Lean Integration: Translating an Innovative Agile Approach into Business Value
MIS Research Center Seminar
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John Schmidt
VP, Global Integration Services

Informatica
The #1 independent leader in Data Integration

- 2009 Revenue: $500 million
- 5-year Average Growth Rate: 18% per year
- Customers: 3,931
  - 84 of Fortune 100
  - 87%+ of Dow Jones
  - Government organizations in 20 countries
- Partners: 400+
  - Major SI, ISV, OEM and On-Demand Leaders
- Employees: 1,755
- Direct in 28 Countries
Our Singular Mission

*Enabling The Information Economy*

We enable organizations to reduce IT costs and gain a competitive advantage in today’s global information economy by empowering them to access, integrate and trust all their information assets.

The Role of IT in Business

“CEO’s, CFO’s and CIO’s all recognize there is zero separation between business strategy and IT execution today. There is pretty much nothing you can do, from cutting costs or growth without the enablement of IT in one way, shape or form.”

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Steve Schuckenbrock,
President, Dell Large Enterprise Business

Reference: Financial Times Special Report, Wednesday, October 27, 2010
The Data Driven Enterprise

Cloud Computing
- Workday
- salesforce.com
- Google
- Windows Azure
- Amazon Web Services
- GoGrid

Traditional Enterprise
- Oracle
- SAP
- Siebel

Partner Trading Network (B2B)
- SEPA
- NACHA
- HIPAA

Problem: Data chaos results from unnecessary complexity

Root Cause - Integrations manufactured as custom point solutions
Craftsman Approach – Custom Development

Manufacturing World
Skilled manual workers
Manufacture by hand
Custom products (works of art)

Integration World
Skilled IT Specialists
Hand coding
Custom integration points

Assembly Line Approach – This is ICCs now

Manufacturing World
Dedicated skilled labor
Standard Tools
Mass production

Integration World
Dedicated skilled labor
Standard Tools
Periodic Large Releases

Benefits
Consistent Quality
Lower Cost
Modern Factory Approach – Automated Flow of Materials and Information

Flow of Materials
- Manufacturing World
  - Automation – new roles
  - JIT Workflow
  - Mass-Customization

Flow of Information
- Integration World
  - Template-driven self-service solutions
  - Agile/iterative Development
  - Configurable re-useable objects

Benefits
- Low cost AND high quality
- Exactly the way you want it

Integration Technology
- Hand coding
- Integration Tools (EAI, ...)
- Integration Platform
- Integration Factory Platform

Management Practices
- Projects & Ad hoc integration
- Program Management
- Competency Center
- Lean Integration

Business Benefits
- Fast (quick & dirty)
- Improved Quality
- Cost Efficiency
- Faster, Better AND Cheaper

It is Critical That You Have an Expert and Sustainable Integration Capability

Efficiency Spectrum

Low CAPEX
High OPEX

Integration Technology
- Hand coding
- Integration Tools (EAI, ...)
- Integration Platform
- Integration Factory Platform

Management Practices
- Projects & Ad hoc integration
- Program Management
- Competency Center
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Business Benefits
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- Faster, Better AND Cheaper

1990's
2000's
2010's

Point-in-time Methods
Sustaining Methods
Cultural Change is easy – isn’t it?

Transform complexity and chaos to an Agile, Data-driven Enterprise
Analyst Perspective

“Taking a production line approach to integrations makes a lot of sense…they should be more widely considered and implemented.”

Philip Howard, Research Director - Data Management
Bloor Research, January 7, 2009

Lean Integration Principles

- Eliminate Waste
- Continuous Improvement
- Automate Processes
- Empower the Team
- Plan for Change
- Optimize the Whole
- Build Quality In
1. Eliminate Waste
Example: Value Added Ratio – Before Lean

Scenario: Simple Change Request to the Data Warehouse

<table>
<thead>
<tr>
<th>Value-Add</th>
<th>Non Value-Add</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 min</td>
<td>1 week</td>
</tr>
<tr>
<td>5 min</td>
<td>2 weeks</td>
</tr>
<tr>
<td>2 hours</td>
<td>2 weeks</td>
</tr>
<tr>
<td>1 hour</td>
<td>1 week</td>
</tr>
<tr>
<td>1 hour</td>
<td>2 weeks</td>
</tr>
</tbody>
</table>

\[
\frac{\text{Value-Add}}{\text{Non Value-Add}} = \frac{5 \text{ hours}}{1344 \text{ hours}} = 0.37\% \text{ Value Added Ratio}
\]

Lead Time Reduced from 2 months to <1.5 days

\[
\text{Lead Time Reduction} = \frac{\text{Original Lead Time} - \text{Current Lead Time}}{\text{Original Lead Time}} = \frac{1344 - 32}{1344} = 97\%
\]

1. Eliminate Waste
Example: Most non-value added activities eliminated

Business

<table>
<thead>
<tr>
<th>Value-Add</th>
<th>Non Value-Add</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 min</td>
<td>4 hours</td>
</tr>
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<tr>
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<td>0 weeks</td>
</tr>
<tr>
<td>1 hour</td>
<td>4 hours</td>
</tr>
<tr>
<td>1 hour</td>
<td>16 hours</td>
</tr>
</tbody>
</table>

\[
\text{Lead Time Reduced from 2 months to <1.5 days}
\]
1. Eliminate Waste

*Keeping data in production that no-one uses is waste*

Data that is not used still costs a lot:
- Disk capacity (production, test, DW)
- Backup costs (tapes, labor, storage)
- Business slow-down by end-of-period jobs
- Application upgrade costs
- Impact on real-time transactions
- Compliance costs
- Data quality analysis and resolution time

**Take Away: Eliminating Waste is not about cutting out fat**

"Don’t think of lean as requiring a diet to lose weight; think of it as focusing the people, process, technology, and architecture that you possess on the projects that have the most impact for the business."

Mike Gualtieri, John Rymer, Jeffrey Hammond,
*Top Five Changes For Application Development*
Forrester, January 4, 2010
2. Automate Process
Create assembly lines for rapid customization

IT Designs Templates and Patterns – Users create custom solutions fast
- Generating custom wizards for templates to maximize productivity for end users—developers and/or analysts
- Ability to build your own wizards based on patterns without coding
- Common data integration and event processing patterns

1. Understand and Define Common Patterns
2. Design Template
3. End Users Quickly Configure and Customize in Assembly Line-Fashion

Examples:
- Slowly changing dimension in warehousing
- Data file interchange with supply chain partners
- Time-based event correlation

Huge Productivity Gains for End Users

Take Away: Automation is a key to simplification

“Factory IT couples lean management techniques and process improvements with advances in cloud computing and software development to simplify the operating environment and improve productivity and cost performance.”

Reshaping IT management for turbulent times, Roger Roberts, Hugo Sarrazin, Johnson Sikes, McKinsey Quarterly, November, 2010
3. Empower the Team

**Problem:** IT is the bottleneck for data requests

**Solution:** Give the business self-service capabilities

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**Business Self-Service**

- Enables business self-service, improving business agility
- IT maintains governance and oversight

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**Take Away:** Self-service improves business agility AND gives IT better governance

"Lean is about ensuring IT is more closely aligned to the Business."

**Stephen Pritchard, Financial Times**

Source: Financial Times Special Report, Wednesday, October 27, 2010
4. Continuously Improve
Problem: How can groups improve themselves?
Solution: Use visual management of the entire integration lifecycle.

Take Away: Don’t use Lean to cut staff

“Best-practice executives view lean as a performance improvement strategy rather than merely a cost-cutting exercise.”

Alexander Peters, Forrester Research

Source: Financial Times Special Report, Wednesday, October 27, 2010
5. Build Quality In

Problem: Quality issues accumulate without business involvement
Solution: Involve business in fixing highest priority issues

Take Away: Metadata is an enabler for IT automation

“Metadata allow systems to adapt more quickly to changing requirements by pushing power into the data, and out onto users.”

Brian Foote and Joseph Yoder, Big Ball of Mud, Addison-Wesley Software Patterns Series, 2000

Reference: Financial Times Special Report, Wednesday, October 27, 2010
6. Plan for Change
Insulate consuming applications from change

Lean Integration
Proven Value Proposition: Better, Cheaper & Faster

Focus on Customer Value and Eliminate Waste
Automate Processes
Empower the Team
Plan For Change
Continuously Improve
Build Quality In
Optimize The Whole

Database Archiving
Mapping Architect For Value
Cloud Services
V9 Data Services
PCAD - Metadata Manager
Data Quality
The Informatica Platform

After re-working their ETL processes to always use design patterns, achieved 8x efficiencies on all new projects and re-work on old projects.

Reduced impact analysis time between 85-95%, reduced time for business analyst inquiries by 50%, reduced end-user support time by over 65%.

Saved $1.4M in first 6 months because of improved customer master data quality; Reduced SKU’s by 40% by reducing old or obsolete parts

4 month payback from storage reduction, and rapid retrieval of archived claims for improved customer service.

Implemented data quality metrics and monitoring system; Saved est.$3M in development costs and avoided $20M in AML regulatory fines

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Manufacturing Production Lines

Leading Practice: Integration Systems are Managed Like First-Class Business Systems
Informatica Platform Mapping

Integration Systems

Integration Hub
- Data Warehouse
- Business Analytics
- Master Data Management
- Data Quality

Transformation Hub
- Extract Transform Load
- Data Services
- Managed File Transfer
- Business to Business

Application Integration
- Cloud Services
- Enterprise Service Bus
- Information Security
- Enterprise Messaging

Portal
- Information Portal
- Directory & Single Sign-on
- Content Management
- Search

Integration Repository
- Metadata Manager
- Business Glossary
- Service Registry
- Data Stewardship

Process Management
- Process State Engine
- Activity Monitoring
- Workflow
- Complex Event Processing

Informatica Factory Platform

Products in Eight Growth Categories

Data Loader
Data Replication
Data Synchronization
Data Quality Assessment
Data Quality Global Address Verification
Data Quality
Data Quality
Data Quality
Data Quality

Ultra Messaging
CEP
B2B Data Exchange
Cloud Services
ILM
PowerCenter
Data Quality
MDM

Ultra Messaging
Complex Event Processing
B2B Data Exchange
Enterprise Data Integration
Application ILM
Data Quality
Master Data Management

LBM Streaming
RulePoint
Advanced XML
PowerExchange
Data Archive
Identity Resolution
MDM

UME Persistence
RuleCast
Data Transformation
PowerCenter
Data Subset
Data Quality

UME Queuing
Real-Time Alert Manager
Data Exchange
Data Services
Data Privacy
Data Explorer
Production Line for Application Modernization

Production Line for Supply Chain Integration
Good technology alone does not guarantee success

“Deploying technology, by itself, is a poor strategy for improving the implementation of interfaces. An effective strategy for integration is established by using these critical success factors:

- Establish an ICC.
- Develop an integration "city plan" consisting of:
  - Policies that implement the necessary governance
  - A set of best practices that is continually refined by measuring the result of applying the best practices in integration projects
  - A technology architecture that establishes standards for the technologies to be used during application integration
  - Have integration competency staff drive the selection of the integration technologies that are to be deployed."

The Seven Critical Success Factors for Application Integration, Jess Thompson, Gartner, November 10, 2010

Lean methods in a nutshell

![Lean method diagram](image-url)
Lean methods – a more complete list

Business Strategy and Annual Plan Goals

Hoshin Kanri – True North – Catch ball – A3 – PDCA Review

- SS
- 5S
- Kanban
- Supermarkets
- Change overboard
- Piece maker scheduling
- Material delivery issues
- Service quality
- Lead time
- Work cell design
- Standard work
- Error proofing
- Plant flow layout
- Lean/leading: help
- 20 days
- SWED

Roles & processes

- Labor productivity
- Value stream
- OOE
- Value stream cycle time
- Value added time

Practices

- As-is Value Stream Map
- CR Review Committee
- GMNA Applications Team
- (Irina)
- Data Warehouse Team
- Change Request Confirmation Request
- Telephone Tag
- Status Request
- Status Update
- Automated Workflow/Tracking (Cust satisfaction)
- Data Dictionary to clarify requirements

As-Is Value Stream Map

DOIT Corporation Value Stream Map (AS-IS) for Change Request Process

Monday, December 20, 2010

Customer’s Customers

Semi-Weekly Review

Requirements Review

Production Deployment

Test Execution

Design & Development

Integration Team Manager

Assign Resource

Test Team Manager

Test Scheduling

Data Warehouse Team

Production CR Submission

DOIT Corporation

Add CR To List

Approved Changes

Forward CR Request To Developer

Clarify Requirements

Requirements Clarification

Approved CR & Design Docs

Design Docs & Schedule

Change Management Board

CR Approval & Schedule

Charge Request

Bypass Committee for simple changes (8 days)

Bypass Council for simple CR’s (26 days)

No notification (Cust Satisfaction) (5 days)

Automated Regression Testing (21 days - requires investment)

Daily ETL Batch Run

Automation Daily ETL Batch Run Execution

30 Minutes

8.8 Days

15 Minutes

8.5 Days

90 Minutes

12.8 Days

180 Minutes

1 Day

15 Minutes

26 Days

180 Minutes

13.3 Days

Work Time = 510 Minutes

(8.5 hrs or 0.35 Days)

Lead Time = 75.6 Days

0.3 Days

Value Ratio: Work Time / Lead Time = 0.5%

Notes:

(1) Lead Time includes 5 delay in customer notification

(2) Lead Time could be reduced to 24 days with just process changes and using existing tools

(3) Lead Time could be reduced to 3 days with a capital investment for automated testing
Helpful resources: Best practice references
Available at amazon.com or integrationfactory.com

- **Integration Competency Center (2005)**: A permanent cross-functional team operating as a shared service function supporting multiple organizational units and sustaining integration in a coordinated manner.

- **Lean Integration (2010)**: A teachable, sustainable management system that emphasizes creating value for customers, continuous improvement, and eliminating waste as a sustainable data management and integration practice.
Lean Integration

Lean Integration is a management system that emphasizes creating value for customers, continuous improvement, and eliminating waste as a sustainable data integration and system integration practice. Lean Integration has parallels with other lean disciplines such as Lean Manufacturing, Lean IT, and Lean software development. It is a specialized collection of tools and techniques that address the unique challenges associated with seamlessly combining information and processes from systems that were independently developed, are based on incompatible data models, and remain independently managed, to achieve a cohesive holistic operation.

Overview

Lean Integration builds on the same set of principles that were developed for Lean Manufacturing and Lean software development which is based on the Toyota Production System. Integration solutions can be broadly categorized as either Process Integration or Data Integration.

CIO Magazine, October 2010
Staff Pick for IT Management & Leadership

Lean Integration
An Integration Factory Approach to Business Agility
By John G. Schmidt and David Lyle
Billing itself as a system for implementing common sense ideas, this book aims to enable setbacks that arise when you tackle integration one project at a time. By taking a holistic approach, it promises, you can achieve significant cost reduction, create a system for continuous improvement, and do a lot more with less. The authors illustrate their arguments with case studies and detailed charts and graphs. Mower-Weiss, $39.99
Sharing Knowledge Among Users

INFORMATICA MARKETPLACE

The go-to destination to buy and sell proven data integration, data quality, and data management solutions (Blocks).

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Maximize your Informatica investment with Informatica Marketplace - www.informaticamarketplace.com

Integration Maturity Assessment Survey

Integration Maturity Assessment

As of September 1, 2010

http://vip.informatica.com/?elqPURLPage=7960
Impact: IT Costs are Increasing

Integration Opportunity Calculator

<table>
<thead>
<tr>
<th>Company Name</th>
<th>DOT</th>
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</thead>
<tbody>
<tr>
<td>Annual Revenue</td>
<td>$1,000,000,000</td>
</tr>
<tr>
<td>Industry Sector</td>
<td>All Industries</td>
</tr>
<tr>
<td>Size (Number of Employees)</td>
<td>Total</td>
</tr>
</tbody>
</table>

| IT Budget as a percent of revenue | 3.0% | $29,973,356 |
| % of IT budget spent on investments | 30.3% | $9,088,436 |
| % of investment projects spent on Integration | 35.0% | $3,110,953 |
| % of integration project savings resulting from an ICC | 30.0% | $954,286 |
| % of IT budget spent on MOOSE | 69.7% | $20,884,920 |
| % of MOOSE spent on maintenance (approximate - no study available) | 15.0% | $3,132,738 |
| % of integration savings on maintenance costs resulting from an ICC | 20.0% | $626,548 |
| Total potential annual savings resulting from an ICC | $1,590,833 |

Notes:
2. Gartner, 11-6-2003, “Client Issues for Application Integration”
3. Gartner, 4-4-2006, “Cost Cutting Through the Use of an Integration Competency Center or SOA Center of Excellence”
Moore – Maintain and Operate the IT Organization, Systems, and Equipment

Takeaways

- Lean is Easy – don’t try to be “perfect”
- Learn a Lean technique and start using it
- Invest in Factory tools
Reference Models are an essential element of an effective Business Framework

How does a framework help?
- Faster projects
- Higher quality solutions
- Decreased cost through reuse of technology assets
- Tighter integration of business and IT – more flexible and agile organization
- Common Business Language
- Up-to-date Risk and Compliance requirements integrated throughout
Case Study: Wachovia’s Business Architecture

Information Architecture Framework

Layer 4 – Enterprise View
Overarching consistent context for executives & information stewards

Layer 3 - Business View
Domain models for business owners and project sponsors

Layer 2 – Solution View
Architecture models for specific systems and solutions

Layer 1 – Technology View
Technical models for developers, engineers and operations staff

Reference Models
Business Context Diagram
Function/Information Matrix
Master Data List

Process Models
Business Event Model
Operational Workflow Model

Interaction Models
Logical Data Map
Sequence diagrams

Transformation Models
Interface Specifications
Transformation rules
Protocol Definitions

Metadata
(federated repository of relevant models)

Information Models
Business Glossary
Canonical Model

Logical Data Models
Entity Relationship Diagram

Physical Data Models
File/Table Properties
Storage Information

A layered approach is needed to manage data complexity, provide multiple stakeholder views, and maintain traceability to business requirements.
Data Governance Methodology

One-Time Effort

1. Organize Governance Committee
2. Define Governance Framework
3. Develop Enterprise Models
4. Assign Organizational Roles
5. Scope Program

Repeat for every program

6. Assess Baseline & Data Quality
7. Develop Target Architecture
8. Plan Migration Roadmap
9. Develop Program Models
10. Implement Projects

Entry Points
1. Enterprise Initiative (Large-scale program with defined ROI – e.g. Merger or major business transformation)
2. Top-level Directive (C-level or higher – e.g. one view of customer/business, control IP, data security, etc.)
3. Scale-up DQ and MDM Projects (Leverage successful solutions that demonstrate the value for a specific business area and scale them up to cross-functional enterprise-wide initiatives)