LESAT: The Lean Enterprise Self Assessment Tool

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Outline

- **LESAT Architecture and Practices**

- **Assessment Process**

- **Case Studies Discussion**

- **Assessment Results**

- **Transformation Insights**

How Do I Assess My Progress?

- **Enterprise transformation experience identified need for assessment tool**

- **Lean Enterprise Self Assessment Tool (LESAT) developed by joint industry / government / MIT team in collaboration with UK LAI**

- **LESAT supports both**
  - **"As-Is" Analysis**

    AND
  - **"To-Be" Vision**

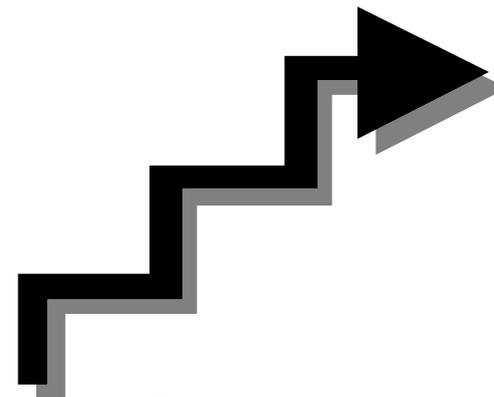- **Targeted at Enterprise Leadership Team**

What Is LESAT?

World Class

Tool for executive self-assessment of the present state of "leanness" of an enterprise and its readiness to change

Assessment Matrix

	1	2	3	4	5

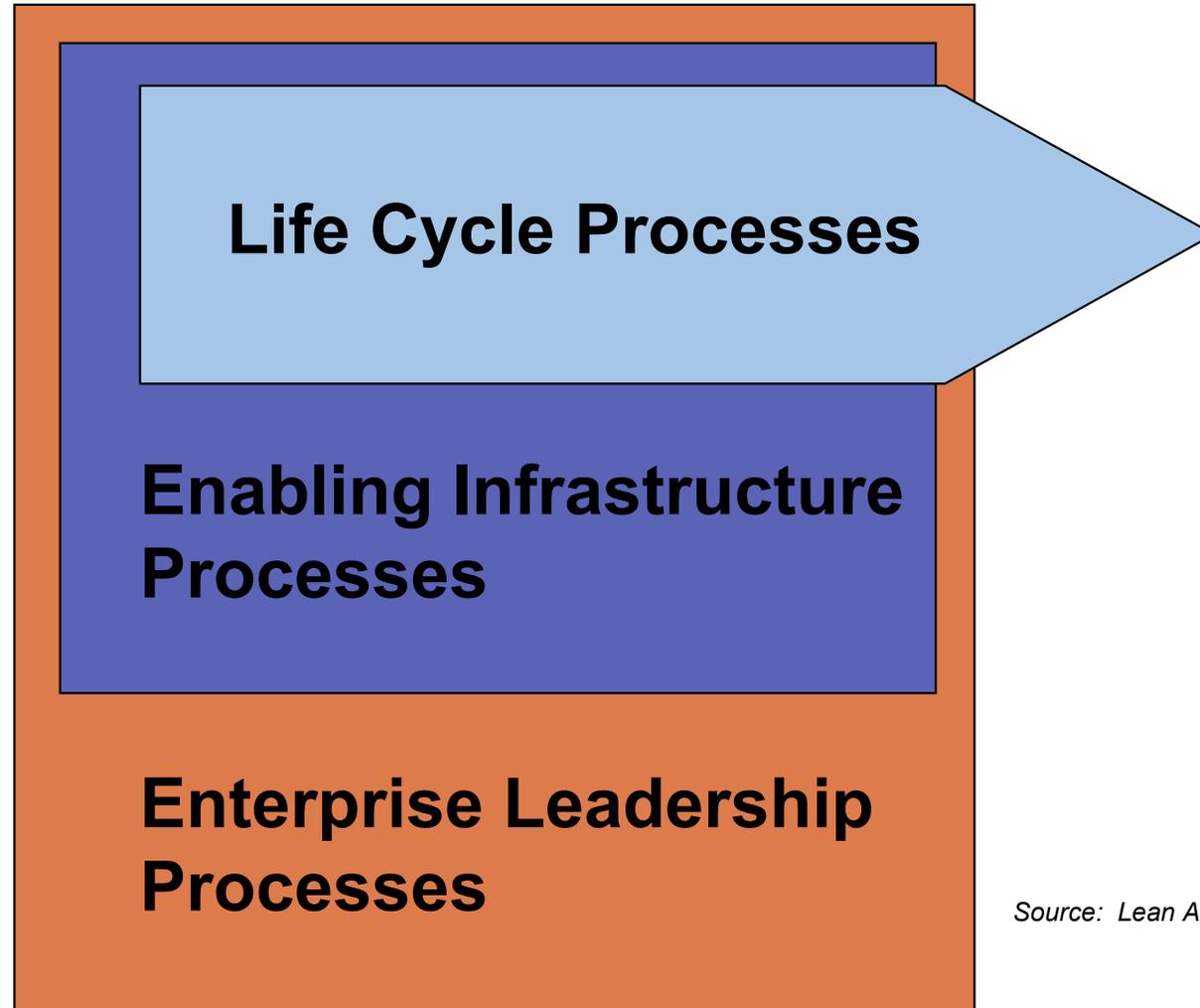**Capability maturity model**

Supporting materials

LESAT Tool Requirements

- ## Simple, easy to use by enterprise leadership

- ## Focus on lean attributes

- ## Alignment with business performance planning (goals and results)

- ## Provides guidance for "next steps"

  - ### Gap analysis capability

- ## Ability to accommodate both single and aligned organizations (teaming, partnerships, suppliers) within an enterprise
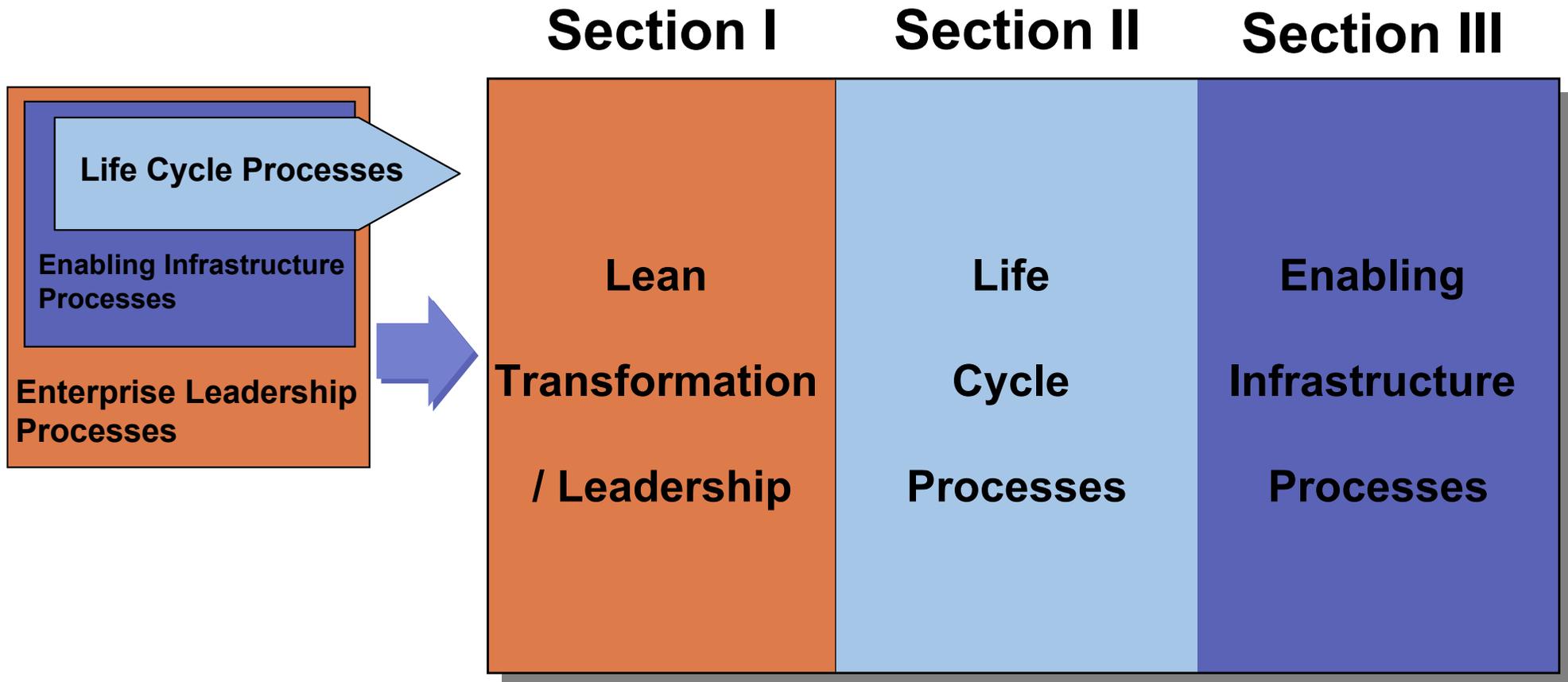
Life Cycle Processes

Enabling Infrastructure Processes

Enterprise Leadership Processes

Source: Lean Aerospace Initiative, MIT © 2001

LESAT Structure is Consistent with Enterprise Architecture

Life Cycle Processes

Enabling Infrastructure Processes

Enterprise Leadership Processes

Section I	Section II	Section III
Lean Transformation / Leadership	Life Cycle Processes	Enabling Infrastructure Processes

Source: Lean Aerospace Initiative, MIT © 2001

Process Capability Maturity Levels

Level 5 — •Exceptional, well-defined, innovative approach is fully deployed across the extended enterprise (across internal and external value streams); recognized as best practice.

Level 4 — •On-going refinement and continuous improvement across the enterprise; improvement gains are sustained.

Level 3 — •A systematic approach/methodology deployed in varying stages across most areas; facilitated with metrics; good sustainment.

Level 2 — •General awareness; informal approach deployed in a few areas with varying degrees of effectiveness and sustainment.

Level 1 — •Some awareness of this practice; sporadic improvement activities may be underway in a few areas.

Source: U.S. and U.K. Lean Aerospace Initiative, © 2001

Lean Enterprise Practices

- There are 54 lean enterprise practices in the assessment, divided amongst the three major sections

  - Section 1 Leadership/Transformation (28 practices)

  - Section 2 Lifecycle Processes (18 Practices)

  - Section 3 Enabling Infrastructure (8 Practices)

- Each practice is assessed on a capability maturity scale of 1 to 5

- There is a practice maturity definition for every maturity level in every practice, provided on a maturity matrix assessment sheet
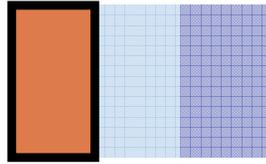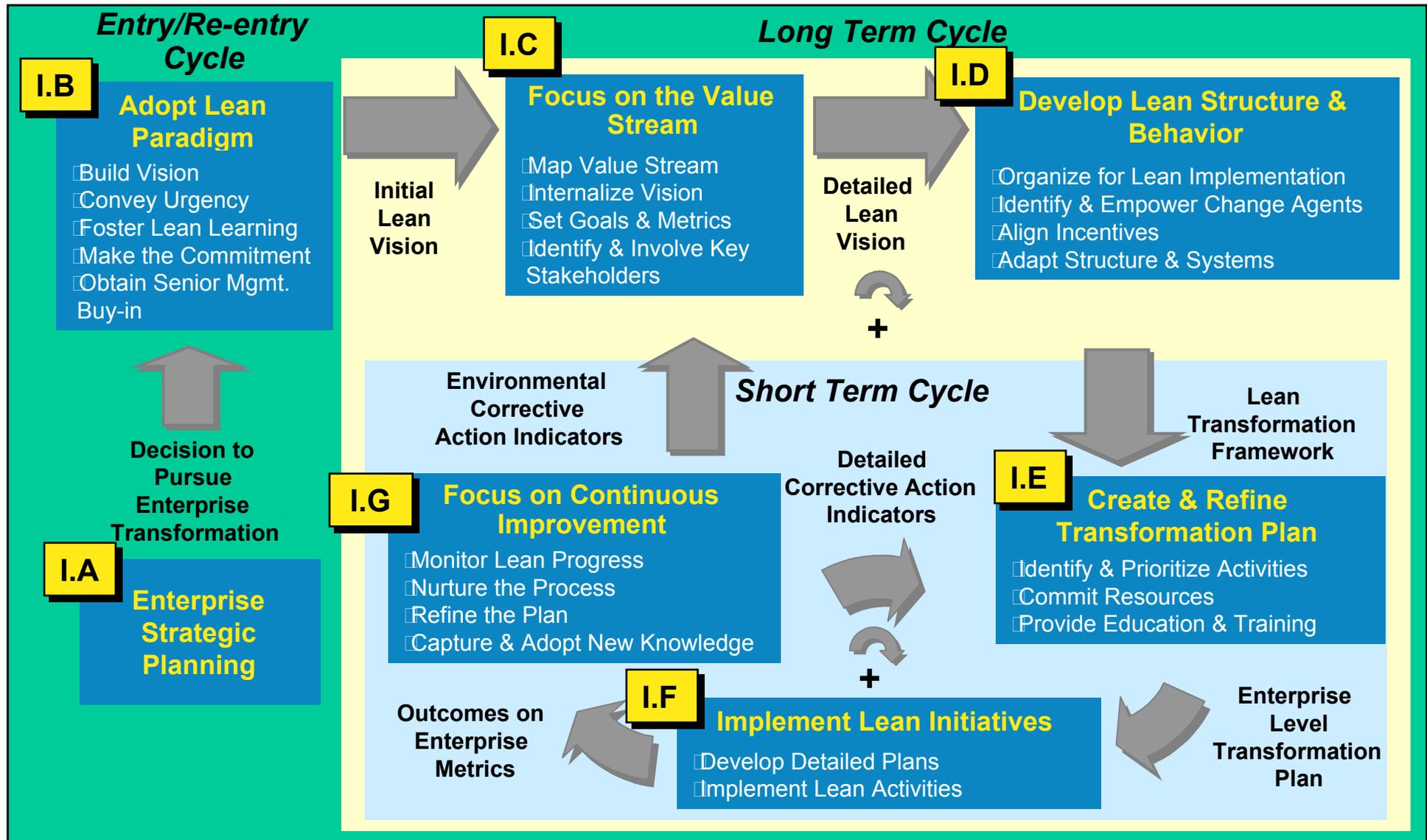
Section I: Lean Transformation/Leadership

- **Practices directly linked to enterprise Transition to Lean Model (TTL)**

- **Assesses the following elements:**
  - **Strategic integration**
  - **Leadership and commitment**
  - **Value stream analysis and balancing**
  - **Change management**
  - **Structure and systems**
  - **Lean transformation planning, execution and monitoring**

Enterprise Level Roadmap

Entry/Re-entry Cycle

Long Term Cycle

I.B Adopt Lean Paradigm
- Build Vision
- Convey Urgency
- Foster Lean Learning
- Make the Commitment
- Obtain Senior Mgmt. Buy-in

Initial Lean Vision

I.C Focus on the Value Stream
- Map Value Stream
- Internalize Vision
- Set Goals & Metrics
- Identify & Involve Key Stakeholders

Detailed Lean Vision

I.D Develop Lean Structure & Behavior
- Organize for Lean Implementation
- Identify & Empower Change Agents
- Align Incentives
- Adapt Structure & Systems

Decision to Pursue Enterprise Transformation

I.A Enterprise Strategic Planning

Environmental Corrective Action Indicators

Short Term Cycle

Detailed Corrective Action Indicators

Lean Transformation Framework

I.G Focus on Continuous Improvement
- Monitor Lean Progress
- Nurture the Process
- Refine the Plan
- Capture & Adopt New Knowledge

I.E Create & Refine Transformation Plan
- Identify & Prioritize Activities
- Commit Resources
- Provide Education & Training

Outcomes on Enterprise Metrics

I.F Implement Lean Initiatives
- Develop Detailed Plans
- Implement Lean Activities

Enterprise Level Transformation Plan

LESAT Section I
28 Lean Practices

I.A. Enterprise Strategic Planning

I.A.1 Integration of Lean in strategic planning process

I.A.2 Focus on customer value

I.A.3 Leveraging the extended enterprise

I.B. Adopt Lean Paradigm

I.B.1 Learning and education in "Lean" for enterprise leaders

I.B.2 Senior management commitment

I.B.3 Lean enterprise vision

I.B.4 A sense of urgency

I.C. Focus on the Value Stream

I.C.1 Understanding current value stream

I.C.2 Enterprise flow

I.C.3 Designing future value stream

I.C.4 Performance measures

I.D Develop Lean Structure and Behavior

I.D.1 Enterprise organizational orientation

I.D.2 Relationships based on mutual trust

I.D.3 Open and timely communications

I.D.4 Employee empowerment

I.D.5 Incentive alignment

I.D.6 Innovation encouragement

I.D.7 Lean change agents

I.E. Create & Refine Transformation Plan

I.E.1 Enterprise-level Lean transformation plan

I.E.2 Commit resources for Lean improvements

I.E.3 Provide education and training

I.F. Implement Lean Initiatives

I.F.1 Development of detailed plans based on enterprise plan

I.F.2 Tracking detailed implementation

I.G. Focus on Continuous Improvement

I.G.1 Structured continuous improvement processes

I.G.2 Monitoring lean progress

I.G.3 Nurturing the process

I.G.4 Capturing lessons learned

I.G.5 Impacting enterprise strategic planning

LESAT Section I: Example

I.B.3 Lean Enterprise Vision - new mental model of the enterprise

Level 1   Senior leaders have varying visions of lean, from none to well-defined

Level 2   Senior leaders adopt common vision of lean

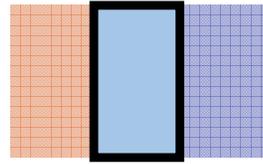**Level 3**   Lean vision has been communicated and is understood by most employees

Level 4   Common vision of lean is shared by the extended enterprise

Level 5   Stakeholders have internalized the lean vision & are an active part of achieving it

Source: U.S. and U.K. Lean Aerospace Initiative, © 2001

Section II: Life Cycle Processes

Assess:

- ## Enterprise level core processes
  - **Acquisition**
  - **Program Management**
  - **Requirements Definition**
  - **Product/Process Development**
  - **Supply Chain Management**
  - **Production**
  - **Distribution and Support**

- ## Key integrative practices

Life Cycle Processes Support Value Delivery

Generic Product Value Stream

Acquire Business	Develop Product	Produce Product	Service Product	Dispose/Update Product

II. A Business Acquisition & Program Management →

II. B Requirements Definition →

II. C Develop Product and Process →

II. D Supply Chain Management →

II. E Produce Product →

II. F Distribute & Service Product →

LESAT Section II
18 Lean Practices

- II.A. Business Acquisition and Program Management
  - **II.A.1 Leverage Lean capability for business growth**
  - **II.A.2 Optimize the capability and utilization of assets**
  - **II.A.3 Provide capability to manage risk, cost, schedule and performance**
  - **II.A.4 Allocate resources for program development efforts**

- II.B. Requirements Definition
  - **II.B.1 Establish a requirements definition process to optimize lifecycle value**
  - **II.B.2 Utilize data from the extended enterprise to optimize future requirement definitions**

- II.C. Develop Product and Process
  - **II.C.1 Incorporate customer value into design of products and processes**
  - **II.C.2 Incorporate downstream stakeholder values into products and processes**
  - **II.C.3 Integrate product and process development**

- II.D. Manage Supply Chain
  - **II.D.1 Define and develop supplier network**
  - **II.D.2 Optimize network-wide performance**
  - **II.D.3 Foster Innovation and knowledge sharing throughout the supplier network**

- II.E. Produce Product
  - **II.E.1 Utilize production knowledge and capabilities**
  - **II.E.2 Establish and maintain a lean production system**

- II.F. Distribute and Service Product
  - **II.F.1 Align sales and marketing to production**
  - **II.F.2 Distribute product in a lean fashion**
  - **II.F.3 Enhance value of delivered products and services to customers and the enterprise**
  - **II.F.4 Provide post-delivery service, support, and sustainability**

LESAT Section II: Example

II.C.2 Incorporate *Downstream Stakeholder Values* (Manufacturing, Support, etc.) into Products & Processes - *Understanding downstream stakeholders allows value to flow seamlessly to customer*

Level 1 — Manufacturing issues are considered late in design

Level 2 — Manufacturing & assembly issues are considered earlier in projects, but in an ad hoc manner. Supplier & cost considerations are limited

Level 3 — Multi-functional teams include some downstream disciplines and key suppliers

Level 4 — Priorities of downstream stakeholders are quantified as early as possible in design, and used for process evaluation and improvement

Level 5 — Downstream stakeholders' values in the extended enterprise are quantified, and balanced via tradeoffs, as a continuous part of the process
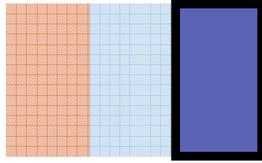
Section III: Enabling Infrastructure

Assess critical supporting processes

- **Finance**
- **Information Technology**
- **Human Resources**
- **Environmental Health & Safety**

8 Lean Practices

- **Lean Organizational Enablers**
- **Lean Process Enablers**

LESAT Section III: Diagnostic Questions

- **Are common tools and systems being used across the enterprise?**

- **How well have the financial and accounting systems been integrated with non-traditional measures of value creation?**

- **How well can stakeholders retrieve financial information as required?**

- **Are human resource practices reviewed to assure intellectual capital matches process needs?**

- **Are enabling infrastructure processes being aligned to value stream flow?**

- **Do processes create the least amount of environmental hazards practical?**

- **Is the information technology system compatible with stakeholder communication and analysis needs?**

LESAT Supporting Materials

- **Introductory Presentation**

- **LESAT Matrices & Facilitator's Guide**

- **TTL Roadmap & Guide**

- **Summary Score Calculator**

- **Glossary of Terms**

Outline

- **LESAT Architecture and Practices**

- **Assessment Process**

- **Case Studies Discussion**

- **Assessment Results**

- **Insights**

Suggested Methodology for Employing LESAT

Step 1: Facilitated meeting to introduce tool. Enterprise leader champions

Step 2: Enterprise leaders and staff conduct LESAT assessment

Step 3: Leadership reconvenes to jointly determine present maturity level

Step 4: Leadership determines desired level and measures gap

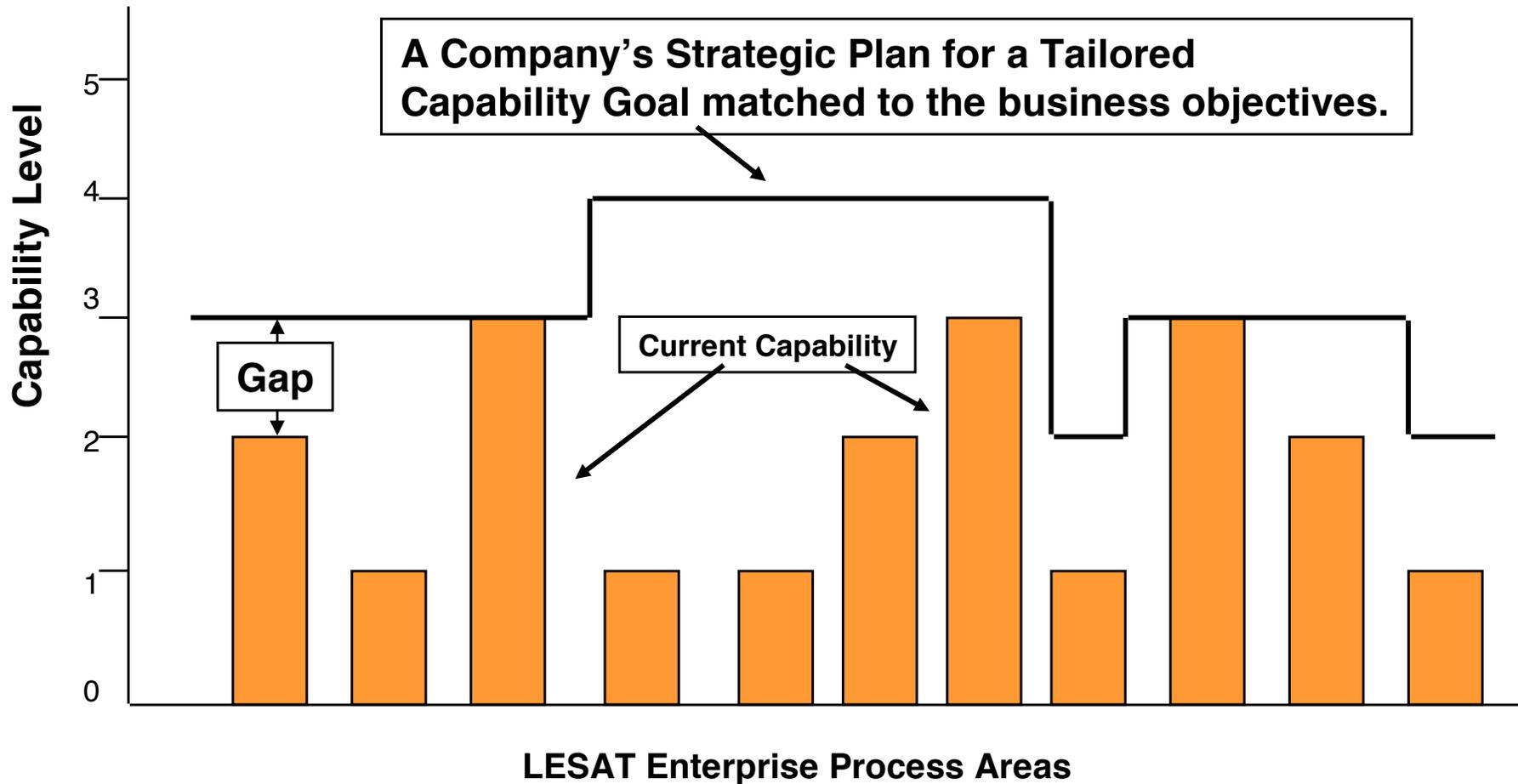**Step 5: Develop action plan and prioritize resources**

Summary Form Example

LESAT Enterprise Self-Assessment Tool (LESAT)				
Section I - Lean Transformation/Leadership				
Process Definition: Develop and deploy lean implementation plans throughout the enterprise leading to (1)- long-term sustainability, (2)- acquiring competitive advantage and (3) satisfaction of stakeholders.				
			Capability Level	
TTL Link	**Lean Practice**	**Lean Characteristic**	**Current**	**Desired**
I.A. Enterprise Strategic Planning	I.A.1 - Integration of Lean in strategic planning process	Lean impacts growth, profitability and market penetration		
	I.A.2 - Focus on customer value	Customers pull value from enterprise value stream		
	I.A.3 - Leveraging the extended enterprise	Value stream extends from customer through the enterprise to suppliers		
		Average		
I.B. Adopt Lean Paradigm	I.B.1 - Learning and education in "Lean" for enterprise leaders	"Unlearning" the old, learning the new		
	I.B.2 - Senior management commitment	Senior management leading it personally		
	I.B.3 - Lean enterprise vision	New mental model of the enterprise		
	I.B.4 - A sense of urgency	The primary driving force for Lean		
		Average		
I.C. Focus on the Value Stream	I.C.1 - Understanding current value stream	How we now deliver value to customers		
	I.C.2 - Enterprise flow	"Single piece flow" of materials and information		
	I.C.3 - Designing future value stream	Value stream to meet the enterprise vision		
	I.C.4 - Performance measures	Performance measures drive enterprise behavior		
		Average		
I.D. Develop Lean Structure and Behavior	I.D.1 - Enterprise organizational orientation	Organize to support value delivery		
	I.D.2 - Relationships based on mutual trust	"Win-win" vs. "we-they"		
	I.D.3 - Open and timely communications	Information exchanged when required		
	I.D.4 - Employee empowerment	Decision-making at lowest possible level		
	I.D.5 - Incentive alignment	Reward the behavior you want		
	I.D.6 - Innovation encouragement	From risk aversion to risk rewarding		
	I.D.7 - Lean change agents	The inspiration and drivers of change		
		Average		

A Company's Strategic Plan for a Tailored Capability Goal matched to the business objectives.

Capability Level

Gap

Current Capability
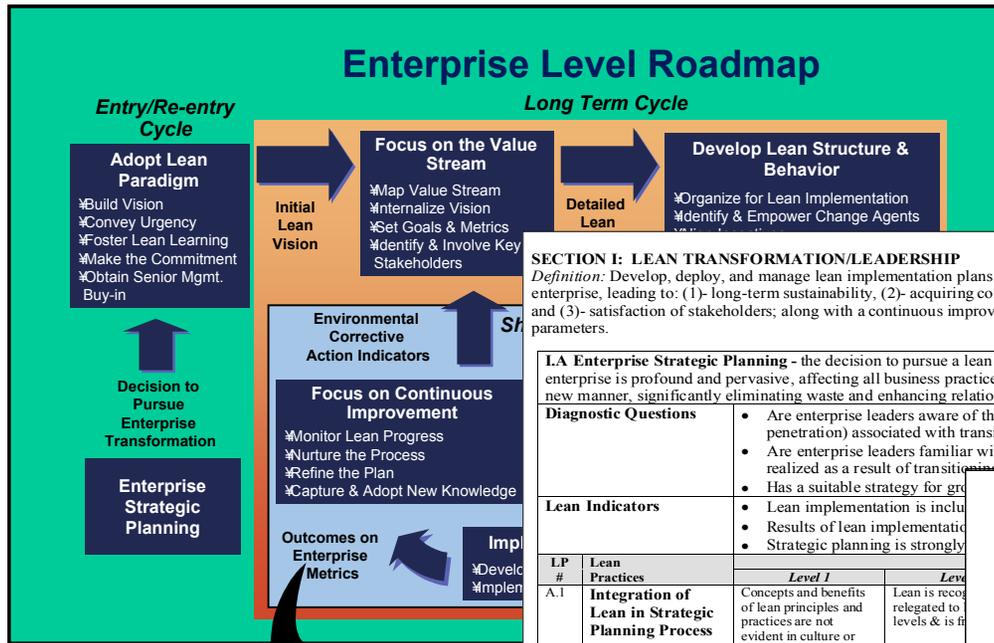
LESAT Enterprise Process Areas

Ground Rules

- **Perform the assessment from a total enterprise perspective, NOT individual functional area**

- **Attempt to assess every practice; leave blank if N/A or if you don't know**

- **Scoring the practices**
  - **Each level assumes that lower level criteria are met**
  - **If between levels, score at the lower level**

- **Note "evidence" for level selected**

- **Identify opportunities to increase maturity level**

- **Seek assistance from company facilitator**

Enterprise Level Roadmap

Entry/Re-entry Cycle

Long Term Cycle

Adopt Lean Paradigm
- ¥Build Vision
- ¥Convey Urgency
- ¥Foster Lean Learning
- ¥Make the Commitment
- ¥Obtain Senior Mgmt. Buy-in

Initial Lean Vision

Focus on the Value Stream
- ¥Map Value Stream
- ¥Internalize Vision
- ¥Set Goals & Metrics
- ¥Identify & Involve Key Stakeholders

Detailed Lean

Develop Lean Structure & Behavior
- ¥Organize for Lean Implementation
- ¥Identify & Empower Change Agents

Environmental Corrective Action Indicators

Decision to Pursue Enterprise Transformation

Enterprise Strategic Planning

Focus on Continuous Improvement
- ¥Monitor Lean Progress
- ¥Nurture the Process
- ¥Refine the Plan
- ¥Capture & Adopt New Knowledge

Outcomes on Enterprise Metrics

Impl
- ¥Develo
- ¥Implem

SECTION I: LEAN TRANSFORMATION/LEADERSHIP

Definition: Develop, deploy, and manage lean implementation plans throughout the enterprise, leading to: (1)- long-term sustainability, (2)- acquiring competitive advantage, and (3)- satisfaction of stakeholders; along with a continuous improvement in all three parameters.

I.A Enterprise Strategic Planning - the decision to pursue a lean transformation is strategic in nature. Its impact throughout the enterprise is profound and pervasive, affecting all business practices and processes. The lean enterprise will behave in a fundamentally new manner, significantly eliminating waste and enhancing relationships with all stakeholders.

Diagnostic Questions	• Are enterprise leaders aware of the strategic opportunities (i.e., greater growth, profitability, and market penetration) associated with transitioning to a "lean enterprise"? • Are enterprise leaders familiar with the dramatic increases in competitiveness that many companies have realized as a result of transitioning to lean? • Has a suitable strategy for gr
Lean Indicators	• Lean implementation is inclu • Results of lean implementatio • Strategic planning is strongly

LP #	Lean Practices	Level 1	Leve
A.1	**Integration of Lean in Strategic Planning Process** *Lean impacts growth, profitability and market penetration*	Concepts and benefits of lean principles and practices are not evident in culture or business plans	Lean is recog relegated to levels & is fi
A.2	**Focus on Customer Value** *Customers pull value from enterprise value stream*	Means of defining value to customer(s) is informal & unstructured	Structured pr defining valu applied to se customers
A.3	**Leveraging the Extended Enterprise** *Value stream extends from customer through the enterprise to suppliers*	Relations with customers and suppliers reflect a "We-They" mentality	Initial oppor identified for establishing enterprise li

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Lean Roadmap Action Plan

PROGRAM:

Section I.A: Lean Transformation / Leadership

Objective
The decision to pursue a lean transformation is strategic in nature. Its impact throughout the enterprise is profound and pervasive, affecting all business practices and processes. The lean enterprise will behave in a fundamentally new manner, significantly eliminating waste and enhancing relationships with all stakeholders.

Impacts / Issues (to be completed by responsible person)
Impact:
- •

Issues:
- •

Responsibility: _____

Success Criteria
- • Enterprise leaders are aware of the strategic opportunities associated with transitioning to a "lean enterprise"
- • The enterprise is involved in defining and documenting the best methods for contributing to customer success
- • The strategic planning process includes key stakeholder's needs from across the enterprise

Major Milestones

Task	01				02			
	1	2	3	4	1	2	3	4
• Understand Need for Change								
• Build Awareness Within Senior Leadership Team								
• Establish Enterprise Strategy								

Source: Northrop Grumman

Outline

- **LESAT Architecture and Practices**

- **Assessment Process**

- **Case Studies Discussion**

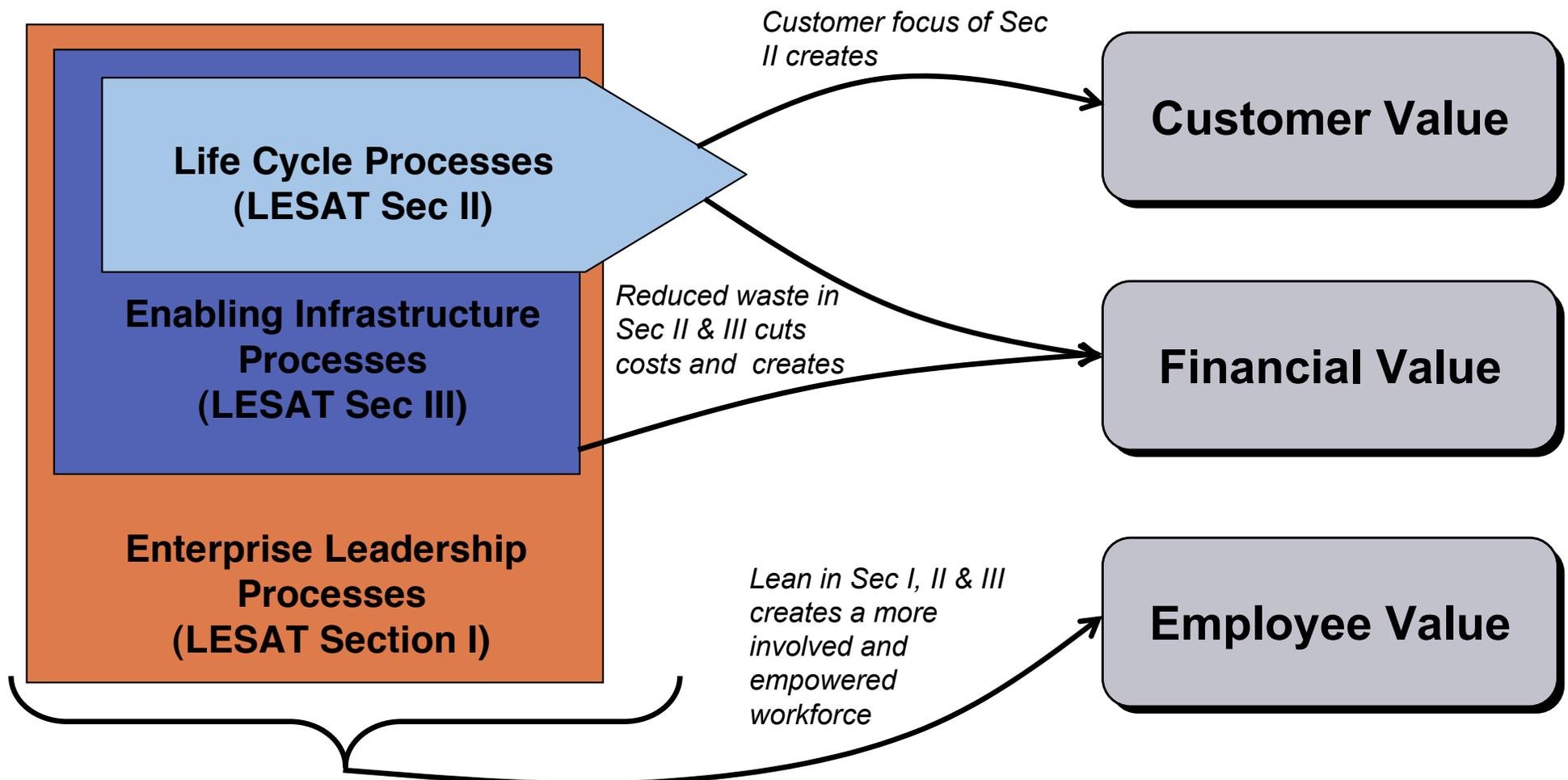- **Assessment Results**

- **Insights**

Outline

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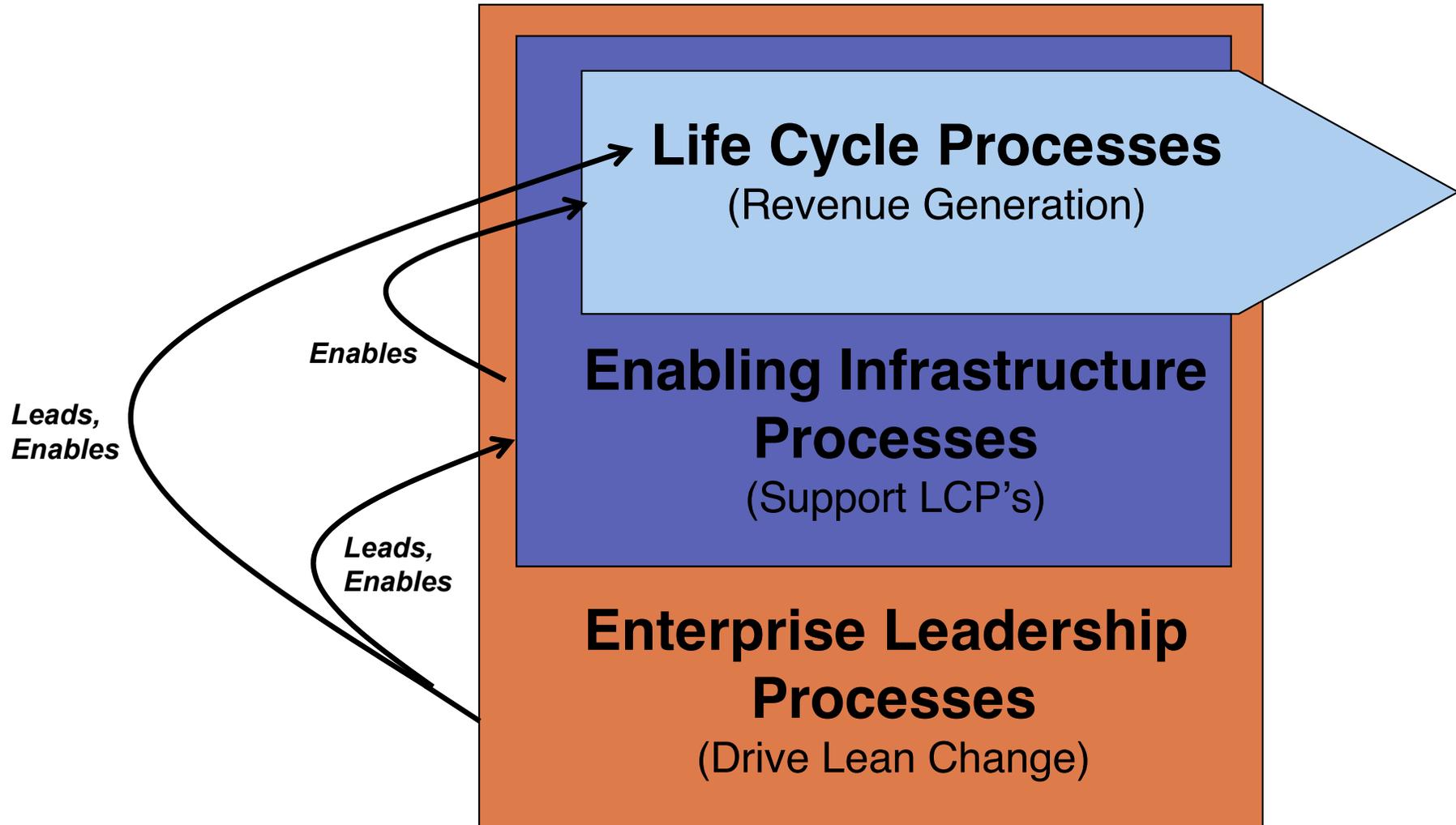# LESAT as a Leading Indicator of Improved Enterprise Value Delivery

State of Enterprise Leanness
(LESAT - Leading Indicators)

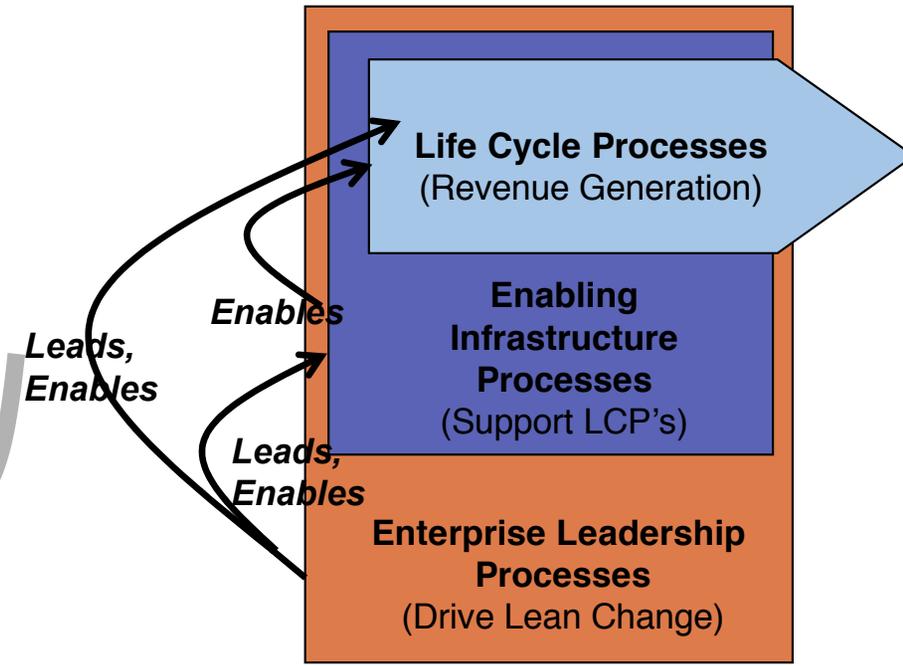## Enterprise Performance Measures
(Lagging Indicators)

Life Cycle Processes (LESAT Sec II)

Enabling Infrastructure Processes (LESAT Sec III)

Enterprise Leadership Processes (LESAT Section I)

Customer focus of Sec II creates

Reduced waste in Sec II & III cuts costs and creates

Lean in Sec I, II & III creates a more involved and empowered workforce

Customer Value

Financial Value

Employee Value

Leading Indicator Relations in Lean Enterprise Transformation

Life Cycle Processes
(Revenue Generation)

Enabling Infrastructure Processes
(Support LCP's)

Enterprise Leadership Processes
(Drive Lean Change)

Leads, Enables

Enables

Leads, Enables

Leadership and Lifecycle Processes
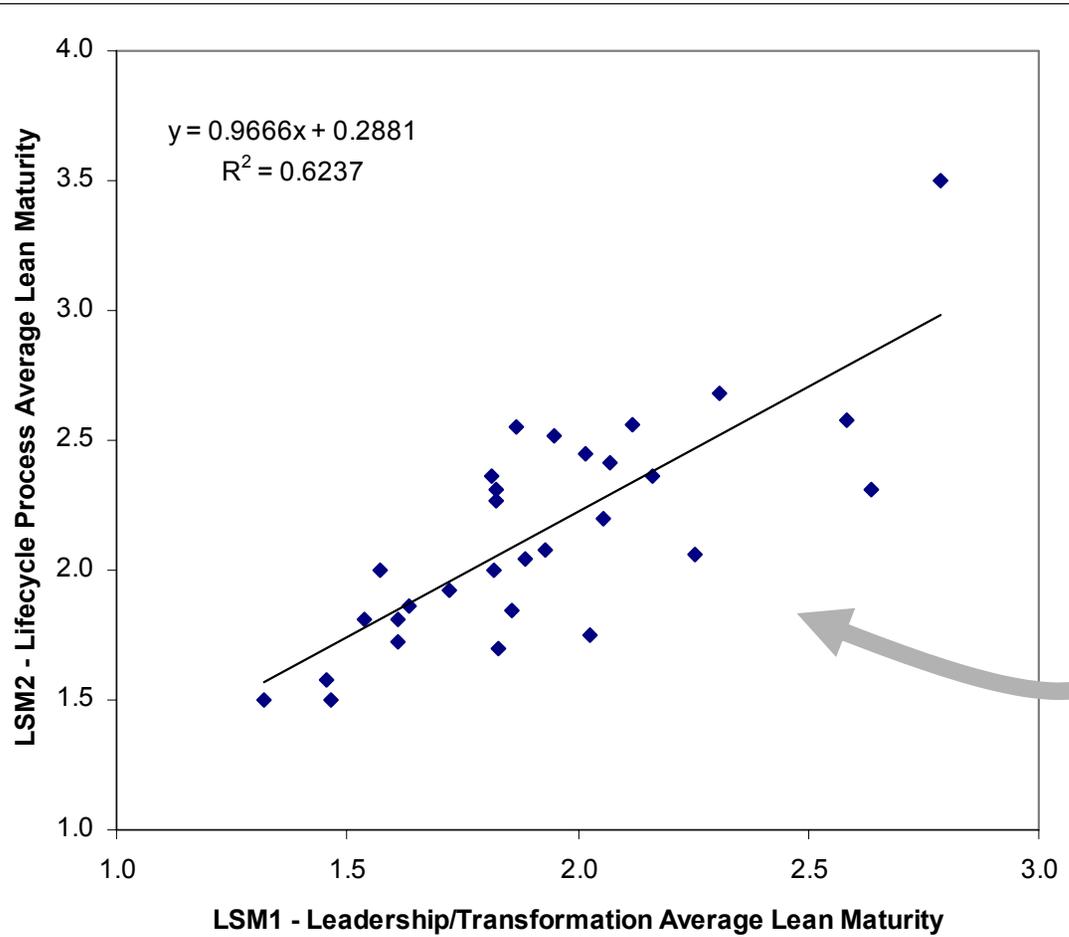
$y = 0.9666x + 0.2881$

$R^2 = 0.6237$

Scatter plot axes: LSM2 - Lifecycle Process Average Lean Maturity (y-axis, 1.0 to 4.0) vs. LSM1 - Leadership/Transformation Average Lean Maturity (x-axis, 1.0 to 3.0)

Leads, Enables

Enables

Leads, Enables

Life Cycle Processes (Revenue Generation)

Enabling Infrastructure Processes (Support LCP's)

Enterprise Leadership Processes (Drive Lean Change)
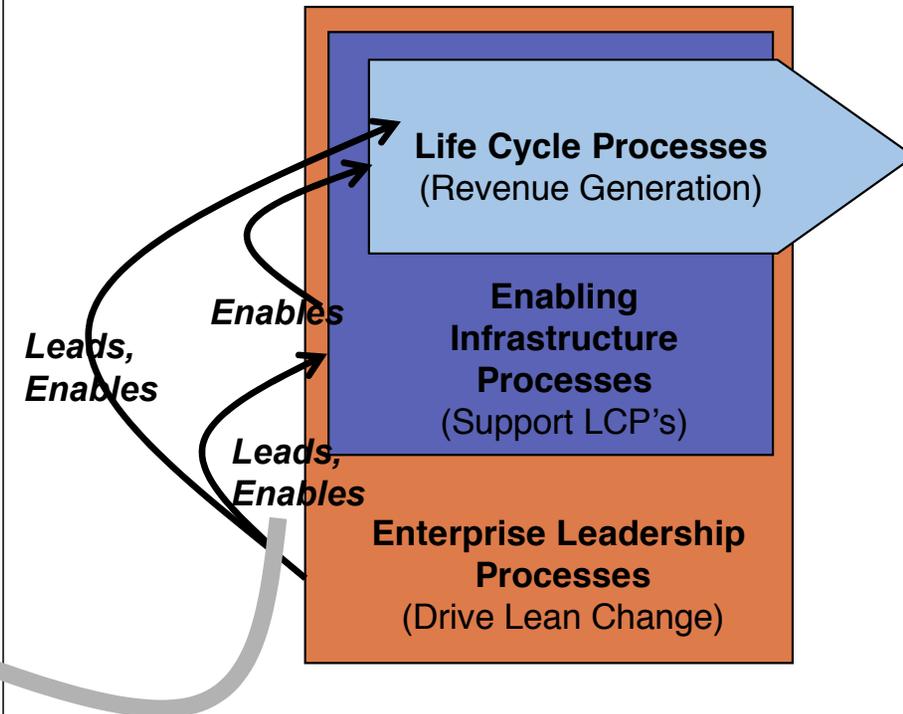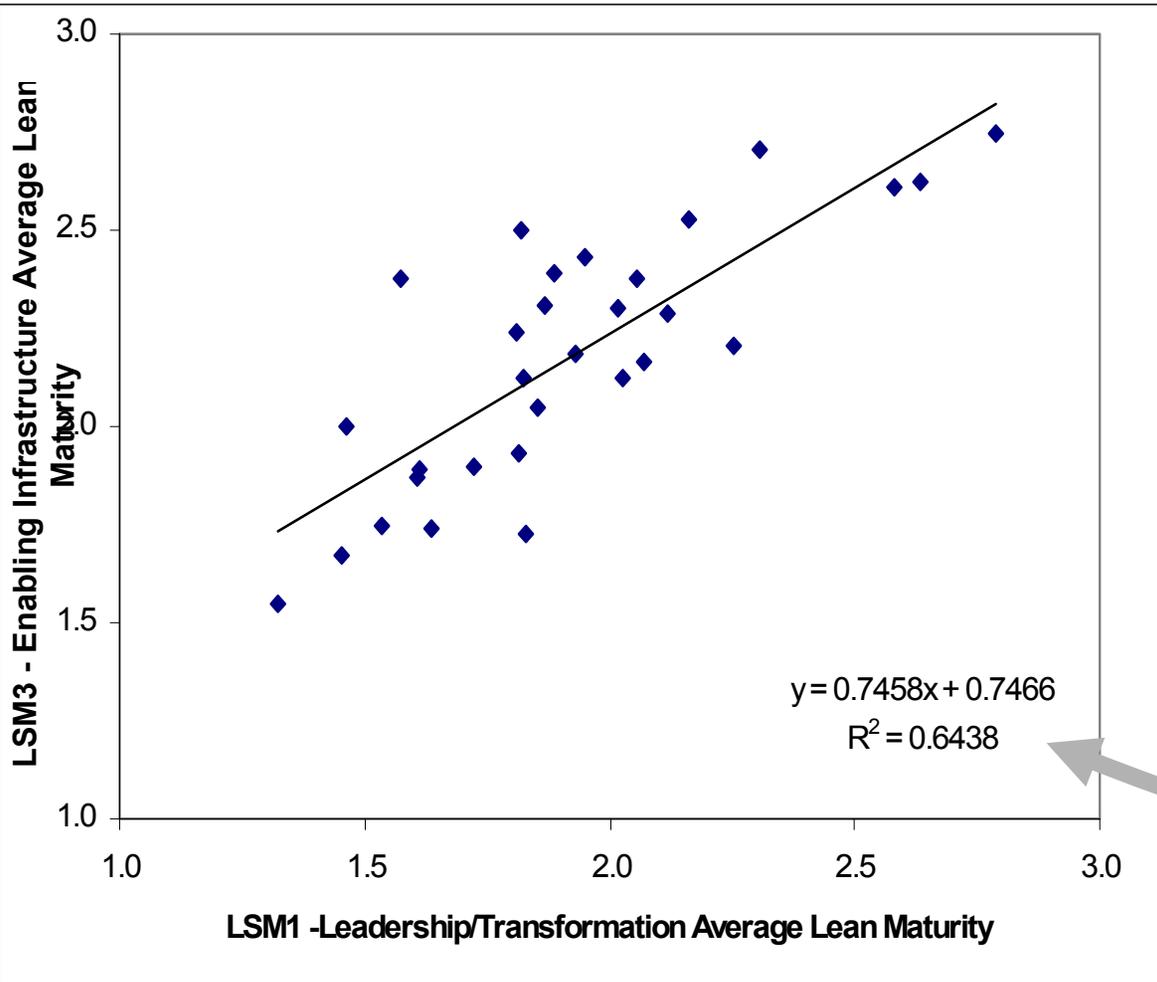
Source: Hallam, MIT, 2003

Enterprises exhibiting high lean maturity in Leadership/Transformation processes exhibit high lean maturity in Lifecycle processes
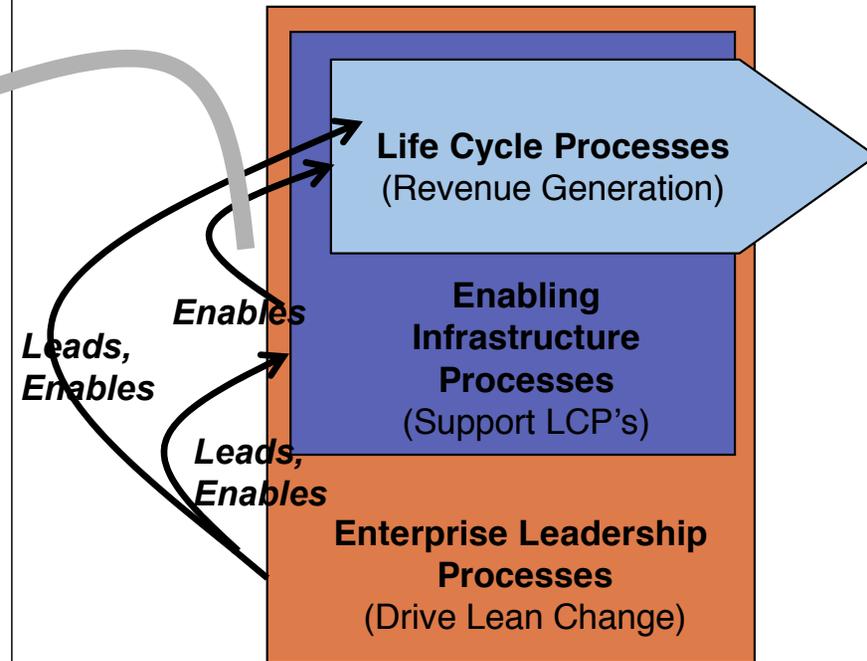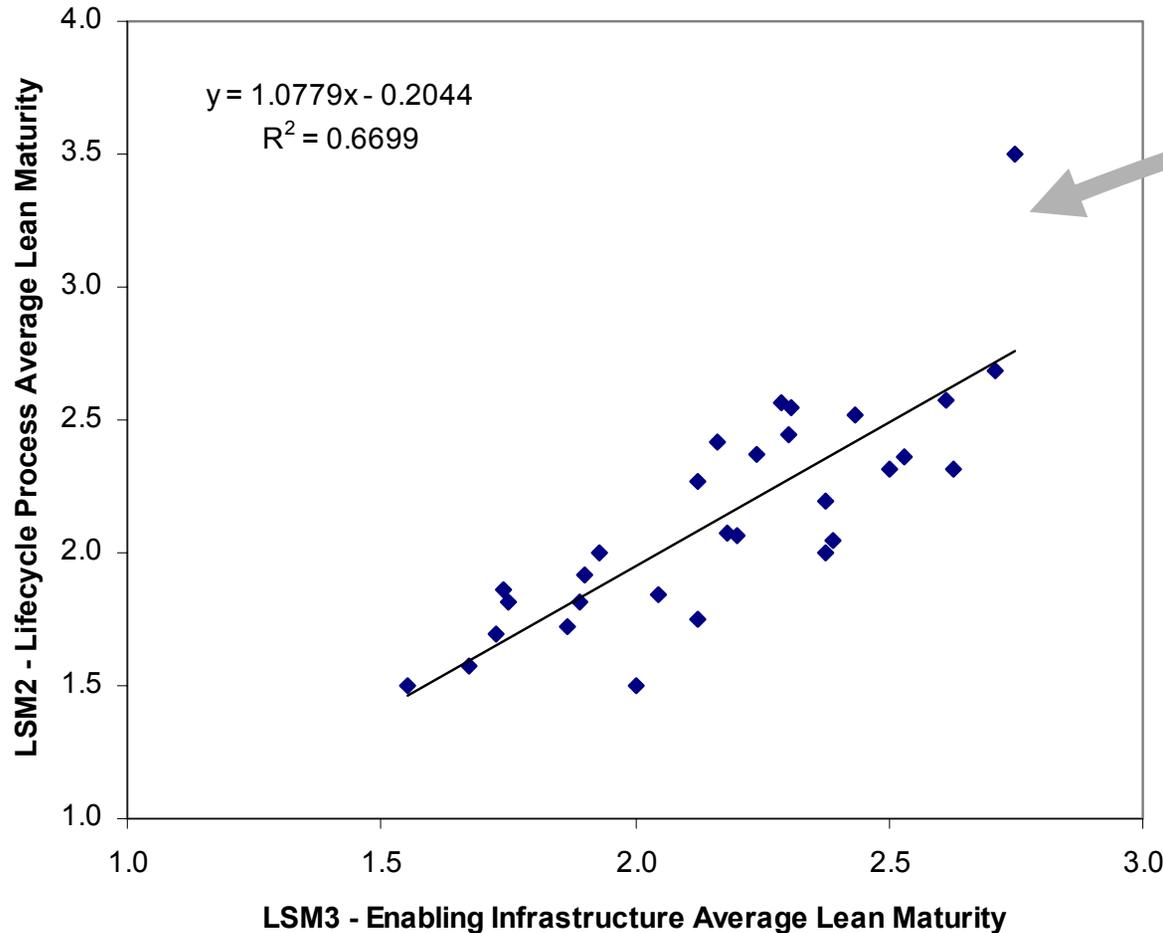
Leadership and Enabling Infrastructure

$y = 0.7458x + 0.7466$

$R^2 = 0.6438$

Chart axes:
- Y-axis: LSM3 - Enabling Infrastructure Average Lean Maturity
- X-axis: LSM1 - Leadership/Transformation Average Lean Maturity

Diagram labels:
- Life Cycle Processes (Revenue Generation)
- Enabling Infrastructure Processes (Support LCP's)
- Enterprise Leadership Processes (Drive Lean Change)
- Leads, Enables
- Enables
- Leads, Enables

Source: Hallam, MIT, 2003

Enterprises exhibiting high lean maturity in Leadership/Transformation processes exhibit high lean maturity in Enabling Infrastructure processes

Enabling Infrastructure and Lifecycle Processes

$y = 1.0779x - 0.2044$

$R^2 = 0.6699$

LSM2 - Lifecycle Process Average Lean Maturity

LSM3 - Enabling Infrastructure Average Lean Maturity

Life Cycle Processes
(Revenue Generation)

Enabling Infrastructure Processes
(Support LCP's)

Enterprise Leadership Processes
(Drive Lean Change)

Enables

Leads, Enables

Leads, Enables

Source: Hallam, MIT, 2003

Enterprises exhibiting high lean maturity in Enabling Infrastructure processes exhibit high lean maturity in Lifecycle processes

Observed Categories of Lean Transformation Management

- ## Category A - Open Loop Assessment
  - ### No feedback to action plan

- ## Category B - Independent Closed-Loop Control
  - ### Competing improvement plans

- ## Category C - Integrated Closed-Loop Control
  - ### Integrated strategic improvement plan

Categories of Enterprise Management
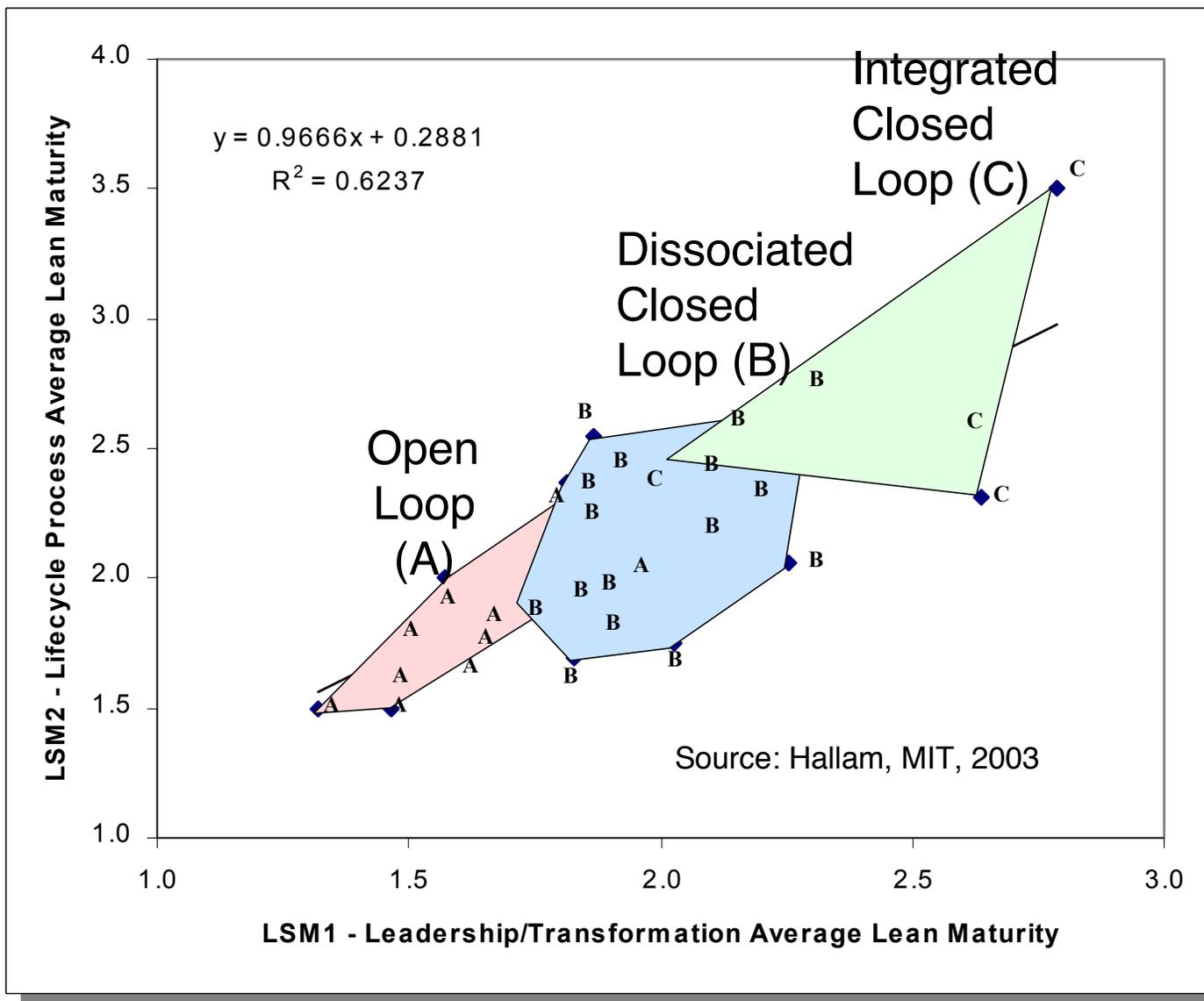
Outline

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Benefits of LESAT Assessment

- **Assessment process as valuable as results**

- **Increased executive communication**

- **Creation of common vocabulary**

- **Identify and support those who need education**

- **Open identification of enterprise-level issues**

- **Clear picture of maturity of enterprise**

- **Next level of maturity obvious**

Enterprise Assessment Insights

- **LESAT is catalyst to elevate lean to enterprise level**

- **Differences in perception were disclosed between management layers**
  - **VP's: "We're highly committed!"**
  - **Directors: "Doesn't look like it to us!"**

- **Opportunities for strategic lean actions surface from gap analysis**

- **The discussion resulting from the assessment analysis proved more valuable than the exact scores**

- **Many organizations "plateau" without total enterprise view**

- **A more holistic understanding of the role of leadership, core, and enabling processes in delivering value ensued**

- **LESAT is complementary to existing assessment tools**

Implications for Industry

- **Establish senior leadership commitment to begin transformation**

- **Improve maturity in leadership/transformation practices**

- **Create formal information feedback mechanisms to**
  - **prioritize strategically important lean improvement efforts**
  - **build on lean capabilities**
  - **build leadership support for continued lean change/operations**