Architecture-Driven Modernization

The Time is Now, The Reasons are Many & The Power is in Your Hands

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Session Overview

- Existing IT Architecture Challenges
- Traditional Approaches to Addressing These Challenges
- Architecture-Driven Modernization Alternative
- The Power is in Your Hands
  - Modernization processes & scenarios
  - Modernization tools, technologies & support
  - Modernization standards
- Implementation Options & Considerations
- Summary
Enterprise Impacts of Aging IT Architectures

- Existing Data & Application Architectures:
  - Contain redundancy, obsolete functionality mixed with mission critical code across stovepipe structures
  - Delay and undermine critical IT projects

- Business Impacts of Aging IT Architectures:
  - Inefficiency, high operating costs, spiraling head-count
  - Shrinking profit margins
  - Poor responsiveness to customers / constituent base
  - Lost / delayed revenue realization
  - Creation of Shadow Systems* 
  - Erosion of ability to respond to strategic objectives

* Spreadsheets, faxes, email, Access, dual entry, paper/pencil
Existing IT architectures include application and data architectures as well as technical architectures.
Greenfield Replacement: Costly & Risky

- Greenfield replacement implies from scratch
- Real cost of application rewrites is in the range of $15-30 / line of code (Gartner)
- Greenfield replacement results in:
  - Missing or incorrect data & business rules
  - Significant reworking of deliverables
  - Loss of critical business knowledge
- If Greenfield replacement fails – there is no fallback
Off-the-Shelf Package Solutions Provide No Easy Answers

- Integrating packages with existing data and systems was very challenging.
- 98% of package users were forced to change business practices (tail wagging the dog).
- 60% of business users favored the existing legacy applications over the new package.
- Only 18% of package users found it easy to realize package benefits.

Unacceptable Results of Greenfield Replacement & Package Options

- New IRS system allows $200M in bogus refunds (USA Today – 2006)
- Telecommunications company cancels package implementation effort - $70-80 million failure
- FBI throws out a $100 million system as a total failure
- U.S. Federal Agency cancels $70 million SAP implementation
- Health insurance provider shuts down $60 million major systems replacement project
- Hershey distribution package failure drives down stock value (1999)
LA County Schools: Payroll System Failure

- Eight months after switching to new $95-million payroll system:
  - Tens of thousands of teachers, cafeteria workers, classroom aides & others have been underpaid, overpaid or not paid at all
  - Costs to fix system are expected to run an additional $50 million.

- District in talks with Deloitte Consulting, negotiating possible repayment of portion of $55 million firm received

- School board approved a request by Supt. David L. Brewer to spend $10 million on yet another consultant

- District plans to recoup nearly $45 million it has overpaid to more than 28,700 employees

Sources:
- LATIMES.com, Aug. 25, 2007
- LATIMES.com, Sept. 19, 2007
Middleware Solutions Can Even Complicate Business Architectures

“…recent advances in integration middleware technology have provided some relief by making it possible for financial institutions to move customer information across channels. But in many cases the technology has been laid over flawed legacy architecture and has merely created more duplication.”

Why Alternatives Should be Sought to Replace or Augment Traditional IT Approaches

- Traditional replacement approaches have fallen short due:
  - Greenfield options incur high costs, long timeframes and high risks
  - Packages require significant customization and even then may not align with business requirements
- Non-invasive integration options have hit a wall
  - Impose additional redundancy over flawed IT architectures
- Architecture-Driven Modernization offers:
  - Real solutions to address core data and application architecture weaknesses and inadequacies
Executive Justification for Architecture-Driven Modernization

- Executives view legacy systems as roadblocks*
  - 78% of respondents said legacy systems had negative effects on conducting business*
  - Most (51%) envision a strategy to replace systems piecemeal, component by component*

- Modernization provides phased approach to:
  - Deciphering existing IT architectural complexities
  - Decoupling, stabilizing, migrating & redeploying essential data and business functionality

Defining Architecture-Driven Modernization (ADM)*

Process of understanding & evolving existing software assets for:

- Software improvement
- Modifications
- Interoperability
- Refactoring
- Restructuring
- Reuse
- Porting
- Migration
- Translation into another language
- Enterprise application integration
- Service-oriented architecture
- Other initiatives as they relate to existing systems

Architecture-Driven Modernization: Aligns Business & IT Domain Initiatives

Adopted from early horseshoe models from Unisys/TSG, Inc.
Architecture-Driven Modernization Framework

- Four stages encapsulate variety of modernization techniques

Source: COMSYS Transformation & Integration Methodology
http://www.comsysprojects.com/SystemTransformation/TMethodology.htm
ADM Framework: 4-Stage Breakdown

Enterprise Assessment: Planning Level

- Enterprise Analysis Planning
- Technical Architecture Assessment
- Business Architecture Assessment
- Modernization Planning
- Data Architecture Assessment

Project-Level Assessment: Detailed analysis to support refactoring & transformation

- Objective Setting/Proposal Development
- Technical Assessment
- IS Infrastructure Assessment
- Integration / Feasibility Analysis
- Architectural Assessment

Refactoring: Retool existing architecture & to migrate languages, platforms & interfaces

- Application Staging
- Language Change/upgrade
- Remodularization
- Middleware Enabling
- Validation
- Code Stabilization
- Data Definition Standardization

Transformation: Redeploy current system artifacts in model driven architectures

Any combination of tasks / subtasks may be combined to create given project scenario.

Source: COMSYS Transformation & Integration Methodology
http://www.comsysprojects.com/SystemTransformation/TMethodology.htm
Architecture-Driven Modernization Scenarios

- ADM Scenario: An initiative (e.g. portfolio management), project (e.g. migrating platforms) or series of projects (e.g. consolidating, redesigning and redeploying an application in model driven architecture) applied to one or more existing systems.
Modernization Scenarios (Projects) Driven by Degree of Abstract from Physical Systems

- Replacement Scenarios
- Greenfield Rewrite
- ERP/Package Deployment
- Knowledge Reclamation
- Model Driven Architecture Migration
- Architecture Consolidation
- SOA Transformation
- Data Architecture Redesign
- Procedural to Object Lang. Migration
- Language Migration
- Platform Migration
- Data Conversion
- Language Transliteration

Adopted from earlier horseshoe models from Unisys/TSG, Inc.
Sample ADM Scenario: Knowledge Reclamation & Business Process / Rule Alignment

- Develop Work Task Estimates
- Analyze Physical Environment
- Analyze System Data Definitions
- Assess Current Architecture
- Derive Logical Data Architecture
- Decompose As-Is Functional Decomposition
- As-Is Event Flows
- Perform Workflow Analysis
- Perform Business Rule Analysis

Meta-data, Form & XREF Reports
Planning Form & Task Estimates
Architectural Reports
As-Is Data Model
As-Is Business Rules
Modernization is Supported by Industry Standards Group

- OMG ADM Task Force* established in 2003:
  - To create specifications and promote industry consensus on modernization of existing applications

- ADM Task Force modernization work:
  - Performed by major industry vendors, integrators and outsourcing firms
  - Delivered first standard into the marketplace in 2007
  - Serves as center of thought modernization leadership

- Companies can apply modernization knowing that projects are supported by industry standards

*Object Management Group (OMG) / Architecture-Driven Modernization Task Force
Four Basic Ways to Implement Modernization on Projects

- **Tool Centric**: License tool, get trained & do it yourself:
  - Works where repeated use of tool is envisioned

- **Service Supported**: License tool, engage outside support to work with in-house teams

- **In-Sourced**: Bring in vendor with a tool & they perform work onsite:
  - Works well for one-time projects

- **Outsourced**: Send your system out to a vendor:
  - Works only for very well defined tasks

- **In-house personnel still must do oversight, testing**
Essential Elements of an Architecture-Driven Modernization Program

- Understanding of how modernization fits into existing or planned IT & business projects
- Framework for understanding project scenarios, work plans, estimates and cost analysis
- Knowledge of and access to available tools, technologies & service providers
- A starting point:
  - Current, high-level architecture assessment
  - Strategy session outlining options, timelines
What You Should Think About When Considering Modernization

- Do you really understand why you are undertaking the initiative?
- Have you taken business architectural alignment into account?
- What are the impacts on interfacing & upstream / downstream systems?
- Have you considered the condition & impact of the underlying data architecture?
- Are you leveraging established modernization literature, approaches & knowledge?
Modernization – Takes Over Where Existing IT Strategies Fall Short

- Augments or displaces existing IT options
- Enables upgrade, conversion, consolidation, migration and related projects
- Applies a measured, phased approach to meeting IT challenges
- Utilizes scenarios to ensure a business-driven approach
- Builds upon solid foundation of production systems
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