Answer the question

list the Tensions

<p><b>Why: “Why Implement Lean Activities?”</b></p> <ul style="list-style-type: none"> <li>• To achieve the Lean Transformation in the most efficient and effective manner possible.</li> <li>• To optimally allocate limited resources to the prioritized set of action programs.</li> </ul>	<ul style="list-style-type: none"> <li>• There will be suspicion and misunderstanding of why we are doing this. There may be a history of past initiatives, broken promises and threats to the employee well-being.</li> <li>• Recognize the great opportunity for this being a positive event/opportunity throughout the workforce.</li> <li>• There is always that segment who believe the good old days are still the best way to do it.</li> <li>• Undoubtedly, you're implementing this new effort in an environment that is under great stress already.</li> <li>• Undoubtedly, there will be some critical decisions that will send the message to the organization about how serious management is about this effort; when they come you need to seize the opportunity correctly.</li> </ul>
<p><b>What: “What does “Implement Lean Activities involve?”</b></p> <ul style="list-style-type: none"> <li>• Empower the workforce to go do it.</li> <li>• The execution of the plan(s).</li> <li>• Coordination across individual Lean initiatives.</li> <li>• The “What” involves the recognition of the chain of implementers. In the adage, the chain is only as strong as its weakest link. (The whole linkage has to be a set of believers and they all must possess a sense of ownership - this linkage is a vertical partnership; each member must understand each other’s roles and responsibilities.)</li> <li>• A critical element of implementation of the detailed Lean activities is the monitoring of successful implementation metrics to the lowest level of activity.</li> </ul>	<ul style="list-style-type: none"> <li>• The Lean initiatives have to be executed while meeting customer demands.</li> <li>• Must push on, despite set backs during implementation.</li> <li>• Lean implementations need to be focused in areas of the organization’s strategic importance.</li> </ul>
<p><b>Who: “Who Implements Lean Activities?”</b></p> <ul style="list-style-type: none"> <li>• The manager responsible for the respective Lean initiative.</li> <li>• Project teams (where appropriate), with assistance from Lean Office.</li> <li>• Has to be the true believers. (If they are not, this is a real danger sign.)</li> </ul>	<ul style="list-style-type: none"> <li>• Getting line managers to assume ownership.</li> <li>• Getting the resources needed to accomplish the initiative.</li> <li>• Competition for resources among initiatives must be referred to the next level up, and the line manager at that next level must resolve these conflicts.</li> <li>• The accountability for progress reporting.</li> <li>• Watch out for the wolf in sheep's clothing.</li> <li>• You need to pay attention that the person you have assigned to implement is the most capable person to successfully implement the strategy or slice of the organization (e.g., new financial reporting system, SPC, etc.).</li> <li>• The key people need to be tied to the process and connected across the organization. Need to recognize the strategy taken and determine the best people after this.</li> </ul>

<p><b>How: “How are Lean Activities Implemented?”</b></p> <ul style="list-style-type: none"> <li>• Varies according to specific requirements.</li> <li>• Employ project management/tracking methodologies.</li> <li>• Many successful change initiatives have been brutal in their absolute determination to succeed.</li> <li>• This should be viewed as a microcosm as how it is being done at the enterprise level. (Consider challenging the implementers at this level to view the EL summary as their own guide book.)</li> <li>• EL and Sr. Managers may participate in a Kaizen event.</li> </ul>	<ul style="list-style-type: none"> <li>• The tendency will be to have an “implementation as usual” approach.</li> <li>• People who have been involved with previous implementations will naturally have a mass production mindset about it.</li> <li>• Most change activities have a half-life, therefore need to pay attention to the timing for "booster shots".</li> </ul>
<p><b>Where: “Where are Lean Activities Implemented?”</b></p> <ul style="list-style-type: none"> <li>• At point of implementation, within each initiative.</li> <li>• Cross-plan coordination provided by Lean Office.</li> <li>• There is no one place, it is along the chain of partnership that we have identified. It has to be recognized that there are different roles and responsibilities that need to be successfully conducted to achieve the end goal.</li> </ul>	<ul style="list-style-type: none"> <li>• In general, the initial Lean implementation will not involve everyone immediately. The ancillary communication to calm the less affected organizational areas is vital.</li> <li>• The first areas identified are those which need the most help or have the most to gain, which suggest they are in current trouble or stressed already.</li> </ul>
<p><b>When: “When are Lean Activities Implemented?”</b></p> <ul style="list-style-type: none"> <li>• As sequenced and scheduled by the detailed plan.</li> <li>• To support the sense of urgency, you would like to implement certain Lean activities when the Lean initiative is announced (formally or by the rumor mill).</li> <li>• It has to be in concert with the training.</li> <li>• Is training not the first step of the Lean implementation?</li> </ul>	<ul style="list-style-type: none"> <li>• Expectations are sometimes raised before the organization is able to move forward.</li> <li>• You can get caught up in waiting until the current crisis has abate somewhat.</li> <li>• Should all other "improvement initiatives" be killed or allowed to exist in parallel?</li> </ul>

### III. BARRIERS:

- Lack of knowledge of project management methodologies and other techniques.
- Competition for scarce resources.
- Unwillingness to release key employees for work on Lean activities.
- Pressure to maintain normal production output during Lean transformation.
- You may have inadequate intellectual resources internally available.
- Resistance to change.
- Middle management and labor leader resistance due to perceived or real loss of power.
- Legacy policies, labor contracts, union rules.

- Perception on the impact of job security.

#### IV. ENABLERS:

- Peoples' inherent desire to perform with excellence.
- Visible scorecards at all levels.
- Human nature - tends to enjoy challenge.
- Perception on the impact of job security.
- Effective comprehensive communication strategy and process.
- Enlightened labor leaders.

#### V. CASE STUDIES/RESEARCH:

- What is the most effective implementation approach - "Just do it", or "with all deliberate speed"? Define what 'effective' means - is it long lasting, etc.
- Do we have evidence of companies who have successfully gone after the low hanging fruit, demonstrating long term success in sustaining their improvement efforts?
- Consider developing a Lean Implementation Reference Model (analogous to Purdue's CIM Reference Model). Set up a methodology/template/guidebook.

#### VI. REFERENCES/LINKAGES:

- Anonymous, *Japanese Management Techniques: Nine Hidden Lessons in Simplicity*, (New York: The Free Press, 1986).
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**CYCLE:**

*Short Term*

**PRIMARY ACTIVITY:**

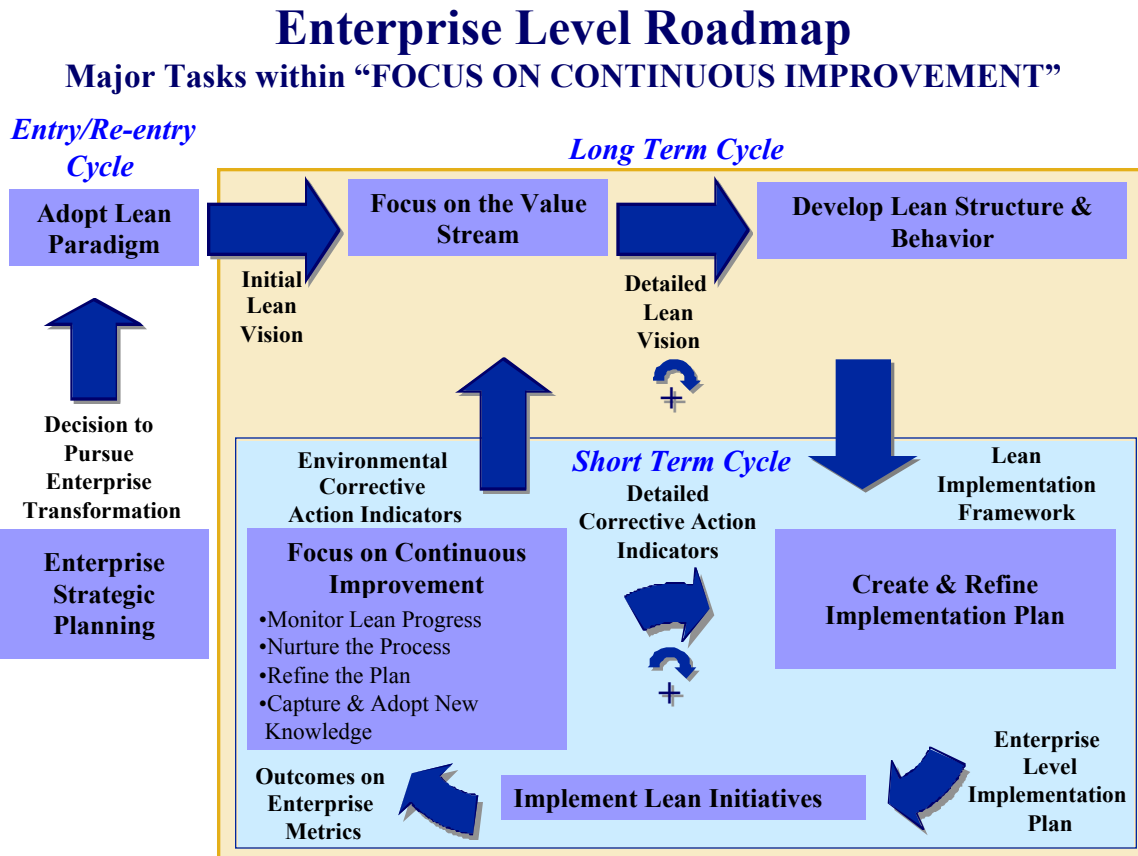
*Focus on Continuous Improvement*

**MAJOR TASKS:**

- *Monitor Lean Progress*
- *Nurture the Process*
- *Refine the Plan*
- *Capture and Adopt New Knowledge*



**Figure 6**



### FOCUS ON CONTINUOUS IMPROVEMENT

This “oversight” segment is the third in the *Short Term Cycle*, and is critically important for long-term effectiveness and continuity. Only when the activities in this segment become a natural part of the Enterprise’s culture can the organization achieve a significant state of being Lean.

This final segment in our Roadmap is in many ways the most critical. The first attempt to create an Enterprise-Level Plan will not yield a categorical plan. The organization will learn from various implementation initiatives. Modifications will be required.

The flow from this segment may go in one of three directions. Ordinarily, it is back through the “Create and Refine Implementation Plan” segment, which exercises the short-term corrective action loop.

At specified intervals and on those occasions when significant structural modifications seem to be called for, the flow will proceed along a second path, to the segment “Focus on the Value Stream”. This path takes us back to the *Long Term Cycle*.

When the Lean transformation process becomes recognized as a keystone within the Enterprise’s strategic plan, a third flow path may occur through the segment “Enterprise Strategic Planning” in the *Entry/Reentry Cycle*. This occurs when the interaction of Enterprise-level strategy and Lean transformation become interdependent and strategic planning, now shaped by Lean implementation, itself may alter the Lean implementation process.

Clearly, the overall Roadmap represents a never-ending process. It suggests a framework in which the organization learns from its past behavior, continually strives to become increasingly focused on *delivering value to the customer*, and is prepared to enter whatever cycle is required to continue its journey toward its continuously updated vision.

## **MAJOR TASKS WITHIN** **“FOCUS ON CONTINUOUS IMPROVEMENT”**

### **Monitor Lean Progress**

- Aggregate results from the implementation of detailed plans back to the Enterprise-Level Implementation Plan.
- Measure implementation progress against schedule and budget.
- Detect significant deviations and determine their causes.
- Institute corrective actions.
- Direct senior managers to participate visibly in monitoring the metric performance and in heralding successes.

### **Nurture the Process**

- Gain the support and encouragement of the Enterprise Leader and senior managers. These are essential, especially when the transformation encounters significant difficulties.
- Pay special attention to modified incentives and rewards: Are they working? Are they understood? Do they need further modification?
- Encourage entire workforce to offer suggestions for further improvements. Benefits gained from Lean implementation should be shared equitably between management and the workforce.
- Make sure that specific issues/problems are dealt with by the Lean Focus Office.
- Emphasize positive reinforcement.

### **Refine the Plan**

- Assess each element of the Enterprise-Level Implementation Plan.
- Incorporate prescribed corrective actions; re-level resources if necessary.
- Revise, eliminate, and add elements to the plan as appropriate.
- Determine when a significant change or high-level re-think is needed; in such cases, revisit the *Long Term Cycle* to determine the necessary modifications.

### **Capture and Adopt New Knowledge**

- Capture lessons learned (from both internal and external sources) and add to the Enterprise Knowledge Base.
- Translate and generalize lessons learned for incorporation into Enterprise decision processes, design rules, operating rules, etc.
- Provide input to the Enterprise Strategic Planning Process.



## Transition to Lean Roadmap Background Materials

**CYCLE:** Short Term  
**PRIMARY ACTIVITY:** Focus on Continuous Improvement  
**MAJOR TASK:** Monitor Lean Progress

### I. OVERVIEW and DISCUSSION:

- Monitor progress of Enterprise Level Plan (as implemented by the programs, projects and activities) against established milestones and performance measures.
- Particular attention must be paid to monitoring of the Change Management model being utilized.
- The selection of metrics is important, remembering the principle, “you get what you measure”.
- There should be wide visibility of these metrics across the enterprise. (Consider the enterprise extending to/from the customer and back through the suppliers.)
- The EL and Sr. Managers need to personally and publicly review the metric performance.
- We need to learn how to measure and monitor behavioral change (e.g., trust and expectations).
- It is necessary to take action dictated by the metric trends to retain a healthy respect for the monitoring and significance of the metrics.

### II. TENSIONS:

Answer the question

list the Tensions

<p><b>Why: “Why Monitor Lean Progress?”</b></p> <ul style="list-style-type: none"> <li>• To detect deviations from plans quickly, so that any needed corrective actions may be determined and specified.</li> <li>• To reinforce behavior.</li> <li>• To communicate to organization what is important.</li> </ul>	<ul style="list-style-type: none"> <li>• The tendency of the managers to focus on traditional mass production measures (labor and overhead).</li> <li>• Difficulty of measuring behaviors.</li> <li>• Most of the rest of the world are measuring something else (Corporate can’t put what you are doing into any context.)</li> </ul>
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<p><b>What: “What does Monitor Lean Progress involve?”</b></p> <ul style="list-style-type: none"> <li>• Proactively to negative metric trends, decisively and publicly.)</li> <li>• Deciding upon the important few vs. the trivial many. Assessment of actual progress against goals/objectives and schedule at the Enterprise plan level.</li> <li>• Periodic progress reports to EL, Sr. Managers.</li> <li>• Assess progress on Change Management model.</li> <li>• Optimize the total system performance rather than individual performance.</li> <li>• Need to monitor the cross-initiative progress, where the interdependencies occur.</li> <li>• What does Lean progress involve? (It involves a requirement to respond.)</li> </ul>	<ul style="list-style-type: none"> <li>• There are at least two dimensions: 1) progress in behavior and 2) progress in Lean terms. Are the results of the implementation of the aggregate Lean practices changing the organization? (Think about metrics at the three critical elements of Systems Dynamics thinking: structural change leads to behavior change that leads to results change.) (Another way would be by the four elements of the balanced scorecard.)</li> <li>• We may have to kill legacy metrics that people hang on to.</li> <li>• Metrics may change as the organization process matures.</li> </ul>
<p><b>Who: “Who Monitors Lean Progress?”</b></p> <ul style="list-style-type: none"> <li>• Everyone has a stake; it doesn’t matter where you are in the spectrum, you are interested in the top end as well as the bottom end of the process.</li> <li>• EL, Sr. Managers.</li> <li>• If present, Lean Focus Office facilitates.</li> </ul>	<ul style="list-style-type: none"> <li>• The EL or Sr. Managers may be adverse to the embarrassment of public disclosure of “poor results”.</li> </ul>
<p><b>How: “How is Lean Progress Monitored?”</b></p> <ul style="list-style-type: none"> <li>• Project management/tracking methodologies.</li> <li>• Visible, meaningful scorecards.</li> <li>• Assessment of progress relative to behavior change.</li> <li>• With the least amount of added effort.</li> <li>• Equivalent of stand-up meetings (cross-accountability and group help).</li> <li>• Management by exception.</li> </ul>	<ul style="list-style-type: none"> <li>• Here is a good marketing opportunity for EL in sharing progress metrics with suppliers and customers. (You look progressive and open.)</li> </ul>
<p><b>Where: “Where is Lean Progress Monitored?”</b></p> <ul style="list-style-type: none"> <li>• The virtual Lean War-room (Enterprise Level Plan).</li> <li>• Throughout the Enterprise.</li> <li>• Special emphasis in the EL office.</li> <li>• Should become part of the executive information systems.</li> <li>• We need to relate this to the corporate strategic plan.</li> </ul>	<ul style="list-style-type: none"> <li>• The perceived sensitivity of some of the data being available and therefore “un-spinnable”.</li> <li>• Must avoid the tendency to hand this off.</li> </ul>
<p><b>When: “When is Lean Progress Monitored?”</b></p> <ul style="list-style-type: none"> <li>• Right from the get-go and on-going.</li> <li>• At regularly established reviews.</li> </ul>	<ul style="list-style-type: none"> <li>• When the metric is no longer meaningful, then kill it.</li> </ul>

### III. BARRIERS:

- The inability of the normal reporting system to capture the metrics that we have specified.
- Those doing the work can see recording and reporting of metrics as a non-value activity.
- Overcoming the perception of the metric being personalized instead of tied to the process.
- Lack of good methodology and subjectivity of some metrics for measuring behavioral change.
- The absence of benchmarking to put the metric value or trend into perspective.

#### **IV. ENABLERS:**

- People like to see evidence of their progress and fruition of their efforts. It supports a sense of being “in control”.
- It is essential for any control feedback process.
- It builds ownership by the group.
- The visual workplace.
- Structured review meetings/sessions.

#### **V. CASE STUDIES/RESEARCH:**

- The selection of the metrics is important, remembering the principle “you get what you measure”. (This is an area where we may want to consider developing a recommended list of metrics.)
- What are the key metrics used to track Lean progress?
- How do you monitor and measure behavioral change (e.g., trust and expectations)?

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## Transition to Lean Roadmap Background Materials

**CYCLE:** Short Term  
**PRIMARY ACTIVITY:** Focus on Continuous Improvement  
**MAJOR TASK:** Nurture the Process

### I. OVERVIEW and DISCUSSION:

- Proactive involvement of top management. The EL has to be the principal cheerleader, champion and coach.
- Senior Managers must be consistent in support of the effort. They are the cheerleader, champion and coach for their areas.
- Assure that management actions and decisions are consistent with Lean principles and practices.
- Be sensitive to need for additional support, further modifications in incentives, structures and systems.
- Provide additional E&T as needed.
- Assure persistent provision of required resources.
- Visibly recognize and reward people (individuals and teams) who make “successes” possible. Equally provide a safe environment for people to “fail” in their initial attempts to implement.
- Key role is to break down barriers.
- The EL and Senior Managers need to themselves grow and learn. May want to get involved in selective projects. A good methodology for nurturing the process is to personally participate in a high profile project.
- Regularly conduct meetings to break down problems and to enable other steps. Provide internal and external networking opportunities to share progress and to get input from others. (Strong method of enforcement - Synergistic and Reinforcing).
- Guidance to nurture the personal skills of the people (e.g., learning how to make presentations, organizational skills, group processes, etc.).

### II. TENSIONS:

Answer the question

list the Tensions

Answer the question	list the Tensions
<p><b>Why: “Why Nurture the Process?”</b></p> <ul style="list-style-type: none"> <li>• To continually re-assure the entire organization (workforce) that Top Mgmt is fully committed to this Transition to Lean, for the good of all stakeholders.</li> <li>• To continually refine and re-boost the overall Lean implementation processes.</li> <li>• There is a need to re-boost the energy within the different initiatives because people lose focus, get diverted and need to be re-assured.</li> </ul>	<ul style="list-style-type: none"> <li>• It again focuses on the desirability to have an integrative view of the “Lean” implementation activity within the organization’s overall set of initiatives. Don’t want to be nurturing conflicting priorities.</li> <li>• There will continue to be resistance to the initiatives.</li> <li>• Delegation is the enemy of nurturing.</li> </ul>

<p><b>What: “What does Nurture the Process involve?”</b></p> <ul style="list-style-type: none"> <li>• See Discussion.</li> <li>• Also, particular attention is paid to the effectiveness and acceptance of modified incentives and reward structures.</li> <li>• Nurturing the process is more than being a cheer-leader; it also involves responding proactively to the changes that must be made.</li> </ul>	<ul style="list-style-type: none"> <li>• Nurturing the process can in fact require you to make corrections in the plan that has been laid out which constitutes changes in the change process.</li> <li>• Avoid knee-jerk over-reaction. This is a period of great uncertainty and over-reaction as well as under-reaction should be equally avoided. (Here is where honest and open communication can be helpful and having the organization recognize that this process of change has merit and is not just random action.)</li> <li>• In situations involving organized labor, special attention may be required for this nurturing.</li> </ul>
<p><b>Who: “Who Nurtures the Process?”</b></p> <ul style="list-style-type: none"> <li>• EL, Sr. Managers and Change Agents, with detailed inputs from Lean Focus Office initially.</li> <li>• Optimal condition has been reached when everybody feels responsible to nurture the process. (This degree of ownership may be a valuable metric for measuring the progress of Lean implementation within the organization.)</li> </ul>	<ul style="list-style-type: none"> <li>• Traditionally, other levels have not felt responsibility for nurturing the change process.</li> <li>• Lack of continuity of top management leadership.</li> <li>• Casual loop diagram that reinforces further progress irrespective of where it might have started. Critical inertia is the criterion. Interesting dynamic between the top and bottom of the organization and is a relationship issue.</li> <li>• What do you do when the EL and/or Senior Managers are not natural nurturers by personality or inclination?</li> </ul>
<p><b>How: “How is Process Nurtured?”</b></p> <ul style="list-style-type: none"> <li>• See Discussion.</li> <li>• Also, special attention is focused upon fostering the capacity and willingness among the entire workforce to come forward with suggestions for further improvement.</li> <li>• Successes are heralded. Problems are identified and additional assistance/resources are provided when justified and required.</li> </ul>	<ul style="list-style-type: none"> <li>• Reference the “causal loop” diagram comment above and note that this is probably a good area for some case study examples of how successful processes have been nurtured.</li> <li>• Those teams which are not given as much attention as other may feel slighted.</li> <li>• Those involved in initiatives scheduled to start later may feel slighted.</li> </ul>
<p><b>Where: “Where is the Process Nurtured?”</b></p> <ul style="list-style-type: none"> <li>• Same as “Who”</li> <li>• “Where” could be throughout the value chain, as well as at the interfaces (suppliers, customers, Corporate, etc.).</li> </ul>	<ul style="list-style-type: none"> <li>• The “Lean” implementation requires a change that may be difficult for the interfaces to understand and appreciate.</li> <li>• The challenge of interfacing “Lean” philosophy with stakeholders (customers, suppliers, etc.) in which “non-Lean” philosophy may exist.</li> </ul>
<p><b>When: “When is Process Nurtured?”</b></p> <ul style="list-style-type: none"> <li>• At the very start and on going.</li> <li>• Stay aware of “Nurturing Moments”; value small things, which pay multiples of dividends for the time spent. Requires an uncommon sensitivity.</li> </ul>	<ul style="list-style-type: none"> <li>• Normal day-to-day activity would tend to interfere (may need scheduled times for nurturing).</li> <li>• A dark side: regularly scheduled approach can appear to be going through the motions and lose its personal touch.</li> <li>• Delegation is the enemy of nurturing.</li> </ul>

### **III. BARRIERS:**

- There is always a communication gap between the top of the organization and the implementation areas, and hence the view of nurturing is always going to be skewed by whose eyes you are looking through.
- Recognize that there are always some elements that want you to fail.
- There is a time lag between action and result that can lead to either overkill or conversely insufficiency of effort.
- The relative insensitivity of various managers to the proper balance between carrot and stick.
- Time it takes to do the nurturing properly.

### **IV. ENABLERS:**

- It feels good to be supportive and to be supported.
- Change Management models (e.g., Kotter reference).
- This is expected by the organization.
- Consultants/training exists to improve individual effectiveness in this area.

### **V. CASE STUDIES/RESEARCH:**

- Are there any case studies identifying how successful processes have been nurtured?
- Are nurturers born or developed? (Similar to the question of whether leaders are born or are developed). Is nurturing necessarily only a “soft” attribute?
- What is it that is needed to make the nurturing process work effectively? (Can be both carrot and stick?)

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**LEM Links:**

- OAP 1 (LAI): “Flow Efficiencies in Multiple Sectors”
- OAP 1 (External): “Northrop Grumman Corporation-El Segundo, CA-Best Practice: Defect Location Plotting and Zone Mapping”
- OAP 2 (External): “Lockheed Martin Tactical Aircraft Systems-Ft. Worth, TX- Best Practice: Conceptual Design Environment”
- OAP 2 (External): “Computing Devices International (General Dynamics Information Systems)-Minneapolis, MN- Best Practice: Design Process Improvement”
- OAP 2 (External): “Rockwell Collins Avionics and Communications Division-Cedar Rapids, IA-Best Practice: Enterprise Core Network”
- OAP 3 (External): “Kurt Manufacturing company-Minneapolis, MN-Best Practice: Employee Involvement”
- OAP4 (External): “Lockheed Martin, Government Electronic Systems-Moorestown, N.J.- Best Practice: LM GES Competitive Initiative”
- OAP 5 (External): “Military Products Using Best Commercial Military Practices (MP/CMP)”
- OAP 5 (External): “Electronic Design and New Manufacturing Processes Eliminate Physical Mockups and Design Errors and Reduce Production Costs for the V-22 Aircraft”
- OAP 5 (External): “Lockheed Martin Tactical Aircraft Systems- Ft. Worth, TX- Best Practice: Product Proof and Prototype Validation”
- OAP 11 (LAI): “Flow Efficiency – Airframe Sector”
- OAP 11 (External): “Nascote Industries, Inc., - Nashville, IL – Best Practice: Reinforced Reaction Injection Molding Process Improvement”
- OAP 11 (External): “Lockheed Martin, Government Electronic Systems-Moorestown, N.J.-Best Practice: Defect and Scrap Reduction”
- OAP 12 (LAI): “Procurement Quantity and Unit Cost Changes”

## Transition to Lean Roadmap Background Materials

**CYCLE:** Short Term  
**PRIMARY ACTIVITY:** Focus on Continuous Improvement  
**MAJOR TASK:** Refine the Plan

### I. OVERVIEW and DISCUSSION:

- Continuous review of the process, eliminating ineffective initiatives and introducing new ones as appropriate.
- Re-schedule as needed in response to actual progress among the detailed projects within the various Lean initiatives. Be sensitive to need for additional support, further modifications in incentives, structure and systems.
- Be responsive to suggestions for change and improvement (avoid NIH behavior).
- Refinement of the plan should be based at least partly on the review of the implementation metrics that have been put into place.
- An important aspect of this activity is the proper assessment of when a major change to the structures and systems is required as opposed to incremental change as part of continuous improvement (is this long cycle or short cycle?).
- Clear, wide and repetitive communication on the need and intent to modify the plan is critical to sustaining the organization’s understanding and support for the process.
- Rumors will always fill any vacuum created by the lack of knowledge.
- In the “Create Enterprise Level Plan” phase, it was recognized that instability and external environment changes will happen and the plan should provide mechanisms of flexibility and adaptability that allow it to continue in the main despite the changing environment.

### II. TENSIONS:

Answer the question

list the Tensions

<p><b>Why: “Why Refine the Plan?”</b></p> <ul style="list-style-type: none"> <li>• To assure that the Enterprise Plan is continuously refined and updated in light of actual implementation results.</li> <li>• To determine when it is necessary to re-visit the Long Term Cycle (Create the Environment).</li> <li>• This is a learning process that you undoubtedly do not get right the first time.</li> <li>• You acquire a better feel for what is possible and the timing and resources required as you move through various phases.</li> </ul>	<ul style="list-style-type: none"> <li>• Don’t get caught up with defending the plan as to whether you have gotten it right or not.</li> <li>• Communication is critical; manage the re-definition process carefully so that the organization does not interpret a shift as a lack of competence. It’s fodder for the naysayers.</li> <li>• Lessons learned are really most effective when you don’t regret the activity that you have decided to discontinue because it is cast in the light of having been a valuable learning experience.</li> <li>• The best refinement is the learning of knowing where to go next.</li> </ul>
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<p><b>What: “What does Refine the Plan involve?”</b></p> <ul style="list-style-type: none"> <li>• “Small” refinements to the Enterprise Plan are made on a regular, on-going basis.</li> <li>• Occasionally, a major re-think will be warranted, resulting in a re-examination of the Plan at a fundamental level.</li> <li>• Focus on the adherence to principles and practices but changing how they are implemented.</li> </ul>	<ul style="list-style-type: none"> <li>• Tendency is to revert to watering down the principles and practices to accommodate the way we used to do it in deference to taking on the really hard barriers to change.</li> <li>• Attention must be paid to the integration and flow-down (refinement at the enterprise level to coordinate refinements at the detail level).</li> </ul>
<p><b>Who: “Who Refines the Plan?”</b></p> <ul style="list-style-type: none"> <li>• EL, Sr. Managers, and Change Agents (assisted by Lean Focus Office, if any), reflecting the insights and recommendations coming up from the organization.</li> </ul>	<ul style="list-style-type: none"> <li>• At the Enterprise level view, necessary changes may seem to be at odds with what’s working and the experiences at local areas (e.g., incentive plan works well at local area but not in general).</li> <li>• Need to retain the “ownership” of the plan throughout the organization.</li> </ul>
<p><b>How: “How is the Plan Refined?”</b></p> <ul style="list-style-type: none"> <li>• Re-examine assumptions and plan structure in light of actual results achieved and of new knowledge acquired.</li> <li>• Plan must be kept aligned with Enterprise Strategic Plan.</li> <li>• Should be a structured process that is scheduled and conducted on a regular basis. In this regard, it can be proactive and not reactive.</li> </ul>	<ul style="list-style-type: none"> <li>• If your planning is proactive it will anticipate problems and thus may be seen by others as being too reactive. The more efficient you are in looking down the road, the more it may seem to the organization that you are not giving the original plan a fair chance before you decide to modify it.</li> <li>• Re-planning is an effort and it’s going to meet resistance as people view it as diversionary.</li> <li>• Maintaining coordination across the many elements of the plan.</li> <li>• Don’t lose sight of the integrative aspects of the plan at the Enterprise level.</li> <li>• Optimal implementation of the refined plan requires re-balancing of resource allocations; this will be resisted.</li> <li>• Requirements change and some might need almost instant attention.</li> </ul>
<p><b>Where: “Where is the Plan Refined?”</b></p> <ul style="list-style-type: none"> <li>• It is refined along the whole value chain.</li> </ul>	<ul style="list-style-type: none"> <li>• Coordination and communication.</li> <li>• Avoiding the revisions being strictly top down.</li> </ul>
<p><b>When: “When is the Plan Refined?”</b></p> <ul style="list-style-type: none"> <li>• Regular schedules that support the organization’s overall strategic plan, but be responsive to significant changes that need immediate response.</li> <li>• When the implementation metrics indicate the need for adjustment.</li> </ul>	<ul style="list-style-type: none"> <li>• Tendency is, once the schedule is created, to adhere to the established schedule and delay ad hoc issues. The longer the cycle of a change issue, the more important it is to not delay.</li> </ul>

### **III. BARRIERS:**

- Tendency is to stay the course rather than refine the plan because changes to the plan take time, energy and effort.
- Alteration of the plan can be interpreted that the first attempt was a failure.
- To be effective, plan changes will probably require reallocation of resources; this will be generally resisted by the organization.
- In many initiatives all the energy is consumed in planning and none is left over for implementation.

### **IV. ENABLERS:**

- Communication of revised plan and reasons for changes.
- Can be a powerful sign of continued involvement and interest of leadership team in the initiative's success.

### **V. CASE STUDIES/RESEARCH:**

- Is there any evidence of anyone going through a Lean implementation process with a formality of planning and re-planning activity?

### **VI. REFERENCES/LINKAGES:**

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## **Transition to Lean Roadmap Background Materials**

**CYCLE:** Short Term  
**PRIMARY ACTIVITY:** Focus on Continuous Improvement  
**MAJOR TASK:** Capture and Adopt New Knowledge

### **I. OVERVIEW and DISCUSSION:**

- As activities occur, initiatives accomplished, and mistakes made, it is important to perform diagnostics so that lessons learned can be captured.
- This is the challenge of a “learning organization”; how do you capture and disseminate knowledge throughout the organization? How do you segregate data from information and information from knowledge? And furthermore, how do you discern what is temporal vs. what is lasting?
- How do you measure the capacity of your organization to comprehend and retain knowledge? “Organization” is defined here as the set of people currently involved and those systems, tools and structure that enable the continuity of lessons learned from the past. It becomes part of the common wisdom of the organization (culture).
- Examples of corporate knowledge: design rules, rules governing behavior and interpersonal relations.
- Is a formal knowledge repository required?
- Sources of knowledge include those that participate internally as well as externally.
- Continual surveillance for discovery of best practices.
- There is an issue in the increasingly rapid turnover of employees.
- There is an intellectual property issue here.
- How does an organization go about implementing a knowledge base?
- Who needs to know what in order to have a Lean organization?
- There is a nuance between the amount and type of knowledge needed and the type of organization you are. For example, a traditional vs. Lean organization. What do you need to know in order to operate as a Lean organization? What is the knowledge needed in a Lean organization in order to function?
- A knowledge base for the company is needed in order for it to operate as a Lean organization. It needs to know the principles, metrics and benchmarking data, etc. These are all things the Lean organization needs to learn (e.g., as it operates it needs to know a schedule [for lead time] and a materials breakdown, etc.).
- The fundamental issue is the issue of new knowledge: learn Lean methodologies, go experience them in the workplace, and from what you have learned, go do. May be able to break the methodologies into specific details. Evaluate against your own culture.
- The challenge is to articulate the principles and practices in a general manner to be applicable in varying situations/environments.

## II. TENSIONS:

Answer the question

list the Tensions

<p><b>Why: “Why Capture and Adopt New Knowledge?”</b></p> <ul style="list-style-type: none"> <li>To move the company toward becoming a “Learning Organization”.</li> <li>To capitalize on lessons learned and contribute them to the <u>Enterprise Knowledge Base</u>.</li> <li>Knowledge is an asset and some would contend that it is the only sustainable asset in a future competitive environment.</li> </ul>	<ul style="list-style-type: none"> <li>To the extent that new knowledge contradicts existing mental models, the new knowledge is generally rejected.</li> <li>We already have data overload. Taking the time to extract what is valuable to retain takes an effort.</li> </ul>
<p><b>What: “What does Capture and Adopt New Knowledge involve?”</b></p> <ul style="list-style-type: none"> <li>As Lean activities and projects are completed, systematically capture lessons learned: what went well and why; where improvements could be made; implications for other initiatives.</li> <li>Acquiring knowledge from the outside.</li> <li>The completing step is the transformation of new knowledge to other activities in the company.</li> <li>It involves starting with asking the question of “what is value in the company and how are we capturing it?”</li> </ul>	<ul style="list-style-type: none"> <li>This requires a degree of discipline that is not common in an organization.</li> <li>The process of capturing and adopting knowledge is an additional task for which additional time and resources are generally not provided.</li> </ul>
<p><b>Who: “Who Captures and Adopts New Knowledge?”</b></p> <ul style="list-style-type: none"> <li>The entire value chain has to participate and capture new knowledge.</li> <li>Chief Knowledge Officer, Lean Focus Office.</li> </ul>	<ul style="list-style-type: none"> <li>Who is responsible to be the knowledge “hunter vs. skinner” in the company? This is not a standard job description in the industry.</li> </ul>
<p><b>How: “How is New Knowledge Captured and Adopted?”</b></p> <ul style="list-style-type: none"> <li>Determine the fundamental knowledge and principles that can be generalized from the outcomes of the various specific experiences.</li> <li>Utilize knowledge engineering tools and techniques.</li> <li>Entrepreneurial surveillance of the environment.</li> <li>It is contained in whatever the statement is of “this is how we do things in this company” - it reflects what the organization has captured as knowledge.</li> <li>Part of this is trying a new approach or practice and capturing the results.</li> <li>There is a minimal critical area for adoption; it is set on a scale of significance of impact vs. time duration. It could be narrow and very high, or wide and long that can make knowledge capture sustainable.</li> <li>Look at what has to be captured and where do I focus my efforts for effective capture? It is not steady or uniform.</li> </ul>	<ul style="list-style-type: none"> <li>Traditionally, knowledge is captured and adopted in an informal/ad hoc fashion.</li> <li>Is informed trial and error a fundamental technique for Lean knowledge creation or is there a prescribed methodology for applying Lean principles to create Lean practices?</li> </ul>
<p><b>Where: “Where is New Knowledge Captured</b></p>	

<p><b>and Adopted?”</b></p> <ul style="list-style-type: none"> <li>• Same as “Who”.</li> </ul>	<ul style="list-style-type: none"> <li>• The complexity and diversity of the typical aerospace enterprise creates the natural challenge of the identification and dissemination of knowledge.</li> <li>• Within a typical organization, useful knowledge is not universal. Not everything applicable for making manufacturing Lean is applicable to Human Resources, for example.</li> </ul>
<p><b>When: “When is New Knowledge Captured and Adopted?”</b></p> <ul style="list-style-type: none"> <li>• On going, with periodic summaries, retrospection, analysis and synthesis.</li> <li>• Periodically update policies, procedures, Enterprise documentation, etc., to reflect new knowledge.</li> </ul>	<ul style="list-style-type: none"> <li>• Realization of knowledge creation is often times after the fact.</li> <li>• It is also difficult to document in real time; it almost always interrupts the process. (If this is true, it calls for some discipline in the organization to get it done.)</li> </ul>

### III. BARRIERS:

- Lack of awareness and understanding of “knowledge engineering” methodologies.
- Lack of maturity of knowledge engineering methodologies.
- It’s tough to create and document simultaneously.
- It’s difficult to discern cause and effect.
- Traditionally there has been no reward structure for capturing and adopting knowledge.
- Knowledge is power and not natural to share.

### IV. ENABLERS:

- Tools and methodologies of Artificial Intelligence and knowledge engineering.
- Principles from literature on Learning Organizations.
- Specific incentives for capturing and adopting knowledge.
- Assigning specific responsibility for this process.

### V. CASE STUDIES/RESEARCH:

- What are the elements of a Lean Enterprise knowledge base?
- How do you measure the capacity of your organization to comprehend and retain knowledge?
- How does an organization go about implementing a knowledge base?
- Let’s go talk to industry people with the title CKO, or CIO and find out whether they are capturing Lean knowledge and information.
- Explore Enterprise Knowledge Base concept.
- Who needs to know what in order to have a Lean organization?
- Are our consortium members capturing and retaining Lean knowledge and information?
- This ties into Next Generation Manufacturing’s knowledge supply chain. (Does this view the knowledge supply chain in the aspects of academia or of industry experience?)

- Can a Systems Dynamic's model be developed to show/explore trade-offs of investment in Lean vs. products vs. markets?

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OAP 2 (LAI): "Formalized Systems in Place at Customer Companies for Sharing Information with their Most Important Suppliers"

OAP 3 (External): "Intranets are Changing Human Resource Operations"

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OAP 7 (LAI): "Percent On-Time Completion/Delivery"  
OAP 10 (External): "Training Hours per Employee"  
OAP 11 (LAI): "Percent of Direct Production Suppliers That Are Certified By Business Units"

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- OAP 11 (External): “Lockheed Martin Tactical Aircraft Systems-Ft. Worth, TX- Best Practice: Supplier Statistical Process Control”

### **Create and Refine Implementation Plan**

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- OAP 3 (LAI): “Training Hours Per Employee at 26 Plants”
- OAP 3 (External): “McDonnell/Douglas Aerospace’s Experience in Training for Integrated Product Development”
- OAP 3 (External): “Informal Worker Training Pays Off”
- OAP 3 (External): “Lockheed Martin Pike County – One of Industry Weeks Best Plants”
- OAP 3 (External): “Haliburton Energy Services, Inc., - One of Industry Weeks Best Plants”
- OAP 3 (External): “McDonnell /Douglas Aerospace – St. Louis (Boeing Aircraft and Missiles) – Best Practice: Integrated Product Definition Process”
- OAP 3 (External): “Kurt Manufacturing Company – Minneapolis, MN. –Best Practice: Employee Involvement”

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- OAP 1 (LAI): "Throughput Improvement"
- OAP 1 (LAI): "Flow Efficiency – Electronic Sector"
- OAP 1 (LAI): "Planned Cycle Time"
- OAP 1 (LAI): "Lean Implementation Considerations"
- OAP 1 (External): "JLG Industries, Inc., - McConnellsburg, PA-Best Practice: Expert System-Machine Configuration"
- OAP 1 (External): "Lockheed Martin Electronics and Missiles-Orlando, FL- Best Practice: Performance Management Teams"
- OAP 1 (External): "Mason & Hanger Corporation, Pantex Plant – Amarillo, TX- Best Practice: Cycle Time Reduction"
- OAP 1 (External): "Dayton Parts, Inc., Harrisburg, PA- Best Practice: Synchronous Manufacturing"
- OAP 1 (External): "Nascote Industries, Inc., - Nashville, IL – Best Practice: Quick Model Change"
- OAP 2 (External): "Weirton Steel Corporation – Weirton, WV – Best Practice: Operations Planning"
- OAP 2 (External): "Lockheed Martin Tactical Aircraft Systems – Ft. Worth, TX – Best Practice: Supplier Performance Evaluation and Review Program"
- OAP 3 (External): "McDonnell/Douglas Aerospace-St. Louis (Boeing Aircraft and Missiles) – Best Practice: Integrated Product Definition Process"

- OAP 5 (LAI): “Reductions in Product Development Cycle Time Achieved Using Integrated Product Development”
- OAP 5 (External): “Lockheed Martin Electronics and Missiles- Orlando, FL – Best Practice: Requirements Management”
- OAP 7 (External): “McDonnell/Douglas Aerospace-St. Louis (Boeing Aircraft and Missiles) – Best Practice: CALS/CITIS”
- OAP 9 (External): “Lockheed Martin, Government Electronic Systems- Moorestown, NJ – Best Practice: Supplier Certification Program”
- OAP 11 (External): “Wainwright Industries, Inc., St. Peters, MO. – Best Practice: Vendor Certification Process”
- OAP 12 (External): “C-17 Program Restructuring Using Best Commercial/Military Practices”
- OAP 12 (External): “McDonnell/Douglas Aerospace –St. Louis (Boeing Aircraft and Missiles)- Best Practice: Integrated Assembly Management Process”
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## **Focus on Continuous Improvement**

### **II. Nurture the Process**

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### **LEM Links:**

- OAP 1 (LAI): "Flow Efficiencies in Multiple Sectors"
- OAP 1 (External): "Northrop Grumman Corporation-El Segundo, CA-Best Practice: Defect Location Plotting and Zone Mapping"
- OAP 2 (External): "Lockheed Martin Tactical Aircraft Systems-Ft. Worth, TX- Best Practice: Conceptual Design Environment"
- OAP 2 (External): "Computing Devices International (General Dynamics Information Systems)-Minneapolis, MN- Best Practice: Design Process Improvement"
- OAP 2 (External): "Rockwell Collins Avionics and Communications Division-Cedar Rapids, IA-Best Practice: Enterprise Core Network"
- OAP 3 (External): "Kurt Manufacturing company-Minneapolis, MN-Best Practice: Employee Involvement"
- OAP4 (External): "Lockheed Martin, Government Electronic Systems-Moorestown, N.J.- Best Practice: LM GES Competitive Initiative"
- OAP 5 (External): "Military Products Using Best Commercial Military Practices (MP/CMP)"
- OAP 5 (External): "Electronic Design and New Manufacturing Processes Eliminate Physical Mockups and Design Errors and Reduce Production Costs for the V-22 Aircraft"
- OAP 5 (External): "Lockheed Martin Tactical Aircraft Systems- Ft. Worth, TX- Best Practice: Product Proof and Prototype Validation"
- OAP 11 (LAI): "Flow Efficiency – Airframe Sector"
- OAP 11 (External): "Nascote Industries, Inc., - Nashville, IL – Best Practice: Reinforced Reaction Injection Molding Process Improvement"
- OAP 11 (External): "Lockheed Martin, Government Electronic Systems-Moorestown, N.J.-Best Practice: Defect and Scrap Reduction"
- OAP 12 (LAI): "Procurement Quantity and Unit Cost Changes"

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#### **III. Refine the Plan**

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OAP 1 (LAI): "Work Instruction Creation on Three Part Types in the Electronic Sector"

OAP 2 (LAI): "Formalized Systems in Place at Customer Companies for Sharing Information with their Most Important Suppliers"

OAP 3 (External): "Intranets are Changing Human Resource Operations"