





Leading Enterprise Transformation

LAI Annual Meeting, Dana Point, California

Prof. Debbie Nightingale

Massachusetts Institute of Technology

March 24, 2010

We Share A Goal: Enterprise Excellence

NORTHROP GRUMMAN

BOEING

CEAGA 

Cluster de Empresas de Automoción de Galicia

***Rockwell
Collins***



AMCOM



Raytheon

USA
United Space Alliance



LAI 
LEAN ADVANCEMENT INITIATIVE™



ULA
United Launch Alliance

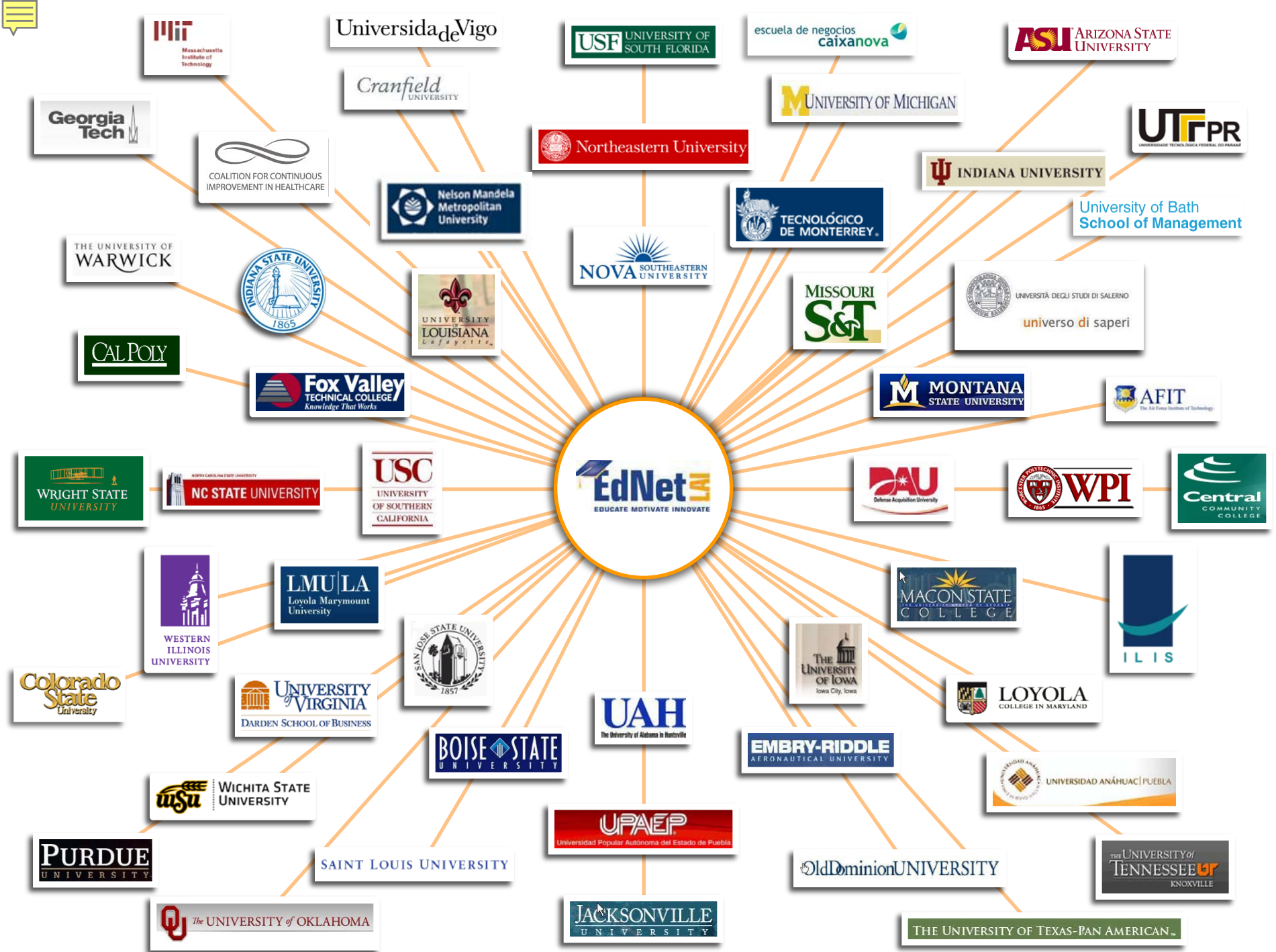
 **Pratt & Whitney**
A United Technologies Company

NAVSEA
NAVAL SEA SYSTEMS COMMAND



BAE SYSTEMS

 **Sikorsky**
A United Technologies Company



Discovery - Deployment - Renewal

Research Shapes
Deployment

Enterprise Research

We study Enterprises to identify best practices, transformation strategies and future Enterprise design.



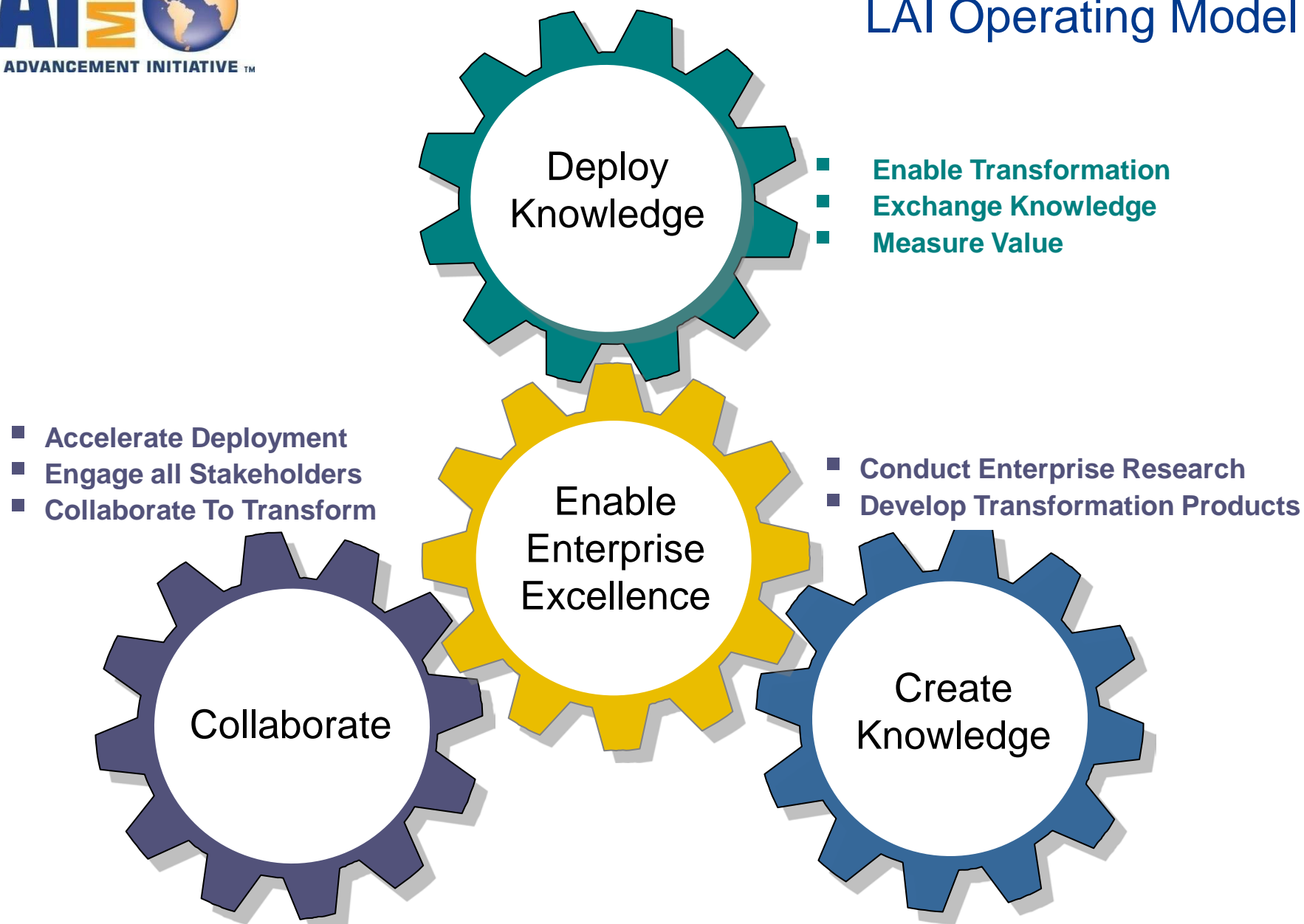
Transformation Knowledge Deployment

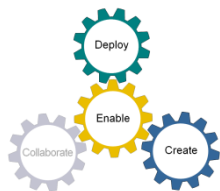
We transform research-based knowledge into education, products, knowledge exchange events and transformation events.

Deployment Shapes
Research

Stakeholder-Centric Value Creation

LAI Operating Model





ESAT Experience: Army Materiel Enterprise

January to May, 2009

LAI conducted 5 Army ESAT workshops

- Participants included senior leaders from 20+ organizations from Army Headquarters and commands.

May 1, 2009

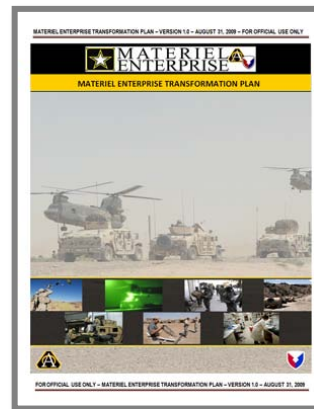
LAI met with 50+ senior leaders from Army Materiel Command at Ft. Belvoir, Virginia

- General Dunwoody and Dean Popp review and endorse plan and order immediate implementation.

August 31, 2009

Materiel Enterprise Transformation Plan released

- Plan seeks measurable cost reduction and cycle times.
- Plan defines 40+ enterprise-level transformation projects.
- Plan sets 5 enabling goal areas:
 - Roles and responsibilities
 - Industrial base
 - Leadership
 - Human capital
 - Business process and information technology



**Materiel Enterprise
Transformation Plan**



“My thanks go to the entire team for your energy and efforts to make this happen and to develop closer working relationships across our communities”

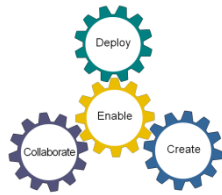


General Ann E. Dunwoody,
USA Commanding General,
U.S. Army Materiel Command

“The quality of this work is very impressive. I only wish that given the many challenges facing our nation right now, the rest of the government could benefit from the level and quality of analysis and work done by this team.”

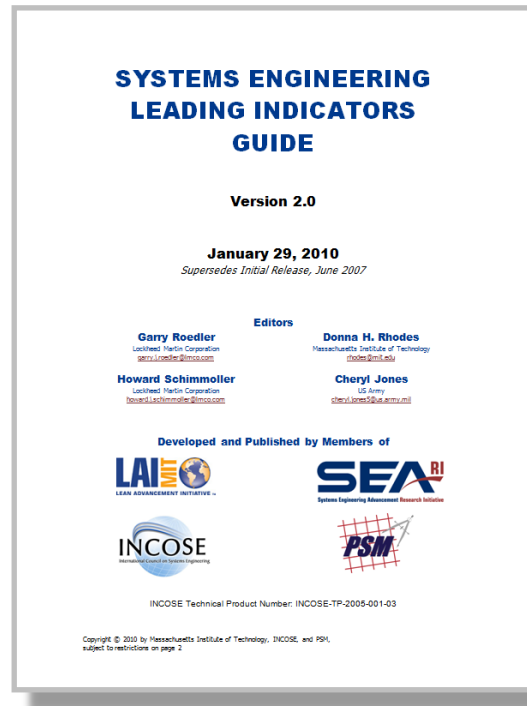


Mr. Dean Popp,
Acting ASA(ALT)
and Army Acquisition Executive



About Version 2.0

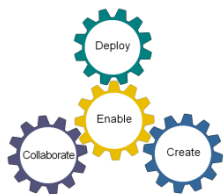
- Released after a year of effort by collaborative team of experts.
- Development team included **27 participants** from government, industry and academia, from US, UK, and Australia.
- Extended the collaboration to additional government agencies, and **involved all US DoD services**.
- Five new leading indicators** added to existing set of 13.
- Several appendices, new information **and real-world examples** are included.



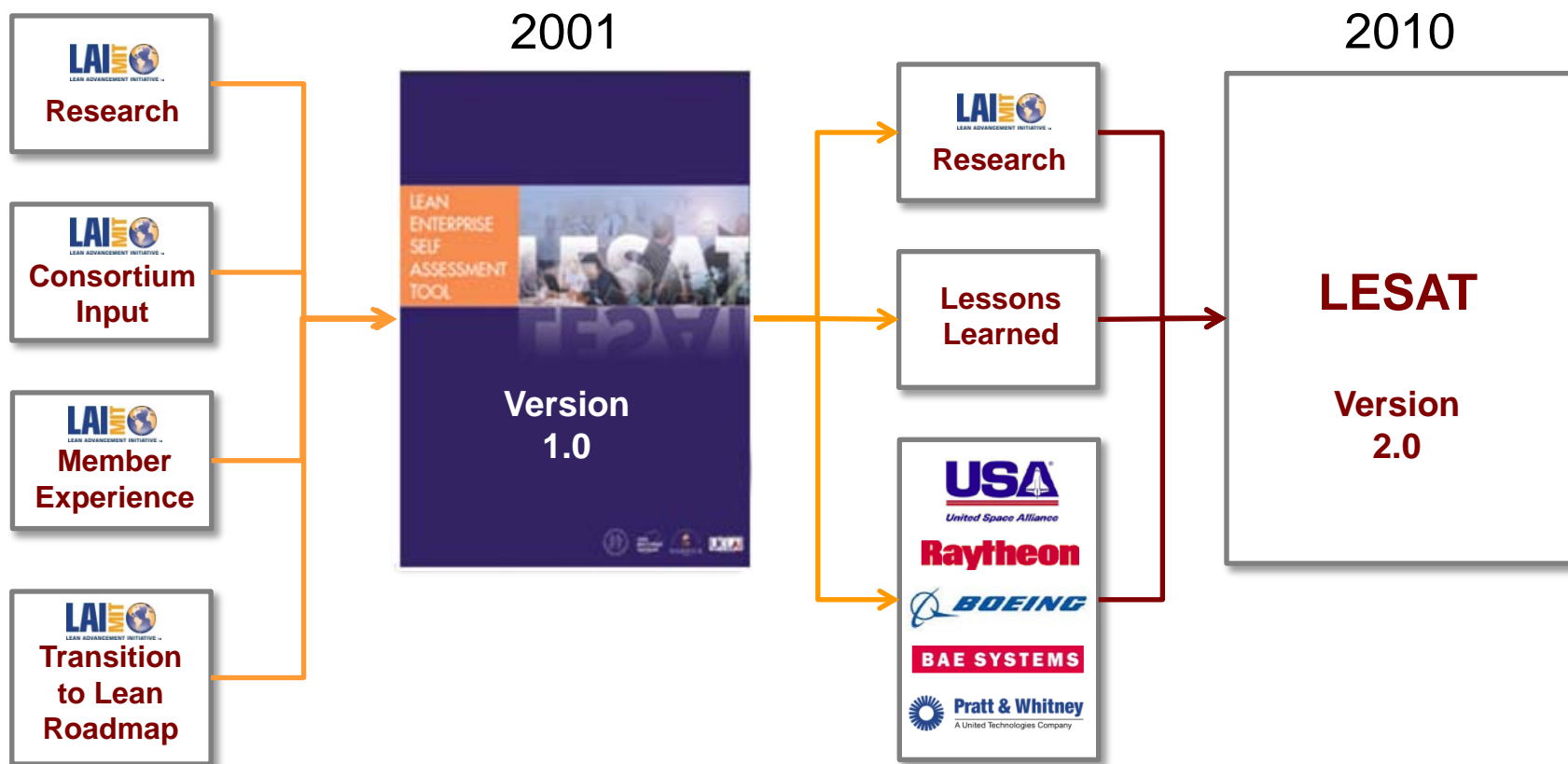
- New Appendix A: NAVAIR's Systems Engineering Development & Implementation Center **(SEDIC) use of SE leading indicators** to develop advanced analysis techniques and toolkit for Navy programs
- New Appendix B: Human Systems Integration Considerations
- New Appendix C: Early Identification of Program Risks
- Applied Leading Indicator Implementation Guidance

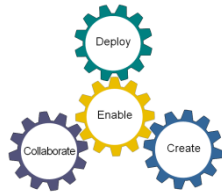


Read About It.
Journal Article in Top 3 Downloads
Rhodes, D.H., Valerdi, R. and Roedler, G.J.,
"Systems Engineering Leading Indicators for Assessing Program and Technical Effectiveness",
Systems Engineering, Vol. 12, No. 1, pp. 21-35, Spring 2009
Online: DOI: 10.1002/sys.20105



Lean Enterprise Self-Assessment Tool 2.0





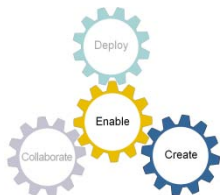
Unique New International Journal
JET will feature both new research findings
and practitioner insights.



Four Special Issues:

- The Intellectual Agenda of Enterprise Transformation
- Transformation Continuity and Change
- Enterprise Transformation in Action
- Enterprise Modeling

Co-Editors:
Professor Debbie Nightingale
and Dr. Ricardo Valerdi
of MIT's Lean Advancement Initiative



LAI's Enterprise Case Studies of UTC's Successful ACE Program



Over the last decade, UTC has the highest shareholder return of any Fortune 50 Company (155%)

Why?

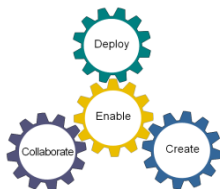
UTC attributes its performance and improvement to the development and deployment of ACE



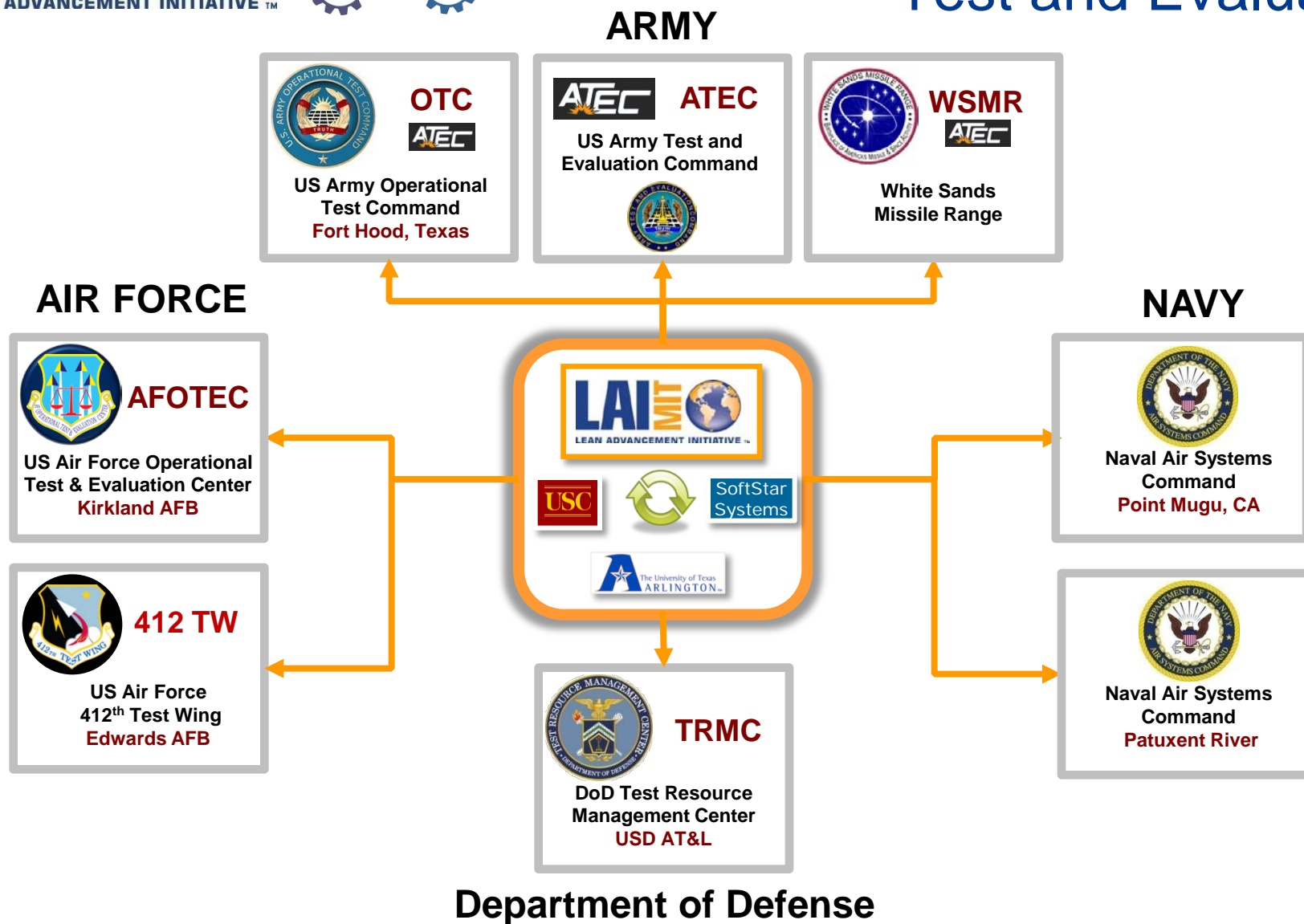
Achieving Competitive Excellence
The United Technologies Operating System

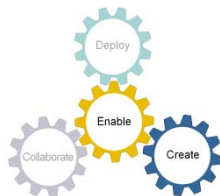
LAI is Working with UTC to Develop Five Related Case Studies

- ACE Operating System: Its History and Tools
- ACE Across Organizations: Deficiency Reporting Process Across Pratt & Whitney, USAF, and DCMA
- ACE in Production: Homogenous Metals, Inc.
- ACE in Engineering: Turbine Model Center
- ACE in Office: Internal Audit Division



Transforming System of Systems Test and Evaluation



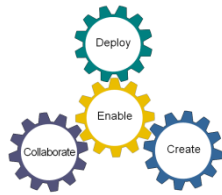


Lean Concepts for Product Development

- Integrated and distilled 15 years of LAI Research (175 documents)
- Developed framework with 15 categories
- Creating new white papers with insights, summary of literature, and references
- Will culminate in book

		Type of process		
		Processes for Value-orientation	Processes for Enterprise Integration	Processes for efficient execution
Level of analysis	Project Portfolio	1. Stakeholder needs generation 2. Trade space exploration & decision making 3. Value & waste in core PD activities	4. Enterprise management 5. Program management 6. Multi-project management 7. Performance metrics and measurement 8. Product architecture & commonality management 9. Risk management 10. IT systems in PD 11. HR development & intellectual capital 12. Teams in PD	13. Enterprise process improvement 14. Enabling factors in Lean PD 15. Core PD process principles
	Single Project			

Dr. Josef Oehmen - oehmen@mit.edu



The Path to Developing Successful New Products

By
Mike Gordon, Chris Musso, Eric Rebentisch and Nisheeth Gupta

“...We found—after surveying more than **300 employees at 28 companies** across North America and Europe—that the businesses with the best product-development track records do **three things** better than their less-successful peers

- they create a **clear sense of project goals** early on,
- they nurture a **strong project culture** in their workplace, and
- they maintain **close contact with customers** throughout a project’s duration.

The teams in our study that embraced these tactics were

- 17 times as likely as the laggards to have projects come in **on time**,
- five times as likely to be **on budget**, and
- twice as likely to meet their company’s **return-on-investment targets**.

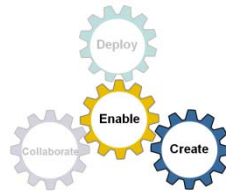
While we focused on companies in the automotive, high-tech and medical-device industries, we believe that product makers of all stripes could benefit from our work...”

November 30, 2009

Read the full article online at:

THE WALL STREET JOURNAL. BUSINESS

MIT Sloan
Management Review



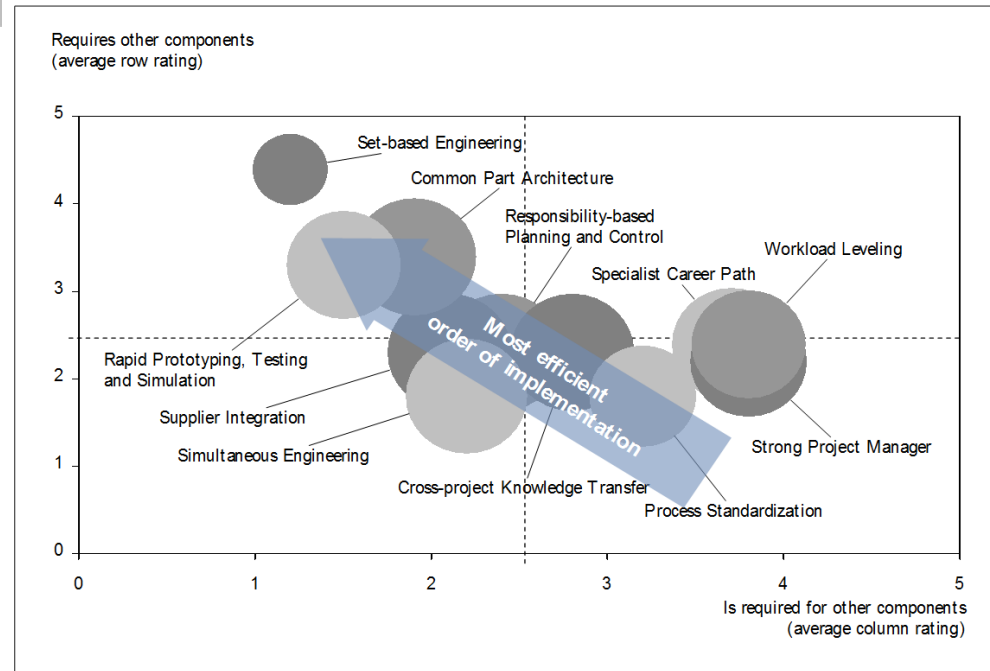
Emerging Research: Roadmap for Implementing Lean Product Development Research



Joern Hoppmann

Diploma in Mech. Eng. and
Business Administration, 2009
TU Braunschweig, Germany

- Investigated implementation of Lean Product Development (PD)
- Developed a comprehensive framework for a Lean PD system consisting of eleven major Lean PD components
- Empirically tested five major hypotheses on the implementation of Lean PD using data from 113 international PD departments
- Derived a roadmap outlining the order of implementing the eleven Lean PD components and identified four maturity phases of Lean PD



Emerging Research: Enterprise Architecture-Informed Stakeholder Value Creation



LTC Douglas Matty
 MIT Degree Candidate:
 Ph.D., Engineering Systems, 2010

For 2008-2009, 64 of the 96 major defense acquisition programs were required to report budget over-runs from the initial cost estimate. Even more critical, during current operations, is the report of a 22 month average delay in delivering initial capability. (GAO 2009)

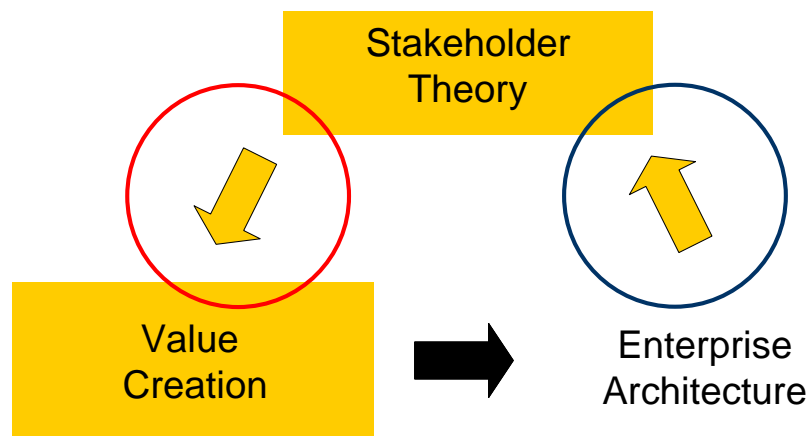


How does stakeholder salience influence value creation in a program enterprise?

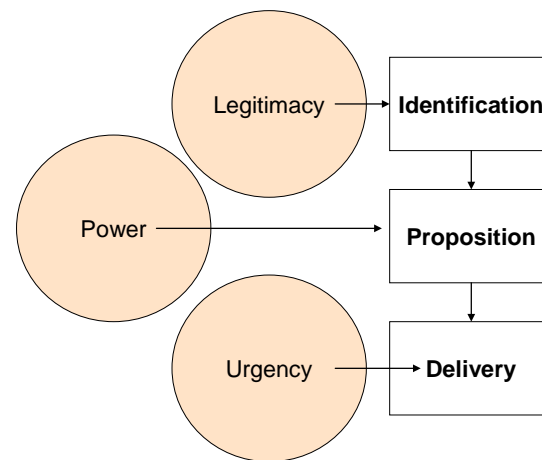


- Conducting three case studies of program enterprises in DOD Acquisition
- Emerging results suggest how the views of enterprise architecture indicate necessary conditions of enterprise stakeholder alignment

RESEARCH FRAMEWORK



PRELIMINARY RESULTS



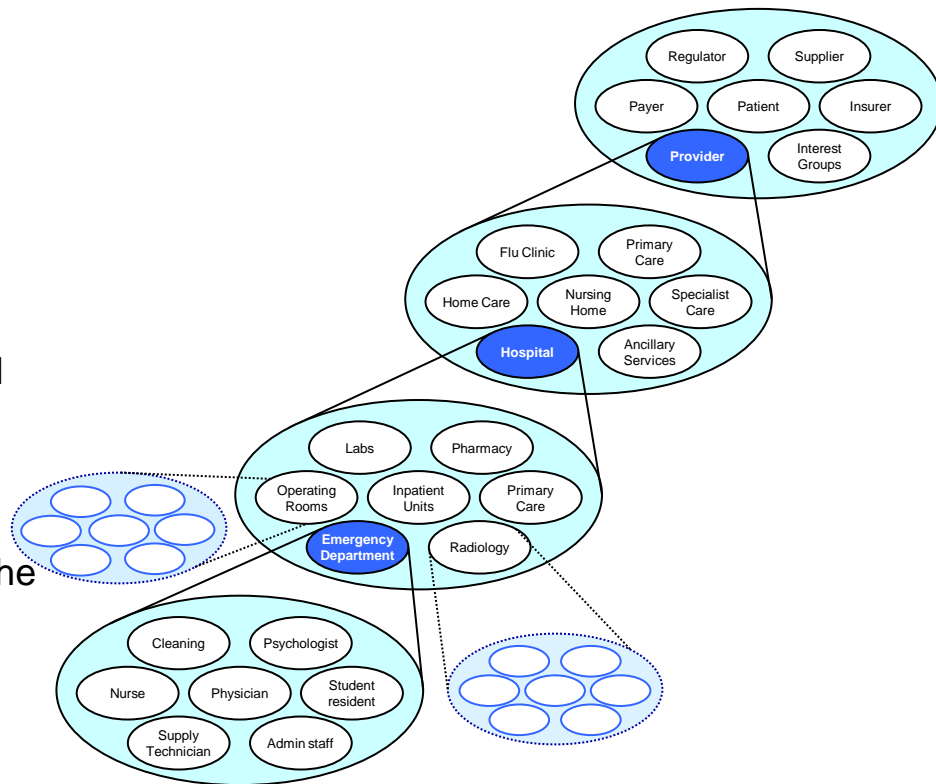
Emerging Research: High-Performing Hospital Enterprise Architectures

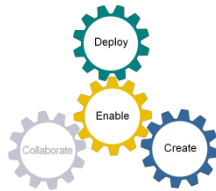


Jorge Fradinho Oliveira

MIT Degree Candidate:
Ph.D., Engineering Systems, 2010

- Contrary to predominant literature, hospitals do adopt multidimensional performance measurement practices but these are mostly set by external entities and in *silo* fashion.
- Studied leading hospitals in the US and UK, and despite considerably different regulatory and payment environments, characterized similar strategic and operational issues.
- Engaged 7 hospital CEOs in Massachusetts in the development of an empirically based and theoretically informed holistic performance measurement for hospitals.
- Identified the existence of multiple internal organizational configurations with variable relationships with hospital enterprise performance





LAI's Enterprise Systems Approach Applicable to a Broad Range of Healthcare Areas



- **Employed ESAT to examine streamlining drug development and innovation**
 - Involves collaborative models
 - Includes early involvement of stake holders (Pharmaceutical makers, regulators, insurers, health care providers, and patients)

- **Hospital Enterprise Performance**

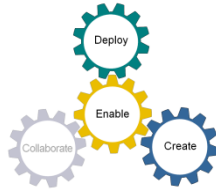
- Exploring the relationship between hospital enterprise architecture and hospital performance

- **Veterans Healthcare Administration**

- Using ESAT to analyze mental health hospital network and New England regional operations

- **Drug Safety Surveillance**

- Use of enterprise systems methodologies in joint MIT/Harvard research project



4-Star Speaks Out on Struggle with PTSD



“This isn’t just a debt of gratitude. This is a debt that must be repaid because they have sacrificed so much. They have done exactly what this country has asked. They have fought and suffered and their lives have been affected forever.”



*Admiral Michael Mullen,
Chairman of the Joint Chiefs of Staff
Army Times, 11-26-2008*

LAI will perform an enterprise analysis of the PTSD process.

Three Phases:

1. Current state analysis
2. Model creation and validation
3. Future scenario planning and recommendations

Anticipated Outcomes:

- Increased understanding of the total system, including stakeholders and system performance
- Determination of high-leverage opportunities for improving the total system
- Examination of policy and treatment implications

The Office of the DCMO was established by Congress in the FY 2008 National Defense Authorization Act.

■ **Vision**

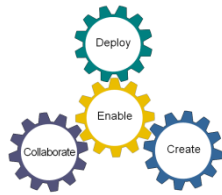
A high performing organization recognized throughout the Department of Defense for adding value and enabling sustained enterprise performance improvement

■ **Mission**

On behalf of the Deputy Secretary of Defense, leads and integrates enterprise-wide performance improvement and business operations to enable and support the Warfighter.

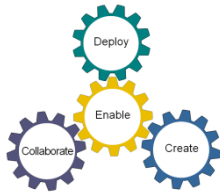
Key Questions For DoD Enterprise Analysis

- How does (should) DOD translate strategic direction into management outcomes?
- What management system is recommended?
- How should DoD measure progress?
- Where should DoD focus its improvement efforts in the next 1-2 years?

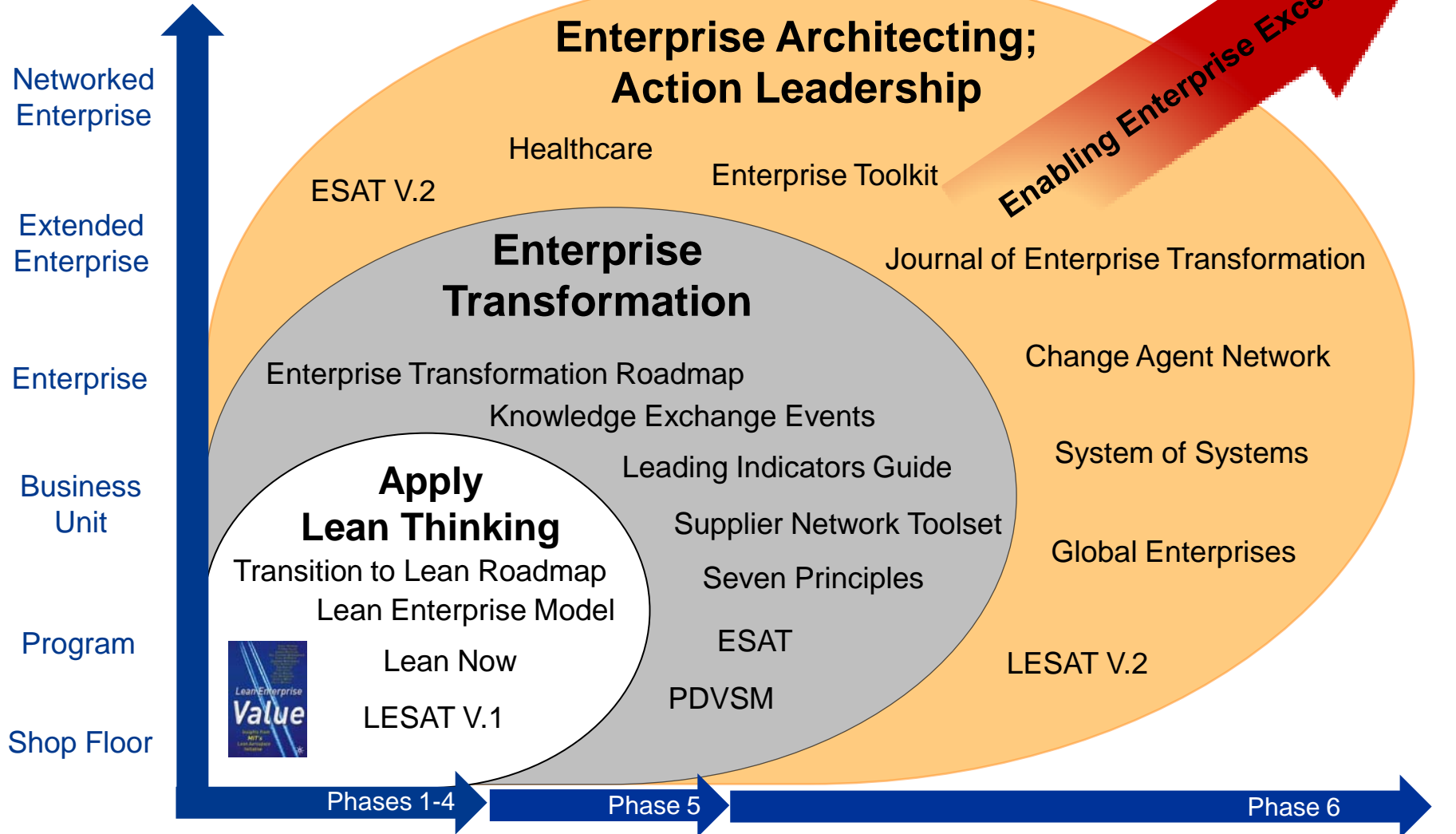


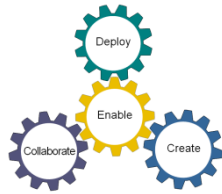
OSD Deputy Chief Management Office Priorities for Phase One

- **Project 1:**
Perform an assessment of existing DoD enterprise-level performance goals and targets
- **Project 2:**
Assist with identifying, developing and implementing DCMO's two-year strategic agenda
- **Project 3:**
Create DCMO Advisory Board for devising strategies and deliberating next steps for important DCMO business operations tied to enterprise-wide performance integration and improved business operations.



Expanding Enterprise Focus





April 8, 2010

Metrics for Enterprise Transformation

Dr. Ricardo Valerdi
 and
 Craig Blackburn,
 1st Lt., USAF



Web KEE



Web KEE



May 5, 2010

Understanding Enterprise Behavior Using a Hybrid Simulation

Dr. Chris Glazer,
 MITRE



Web KEE



Web KEE



May 18 and 19, 2010

Principles of Enterprise Transformation

Prof. Debbie Nightingale
 and
 Dr. Jayakanth Srinivasan

**MIT Campus
 Cambridge, MA**

**MIT Campus
 Cambridge, MA**



**EMBRY-RIDDLE**
AERONAUTICAL UNIVERSITY
DAYTONA BEACH, FLORIDA
MAY 19-21, 2010

LEAN EDUCATOR CONFERENCE

"SHIFTING THE STATUS QUO"

"Integrating the Lean Enterprise"



Prof. Debbie Nightingale
MIT, Aero-Astro and ESD
Co-Director, Lean
Advancement Initiative

"Teaching Lean in a Manner Consistent with How People Learn"



David C. Wisler, Ph.D.,
NAE, MIT CDIO Initiative
GE (retired)

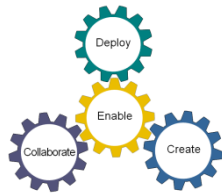
The First Lean Dentist



Dr. Sami Bahri
Bahri Dental Group
Author, "Follow the Learner:
The Role of a Leader in
Creating a Lean Culture"

Keynote Speakers Workshops Presentations Panels
Kennedy Space Center Tour NAVAIR Lean Operations Tour

<http://www.lean.org/LeanEd/>



June 14-15, 2010

**Architecting
the Future
Enterprise**

Prof. Debbie Nightingale
Dr. Donna Rhodes



July 14-16, 2010

**LAI
Lean Healthcare
Academy**

Dr. Earll Murman

July 19-21, 2010

**LAI
Lean Academy
Course**

Prof. Annalisa Weigel
Dr. Hugh McManus

July 22-23, 2010

**LAI Lean
Engineering
Seminar**

Prof. Annalisa Weigel
Dr. Eric Rebentisch

July 26-28, 2010

**Value-Driven
Tradespace
Exploration for
System Design
Future Enterprise**

Dr. Donna Rhodes
Dr. Adam Ross

July 29-30, 2010

**Epoch-Based
Thinking:
Anticipating System
and Enterprise
Strategies for
Dynamic Futures**

Dr. Donna Rhodes
Dr. Adam Ross

Leading Enterprise Transformation

LAI Annual Conference

March 23-25, 2010

Dana Point, California

Keynote Speech

“Process Improvement in Defense
Business Operations”



Elizabeth A. McGrath

Assistant Deputy
Chief Management Officer for
Department of Defense



Today
9:00 am



Leading Enterprise Transformation

LAI Annual Conference

March 23-25, 2010

Dana Point, California

Keynote Panel

Large-Scale System Transformation: U.S. Army's Experience with the ESAT Process



Nancy Moulton
Director,
Business Transformation,
HQDA, OASA(ALT) SL-ZG



Dr. Eric Rebentisch
Session Chair



Jerry A. Coover, Sr.
Managing Consultant,
IBM Federal,
Global Business Services

Today
11:00 am



Leading Enterprise Transformation

LAI Annual Conference

March 23-25, 2010
Dana Point, California

Breakout Session 1

Architecting for
Lean Product
Development



Dr. Eric Rebentisch
Session Chair

The Paradox of
Leading From the
Middle – Part I



Dr. George Roth
Session Chair

Success Stories
Above the
Factory Floor (A)



J. Tom Shields
Session Chair

Today
1:30 pm



Leading Enterprise Transformation

LAI Annual Conference

March 23-25, 2010

Dana Point, California

Breakout Session 2

Lean Product
Development
System Initiatives



Dr. Eric Rebentisch
Session Chair

The Paradox of
Leading From the
Middle – Part II



Dr. George Roth
Session Chair

Success Stories
Above the
Factory Floor (B)



J. Tom Shields
Session Chair

Today
3:45 pm



Leading Enterprise Transformation

LAI Annual Conference

March 23-25, 2010

Dana Point, California

Breakout Session 3

Program
Management in the
Lean Enterprise



Dr. Eric Rebentisch
Session Chair

Enterprise
Measurement
Challenges



Dr. Ricardo Valerdi
Session Chair

Success Stories
Above the
Factory Floor (C)



J. Tom Shields
Session Chair

Tomorrow
8:00 am



Leading Enterprise Transformation

LAI Annual Conference

March 23-25, 2010

Dana Point, California

Breakout Session 4

Value Stream
Optimization in Lean
Product Development



Dr. Eric Rebentisch
Session Chair

Lean in
Healthcare



Dr. Jackie Candido
Session Chair

Introduction to
ESAT: A Tutorial
Session



Dr. Jayakanth
Srinivasan
Instructor

Tomorrow
10:15 am



Leading Enterprise Transformation

LAI Annual Conference

March 23-25, 2010
Dana Point, California

Lunch and Keynote Speaker

Lessons Learned on
Leading Enterprise Transformation



Robert Hoffman

Director of Operations and Site Executive
BAE Systems, Inc. .
Electronics, Intelligence, and Support

Tomorrow
Noon



Leading Enterprise Transformation

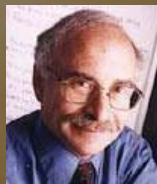
LAI Annual Conference

March 23-25, 2010

Dana Point, California

Closing Remarks

Key Enablers to a
Lean Enterprise Journey



Prof. John Carroll

Massachusetts Institute of Technology

LAI Co-Director

Tomorrow

1:00 pm



Leading Enterprise Transformation

LAI Annual Conference

March 23-25, 2010
Dana Point, California

Open Discussions

LESAT
LAI's Lean Enterprise
Self-Assessment Tool



J. Tom Shields
Session Chair

Consortium
Lean Training and
Education Programs



Dr. Jackie Candido
Session Chair

Tomorrow
3:00 pm



