Risks and Mitigation Approaches for Business System Integrations

Daniel Mark Adsit
MIT SDM’13
Principal, Mergence Systems LLC
www.mergencesystems.com

Most graphics from Openclipart.org unless otherwise noted
What does business systems mean for this presentation?

Processes + technology that creates emergent business factors (positive or negative)

Raw materials
Capital
Clients
Customers
Regulation
Suppliers
Environment

Design
Engineering
Procurement
Production
Logistics
Service
+ more!

Sales
Solutions

You know others!

Backlogs
Shortages

© 2014 Mergence Systems LLC
High-level business system cases in the news...

Case 1: Boeing 787 “Dreamliner”
Integrate globally-sourced subsystems into final product
AP (Jan 2013): bit.ly/1nXxhqY

Case 2: Siemens Electrical Generation
Produce spare parts globally on-demand where they are needed.
FT (Dec 2013): http://on.ft.com/19n07Iz

NOTE: graphical breakdowns intended to capture business system concept and may not reflect actual technical detail.

© 2014 Mergence Systems LLC
Shift: New advantage in business systems

<table>
<thead>
<tr>
<th>Category</th>
<th>Traditional Advantage</th>
<th>New Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure</td>
<td>Scale barriers to entry</td>
<td>Flexibility to reconfigure dynamically</td>
</tr>
<tr>
<td>Technology</td>
<td>Specialized and localized</td>
<td>Configurable platforms</td>
</tr>
<tr>
<td>Logistics</td>
<td>Low cost for mass</td>
<td>Added value</td>
</tr>
<tr>
<td>Labor</td>
<td>Repetitive task-based</td>
<td>Specialized knowledge-based</td>
</tr>
<tr>
<td>Boundaries</td>
<td>Optimized for defined risks and rewards</td>
<td>Adapt to unknown risk and opportunities</td>
</tr>
<tr>
<td>Solutions</td>
<td>Specific point solutions</td>
<td>End-to-end solution</td>
</tr>
<tr>
<td>Information</td>
<td>Centralized</td>
<td>Connected</td>
</tr>
</tbody>
</table>


Impact: Business systems are now scattered across functions, locations, and technologies...

Challenges
• Data is in different places
• Standardization
• Global suppliers and customers
• Variable inputs and outputs
• Complex and sequential hand-offs
• Rules of the game keep changing

Complications
• Limited $ to allocate to projects
• How do you implement a solution well?
• If you optimize a subsystem, will it sacrifice the overall system?
• What can go wrong?

Promises
• Automation
• Efficiency
• Scalability
• Flexibility
• Dynamic

How do we connect it all together?

© 2014 Mergence Systems LLC
Example project type: Enterprise Resource Planning (ERP)

Penetration
- 75% of manufacturers and 59% of service companies running or implementing
- ERPs account for almost 50% of application budget
- $300 billion spent on ERPs in decade through 2004

Results
- 40-60% of implementations are failures
- “Continuous process” improvement effect- benefits are not realized for a long time


Other good sources (many with SDM connections) available from Prof. Stuart Madnick’s group at MIT: http://web.mit.edu/smadnick/www/home.html

ERPs are a common sub-system
Risk 1: Project misalignment with overlapping implementation contexts

- Cultural
- Locational
- Functional
- Technical
- Industry

© 2014 Mergence Systems LLC
Context Risk: Focus on end-to-end solutions, not just “owners”

Examples of end-to-end thinking…

- Who are the stakeholders involved?
- What are the sequential steps?
- What are the hand-offs or transitions details?
- What are the inputs and outputs?
- What could go wrong at each step? What are the contingencies?
- What technology is involved, and how does it interact with the surroundings?

Context Risk: Implement platforms, not blueprints when complex contexts…

**Blueprint**
- Specifications for exact implementation
- Sometimes you will plan to do gap analysis
- Example: series of satellite launches

**Platform**
- Incomplete system that can be built upon
- 60-70% of the way there (might vary)
- Example: trade reporting by country

---

CC BY 2.0 USB Flash Drive courtesy of Ambuj Saxena

© 2014 Mergence Systems LLC Leadership, Innovation, Systems Thinking
Risk 2: Mistreatment of legacy constraints

“Don't be trapped by dogma - which is living with the results of other people's thinking.” –Steve Jobs

Coca-Cola Classic  |  Mobile
EXPERCTATION/IDENTITY  |  TRANSFORMATIONAL
(Legacy)  |  (Brand New)
STUCK IN THE PAST  |  LABOR OF LOVE
(Value Reduced)  |  (Value Add)

© 2014 Mergence Systems LLC
Legacy Risk: Pursue meaningful legacy stakeholder involvement

- People are personally vested in their work and systems
- Don’t tell people that their last 30 years of service were “wrong”
- Don’t link future vision with someone’s personal legacy
- Give legacy stakeholders productive role
- Don’t say “you will retire at the end of this project”

Buried resentment will tank your project

Legacy Risk: Measure value of legacy and new constraints

- Quantify linkage to underlying business needs
- QFD-style analysis is excellent here (could be its own webinar itself)
- Numerical measurements of value (based on your business) with same units to avoid bias
- Frame solutions based on agreed constraints, NOT anecdotes or politics

For value, see “Establishing Quantitative Economic Value for Product and Service Features” by Kevin Otto, Victor Tang, and Warren Seering (from MIT) in The “PDMA Toolbook 2”
Risk 3: Unexpected interactions

“The system is not the sum of its parts, but the product of interactions.” – Prof. Russell Ackoff, The Wharton School

CONSTRUCTIVE

DESTRUCTIVE
Interaction Risk: Identify dependencies that cross different end-to-end processes

Shipping happens in:

- Customer sales order
- Intercompany sales order
- Spare parts warranty replacement
- Outside processing transaction
- Return sales order
- Promotional sales order
- Stock transfer

DSMs are another great tool emphasized at MIT to visualize dependencies and sequences (probably an entire subject itself): http://dsmweb.org/

© 2014 Mergence Systems LLC
Interactions: Test or simulate “real” scenarios

- Determine criteria and success criteria in advance
- “Approval” is NOT a success criteria
- Criteria should be based on business goal
- Testing is a gift to predict the future
- Determine important variables
- Test the full end-to-end process
- Simulate scenarios you cannot test (due to infeasibility)
Conclusions

Constant evolutions in business systems with more complex processes, technologies, connections and hand-offs

Project risks, strategies, and tactics

• Overlapping contexts matter
  – Think of end-to-end
  – Platforms, not blueprints for complex context

• Legacy constraints are not created equal
  – Give legacy people a meaningful role in FUTURE
  – Every constraint EARNS it’s way into the system

• Interactions happen
  – Identify common sub-systems
  – Test everything with real criteria
Questions and Feedback

I would like to continue to learn alongside each of you: Please reach out with comments, feedback, complaints, and questions.

Daniel Mark Adsit
MIT SDM ’13
Principal, Mergence Systems LLC
dan@mergencesystems.com
www.mergencesystems.com
www.linkedin.com/in/danielmarkadsit/