The Effect of Enterprise Design on Stakeholders and Value Creation

LTC Doug Matty, PhD, Presenter
LAI Web Knowledge Exchange Event
February 10, 2011
Knowledge Exchange Events
Network - Share - Learn
April 14, 2011
Enhancing Cost Realism Though Risk-Driven Contracting
Web KEE

Knowledge Exchange Events
Network - Share - Learn
April 28, 2011
Post-Traumatic Stress Innovations: Latest Findings
Web KEE

Knowledge Exchange Events
Network - Share - Learn
May 5, 2011
LEPD Whitepaper Series Discussion
Web KEE

Knowledge Exchange Events
Network - Share - Learn
May 19, 2011
Enterprise Improvement: an Engineering Case Study
Web KEE
We Share A Common Goal: Enterprise Excellence
Agenda

• Motivation
• Literature Review – Domain and Theory
• Theory Development
• Case Study Methodology
• Theoretical Contributions
• Policy Implications
• Future Work
“Entrenched attitudes throughout the government are particularly pronounced in the area of acquisition: a risk-averse culture, a litigious process, parochial interests, excessive and changing requirements, budget churn and instability, and sometimes adversarial relationships within the Department of Defense and between DoD and other parts of the government … Since the end of World War II, there have been nearly 130 studies on these problems – to little avail.” (Gates 2009)

Lot’s of Research – Little Improvement. Using a multidiscipline approach might provide a “new” perspective and a theoretical contribution.
Agenda

• Publications
• Motivation
• Literature Review – Domain and Theory
  • DOD Acquisition
  • Value Creation
  • Enterprise Architecture
  • Stakeholder Theory
• Theory Development
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• Future Work
Forty Years of Acquisition Reforms

1970 Packard Memo
1984 Grace Commission
1986 Packard Commission
1986 Goldwater-Nichols Act
1989 Defense Management Report
1990 Defense Acquisition Workforce Improvement Act
1994 Perry: Acquisition Reform Mandate for Change
1996 Clinger-Cohen Act
1998 Gansler Congressional Testimony – DOD Acquisition “Death Spiral”
2002 Rapid Fielding Initiative
2009 Weapon Systems Acquisition Reform Act
Current “Program Thinking”

The Acquisition Process follows Systems Engineering Principles, driving program management methods.

Program Management

Probability for Program Success reporting system: technical metrics and one subjective assessment Program Advocacy.

User Requirement

Program Advocacy

We are beginning to adopt a new approach to management, realizing that we need to shift from managing a “program process” to managing a “program enterprise.” (Senior Executive 2008)
Value Creation Process Framework

**Identification** – Identify needed capabilities of product or service
   Identify stakeholders and their competencies

**Proposition** – Formalize product capabilities and requirements
   Define tasks in value stream and map to stakeholder roles

**Delivery** – Deliver on the promise; provide capability

Creating Value is the cornerstone of a successful enterprise.

Adapted from Murman, et al, 2002
## Enterprise Architecture Framework Views

<table>
<thead>
<tr>
<th>View</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategy</strong></td>
<td>This view includes the goals, vision and direction objectives of the enterprise with an emphasis on the business model and competitive environment.</td>
</tr>
<tr>
<td><strong>External Factors and Policies</strong></td>
<td>The external regulatory, political and societal environments in which the enterprise operates.</td>
</tr>
<tr>
<td><strong>Process</strong></td>
<td>The lifecycle, enabling and leadership processes by which the enterprise creates value for its stakeholders.</td>
</tr>
<tr>
<td><strong>Organization</strong></td>
<td>The organizational structure as well as the relationships, culture, behaviors, and boundaries between individuals, teams and organizations.</td>
</tr>
<tr>
<td><strong>Knowledge</strong></td>
<td>The implicit and tacit knowledge, capabilities, intellectual property collectively in the enterprise.</td>
</tr>
<tr>
<td><strong>Infrastructure/Infrastructure</strong></td>
<td>The physical layer of the enterprise including real estate, facilities and etc., as well as the network systems and technologies needed to ensure resource availability.</td>
</tr>
<tr>
<td><strong>Product/Services</strong></td>
<td>The product architectures and the service architecture of the enterprise, including services as a primary objective or in support of products.</td>
</tr>
</tbody>
</table>

Adapted from Nightingale & Rhodes 2004
Rhodes, Ross, & Nightingale 2009
Ackoff, et al, 2006
“Enterprise...an integrated entity that efficiently creates value for its multiple stakeholders...”

Murman, et al, 2002
The stakeholder theory is intended both to explain and to guide the structure and operation of the established corporation. 

(Donaldson & Preston 1995)
...we can envision refinements in long-standing management techniques designed to assist managers in dealing with multiple stakeholders' interests. (Mitchell, Agle, Wood 1997)
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How does stakeholder salience influence value creation in a bureaucratic program enterprise?
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Over-arching Research Methodology

- Develop Theory
  - Select Cases
  - Design Data Collection Protocol
- Conduct 1st Case → Write Individual Case Report
- Conduct 2nd Case → Write Individual Case Report
- Conduct 3rd Case → Write Individual Case Report
- Draw cross-case Conclusions
- Modify Theory
- Develop Policy Implications
- Write cross-case report

Adapted from Yin, 2009

“Replication, not sampling logic, used for multiple case studies.”
(Yin, 2009)
With-in Case Study Methodology

1. Motivation
2. Review Existing Case Studies
3. Develop Initial Hypotheses
4. Crafting Protocols
5. Collect Data
6. Analyze Data
7. Refine Hypothesis
8. Enfolding Literature
9. Closure

Adapted from (Eisenhardt, K.M., 1989; Yin, 2009)
**Case Selection – Replication Logic**

<table>
<thead>
<tr>
<th>Program</th>
<th>Capability</th>
<th>Executive Agent</th>
<th>Program Executive Office</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aerial Reconnaissance</td>
<td>Army</td>
<td>Aviation</td>
</tr>
<tr>
<td>2</td>
<td>Aerial Reconnaissance</td>
<td>Army</td>
<td>Aviation</td>
</tr>
<tr>
<td>3</td>
<td>Aerial Reconnaissance</td>
<td>Army</td>
<td>Aviation</td>
</tr>
</tbody>
</table>

“Replication, not sampling logic, used for multiple case studies.” (Yin, 2009)
Data Collection (P1) – Survey-based Interview

- Identification
- Proposition
- Delivery

Power
Urgency
Legitimacy

Adapted from Murman, et al, 2002

Adapted from Mitchell, et al, 1997

Adapted from Seigle 2009

“The influence of <Salience Attribute> on <Value Creation Process> is <#>.”
Stakeholder Salience

- Urgency
  - Criticality
  - Importance
- Power
  - Coercive
  - Utilitarian
  - Symbolic
- Legitimacy
  - Pragmatic
  - Moral
  - Cognitive

Adapted from Mitchell et al 1997 and Grossi 2003

Hybrid Data Methods – Triangulation (Jick 1979)

Data Collection – Lattice Sampling

A type of two-way stratified sampling, named "LATTICE SAMPLING" by Yates (1960), appears to be a promising sampling design when small area or intra-universe estimates as well as estimates for the entire universe are desired.

(Abbey 1978)
Case 1: Context

• Capability: Aerial Reconnaissance
• Initiated: 1969
• Milestone: Post Milestone C (Sustainment/Retirement)
• Acquisition Category: ACAT III
• Strategy: Spiral Development
• Program Executive Office: Aviation
• Executive Agency: US Army
Case 1: “The influence of <Salience Attribute> on <Value Creation Process> is <#>.”

Assumptions:
- Random Samples
- Independence within each Sample; Mutual Independence among various samples
- Measurement scale at least ordinal
- Either \( k \) population distributions are identical or some the populations tend to yield larger values than other populations

Conclude: The stakeholder salience attributes influence the enterprise program value creation process

Conover, 1999
Case 1: Findings P1

Conclude: The <stakeholder salience attribute> is an important or very important influences the program enterprise <value creation process>
Case 1: The <enterprise architecture view> influence on <stakeholder salience attribute> is <#>.

Kruskal-Wallis Nonparametric ANOVA: OBS

H0: Median 1 = Median 2 = ... = Median k
H1: At least one pair Median i ≠ Median j

Kruskal-Wallis Statistic (H) 5557.6
DF 63
p-value (2-sided, adjusted for ties) 0.0000

1 Sample Sign Test for Medians: OBS

H0: Median = 6
H1: Median Greater Than 6

<table>
<thead>
<tr>
<th>EAV</th>
<th>Infra/Info-Structure</th>
<th>Knowledge</th>
<th>Organization</th>
<th>Policy/EF</th>
<th>Process</th>
<th>Product</th>
<th>Service</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count (N)</td>
<td>920</td>
<td>920</td>
<td>920</td>
<td>920</td>
<td>920</td>
<td>920</td>
<td>920</td>
<td>920</td>
</tr>
<tr>
<td>Median</td>
<td>6</td>
<td>5</td>
<td>8</td>
<td>4</td>
<td>8</td>
<td>7</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Points Below 6</td>
<td>372</td>
<td>488</td>
<td>185</td>
<td>644</td>
<td>164</td>
<td>307</td>
<td>463</td>
<td>884</td>
</tr>
<tr>
<td>Points Equal To 6</td>
<td>152</td>
<td>117</td>
<td>114</td>
<td>48</td>
<td>93</td>
<td>110</td>
<td>161</td>
<td>22</td>
</tr>
<tr>
<td>Points Above 6</td>
<td>396</td>
<td>315</td>
<td>621</td>
<td>228</td>
<td>663</td>
<td>503</td>
<td>296</td>
<td>14</td>
</tr>
<tr>
<td>P-value (1-sided)</td>
<td>0.2033</td>
<td>1.0000</td>
<td><strong>0.0000</strong></td>
<td><strong>0.0000</strong></td>
<td><strong>0.0000</strong></td>
<td><strong>0.0000</strong></td>
<td>1.0000</td>
<td>1.0000</td>
</tr>
</tbody>
</table>
Case 1: Findings P2

Salience Attributes

Urgency
- Criticality
- Importance

Power
- Coercive
- Utilitarian
- Symbolic

Legitimacy
- Moral
- Cognitive
- Pragmatic

Bureaucratic Characteristics Dominate – Salience Attributes are influenced by the Enterprise Architecture

EA Views

External Factors/Policy
Strategy
Process
Organization
Knowledge
Info/Infrastructure
Product
Service
Enterprise Architecture Views have important influence on Stakeholder Salience attributes.
Based on findings, the three Salience attributes are “important” or “very important” in their influence on the respective value creation processes.

The stakeholder salience attributes are important influences on the program value creation process.
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Theoretical Contributions

• First to codify influence relationships for dynamic closed loop:

![Diagram showing Enterprise Architecture, Value Creation, Stakeholder Salience]

• Uses Engineering Systems field to offer findings that closes theoretical gaps in at least three different disciplines: Engineering, Management and Social Science.

• Developed efficient research methodology minimizing impact on respondents, with high quality – repeatable and reproducible techniques.
Policy Implications

1970 Packard Memo
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1998 Gansler Congressional Testimony –
  DOD Acquisition “Death Spiral”
2002 Rapid Fielding Initiative (ARMY)
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“... we could have done it ten years ago... It wasn't the technology that was limiting us. It was the organization, the tactics, the strategy, and primarily the culture.”

(Dr. J. Gansler Fmr. Under Secretary of Defense for Acquisition, Technology and Logistics, 2002)
Policy Implications

Program Enterprise Policy/Actions

- Develop explicit Program Enterprise Architectures, especially process, organizational, product and strategic views
- Conduct Enterprise Stakeholder Salience Assessment and Publish to Enterprise
- Develop lifecycle approach to governance (i.e. IPT Chair)
Future Work

• Test generalizability across different programs (ACAT, BOS, etc.)
• Develop self-administered Enterprise Architecture assessment for Enterprise Architecture Views
• Refine Stakeholder Salience Index assessment to incorporate Enterprise Architecture Influence
• Investigate Stakeholder Salience Alignment on Enterprise Value Creation

“These types of insights from research is why we established the Army Studies Program.”

Director of Army Studies 2010
"The biggest threat to our nation's security is our debt."

(ADM Mullen, CJCS, 2010)