



Enabling Enterprise Excellence

Lean Enterprise Thinking and Implementation

MICI China Lean Summit

Professor Earl Murman

November 4, 2010



Lean Advancement Initiative (LAI)

- **An Academic – Industry – Government research consortium hosted by MIT**
- **Founded in 1993 as the Lean Aircraft Initiative**
- **Became the Lean Aerospace Initiative in 1998**
- **LAI Educational Network (EdNet) founded in 2002**
- **Became the Lean Advancement Initiative in 2007**

LAI enables the focused and accelerated transformation of complex enterprises through collaborative stakeholder engagement in developing and institutionalizing principles, processes, behaviors, and tools for enterprise excellence.



LAI Members Share a Goal: Enterprise Excellence

NORTHROP GRUMMAN



Raytheon



**Rockwell
Collins**



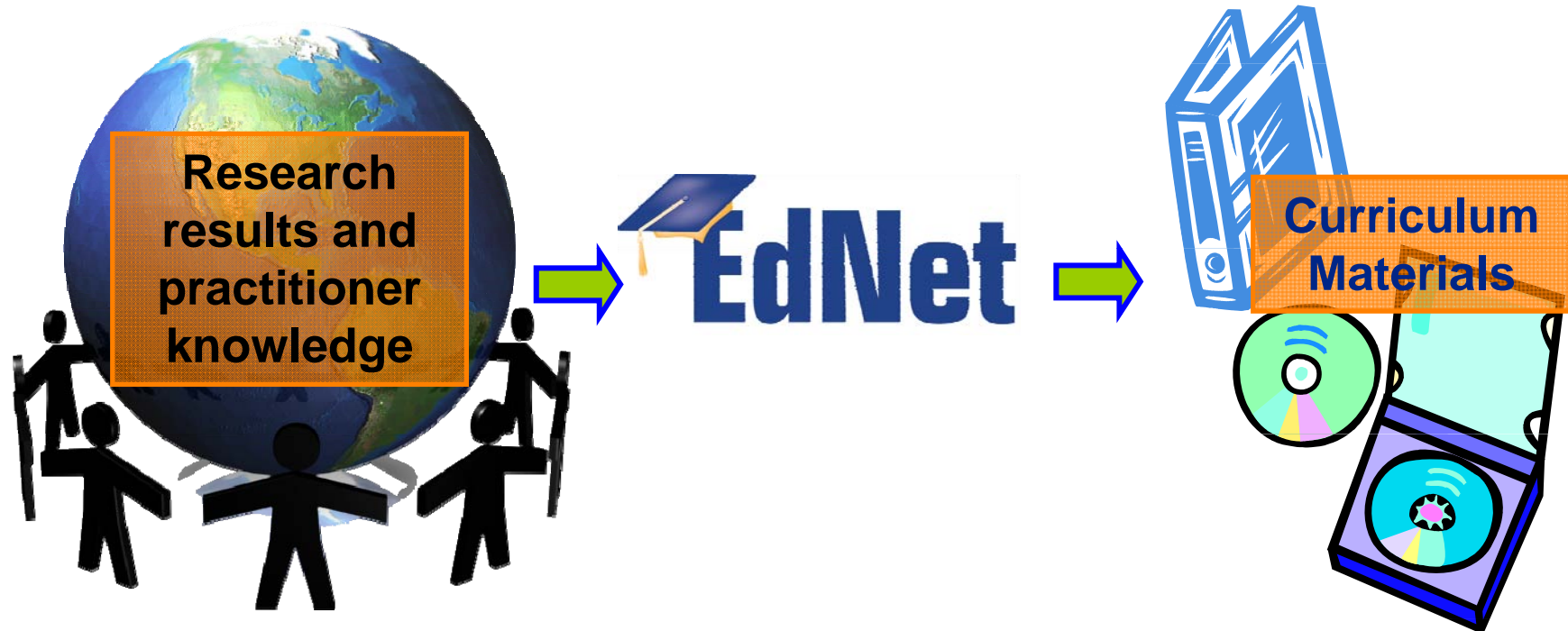
ULA
United Launch Alliance



BAE SYSTEMS



LAI Educational Network



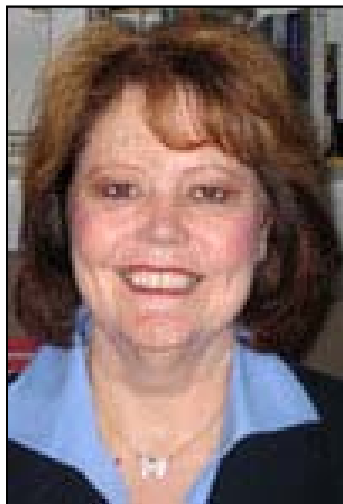
Integrating lean into education



LAI Directors

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Professor of the Practice of Aeronautics and Astronautics and Engineering Systems



Dr. John Carroll

Morris A. Adelman Professor of Management, Professor of Behavioral and Policy Sciences and Engineering Systems

Co – Directors

Richard Lewis II

Research Affiliate, COO Rolls Royce Indianapolis, Retired



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**Prof. Warren
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**Together with
10 US Air Force & Army Fellows
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Membership and
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Transformation Dir.

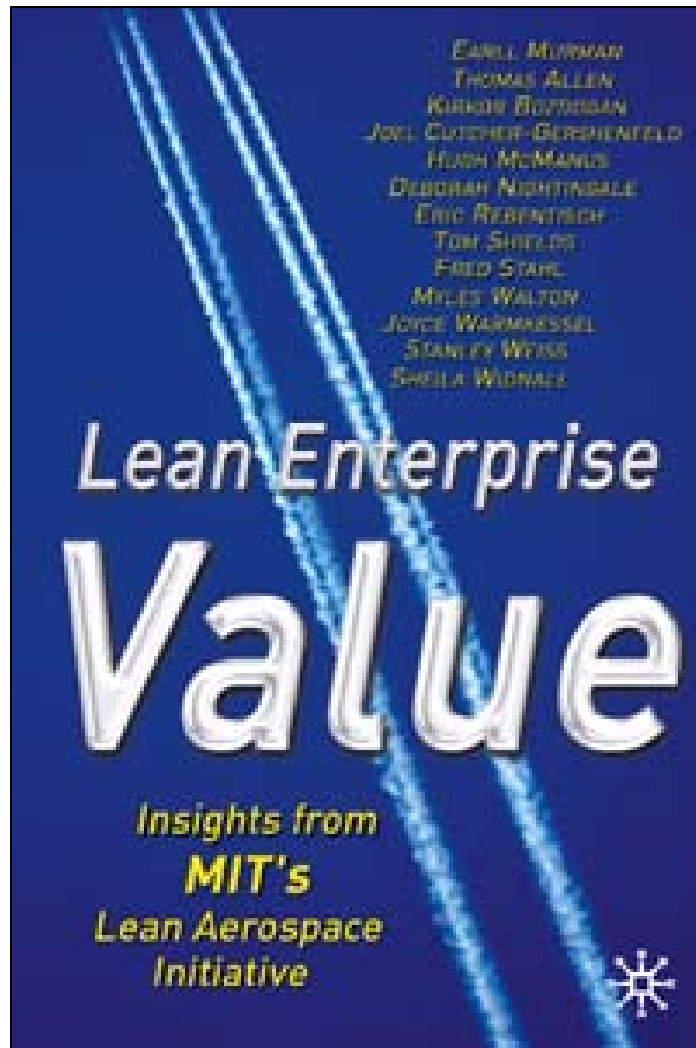


Dr. Hugh McManus
EdNet Associate Dir.



Dr. Jacqueline Candido
EdNet Associate Dir.

Lean Produces Results in Aerospace

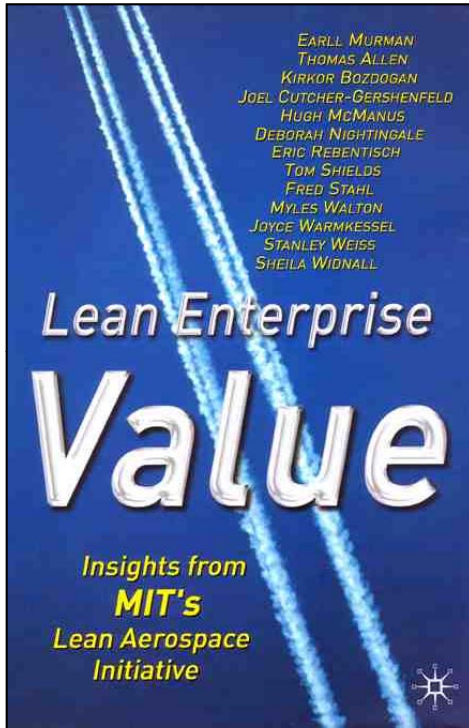


In 1992 US Air Force asked:
Can the concepts, principles, and practices of the Toyota Production System be applied to the military aircraft industry?

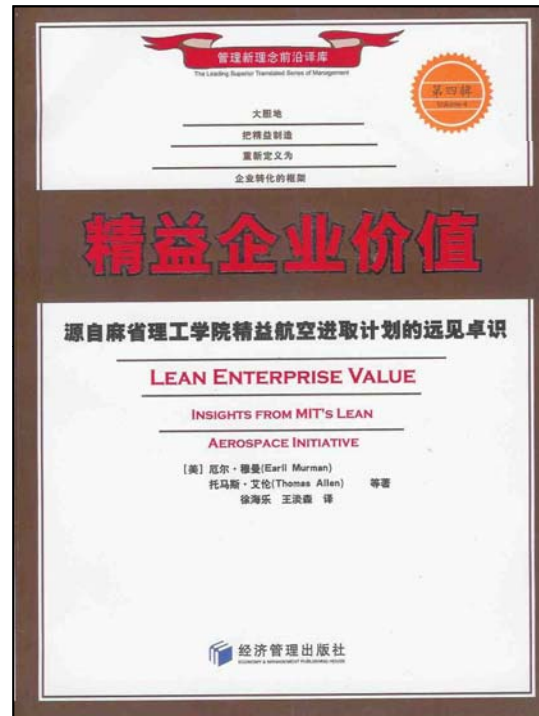
In 2002 LAI responded:
YES

...if Lean is focused on enterprise value creation

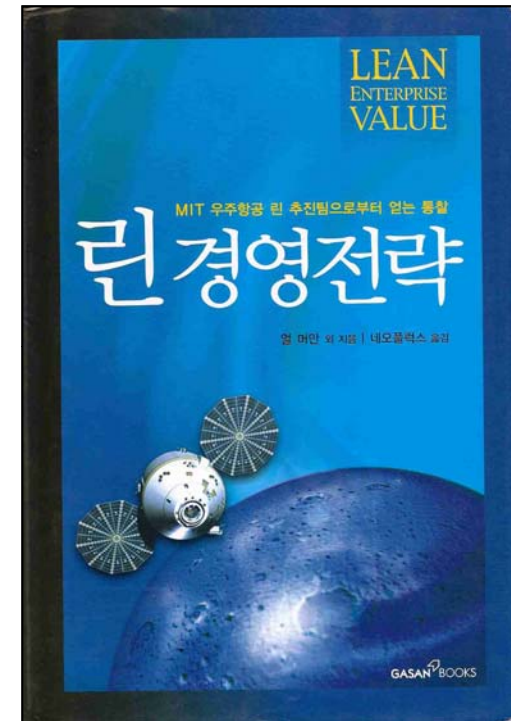
Lean Enterprise Value



2002



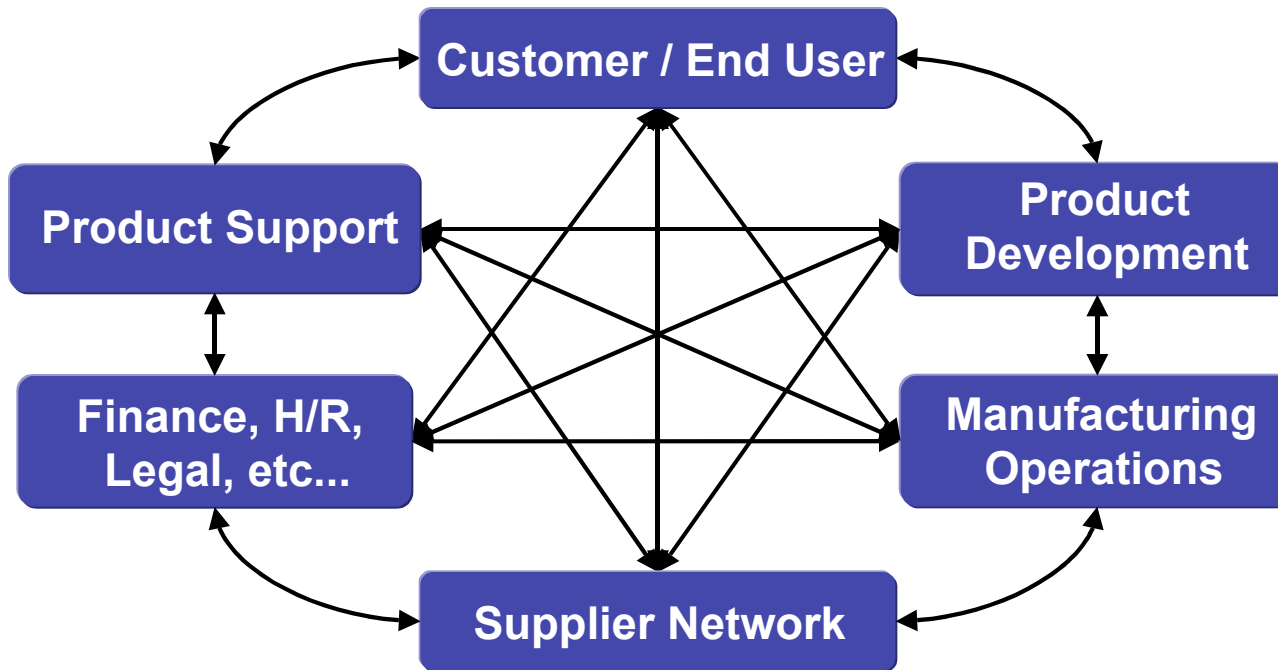
2005



2008

Fundamental Principles applicable to many complex enterprises beyond aerospace; e.g automotive, healthcare, government, services.

What Is an Enterprise?



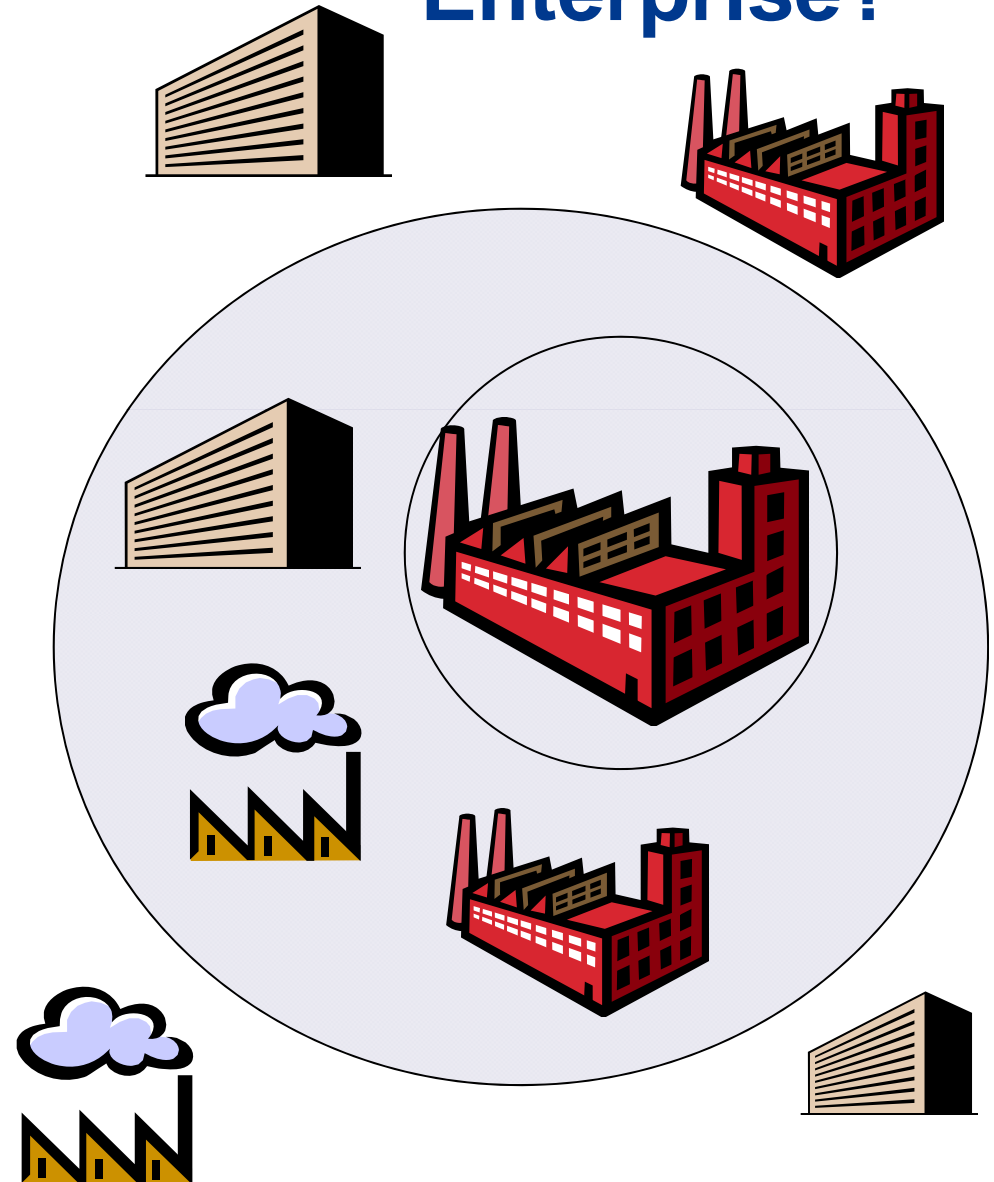
One or more organizations having related activities, unified operation, and a common business purpose

Source: Black's Law Dictionary, 1999

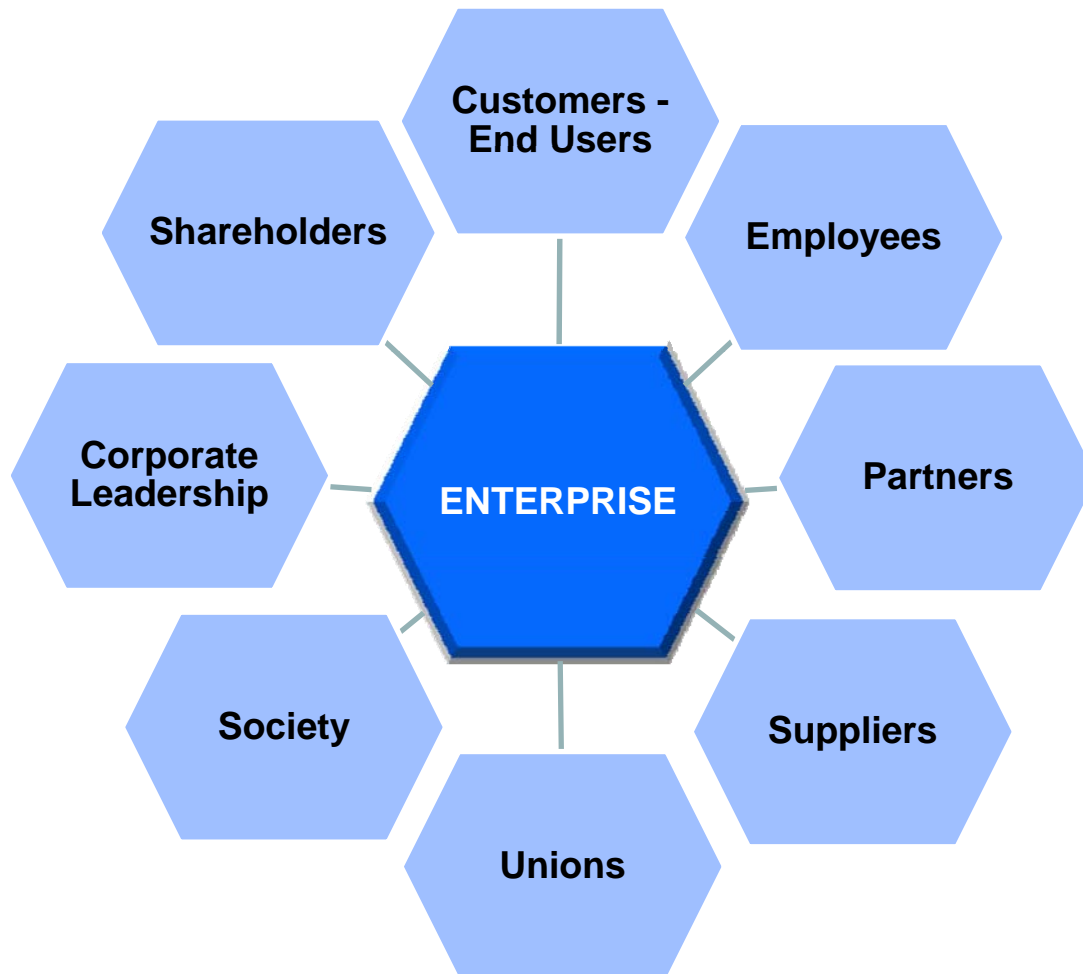
An enterprise may be a firm, large division of a firm, government agency, a multi-firm program, etc.

What Are the Boundaries of an Enterprise?

- The enterprise boundaries need to be identified: Definition is contextual
- Core enterprise: Entities tightly integrated through direct or partnering agreements
- Extended enterprise: From customer's customer to supplier's supplier



Who are the Stakeholders ?

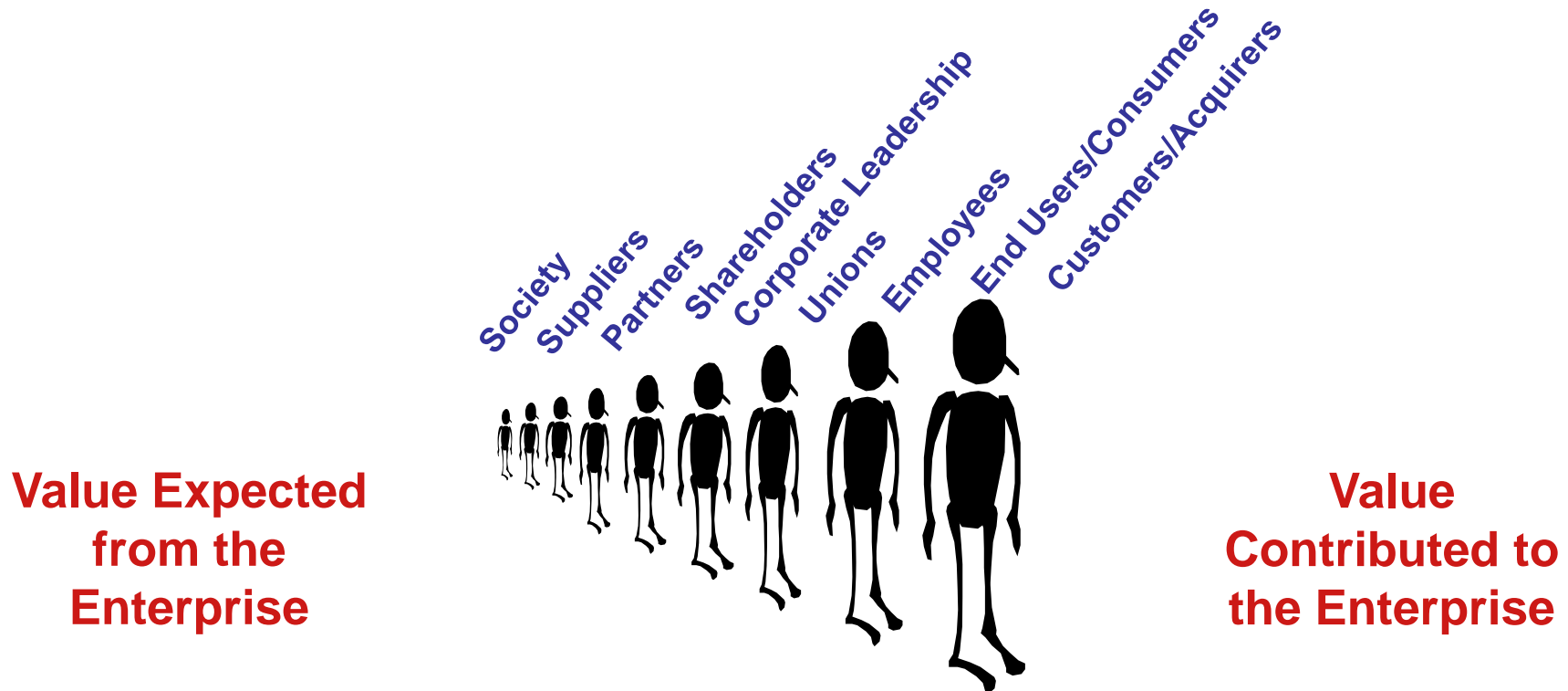


Stakeholder:
 Any group or individual who can affect or is affected by the achievements of the organization's objective*

* Source: Freeman, *Strategic Management: A Stakeholder Perspective*, Pittman, 1984

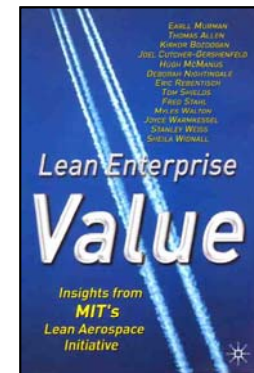
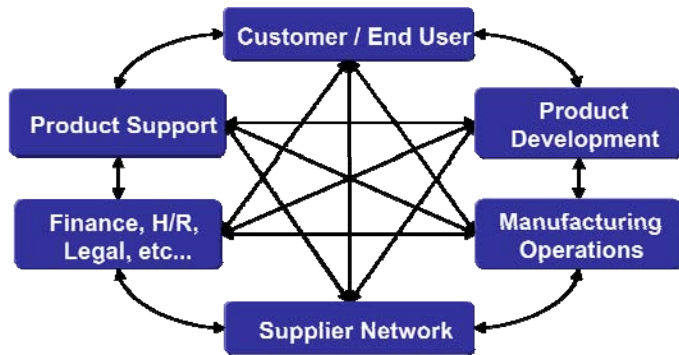
Stakeholder Value

“Value - how various stakeholders find particular worth, utility, benefit, or reward in exchange for their respective contributions to the enterprise.”

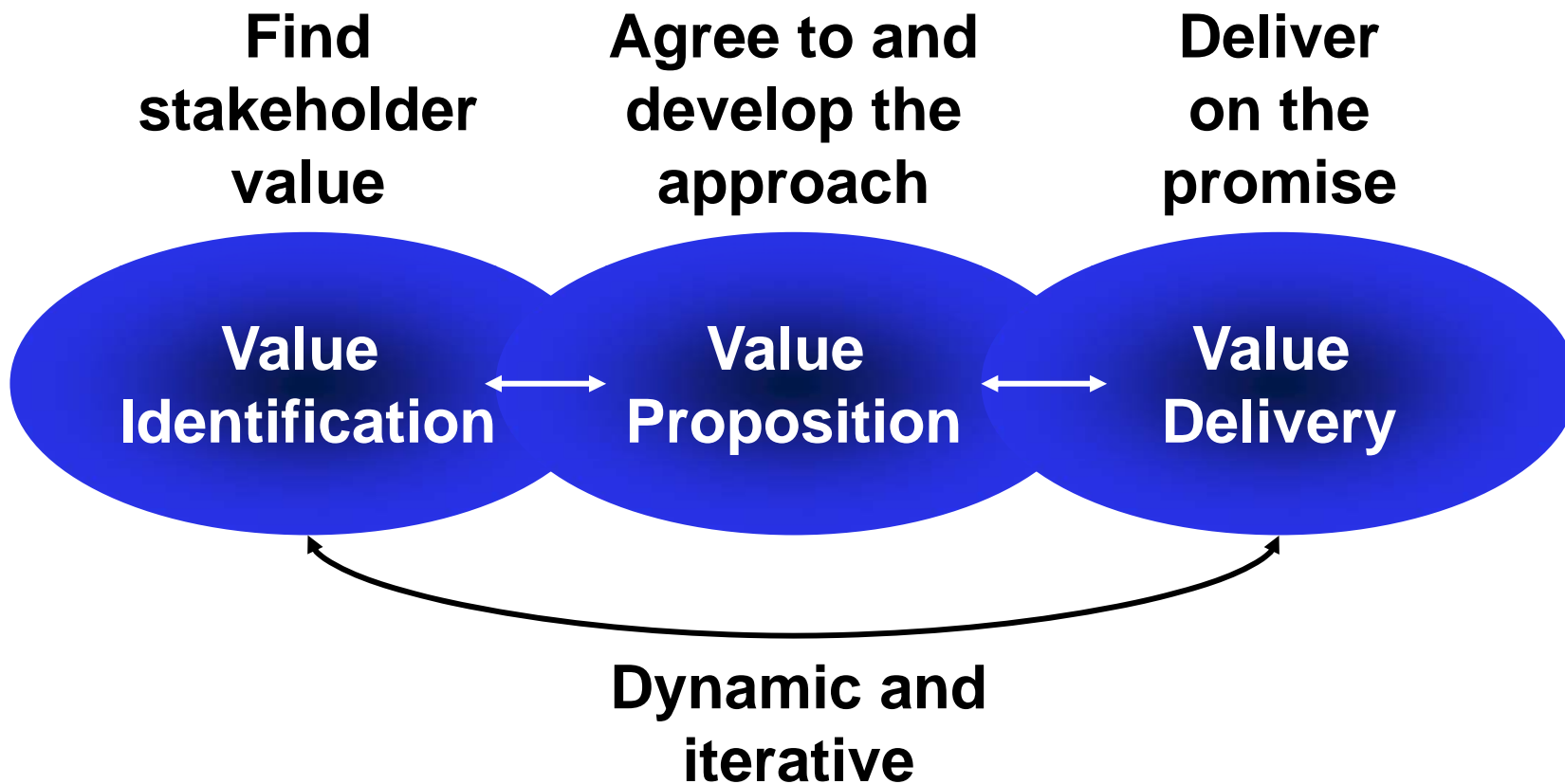


What is A Lean Enterprise?

“A lean enterprise is an integrated entity that efficiently creates value for its multiple stakeholders by employing lean principles and practices.”



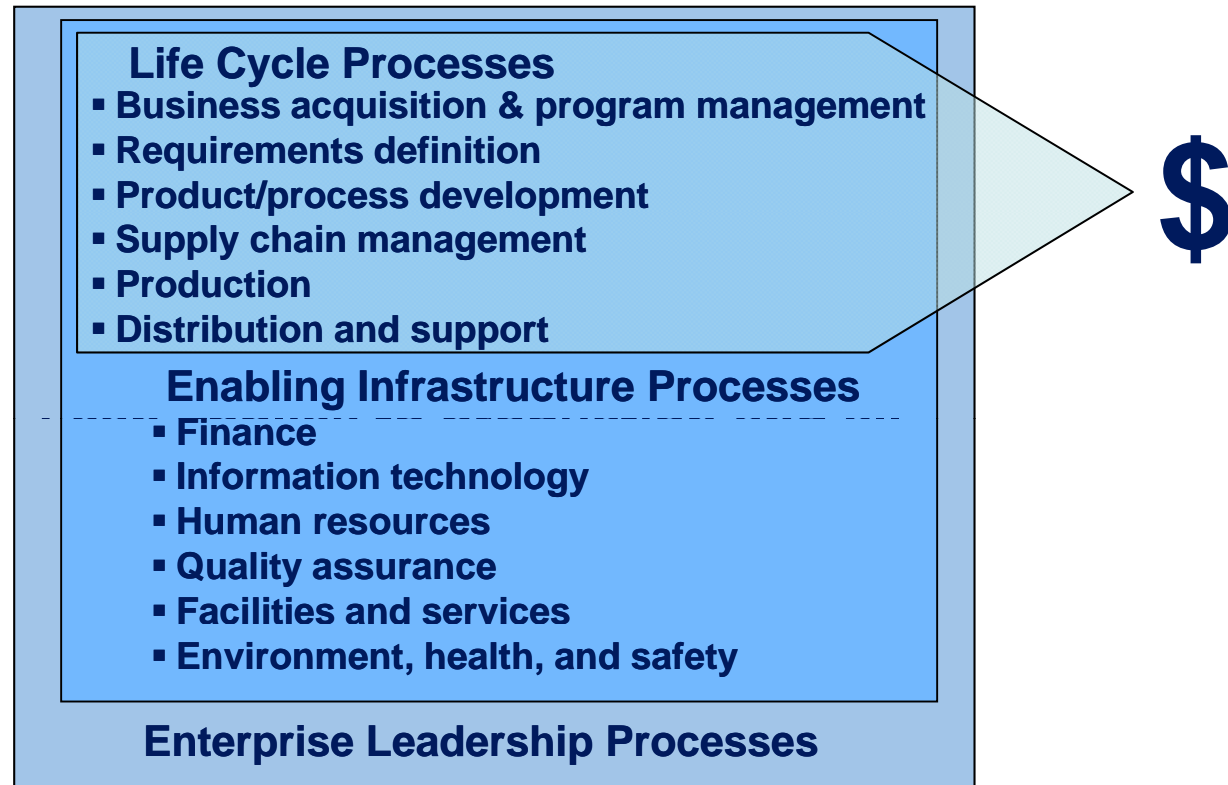
Value Creation Framework



Do the Right Job & Do the Job Right



Lean Applies to All Enterprise Processes



Lean also applies to enabling infrastructure and enterprise leadership processes required to deliver program/product value

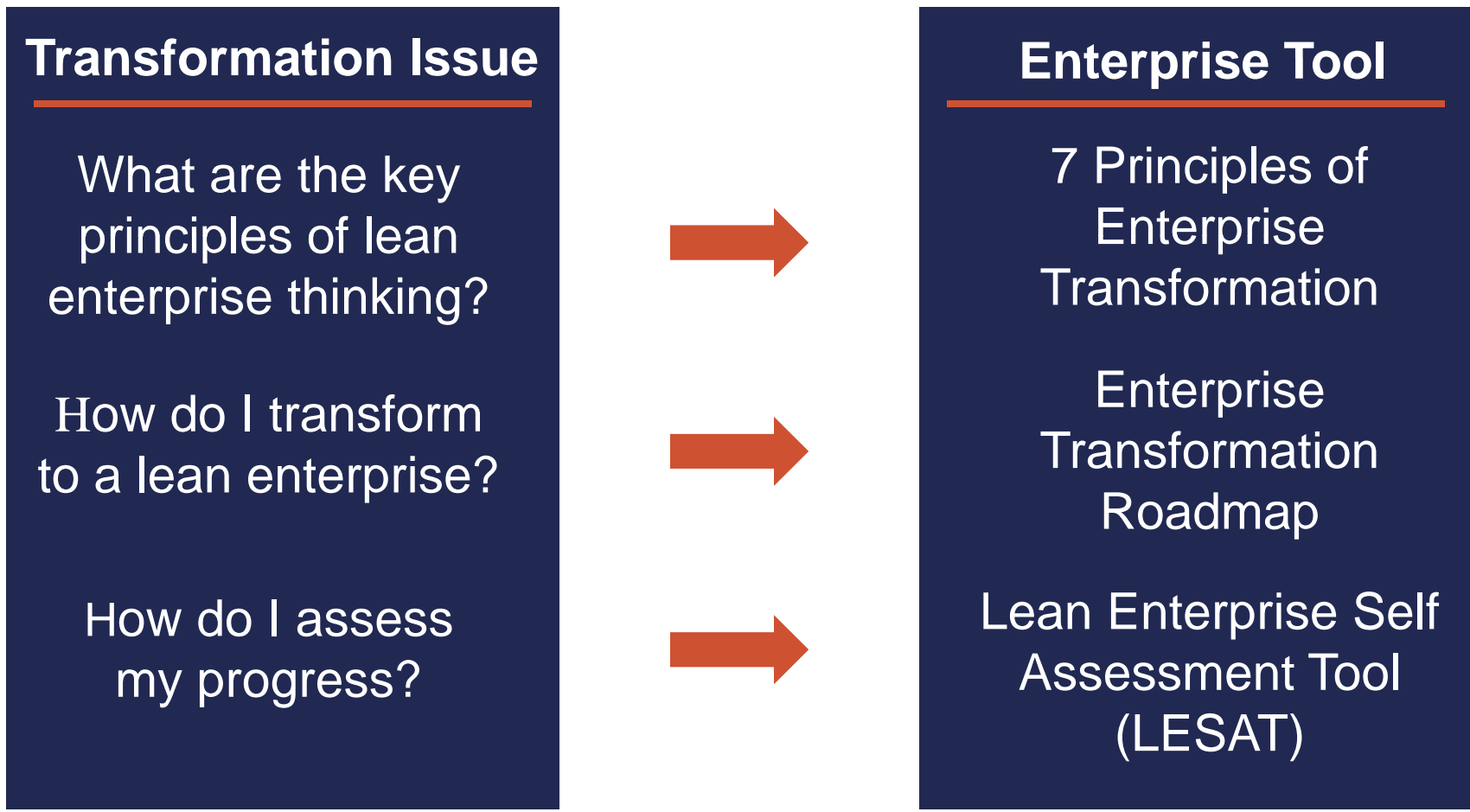
Applying Lean Thinking to only some enterprise processes leads to Islands of Excellence – not Lean Enterprise Value

Types of Enterprise Transformation Failure

Failure Type	Results from ...
Only in my backyard	Undertaking only local projects, with no consideration for their impact across the enterprise
Activity	Feeling the need to “do something” and measuring/valuing activity rather than progress
Low-hanging fruit	Focusing efforts on whatever is the easiest problem to address
Pet project	Working on whatever a leader or leaders want, whether it is the right thing or addresses root issues
New leadership	Heading down the path set by a new leader with no regard for where the organization is/ has been going
Leaders who don't lead	Delegating all transformation work to underlings, with leaders taking no part in the efforts
Hire the transformers	Bringing in outsiders to develop and implement transformation, who leave behind no plan
Flavor-of-the-month	Undertaking transformation efforts that shift from one methodology to another, again and again

Transformation Principles and Tools are Needed!

Lean Enterprise Transformation Processes and Tools



7 Principles of 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.

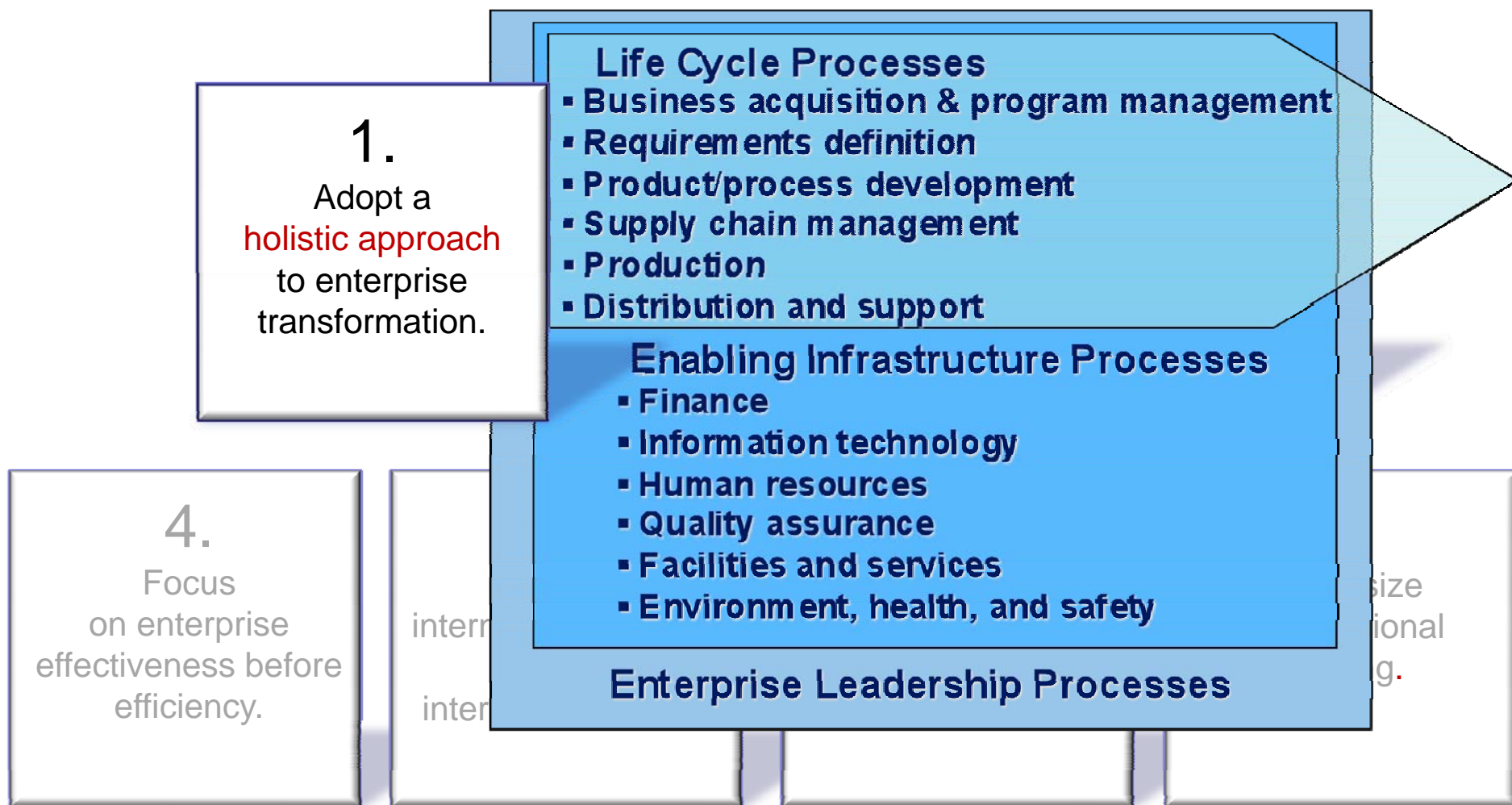
6.

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

7.

Emphasize **organizational learning**.

1 – Holistic Approach



2 – Leadership Commitment

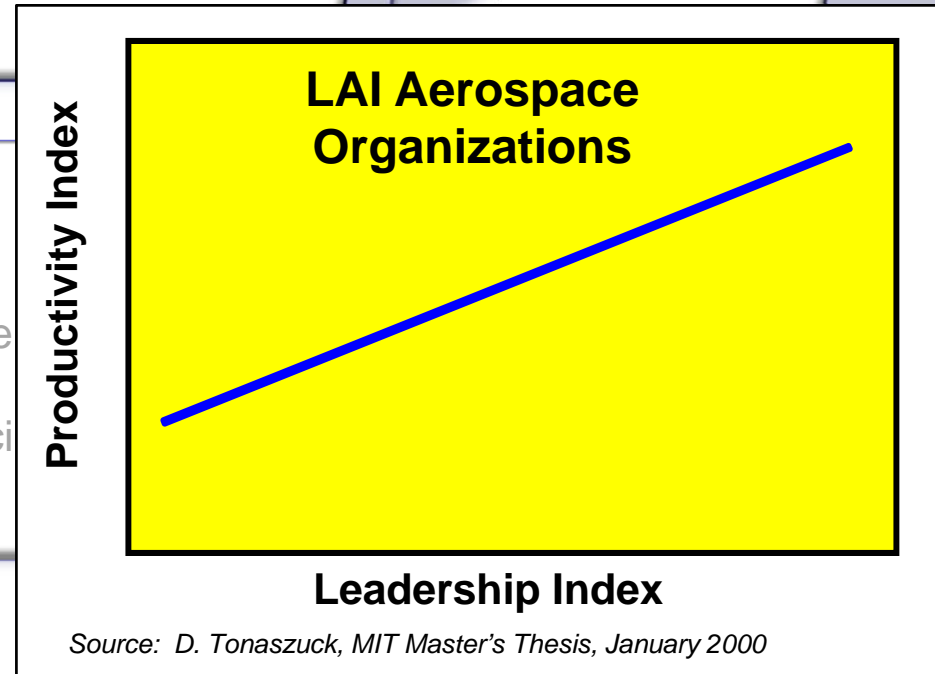
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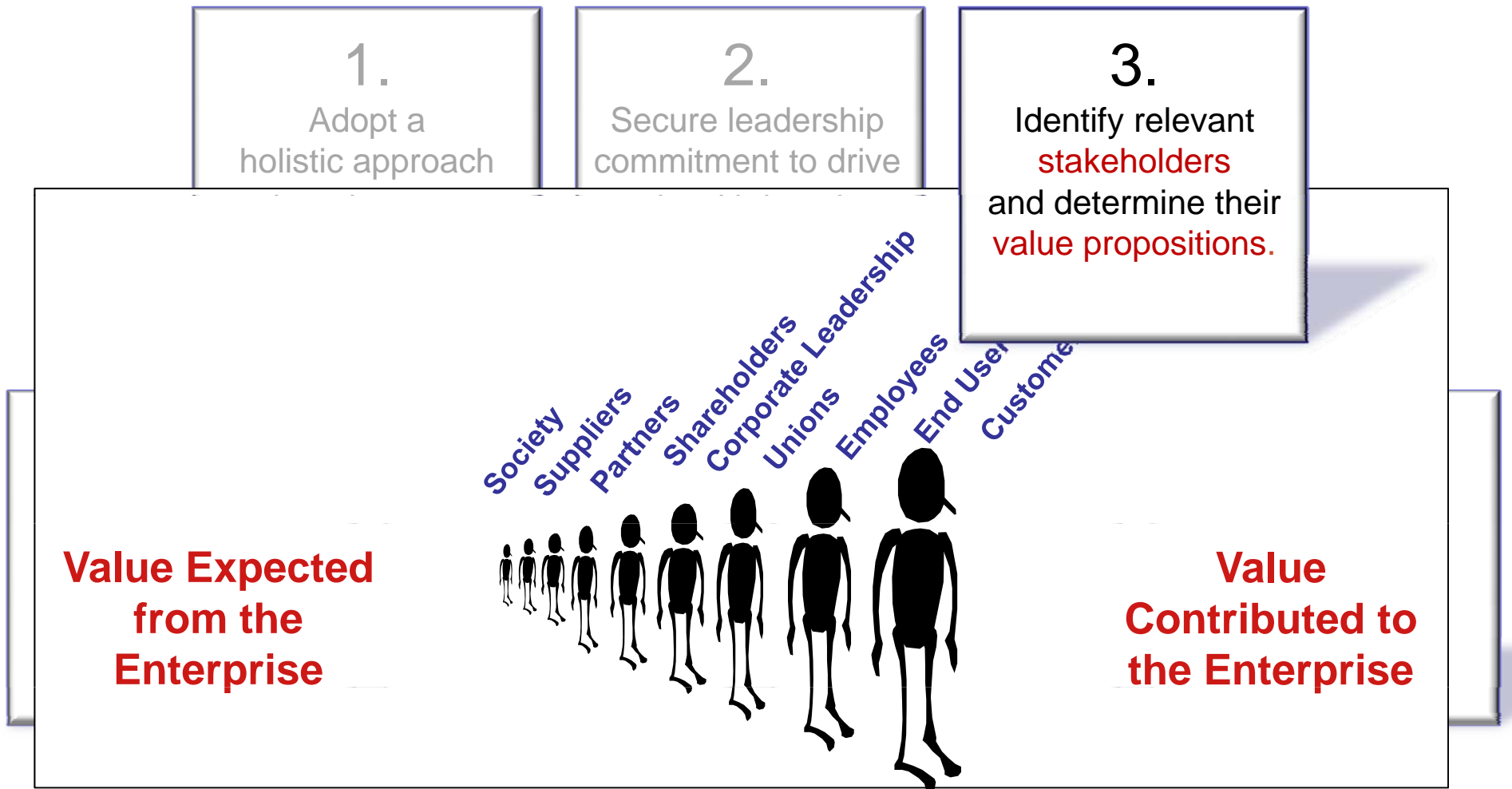
3.
Identify relevant stakeholders and determine their value propositions.

4.
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5.
Address internal and external enterprise interdependencies.



3 – Stakeholder Value Propositions



4 – Effectiveness Before Efficiency

1.

Adopt a holistic approach to enterprise transformation.

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Secure leadership commitment to drive and institutionalize enterprise behaviors.

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4.

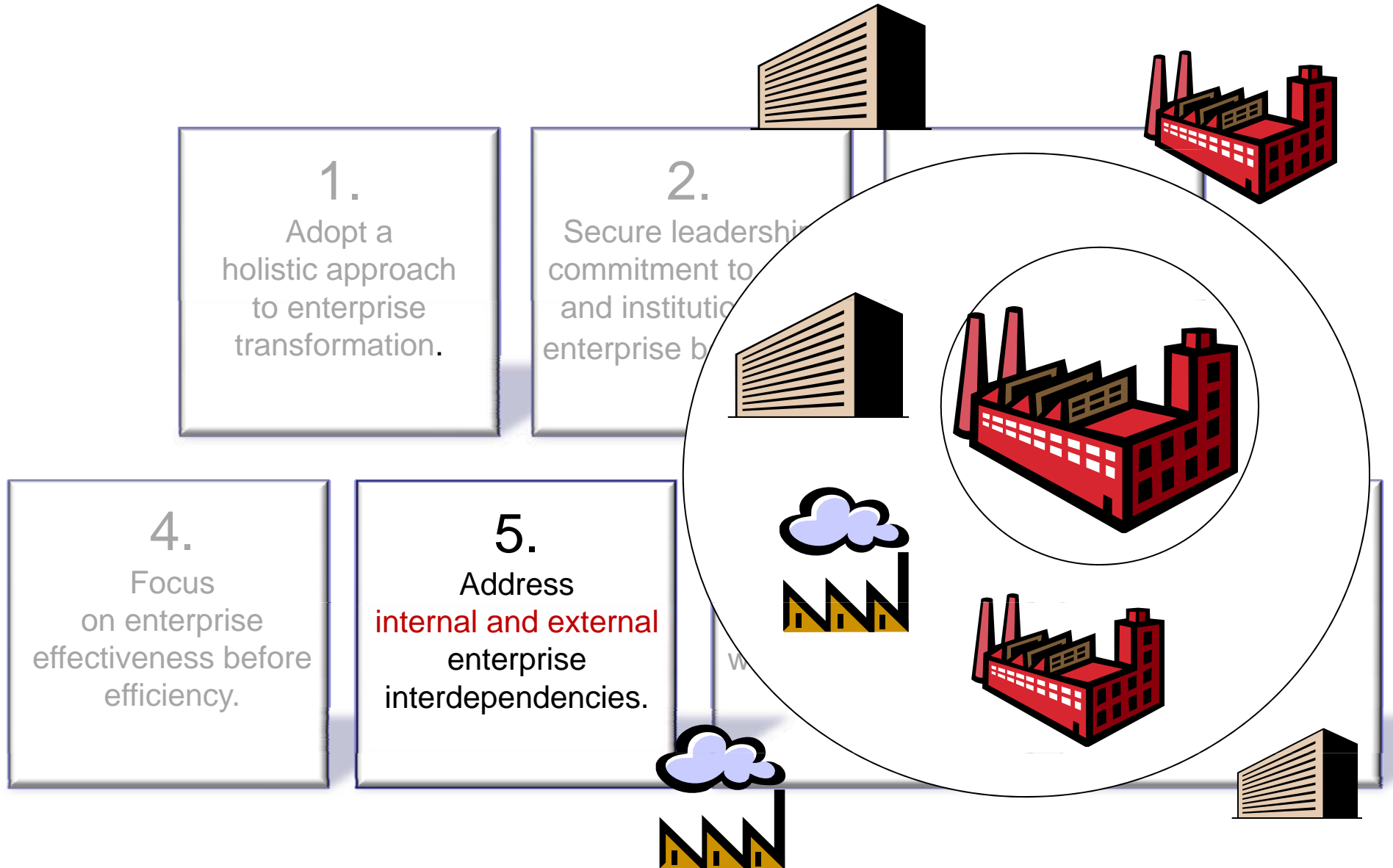
Focus on enterprise effectiveness before efficiency.

**Do the Right Job
THEN
Do the Job Right**

7.

Emphasize organizational learning.

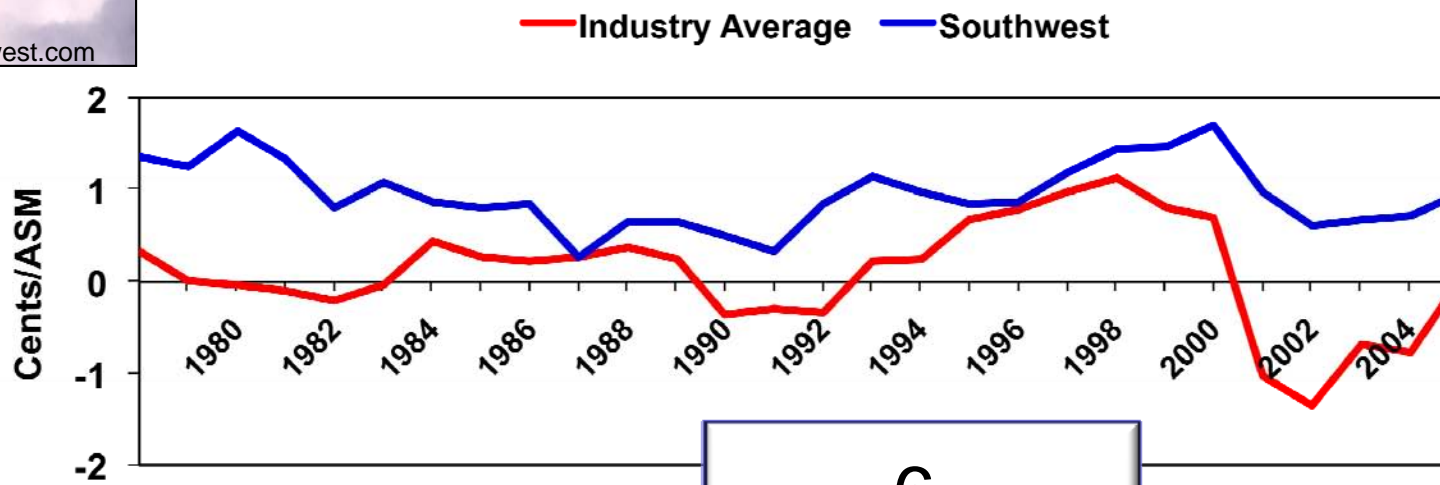
5 – Enterprise Dependencies



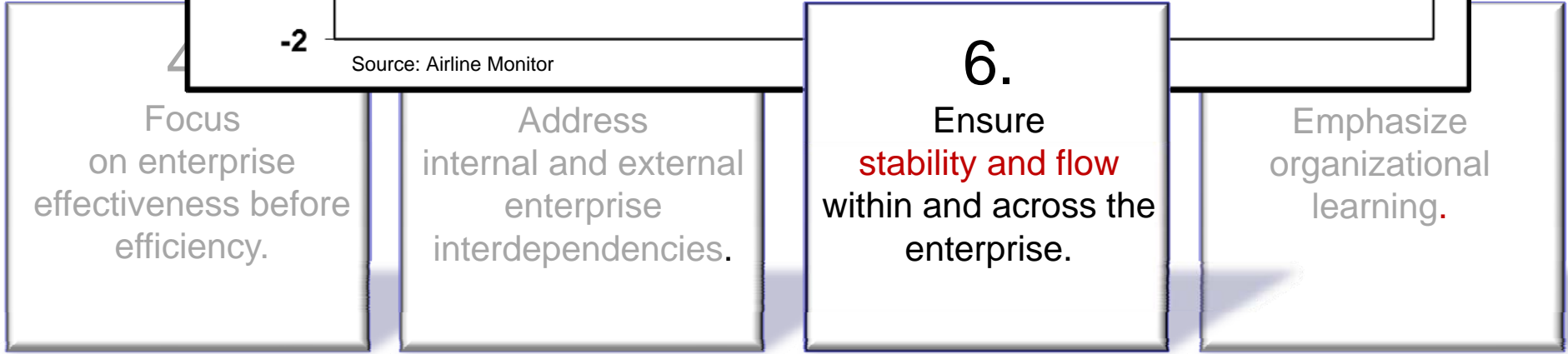
6 – Stability and Flow



Operating Profit/Available Seat Mile For U.S. Routes (1978-2005)



Source: Airline Monitor



7 Organizational Learning

Rockwell Collins Example

- Each employee averages 40 hours of education per year
- Focusing on 21st-century-style learning by tailoring education to fit the individual
- Apprentice like environment through online mentoring
- Knowledge management data base, with expertise location
- Fluid communities of practice

3. relevant holders determine their positions.

4. Focus on enter effectiveness efficient

7. Emphasize organizational learning.



Rockwell Collins Overview

- Leading provider of commercial and military avionics systems and information technology
- Founded in 1933 as Collins Radio Company
- Acquired by Rockwell International in 1973
- Spun-off in 2001 as an independent, publicly traded company
- Today, more than 20,000 employees at over 60 locations in 27 countries
- 1998 - “Lean Electronics” launched by CEO Clay Jones as RC’s operating philosophy



Lean Electronics: Our Operating Philosophy



**Rockwell
Collins**
Building trust every day

Results In the Office:

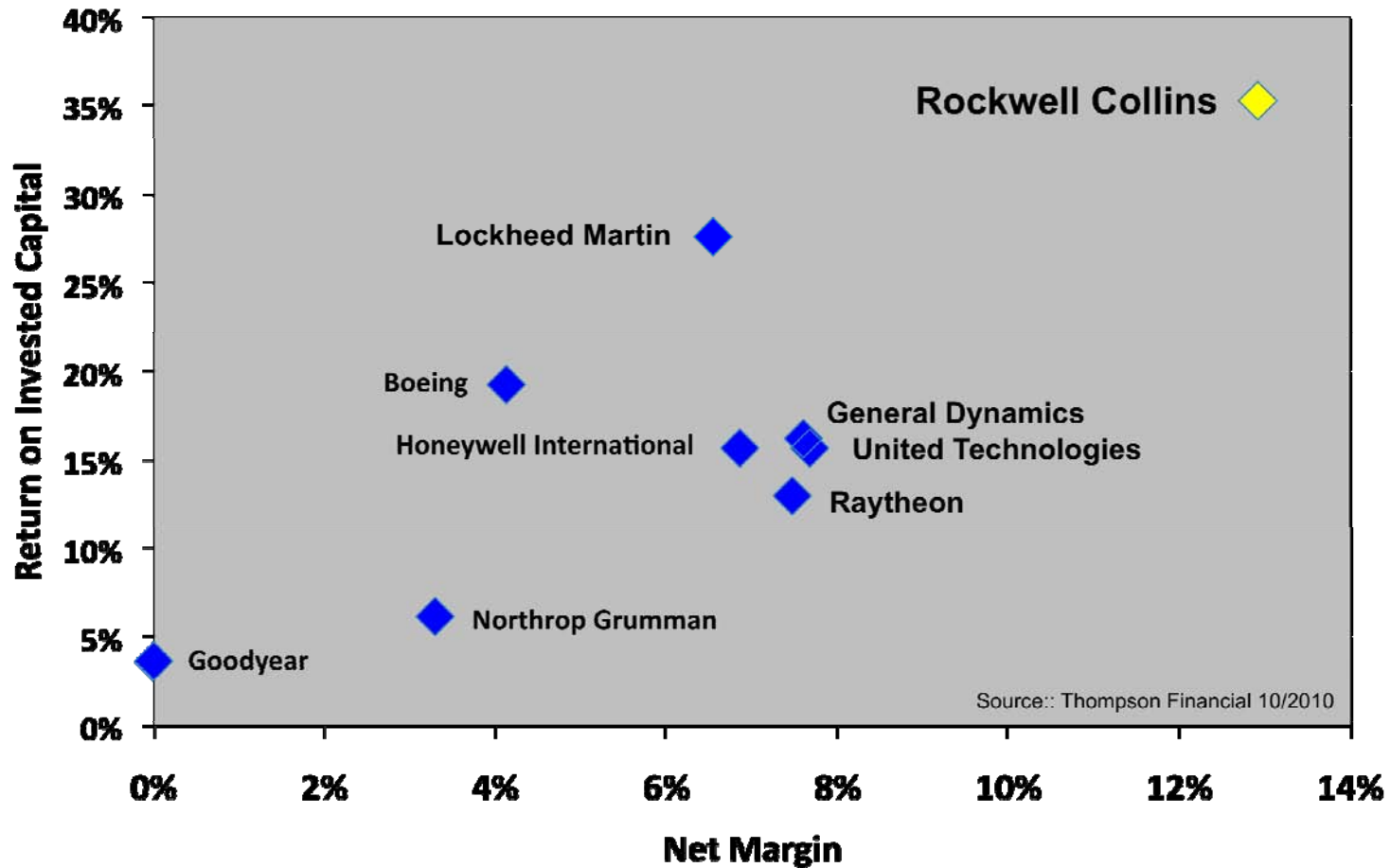
- Reduced Publishing Cycle Time 72%
- 70% Work In-Process Reduction
- 38% Productivity Improvement
- 77% Manuals Inventory Reduction

Results In the Factory:

- 25% Improvement in Productivity
- 46% Reduction in Inventory
- Cycle Time Reductions of up to 75%

Rockwell Financial Performance

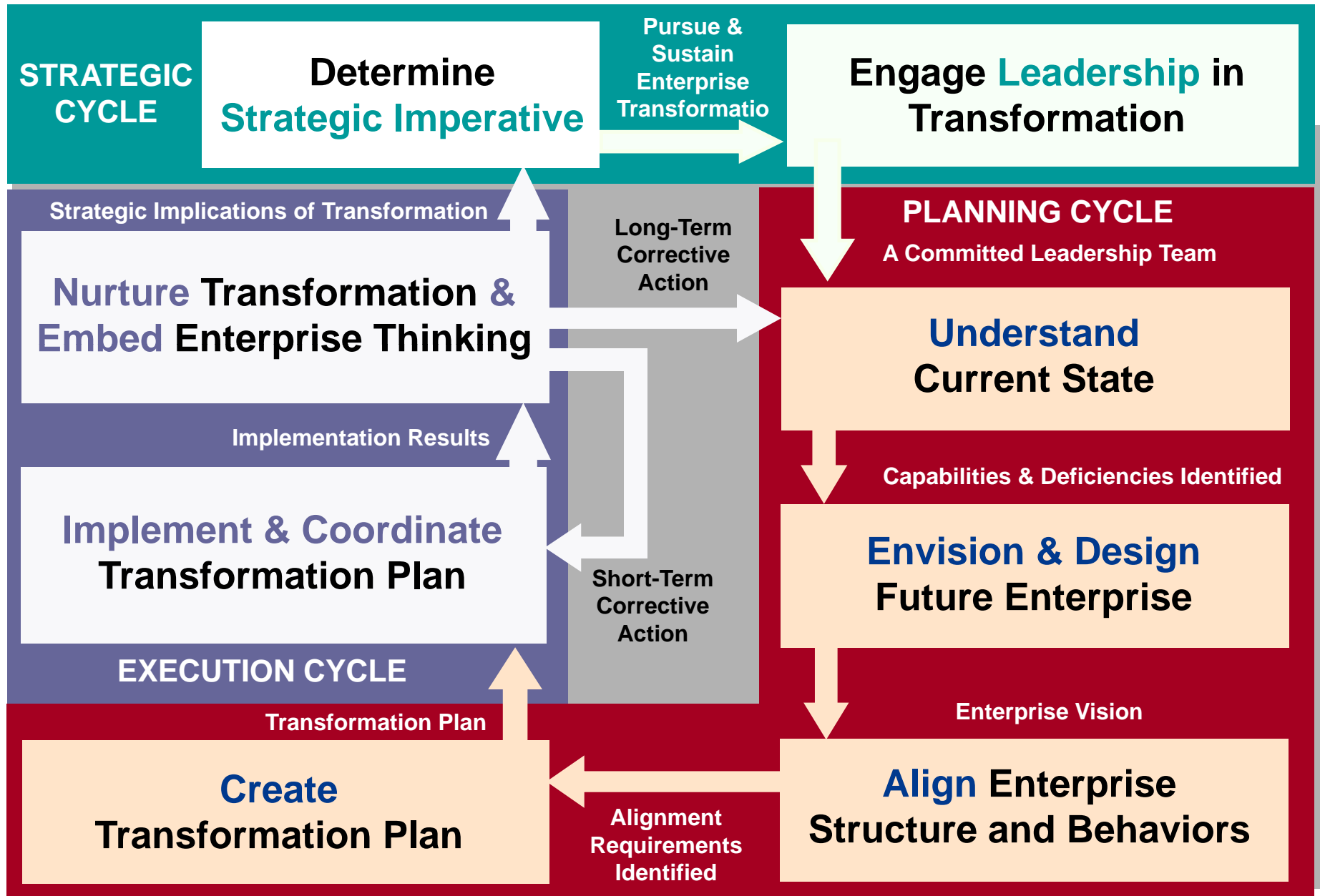
Financial Performance of Selected Aerospace Companies: 2005 to 2009

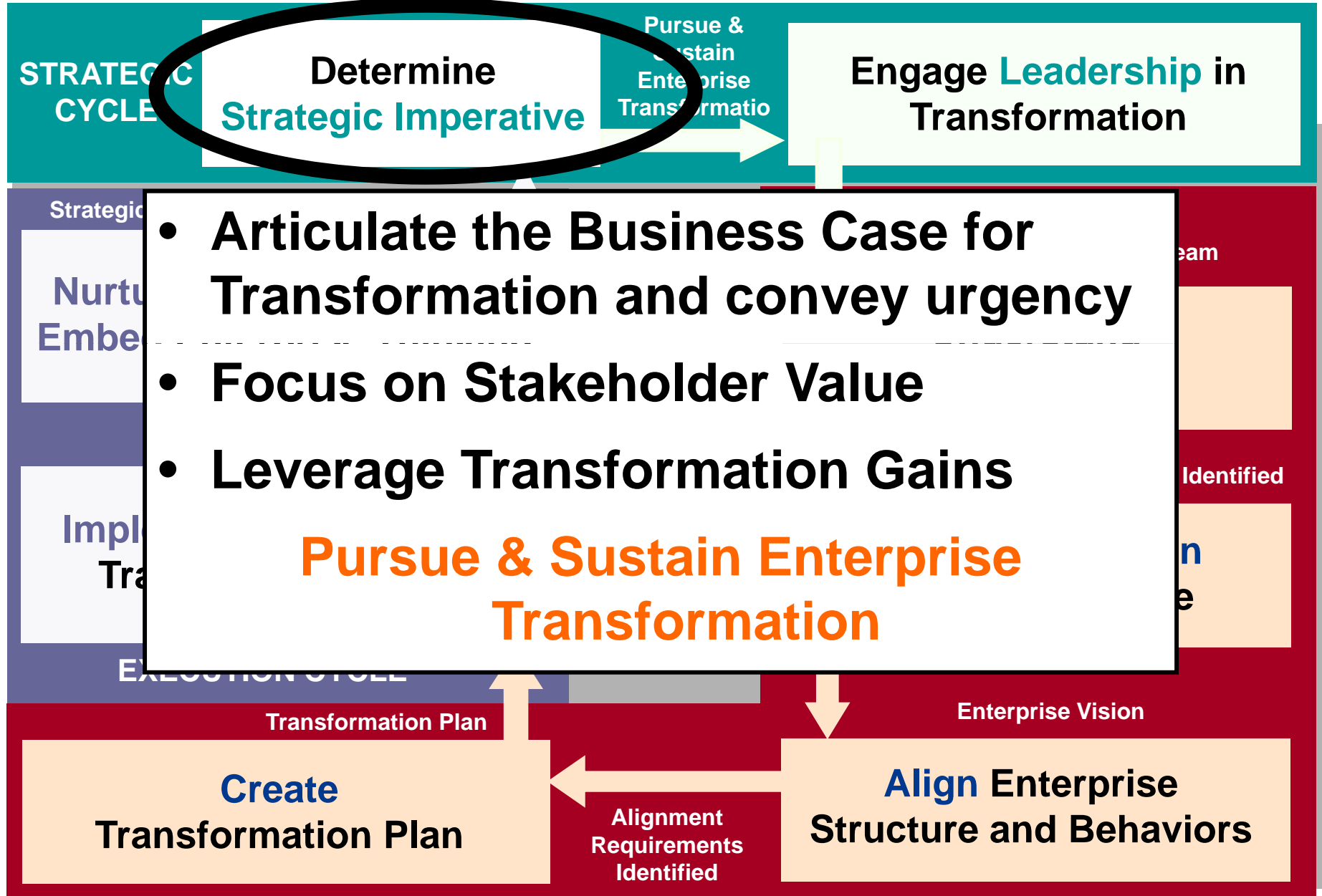


- Notes (1) Additional factors beyond Lean Electronics contribute to Rockwell Collins superior sector performance
- (2) Financial performance for firms can include non-aerospace business units

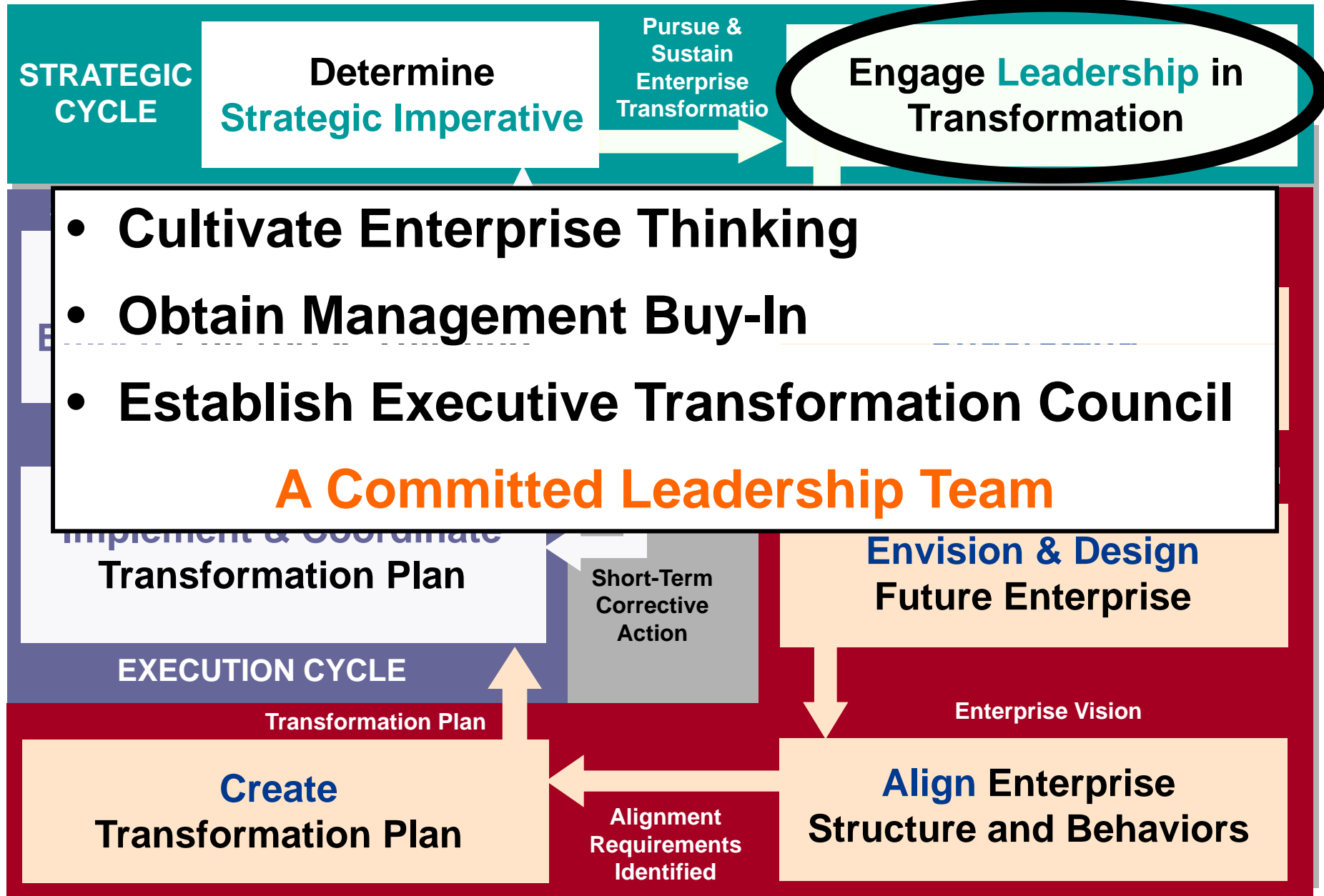


Lean Enterprise Transformation Roadmap



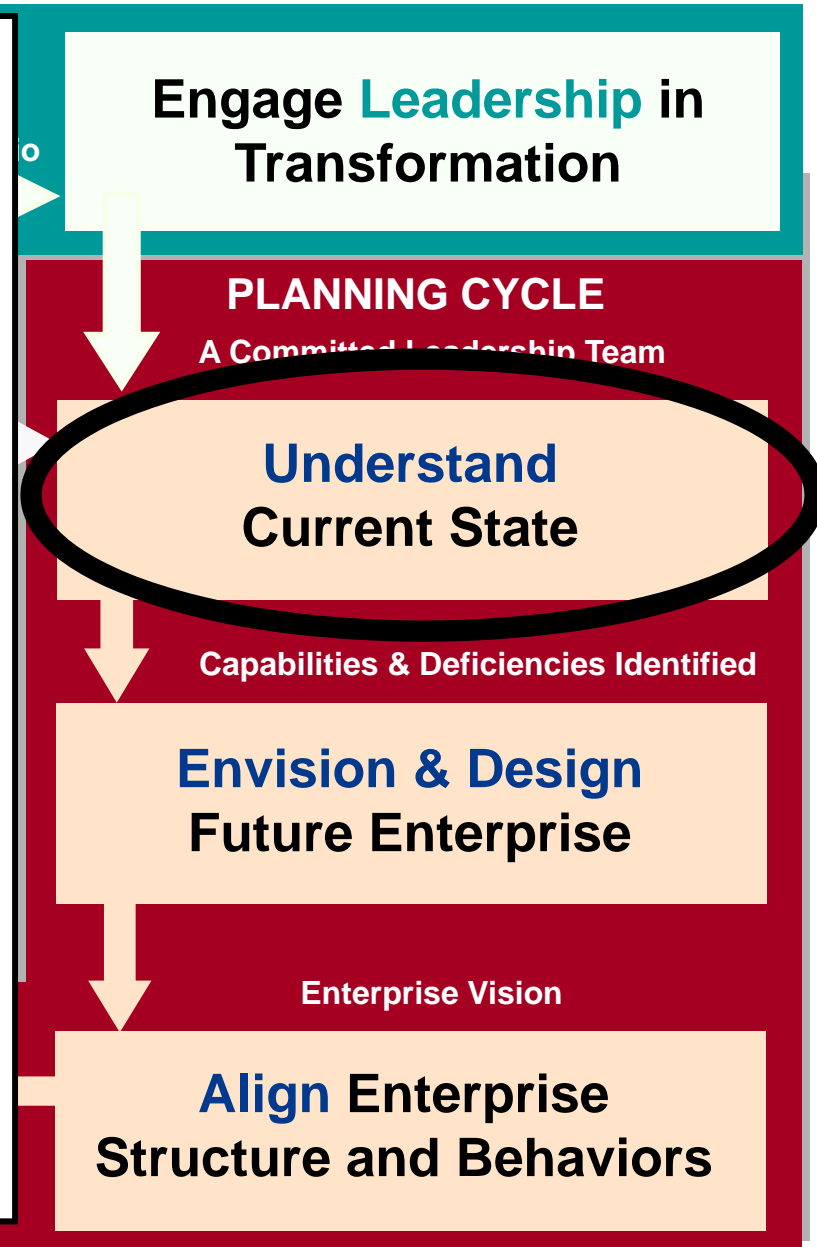


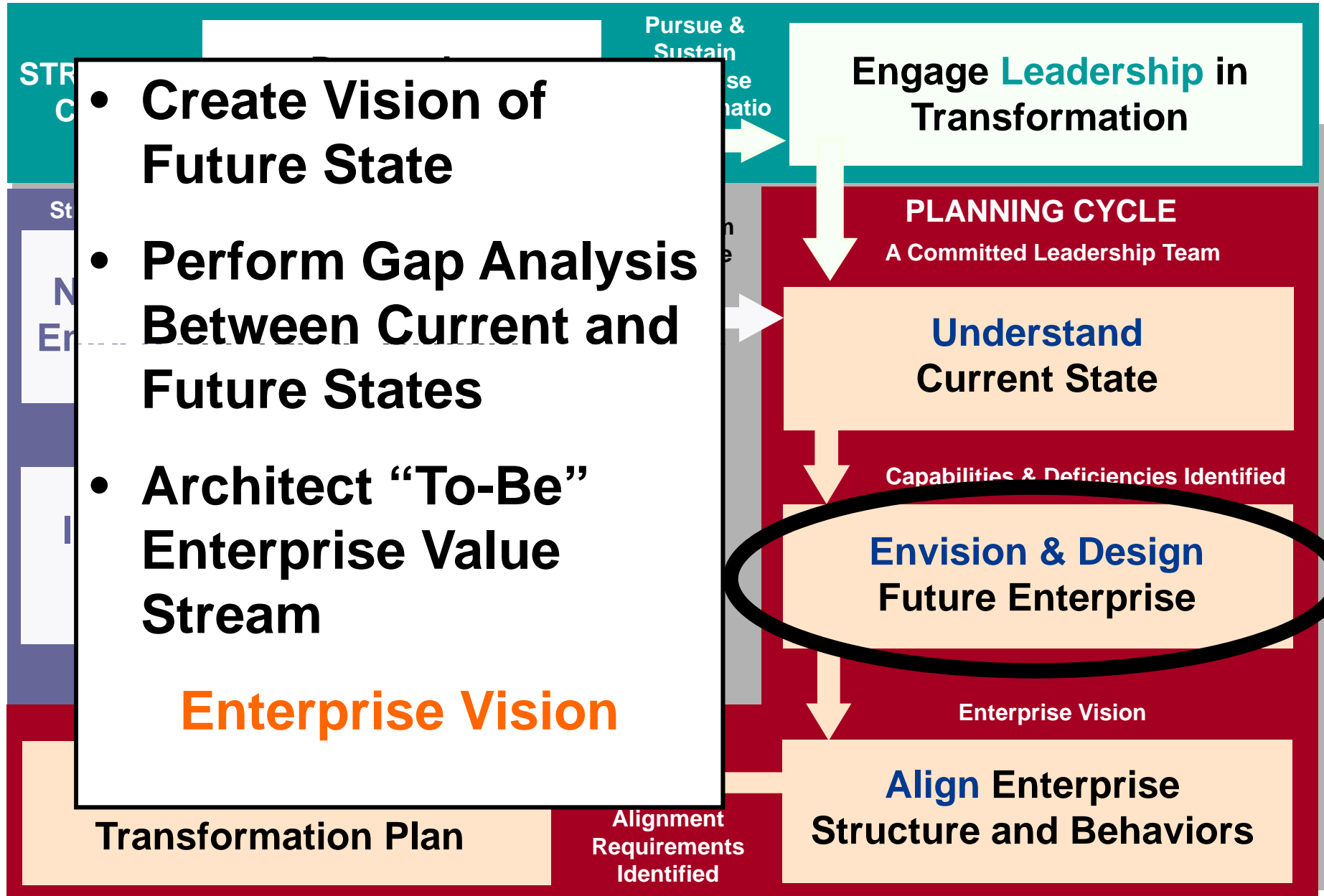
- Articulate the Business Case for Transformation and convey urgency
 - Focus on Stakeholder Value
 - Leverage Transformation Gains
- Pursue & Sustain Enterprise Transformation**

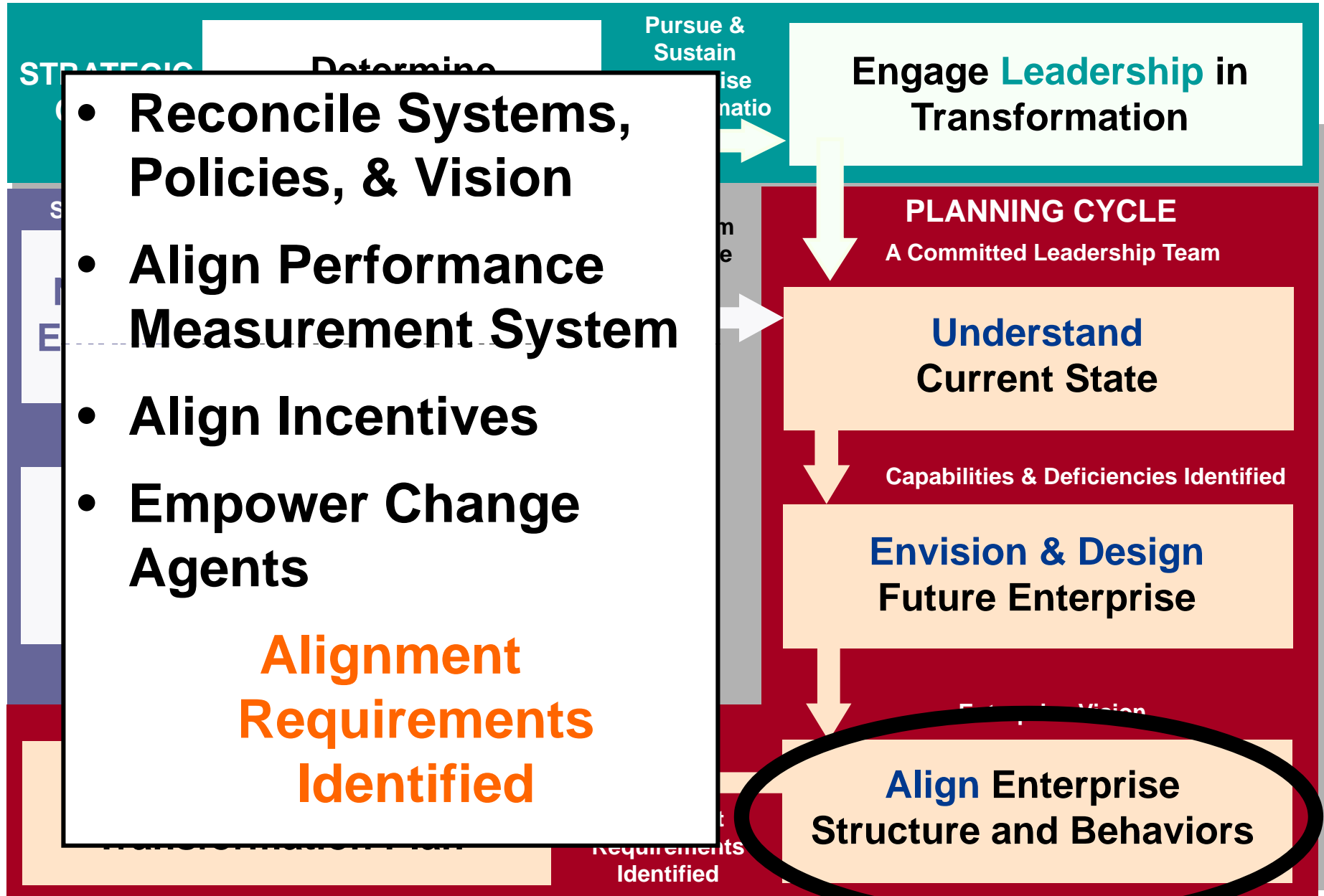


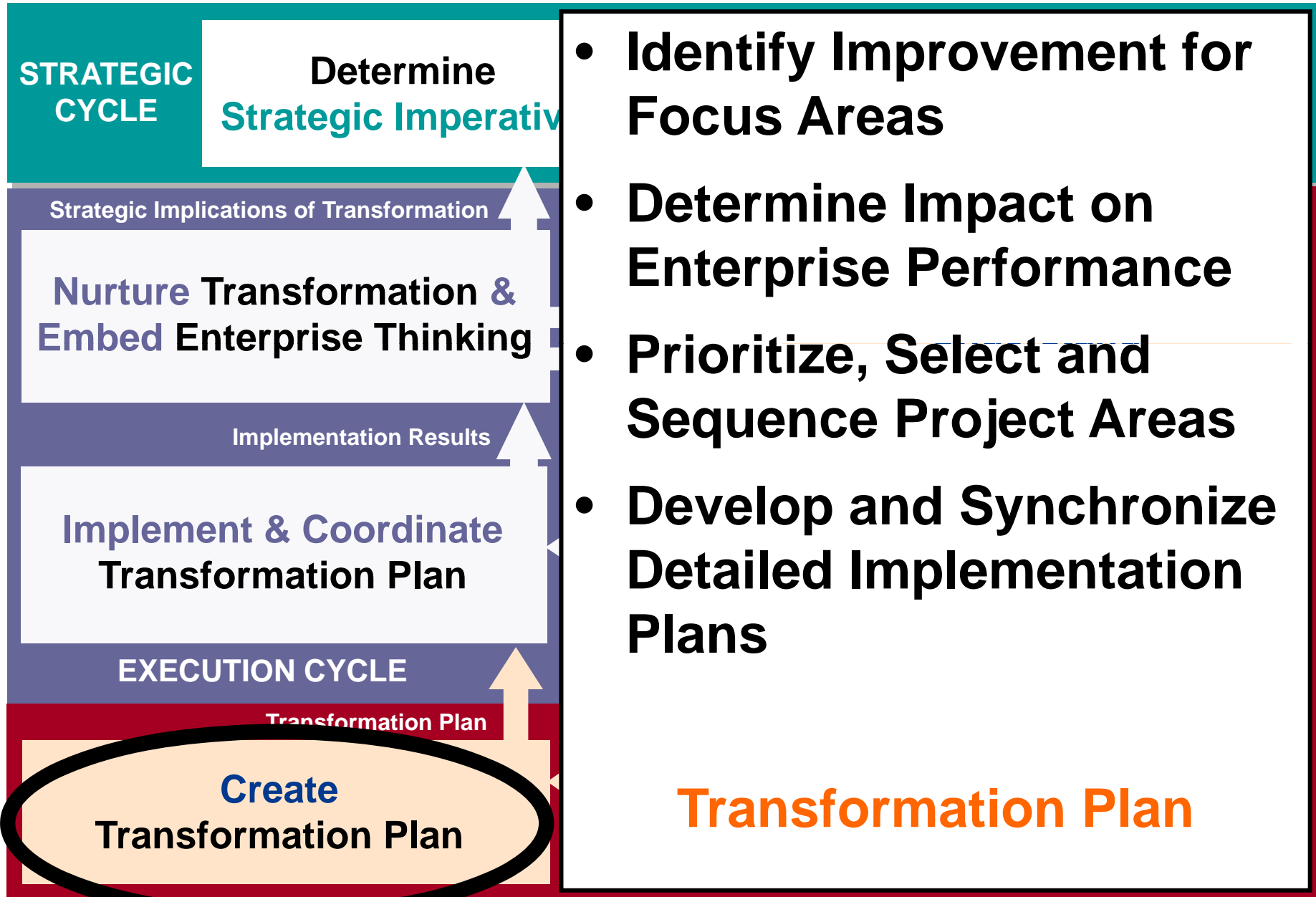
- Perform Stakeholder Analysis
- Analyze Processes & Interactions
- Perform Enterprise Maturity Assessment
- Assess Current Performance Measurement System

Capabilities and Deficiencies Identified

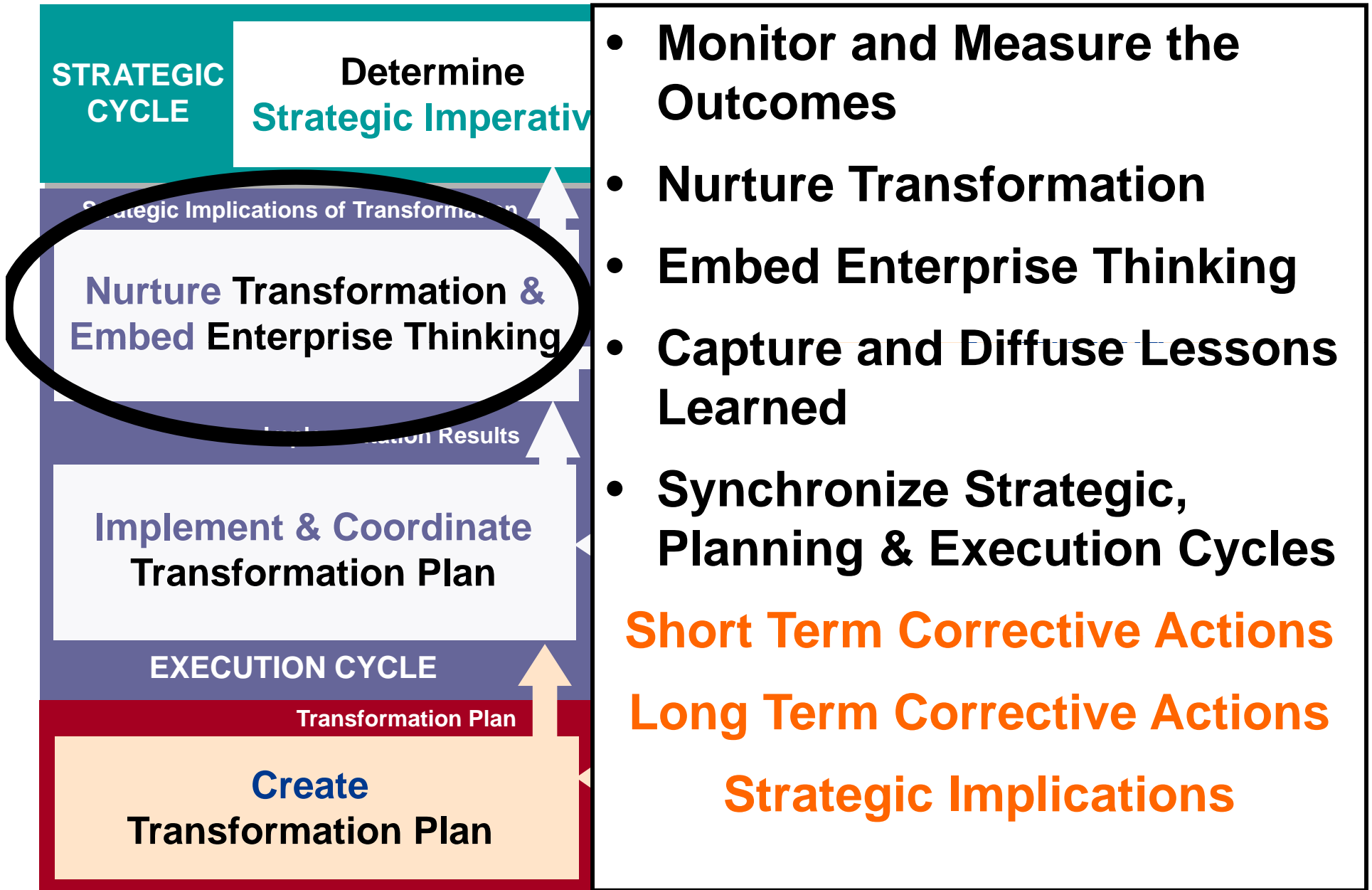














Lean Enterprise Self Assessment Tool (LESAT)

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

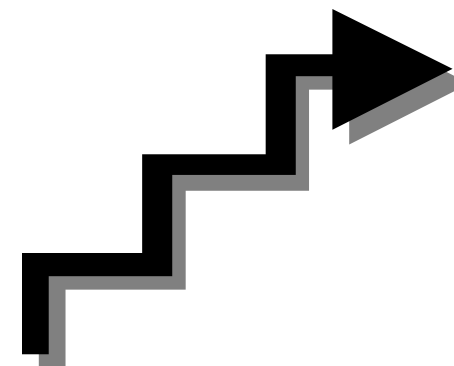


Over 3400 downloads
LESAT Being updated

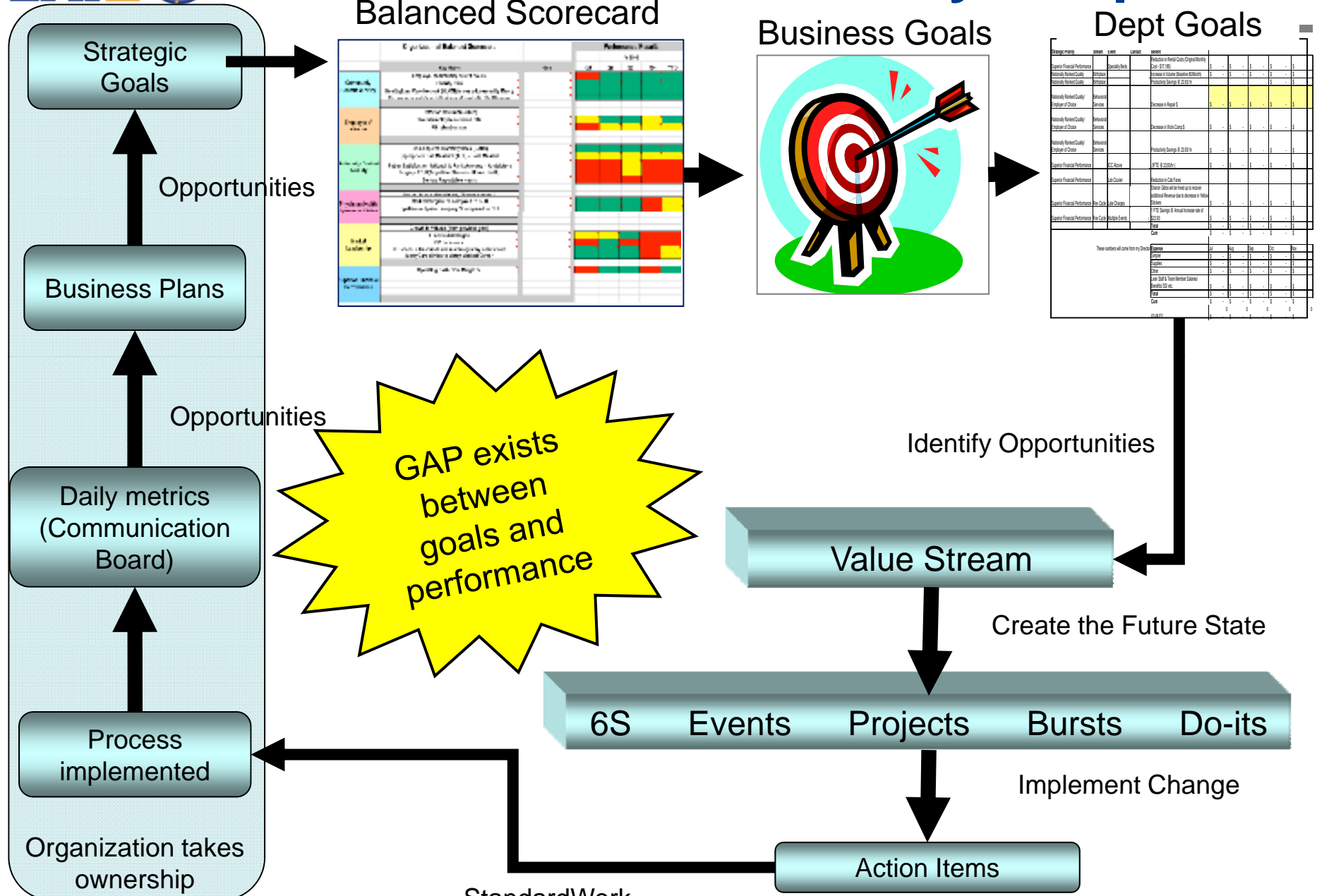


	1	2	3	4	5

Capability maturity model



Supporting materials



Balanced Scorecard

Category	Objective	Measure	Target	Actual	Variance
Financial	Improve operating margins	Operating Margin	15%	14%	-1%
Customer	Improve patient satisfaction	Net Promoter Score	75	72	-3
Internal Process	Reduce patient wait times	Wait Time	15 min	18 min	+3 min
Learning & Growth	Improve employee skills	Employee Training Hours	1000	950	-50

Business Goals



Dept Goals

Department	Measure	Target	Actual	Variance
Emergency	Emergency Room Wait Time	15 min	18 min	+3 min
ICU	ICU Patient Turnover	100%	95%	-5%
OR	OR Case Cancellation Rate	5%	8%	+3%
ER	ER Patient Satisfaction	80%	75%	-5%

GAP exists between goals and performance

Identify Opportunities

Value Stream

Create the Future State

6S Events Projects Bursts Do-its

Implement Change

Action Items



Beyond the Lean Revolution: Achieving Successful and Sustainable Enterprise Transformation

- **Authors: Deborah J. Nightingale and Jayakanth Srinivasan**
- **Published by AMACOM Press, Out Spring 2011**

Strategic Context	Lenses of Current State Analysis	Achieving Transformation
<ul style="list-style-type: none"> • Understanding Transformation • Seven Principles • Transformation Roadmap • Role of Leadership 	<ul style="list-style-type: none"> • Stakeholders • Processes • Performance Measurement • Resources • Maturity • Alignment • Wastes 	<ul style="list-style-type: none"> • Articulating the Vision • Planning Enterprise Transformation • Managing Transformation • Putting it all Together

Book Structure: Emphasizes Understanding and Executing

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- 766 Presentations
- 54 Reports, white papers, articles
- 91 Workshops
- 102 EdNet talks
- 104 Student research posters
- And more



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- **Jayakanth Srinivasan**