



Enterprise Systems Principles

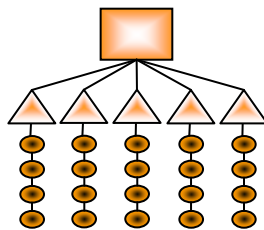
International Engineering Systems Symposium

Prof. Debbie Nightingale
MIT

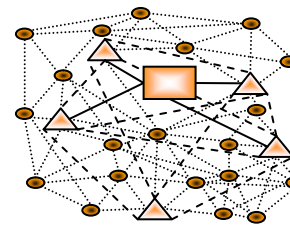
June 17, 2009

The Challenges of Complex Enterprises Requires a Systems Approach

- New strategic systems perspective
- Viewing enterprises as holistic and highly networked systems
- Integrating leadership processes, lifecycle processes and enabling infrastructure systems
- Balancing needs of multiple stakeholders working across boundaries

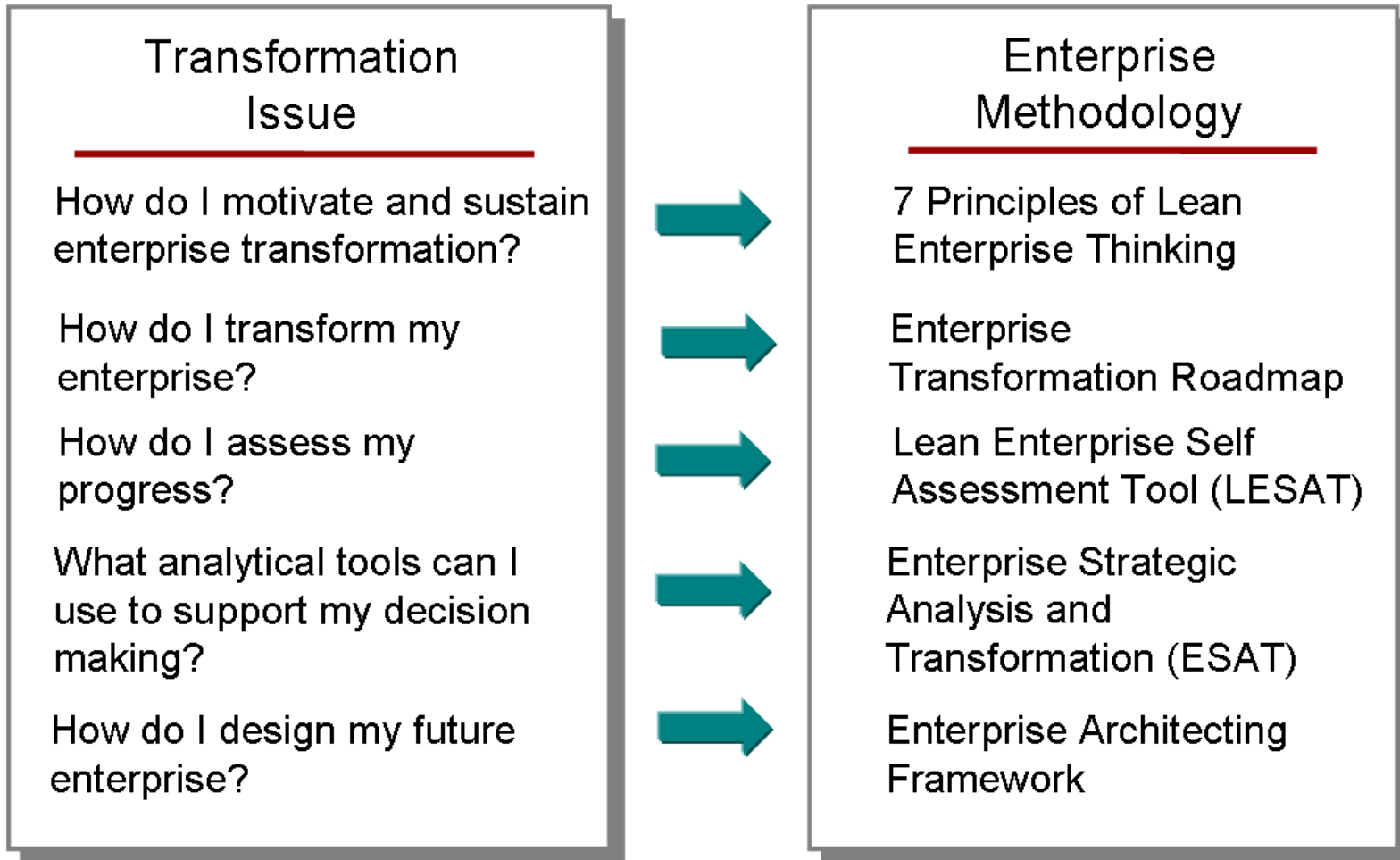


MOVING FROM THE PAST
(hierarchical) enterprise



TOWARDS THE FUTURE
(networked) enterprise

Creating a Holistic Approach to Enterprise Transformation



7 Principles of Lean Enterprise Thinking

1.

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

2.

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

3.

Focus on enterprise **effectiveness before efficiency**.

4.

Address **internal and external** enterprise interdependencies.

5.

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

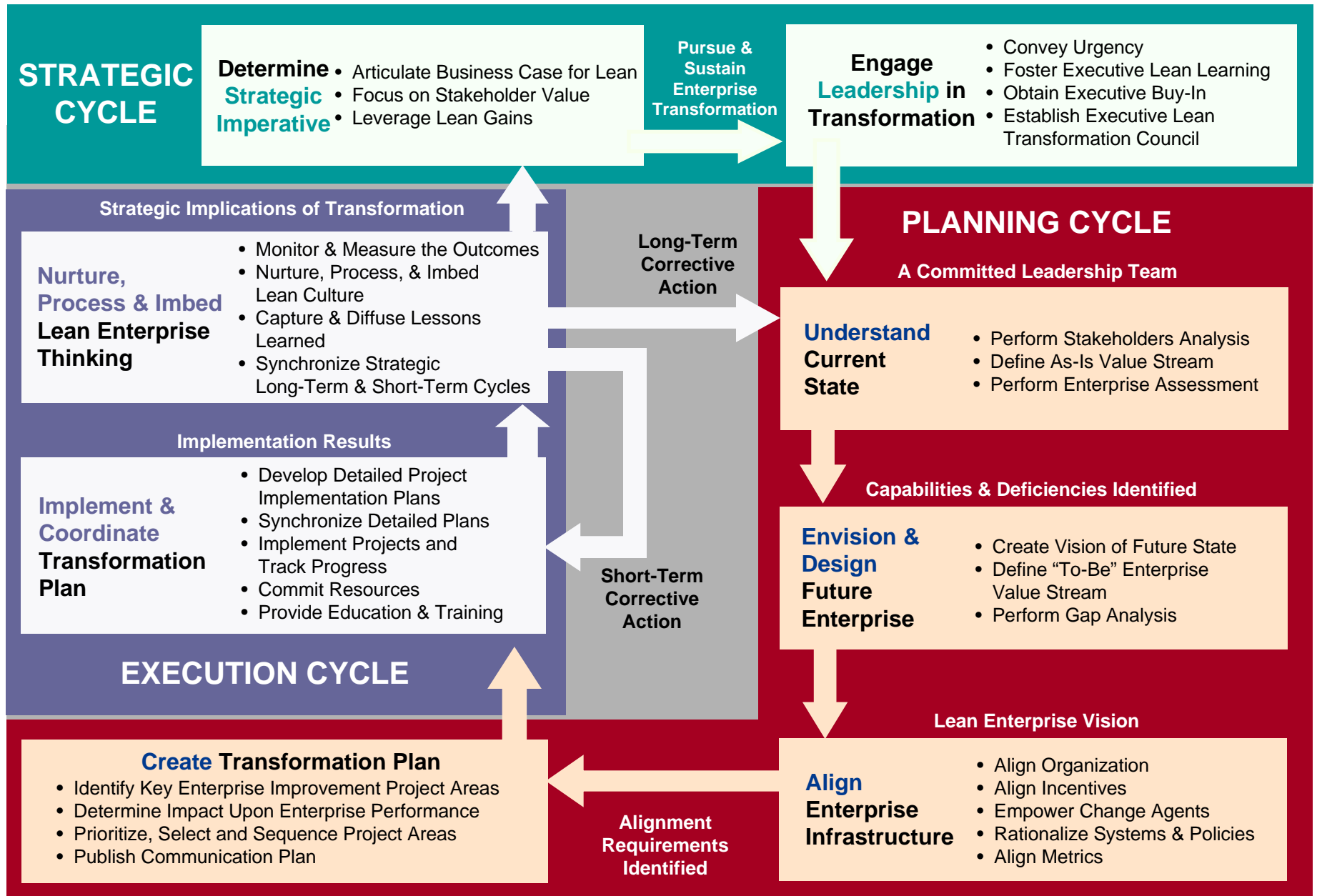
6.

Cultivate leadership to support and drive enterprise behaviors.

7.

Emphasize **organizational learning**.

LAI MIT Enterprise Transformation Roadmap





Lean Enterprise Self Assessment Tool (LESAT)

World Class



Assessment Matrix

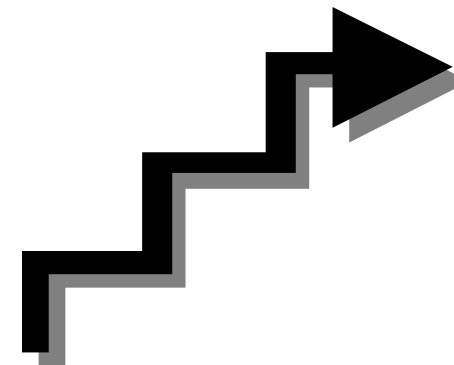


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Capability maturity model

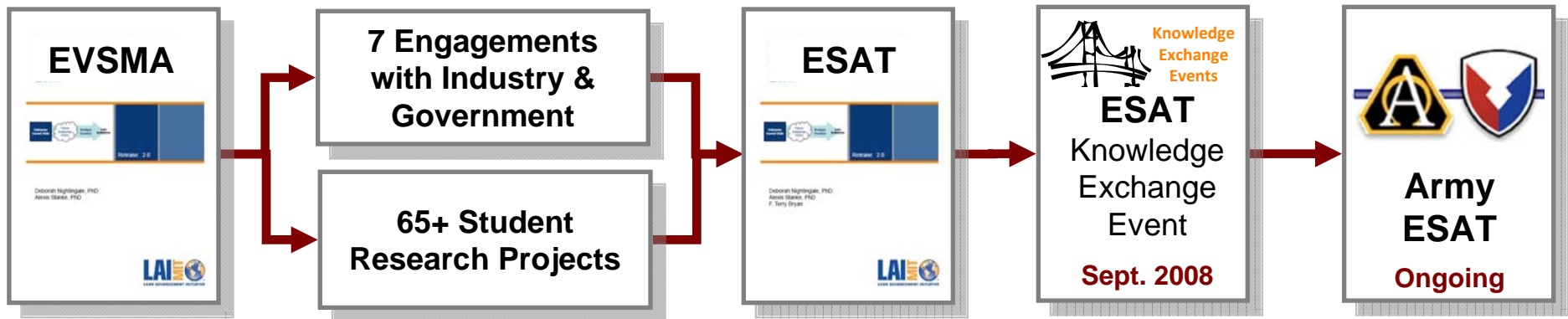
Tool for executive self-assessment of the present state of “leanness” of an enterprise and its readiness to change

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Supporting materials

Enterprise Strategic Analysis for Transformation (ESAT)

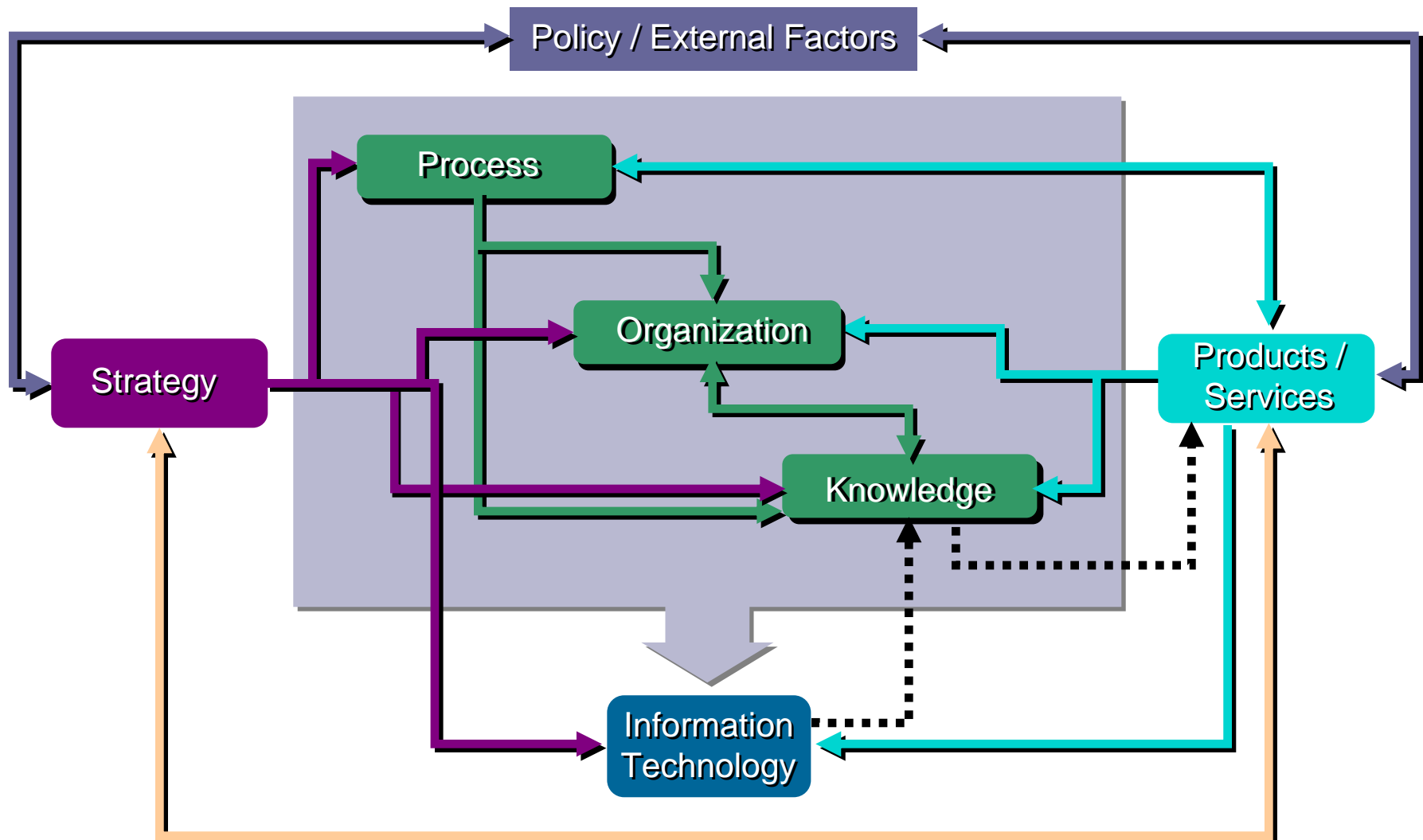


ESAT

An integrated, analytical framework for diagnosing and improving overall Enterprise performance.

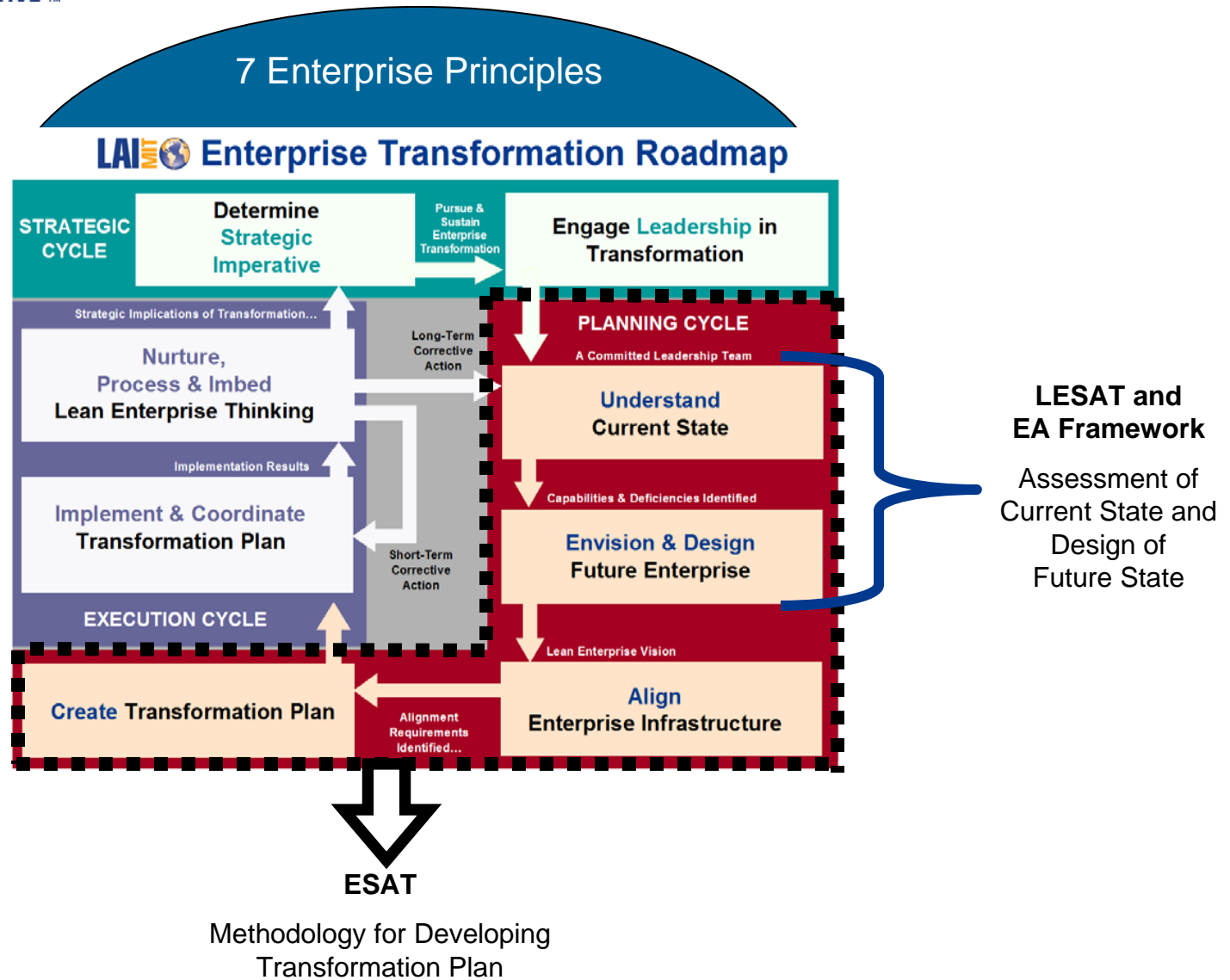
- Focuses on Enterprise-wide processes
- Provides a cohesive method for diagnosing an Enterprise to expose sources of waste and barriers to value delivery
- Considers the needs and values of all enterprise stakeholders
- Identifies process interfaces, disconnects, and delays
- Establishes an Enterprise vision for the future
- Identifies improvement opportunities that will lead the enterprise to its future state

Enterprise Architecture Framework



Source: D. Nightingale and D. Rhodes

Enterprise Transformation Framework





Enterprise Principles Deployed in Action Research and in Graduate Courses

- **Graduate Courses (project based)**
 - “Integrating the Lean Enterprise”
 - “Enterprise Architecting”
 - 65 cases
- **Enterprise Transformation Cases with executive teams**
 - Industry
 - Gov’t
 - 9 cases
- **Multiple Domains and Industries**

Transformation Case Studies

Industry	Organization	Reason to Transform	Insights from Enterprise Analysis
Aerospace	Air Cargo Carrier Program	Reduce costs and cycle times	Multiple stakeholder (industry, government regulatory) essential for enterprise success
	Space Center	Long development /procurement times at high cost	Criticality of including extended enterprise, including key suppliers and requirements generators
Healthcare	Mental Health Hospital	Breaking cultural norms to drive needed change, improve service and reduce costs	While experts in patient care, enterprise analysis uncovered traditional behaviors were inadequate for enterprise optimization and operation across boundaries.
	Hospital	Emergency Dept. overcrowding	Traditional lean approaches prone to sub-optimization. Enterprise thinking unveiled strong interdependencies with other hospital units (inpatient, operating rooms, etc) and external entities (insurance companies, primary care, etc). Ensuing transformation efforts adopted holistic principles.
	Medical Device Manufacturer	High growth rate; improve quality and profitability	Requires governance structure to oversee enterprise transformation; critical to span cross-organizational boundaries

Transformation Case Studies

Industry	Organization	Reason to Transform	Insights from Enterprise Analysis
Services	Commodity Provider	Misalignment of customer service with development and delivery platform	Leveraged front end enterprise interface while supplying holistic stakeholder value propositions; adopted both effectiveness as well as efficiency measures
Automotive	Auto Manufacturer	Reduced time-to-market in global product development	Required more than just traditional R&D – streamlined cross functional information exchange across organizational boundaries key to transformation
Government	Air Logistics Center	Increase aircraft availability, Commercial competition for logistics support	Shared enterprise strategic vision provided focus for prioritizing projects to achieve increased mission effectiveness
	Acquisition, Technology and Materiel Support	Higher levels of support to the field at reduced costs and cycle time; organizational integration	Integrated enterprise model requires extensive involvement of leadership, inclusion of supply base and integration of processes with IT systems

Enabling Enterprise Excellence

Discovery - Deployment - Renewal

Research Shapes
Deployment

**Enterprise
Research**
We study Enterprises to
identify best practices,
transformation strategies and
future Enterprise
architectures



**Transformation Knowledge
Deployment**
We transform research-based
knowledge into education,
products, knowledge exchange
events, and transformation events

Deployment Shapes
Research

Stakeholder-Centric Value Creation



BACKUP



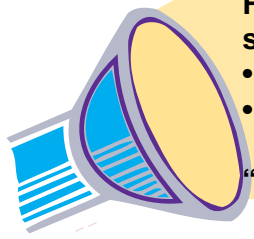
LAI: A Consortium Dedicated To Enterprise Performance

- Enable Enterprises to effectively, efficiently and reliably create value in a complex and rapidly changing environment
- Enable focused and accelerated transformation of complex enterprises
- Collaborative engagement of all stakeholders in Industry, Government and Academia
- Understand, develop, and institutionalize principles, processes, behaviors and tools

LAI - Expanding Enterprise Focus

Increasing Total
Enterprise
Effectiveness

EVOLUTION OF LEAN ENTERPRISE THINKING



Operations
Functional lean
successes
• Manufacturing
• Supplier Networks
“Islands” of Success

1993

Successes
through
interaction
between
functions

Lean applied
to enabling
processes
• HR
• IT, etc.

Success
through
*enterprise
integration &
application to
Product Dev*

Transition from
waste
minimization to
value creation

Success
through total
enterprise
integration of
all
stakeholders
• Industry
• Government
• Suppliers
• Employees

Success
through
*networked
enterprises*

Expanding the
lean boundaries
• Suppliers
• Customers
• Partners

NOW

LAI Research Groups Address 4 Grand Questions

