



Lean Enterprise Transformation

FCM - UNICAMP

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Executive Director, Lean Advancement Initiative, MIT

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Lean Advancement Initiative (LAI)

- Founded in 1993, LAI has evolved from a focus on lean processes and tools to holistic enterprise transformation and architecting
- Enables enterprises to effectively, efficiently, and reliably create value in complex and rapidly changing environments
- Works with international enterprises in multiple domains, including: automotive, aerospace, manufacturing, health care, and financial services
- International Educational Network (EdNet) with more than 70 member educational institutions around the world



LAI Members Share a Common Goal: Enterprise Excellence





Lean

emerged from post-WWII Japanese automobile industry as a fundamentally more efficient system than *mass* production.

Lean Thinking

is the dynamic, **knowledge-driven**, and **customer-focused** process through which all people in a defined enterprise continuously eliminate waste and create value.

	Craft	Mass Production	Lean Thinking
Focus	Task	Product	Customer
Operation	Single items	Batch and queue	Synchronized flow and pull
Overall Aim	Mastery of craft	Reduce cost and increase efficiency	Eliminate waste and add value
Quality	Integration (part of the craft)	Inspection (a second stage after production)	Inclusion (built in by design and methods)
Business Strategy	Customization	Economies of scale and automation	Flexibility and adaptability
Improvement	Master-driven continuous improvement	Expert-driven periodic improvement	Worker-driven continuous improvement

Source: *Lean Enterprise Value: Insights from MIT's Lean Aerospace Initiative*, Palgrave, 2002.

The Early Lean Message

The 90's

The emphasis
was on
Lean
Production.

... stressed minimizing waste.
Sometimes “less” adds up to “more.”

- less waste
- less design time
- less costs
- fewer organizational layers
- fewer suppliers



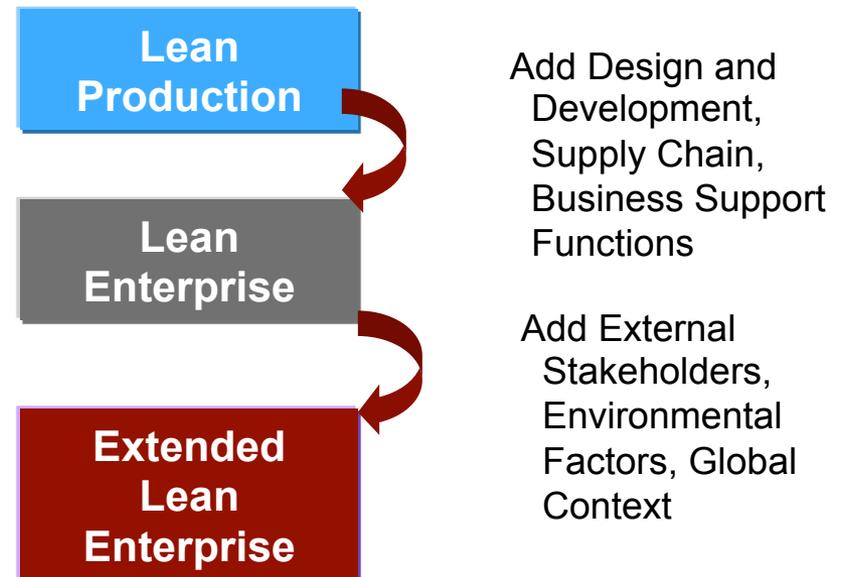
- more employee empowerment
- more flexibility and capability
- more productivity
- more quality
- more customer satisfaction
- more long-term competitive success

The Evolving Lean Message

The 21st Century

The emphasis
is on
Value Added
Activities

Moving beyond lean “production”
to an extended lean enterprise.



- Most enterprises today base their transformation initiatives on elements of Lean and Six Sigma.
 - Lean optimizes flow and strives for perfect quality.
 - Six Sigma stresses quality through the elimination of variation in all enterprise processes.
- A unified framework called *Lean Six Sigma* is emerging.
- Enterprises usually adopt their own name.

Some examples:

- Rockwell Collins - *Lean Electronics*
- United Technology - *ACE*
- Lockheed Martin - *LM21*
- Textron - *Textron Six Sigma*
- Raytheon - *R6 σ*
- NAVAIR - *AIRSpeed*
- Boeing - *Lean+*
- USAF - *Smart Ops 21*

Delivering Value – Five Lean Thinking Fundamentals

Specify Value

Value is defined by customer in terms of specific products and services

Identify the Value Stream

Map out all end-to-end linked actions, processes, and functions necessary for transforming inputs to outputs to identify and eliminate waste

Make Value Flow Continuously

Having eliminated waste, make remaining value-creating steps “flow”

Let Customers Pull Value

Customer’s “pull” cascades all the way back to the lowest level supplier, enabling just-in-time production

Pursue Perfection

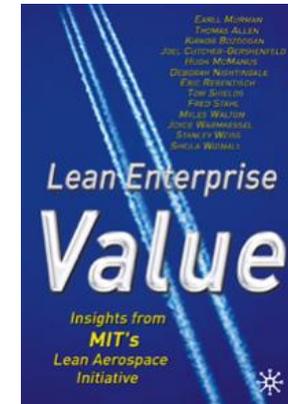
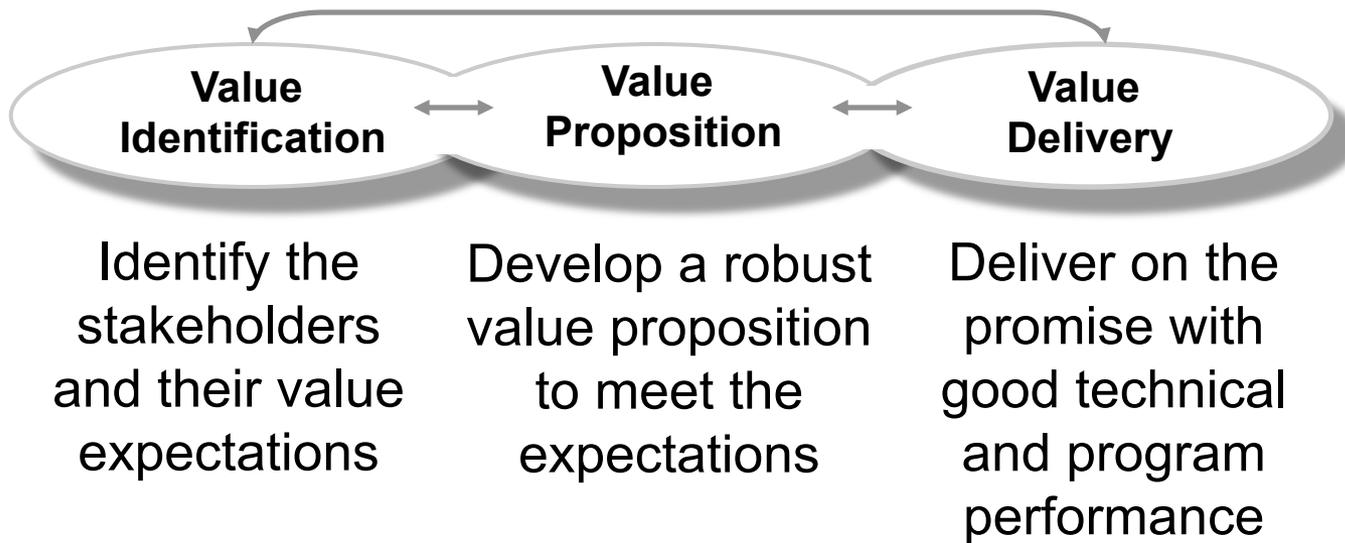
Pursue continuous process of improvement striving for perfection

eliminate waste
to identify and
inputs to outputs
transforming

production
just-in-time

Source: James Womack and Daniel T. Jones, *Lean Thinking* (New York: Simon & Schuster, 1996)

Value Phases

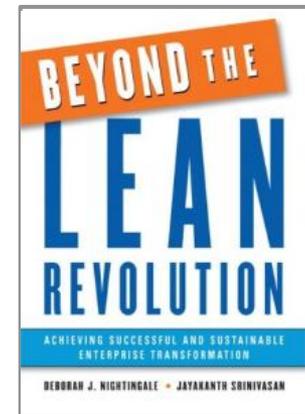
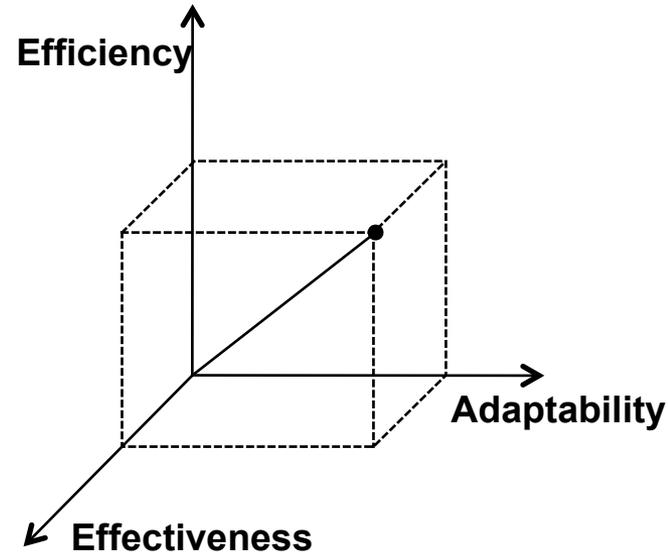


Source: *Lean Enterprise Value: Insights from MIT's Lean Aerospace Initiative*, Murman, et. al, 2002

An Enterprise is...

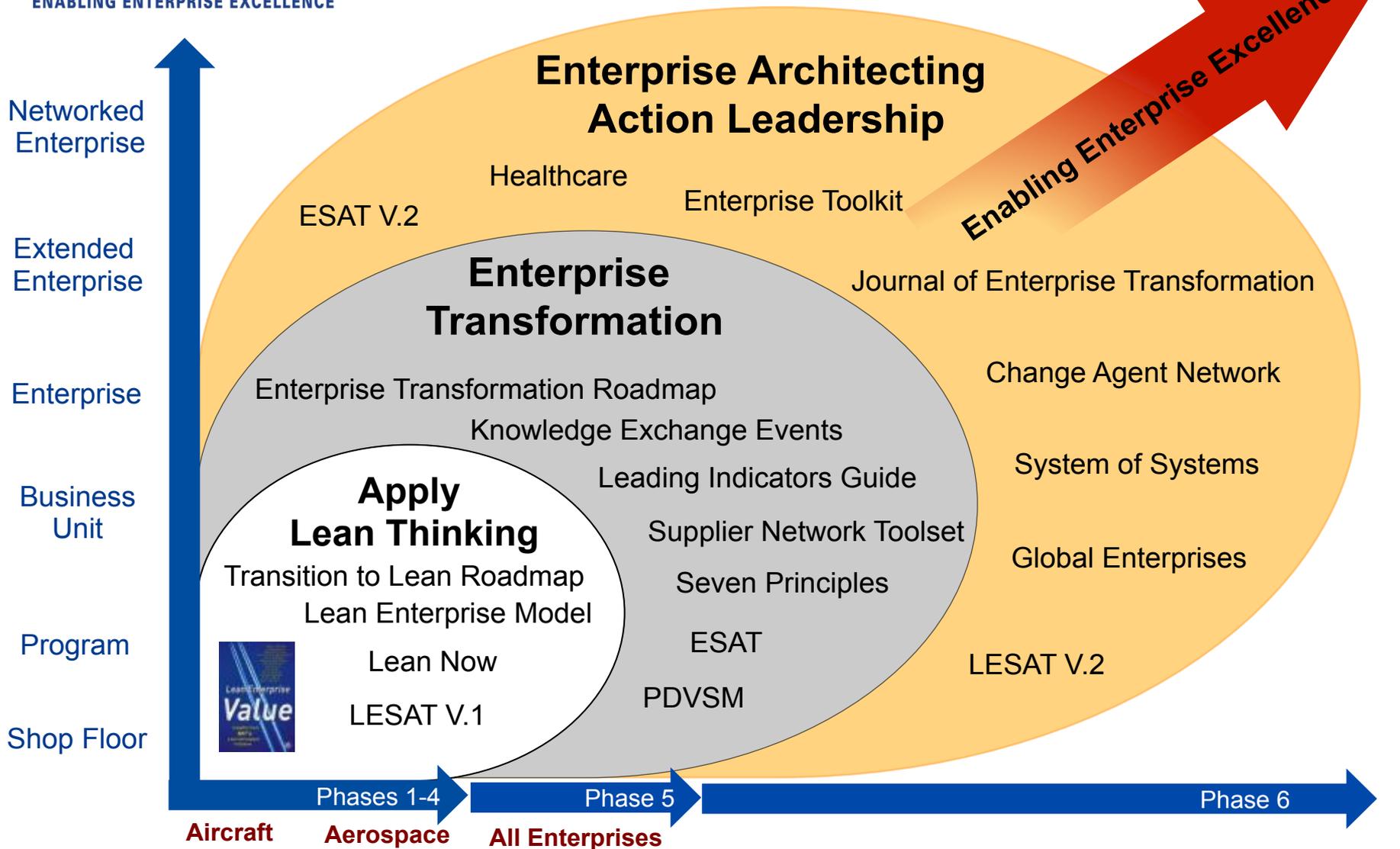
“...a complex, integrated, and interdependent system of people, processes, and technology that creates value as determined by its key stakeholders.

*An enterprise typically consists of **multiple organizations** (e.g., suppliers, partners, regulators) rather than a single corporation, division, or government unit.”*



Amacon Press, August 2011

Expanding Enterprise Focus



Improvement That Flows to the Bottom Line Requires

- Vision
- Focus on Customers and Employees
- Active Leadership Involvement and Alignment with Workforce
- Willingness to Break Established Paradigms
- Hierarchy of Trained, Empowered, and Incentivized Employees
- Constancy of Improvement Activity
- Celebrate and Reward Success

Creating a Holistic Approach to Enterprise Transformation

Transformation Issue

How do I motivate and sustain enterprise transformation?

How do I transform my enterprise?

What analytical tools can I use to support my decision making?

How do I design my future enterprise?



Enterprise Methodology

7 Principles of enterprise thinking

Enterprise Transformation Roadmap

LAI Enterprise Self-Assessment Tool (LESAT)

Enterprise Architecting Framework

7 Principles of Lean Enterprise Transformation

1.

Adopt a **holistic approach** to enterprise transformation.

2.

Secure **leadership commitment** to drive and institutionalize enterprise behaviors.

3.

Identify relevant **stakeholders** and determine their **value propositions**.

4.

Focus on enterprise **effectiveness before efficiency**.

5.

Address **internal and external** enterprise interdependencies.

6.

Ensure **stability and flow** within and across the enterprise.

7.

Emphasize **organizational learning**.

Source: D. Nightingale and J. Srinivasan, MIT 2010

Lean Transformation Issues

- Why do most lean transformation activities fail?
- What are the key success factors in implementing lean enterprise wide?
- How can we better assure that lean will impact bottom line results?
- Are there certain activities that are ideally performed before others?
- What is the role of senior leadership in assuring success?

Issues Motivated Development of
Lean Enterprise Transformation Roadmap

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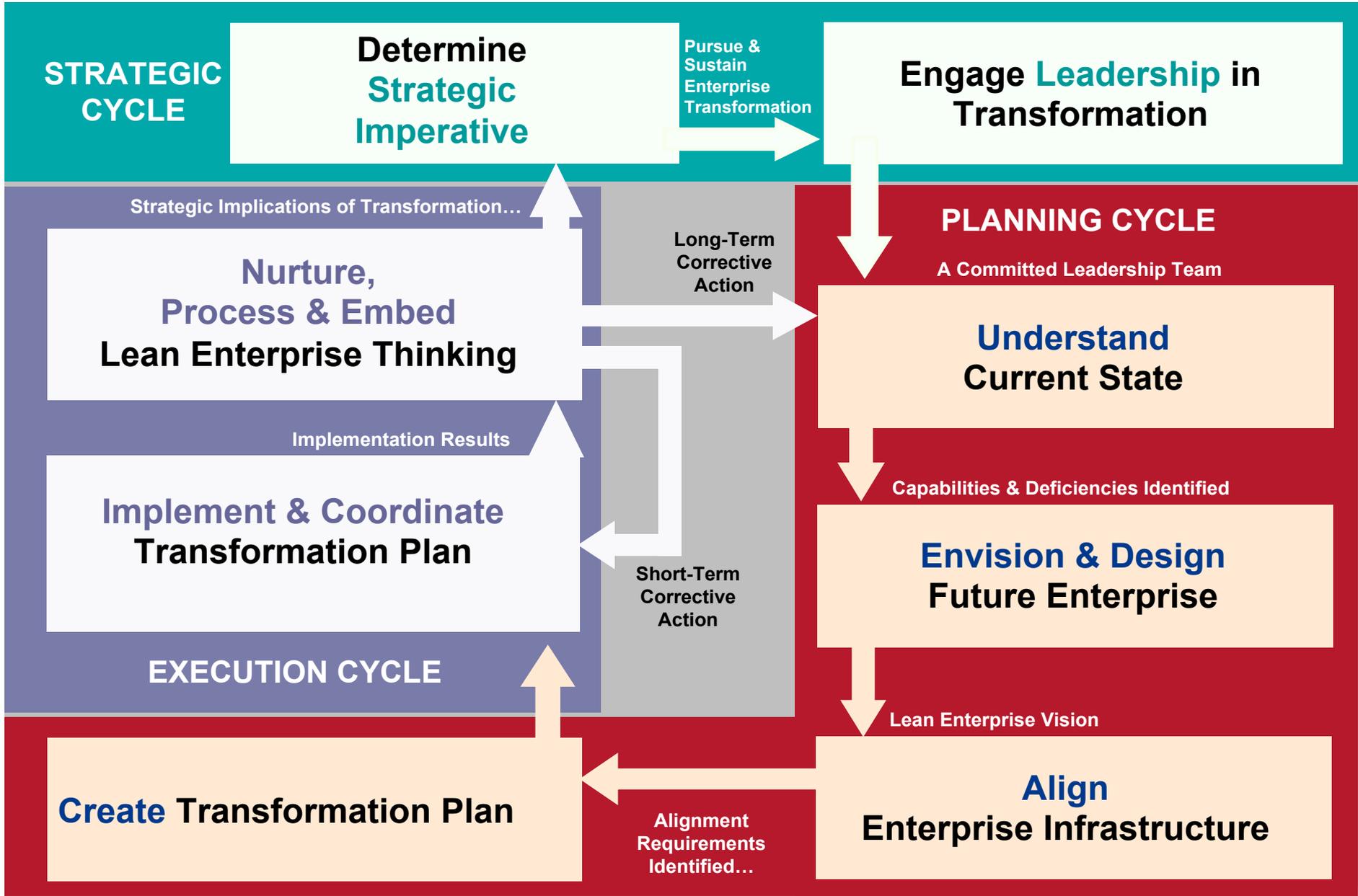
Enterprise Architecting Framework

Motivating an Enterprise Level Transformation Roadmap

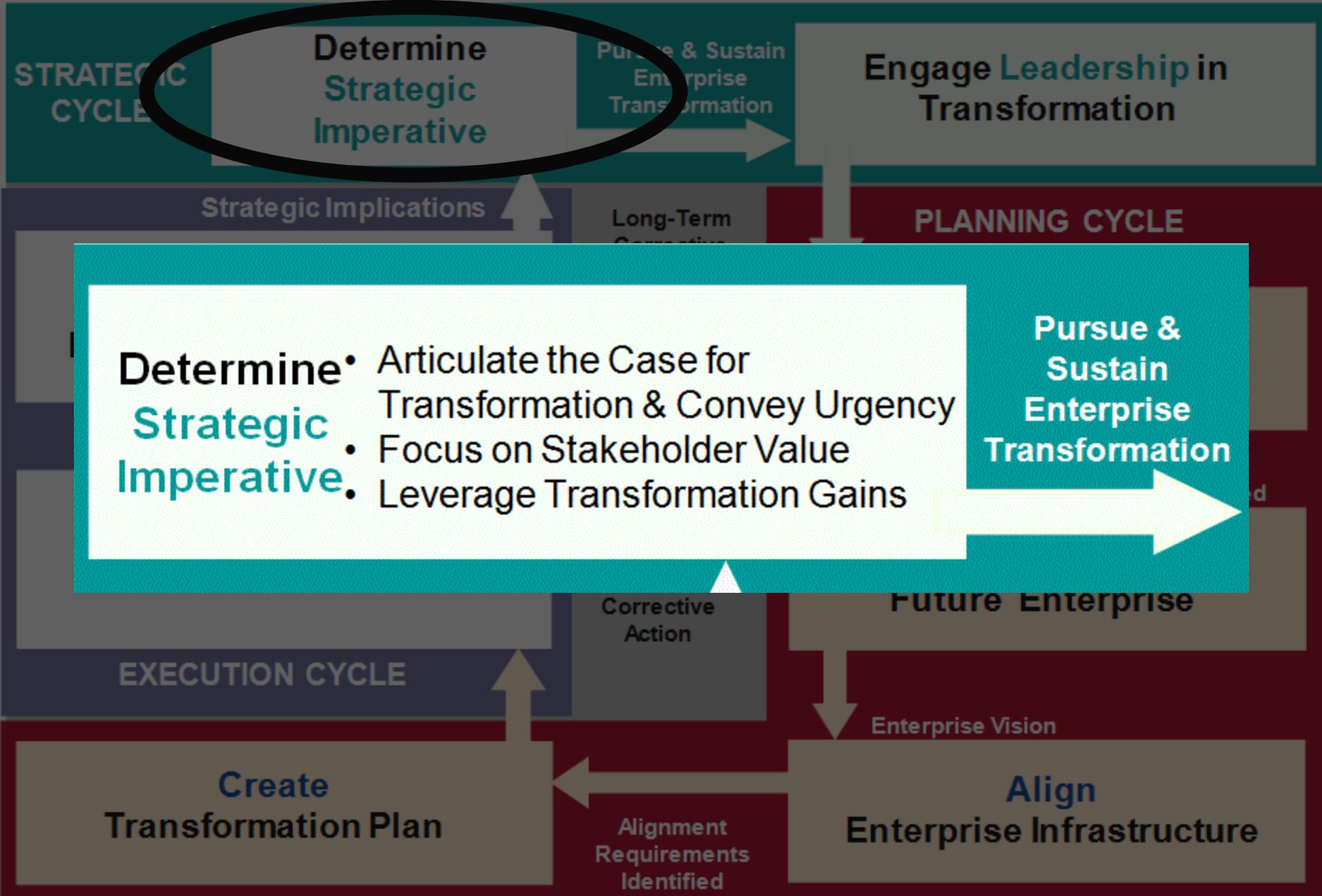
- Improve the quality of thinking and awareness of leaders on the challenge of transforming their enterprises
- Framework for cultural, organizational, and change management considerations
- Provide enterprise leaders with a balanced decision aid to:
 - Identify barriers to the creation/delivery of value to each stakeholder
 - Specify a vision of their future lean enterprise
 - Determine significant gaps between current and future states
 - Prioritize opportunities for eliminating waste and increasing value deliver for the maximum benefit of the total enterprise
- Guidance in making the transition process itself a 'lean' process



Lean Enterprise Transformation Roadmap



LAI Enterprise Transformation Roadmap



Determine Strategic Imperative

- Articulate the Case for Transformation & Convey Urgency
- Focus on Stakeholder Value
- Leverage Transformation Gains

Pursue & Sustain Enterprise Transformation

Breaking Down the Barriers

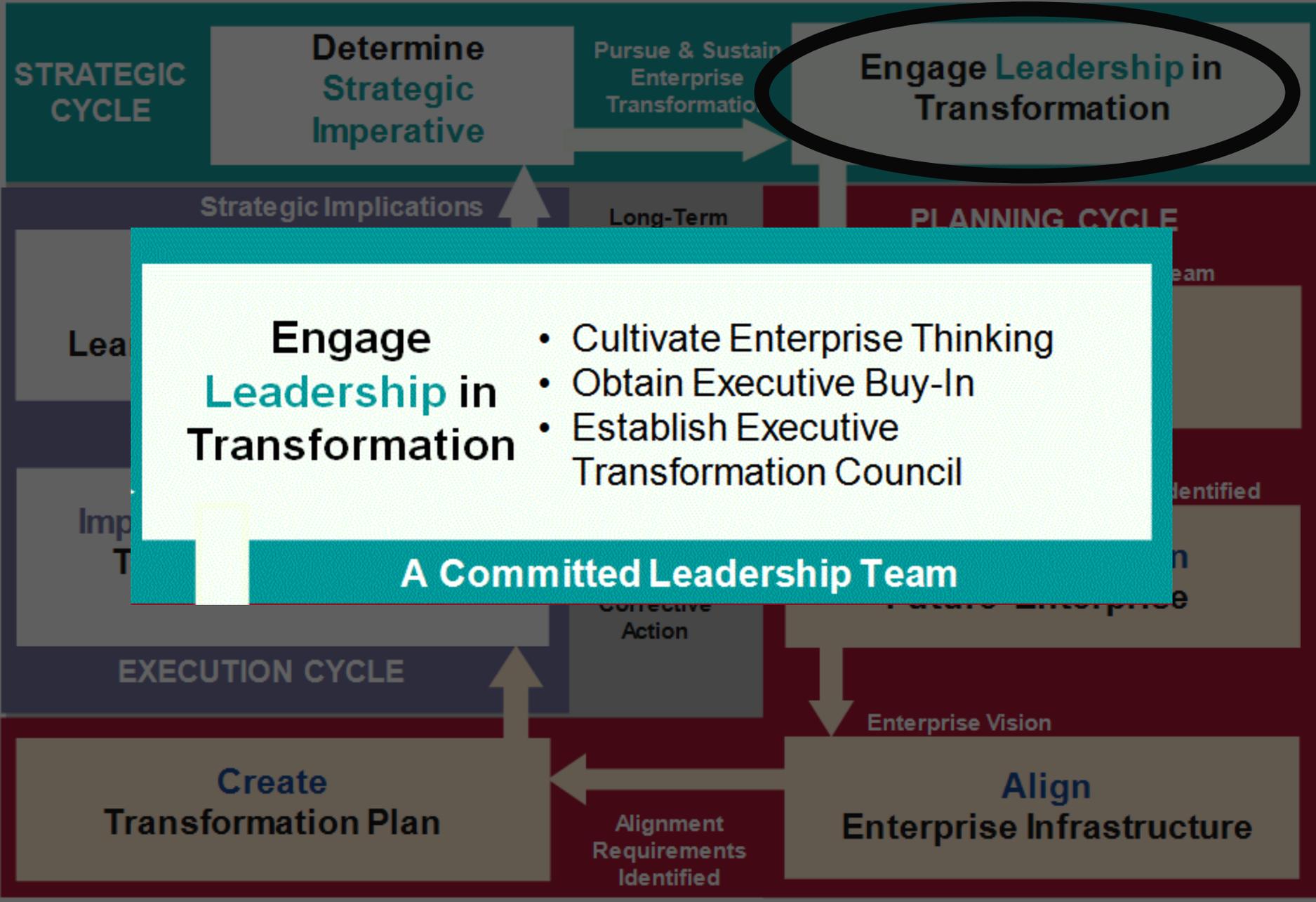
- Define the “burning platform”
- Work to obtain buy-in from key stakeholders
- Communicate, communicate, communicate
- Dispatch the resistance
- Reward results

Typical Imperatives for Change

- Customer dissatisfaction with development of critical new products
- Slow deliveries of products to support end-item deliveries
- In-service issues with perceived lack of reliability
- Unacceptable financial performance

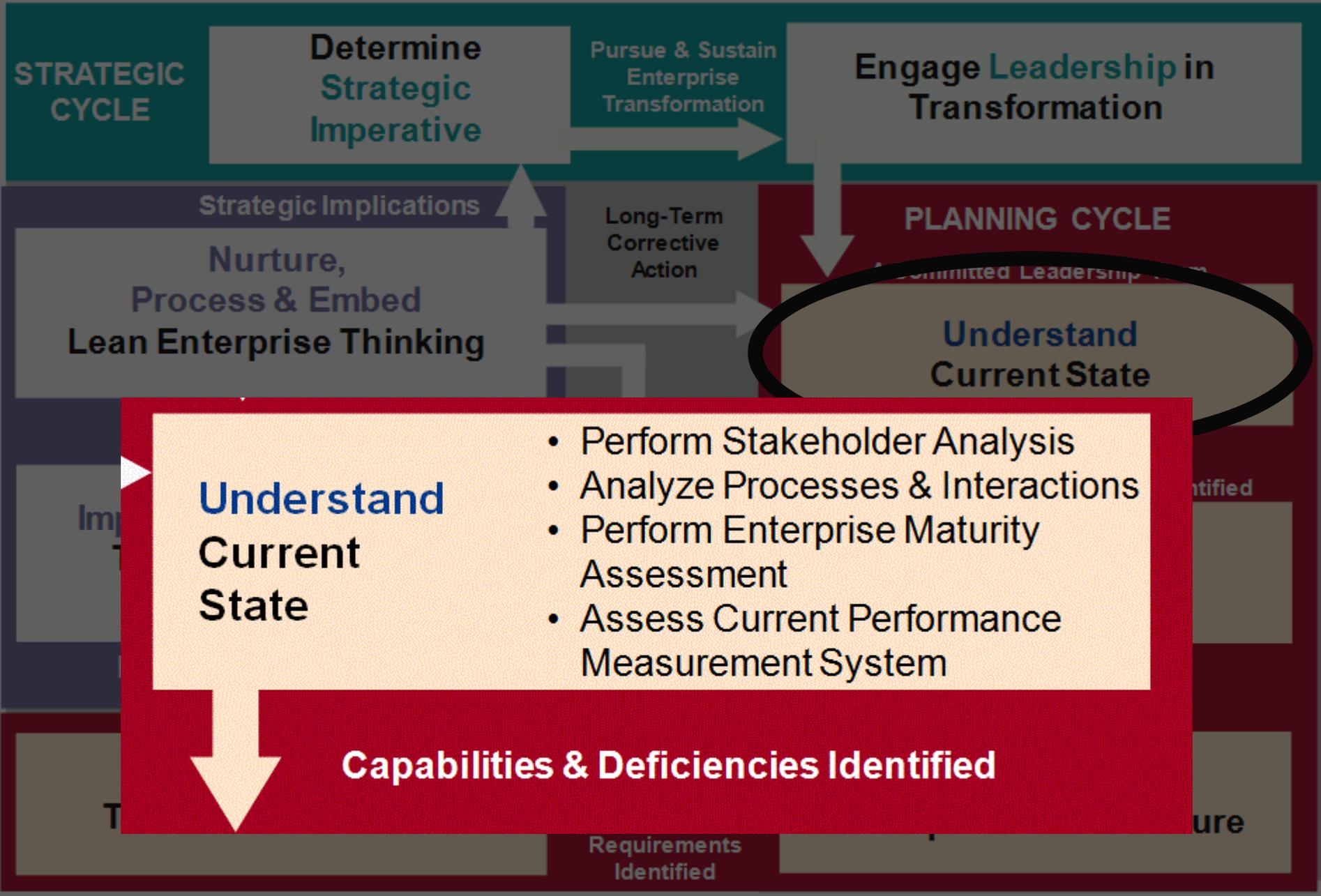


Enterprise Transformation Roadmap



- Mobilize leadership team
- Agree on vision
- Set priorities
- Establish business metrics
- Flow down management policy throughout entire organization
- Where necessary reassign key leaders

LAI Enterprise Transformation Roadmap



Understand Current State

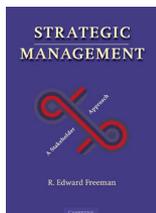
- Perform Stakeholder Analysis
- Analyze Processes & Interactions
- Perform Enterprise Maturity Assessment
- Assess Current Performance Measurement System

Capabilities & Deficiencies Identified

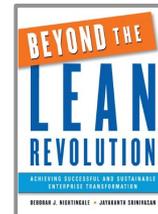
Stakeholders Defined

*“A **stakeholder** is any group or individual who can affect or is affected by the achievement of the organization's objectives”*

*“The enterprise is a **network of stakeholders** configured by the flow of value, which moves between the enterprise and its stakeholders”*

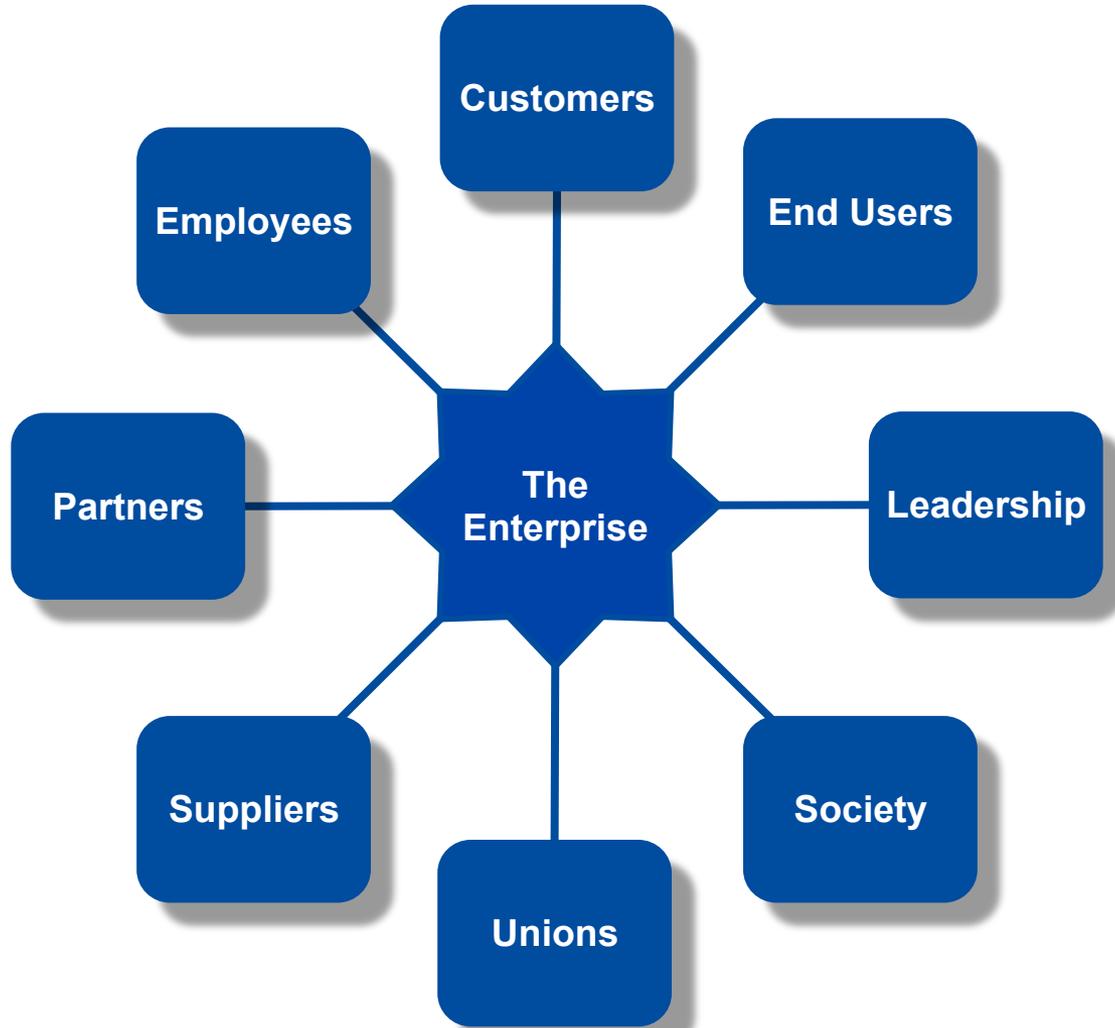


Source:
R. Edward Freeman
“Strategic Management:
A Stakeholder Approach”,
Pitman, 1986



Source:
D. Nightingale, and J. Srinivasan
“Beyond the Lean Revolution:
Achieving Successful and
Sustainable Enterprise
Transformation”,
AMACOM, 2011

Classic Stakeholder Map



- Process for aligning the enterprise with its stakeholders
- Brings to the forefront the disconnects and misalignments in the enterprise value proposition
- Structured means of reflecting on the enterprise value proposition as a whole.

Business Metrics Based on Stakeholder Analysis

- On-time delivery
- Delivered product quality
- First-pass test yields
- Past-due receivables
- Return on Invested Capital

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Enterprise Architecting Framework

LAI Enterprise Self Assessment Tool (LESAT)

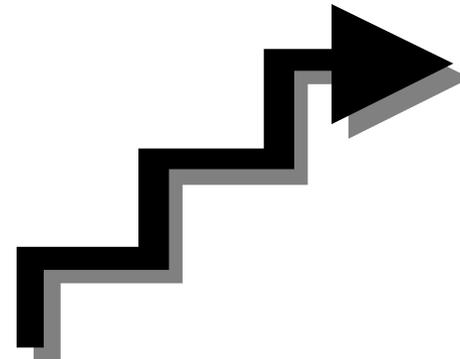
World Class



	1	2	3	4	5

Capability maturity model

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



Supporting materials

- There are **68 lean enterprise** practices in the assessment, divided amongst the three major sections
 - Section 1 **Leadership/Transformation** (30 practices)
 - Section 2 **Lifecycle Processes** (30 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



Step 1: Facilitated meeting to introduce tool
Enterprise leader champions



Step 2: Enterprise leaders and staff
conduct LESAT 2.0 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

Understand the Current State

- Benchmark current performance against colleagues and competitors
- Focus on attributes data
- Analyze value streams

LAI MIT Enterprise Transformation Roadmap

Envision & Design Future Enterprise

- Create Vision of Future State
- Perform Gap Analysis Between Current and Future States
- Architect "To-Be" Enterprise

Enterprise Vision

Envision & Design Future Enterprise

Align Enterprise Infrastructure

Create Transformation Plan

Enterprise Vision

Alignment Requirements Identified

Short-Term Corrective Action

Capabilities & Deficiencies Identified

Implement & Coordinate Transformation Plan

EXECUTION CYCLE

STRATEGIC CYCLE

Determine

Pursue & Sustain

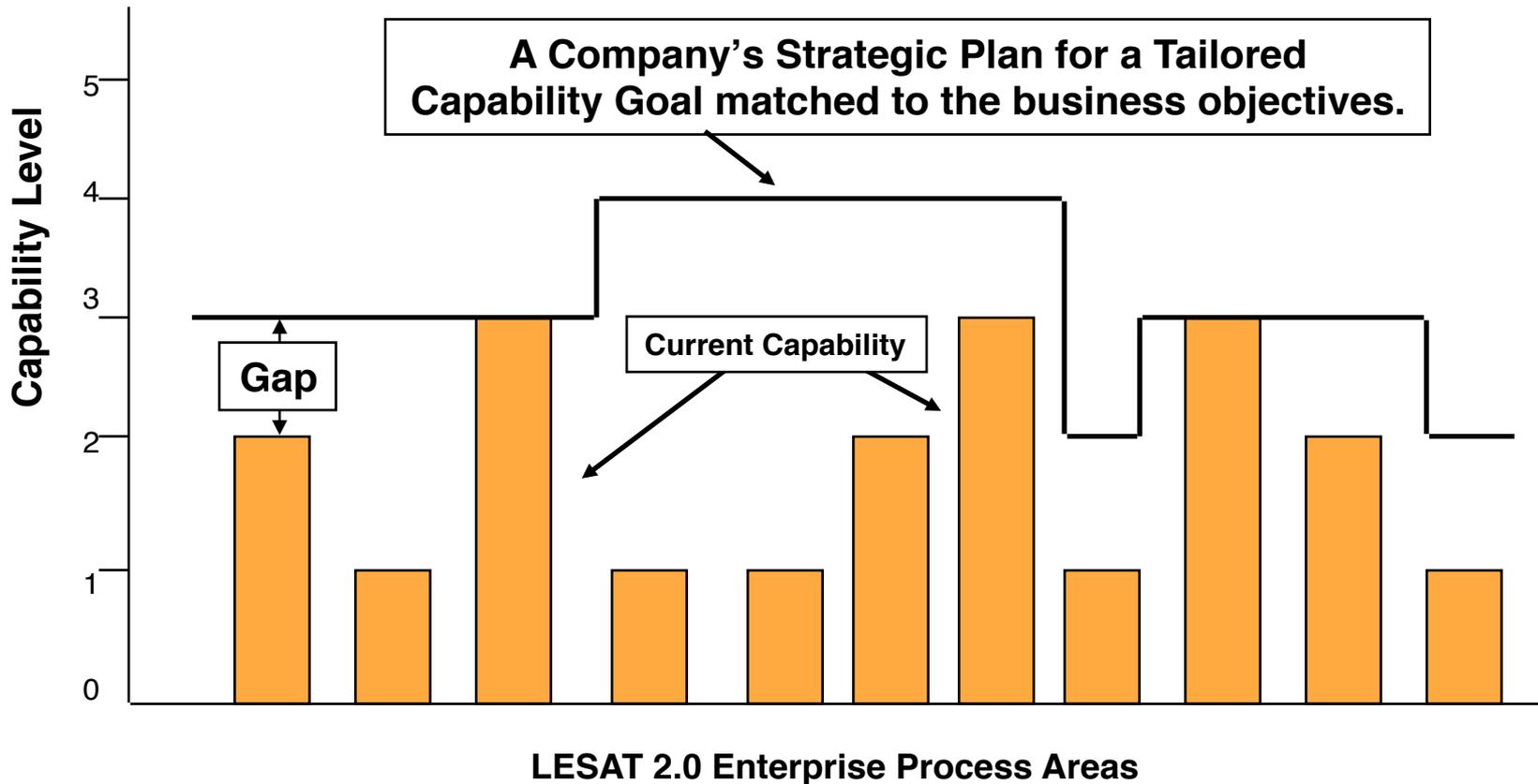
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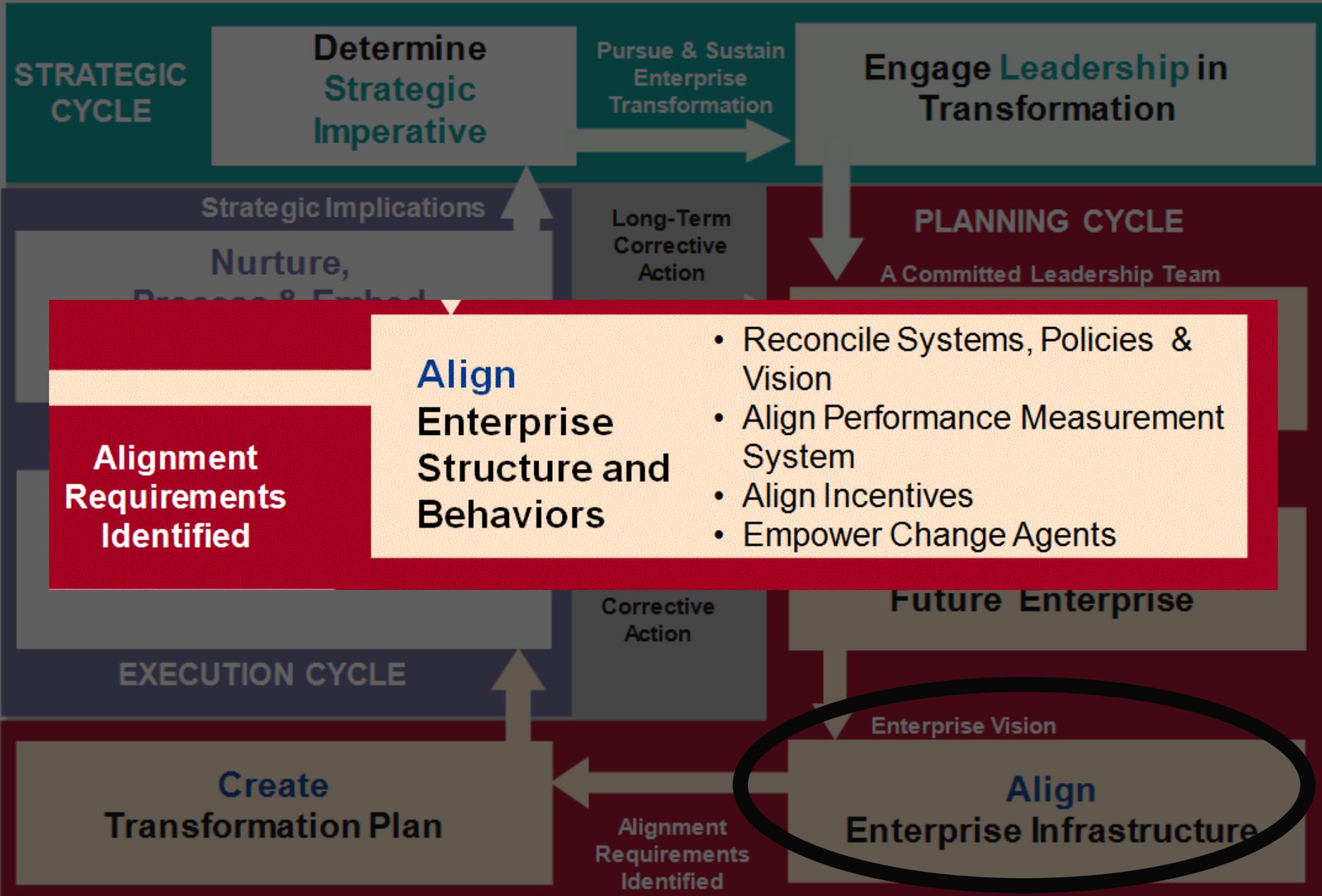
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ified

LESAT 2.0 Desired Score Can be Tailored for Each Process Area



LAI Enterprise Transformation Roadmap



STRATEGIC CYCLE

Determine Strategic Imperative

Pursue & Sustain Enterprise Transformation

Engage Leadership in Transformation

Strategic Implications

Nurture, Process & Embed

Long-Term Corrective Action

PLANNING CYCLE

A Committed Leadership Team

Alignment Requirements Identified

Align Enterprise Structure and Behaviors

- Reconcile Systems, Policies & Vision
- Align Performance Measurement System
- Align Incentives
- Empower Change Agents

EXECUTION CYCLE

Corrective Action

Future Enterprise

Create Transformation Plan

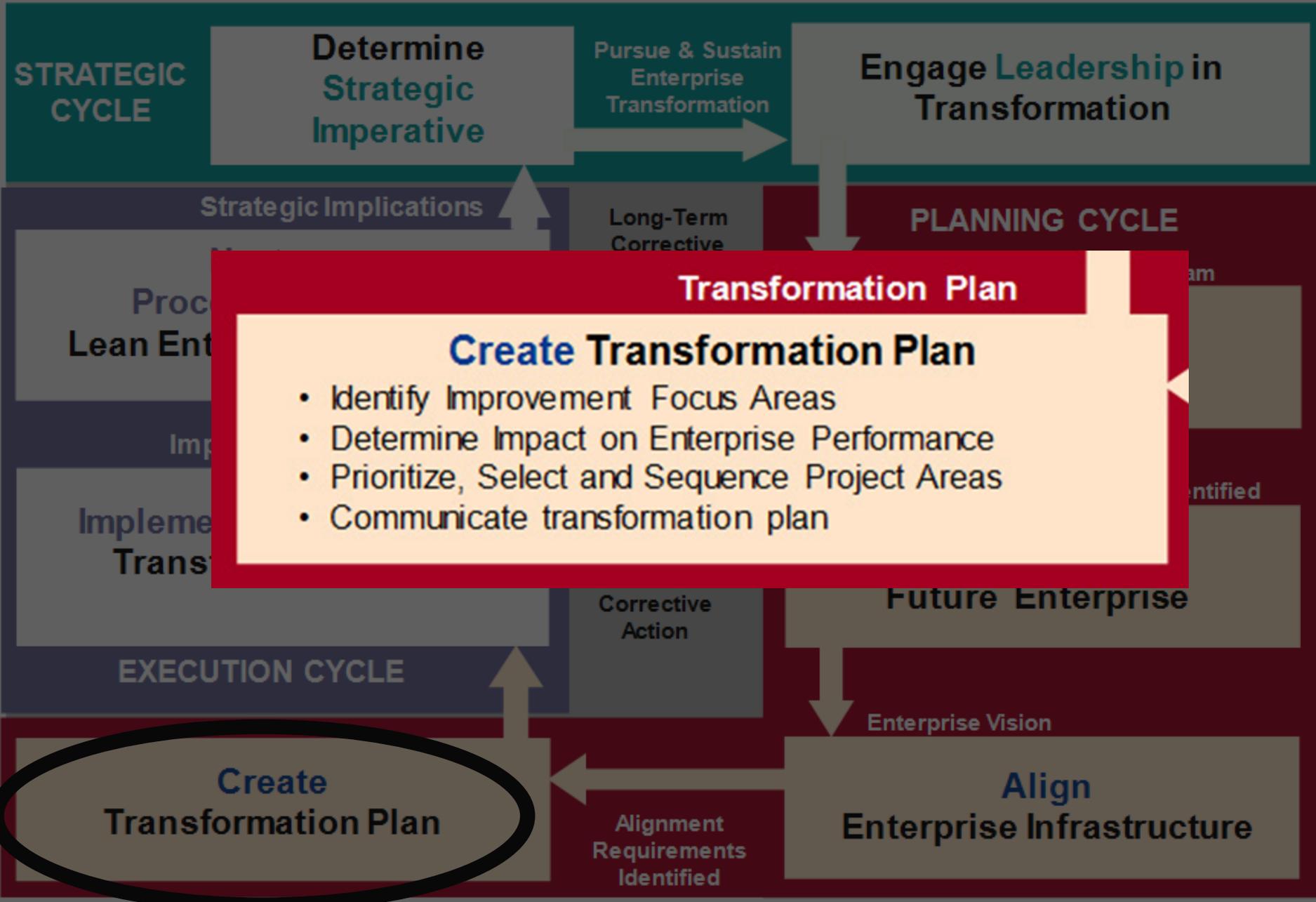
Alignment Requirements Identified

Enterprise Vision

Align Enterprise Infrastructure

- As determined by customer satisfaction
- And measured by a few understandable metrics
- Supported by a workforce trained and empowered to deliver improvement
- Across the entire business

LAI Enterprise Transformation Roadmap



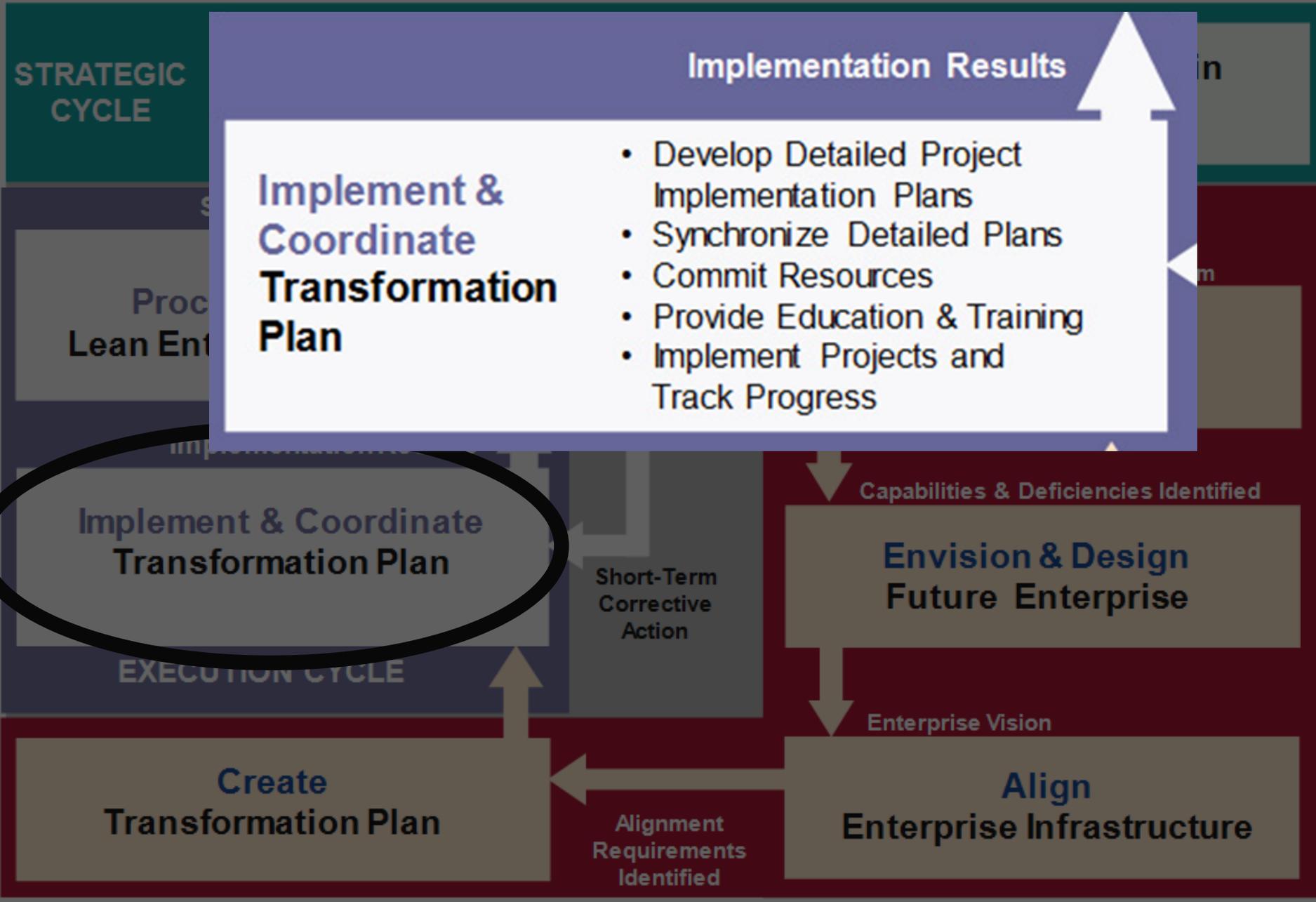
Initial Factory Kaizen Activities
Team and Individual Training
Supplier Quality Initiatives
Process Improvement Initiatives
Redesign Processes to Enable Flow
Finance Management Initiatives
Supply Chain Restructuring



Systematic incremental Activity



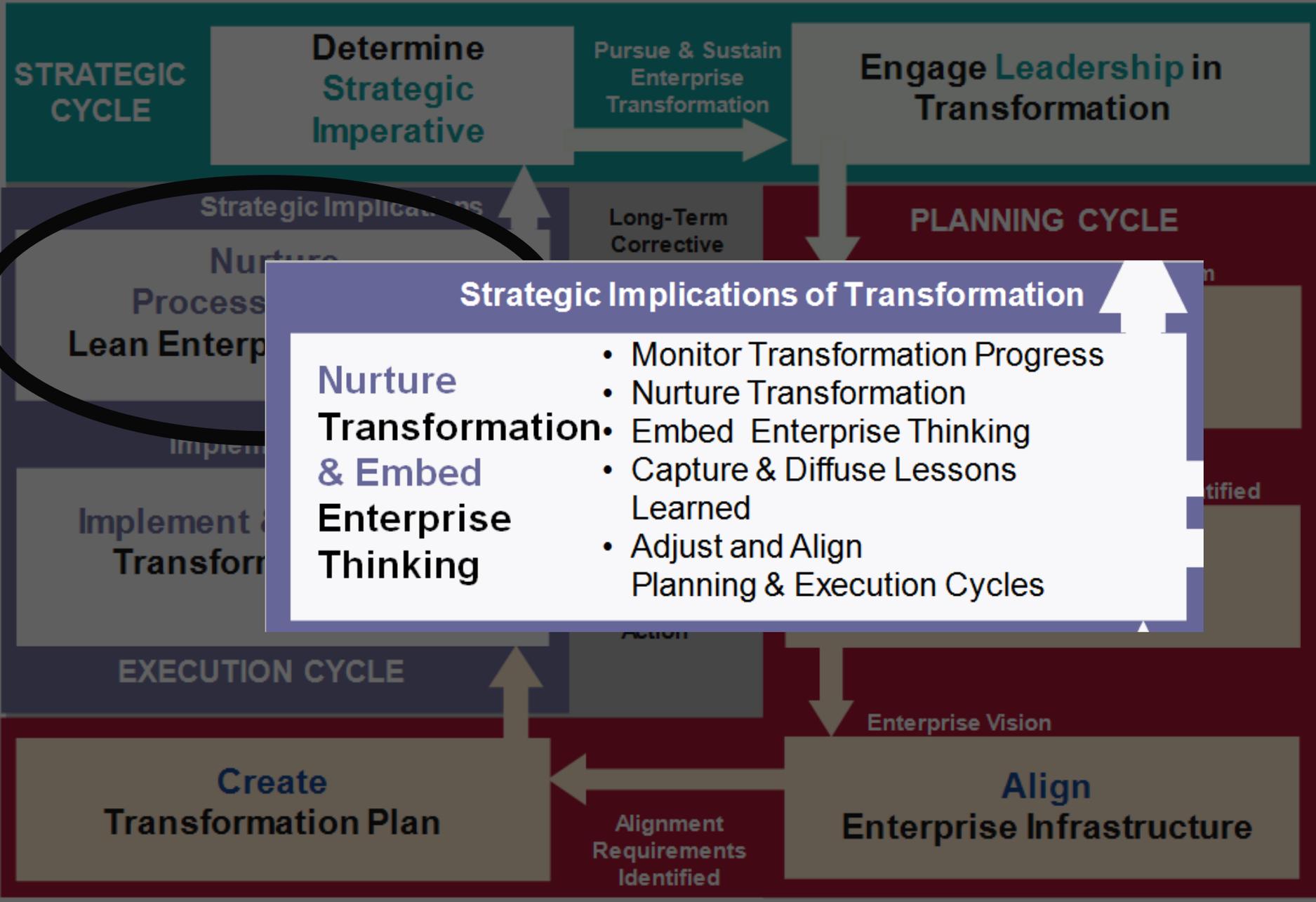
Enterprise Transformation Roadmap



A Hierarchy of Knowledge is Required

- Team and Leadership Skills
- Knowledge-based “Belts” - Yellow, Green, Black – in lean and six sigma
- Certified Mastery - ASQ
- Sensei - e.g. Mr. Ito at Pratt & Whitney

LAI@MIT Enterprise Transformation Roadmap



Strategic Implications of Transformation

Nurture Transformation & Embed Enterprise Thinking

- Monitor Transformation Progress
- Nurture Transformation
- Embed Enterprise Thinking
- Capture & Diffuse Lessons Learned
- Adjust and Align Planning & Execution Cycles

STRATEGIC CYCLE

- Determine Strategic Imperative**
- Articulate the Case for Transformation & Convey Urgency
 - Focus on Stakeholder Value
 - Leverage Transformation Gains

Pursue & Sustain Enterprise Transformation

Engage Leadership in Transformation

- Cultivate Enterprise Thinking
- Obtain Executive Buy-In
- Establish Executive Transformation Council

Strategic Implications of Transformation

Nurture Transformation & Embed Enterprise Thinking

- Monitor Transformation Progress
- Nurture Transformation
- Embed Enterprise Thinking
- Capture & Diffuse Lessons Learned
- Adjust and Align Planning & Execution Cycles

Long-Term Corrective Action

PLANNING CYCLE

A Committed Leadership Team

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Capabilities & Deficiencies Identified

Envision & Design Future Enterprise

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- Architect "To-Be" Enterprise

Enterprise Vision

Implement & Coordinate Transformation Plan

- Develop Detailed Project Implementation Plans
- Synchronize Detailed Plans
- Commit Resources
- Provide Education & Training
- Implement Projects and Track Progress

Short-Term Corrective Action

EXECUTION CYCLE

Transformation Plan

Create Transformation Plan

- Identify Improvement Focus Areas
- Determine Impact on Enterprise Performance
- Prioritize, Select and Sequence Project Areas
- Communicate transformation plan

Alignment Requirements Identified

Align Enterprise Structure and Behaviors

- Reconcile Systems, Policies & Vision
- Align Performance Measurement System
- Align Incentives
- Empower Change Agents

Benefits of Lean Enterprise Transformation Roadmap

- Facilitates enterprise focus
- Provides “sequence” for enterprise transformation
- Increases understanding of “what went wrong” in previous transformation attempts
- Focuses on people/leadership issues
- Provides an organizing framework for enterprise-wide transformation

Robust Repeatable Processes Are Key to Sustained Excellence

These include:

- Standardized design tools
- Lean manufacturing techniques
- Supplier partnerships
- Kaizen throughout the company
- Respect for all employees

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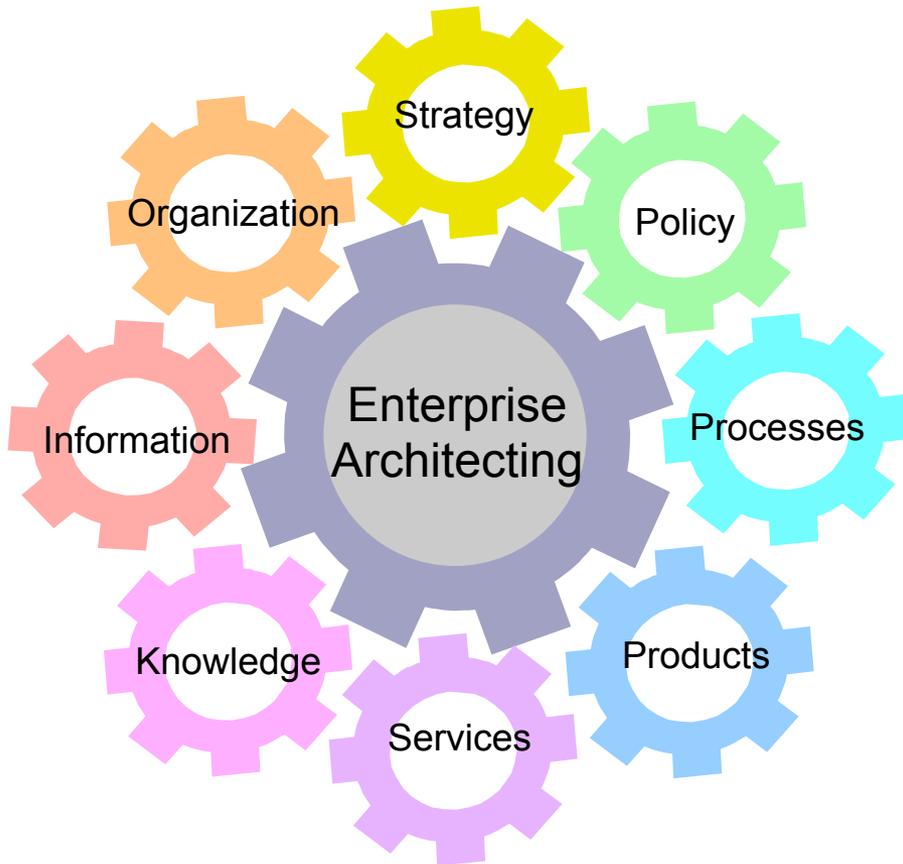
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Enterprise Architecting Framework

Motivation for Enterprise Architecting

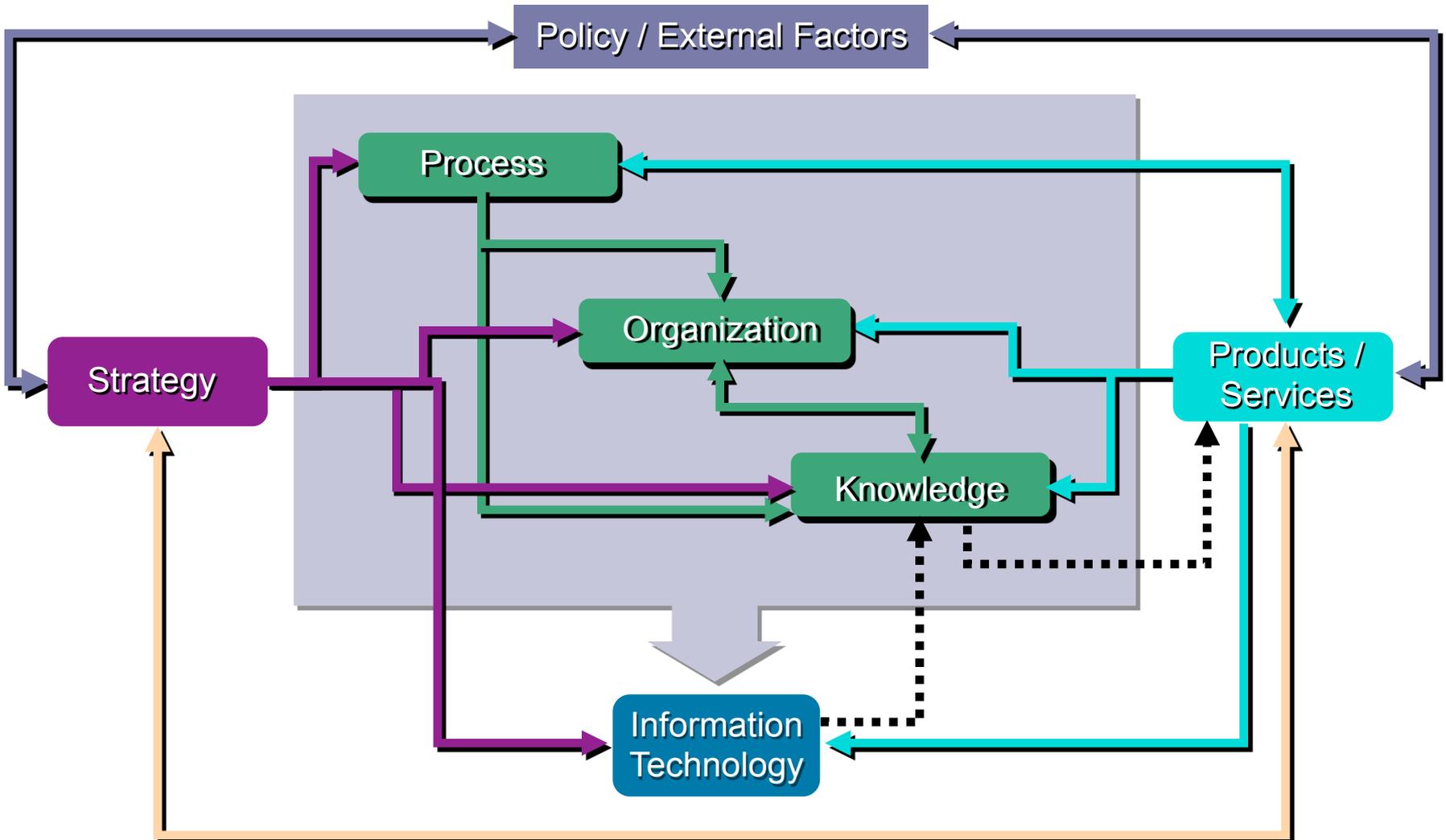
- In order to transform an enterprise we need to know not only where we are, but more importantly where we want to be (future state)
- In enterprise value analysis how do we define the “future state” of the enterprise?
- Once we define the future “vision” how do we design the enterprise?
- How do we incorporate the multiple dimensions or “views” at the enterprise level?

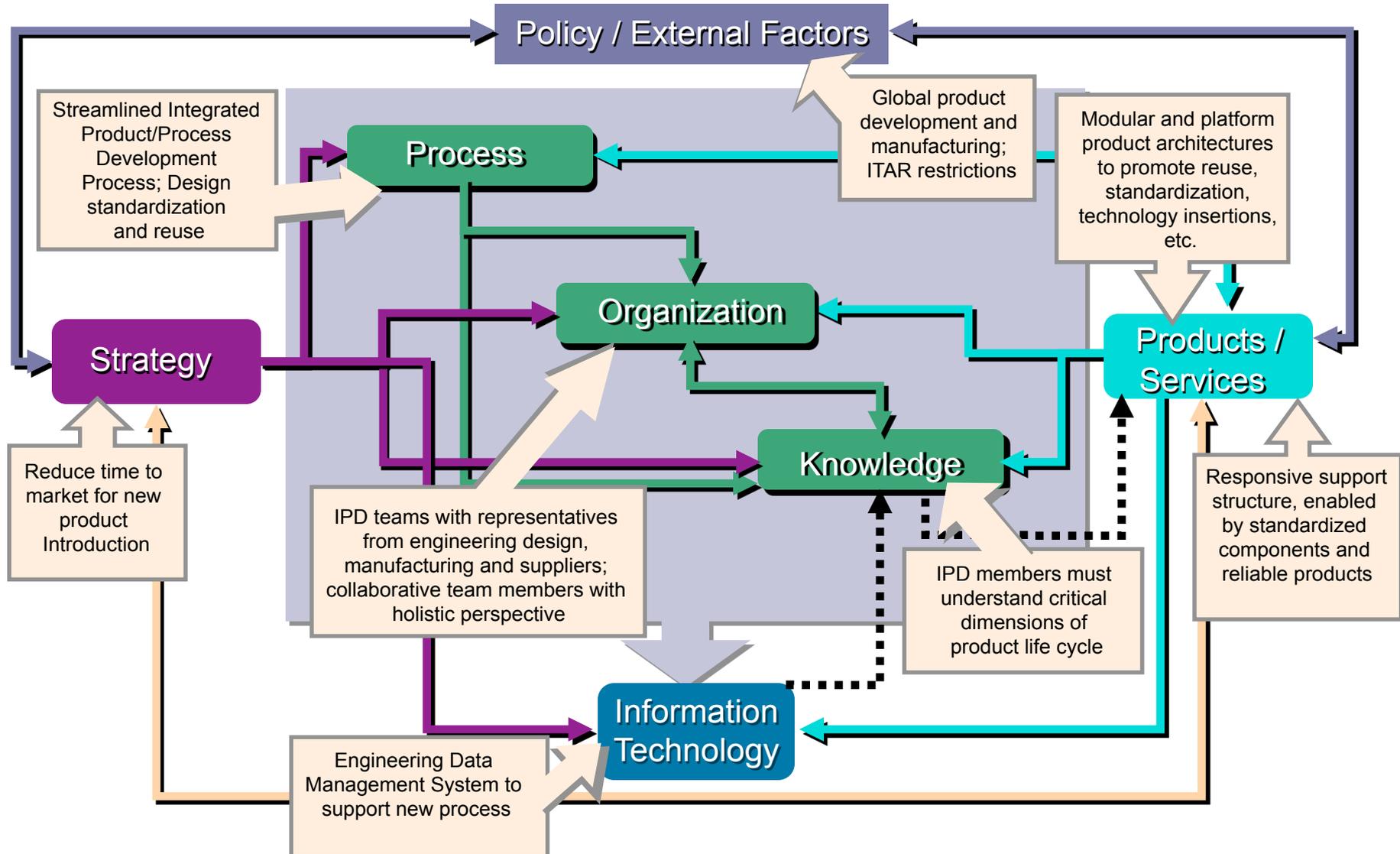
Enterprise Architecting – *Enables Greater Efficiency and Effectiveness*



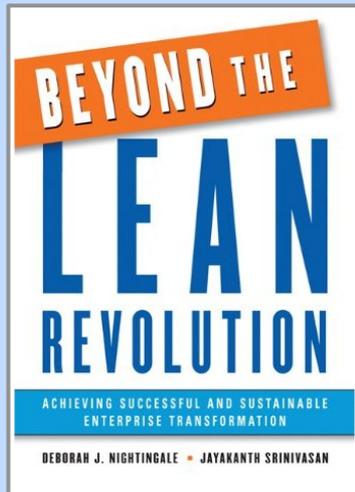
- Effective integration – managing complex interdependencies
- System optimization, not local optimization
- Knowledge-based enterprise capabilities
- Achieving desired future state characteristics
 - Agility
 - Flexibility
 - Reconfigurability

Enterprise Architecture Framework





Special Issue



- **Strategic Context**
(4 chapters)
- **Lenses of Current State Analysis**
(5 chapters)
- **Achieving Transformation**
(3 chapters)

Hardcover and Kindle discounts at Amazon.com

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“Enterprise Transformation in Action”



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July 16-17, 2012

Principles of Enterprise Transformation

Prof. Debbie Nightingale
Jayakanth Srinivasan, Ph.D

This course highlights the importance of **going beyond classical lean thinking** to truly embracing the enterprise paradigm to achieve successful and sustainable transformation. Over two days, we provide a set of enterprise principles and a transformation roadmap that serve as **the foundation for the holistic analysis framework** that captures the current state, envisions the future state, and determines actions needed for transformation.



Think
Holistically



PROFESSIONAL EDUCATION

web.mit.edu/professional/index.html

July 30 to Aug. 1, 2012

Architecting the Future Enterprise

Prof. Debbie Nightingale
Donna Rhodes, Ph.D.

Enterprises often evolve in an ad-hoc, suboptimal manner, without viewing the enterprise as a whole system. This course looks at the **enterprise as a holistic and highly networked structure** wherein planning and decisions must be accomplished by applying **a systems perspective and architecting principles**, considering all facets of the enterprise

10% Discount for LAI Members

- Please contact us at any time:

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